3 DOE ALTERNATIVES

The DOE alternatives being analyzed through this Supplement include the no action alternative and an action alternative (DOE's proposed action) under which DOE would develop and adopt programmatic environmental guidance for use in solar projects. In the Draft Solar PEIS, DOE presented its plans to develop such guidance; this Supplement presents the proposed guidance (described and analyzed in Sections 3.2 and 3.3). Examples of DOE-supported solar projects are briefly described in Section 1.4 of the Draft Solar PEIS.

3.1 NO ACTION ALTERNATIVE

Under the no action alternative, DOE would continue its existing case-by-case process for addressing environmental concerns for solar projects supported by DOE in any location (i.e., not restricted to BLM-administered lands). It would not develop programmatic environmental guidance with recommended environmental best management practices and mitigation measures that could be applied to all DOE-supported solar projects. The no action alternative remains unchanged from the Draft Solar PEIS (as described in Section 2.3.1 of the Draft).

3.2 ACTION ALTERNATIVE—DOE'S PROPOSED PROGRAMMATIC ENVIRONMENTAL GUIDANCE

As described in the Draft Solar PEIS, under the proposed action (action alternative), DOE would develop and adopt programmatic environmental guidance, which would be used by DOE to further integrate environmental considerations into its analysis and selection of proposed solar projects. DOE has used the information about environmental impacts provided in the Draft Solar PEIS and other information to develop the proposed programmatic guidance below.

3.2.1 General Mitigation Measures

- Consider siting facilities in pre-determined solar development zones (e.g., an SEZ designated by the BLM) in order to assist in the sharing of technologies, resources, and data to ensure a more detailed understanding of environmental resources, to facilitate consistency with land use planning and zoning designations, and to make use of existing infrastructure (e.g., access to transmission equipment and lines).

- Include, in early correspondence between the applicant and appropriate permitting or interested government agencies, preliminary project designs, planned use of new technologies, plans of development, and related information in sufficient detail to allow adequate evaluation of potential impacts.

- Develop a thorough understanding of all applicable federal, state, and local environmental regulatory requirements, processes, consultations, and interactions.

- Make early contact with local officials, regulators, and inspectors to explore all applicable regulations and address concerns unique to solar power generation projects.

- Conduct early project development discussions with potential energy users to identify how energy production can be transmitted to load centers and increase the ability to finance projects.

- Be aware of possible pre- and post-construction environmental monitoring through agency and public interactions.

3.2.2 Institutional and Public Outreach

- Emphasize early identification of, and communication and coordination with, stakeholders including, but not limited to, federal, state, and local agencies; special interest groups; Native American Tribes and organizations; elected officials; and concerned citizens.

- Consider holding periodic public update meetings and/or hosting a Web site with project and contact information.

- Consider providing renewable energy public relations and scientific program speaker support and input to community educational programs, other interest groups, and the media.

3.2.3 Land Use

- Maximize the use of previously disturbed lands.

- Avoid land requiring deforestation/de-shrubbing and/or significant slope leveling or grading.

- Avoid siting projects on prime or unique farmland.

- Avoid impacts on special use lands such as NPS lands, Wilderness Areas, National Wildlife Refuge System lands, ACECs, Wildlife Management Areas, traditional cultural properties and other culturally sensitive sites, critical habitat for special status species, and military operations areas and other regulated military lands.

- Consult with local agencies regarding potential impacts of developing within, adjacent, or close to state or local special use areas such as parks.

- Use technologies and facility layouts and designs that will minimize land disturbance at a site.

- Avoid or minimize the use of lands that would adversely affect high-use recreational areas such as hiking, camping, and off-road vehicle use locales.

- Consider potential direct and indirect impacts on private lands from project siting.

- Ensure lands considered are appropriately zoned for project development (e.g., industrial or energy development uses).

- Solar development in close proximity to airports will likely trigger the need for consultation with the Federal Aviation Administration (FAA).

3.2.4 Water Resources and Erosion Control

- Consider technologies that minimize water use.

- Consider the sustainable use of water resources through appropriate technology selection, conservation practices, and the protection of the quality of the existing natural water bodies (including streams, wetlands, ephemeral washes, and floodplains, as well as groundwater aquifers).

- Consider the use of rain, gray, and/or other recycled water for facility operations, including plant cooling, steam generation, irrigation, maintenance, and dust suppression.

- Avoid locations that would involve impacts on surface water bodies, ephemeral washes, playas, and natural drainage areas (including groundwater recharge areas).

- To the extent practicable, minimize the use of and impacts on surface and groundwater resources (including sole source aquifers) during construction and operations.

- Avoid groundwater resource project requirements that would result in over-appropriation or over-drafting of any groundwater basin.

- Identify source capacity, prior water rights, and adequacy of capacity to serve project requirements and dependent biological resources in the area.

- Avoid or minimize the use of land within an identified 100-year floodplain or identify engineering controls to mitigate potential impacts.

- Avoid locating facilities on steep slopes, in alluvial fans, and in other areas prone to landslides or flash floods, or within gullies or washes.

- Compare preliminary site grading, drainage, erosion, and sediment control plans with applicable local jurisdiction requirements.

- Consult federal, state, and local "water-wise" guidelines, as applicable, for project development in the arid southwest.

3.2.5 Biological Resources

- Review federal and state databases and technical reports for regulatory requirements for protection of special status animal and plant species and habitats.

- Begin early consultation processes with the USFWS and state environmental agencies for identification of potential issues, and ensure ongoing communication in the course of project development.

- Locate project facilities and ancillary components so that environmentally sensitive areas (e.g., riparian habitats, streams, wetlands, critical wildlife habitats, and other protected areas) are avoided.

- Consider glint, glare, reflection, and linear characteristics of project components on bird and terrestrial animal movements in the project area.

- Develop biological survey protocols and plans in consultation with regulatory agencies to ensure that specific regional and other requirements are met.

- Consider potential impacts on indigenous and special status plant species while addressing controls for non-native/invasive species and noxious weeds.

- Consider reclamation and conservation initiatives for disturbed lands after construction.

- Consider developing habitat restoration and management plans and compensatory mitigation and monitoring plans.

3.2.6 Air Quality

- Identify applicable federal, state, and local air quality management agencies and follow requirements and application procedures.

- Identify all emission sources associated with the proposed technology and/or use information from existing facilities with similar characteristics.

- Consider dust abatement procedures that will minimize particulate matter emissions while reducing the use of extensive amounts of water.

3.2.7 Cultural Resources and Native American Interactions

- Consult cultural resource experts who meet the Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

- Identify all Tribes and Tribal organizations with cultural and religious ties to the land and resources in the proposed project vicinity and begin a dialogue of information sharing (formal government-to-government consultations may be requested between federal agencies and federally recognized Tribal governments if the federal government or federal funds are involved in a project that affects a Tribe).

- Avoid locations that are in close proximity to sensitive cultural and historic resources.

- Begin early interactions with the SHPO and/or Tribal Historic Preservation Officer to identify cultural resources and potential issues associated with a proposed site.

- In addition to qualified cultural resource experts, consider employment of a qualified Native American monitor to help identify issues and to work in the field during construction activities should unanticipated cultural resources be encountered.

3.2.8 Visual Resources and Aesthetics

- Consider potential impacts on visual resources in the project planning and siting phase, for example, when siting structures, consider landscape characteristics, lighting and glare from facility components, minimizing structure profiles, views from key observation points and nearby recreation lands, and integration of project components with natural land contours and colors.

- Consider potential visual impacts on the nature and character of nearby culturally sensitive and historic structures.

- Consider visual effects of project components on local infrastructure facilities such as schools, hospitals, and housing developments in urban and rural communities.

3.2.9 Socioeconomics

- Site facilities to maximize local, regional, and state-wide economic benefits.

- Site projects to minimize adverse effects on area housing markets and local infrastructure (e.g., schools and other public services) and to ensure adequate housing vacancy rates and local infrastructure support for workers and their families.

- Site facilities to maximize effective integration with existing electrical transmission corridors, including Western Area Power Administration and other power marketing organization transmission resources and population centers that will use the power.

- Give maximum priority to buying American-made solar technologies and components to the extent practicable.

- Employ "local to global" practices in hiring and procurement of goods and services, giving priority to using local labor forces and businesses during construction and operation prior to considering regional, national, and international resources.

3.2.10 Environmental Justice

- Avoid locating facilities where disproportionately high and adverse impacts would be incurred by a minority population or a population whose income is below the poverty level, unless requested by the minority or low-income population.

- Where applicable, work with potentially affected low-income and minority communities to develop appropriate mitigation measures to reduce environmental, human health, social, and economic impacts from the project on identified populations.

3.2.11 Safety and Health

- Consider state and local fire protection ordinances and fire hazard severity zones when siting a project.

- Where appropriate, consider facility setback distances and buffers to separate nearby populations and structures from a proposed facility to minimize impacts from sun reflection (glare), low-frequency sound, electromagnetic fields, noise, air pollution, and other facility-related hazards, wastes, emissions, and discharges.

- Coordinate with the FAA and local aviation or military facility managers to address safety concerns and potential impacts on airports or flight paths in close proximity to solar facilities.

- Consider potential impacts from electromagnetic interference (e.g., impacts on radar, microwave, television, and radio transmissions) in facility design and comply with Federal Communications Commission regulations.

3.3 ANALYSIS OF DOE'S ACTION ALTERNATIVE

This section presents an analysis of DOE's action alternative, under which DOE would develop and adopt programmatic environmental guidance for use in the consideration of future solar projects.

DOE developed the proposed guidance presented in Section 3.2 above to facilitate the advancement of solar energy development. DOE will consider this guidance, including recommended environmental practices and mitigation measures, in its investment and deployment strategies and decision-making process. This guidance would provide DOE with a tool for making more informed, environmentally sound decisions on DOE-supported solar projects.

3.3.1 Impacts of DOE's Proposed Action

The proposed guidance presented in Section 3.2 is intended to better enable DOE to comprehensively determine where to make technology and resource investments to minimize the environmental impacts of solar technologies for DOE-supported solar projects.

DOE could also consider the proposed guidance in establishing environmental mitigation recommendations to be considered by project proponents. The recommendations contained in the guidance, which are based upon the analysis of impacts of solar energy development and potentially applicable mitigation measures presented in Chapter 5 of the Draft Solar PEIS, would help DOE ensure that adverse environmental impacts of DOE-supported solar projects would be avoided, minimized, or mitigated.

Collectively, streamlined environmental reviews, quicker project approval processes, and reduced opposition to solar energy development would likely increase the pace of DOE-sponsored development and reduce the costs to industry, regulatory agencies, and stakeholders. These outcomes would support the mandates of Executive Orders 13212 and 13514 ("Federal

Leadership in Environmental, Energy, and Academic Performance," *Federal Register,* Volume 74, page 52117, Oct. 5, 2009) and Section 603 of the Energy Independence and Security Act of 2007.

Increasing the pace of solar energy development would, in turn, translate into other benefits. Utility-scale solar energy development would result in reduced emissions of GHGs and combustion-related pollutants, if the development offsets electricity generation by fossil fuel power plants (see Section 5.11.4 of the Draft Solar PEIS). If the pace of solar energy development is faster as a result of DOE's proposed action, the potential beneficial impacts of reduced GHG emissions would be realized at a faster rate.

Utility-scale solar energy development would result in local and regional economic benefits in terms of both jobs and income created (see Section 5.17.2 of the Draft Solar PEIS). The associated transmission system development and related road construction would also produce new jobs and income. These benefits would occur as both direct impacts, resulting from wages and salaries, procurement of goods and services, and collection of state sales and income taxes, and indirect impacts, resulting from new jobs, income, expenditures, and tax revenues subsequently created as the direct impacts circulate through the economy. Increasing the pace of solar energy development would cause these economic benefits to be realized at a faster pace as well.

As discussed in Section 5.17.1.1 of the Draft Solar PEIS, there may be some adverse socioeconomic impacts resulting from changes in recreation, property values, and environmental amenities (e.g., environmental quality, rural community values, or cultural values), and disruption potentially associated with solar development. There could also be beneficial socioeconomic impacts in these areas resulting from economic growth and a positive reception to the presence of a renewable energy industry. Increasing the pace of solar energy development would also speed up the pace of these types of socioeconomic changes. At the programmatic level, it is difficult to quantify these impacts.

In summary, the proposed programmatic guidance that DOE has developed under its proposed action will likely minimize the potential adverse environmental impacts of solar energy development for DOE-supported projects. As a result of adopting this guidance in various DOE solar-related programs, the pace of solar energy development could increase.

3.3.2 Impacts of the No Action Alternative

No change to the no action alternative is being proposed as part of the Supplement. As stated in the Draft Solar PEIS, under the no action alternative DOE would continue its case-by-case process for addressing environmental concerns for DOE-supported solar projects. It would not adopt programmatic environmental guidance to apply to DOE-supported solar projects. As a result, DOE would not undertake any specific efforts to programmatically promote the reduction of environmental impacts of solar energy development or streamline environmental reviews for DOE-supported projects. Such achievements, and the potential benefits in terms of increased pace of solar energy development and decreased associated costs, might occur under

the no action alternative, but they would not be explicitly promoted by DOE (by adoption of programmatic environmental guidance with recommended environmental practices and mitigation measures).

3.3.3 Cumulative Impacts

This section incorporates by reference the assessment of cumulative impacts of DOE's action alternative (proposed action) from the Draft Solar PEIS (Section 7.3 of the Draft PEIS). The scope of the cumulative impact analysis in the Draft Solar PEIS was based on solar energy development at the level projected in the RFDS (from tens of thousands of acres in some states to potentially hundreds of thousands of acres in other states). As discussed in Section 1.6 of this Supplement, the RFDS remains a valid estimate of potential solar development over the next 20 years in the six-state study area.

As stated in the Draft Solar PEIS, in all likelihood only a small percentage of utility-scale solar energy development projected in the RFDS would be directly attributable to DOE's proposed action, in light of the anticipated limited availability of federal funds to support such projects in the six-state study area. As a result, the BLM cumulative impact analysis is considered to provide the upper bound description of potential cumulative environmental impacts. Therefore, a separate cumulative impacts analysis for the DOE proposed action was not prepared.

3.3.4 Other NEPA Considerations

The discussion of other NEPA considerations, including unavoidable adverse impacts, short-term uses of the environment and long-term productivity, irreversible and irretrievable commitment of resources, and mitigation of adverse effects, are incorporated by reference from the Draft Solar PEIS (Section 7.4). The analysis in these sections remains applicable to the action alternative as presented in this Supplement.

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