

# How to Save the Tortoises: Incorporating Wildlife Concerns in Siting of the Utility-Scale Solar Farms

By Hina Gupta\*

For if one link in nature's chain might be lost, another might be lost, until the whole of things will vanish piecemeal.<sup>1</sup>

— Thomas Jefferson

The long history of the desert tortoise, a species that evolved 220 million years ago and has since remained unchanged, presents an apt example of the saying “survival of the fittest.”<sup>2</sup> A recent spate of development of commercial solar farms, however, has left this species vulnerable to extinction.<sup>3</sup> The Ivanpah Solar Project's impacts on wildlife present examples of the not-so-sunny side of solar power, a supposedly “environmentally-friendly” energy source. The desert tortoise on the project site became more vulnerable as they were drawn out from their burrows by clearing of the project site for construction and moving tortoise hatchlings from their natural environment to makeshift nurseries — “[tortoises] crushed under vehicle tires, army ants attacking hatchlings in a makeshift nursery and one small tortoise carried off to an eagle nest, its embedded microchip pinging faintly as it receded.”<sup>4</sup>

Despite warnings that the site was “thick with tortoise,” Ivanpah developers continued with the project because of the site's ideal solar power generation potential.<sup>5</sup> They hired several biologists, prepared extensive environmental impact documents, reduced the scale of the project, and even agreed to implement costly mitigation measures to receive approval from the Bureau of Land Management (“BLM”).<sup>6</sup> The project

still resulted in controversy and litigation because the initial biological assessment proved to be inadequate as the number of desert tortoises on the site far exceeded the initial estimates.<sup>7</sup> The Ivanpah Project is a characteristic example of conflict between utility-scale solar farms<sup>8</sup> and wildlife management. The question remains as to how many threatened species will the United States sacrifice to build a utility-scale solar farms.<sup>9</sup>

Undoubtedly, increasing greenhouse gas emissions in the United States are making renewable energy sources like solar an attractive alternative to coal and other traditional energy sources.<sup>10</sup> Both federal and state governments have taken measures to promote renewable energy. Federal measures include the Energy Policy Act of 2005 which mandates that BLM approve leases for power generation facilities to produce 10,000 MW of non-hydroelectricity renewable energy on federal lands by 2015.<sup>11</sup> States have promoted renewable energy through the state-mandated renewable portfolio standards (“RPS”).<sup>12</sup> Utility-scale solar farms, in particular, form a huge part of achieving carbon-free energy in the United States, but even solar farms have associated environmental challenges.<sup>13</sup>

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1. *Species Extinction*, MONTICELLO.ORG, <http://www.monticello.org/site/research-and-collections/species-extinction> (last visited Feb. 2, 2014) (referring to Thomas Jefferson's statements in *Memoir on the Discovery of Certain Bones of a Quadruped of the Clawed King in the Western Parts of Virginia* in 1799 on species extinction).
2. See Julie Cart, *Saving Desert Tortoises is a Costly Hurdle for Solar Project*, L.A. TIMES (Mar. 4, 2012), <http://articles.latimes.com/2012/mar/04/local/la-me-solar-tortoise-20120304>.
3. See *id.*
4. *Id.* (Describing impacts of Ivanpah Solar Project in California on desert tortoises).
5. See *id.*
6. See *id.*

7. See Robert L. Glicksman, *Solar Energy Development on the Federal Public Lands: Environmental Trade-Offs on the Road to A Lower Carbon Future*, 3 SAN DIEGO J. CLIMATE & ENERGY LAW 107, 139 (2011–2012).
8. Utility-scale facilities are defined as projects that generate electricity that is delivered into the electricity transmission grid, generally with capacities greater than 20 MW. See *Utility-Scale Solar Energy*, SOLAR ENERGY DEV. PROGRAMMATIC EIS INFO. CTR., <http://solareis.anl.gov/guide/environment/> (last visited Nov. 9, 2013).
9. Tom Zeller Jr., *Clean Power Collateral Damage: Of Birds, Tortoises and the Transition from Fossil Fuels*, HUFFINGTON POST (Mar. 11, 2013), [http://www.huffingtonpost.com/tom-zeller-jr/collateral-damage-energy\\_b\\_2843106.html](http://www.huffingtonpost.com/tom-zeller-jr/collateral-damage-energy_b_2843106.html).
10. See Hadassah M. Reimer & Sandra A. Snodgrass, *Tortoises, Bats, and Birds, Oh My: Protected-Species Implications for Renewable Energy Projects*, 46 IDAHO L. REV. 545, 546 (2010).
11. The Energy Policy Act of 2005, Pub. L. No. 109-58, § 211, 119 Stat. 594, 660 (2005).
12. See U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2012 WITH PROJECTIONS TO 2035, at 12–13 (June 2012), available at [http://www.eia.gov/forecasts/aeo/pdf/0383\(2012\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2012).pdf). A RPS mandates that a certain percentage of retail electricity (*i.e.*, not wholesale) sold in a state be from renewable sources; currently, thirty states and the District of Columbia have an enforceable RPS or similar laws. *Id.* at 11.
13. See Alexander B. Klass, *Energy and Animals: A History of Conflict*, 3 SAN DIEGO J. CLIMATE & ENERGY L. 159, 193 (2011–2012).

The Ivanpah Project site demonstrates that utility-scale solar farms could result in direct harm to wildlife by crushing animals such as desert tortoises with construction equipment or by burning birds and bats in flight.<sup>14</sup> The intensive land use requirements of utility-scale solar farms also result in indirect harm through land use conversions, habitat modification, and habitat fragmentation.<sup>15</sup> The federal government passed the Endangered Species Act, with President Nixon emphasizing the importance of federal government authority to protect plants and animals from threats of harm and extinction; thus, the federal policies of promoting renewable energy and preserving wildlife are in direct contradiction.<sup>16</sup>

The federal and state governments have made some efforts to mitigate the wildlife impacts of solar farms.<sup>17</sup> For example, in implementing President Obama's objective of promoting renewable energy, the Department of Interior ("DOI") has made efforts to identify appropriate DOI-managed lands for solar facilities that present minimal conflicts with wildlife and other natural resources.<sup>18</sup> In 2010, DOI and the Department of Energy ("DOE") proposed identifying solar energy zones ("SEZ") for prioritized development on public lands in six southwestern states most suitable for "environmentally-sound, utility-scale solar energy production."<sup>19</sup> Based on inputs from various stakeholders, BLM identified SEZs and avoided potential resource conflicts by reserving the public lands not well-suited for utility-scale solar energy development for other uses.<sup>20</sup> Federal and state agencies have been extremely supportive of the large number of applications for environmentally-sound utility-scale solar farms.<sup>21</sup>

Despite good faith efforts, federal, state, and private conservation programs to minimize wildlife impacts are inadequate.<sup>22</sup> Even the Fish and Wildlife Service ("FWS") suggested that federal agencies slow down further approval of solar farms in United States, as they deemed that the data on solar farms' wildlife impacts are incomplete and further

studies are needed to analyze the full scope of such impacts of these projects on the wildlife before committing federal lands to irreversible land use change to solar farms.<sup>23</sup>

This Note argues that only a combination of actions by federal and state agencies would make wildlife-friendly solar energy development possible in the southwestern states. Three actions are proposed: (1) Congress should modify BLM's governing statute to incorporate substantive wildlife protections and establish wildlife conservation land banks (2) state governors should issue executive orders mandating that state agencies enter into a Memorandum of Understanding ("MOU") with federal agencies to coordinate solar farm approvals; (3) states should enact or modify state energy regulations to mandate preparation of a state solar energy conservation plan; and (4) states should enact or modify energy regulations to provide more funding to Natural Heritage Inventory Programs ("NHIP"). These actions would ensure realization of the federal government's goal of quick development of environmentally sensitive solar projects in the southwestern states.

Part I of this Note examines solar energy in general, the common techniques for harnessing solar energy at a commercial scale, and the current federal efforts at promoting solar energy. Part II discusses the negative environmental effects of solar energy, particularly on wildlife and wildlife habitats. Part III analyzes major federal regulations affecting the siting of utility-scale solar farms. Part IV provides a description of the common siting constraints imposed by the states on utility scale solar farms, with particular emphasis on California, Arizona, and Nevada and the conflict between federal and state agencies in balancing wildlife conservation and solar energy development. Lastly, Part V concludes with recommendations to ensure wildlife-friendly, utility-scale solar farms for implementation at the federal and state levels.

## I. Overview of Solar Energy in the United States

Solar energy is considered to be one of the most abundant and cleanest renewable energy sources available,<sup>24</sup> yet solar energy accounts for less than 1% of the total electricity generated in the United States.<sup>25</sup> Nonetheless, solar electricity generation is one of the fastest growing renewable electricity sectors, increasing by more than 86% from 2010–2011.<sup>26</sup> Based on these growth trends, it is estimated that solar power could provide as much as 14% of United States electricity

14. See *infra* Part II.

15. A Concentrated Solar Panels (CSP) solar plant requires approximately 6,000 acres to produce 1,000 MW of power, compared to 640–1,280 acres for a coal fired power plant or nuclear plant to produce the same amount of power. See Klass, *supra* note 13, at 193–94.

16. See President Richard Nixon, *Statement on Signing the Endangered Species Act of 1973*, THE AM. PRESIDENCY PROJECT (Dec. 28, 1973), <http://www.presidency.ucsb.edu/ws/index.php?pid=4090>.

17. See *infra* notes 18–20 and accompanying text.

18. See Press Release, U.S. Dep't of the Interior, Secretary Salazar, Senator Reid Announce 'Fast Track' Initiatives for Solar Energy Development on Western Lands (June 29, 2009), available at [http://www.doi.gov/news/pressreleases/2009\\_06\\_29\\_release.cfm](http://www.doi.gov/news/pressreleases/2009_06_29_release.cfm).

19. Six states are California, Nevada, Arizona, Utah, New Mexico and Colorado. See Press Release, U.S. Dep't of the Interior, Salazar, Chu Announce Next Step in Nation's March Toward Renewable Energy (Dec. 16, 2010), available at <http://www.doi.gov/news/pressreleases/Salazar-Chu-Announce-Next-Step-in-Nations-March-toward-Renewable-Energy-Future.cfm>; see also BUREAU OF LAND MGMT., U.S. DEP'T OF INTERIOR & U.S. DEP'T OF ENERGY, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR SOLAR ENERGY DEVELOPMENT IN SIX SOUTHWESTERN STATES, ES-1 (July 2012), available at <http://solareis.anl.gov/documents/fpeis/index.cfm>.

20. See *id.* at ES-7.

21. See Klass, *supra* note 13, at 193.

22. See Cart, *supra* note 2; Steve Belinda, *Solar Projects in West Require Responsible Development*, NEWWEST (Apr. 22, 2011), [http://www.newwest.net/topic/article/solar\\_projects\\_in\\_the\\_west\\_require\\_responsible\\_development/C35/L35/](http://www.newwest.net/topic/article/solar_projects_in_the_west_require_responsible_development/C35/L35/).

23. See Chris Clarke, *U.S. Fish & Wildlife Service Wants Moratorium on Solar Power Towers*, REWIRE AND KCET (Aug. 23, 2012), <http://www.kcet.org/news/rewire/solar/concentrating-solar/usfws-wants-moratorium-on-solar-power-towers.html>.

24. *Beyond Coal Solar*, SIERRA CLUB, <http://content.sierraclub.org/coal/solar> (last visited Nov. 4, 2012).

25. *Total Energy. Annual Energy Review Statistics 2011*, U.S. ENERGY INFO. ADMIN. (Sept. 2012), <http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0802a>.

26. RACHEL GELMAN, DEP'T OF ENERGY, 2011 RENEWABLE ENERGY DATA BOOK 17 (Scott Gossett ed., Rev. 2013).

demand by 2030 and 27% by 2050.<sup>27</sup> Both federal and state governmental efforts in creating incentive programs, grants, and loans to further promote solar energy would perpetuate this growth trend.<sup>28</sup> The following subsections discuss the main solar technologies suitable for utility-scale solar facilities in the United States and the federal government efforts to promote solar energy.

### A. Solar Energy in General

There are two main types of solar technologies suitable for utility-scale solar facilities: concentrated solar power (“CSP”) and photovoltaic (“PV”).<sup>29</sup> CSP converts solar power into thermal energy by using mirrors or lenses; the thermal energy generated is then used to drive steam turbines or other devices to generate power.<sup>30</sup> For commercial scale electricity generation, CSP technologies require large areas for solar radiation collection.<sup>31</sup>

The PV system converts sunlight directly into electricity by capturing light energy using solar panels, which creates an electric current.<sup>32</sup> Solar cells for PV systems are generally very small and each one may be capable of generating only a few watts of electricity.<sup>33</sup> Typically, several PV cells are combined into modules, which are then assembled into PV arrays—usually several meters on a side.<sup>34</sup> For utility-scale electricity generation, hundreds of PV arrays are interconnected to form a single, large system on several acres of land.<sup>35</sup>

### B. Federal Efforts to Promote Solar Energy

Carbon dioxide emissions in the United States have increased by 10% between 1990 and 2011.<sup>36</sup> To address increasing greenhouse gas emissions, the DOI officially designated renewable energy development as its priority and outlined the expansion of renewable energy on federal lands through a Department Order.<sup>37</sup> The Secretary of the Interior, Ken Sala-

zar, stated in a press release that “[t]he two dozen areas [that the DOI is] evaluating could generate nearly 100,000 [MW] of solar electricity. With coordinated environmental studies, good land use planning and zoning and priority processing, we can accelerate responsible solar energy production . . . .”<sup>38</sup> As of August 2011, BLM had received more than three hundred applications and had seventy-nine pending applications for utility-scale solar energy projects.<sup>39</sup> The pending applications covered 685,037 acres of BLM-administered land with the capacity to generate an estimated 33,313 MW.<sup>40</sup>

## II. Negative Impacts of Utility Scale Solar Farms on Wildlife

Solar energy is an appealing idea to environmentalists, but the potential impacts of siting specific projects has turned out to be a contentious issue.<sup>41</sup> The large amount of land needed by solar facilities can result in negative environmental impacts, particularly on wildlife.<sup>42</sup> Large open tracts of undisturbed land suitable for solar energy collection usually are also biologically rich habitats with a vast array of animals and plants.<sup>43</sup> The large solar panels of the solar farms also result in significant negative aesthetic impacts.<sup>44</sup> Usually located far from urban areas, the solar farms also require upgrading or replacing existing transmission lines, causing even larger impacts from construction activities and expansion of disturbed land area under transmission lines.<sup>45</sup>

Solar farms can result in direct harms to animals. Construction activities such as bulldozing new roads and grading solar collection sites can destroy plant life and may also kill animals that cannot escape heavy earthmoving equipment.<sup>46</sup> CSP systems, which function by super-heating the surrounding air to as high as 800 degrees, can burn birds, bats, and insects in flight when passing near the solar panel

27. U.S. DEP’T OF ENERGY, SUN SHOT VISION STUDY 1 (June 2012), available at <http://www.nrel.gov/docs/fy12osti/54294.pdf> (last visited Nov. 9, 2013).

28. See Alexandra B. Klass, *Property Rights on New Frontier: Climate Change, Natural Resource Development, and Renewable Energy*, 38 *ECOLOGY L.Q.* 63, 66 (2011).

29. See *Solar Technology*, SOLAR ENERGY INDUS. ASS’N, <http://www.seia.org/policy/solar-technology> (last visited Mar. 21, 2013).

30. See U.S. DEP’T OF ENERGY, *supra* note 27, at 3.

31. See *id.*; *Concentrating Solar Power (CSP) Technologies*, SOLAR ENERGY DEV. PROGRAMMATIC EIS INFO. CTR., <http://solareis.anl.gov/guide/solar/csp/index.cfm> (last visited Jan. 18, 2013).

32. See *Photovoltaic (Solar Electric)*, SOLAR ENERGY INDUS. ASS’N, <http://www.seia.org/policy/solar-technology/photovoltaic-solar-electric> (last accessed Sept. 23, 2013).

33. See *Small Solar Electric System Arrays, Energy Savers*, U.S. DEP’T OF ENERGY, <http://energy.gov/energysaver/articles/small-solar-electric-systems> (last updated July 1, 2012).

34. See *Solar Photovoltaic Technologies*, SOLAR ENERGY DEV. PROGRAMMATIC EIS INFO. CTR., <http://solareis.anl.gov/guide/solar/pv/index.cfm> (last visited Jan. 18, 2013).

35. See *id.*

36. *Overview of Greenhouse Gases*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/climatechange/ghgemissions/gases/co2.html> (last visited Jan. 16, 2013).

37. Order used by the Secretary is Section 211 of the Energy Policy Act of 2005. Order issued under the authority of §2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262) as amended, and pursuant to the provisions of § 211 of the Energy Policy Act of 2005 (P.L. 109-58). See SECRETARY KEN SALAZAR, BUREAU

OF LAND MGMT., U.S. DEP’T OF INTERIOR, ORDER # 3285, RENEWABLE ENERGY DEVELOPMENT BY THE DEPARTMENT OF THE INTERIOR (Mar. 11, 2009), available at [http://www.blm.gov/or/energy/opportunity/files/order\\_3285.pdf](http://www.blm.gov/or/energy/opportunity/files/order_3285.pdf).

38. Press Release, *supra* note 18. See also Instruction Memorandum No. 2007-097 on Solar Energy Development Policy, Bureau of Land Mgmt., U.S. DEP’T of the Interior (2007), available at [http://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/2011/IM\\_2011-003.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2011/IM_2011-003.html).

39. See BUREAU OF LAND MGMT., DEP’T OF INTERIOR & U.S. DEP’T OF ENERGY, SUPPLEMENT TO THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR SOLAR ENERGY DEVELOPMENT IN SIX SOUTHWESTERN STATES, at Appendix A: 1.2 (Oct. 2011), available at [http://solareis.anl.gov/documents/supp/Appendix\\_A.pdf](http://solareis.anl.gov/documents/supp/Appendix_A.pdf).

40. See *id.* at A-1.

41. See Press Release, Natural Res. Def. Council, Right Idea, Wrong Place: Groups Sue Solar Project to Protect Imperiled Wildlife and Wild Lands (Mar. 26, 2012), available at <http://www.nrdc.org/media/2012/120326a.asp>.

42. See *infra* notes 46–54 and accompanying text.

43. See Klass, *supra* note 13, at 194.

44. *Solar Energy Development Environmental Considerations*, SOLAR ENERGY DEV. PROGRAMMATIC EIS INFO. CTR., <http://solareis.anl.gov/guide/environment/index.cfm> (last accessed Mar. 21, 2013).

45. Robert Glennon & Andrew M. Reeves, *Solar Energy’s Cloudy Future*, 1 *ARIZ. J. OF ENVTL. L. & POL’Y* 91, 94 (2010).

46. See Sarah Pizzo, *When Saving the Environment Hurts the Environment: Balancing Solar Energy Development With Land and Wildlife Conservation in a Warming Climate*, 22 *COLO. J. INT’L ENVTL. L. & POL’Y* 123, 137–38 (Winter 2011).

towers.<sup>47</sup> Further, improper mirror focusing can “focus high temperature beams on plants and animals, causing burns, retinal damage, and fires.”<sup>48</sup> CSP solar plants, which are usually located in desert and arid areas, have significant water requirements and consequently can substantially strain aquatic species and other desert animals in already water-constrained regions.<sup>49</sup>

Direct wildlife impacts, such as habitat destruction and habitat fragmentation, could result from construction, maintenance, and operation of utility-scale solar plants.<sup>50</sup> Habitat destruction occurs when the land within the solar collection field is graded in preparation for construction.<sup>51</sup> The site remains unsuitable for wildlife during the project’s lifetime because the large fields of solar collectors interfere with the natural sunlight, rainfall, and drainage at the facility, causing alterations to the local ecosystem.<sup>52</sup> This can result in shifts in various plant and animal populations.<sup>53</sup> Habitat fragmentation makes it difficult for animals to find food, water, shelter, mates, and protection from predators, thus forcing “wildlife to live on an ever-shrinking islands of habitat.”<sup>54</sup> Solar development may also affect migratory populations by cutting off migration corridors and eliminating staging grounds.<sup>55</sup>

In short, the positive environmental effects of solar energy must be balanced with its potential to harm wildlife and damage ecosystems.<sup>56</sup> Given the multitude of identified impacts of utility-scale solar farms on wildlife, federal and state agencies must thoroughly consider the impacts of the solar farms during the approval process.

### III. Major Federal Laws Governing Siting of Utility Scale Solar Farms

In siting of solar farms, the developers must account for ecologically sensitive resources, including wildlife, to configure the project so that they comply with the laws and regulations governing the effects on these resources. Presented below is an overview of environmental laws pertaining to the effects of solar farms development.

47. See *id.* at 138.

48. *Id.*; see also *Solar Energy Development Environmental Considerations*, *supra* note 44.

49. See Klass, *supra* note 13, at 194.

50. See *Solar Energy Development Environmental Considerations*, *supra* note 44. See also Pizzo, *supra* note 46, at 136. Habitat fragmentation is habitat alteration “resulting in spatial separation of habitat units from a previous state of greater continuity.” C. Michael Hogan, *Habitat Fragmentation*, ENCYCLOPEDIA EARTH, [http://www.eoearth.org/article/Habitat\\_fragmentation?topic=58074](http://www.eoearth.org/article/Habitat_fragmentation?topic=58074) (last updated May 5, 2013).

51. See Pizzo, *supra* note 46, at 136.

52. See *id.*

53. See *id.* at 137.

54. See *id.*

55. See *id.* Staging areas are resting and feeding places of migratory birds, where the birds take temporary shelter. See Kerry Scanlan et al., *Bird Migration Facts*, ZOOLOGICAL SOC’Y OF MILWAUKEE, <http://www.zoosociety.org/conservation/bwb-asf/library/BirdMigrationFacts.php> (last accessed Mar. 21, 2013).

56. See Pizzo, *supra* note 44, at 133.

#### A. Federal Land Policy and Management Act

Under the Federal Land Policy and Management Act (“FLPMA”),<sup>57</sup> BLM approves solar energy projects on public lands as rights-of-way (“ROW”) authorizations<sup>58</sup> if the proposed project is found to be consistent with BLM’s land use plans.<sup>59</sup> FLPMA requires BLM to develop land use plans or resource management plans for BLM-administered lands based on principles of multiple use and sustained yield, accommodating a host of potentially conflicting uses, with none of those uses predominating the others.<sup>60</sup> FLPMA, however, gives little planning direction to BLM concerning wildlife management.<sup>61</sup> FLPMA lacks any requirement to maintain wildlife diversity or habitat health, giving BLM virtually unfettered discretion to manage land resources under its jurisdiction.<sup>62</sup>

In 2009, BLM established a fast-track application review process for a list of priority energy projects, including utility-scale solar projects, which had established sufficient progress in environmental review and public participation under federal environmental provisions.<sup>63</sup> BLM justified the fast-tracking based on the capacity of these solar projects to replace conventional energy sources and by incorporating sound environmental procedures and mitigation measures.<sup>64</sup> BLM asserts that it took all necessary steps to avoid “unnecessary or undue degradation” of natural environment under its fast-tracking process.<sup>65</sup> For example, BLM issued a draft mitigation measures document identifying a preliminary list and descriptions of project-specific plans required from each solar project.<sup>66</sup> The terms and conditions of each ROW authoriza-

57. The Federal Land Policy & Management Act of 1976 (FLPMA), 43 U.S.C. § 1701 *et seq.* (1976).

58. A ROW authorization is a land use authorization under FLPMA by BLM “to authorize the use of a right of way over, upon, under, or through public lands for construction, maintenance, and termination of a [specific] project for a specified period of time.” *ROW At-a-Glance*, BUREAU OF LAND MGMT., [http://www.blm.gov/id/st/en/prog/lands\\_and\\_realty/ROW.html](http://www.blm.gov/id/st/en/prog/lands_and_realty/ROW.html) (last updated Nov. 27, 2012). Any project causing cause or resulting “in appreciable alteration to public lands requires a ROW grant from the BLM.” *Id.* This includes solar energy projects. See *id.*

59. Right-of-way authorizations are processed according to Title V of FLPMA. See 43 U.S.C. §§ 1761–71; 43 C.F.R. § 2801 (2011).

60. See 43 U.S.C. § 1702(h). See also Glicksman, *supra* note 7, at 125–26 (stating that while balancing multiple uses, BLM should “give priority to protecting areas of critical environmental concern, consider present and potential uses of the public lands, consider the relative scarcity of the values involved and the availability of alternative means and sites for realization of those values, weigh long- and short-term public benefits, and require compliance with federal and state pollution control laws”).

61. See Karin P. Sheldon, *Mother Nature’s Challenge: Managing Energy as If Wildlife Matters*, 55 RMMLF-INST 15-1, §15.05[3][c] (2009).

62. See *id.*

63. BLM recognized priority projects had “demonstrated sufficient progress in environmental review and public participation processes under FLPMA, NEPA, and other federal environmental statutes to potentially be cleared for approval by December 2010, making them eligible for economic stimulus funding under the [American Recovery and Reinvestment Act].” Glicksman, *supra* note 7, at 129–31.

64. See *id.* at 131–32.

65. See *id.* at 132.

66. See generally Instruction Memorandum No. 2007-097 from Director of Bureau of Land Mgmt. on Solar Energy Development Policy to All Field Officials (Apr. 4, 2007), available at [http://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/2007/im\\_2007-097\\_.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2007/im_2007-097_.html).

tion incorporated these plans in the development plan of the project and the project developer had to fully comply with the plan's terms.<sup>67</sup> If needed, BLM identified preparation of additional plans for individual solar energy projects based on the information in the application.<sup>68</sup>

The full extent of the damage from the projects approved through the fast-tracking process is yet to be seen.<sup>69</sup> But the quick approval process leaves the possibility of insufficient consideration of potentially adverse wildlife impacts, given that some of these effects become apparent during project construction and operation stages.<sup>70</sup> For example, FWS has openly expressed concerns about the large number of solar farms being approved on federal lands, given the lack of complete information on extent of the wildlife impacts from the solar farms.<sup>71</sup> This problem is already apparent in the Ivanpah Project, where BLM's initial biological assessment proved inadequate as the number of desert tortoise on the site far exceeded the initial estimates and the BLM underestimated the adverse impacts of the project on the desert tortoise and its habitat.<sup>72</sup> The original biological assessment concluded that only dozens of animals were at risk, while subsequent BLM's findings showed that the project may "cause loss of about 3,300 acres of tortoise habitat and the deaths of more than 600 tortoises."<sup>73</sup>

## B. National Environmental Policy Act

The National Environmental Policy Act of 1970 ("NEPA")<sup>74</sup> is a procedural statute requiring all federal agencies to consider the environmental impacts of their proposed actions before making decisions.<sup>75</sup> Environmental review requirements under NEPA are triggered by "major federal actions significantly affecting the human environment."<sup>76</sup> NEPA may apply even if the project is not located on federal lands.<sup>77</sup> For example, NEPA review is required when projects are supported by federal funding, require a federal permit or approval, or affect federally listed species under the Endangered Species Act ("ESA").<sup>78</sup> As a procedural statute, NEPA only requires a full disclosure of environmental impacts and potential mitigation measures; no substantive requirements are imposed.<sup>79</sup>

Once NEPA is triggered, the requisite degree of environmental review may vary in terms of scope and stringency based on a number of factors including the size of the project

and the extent of the potential environmental impacts.<sup>80</sup> The duration of the environmental review process depends on the kind of environmental impacts document being prepared for a particular project by the agency.<sup>81</sup> Such documents may include a Categorical Exclusion, an Environmental Assessment ("EA"), or an Environmental Impact Statement ("EIS").<sup>82</sup> Depending on the document being prepared, the review process may last between a few months and several years.<sup>83</sup> Federal agencies can overcome the delay through preparation of programmatic EIS ("PEIS") document, a coordinated environmental review process for several related projects, on which the developers can piggyback to prepare environmental analyses for individual projects.<sup>84</sup> But PEIS lacks location-specific impacts of an individual project such as impacts on groundwater availability, wildlife habitat, vegetation, scenic resources, the presence of endangered or threatened species, and the presence of cultural resources that vary from site to site.<sup>85</sup>

DOE and BLM prepared one such PEIS in the form of the Final PEIS for Solar Energy Development in Six Southwestern States ("Solar PEIS").<sup>86</sup> The Solar PEIS assessed the environmental, social, and economic impacts of solar energy development on BLM-managed lands in Arizona, California, Colorado, Nevada, New Mexico, and Utah.<sup>87</sup> The Solar PEIS identified seventeen SEZs covering about 285,000 acres of public lands as priority areas for utility-scale solar development, with an additional 19 million acres of land available for application and review through additional environmental criteria.<sup>88</sup> The identified SEZs were evaluated for their solar energy generation potential, environmental qualities, presence of sensitive plant or animal species, and other environmental factors.<sup>89</sup> Based on the Solar PEIS analysis, BLM anticipated making land use plan amendments identifying which lands were open to utility-scale solar energy development and anticipated establishing mandatory design features and new policies applicable to solar energy development on BLM-administered lands.<sup>90</sup>

The Solar PEIS reflects BLM's effort at minimizing wildlife damage at approved utility-scale solar facilities.<sup>91</sup> However, the Solar PEIS did not evaluate the localized impacts of project construction and operation and the general solutions to problems proposed in the Solar PEIS may

67. See 43 C.F.R. § 2804.25(b) (2013).

68. See *id.*

69. See Glicksman, *supra* note 7, at 135–36.

70. See *id.*

71. See Clarke, *supra* note 23 (discussing FWS concerns regarding Rio Mesa and Hidden Hills project impacts on birds, bats and insects from solar flux).

72. See Glicksman, *supra* note 7, at 139.

73. *Id.*

74. The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321 *et. seq.* (1969).

75. See *id.*

76. See 42 U.S.C. § 4332(2)(c).

77. See 40 C.F.R. § 1508.18(a)–(b) (2012).

78. See *id.*

79. See generally *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989).

80. See 40 C.F.R. § 1508.27 (2013). See also Roger L. Freeman & Ben Kass, *Siting Wind Energy Facilities on Private Land in Colorado; Common Legal Issues*, 39 COL. LAW. 43, 46 (May 2010), available at [http://www.dgslaw.com/images/materials/Freeman-Kass\\_ColoLaw\\_SitingWindEnergy.pdf](http://www.dgslaw.com/images/materials/Freeman-Kass_ColoLaw_SitingWindEnergy.pdf).

81. See Freeman & Kass, *supra* note 80, at 46.

82. See 40 C.F.R. §§ 1508.4, 1508.9, 1508.11.

83. See Freeman & Kass, *supra* note 80, at 46.

84. See *id.*

85. See Glicksman, *supra* note 7, at 144.

86. DEP'T OF ENERGY & BUREAU OF LAND MGMT., FINAL PEIS FOR SOLAR ENERGY DEVELOPMENT IN SIX SOUTHWESTERN STATES (July 2012), available at <http://solareis.anl.gov/documents/fpeis/index.cfm>.

87. See *id.*

88. *Id.*

89. See Freeman & Kass, *supra* note 80, at 46.

90. See *id.*

91. See *supra* note 87–88 and accompanying text.

prove to be ineffective at individual site.<sup>92</sup> BLM has recognized its obligation to prepare site-specific environmental reviews for individual utility-scale solar energy development proposals in addition to the Solar PEIS.<sup>93</sup> However, the past efforts of DOI agencies to pursue NEPA shortcuts have not fared well in analyzing individual project level impacts. For example, for Gulf of Mexico oil leases, DOI agencies routinely prepared EAs and EIS that piggybacked on previously prepared PEIS concerning broad programmatic actions “even where those documents lacked the level of detail needed to properly evaluate subsequent site-specific projects.”<sup>94</sup> These individual projects level EA and EIS relying on PEIS documents were later found to be inadequate.<sup>95</sup> Therefore, BLM should allot adequate time and resources to conduct thorough environmental studies of individual projects and to formulate effective protective measures at a site-specific level, rather than a quick review using recycled research and broad impacts discussion from the Solar PEIS.<sup>96</sup> The need for increased resources and time for environmental review is even more apparent after the Ivanpah Project, where construction had to be halted midway because BLM’s initial environmental clearance proved inadequate given the inaccuracies in the EIS.<sup>97</sup>

### C. Endangered Species Act

The ESA<sup>98</sup> is “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.”<sup>99</sup> The purpose of the ESA is to conserve and restore species that have been listed by the federal government as either endangered or threatened (“listed species”) and to conserve the ecosystems upon which listed species depend.<sup>100</sup> If an action potentially affects a listed species or its critical habitat,<sup>101</sup> the ESA requirements are triggered along with NEP review.<sup>102</sup> Three provisions of ESA are very pertinent for siting, construction and operation of solar farms.

## 1. Section 7: The Consultation and Conservation Duties

Section 7 of the ESA requires that any action authorized, funded, or carried out by a federal agency would not jeopardize the continued existence of a listed species or adversely modify its critical habitat.<sup>103</sup> Consequently, a federal agency considering the taking<sup>104</sup> of a listed species must consult with FWS.<sup>105</sup> Impacts to the listed species are minimized through incorporating mitigation measures in the agency’s project description.<sup>106</sup> These mitigation measures could include protection of off-site listed species habitats, including purchase of credits in a conservation bank.<sup>107</sup> The Ivanpah Project illustrates that commercial solar farms’ intensive land requirements in undisturbed desert areas are highly likely to affect federally listed species, triggering section 7 consultation requirements.<sup>108</sup>

## 2. Section 9: The Takings Prohibition

Section 9 of the ESA prohibits the taking of any listed species by “any person subject to the jurisdiction of the [United States].”<sup>109</sup> Thus, the taking prohibition applies to federal agencies, state agencies, organizations, and individuals. If utility-scale solar farms result in a taking of a listed species, section 9 prohibitions would apply. In 1983, Congress amended the ESA to include section 10, which provided an exception to the absolute taking prohibition of endangered species under section 9.<sup>110</sup>

## 3. Section 10: Incidental Take Permit

Under section 10, landowners may obtain an Incidental Take Permit for taking listed species if such taking is “incidental to, and not the purpose of, the carrying out of an otherwise lawful [development] activity.”<sup>111</sup> In exchange for this Incidental Take Permit, the landowner must prepare a Habitat Conservation Plan to minimize and mitigate the impacts of the taking.<sup>112</sup> Recommended off-site mitigation could include purchasing credits in an approved conservation bank.<sup>113</sup>

92. See *Solar Energy Program*, BUREAU OF LAND MGMT., <http://blmsolar.anl.gov/program/> (last visited Nov. 9, 2013).

93. Notice of Intent To Prepare a Programmatic Environmental Impact Statement To Evaluate Solar Energy Development, Amend Relevant Agency Land Use Plans, and Provide Notice of Proposed Planning Criteria, 73 Fed. Reg. 30,910 (May 29, 2008) (“Site-specific environmental reviews are expected to be tiered to the PEIS and to be more effective and efficient because of the PEIS.”).

94. Glicksman, *supra* note 7, at 137–38.

95. *Id.*

96. See *id.* at 147.

97. See *id.* at 139.

98. Endangered Species Act, 16 U.S.C. §§ 1531–1543 (2006).

99. See *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978). The term “species” includes any subspecies of animal or plant, and any distinct population segment of any animal species that interbreeds when mature. See 16 U.S.C. § 1532(15). A species is “endangered” if it is in danger of extinction throughout all or a significant portion of its range. See § 1532(6). A species is “threatened” if it is likely to become an endangered species within the foreseeable future. § 1532(20).

100. See 16 U.S.C. § 1531(b).

101. Critical habitat is defined as occupied areas with features that are essential for the “conservation” of the species in question, and which may require special management considerations or protection. See § 1532(5)(A).

102. See National Environmental Policy Act of 1969, 42 U.S.C. § 4332(C) (1982).

103. 16 U.S.C. § 1536.

104. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. § 1532(19).

105. See § 1536(a).

106. See U.S. FISH & WILDLIFE SERV., DEP’T OF INTERIOR, GUIDANCE FOR THE ESTABLISHMENT, USE, AND OPERATION OF CONSERVATION BANKS 4 (May 2003), available at [http://www.fws.gov/endangered/esa-library/pdf/Conservation\\_Banking\\_Guidance.pdf](http://www.fws.gov/endangered/esa-library/pdf/Conservation_Banking_Guidance.pdf).

107. See *id.* Conservation banking allows some “landowners to assemble and restore significant holdings of prime habitat for listed species and to market “credits” in the habitat to other landowners in need of mitigation habitat to satisfy their HCP permit.” J.B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21, 43–44 (2005). See also *infra* at 161–165 and accompanying text for details on conservation banking.

108. See Pizzo, *supra* note 46, at 153 (discussing that wildlife harm from solar energy development meet the regulatory definition of “harm” under the ESA, triggering section 7 consultation).

109. See 16 U.S.C. § 1538(a)(1) (1973).

110. See 16 U.S.C. § 1539(a) (1988).

111. See *id.* § 1539(a)(1)(B).

112. See *id.* § 1539(a)(2)(A).

113. See U.S. FISH & WILDLIFE SERVS., DEP’T OF INTERIOR, *supra* note 106, at 4.

The Ivanpah Project is an example of wildlife conservation in solar farms being inadequate despite the ESA's current stringent requirements.<sup>114</sup> One of the major reasons is a lack of research and information on the effect of commercial solar farms on wildlife.<sup>115</sup>

#### IV. Siting Constraints Imposed by States on Utility-scale Solar Farms

Traditionally, states served the role of protecting natural resources and were the chief stewards of wildlife within their borders.<sup>116</sup> At least one court recognized that scientific uncertainty may exist regarding an animal's classification as threatened or endangered at the federal level, a gap which the states can fill.<sup>117</sup> This state authority applies not only to a state's indigenous species but to nonindigenous species as well.<sup>118</sup>

Even FLPMA acknowledges states' role in protecting their natural resources by explicitly preserving the "responsibility and authority of the States for management of fish and wildlife."<sup>119</sup> DOI's Fish and Wildlife Policy also emphasizes on state's broad trustee and police powers for conservation of fish and wildlife within their borders.<sup>120</sup> However, federal deference to states' role in wildlife management has been somewhat narrowed in the case of conflicts between wildlife and energy development on federal lands.<sup>121</sup> For example, western states have increasingly recognized that "unbridled energy development threatens wildlife and other significant resources and activities essential to the communities and economies of the region."<sup>122</sup> Yet, BLM continues granting leases for oil and gas development over the objections from the state politicians and the environmental community.<sup>123</sup> There is a risk that the trend of BLM granting leases despite state objections might continue for utility-scale solar farms.<sup>124</sup> Still, states may find ways to impose their wildlife and environmental regulations on solar farm developers.

##### A. State Approval Process for Siting of Solar Farms

Ideal solar project location sites almost always have clear skies and lack objects such as mountains, trees, and buildings that block the sun's rays.<sup>125</sup> Accordingly, solar energy developers and several government agencies have targeted the southwest

portion of the United States—California, Colorado, Arizona, New Mexico, Utah, and Nevada—as an ideal region for large-scale solar energy development.<sup>126</sup> Much of this area is characterized as flat, hot, dry desert, receiving an average of 340 days of sunshine per year and very little precipitation.<sup>127</sup> The arid conditions have led to large pieces of land that are incapable of supporting large, shade-producing vegetation and are subsequently devoid of human presence.<sup>128</sup> As seventy-six of the seventy-nine pending applications for utility scale solar projects with the BLM are in California, Arizona, and Nevada, this Note focuses on the general siting process of power facilities in these states.<sup>129</sup>

##### I. Common Features of Siting Process for Power Facilities in California, Arizona and Nevada

California's, Arizona's, and Nevada's RPS requirements are driving the growth of solar energy in those states.<sup>130</sup> The states' public utility or energy commissions are responsible for issuing environmental clearances for construction of an energy generation facility of a certain size.<sup>131</sup> Smaller-sized facilities are cleared at county or local level.<sup>132</sup> As part of the permitting process, utility commissions may impose reasonable conditions on a project.<sup>133</sup>

The states' energy commissions and counties work with wildlife agencies to get wildlife concerns incorporated into the approval decisions.<sup>134</sup> The states' wildlife agencies review the commercial solar projects' development plans for consistency with agencies' policies, management plans, and programs.<sup>135</sup> The agencies then provide project-specific recommendations to mitigate the adverse wildlife impacts, but they do not have the final say in approval of the facility.<sup>136</sup>

114. See Glicksman, *supra* note 7, at 139.

115. See Clarke, *supra* note 23.

116. See Susan George & William J. Snape III, *State Endangered Species Act, in* ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVE 344, 345 (Donald C. Baur & WM. Robert Irvin eds., 2nd ed., 2010).

117. See *Nettleton Co. v. Diamond*, 27 N.Y.2d 118, 124 (N.Y. 1970) (upholding New York statute that enumerated species not present on the federal list).

118. See *id.* at 122.

119. 43 U.S.C. § 1732(b).

120. 43 C.F.R. § 24.3(a) (rev. 2011).

121. See Sheldon, *supra* note 60, at §15.07.

122. *Id.*

123. *Id.*

124. See *id.* at §15.06 (discussing that Western states are worried about the consequences of BLM approvals for energy leases that threaten wildlife and other resources important for the local community).

125. Pizzo, *supra* note 46, at 133.

126. See W. GOVERNORS' ASS'N & U.S. DEP'T OF ENERGY, WESTERN RENEWABLE ENERGY ZONES — PHASE I REPORT, 11–12 (June 2009), available at <http://www.westgov.org/component/content/article/102-initiatives/219-wrez>.

127. See Michael Riley, *Greens, New-Energy Backers at Odds Over Use of Desert*, THE DENVER POST (Sept. 3, 2009), [http://www.denverpost.com/ci\\_13257517](http://www.denverpost.com/ci_13257517).

128. See Pizzo, *supra* note 46, at 133.

129. See generally BUREAU OF LAND MGMT., DEP'T OF INTERIOR & U.S. DEP'T OF ENERGY, *supra* note 39, at 7.

130. California utility companies must produce 33% of electricity using renewable energy sources by 2020; Arizona requires 15% of electricity sales to be renewable by 2025; and Nevada mandates a 25% renewable generation share of sales by 2025. See U.S. ENERGY INFO. ADMIN., *supra* note 12, at 12.

131. California Energy Commission grants site certification for facilities of 50 MW or larger. See CAL. PUB. RES. CODE § 25543 (West 2013). Arizona Power Plant and Transmission Line Siting Committee (APPTLSC) provides Certificate of Environmental Compatibility (CEC) to build power plants of 100 MW or more. See ARIZ. REV. STAT. ANN. §§ 40-360, 40-360.01 (2012). Public Utilities Commission of Nevada issues a permit for construction of electrical facilities, including solar energy facilities of up to 70 MW capacity. See NEV. REV. STAT. ANN. § 704.860 (West 2012).

132. *Id.*

133. See CAL. PUB. RES. CODE § 25514 (West 2013); NEV. REV. STAT. ANN. § 704.890 (West 2012); ARIZ. REV. STAT. ANN. § 40-360.06 (2012).

134. See CAL. PUB. RES. CODE § 25506 (West 2013); NEV. REV. STAT. ANN. § 704.875 (West 2012); ARIZ. REV. STAT. ANN. § 40-360.06 (2012).

135. See CAL. PUB. RES. CODE § 25523(d) (West 2013); NEV. REV. STAT. ANN. § 704.875 (West 2012); ARIZ. REV. STAT. ANN. § 40-360.06 (2012).

136. See CAL. PUB. RES. CODE §§ 25523(d)(1), 25525 (West 2013); NEV. REV. STAT. ANN. § 704.890 (West 2012); ARIZ. REV. STAT. ANN. § 40-360.06(C) (2012).

Additionally, the three states provide energy developers with on-site wildlife and habitat information through voluntary NHIPs.<sup>137</sup> The NHIP of each of the three states is a government-operated database, maintaining the lists of rare, threatened, and endangered species, as well as individual species, biological communities, and habitat areas in their respective states.<sup>138</sup> An effort is made to keep the databases current with an accurate account of the endangered species in the state,<sup>139</sup> but limited funding and limits to access of private lands for surveying can provide roadblocks in this regard.<sup>140</sup>

In addition to the general siting requirements, California has taken additional steps that might impact the siting of solar facilities. California and DOI have entered into an MOU to fast-track all renewable energy projects in the state by creating a Renewable Energy Policy Group that oversees and coordinates the permitting processes of all involved federal and state agencies.<sup>141</sup> California is also preparing a Desert Renewable Energy Conservation Plan that identifies top priority areas within the state for the development of solar power and other types of renewable energy.<sup>142</sup>

## 2. Conflict Between Federal, State, and Local Governments

Though federal land systems play a large role in assuring survival of the nation's precious wildlife heritage, they are either too small or too fragmented to provide viable habitats for wildlife and ecosystem diversity.<sup>143</sup> Additionally, due to the large land requirements of commercial scale solar projects, it is highly unlikely that a project might be located on parcels with a single owner.<sup>144</sup> Any solution to encourage wildlife-friendly solar development must include state and local governments because the development of private, state government, or local government-owned lands would be under the purview of state and local laws.<sup>145</sup> Even the projects completely located on federal lands may require local and state approvals for actions such as acquiring water rights, affecting state endangered species, planning access through state roads, or locating transmission facilities on state and local land.<sup>146</sup>

137. See *Visit Local Programs*, NATURESERVE, <http://www.natureserve.org/visitLocal/> (last visited Apr. 6, 2012) (follow California, Arizona, and Nevada in "Programs for United States" drop down menu).

138. See Lee Paddock & Lea Colasuonno, *Minimizing Species Disputes in Energy Siting: Utilizing Natural Heritage Inventories*, 87 N. DAK. L. REV. 603, 604 (2011).

139. *Id.* at 606.

140. *Id.* at 623.

141. See generally Dept't of Interior, Memorandum of Understanding between the State of California and the Department of the Interior on Renewable Energy 2 (2009), available at [www.energy.ca.gov/33by2020/mou/2009-10-12\\_DOI\\_CA\\_MOU.PDF](http://www.energy.ca.gov/33by2020/mou/2009-10-12_DOI_CA_MOU.PDF) [hereinafter MOU].

142. See John Copeland Nagle, *See the Mojave!*, 89 OR. L. REV. 1357, 1396 (2011).

143. See Sheldon, *supra* note 61, at § 15.08.

144. See Glicksman, *supra* note 7, at 151.

145. See Pizzo, *supra* note 46, at 156 (stating that BLM management of resources should be consistent with state and local government planning).

146. See, e.g., Ryan Tracy, *U.S. Approves Three Renewable-Energy Projects on Federal Land*, WALL STREET J. (Mar. 13, 2013, 5:23 p.m.), <http://online.wsj.com/ar->

In the past, BLM has acted inconsistent with the states' wildlife protections acts and mandates.<sup>147</sup> BLM also does not substantively prioritize protection of wildlife and species of concern and only commits to this cause when it is consistent with the agency's purposes.<sup>148</sup> For example, BLM's proposal to lease out New Mexico's Otero Mesa area, which is the largest publically-owned expanse of Chihuahuan Desert and home to a host of listed species,<sup>149</sup> was found to be inconsistent with several of New Mexico's laws.<sup>150</sup> Thus, the states and the federal agencies must coordinate for optimal wildlife conservation in siting solar facilities, even when the facility is located entirely on federal lands.

## V. Proposed Solution

Both state and federal legal paradigms provide limited meaningful constraints on land managers to balance solar energy facilities' siting against other.<sup>151</sup> It has been said that due to nation's need for energy security, Congress should "go easy" on renewable energy development when it conflicts with wildlife management.<sup>152</sup> However, current environmental laws do not allow renewable energy projects a total free pass as well.<sup>153</sup> Consequently, resolving conflict between solar farms' siting and wildlife conservation by developing solutions within the current legal paradigms is vital. Considering that a utility-scale solar project usually requires both federal and state permits for compliance with wildlife laws and regulations, only a solution combining both federal and state level actions would be comprehensive in minimizing such conflicts. This Part proposes: (1) modifying FLPMA to incorporate wildlife concerns in decisionmaking and to establish wildlife conservation banks for solar farms on federal lands; (2) executing an MOU between the state and federal agencies to coordinate solar farm approvals under the Solar PEIS; (3) enacting or modifying state energy regulations to mandate preparation of a state solar energy conservation plan; and (4) enacting or modifying state energy regulations to provide more funding to NHIPs.

### A. Federal Level

The following subsection provides the proposals for improving incorporation of wildlife concerns at the federal level. The major proposals at the federal level include the language changes in FLPMA to make wildlife conservation an important factor in BLM's decisionmaking and establish a wildlife habitat conservation bank for offsite mitigation of wildlife impact of the solar farm at the project sites.

<http://www.federalregister.gov/title/BT-CO-20130313-714290.html> (stating that a federally approved solar projects still need state and county permits).

147. See Sheldon, *supra* note 61, at §15.07.

148. See, e.g., *id.*

149. See *New Mexico v. Bureau of Land Mgmt.*, 565 F.3d 683, 688 (10th Cir. 2009) (stating Otero Mesa is "home to the endangered Northern Aplomado Falcon, along with a host of other threatened, endangered, and rare species").

150. See *id.* at 693.

151. See Sheldon, *supra* note 61, at §15.09.; See *infra* Part III.

152. See Klass, *supra* note 13, at 198.

153. See *id.*



## I. Language Addition in FLPMA

Currently, BLM's decisions to grant ROW authorizations for utility-scale solar farms under FLPMA are devoid of any specific wildlife protection provisions.<sup>154</sup> Representative Ronald Kind of Wisconsin has introduced legislation that would apply species population viability standards to BLM-administered lands to prioritize wildlife concerns and make wildlife protection one of the major factors rather than just one of the many factors in BLM's ROW authorization decisions under FLPMA.<sup>155</sup> Congress should amend the language of FLPMA's Title V to adopt Representative Kind's proposed species population viability standard<sup>156</sup> for the projects approved on large undisturbed tracts of BLM land. The new language would read:

The Secretary should approve a project located on 100 acres or more of BLM-administered land only if the project maintains sustainable populations of native species and desired non-native species within planning areas<sup>157</sup> under the Secretary's respective jurisdiction.

This provision ensures that BLM prioritizes wildlife conservation when approving projects located on large tracts of undisturbed land, like commercial solar projects, and minimizes the dangers of habitat destruction and fragmentation. Requiring the maintenance of a sustainable population within a planning area would also minimize cumulative wildlife impacts of several solar projects located within one planning area.

## 2. Conservation Banking

The Solar PEIS has already excluded ecologically sensitive land categories such as National Landscape Conservatory System Lands, designated critical habitat for listed species, and other environmentally sensitive lands from development for solar farms.<sup>158</sup> BLM should go a step further and extend the protection to other ecologically sensitive lands such as wildlife movement corridors, terrestrial and aquatic ecosystems, and lands with unique habitat features.<sup>159</sup> Ultimately, the Secretary should issue a Department Order requiring BLM and FWS to coordinate in identifying land for solar wildlife conservation banks for the six southwestern states. A conservation bank consists of large parcels of land containing prime habitat for specified listed species that are put into permanent conservation easement.<sup>160</sup> The entity holding the

easement is also enforcing the terms of the easement.<sup>161</sup> The conservation banks mitigate impacts of multiple projects by allowing project developers to secure certain natural resource value or prime habitat within the bank to offset the impacts to those same values or habitat offsite.<sup>162</sup> The natural resource value or prime habitat is converted into credits and project developer can meet their conservation needs through a one-time purchase of credits from the conservation bank.<sup>163</sup> Such wildlife conservation banking allows advantages like "economies of scale (both financial and biological), funding sources, and management, scientific, and planning resources that are not typically available at the individual project level."<sup>164</sup> For the solar projects, BLM and FWS should be the agencies establishing and operating the conservation bank in southwestern states' desert areas because the majority of the land within these states is under BLM jurisdiction.<sup>165</sup>

BLM should further consolidate its land inventory for conservation banks through land exchanges or land swaps<sup>166</sup> with state agencies and private developers. FLPMA currently permits land swaps for public purposes for lands within the same state.<sup>167</sup> Congress should add an exception to this "within the same state" requirement when the land swap is made for wildlife conservation. This would help BLM and FWS achieve an integral and viable conservation bank for species, even if it cuts across state boundary lines or where federal land is interspersed with land owned by state agencies and private developers.

Under the ESA, solar developers have an already option to fulfill their sections 7, 9, and 10 off-site mitigation requirements and HCP permits by buying credits in the conservation banks.<sup>168</sup> Once BLM and FWS establish solar wildlife conservation banks in the same ecological region as the solar projects, the solar developers would be required to fulfill their ESA off-site mitigation requirements to compensate for the loss of habitat on their project site through buying credits in the conservation banks, which BLM and FWS would track. FWS would decide the ratio of the credits a project developer needs to buy in order to offset habitat lost at project site based on the existing ESA criteria. Mandatory buying of credits in conservation banks owned and operated by BLM and FWS would reduce piecemeal conservation efforts<sup>169</sup> by creating larger land reserves and reducing interruptions in wildlife habitat sometimes created by commercial solar farms.<sup>170</sup> In addition to fulfilling the ESA compliance requirements, the credits in conservation banking would also serve as effective

154. See *supra* Part III.B

155. See *id.* at §15.09 [3](a); see generally America's Wildlife Heritage Act, H.R. 2807, 111th Cong. (2009).

156. America's Wildlife Heritage Act, H.R. 2807, 111th Cong. (2009).

157. Planning area is the geographic area for which BLM makes planning decision. A planning area may include all lands regardless of jurisdiction; however BLM only makes decisions for lands under BLM's jurisdiction. BUREAU OF LAND MGMT., U.S. DEP'T OF THE INTERIOR, LAND USE PLANNING HANDBOOK 14 (2005), available at [http://www.blm.gov/pgdata/etc/medialib/blm/ak/aktest/planning/planning\\_general.Par.65225.File.dat/blm\\_lup\\_handbook.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/ak/aktest/planning/planning_general.Par.65225.File.dat/blm_lup_handbook.pdf)

158. .

See Pizzo, *supra* note 46, at 155.

159. *Id.* at 155-56.

160. See U.S. FISH & WILDLIFE SERV., DEP'T OF INTERIOR, *supra* note 106, at 2.

161. *Id.*

162. See *id.*

163. See *id.*

164. See *id.*

165. See BUREAU OF LAND MGMT., U.S. DEP'T OF INTERIOR & U.S. DEP'T OF ENERGY, *supra* note 19, at ES 36-39.

166. Land swap is "[a] tract of public land or interests therein may be disposed of by exchange by the Secretary [of Interior] under this Act ... where the Secretary ... determines that the public interest will be well served by making that exchange." 43 U.S.C. § 1716 (1998).

167. See *id.*

168. See Ruhl, *supra* note 107, at 43-44.

169. See *id.* at 44.

170. See U.S. FISH & WILDLIFE SERVS., DEP'T OF INTERIOR, *supra* note 106, at 1.

mitigation measure under NEPA for the project level and cumulative impacts to wildlife.<sup>171</sup>

Purchasing credits in conservation banks can help solar developers offset habitat loss or modification in an off-site location that already satisfies the federal regulatory regimes.<sup>172</sup> Therefore, solar wildlife conservation banking would save developers “time and money by providing them with certainty of pre-approved compensation lands and provide long-term protection of habitat.”<sup>173</sup> Conservation banking is also good for the species as it promotes an orderly system of securing permanently dedicated conservation lands and attracts “true experts of the industry” to create and manage the banks.<sup>174</sup> Thus, conservation banking would help promote the federal goal of expediting development of wildlife-friendly commercial solar farms.

## B. State Level

Federal action needs to be coordinated and supplemented with state efforts in order to achieve comprehensive wildlife habitat protection in utility-scale solar projects. This coordination would ensure wildlife protection for solar projects approved on federal, state, and private lands. States should take three main actions: (1) execute an MOU between the state and federal agencies to coordinate solar farm approvals under the Solar PEIS; (2) enact or modify state energy regulations to mandate preparation of a state solar energy conservation plan; and (3) enact or modify state energy regulations to provide more funding to NHIPs.

### I. Memorandum of Understanding between the Federal and State Agencies

The Solar PEIS promotes the federal government’s policy of fast-tracking applications for environmentally-sensitive utility-scale solar farms.<sup>175</sup> Though the Solar PEIS’s preparation involved participation by several state and local agencies, it lacked participation from key players such as Nevada’s Public Utilities Commission and Arizona’s Corporation Commission.<sup>176</sup> Both of these state agencies oversee environmental clearances of utility-scale solar farms, which must be given before project proponents may proceed with the projects.<sup>177</sup> The optimal implementation of recommendations and proposals within the Solar PEIS would require complete participation from key state and local agencies that have the

decisionmaking authority that could affect the development and siting of utility scale solar farms. Therefore, the state governors should each pass an Executive Order mandating the state agencies to enter into an MOU with the federal agencies to achieve solar energy development in a cooperative, collaborative, and timely manner to minimize application and permits processing time for such projects.

A ideal practice would be an MOU between the pertinent state agencies in each state and the pertinent federal agencies to form a coordination team, similar to California’s MOU with BLM, which creates a Renewable Energy Policy Group that oversees and coordinates the permitting processes of all involved federal and state agencies and thus fast-tracks all solar projects in California.<sup>178</sup> This MOU mandates that there be an agreement of coordination between FWS and BLM and key state agencies such as the California Department of Fish and Wildlife and the California Energy Commission,<sup>179</sup> thus ensuring that states’ interests are incorporated in the BLM decisionmaking process.<sup>180</sup>

The MOU will provide for a coordination team would monitor and observe implementation of DOI’s Solar Policy, outlined in the Solar PEIS.<sup>181</sup> A single coordination team comprised of various departments’ representatives and led by high-level designees from state and federal agencies would work to provide permitting guidelines and milestones. This process would be especially helpful to solar developers in meeting state and federal incentives’ deadlines for federal grants and tax credits.<sup>182</sup> A single coordination team would provide a “one stop shop” for solar developers. A single team would also ensure coordination of review time for various agencies and ensure incorporation of concerns of all the agencies involved in the review process.<sup>183</sup>

The state and federal agencies would provide adequate funding and staffing to monitor wildlife and environmental impacts of solar projects during the project design and construction phases.<sup>184</sup> An adequate monitoring and compliance mechanism under the MOU would help in a quicker multi-agency action in case of an Ivanpah-like situation, where the project’s initial wildlife impacts assessment prove to be wrong. A quick response to the situation would minimize the unanticipated wildlife impacts from construction activities.

## 2. State and Regional Level Conservation Plans for Solar Energy

Each state legislature should amend or pass a new state energy act requiring the state’s conservation agencies to prepare a state-level solar conservation plan. Similar to the Solar PEIS, the state solar conservation plan would identify

171. See *id.* at 8

172. See Ruhl, *supra* note 107, at 44.

173. *Id.*

174. See *id.*

175. See Press Release, U.S. Dep’t of the Interior, Secretary Salazar, Senator Reid Announce ‘Fast Track’ Initiatives for Solar Energy Development on Western Lands (June 29, 2009), available at [http://www.doi.gov/news/pressreleases/2009\\_06\\_29\\_release.cfm](http://www.doi.gov/news/pressreleases/2009_06_29_release.cfm).

176. BUREAU OF LAND MGMT., U.S. DEP’T OF THE INTERIOR & U.S. DEP’T OF ENERGY, DES 10-59, DOE/EIS-0403, DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR SOLAR ENERGY DEVELOPMENT IN SIX SOUTHWESTERN STATES 1-19-1-20 (2010), available at [http://solareis.anl.gov/documents/dpeis/Solar\\_DPEIS\\_Chapter\\_1.pdf](http://solareis.anl.gov/documents/dpeis/Solar_DPEIS_Chapter_1.pdf).

177. See NEV. REV. STAT. § 704.865 (West 2012); see also ARIZ. REV. STAT. ANN. § 40-360.02 (2011).

178. See DEP’T OF INTERIOR, *supra* note 141.

179. See *id.*

180. ALEX WEISS, IMPACTS OF ENERGY DEVELOPMENT ON WILDLIFE: HIGHLIGHTING THE UNIQUE RESOURCES OF THE ROCKIES, THE 2009 COLORADO COLLEGE STATE OF THE ROCKIES REPORT CARD 101 (2009), available at <http://www.coloradocollege.edu/dotAsset/eb9775c8-e8e0-4cea-9f62-1dde11ff7964.pdf>.

181. See DEP’T OF INTERIOR, *supra* note 141.

182. See *id.*

183. See *id.*

184. *Id.*

SEZs for state-owned and private lands based on solar energy development potential and wildlife conservation criteria.<sup>185</sup> A state-level conservation plan would ensure that federal efforts to build environmentally responsible solar farms are not diluted by the cumulative impacts from purely intrastate solar farms that are not subject to the same stringent conservation criteria.

California's Desert Renewable Energy Conservation Plan ("DRECP") presents an example of an effective state solar conservation plan.<sup>186</sup> The DRECP is a collaborative effort between the various state and federal agencies that identifies low conflict areas for the priority development of solar power and other types of renewable energy.<sup>187</sup> The DRECP also protects important habitat for desert plants and animals.<sup>188</sup> The DRECP aims at presenting a roadmap for development that ensures California can meet its renewable energy goals with the least environmental harm.<sup>189</sup>

Similar to the DRECP, a state's solar conservation plan should identify suitable, low conflict areas for solar energy development as SEZs and for regional habitat conservation plans. The plan would identify key habitats, protect ecologically sensitive areas, and promote solar development in least sensitive areas with the cooperation of federal agencies and neighboring states.<sup>190</sup> This plan would also incorporate suggestions from renewable energy developers, local government agencies, and environmental and wildlife organizations.

The plan would also identify state-owned and private land parcels for land swaps with BLM for establishing conservation banks. If current state laws do not allow land swap with federal agencies, the states should modify the law to permit them. The state solar conservation plan would help states and BLM to coordinate their planning and management efforts with other energy-related and solar projects in the region for holistic wildlife habitat management.<sup>191</sup> A state-level plan would also ensure that habitat fragmentation does not occur due to a lack of coordination and planning between the state and federal agencies.

### 3. Natural Heritage Inventories Program

All the southwestern states already participate in some form of an NHIP.<sup>192</sup> The states should mandate the solar developers to consult the NHIP early in the development stage in order to reduce needless conflicts between wildlife and solar

energy for initial site selection.<sup>193</sup> The advanced information about what endangered, rare, or threatened species inhabit an area can help a solar project developer "save money, time, and resources by choosing a project that would have fewer or more easily mitigated impacts and thereby obtain project approval with fewer political, public relations, or financial costs."<sup>194</sup>

The state legislatures should increase the funding to their NHIP programs. Increased funding would help expand field-work studies and surveys to collect accurate wildlife inventories, to catalog the information in databases, to develop cutting-edge information technology to maximize the value of collected data points, and to develop sophisticated predictive modeling technology to draw inferences about unsurveyed land by data extrapolation.<sup>195</sup> The state legislature should also mandate annual updating of the inventory of the NHIP through annual census. NHIP and quality data would help reduce the number and extent of Ivanpah-like controversies in the future where the lack of accurate data resulted in construction halt and costly rehabilitation of tortoise.<sup>196</sup>

### C. Other Proposals to Resolve the Conflict and Why They are Inadequate

Academics have made proposals to balance wildlife preservation and solar projects.<sup>197</sup> One suggestion includes changes in the ESA to include exceptions for renewable energy projects or removing private citizen lawsuit provision for renewable projects.<sup>198</sup> There is a proposal to allow NEPA approval for solar energy projects through Mitigated Finding of No Significant Impacts to expedite environmental review process.<sup>199</sup> However, these methods would short shrift the goals of preservation of endangered species over promotion of renewable energy, especially given the uncertainty surrounding the complete understanding and information regarding solar projects' impacts on wildlife.<sup>200</sup> Such drastic changes to ESA and NEPA would promote one federal policy over the other, rather than finding a mutually agreeable solution. The Ivanpah Solar Project is an appropriate example of how the current regulatory regime is inadequate in wildlife protection. Thus, any more relaxation of NEPA or ESA would further exacerbate problems.<sup>201</sup> The status quo or relaxation of environmental laws would result in solar farms meeting the same fate as the traditional energy sources and would pit the

185. It might have to be a renewable energy overlay zone rather than strict land use zoning. Otherwise it would be tantamount to subjecting private land to only one land use that might result in public opposition.

186. See CAL. ENERGY COMM'N, DESERT RENEWABLE ENERGY CONSERVATION PLAN, BACKGROUND, available at <http://www.drecp.org/whatisdrecp/> (last visited Feb. 9, 2013).

187. See *id.*

188. See CAL. ENERGY COMM'N, DESERT RENEWABLE ENERGY CONSERVATION PLAN INTERIM DOCUMENT-FACT SHEET, available at [http://www.drecp.org/documents/docs/2012-12-18\\_DRECP\\_Interim\\_Document\\_Fact\\_Sheet.pdf](http://www.drecp.org/documents/docs/2012-12-18_DRECP_Interim_Document_Fact_Sheet.pdf).

189. See *id.*

190. George & Snape, *supra* note 116, at 355.

191. See Pizzo, *supra* note 46, at 156–57.

192. See *Visit Local Programs*, NATURESERVE, <http://www.natureserve.org/visitLocal/> (last visited Apr. 6, 2012).

193. See Paddock & Colasuonno, *supra* note 138, at 624.

194. See *id.* at 623.

195. See *id.* at 624.

196. See *supra* notes 3–6 and accompanying text.

197. See *supra* notes 193–94 and accompanying text.

198. See Laura Householder, *Have we all Gone Batty? The Need for a Better Balance Between the Conservation of Protected Species and the Development of Clean Renewable Energy*, 36 W.M. & MARY ENVTL. L. & POL'Y REV. 807, 830 (Spring 2012).

199. See Trevor Salter, *NEPA and Renewable Energy: Realizing the Most Environmental Benefit in the Quickest Time*, 34-SPG ENVIRONS ENVTL. L. & POL'Y J. 173, 182–83 (2011).

200. See Clarke, *supra* note 23 (reporting that FWS urges fellow agencies to proceed with caution before approving solar projects because of insufficient robust data available regarding solar farm impacts on wildlife).

201. See *supra* notes 3–6 and accompanying text.

environmentalists against each other.<sup>202</sup> Additionally, BLM is required to comply with applicable state laws for ROW authorizations, as the states have traditionally been responsible for natural resource management and land use allocation.<sup>203</sup> Thus, an optimal solution to achieve balance between wildlife and solar would include combined state- and federal-level actions.

#### IV. Conclusion

There is a conflict between the federal goals of habitat and wildlife protection and the promotion of utility-scale solar farms as clean energy sources. To prevent any more Ivanpah-like litigation for solar development pertaining to wild-

life conservation, a balance must be achieved between the federal goals of expeditious solar development and wildlife conservation. Joint federal and state action is imperative for a comprehensive solution in this regard. Prioritizing wildlife concerns in BLM decisionmaking processes, better coordination between the states and the federal agencies, and amending state laws and regulations to better incorporate preservation of wildlife in their land use decisionmaking processes can help ameliorate some of the wildlife concerns of the utility-scale solar farms. As solar energy is one of the fastest growing renewable energy sources in the United States, our goal should be to guide the solar energy development in a holistic manner that minimizes harm to the wildlife, and ensure that this clean source of energy is indeed "clean."

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202. See generally *Tenn. Valley Auth. v. Hill*, 437 U.S. 153 (1978).

203. See 43 U.S.C. § 1765(a)(iii)–(iv).