March 1, 2023

Mr. Jeremy Bluma,
Acting Division Chief
National Renewable Energy Coordination Office
BLM Headquarters
1849 C Street NW
Washington, DC 20006

Submitted electronically at solar@blm.gov

Re: Notice of Intent to Prepare a Programmatic Environmental Impact Statement to Evaluate Utility-Scale Solar Energy Planning and Amend Resource Management Plans for Renewable Energy Development (87 Fed. Reg. 75284)

Dear Mr. Bluma:

Please accept these comments on behalf of the undersigned organizations on the Bureau of Land Management's (BLM) Notice of Intent (NOI) to Prepare a Programmatic Environmental Impact Statement to Evaluate Utility-Scale Solar Energy Planning and Amend Resource Management Plans for Renewable Energy Development (Solar PEIS). We applaud the agency's effort to revisit the decade's old 2012 Western Solar Plan and offer the following comments to help guide the BLM through this process.

I. Introduction and Summary

President Biden, Congress, and others have pointed to renewable energy generation on public lands in the West as one way to reduce reliance on fossil fuels and tackle climate change. The Energy Act of 2020 instructs the Secretary of the Interior to "seek to issue permits" for wind, solar, and geothermal energy projects on public lands that produce at least 25 gigawatts of electricity by 2025.[1] President Biden, through executive order, has likewise instructed the Secretary of the Interior to increase renewable energy production on public lands and waters.[2]

As we strive to address the causes and effects of climate change, we must continue to be cognizant of potential impacts to biodiversity, natural ecosystems, and connectivity. Recently, the United Nations Convention on Biological Diversity adopted a framework to address the global loss of biodiversity, with a goal of maintaining, enhancing, and restoring the integrity, connectivity, and resilience of all ecosystems, and substantially increasing the area of natural

[1] National Goal for Renewable Energy Production on Federal Land. (2020, Dec 27). 43 U.S.C. § 3004(b). (Pub. L. 116–260, div. Z, title III, §3104, 134 Stat. 2516.
[2] Tackling the Climate Crisis at Home and Abroad. (2021, Feb 1). Executive Order 14,008, 86 Fed. Reg. 7619, 7624.

ecosystems in decades to come.[3] This framework, and its calls to action, are a reminder that, for a sustainable future, we must be careful and deliberate about how we mitigate climate impacts, ensuring that we do not sacrifice biodiversity and connectivity in our efforts.[4]

With this in mind, we applaud the BLM's proposal to revisit and possibly expand the agency's existing plans and processes related to solar development on public lands. In this process, we urge the BLM to use a smart-from-the-start approach to planning, critically and comprehensively evaluating where and how projects will be sited in a way that limits impacts to lands and waters, fish and wildlife and habitat, cultural and Indigenous resources, and recreational opportunities. As discussed in detail below, we suggest the following:

- To avoid inconsistent permitting of solar projects across the West, expand the 2012 Western Solar Plan to apply to all eleven western states.
- To reduce impacts of solar energy development—not simply at the project site, but across the West—analyze the capacity and demands of existing transmission infrastructure and use this information to inform where BLM will incentivize solar development.
- Identify areas to prioritize development where the likelihood of resource impacts will be the lowest.
- Maximize incentives for development in solar energy zones (SEZs) or other priority areas.
- Update existing exclusion criteria to reflect the best available science and expand criteria to better meet new priorities.
- Incorporate an update to the agency's existing variance process to ensure that projects inside SEZs are prioritized, while projects outside SEZs are fully analyzed and impacts addressed.
- Ensure that project impacts are avoided, minimized and offset where appropriate.
- Consider the full social, environmental, and economic life cycle implications of solar energy development.

Due to multiple regulatory jurisdictions and the visual, land, fish and wildlife impacts of large-scale developments, effective solar development on public lands and waters will require robust coordination between federal, state, and local governments, as well as stakeholders who recreate, hunt, fish, visit, and value public lands and waters. Further, it is critical that the BLM meaningfully consult and engage with Tribal and Indigenous Peoples about solar development as these communities rely on public lands and waters for activities of deep cultural and spiritual

[3] United Nations Convention on Biological Diversity. (2022, Dec 18). *Kunming-Montreal Global biodiversity framework, Section 30, Goal A*. https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf

[4] Ketcham C. (2022, Dec 3). *Addressing Climate Change Will Not "Save the Planet"*, The Intercept. https://theintercept.com/2022/12/03/climate-biodiversity-green-energy/

importance. The agency must also consider the potential socioeconomic and health impacts that utility-scale development may have on neighboring communities.

This planning process should be informed by the best available science and lessons learned from permitting in recent decades. Existing renewable development, including projects permitted pursuant to the 2012 Western Solar Plan, has taught us a great deal about how renewable energy construction and infrastructure affects fish, wildlife, and people. The BLM should evaluate and learn from such development as it plans for future uses on public lands, relying on the current science and mapping technology.

We also urge the BLM and the Secretary of Interior to explore—independently and with federal, state and Tribal partners, and stakeholders—other opportunities for solar development that may reduce overall impacts to and reliance on public lands and waters. Such opportunities may include distributed generation, expansive rooftop solar, and co-locating solar development with existing roads, transmission corridors, or other energy development. As part of this effort, the BLM should develop a plan that is consistent with reasonably foreseeable demand for renewable energy, considering other generation opportunities.

While renewable energy projects on public lands may help us reach our clean energy goals, we must ensure that the impacts of such a build out do not compound the habitat loss and fragmentation that fish and wildlife are already experiencing as a result of climate change and other activities.[5] Further, we urge the agency to consider how solar development may affect other uses of public lands and waters, including camping, hunting, fishing, hiking, and other uses, as well as those who live nearby.

II. <u>The BLM should expand the existing solar plans to more fully address impacts of development across the West.</u>

a. Expand the Solar PEIS to apply to all eleven western states.

We urge the BLM to expand the Solar PEIS to apply to all eleven western states, including Wyoming, Montana, Washington, Oregon and Idaho. Since the BLM issued the 2012 Western Solar Plan, technological advances, additional transmission capacity, and increased demand for clean energy has resulted in solar development across the West, including in these five states.

In the absence of broad plan amendments, the BLM has permitted solar energy development in the states not covered by the 2012 Western Solar Plan using a piecemeal approach. This has resulted in negative impacts to resources. For example, the BLM issued a right-of-way (ROW) for Sweetwater Solar, an 80MW solar project in southwest Wyoming sited in general habitat for

[5] Amanda Staudt et al. 2013.*The added complications of climate change: understanding and managing biodiversity and ecosystems*, Frontiers in Ecology and the Environment, 494.

Greater sage-grouse, winter range for mule deer and pronghorn, and a known migration route.[6] Under BLM's existing exclusion criteria, such a project would likely not have been permitted.

Rather than address utility-scale solar development on a case-by-case basis in the states not covered by the 2012 Western Solar Plan, BLM should develop a comprehensive program and permitting process that applies across the West to appropriately site development and avoid, minimize, and offset impacts.

Expanding the scope of the PEIS to include Idaho, Washington, Oregon, Montana and Wyoming requires that the BLM thoroughly analyze SEZs and variance and exclusion areas in relation to electric transmission and interconnection capacity, sensitive fish and wildlife habitats, and other resource values. Adopting a balanced and comprehensive process that protects sensitive fish and wildlife populations, seasonal habitats, surface and groundwater resources, and outdoor recreation pursuits should be a top priority for the BLM.

b. Engage in meaningful consultation with Tribal and Indigenous Peoples throughout the development of the Solar PEIS and plan amendments.

Public lands are home to landscapes, waters, fish and wildlife, and other resources that carry cultural and spiritual significance to Tribal and Indigenous Peoples across the region. Accordingly, we urge the BLM to engage in meaningful consultation with Tribal and Indigenous Peoples consistent with the spirit and letter of applicable law and the agency's policies, including Secretarial Order No. 3403 on Tribal engagement and the Department of Interior Instruction Memorandum No. 2002-11 on Co-Stewardship with Federally Recognized Indian and Alaska Native Tribes Pursuant to Secretary's Order 3403. Throughout the development of the Solar PEIS and its implementation, the BLM must fulfill its federal trust obligation to Tribes and Indigenous Peoples to protect their interests and further the government-to-government relationship with Tribes and Indigenous peoples.

While Tribal and Indigenous interests should be represented throughout the entire process, it is especially critical that BLM involve Tribal and Indigenous Peoples when identifying areas to prioritize for solar development and crafting exclusion criteria to determine where activity would be prohibited. Further, the BLM should incorporate Tribal traditional knowledges into its analysis of the importance, nature, and relationship between resources potentially impacted by solar development.

[6] Hall Sawyer, Nicole M. Korfanta, Matthew J. Kauffman, Benjamin S. Robb, Andrew C. Telander, Todd Mattson. April 21, 2022. Trade-offs between utility-scale solar development and ungulates on western rangelands. *Frontiers in Ecology and the Environment*, 20(6), 345-351.

c. Evaluate all enabling infrastructure for solar generating facilities, including storage and transmission.

The agency should evaluate all infrastructure related to solar generating facilities, including energy storage, transmission, and substation location, in the Solar PEIS to comprehensively capture the potential effects of solar energy development on public lands, focusing on biodiversity and connectivity of intact landscapes. Solar development requires extensive infrastructure to effectively capture and transport energy to market. Without fully analyzing all related activity and development, the agency risks overlooking the direct, indirect, and cumulative impacts to fish and wildlife habitat, nearby communities, and cultural and Tribal resources.

d. Consider reducing the minimum size of projects covered by the Solar PEIS and using other metrics to define utility-scale projects.

The BLM should consider expanding the scope of the Solar PEIS by reducing the minimum size of projects. Covering smaller projects that are less than 20 megawatts may allow the agency to more effectively reduce the overall impact of solar development by distributing impacts and maintaining landscape permeability. Further, expanding the scope of the solar plans to include smaller projects may incentivize distributed development near where people live and consume energy. Finally, expanding the scope could help to effectively focus development on already disturbed lands, such as brownfields, which may be smaller but well-suited for solar projects.

We also recommend the BLM evaluate other potential definitions for utility-scale solar rather than just generation capacity, including how many surface acres a project will disturb or whether the project will connect to the grid via a power purchase agreement. Many of the impacts associated with a solar project are a result of its actual footprint not the amount of energy generated. Further, determining applicability based on disturbance may have the added benefit of encouraging more efficient use of lands. As a threshold, we suggest that any project that would permanently disturb at least fifty acres of public land be subject to the Solar PEIS. This size is consistent with some of the smaller commercial solar projects recently constructed in and near urban areas.[7]

e. Evaluate the full life cycle of solar energy development—from obtaining raw materials, to siting, through decommissioning and reclamation—to more fully capture impacts.

In the Solar PEIS, the agency should analyze the full life cycle of solar energy development, accounting for the potential impacts of obtaining raw materials to how operators will dispose of panels upon decommissioning. The extraction, manufacturing, transportation, installation, and disposal of solar energy infrastructure will have cumulative impacts on the physical, biological,

[7] OneEnergy renewables. (Accessed Jan 2023). *Solar Energy Project Portfolio: West and Midwest locations*. https://www.oneenergyrenewables.com/portfolio

and human resources in the planning area. The BLM should evaluate and disclose the nature and types of these cumulative impacts in the PEIS.

The raw materials needed to manufacture solar panels, batteries, and other infrastructure must come from somewhere, and domestic mining is likely to dramatically increase to meet these needs. Much like siting of renewable energy development projects and transmission corridors, the development of mining sites, where domestic mining is necessary, also requires forethought and utilization of best practices.

Recognizing that the U.S. must develop new, good policy as it relates to mineral development, several of our sporting partners produced a report in 2019, *Critical Minerals: A Conservation Perspective,* that highlights the issues while providing recommendations on policy to mitigate harmful mining practices and poorly sited mines.[8] Detailed mapping produced with the report shows that, of the known critical mineral deposits in the U.S., fifty percent are in trout/salmon habitats, and one in ten are in currently protected public lands. This demonstrates that the shift to renewable energy puts at risk vital hunting, fishing, and outdoor recreation assets in the absence of good policy going forward.

Many of the recommended policy actions outlined in the report can and should be considered in the context of energy development siting considerations. With forethought, energy development sites and transmission corridors, similarly to mine sites, should be planned in strategic locations that limit or avoid high-value public lands vital to our hunting and fishing traditions and the massive economic benefits these industries provide to the nation.

The BLM should also consider how developers may dispose of solar equipment at the end of a project's life and analyze the impacts of such disposal. There are examples across the West of improper disposal of solar panels, wind turbines filling up landfills, and other potentially harmful ways of managing waste associated with renewable energy development.[9] [10]Many rural communities where solar projects will be located do not have sufficient landfill or recycling facilities to accommodate future end-of-life needs for solar projects. The agency should consider these and other potential impacts of decommissioning solar projects.

Finally, we also ask that the agency revisit requirements for reclamation and bonding to ensure that a site is restored to its original condition where appropriate and that, to the extent a developer is unable to meet its reclamation obligations, a bond amount is secured that is sufficient for restoration. While many renewable projects across the West are still in operation,

---

[8] Trout Unlimited, National Wildlife Federation, Backcountry Hunters and Anglers. (2020). *Critical Minerals: A Conservation Perspective*., https://www.tu.org/wp-content/uploads/2020/08/Critical-Minerals_Interactive.pdf

[9] Martin C. (2020, Feb 5). *Wind Turbine Blades Can't be Recycled so They're Piling Up in Landfills*. Bloomberg News. https://www.bloomberg.com/news/features/2020-02-05/wind-turbine-blades-can-t-be-recycled-so-they-re-piling-up-in-landfills#xj4y7vzkg

[10] Kisela R. (2022, July 15). *California went big on rooftop solar. Now that's a problem for landfills*. Los Angeles Times.https://www.latimes.com/business/story/2022-07-14/california-rooftop-solar-pv-panels-recycling-danger

we encourage the agency to evaluate any existing examples of restoration successes or setbacks on public lands or elsewhere for potential lessons learned.

f. The BLM should separately and expeditiously amend plans to address wind and geothermal energy development and transmission.

While we fully support amending resource management plans across the West to more comprehensively address wind and geothermal development and transmission and interconnection infrastructure, we urge the agency to focus this process solely on solar energy development and related transmission infrastructure. Expanding the scope of this effort to include other forms of renewable energy would create an unwieldy and lengthy process, which our public lands, people, fish, and wildlife cannot afford. The BLM needs a comprehensive siting and permitting process for solar development that avoids and minimizes resource impacts as soon as possible.

That said, we urge the BLM to separately and expeditiously programmatically update management plans and regulations for wind and geothermal in a similar fashion, including establishing exclusion criteria.

III. The BLM should update and expand the exclusion area categories from the 2012 Western Solar Plan.

The 2012 Western Solar Plan amended 89 individual BLM Resource Management Plans (RMPs) to identify ROW exclusion areas for utility-scale solar development in the six-state study area. The 30 resource-based exclusion categories identified by the BLM are intended to avoid resource conflicts and conflicts with other uses of public lands that are not compatible with dedicated solar energy development.[11]

The BLM acknowledged in the 2012 Western Solar Plan that they included a broader set of ROW exclusion categories for solar development than they would have for other types of ROWs due to the size and scale of utility-scale solar developments, and the fact that solar developments typically exclude all other land uses, requiring a dedicated single use of public lands within the entire footprint of the solar development area. In total, the BLM used the exclusion categories to identify 78.6 million acres of specific exclusion areas in the 2012 Western Solar Plan.[12]

We request that the BLM evaluate in the updated PEIS expanding the exclusion area categories and criteria established in 2012 Western Solar Plan to all 11 western states with the changes

---

[11] U.S. Department of the Interior. Bureau of Land Management. (2012, Oct). *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States*. *Appendix A – Land Use Plan Amendments, p. 37 and Table A-2*. https://solareis.anl.gov/documents/docs/Solar_PEIS_ROD.pdf

[12] U.S. Department of the Interior. Bureau of Land Management. (2012, Oct). *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States*. *Appendix A – Land Use Plan Amendments, p. 27 and 37*. https://solareis.anl.gov/documents/docs/Solar_PEIS_ROD.pdf

outlined below designed to streamline development and avoid conflicts with other resources and uses of public lands.

a. Remove the two technical exclusion categories from the 2012 Western Solar Plan based on advances in solar technology.

We agree with the BLM's assertion in its NOI that exclusion criteria 1 (excluding development in locations with slopes greater than 5 percent) and 2 (excluding development where insolation values are below 6.5 kWh/m2/day) were based on technological constraints present at the time the 2012 Wester Solar Plan was prepared, and that these criteria may no longer be applicable.

When the 2012 Western Solar Plan was adopted, the most efficient commercially available photovoltaic (PV) solar panels were approximately 17% efficient at converting sunlight into usable electricity. Today, commercially available solar panels are approximately 23% efficient and researchers have demonstrated panels with up to 47% efficiency.[13,14] In addition, the cost of utility-scale PV systems has declined by approximately 82% in the last decade.[15,16] This rapid change in PV panel efficiency and cost has greatly expanded the geographic areas where economic solar development can take place on BLM-managed public lands. Excluding projects because the slope and insolation thresholds contained in Criteria 1 and 2 have not been met no longer makes sense.

b. Modify the resource-based exclusion categories from the 2012 Western Solar Plan to incorporate the best available science and data sources.

Eighteen of the thirty resource-based exclusion categories found in Table A-2 of the 2012 Western Solar Plan[17] are based on data contained in approved land use plans--many of which are now outdated and no longer represent the best available science or data to assist with avoiding unnecessary resource conflicts. We recommend that the BLM update these categories with the best available science and spatial data as outlined below.

---

[13] Ecowatch. (2023, Feb 8). *10 Most Efficient Solar Panels of 2023*. https://www.ecowatch.com/solar/most-efficient-solar-panels

[14] Science Daily. (2020, April 14). *Six-junction solar cell sets two world records for efficiency*. https://www.sciencedaily.com/releases/2020/04/200414173255.htm

[15] National Renewable Energy Laboratory. (2021, Feb 10). *Documenting a Decade of Cost Declines for PV Systems*. https://www.nrel.gov/news/program/2021/documenting-a-decade-of-cost-declines-for-pv-systems.html

[16] Energy Innovation: Policy and Technology and Silvio Marcacci. (2020, Jan 21). *Renewable Energy Prices Hit Record Lows: How Can Utilities Benefit from Unstoppable Solar And Wind?* https://www.forbes.com/sites/energyinnovation/2020/01/21/renewable-energy-prices-hit-record-lows-how-can-utilities-benefit-from-unstoppable-solar-and-wind/?sh=f2eda812c84e

[17] U.S. Department of the Interior Bureau of Land Management. (2012, Oct). *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States*. *Appendix A – Land Use Plan Amendments, Table A-2 Exclusions under BLM's Solar Energy Program*. https://blmsolar.anl.gov/documents/docs/peis/Exclusions-ROD-Table-A-2.pdf

i. Update Table A-2 Exclusion Categories with existing BLM planning data.

We recommend the BLM update the mapping for all Table A-2 exclusion area categories, including the following, with data from any land management plans that have been approved since 2012. Additionally, we ask that BLM evaluate in the PEIS geographic areas that the agency has identified in any of these categories as part of an alternative in a preliminary, draft, or final EIS for an update to land management plans.

- Category 3 - Areas of Critical Environmental Concern (ACECs)
- Category 5 - Lands with wilderness characteristics (LWCs)
- Category 6 – Developed recreation facilities, special-use permit recreation sites, and Special Recreation Management Areas (SRMAs)
- Category 7 – Sage-grouse core areas, nesting habitat and winter habitat, Mohave ground squirrel habitat; flat-tailed horned lizard habitat; fringe-toed lizard habitat; and all other areas where the BLM has agreements with state agency partners and other entities to manage sensitive species habitat in a manner that would preclude solar energy development.
- Category 8 - Greater sage-grouse habitat (currently occupied, brooding, and winter habitat) as identified by the BLM in California, Nevada, and Utah, and Gunnison's sage-grouse habitat (currently occupied, brooding, and winter habitat) as identified by the BLM in Utah.
- Category 9 - No Surface Occupancy (NSO) areas
- Categories 10 and 11 - ROW exclusion and avoidance areas
- Categories 15 - Desert Tortoise translocation sites, project-level mitigation plans or Biological Opinions
- Category 18 - Research Natural Areas
- Category 19 - Visual Resource Management (VRM) Class I or II (and in Utah Class III) areas
- Category 20 - Secretarially designated National Recreation, Water, or Side and Connecting Trails, National Back Country Byways, and associated corridors and lands for these areas
- Category 22 - National Historic and Natural Landmarks and associated lands
- Category 23 – Lands associated with properties listed in the National Register of Historic Places (NRHP)
- Category 24 – Traditional cultural properties and Native American sacred sites
- Category 25 – Wild, Scenic, and Recreation Rivers designated by Congress and associated corridors or lands identified for protection
- Category 26 – Segment of rivers determined to be eligible or suitable for Wild or Scenic River status and any associated corridors or lands identified for protection
- Category 27 – Old growth forest

The BLM should update Greater sage-grouse habitat maps identified in exclusion categories 7 and 8 as part of BLM's ongoing effort initiated in November 2021[18] to update and implement the range-wide management plans for Greater sage-grouse adopted in 2015.[19] Due to the continuing long-term population declines documented for Greater sage-grouse,[20] we recommend that BLM manage sagebrush focal areas[21] and additional population-limiting Greater sage-grouse habitats identified by individual western state wildlife agencies—such as Priority Habitat Management Areas, Core Areas, Focal Areas, and Important Habitat Areas—as exclusion areas.

ii. Update and analyze expanding exclusion categories related to big game migratory corridors and winter ranges with third-party data.

Significant policy changes related to Big Game Migratory Corridors (Category 16) and Big Game Winter Ranges (Category 17) and improvements in mapping technology have made the data in most existing land use plans outdated. On February 9, 2018, the Secretary of Interior signed Secretarial Order 3362 – Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors (SO 3362).[22] SO 3362 directs appropriate bureaus within the Department of the Interior to work in close partnership with states and Tribes to enhance and improve the quality of big-game winter range and migration corridor habitat on federal lands.

In response to SO 3362, in 2019, the U.S. Geological Survey (USGS) assembled a Corridor Mapping Team to work with individual state wildlife agencies and Tribes to facilitate mapping of migration corridors using the latest Global Positioning System (GPS) tracking technology and analytical tools.[23] Since 2019, the USGS and individual western states and Tribes have made significant progress mapping big game migration corridors, and most of this

---

[18] U.S. Department of the Interior. Bureau of Land Management. (2021, Nov 19). *The Bureau of Land Management Begins Evaluation of Plans for Sage-Grouse Conservation*. https://www.blm.gov/press-release/bureau-land-management-begins-evaluation-plans-sage-grouse-conservation

[19] U.S. Department of the Interior. Bureau of Land Management. (Accessed January 2023). *The Bureau of Land Management Sage-Grouse Plans.* https://www.blm.gov/programs/fish-and-wildlife/sagegrouse/blm-sagegrouse-plans

[20] U.S. Department of the Interior. Bureau of Land Management. (2021, Oct). *Greater Sage-Grouse Plan Implementation Rangewide Monitoring Report for 2015–2020*. https://eplanning.blm.gov/public_projects/2016719/200502020/20050224/250056407/Greater%20Sage-Grouse%20Five-year%20Monitoring%20Report%202020.pdf

[21] U.S. Department of the Interior. Bureau of Land Management. (2016, Dec). *Sagebrush Focal Areas Withdrawal Environmental Impact Statement Idaho, Montana, Nevada, Oregon, Utah, and Wyoming Draft EIS*. https://eplanning.blm.gov/public_projects/nepa/70697/94514/114120/SFA_DEIS_Main_Text_508.pdf

[22] U.S. Department of the Interior. Bureau of Land Management. (Accessed Jan 2023). *Secretarial Order 3362: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors.* https://www.doi.gov/sites/doi.gov/files/uploads/so_3362_migration.pdf

[23] Western Association of Fish and Wildlife Agencies. (Accessed Jan 2023). *Secretarial Order 3362.* https://wafwa.org/so3362/

migration corridor data is not identified in existing land use plans. Some of this updated migration corridor data can be found through USGS and is publicly available,[24,25] however, some states and Tribes have mapped migration corridors and winter ranges that are not yet publicly available. For this reason, we request that BLM coordinate closely with the USGS and individual western state and Tribal wildlife agencies to incorporate the best available migration data into the PEIS Alternatives to update the mapping for Big Game Migratory Corridors (Category 16) and Big Game Winter Ranges (Category 17).

Research and monitoring completed by USGS, state wildlife agencies, Tribes, and others since 2012 supports continued use of these habitat categories as exclusion areas. Most ungulates across the American West– including mule deer, elk, pronghorn, and bighorn sheep– migrate from low-elevation winter ranges to high-elevation summer ranges.[26,27,28,29] Migration promotes nutritional gain, survival, and successful reproduction, and thus, is often an optimal strategy for ungulates inhabiting seasonal environments.[30,31,32] During winter, ungulates expend more energy than they consume and rely on body reserves of fat and protein to survive.[33,34] The foraging benefits of migration allow ungulates to survive the nutritional constraints of

---

[24] US Geological Survey. (Accessed Jan 2023). *USGS Ungulate migrations of the western United States, Volumes 1, 2 and 3*. https://pubs.er.usgs.gov/search?q=ungulate+migrations+of+the+western+united+states+volume&__ncforminfo=fY8x73kRGKq6RRy49ydFvcmSDW4U03XHIN5t_C69fSxZ2ZaEoAS_bOH8Gvej0XYu4yR5fw68kd1TA0aJBbYCYbjNH6EQbdPl

[25] Western Migrations. (Accessed Jan 2023). *Wildlife Corridors and Route Viewer*. https://westernmigrations.net

[26] Sawyer, H., A. D. Middleton, M. M. Hayes, M. J. Kauffman, and K. L. Monteith. 2016. The extra mile: ungulate migration distance alters the use of seasonal range and exposure to anthropogenic risk. *Ecosphere* 7: e01534.

[27] Kauffman, M. J., J. E. Meacham, H. Sawyer, A. Y. Steingisser, W. J. Rudd, and E. Ostlind. 2018. *Wild Migrations: Atlas of Wyoming's Ungulates*. Oregon State University Press.

[28] Middleton, A. D., J. A. Merkle, D. E. McWhirter, J. G. Cook, R. C. Cook, P. J. White, and M. J. Kauffman. 2018. Green-wave surfing increases fat gain in a migratory ungulate. *Oikos 127:*1060–1068.

[29] Lowrey, B., K. M. Proffitt, D. E. McWhirter, P. J. White, A. B. Courtemanch, S. R. Dewey, H. M. Miyasaki, K. L. Monteith, J. S. Mao, J. L. Grigg, C. J. Butler, E. S. Lula, and R. A. Garrott. 2019. Characterizing population and individual migration patterns among native and restored bighorn sheep (Ovis canadensis). *Ecology and Evolution* 9: 8829–8839.

[30] Albon, S. D., and R. Langvatn. 1992. Plant phenology and the benefits of migration in a temperate ungulate. *Oikos* 65: 502–513.

[31] Middleton, A. D., J. A. Merkle, D. E. McWhirter, J. G. Cook, R. C. Cook, P. J. White, and M. J. Kauffman. 2018. Green-wave surfing increases fat gain in a migratory ungulate. *Oikos* 00:1-9.

[32] Schuyler, E. M., K. M. Dugger, and D. H. Jackson. 2018. Effects of distribution, behavior, and climate on mule deer survival. *Journal of Wildlife Management* 83: 89–99.

[33] Parker, K. L., P. S. Barboza, and M. P. Gillingham. 2009. Nutrition integrates environmental responses of ungulates. *Functional Ecology* 23:57–69.

[34] Monteith, K. L. T. R. Stephenson, V. C. Bleich, M. M. Conner, B. M. Pierce, and R. T. Bowyer. 2013. Risk-sensitive allocation in seasonal dynamics of fat and protein reserves in a long-lived mammal. *Journal of Animal Ecology* 82:377–388.

winter by accessing the highest quality forage during spring, summer, and fall to accumulate adequate body reserves of fat and protein prior to severe winters.[35]

Although migration is a key strategy that supports the persistence and productivity of big game herds, ungulate migrations are disappearing at an alarming rate.[36,37] Utility-scale solar energy development and supporting infrastructure (substations and transmission lines) in migration corridors and winter ranges have been shown to directly and indirectly interfere with big game movements and result in habitat loss and fragmentation that impacts the ability of big game populations to access critical resources.[38] Within migration corridors, fences, high-traffic roads, and other forms of infrastructure development severs movement routes, thereby inhibiting the free movement of ungulates across the landscape and limiting their ability to track fleeting resources.[39,40,41] Additionally, disturbances on winter ranges can displace ungulates, thereby limiting access to essential food or causing unnecessary expenditures of energy that impact winter survival.[42, 43]

Migratory ungulates are also impacted by the long-term changes to habitat quality from the secondary effects of the spread of invasive vegetation caused by surface-disturbing construction activity.[44] Once established, some invasive species have proven difficult or impossible to control, altering entire vegetative communities, resulting in poorer quality habitat on a landscape scale. This has proven particularly problematic with long-linear disturbance

---

[35] Parker, K. L., P. S. Barboza, and M. P. Gillingham. 2009. Nutrition integrates environmental responses of ungulates. *Functional Ecology* 23: 57–69.

[36] Bolger, D. T., W. D. Newmark, T. A. Morrison, and D. F. Doak. 2008. The need for integrative approaches to understand and conserve migratory ungulates. *Ecology Letters* 11:63–77.

[37] Kauffman, M. J., et al. 2021. Mapping out a future for ungulate migrations. *Science* 372:566–569.

[38] Sawyer, H., N.M. Korfanta, M.J. Kauffman, B.S. Robb, A.C. Telander and T. Mattson. 2022. Trade-offs between utility-scale solar development and ungulates on western rangelands. *Frontiers in Ecology and the Environment, 20(6),* 345-351. https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2498

[39] Lendrum, P. E., C. R. Anderson Jr., K. L. Monteith, J. A. Jenks, and R. T. Bowyer. 2013. Migrating mule deer: effects of anthropogenically altered landscapes. *Plos One*: doi: 10.1371/journal.pone.0064548.

[40] Kauffman, Meacham, Sawyer, Steingisser, Rudd, and Ostlind. W*ild Migrations: Atlas of Wyoming's Ungulates.*

[41] Reinking, A.K. et al. 2019. Across scales, pronghorn select sagebrush, avoid fences, and show negative responses to anthropogenic features in winter. *Ecosphere* 10(5). https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2722

[42] Harris, G., R. M. Nielson, T. Rinaldi, and T. Lohuis. 2013. Effects of winter recreation on northern ungulates with focus on moose (Alces alces) and snowmobiles. *European Journal of Wildlife Research* 60:45–58.

[43] Dwinnell, S. P. H., H. Sawyer, M. J. Kauffman, J. E. Randall, R. C. Kaiser, M. A. Thonhoff, G. L. Fralick, and K. L. Monteith. 2021. Short-term responses to a human-altered landscape do not affect fat dynamics of a migratory ungulate. *Functional Ecology* 35:1512–1523.

[44] Lutz, D. W., J. R. Heffelfinger, S. A. Tessmann, R. S. Gamo, and S. Siegel. 2011. Energy Development Guidelines for Mule Deer. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies, USA.

features such as roads, pipelines, and the electric transmission corridors associated with solar energy facilities.[45]

Due to extensive research documenting the direct and indirect adverse impacts of utility-scale solar energy development and related infrastructure on big game use of migration corridors and winter ranges, and concrete examples of poorly sited solar energy developments impeding migratory ungulates in the West,[46] we request that the BLM incorporate alternatives that continue categorizing big game migration corridors and winter ranges as exclusion areas in the PEIS.

c. The BLM should add exclusion area categories specifically to address existing investments in conservation that would be negatively impacted by solar energy development.

The federal government, states, and Tribes regularly invest in conserving and improving key wildlife habitats and areas important for outdoor recreation. These investments, in turn, help support hunting, fishing, camping, hiking, paddling, and other outdoor recreation activities contributing $862 billion annually to the economy and supporting 4.5 million jobs.[47] The open-space, public access, recreation, and biological resource values these lands support are incompatible with utility-scale solar development. Significant conservation investments and the resulting economic benefits from these investments will be lost if these areas are developed or their habitat function impaired. BLM should leverage this investment in conservation to meet its existing land conservation climate objectives[48] by incorporating alternatives in the PEIS that identify these areas as exclusion areas from utility-scale solar development. Specific examples include the following.

i. Exclude lands acquired or improved with Land and Water Conservation Fund (LWCF) resources.

Congress established the LWCF in 1964 to conserve natural areas, water resources, and cultural heritage, and to provide public access and outdoor recreation opportunities to all Americans. Projects have been funded in all 50 states and almost every county.[49] In 2020, Congress passed

---

[45] US Department of Energy. Office of Electricity. (Accessed Jan 2023). *Energy Corridors on Federal Lands*. https://www.energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/energy

[46] Martin, D. (2019, Dec. 4). *Antelope hindered by solar farm*. Green River Star. https://www.greenriverstar.com/story/2019/12/04/county/antelope-hindered-by-solar-afarm/6818.html

[47] US Department of Commerce. Bureau of Economic Analysis. (Accessed Jan 2023). https://www.bea.gov/sites/default/files/2022-11/orsa1122.pdf

[48] US Department of the Interior. (Accessed Jan 2023). *America the Beautiful: Spotlighting the Work to Restore, Connect and Conserve 30 Percent of Lands and Waters by 2030*. https://www.doi.gov/priorities/america-the-beautiful

[49] The Land and Water Conservation Fund. (Accessed Jan 2023). *Past Projects*. https://lwcf.tplgis.org/mappast/

the Great American Outdoors Act (GAOA) , authorizing $900 million annually in permanent funding for LWCF. The substantial LWCF funds are invested by agencies specifically to conserve natural habitats and Federal lands for public outdoor recreation – including National Parks, National Forests, National Recreation Areas and National Wildlife Refuges and Conservation Areas.[50] Agencies also partner with landowners to support voluntary conservation easements on private lands. A portion of the LWCF funds are distributed directly to States and local communities through grant programs, and Tribes work directly with States to secure LWCF funding for recreation and conservation projects on Tribal lands. To date, over 40,000 grants have been issued to states and localities conserving over 3 million acres.[51] Lands purchased with LWCF and resource values and uses they support are incompatible with utility-scale solar development.

ii. Exclude BLM lands within or adjacent to the boundaries of U.S. Fish and Wildlife Service (USFWS) Conservation Areas.

A USFWS Conservation Area is a type of national wildlife refuge that consists primarily or entirely of conservation easements on private lands. These conservation easements help landowners keep working lands in agricultural production while conserving important habitat for fish and wildlife and major migration corridors.[52] Utility-scale solar development within or adjacent to the boundaries of USFWS Conservation Areas is incompatible with the purposes for which they were established.

iii. Exclude BLM lands within or adjacent to the boundaries of USFWS Waterfowl Production Areas and HAPET Waterfowl Priority Areas.

USFWS waterfowl production areas are units of the National Wildlife Refuge System purchased with funds from the sale of Federal Duck Stamps to conserve thousands of small wetlands and grasslands critical for migratory waterfowl populations.[53] Waterfowl Production Areas differ from wildlife refuges in that they are often made up of lands dispersed across several counties and townships (rather than one contiguous area).[54] This means that Waterfowl Production Areas often include hundreds of neighboring landowners and that the habitat function of these

[50] US Department of the Interior. (Accessed Jan 2023). *Land and Water Conservation Fund*. https://www.doi.gov/lwcf
[51] National Park Service. (Accessed Jan 2023). *Land and Water Conservation Fund*. https://www.nps.gov/subjects/lwcf/stateside.htm
[52] US Fish and Wildlife Service. (Accessed Jan 2023). *Conservation Areas*. https://www.fws.gov/glossary/conservation-area
[53] US Fish and Wildlife Service. (Accessed Jan 2023). *Waterfowl Production Area*. https://www.fws.gov/glossary/waterfowl-production-area
[54] US Fish and Wildlife Service. (Accessed Jan 2023). *Waterfowl Production Area*s. https://www.fws.gov/story/waterfowl-production-areas

areas is more easily impacted by neighboring land uses like solar development.[55,56] USFWS's Habitat and Population Evaluation Team (HAPET) also identify Waterfowl Priority Areas containing 10 nesting pairs or greater per square mile. Beyond their conservation value, Waterfowl Production Areas and Waterfowl Priority Areas are economic drivers for local economies due to the hunting and outdoor recreation opportunities they provide. Utility-scale solar development within or adjacent to the boundaries of USFWS Waterfowl Production Areas and Waterfowl Priority Areas is incompatible with the purposes for which they were established.

iv. *Exclude BLM lands adjacent to the boundaries of State-purchased wildlife management areas.*

States work in partnership with other governmental entities and private landowners to purchase fee-title or lease lands specifically to enhance their wildlife habitat value and use for wildlife-related recreation. These areas are purchased using a variety of funding mechanisms but are most often funded by sportspeople and managed by state wildlife agencies to enhance hunting, fishing, and wildlife-related outdoor recreation opportunities. The purposes for which these properties were purchased are incompatible with utility-scale solar development.

v. *Exclude BLM lands where federal, state, or Tribal funds have invested to improve habitat quality in western big game winter ranges, migration corridors, and other priority habitats.*

Since the signing of SO 3362 in 2018, DOI and other funding partners have invested about $90 million to improve the quality of state or Tribal-identified priority big game habitat, stopover areas, and migration corridors on federal, state, Tribal and (voluntarily) private land across the west.[57] Beyond SO 3362, states regularly fund habitat improvement projects on BLM lands to improve habitat quality for both game and non-game species like Greater sage-grouse. Big game habitat improvement projects are often implemented on federal lands to maintain big game distribution and avoid pushing animals to private lands where they may cause extensive property and crop damage. Displacement of big game onto private lands should be part of the impact analysis in the Solar PEIS. Habitat improvement projects conducted on BLM lands promote habitat connectivity, increased climate resiliency, and robust, sustainable populations of big game and other wildlife.[58] Utility-scale solar development in areas where habitat quality

[55]Kosciuch K, Riser-Espinoza D, Gerringer M, Erickson W. 2020. A summary of bird mortality at photovoltaic utility scale solar facilities in the Southwestern U.S. *PLoS ONE* 15(4): e0232034.

[56] Kagan, R. et al. 2014. Avian Mortality and Solar Energy Facilities in Southern California: A Preliminary Analysis. https://usiraq.procon.org/sourcefiles/avian-mortality-solar-energy-ivanpah-apr-2014.PDF

[57] Stemler, C. 2020. *SO 3362: Improving Habitat Quality in Western Big Game Winter Range and Migration Corridors: Implementation Progress report*. Department of Interior. 37pp. (J. Holst, personal communication, February 2023). https://wafwa.org/wp-content/uploads/2021/02/Final-SO3362-report-081120.pdf

[58] National Fish and Wildlife Foundation. (Accessed Jan 2023). *Western Big Game Seasonal Habitat and Migration Corridors Fund 2023 Request for Proposals.* https://www.nfwf.org/programs/rocky-mountain-rangelands/western-

has been deliberately improved through significant federal, state, and Tribal investments would negate the conservation gains that these areas provide.

vi. Exclude BLM lands adjacent to existing or planned highway wildlife crossing infrastructure.

Since 2012, state and Tribal wildlife management agencies and departments of transportation across the West have prioritized installing highway wildlife crossing structures and fencing to mitigate high incidents of wildlife-vehicle collisions and to maintain habitat connectivity for migratory wildlife. [59,60,61] Given their proven efficacy at both increasing human safety and enhancing habitat connectivity, congress included $350 million in the Infrastructure Investment and Jobs Act to facilitate increased deployment of wildlife crossing structures. Even the most basic wildlife underpass designed to accommodate large mammals costs about $1 million to install. Due to the large expenditure associated with each structure, and the need to incorporate them into state transportation plans, they are planned and funded well in advance—sometimes decades—using the best available science.[62] Once installed with adjacent fencing to funnel wildlife to the crossing structures they become "migratory bottlenecks"—constrained areas along migration routes that restrict animal movements.[63,64] The very nature of migratory bottlenecks makes maintaining the openness and permeability of lands adjacent to these areas critical for their continued efficacy for minimizing wildlife-vehicle collisions and conserving free ranging migratory big game species and other wildlife. Utility-scale solar development in these areas is an incompatible use that would jeopardize the continued use of wildlife crossing structures and the investment in them by federal, state, and Tribal agencies.

---

big-game-seasonal-habitat-and-migration-corridors-fund/western-big-game-seasonal-habitat-and-migration-corridors-fund-2023-request-proposals

[59] Colorado Department of Transportation. (2022, Aug 1). *Colorado's newest wildlife overpass and underpass provide safe passage for wildlife and motorists*. https://www.codot.gov/news/2022/august/us160-wildlife-overpass-completion

[60] Wyoming Game and Fish Department. (2016). *Wyoming Game and Fish Department Ungulate Migration Corridor Strategy*. (Accessed Aug. 2022). https://wgfd.wyo.gov/WGFD/media/content/PDF/Habitat/Habitat%20Information/Ungulate-Migration-Corridor-Strategy.pdf

[61] Holland, J.S. (2020, June 10). *Wildlife Crossings Can Protect Migrating Animals*. PEW. https://www.pewtrusts.org/en/trust/archive/spring-2020/wildlife-crossings-can-protect-migrating-animals

[62] Colorado Department of Transportation. Applied Research and Innovation Branch. (2019, April). *Western Slope Wildlife Prioritization Study*. https://www.codot.gov/programs/research/pdfs/2019/WSWPS/wswps_final_report_april_2019-revised-5-3-2019-copy.pdf

[63] US Geological Survey. Climate Adaptation Science Center and Land Change Science Program (2022). *Ungulate Migration in a Changing Climate—An Initial Assessment of Climate Impacts, Management Priorities, and Science Needs*. https://pubs.er.usgs.gov/publication/cir1493

[64] Phippen, J. W. (2016, Dec 14). *America's Wildlife Corridors Are in Danger*. The Atlantic. (Accessed Aug. 2022). https://www.theatlantic.com/science/archive/2016/12/deer-migration/509033/

d. The BLM should add exclusion area categories to address new policy priorities and newly identified resources that would be negatively impacted by solar energy development.

Since finalizing the 2012 Western Solar Plan, the Administration and the BLM have adopted new policy priorities and strategies to address emerging issues. These include increasing land conservation and habitat connectivity to combat climate change,[65,66] increasing landscape-scale sagebrush conservation to address threats to sage-grouse,[67,68] and designating specific areas to meet the increased demand for outdoor recreation opportunities.[69] In addition, new research clearly demonstrates the need to conserve all seasonal habitats and maintain landscape permeability for migratory species to fulfill their life cycle and sustain resilient populations.[70,71] BLM should recognize these changed policy priorities and resource values by incorporating alternatives in the updated PEIS that identify the following as exclusion areas from utility-scale solar development.

i. Consider exclusions for Gunnison sage-grouse, Columbian and Plains sharp-tailed grouse, and Greater prairie-chicken priority habitats.

The exclusion categories 7 and 8 found in Table A-2 of the 2012 Western Solar Plan included a variety of Greater sage-grouse habitats and Gunnison sage-grouse (GUSG) habitats in Utah. This is supported by research that suggests avoiding placing utility-scale solar in the most limiting

---

[65] The White House. (2021, Jan 27). *Executive Order on Tackling the Climate Crisis at Home and Abroad*. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/

[66] U.S. Department of the Interior. Bureau of Land Management. (2022, Nov 18). *Habitat Connectivity on Public Lands. IM 2023-005, Change 1*. https://www.blm.gov/policy/im-2023-005-change-1

[67] U.S. Department of the Interior. Bureau of Land Management. (Accessed January 2023). *The Bureau of Land Management Sage-Grouse Plans.* https://www.blm.gov/programs/fish-and-wildlife/sagegrouse/blm-sagegrouse-plans

[68] U.S. Department of the Interior. Bureau of Land Management. (2022, Dec 21). *Gunnison Sage-Grouse Resource Management Plan Amendment*. https://eplanning.blm.gov/eplanning-ui/project/2019031/510

[69] U.S. Department of the Interior. Bureau of Land Management. (2017, Jan 19). *Considering Backcountry Conservation Management in Land Use Planning Efforts*. *IM 2017-036*. https://www.blm.gov/policy/im-2017-036

[70] US Geological Survey. Cooperative Research Units. Science. (2023, Jan 18). *Wyoming Migration Initiative: Ungulate Migration in the West*. https://www.usgs.gov/programs/cooperative-research-units/science/wyoming-migration-initiative-ungulate-migration-west

[71] Middleton, A. et al. 2022. Wildlife migrations highlight importance of both private lands and protected areas in the Greater Yellowstone Ecosystem. Biological Conservation. 275. 109752. 10.1016/j.biocon.2022.109752. https://www.researchgate.net/publication/364139853_Wildlife_migrations_highlight_importance_of_both_private_lands_and_protected_areas_in_the_Greater_Yellowstone_Ecosystem

seasonal mountain and prairie grouse habitats is warranted.[72] Loss of habitat is the biggest driver of population declines in GUSG.[73] Colorado has the largest stable population (centered around Gunnison Basin) and six satellite populations representing approximately 98 percent of the rangewide population. Utah has only one satellite population representing approximately 2 percent of the population. The GUSG was listed by USFWS as Threatened in 2014, and a final Recovery Plan and Recovery Implementation Strategy (RIS) was published in 2020.[74] The RIS calls for avoiding and minimizing disturbance in all occupied GUSG habitat and burying new and existing electric transmission lines where feasible.[75] This makes utility-scale solar development incompatible with all occupied GUSG habitat and habitats needed for recovery of the species.

Expanding the geographic scope of the Solar PEIS to include Wyoming, Montana, Idaho, Washington, and Oregon incorporates the range of Columbian sharp-tailed grouse (CSTG) and Plains sharp-tailed grouse (PSTG).[76] Greater Prairie Chicken (GPC) occupy portions of northeastern Colorado, but they were not addressed in the 2012 Western Solar Plan. The CSTG currently occupies less than 10% of its historic range, and due to this very limited geographic distribution the Western Association of Fish & Wildlife Agencies (WAFWA) has published guidelines recommending that all currently occupied CSTG habitat be considered "core" areas when managing energy development.[77] We encourage BLM to adopt this same approach and include alternatives in the Solar PEIS that categorize CSTG occupied habitat as exclusion areas for utility-scale solar development. Both the PSTG and GPC occur on the eastern edge of the expanded Solar PEIS scope area. While populations for both these species are still widely distributed, they fluctuate and remain susceptible to disturbance—particularly near leks and nesting areas. We recommend that the BLM incorporate in the Solar PEIS alternatives that identify lek and nesting area buffer exclusion areas for PSTG and GPC.

---

[72] Hovick, T.J., R.D. Elmore, D.K. Dahlgren, S.D. Fuhelndor and D.M Engle. 2014. Evidence of negative effects of anthropogenic structures on wildlife: a review of grouse survival and behavior. *Journal of Applied Ecology*. 51, 1690-1689.

[73] Colorado Parks and Wildlife. (Accessed Jan 2023*). Gunnison Sage-Grouse*. https://cpw.state.co.us/Conservation/Pages/CON-Gunnison-Sage-Grouse.aspx

[74] US Fish and Wildlife Service. Upper Colorado Basin Region 7, Grand Junction, CO. (2020). *Recovery Implementation Strategy for Gunnison Sage-Grouse (Centrocercus minimus)*, Version 1.0. https://eplanning.blm.gov/public_projects/2019031/200526603/20064396/250070578/2020-0930%20USFWS%20Recovery%20Implementation%20Strategy%20Gunnison%20Sage-Grouse.pdf

[75] US Fish and Wildlife Service. Upper Colorado Basin Region 7, Grand Junction, CO. (2020). *Recovery Implementation Strategy for Gunnison Sage-Grouse (Centrocercus minimus)*, Version 1.0. https://eplanning.blm.gov/public_projects/2019031/200526603/20064396/250070578/2020-0930%20USFWS%20Recovery%20Implementation%20Strategy%20Gunnison%20Sage-Grouse.pdf

[76] North American Grouse Partnership. (Accessed Jan 2023). http://www.grousepartners.org/prairie-grouse

[77] Western Association of Fish and Wildlife Agencies. (2015). *Guidelines for the Management of Columbian Sharp-tailed Grouse Populations and their Habitats*. https://wafwa.org/wp-content/uploads/2020/09/Guidelines_Mgmt_Columbian_Sharp-tailed_Grouse_WAFWA.pdf

ii. Evaluate exclusions for federal, state, or Tribal-identified habitat connectivity areas.

BLM Instruction Memorandum (IM) 2023-015 *Habitat Connectivity on Public Lands* calls for the agency to ensure that habitats for native fish, wildlife, and plant populations are inter-connected by inventorying existing priority habitat and areas of habitat connectivity (AHCs), and by directing the BLM state offices to explicitly consider habitat connectivity, permeability, and resilience during planning activities. In addition, the IM added to BLM Manual Section MS 6500.06 Policy to clarify that the BLM:

> *Will manage existing fish and wildlife habitat with the goal of maintaining, improving, and/or conserving habitat connectivity and restoring degraded fish and wildlife habitat to provide for increased habitat connectivity.*

In addition to the BLM's efforts, other federal agencies, states, and Tribes have been implementing their own efforts to map and conserve habitat connectivity. Several examples include:

- Oregon Department of Fish & Wildlife (ODFW) recently completed the Oregon Connectivity Assessment and Mapping Project (OCAMP) to identify Priority Wildlife Connectivity Areas.[78] ODFW is currently developing a Wildlife Corridor Action Plan that will integrate these areas into the state's planning processes.
- Colorado Department of Natural Resources (CDNR) and its Division of Parks & Wildlife (CPW) are in the process of preparing a statewide *Habitat Conservation and Connectivity Plan* to identify priority landscapes to inform conservation actions improve habitat connectivity for big game and other wildlife.[79]
- Wyoming Game & Fish Department has a Statewide Habitat Plan that includes the identification of Connectivity Habitat Priority Areas for both fish and wildlife populations. These areas are meant to promote conserving connectivity where it exists on the landscape and to focus attention on enhancing fish passage and wildlife migrations to improve connectivity where needed.[80]

These state efforts are being implemented consistent with executive orders and state legislative measures recognizing the importance of big game migrations and conserving habitat

---

[78] Oregon Fish and Wildlife. The Oregon Conservation Strategy. (Accessed Jan 2023). *The Oregon Connectivity Assessment and Mapping Project (OCAMP)*. https://oregonconservationstrategy.org/success-story/the-oregon-connectivity-assessment-and-mapping-project-ocamp/

[79] Colorado Department of Natural Resources and Colorado Department of Transportation. (2021, Sept 27). *Opportunities to Improve Sensitive Habitat and Movement Route Connectivity for Colorado's Big Game Species*. https://drive.google.com/file/d/1nKR7fdQpcLHsU_z7XoJz5s7jXdvLwUqs/view

[80] Wyoming Game and Fish Department. (Accessed Jan 2023). *Habitat Priority Area Maps and Narratives User Guide to Habitat Priority Areas*. https://wgfd.wyo.gov/Habitat/Habitat-Plans/Habitat-Priority-Areas

connectivity for multiple species in Colorado,[81,82] New Mexico,[83] Oregon,[84] Utah,[85] Wyoming,[86] and Nevada.[87] The large and impermeable footprint associated with utility-scale solar development is incompatible with maintaining habitat connectivity in areas identified as critical for wildlife movements.[88,89] For this reason, we request that the BLM include alternatives in the Solar PEIS that categorize federal, state, and Tribal-identified habitat connectivity areas as exclusion areas from utility-scale solar development.

iii. Consider excluding Backcountry Conservation Areas (BCAs).

In 2017, the BLM established BCAs through IM 2017-036, which addressed a clear need for a land use planning tool to conserve undeveloped public lands and provide management direction for both the wildlife habitat BCAs contain and associated wildlife-dependent outdoor recreation.[90] By establishing BCAs, the BLM recognized the value of protecting certain backcountry areas in order to conserve generally intact, undeveloped public lands that contain priority habitats for recreationally important fish and wildlife species and that provide high-quality wildlife-dependent recreation opportunities afforded by those species.[91] BCAs are used by the BLM to maintain and enhance habitat for recreationally important fish and wildlife

---

[81] State of Colorado. (2019, Aug 21). *Executive Order D2019011. Conserving Colorado's Big Game Winter Range and Migration Corridors*. https://wafwa.org/wp-content/uploads/2021/04/CO-Executive-Order-D-2019-011.pdf

[82] Colorado General Assembly. 74th General Assembly. (2021). *Concerning the general assembly's support of the state of Colorado's efforts to preserve the state's flora and fauna through the protection of wildlife habitat connectivity*. Colorado Habitat Connectivity. https://leg.colorado.gov/bills/sjr21-021

[83] The Legislature of the State of New Mexico. 54th Legislature, 1st Session. (2019). *Senate Bill 228. The Wildlife Corridors Act*. https://wafwa.org/wp-content/uploads/2021/04/New-Mexico-Wildlife-Corridors-Act-2019.pdf

[84] 80th Oregon Legislative Assembly. Regular Session. (2019). House Bill 2834. *Wildlife Corridors Act*. https://wafwa.org/wp-content/uploads/2021/04/OR-HB2834.pdf

[85] State of Utah. General Session. (2020). *Concurrent Resolution Supporting the Protection and Restoration of Wildlife Corridors*. https://wafwa.org/wp-content/uploads/2021/04/UT-Concurrent-Resolution-H.C.R.-13-Signed-March-24-2020-.pdf

[86] State of Wyoming. (2020). Order 2020-1. *Wyoming Mule Deer and Antelope Migration Corridor Protection*. https://wafwa.org/wp-content/uploads/2021/04/WY-signed-Executive-Order-2020-01.pdf

[87] State of Nevada. (2021). Executive Order 2021-18. *Creating the Nevada Habitat Conservation Framework*. https://wafwa.org/wp-content/uploads/2021/08/2021-18-Habitat-Framework-EO.pdf

[88] Leskova, O.V., R.A. Frakes and S.H. Markwith. 2022. Impacting habitat connectivity of the endangered Florida panther for the transition to utility-scale solar energy. *Journal of Applied Ecology*. Volume 59, Issue 3, pp. 822-834. https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.14098

[89] Sawyer, H., N.M. Korfanta, M.J. Kauffman, B.S. Robb, A.C. Telander and T. Mattson. 2022. Trade-offs between utility-scale solar development and ungulates on western rangelands. *Frontiers in Ecology and the Environment* 20(6), 345-351. https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2498

[90] U.S. Department of the Interior. Bureau of Land Management. (2017, Jan 19*). Considering Backcountry Conservation Management in Land Use Planning Efforts*. *IM 2017-036*. https://www.blm.gov/policy/im-2017-036

[91] U.S. Department of the Interior. Bureau of Land Management. (2017, Jan 19*). Considering Backcountry Conservation Management in Land Use Planning Efforts*. *IM 2017-036*. https://www.blm.gov/policy/im-2017-036

species and to expand public access for hunting, angling, and other forms of wildlife-dependent recreation consistent with Secretarial Orders 3347, [92] 3356, [93] and 3362. [94]

In order to meet the purposes for which they are established, BCAs are by definition "generally intact and undeveloped" with "few, if any, development features that reduce the effectiveness of an area for wildlife or diminish the recreation experience."[95] For this reason, we request that BCAs that have been designated in applicable land use plans be added as an exclusion area. In addition, as part of the PEIS, we encourage BLM to evaluate an alternative that includes proposed BCAs identified in a preliminary, draft, or final EIS that is currently in progress as exclusion areas for utility-scale solar development.

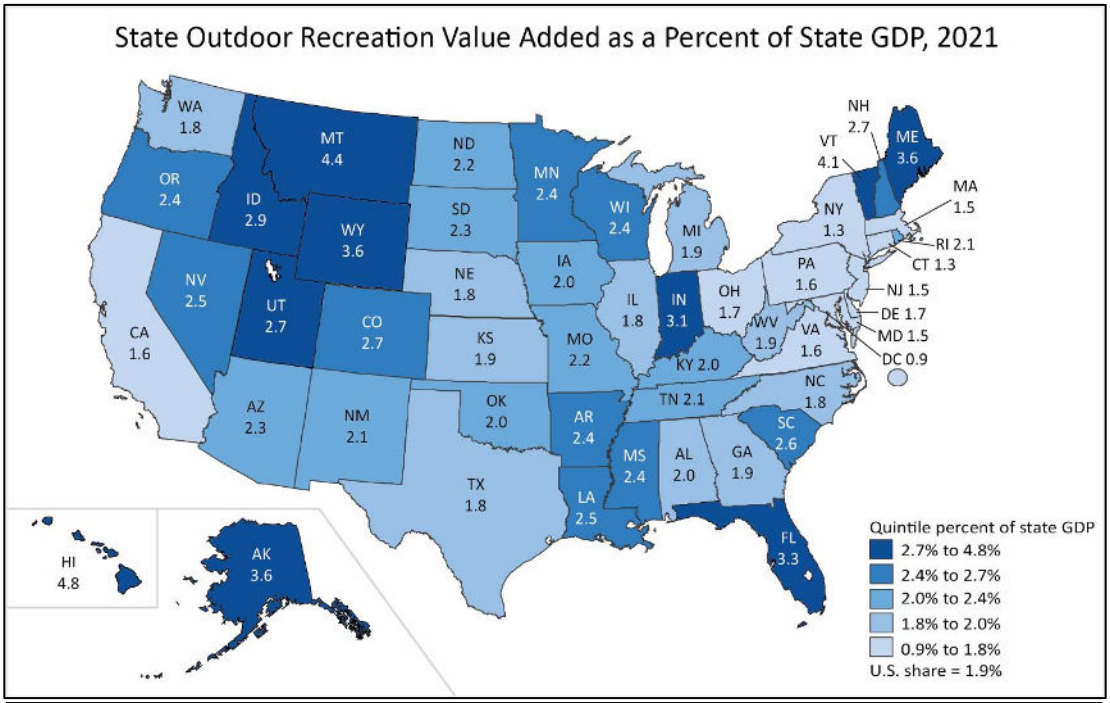

Figure 1. State outdoor recreation value added as a percent of gross domestic product. Source: U.S. Bureau of Economic Analysis.

[92] US Department of the Interior. (2017, March 2). Order No. 3347. *Conservation Stewardship and Outdoor Recreation*. https://www.doi.gov/sites/doi.gov/files/uploads/revised_so_3447.pdf

[93] US Department of the Interior. (2017, Sept 15). Order No. 3356. *Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories*. https://www.doi.gov/sites/doi.gov/files/uploads/signed_so_3356.pdf

[94] US Department of the Interior. (Accessed Jan 2023). Order No. 3362. *Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors*. https://www.doi.gov/sites/doi.gov/files/uploads/so_3362_migration.pdf

[95] US Department of the Interior. (Accessed Jan 2023). *IM 2017-036*. https://www.blm.gov/sites/default/files/policies/IM2017-036_att1.pdf

iv. <u>Evaluate excluding BLM lands identified by local communities as important for recreation.</u>

The outdoor recreation economy accounted for 1.9 percent ($862.0 billion) of current-dollar gross domestic product (GDP) for the nation in 2021, and the percentage of state GDP for some states within the geographic scope of the PEIS is as high as 4.4 percent (Figure 1).[96] The growth in the outdoor recreation economy is outstripping the rest of the U.S. economy (Figure 2).

Federal public lands—and BLM lands in particular—play an outsized role in sustaining and supporting the growth of this outdoor recreation economy.[97] Some western states estimate that two-thirds of their outdoor economy stems from federal public lands,[98] and the current growth of outdoor recreation employment is dominated by western public land states within the geographic scope of the Solar PEIS.[99] This opportunity for economic growth is particularly important in rural areas dominated by federal public lands.[100]

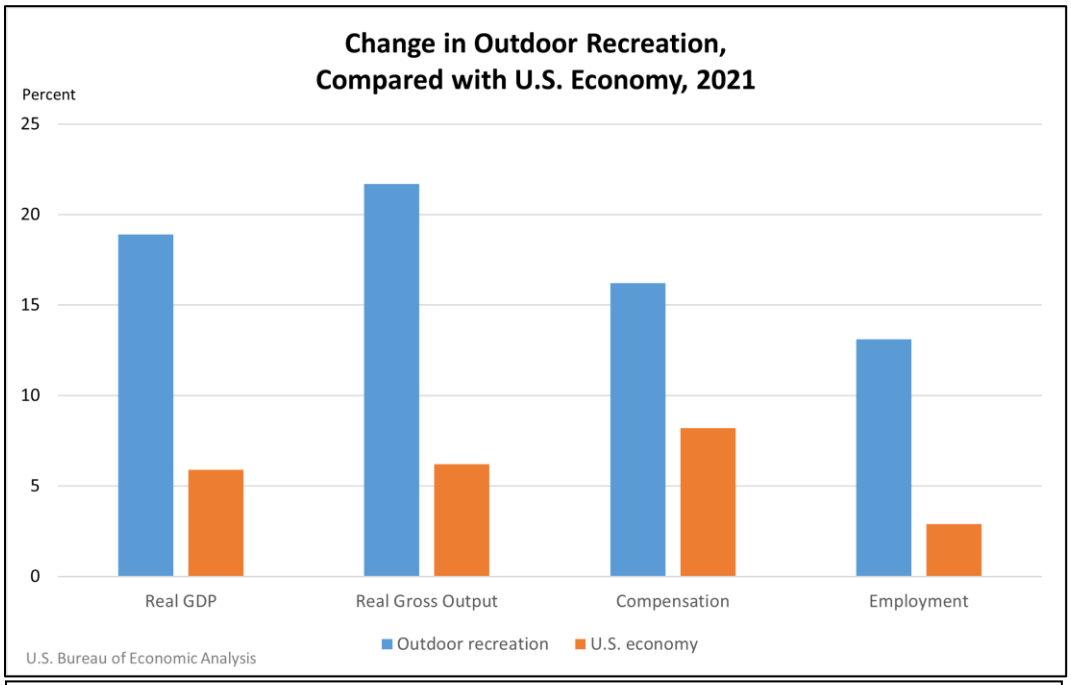

Figure 2. Changes in outdoor recreation. Source: U.S. Bureau of Economic Analysis.

[96] US Government. (2022, Nov 9). *Outdoor Recreation Satellite Account, U.S. and States, 2021*. https://www.bea.gov/news/2022/outdoor-recreation-satellite-account-us-and-states-2021
[97] Rait, K. (2020, April 28). *Federal Plans Put Public Lands Across the West at Risk*. PEW. https://www.pewtrusts.org/en/research-and-analysis/articles/2020/04/28/federal-plans-put-public-lands-across-the-west-at-risk
[98] Walls, Margaret A. (2018, Oct 18). *The Outdoor Recreation Economy and Public Lands. Resources*. https://www.resources.org/archives/the-outdoor-recreation-economy-and-public-lands/
[99] US Government. (2022, Nov 9). *Outdoor Recreation Satellite Account, U.S. and States, 2021*. https://www.bea.gov/news/2022/outdoor-recreation-satellite-account-us-and-states-2021
[100] Headwaters Economics. (2017, Feb). *Federal Lands in the West: Liability or Asset?* https://headwaterseconomics.org/public-lands/federal-lands-performance/

The increasing demand for outdoor recreation opportunities, including hunting, fishing, camping, hiking, and other dispersed activities requires areas that remain relatively intact and undeveloped. Given the variability of rural communities and their reliance on surrounding public lands for their local economies, we recommend that BLM consider extensive recreation management areas (ERMAs) designated in RMPs after 2012 as exclusion areas and incorporate in the Solar PEIS opportunities for local communities to nominate specific BLM lands recognized as critical for local recreation opportunities as exclusion areas from utility-scale solar development.

e. The BLM should add exclusion area categories to address potential impacts to water resources.

i. Exclude all native salmonid and anadromous fish habitats.

Many aquatic species, including native salmonid and anadromous fish, are sensitive to disturbance and their habitats should be identified as exclusion areas for solar development and transmission.101 We request that the BLM incorporate in the Solar PEIS alternatives categorizing all native salmonid and anadromous fish habitats as exclusion areas, and that the spatial analysis of these areas be updated using the best available information.

Native trout are indicators of watershed integrity.102 Trout evolved strategies to respond to disturbance (such as fire, drought, and other natural processes),103 but their resilience is increasingly constrained by human-caused impacts such as habitat loss and fragmentation that reduce access to refuge habitats.104,105,106,107 The amount and distribution of habitat and

---

[101] Haak, A. L., and J. E. Williams. 2013. Using native trout restoration to jumpstart freshwater conservation planning in the Interior West. *Journal of Conservation Planning* 9:38-52.

[102] Conservation Strategy/Habitat Work Group. Eastern Brook Trout Joint Venture. (2011, Jan). *Conserving the Eastern Brook Trout: Action Strategies*. https://easternbrooktrout.org/about/reports/Conserving%20Eastern%20Brook%20Trout-Action%20Strategies%20%282018%29/view

[103] Penaluna, Brooke & Reeves, Gordon & Barnett, Zanethia & Bisson, Peter & Buffington, John & Dolloff, Andy & Flitcroft, Rebecca & Luce, Charles & Nislow, Keith & Rothlisberger, John & Warren, Mel. 2018. Using Natural Disturbance and Portfolio Concepts to Guide Aquatic–Riparian Ecosystem Management. *Fisheries* 43. 10.1002/fsh.10097.

[104] Neville, et al. 2009. Influences of Wildfire, Habitat Size, and Connectivity on Trout in Headwater Streams Revealed by Patterns of Genetic Diversity. *Transactions of the American Fisheries Society* 138:1314–1327.

[105] Dunham, J. B., M.K. Young, R.E. Gresswell and B.E. Rieman. 2003. Effects of fire on fish populations: landscape perspectives on persistence of native fishes and nonnative fish invasions. *Forest Ecology and Management* 178:183–196.

[106] Mark Hudy, Teresa M. Thieling, Nathaniel Gillespie & Eric P. Smith. 2008. Distribution, Status, and Land Use Characteristics of Subwatersheds within the Native Range of Brook Trout in the Eastern United States. *North American Journal of Fisheries Management* 28:4, 1069-1085, DOI: 10.1577/M07-017.1.

[107] Dunham, J.B. and Rieman, B.E. 1999., Metapopulation Structure of Bull Trout: Influences of Physical, Biotic, and Geometrical Landscape Characteristics. *Ecological Applications* 9: 642-655.

habitat preference of the species in question plays a role in population resilience and survivability.

In fact, 73% of the watersheds that can and do still support native trout in Montana, Colorado, Utah, New Mexico, Wyoming, Nevada, and Idaho are within or are composed of public lands. Native cutthroat trout were once robust across the West, but they have been widely extirpated from their historical range (Figure 3). As a result, it is critical that the remaining aquatic habitat be protected, especially where native trout are found.108

Surface development within sensitive watersheds and close to or on top of riparian areas, wetlands, and streams compromises aquatic habitat and will make these aquatic systems less resilient, particularly as the climate changes and becomes more extreme. Public lands are vital to sustaining water resources, food security, energy security, and sensitive fish and wildlife populations. Renewable power production occupies large acreages in often remote areas that have not seen energy development. Utility-scale developments require networks of roads and utility corridors, transportation, and transmission capacity that does not exist today. In fact, the Sabin Center for Climate Change Law at Columbia Law School estimates109that the U.S. needs a tripling or even quadrupling of transmission capacity—up from the 160,000 miles of high-voltage power lines now in operation—to move all the new green energy to consumers, who are mostly in cities, from the remote places where it is harvested.110

Expanding the scope of the Solar PEIS to include Idaho, Washington, Oregon, Montana and Wyoming—all headwaters states—requires that the BLM thoroughly analyze impacts to aquatic and coldwater resources. The BLM must take a hard look at how solar development may affect seasonal anadromous and freshwater fish habitats.

For example, in New Mexico, the most threatened trout stream due to the expansion of all energy production, but now including wind and solar, is the San Juan River. Almost all of the new transmission lines will tie into the existing Public Service Company of New Mexico utility infrastructure that is a hub leftover from the Four Corners Power Plant (recently closed). There are approximately 3.75 miles of state designated “Red Chile” Special Trout Waters on the San Juan River, downstream of the Navajo Dam. Most of these waters and their riparian areas are currently owned by New Mexico Game and Fish, but they are surrounded by BLM-managed lands and could be threatened by upstream impairments caused by land use changes such as new energy production or transmission lines.

---

https://doi.org/10.1890/1051-0761(1999)009[0642:MSOBTI]2.0.CO;2

[108] Haak, A. L., and J. E. Williams. 2013. Using native trout restoration to jumpstart freshwater conservation planning in the Interior West. *Journal of Conservation Planning* 9:38-52.
[109] Gerrard, M.B. (2022). *A Time for Triage*. 39(6) Envtl. F. 38. https://scholarship.law.columbia.edu/faculty_scholarship/3867
[110] Gerrard, M.B. (2022). *A Time for Triage*. 39(6) Envtl. F. 38. https://scholarship.law.columbia.edu/faculty_scholarship/3867

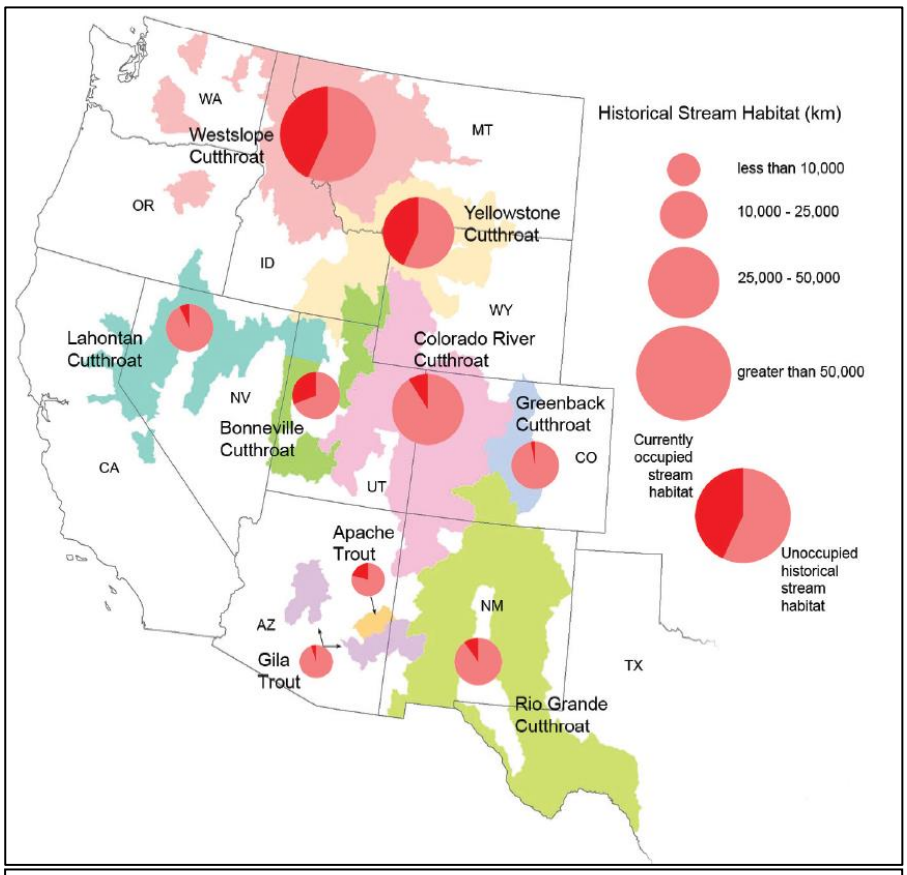

Figure 3. Comparison of historical and current distributions for seven subspecies of cutthroat trout and Apache and Gila trout. The size of the pie chart associated with each fish is indicative of the amount of stream habitat historically occupied while the dark red 'slice' represents the percent of the historical stream habitat that is currently occupied. Adapted from Haak, A. L., and J. E. Williams. 2013. Using native trout restoration to jumpstart freshwater conservation planning in the Interior West. Journal of Conservation Planning 9:38-52

The second most threatened trout stream in New Mexico is the Upper Rio Grande, as new transmission lines or solar facilities seem opportune in the Upper Rio Grande watershed/Cruces Basin. There are plans such as the New Mexico North Path and transmission with the Alamosa Solar Energy facility (29.3-MW high concentration photovoltaic) that threaten to crisscross a wild and remote landscape that has been designated as the Rio Grande Natural Heritage Area and the Rio Grande del Norte National Monument.

ii. <u>The BLM should consider excluding mainstem lower elevation warm-water habitats.</u>

In its analysis, BLM should consider new science that shows that mainstem lower elevation habitats serve as the main area for fish putting on weight and are critical to the growth and

reproductive opportunity for fish.[111] Warm water habitats drive the expansion and contraction of areas available to fish that are thermally optimal for their life cycle. The ability for fish to move amongst habitats unimpaired leverages the ecological complexity for fish to cope with uncertainty in future change and increases the capacity for rivers to produce mobile fishes.[112]

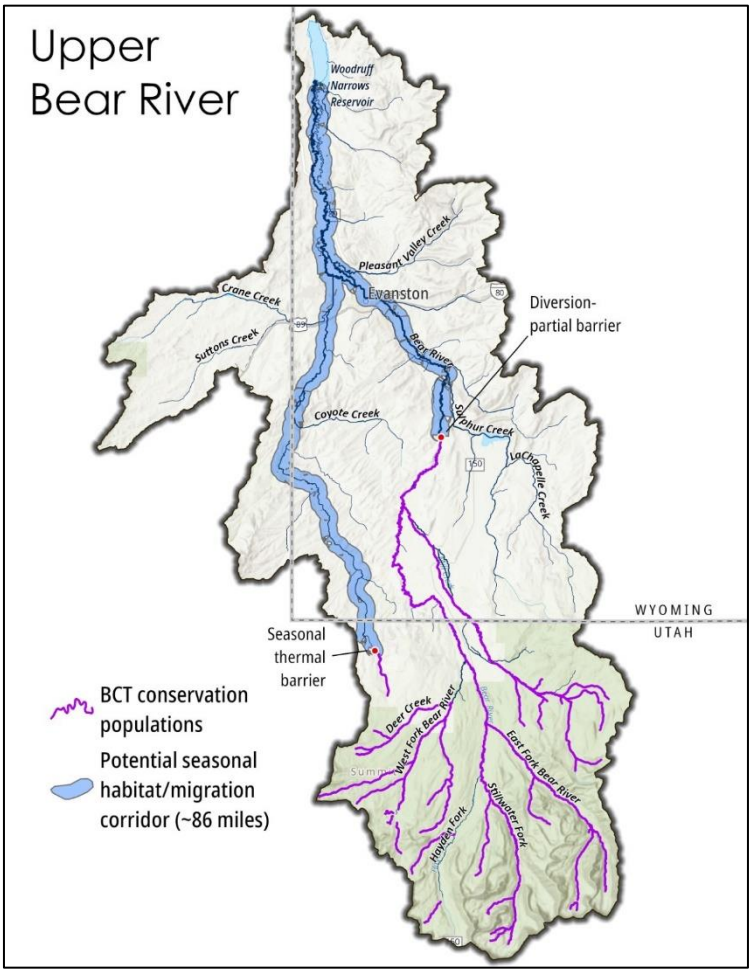

Figure 4. Example of a Habitat Patch Assessment for the Upper Bear River watershed in Wyoming and Utah. This map shows a known diversion structure and the seasonal thermal barrier. Using barrier data and native cutthroat trout conservation portfolio data we can determine approximately 86 stream miles of important mainstem downstream habitat used to maintain gene flow, fecundity and refuge habitats.

[111] Cline, Timothy. (2021, Dec 10). *Leveraging ecological complexity to cope with uncertainty in future change.* [Webinar] Trout Unlimited. https://vimeo.com/656291682#t=59m40s.

[112] Armstrong, J.B., Fullerton, A.H., Jordan, C.E. et al. 2021. The importance of warm habitat to the growth regime of cold-water fishes. *Nat. Clim. Chang.* 11, 354–361. https://doi.org/10.1038/s41558-021-00994-y

Trout Unlimited (TU) continues to expand on this existing science using GIS analysis for creating Habitat Patching Assessments (HPAs). HPAs can be modeled for areas that have good barrier data (dams and road-stream crossings) for a watershed (Figure 4). Habitat patches are networks of connected streams that are not impeded by barriers. Building intact habitat patches using tools developed by TU for Eastern Brook trout portfolios,[113] we can highlight the mismatch between stream habitat downstream of known populations that is within a habitat patch. These areas are important seasonal habitats/migration corridors. We can overlay existing populations of native cutthroat trout in the West to help determine and highlight the importance of these mainstem downstream habitats as exclusion areas. Through a restoration lens, this type of assessment can also prioritize barriers for removal to expand/reconnect these

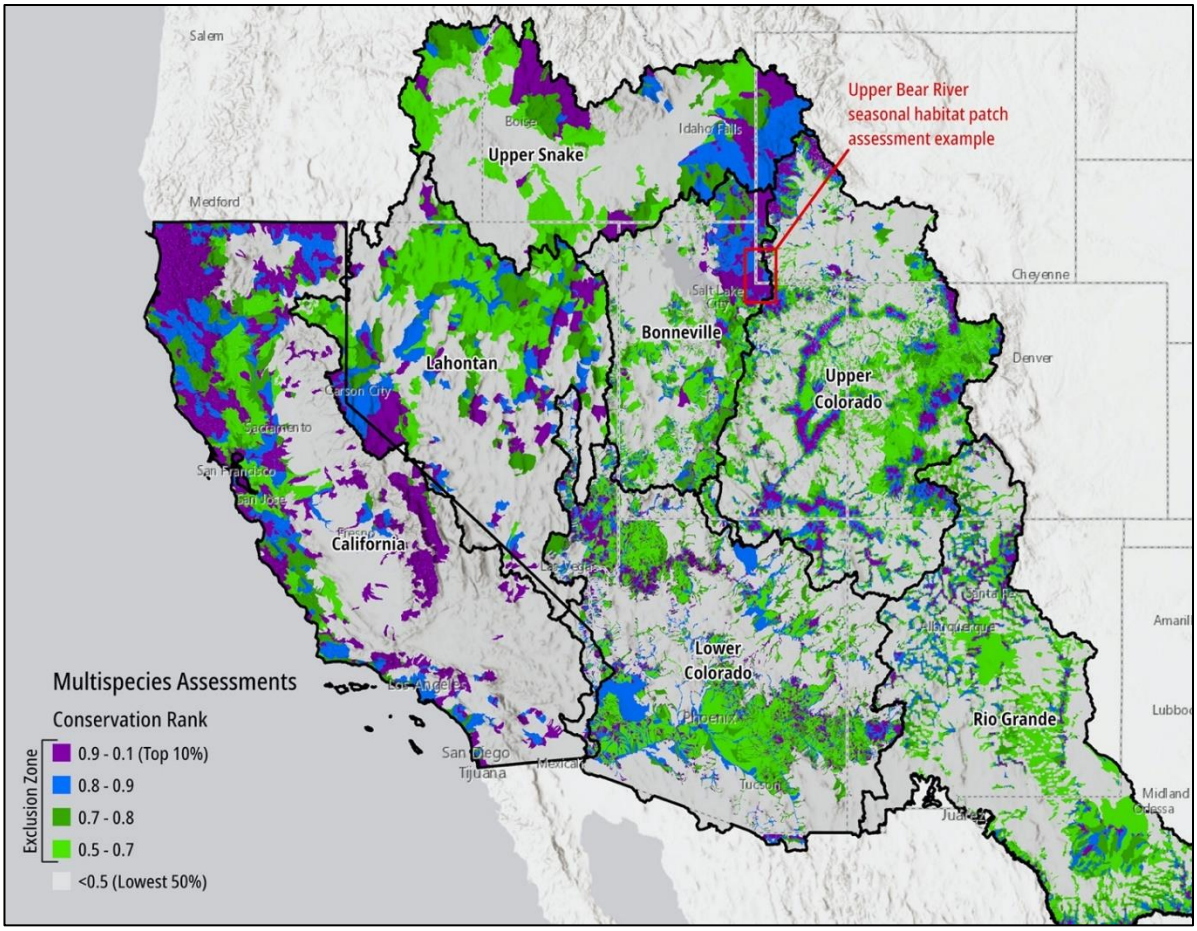

Figure 5. Western coldwater habitats analyzed adopting the multispecies assessment approach and highlighting an example of a seasonal Habitat Patch Assessment for landscape scale conservation rank identifying exclusion areas for native trout within its focal geography.

[113] Trout Unlimited. (Accessed Jan 2023). *Conservation Portfolio: Managing Trout with a Portfolio Approach*. https://www.tu.org/science/conservation-planning-and-assessment/conservation-portfolio/

habitat patches based on size of conservation populations to be reconnected, absence of non-natives and length of stream habitat.

We request the BLM analyze and evaluate the importance of mainstem downstream habitats to the connectivity and survivability for all native salmonid and anadromous seasonal fish bearing habitats and consider these for inclusion as exclusion areas.

We also request the BLM evaluate biodiversity outcomes using a multi-species approach.[114] Figure 5 represents conservation ranking outcomes from a multi-species assessment approach encompassing information on the distribution of 180 native fish species, aquatic connectivity, habitat condition and threats. This approach is used by the Western Native Trout Initiative and Desert Fish Habitat Partnership to characterize conservation value and prioritize funding across the West. We request that the BLM use this or a similar resource to identify exclusion area criteria incorporated in the Solar PEIS alternatives and that the spatial analysis of these areas be incorporated using the best available information.

iii. Consider the availability of and potential effects to surface and groundwater resources.

The agency must analyze how solar development may affect surface and groundwater availability and quality and incorporate exclusion area criteria to address these issues. Many solar development projects involve the use of water. In wet-cooled solar development projects, large quantities of water are needed for cooling and other purposes (e.g., cleaning of solar reflectors or receivers, sanitary use, driving/drilling support pilings and makeup). The use of large quantities of water pumped from groundwater resources creates potential long-term effects on the stability and longevity of aquifers, seeps, springs, wetlands, etc.

Groundwater is the largest source of freshwater for all life and arid landscapes require more area to support the ecological needs of fish and wildlife. Questions about the source, quantity, quality, and recyclability of water are one of the most important considerations in the siting and development of renewable energy projects. We request a thorough water-right analysis identifying capacity of allocatable groundwater be required as part of any renewable energy development project. Any technology that supports the least amount of water use should be implemented and sufficient incentives developed that encourage such methods.

Water rights and water allocation issues have become increasingly controversial. The use of large quantities of water and its effects on water rights of surrounding communities and other large-scale users of water is causing local and state governments to oppose projects. For

[114] Desert Fish habitat Partnership. (Accessed Jan 2023). *Multispecies Aquatic Assessments*. https://www.desertfhp.org/multispecies-aquatic-assessments

example, in south-central Idaho, where many large-scale utility renewable energy projects are slated for permitting and development, there is a moratorium on all new water allocations.[115]

Surface disturbances associated with solar development can burden upstream and downstream water sources and impede fish migration and passage. Roads, water withdrawals, boring under streams, and loss of vegetation will impact water resources. For example, on October 7, 2022, there was a significant spill from a boring operation to connect solar infrastructure on the south side of the West Branch of the White River in Wisconsin. The West Branch is a Class 1 trout stream with naturally reproducing Brown, Rainbow and Brook trout. The project proponent's plans included boring under the West Branch and pull power collection cables through to the other side at two boring sites. The boring resulted in a "frac-out" and over 100 gallons of bentonite drilling lubricant erupted onto the bank and into the stream. The operation was stopped, containment barriers were put in place and the bentonite vacuumed from the bank and stream bottom. Bentonite is non-toxic, but its very small particles catch in the gills of fish swimming through a cloud of settling material, suffocating them.

Drilling operations are now on hold until spring 2023, allowing time for Wisconsin Department of Natural Resources and the project proponent to rewrite the boring procedures for wetlands following a subsurface water study. We request the BLM require subsurface water studies prior to drilling, blasting, or boring through or under any waterways including but not limited to artesian wells, seeps, and springs.

The potential discharge of liquids and effluents from solar power projects could have negative effects on (1) water quality in local streams and reservoirs and groundwater, (2) aquatic organisms, and (3) soil erosion. In particular, any chemicals released as part of boiler or cooling-tower blow down and storm water runoff are of concern. We request the BLM provide a more in-depth analysis on the source of allocatable water, water use and its potential effects on local communities and fish and wildlife.

IV. **The BLM should reconsider the criteria used to identify solar energy priority areas to better incentivize development where it would have the least impact.**

We ask that the agency revisit the process and criteria by which it identifies areas to prioritize for development. As described below, the agency should focus development in areas where there will be the lowest impact to resources. Further, identification of priority areas must be fully informed by the economic feasibility of development, including available transmission and storage.

The BLM should clearly identify the criteria by which it will identify priority areas, acknowledging that such criteria may vary geographically. To the extent the BLM relies on state

[115] Idaho Department of Water Resources. (2022, Oct 21). *Amended Snake River Basin Moratorium Order*. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://idwr.idaho.gov/wp-content/uploads/sites/2/legal/SRB-Moratorium/SRB-Moratorium-20221223-Second-Order-Granting-Petitions-to-Intervene.pdf

and field office staff to help identify priority areas, these criteria must be clearly communicated and analyzed. The approach should be collaborative, involving Tribes, states, and stakeholder interests. Several states have already embarked on mapping and siting prioritization efforts that the BLM should evaluate in the Solar PEIS alternatives. For example, the Oregon Department of Land Conservation and Development worked to develop a mapping resource called the Oregon Renewable Energy Siting Assessment (ORESA),[116] and a group of stakeholders have come together to develop siting prioritization guidelines.[117]

We encourage the BLM to consider adopting the approach taken in the preparation of the Arizona Restoration Design Energy Project (RDEP) EIS, which considers resource impacts, transmission capacity, and environmental justice concerns in identifying priority areas. The RDEP EIS, which resulted in the designation of the Agua Caliente SEZ, used an informed and collaborative approach to designating the new SEZ based on best available science, including proximity to transmission infrastructure. The Solar PEIS should incorporate the Agua Caliente SEZ as a priority area for solar development.

a. The identification of priority areas should be resource driven.

The best way to limit impacts to important resources, including fish and wildlife habitat, is to site development in a way that avoids these impacts in the first place. The 2012 Western Solar Plan properly prioritized areas with limited resource values for SEZs and the agency should carry this practice forward in this planning effort, avoiding incompatible resource values and conflicts. Further, we ask that the agency consider the additional resources we identified in our discussion of exclusion criteria above.

The agency must use the best available science, including resources we have referenced in these comments, and improved mapping technology to identify areas with minimal resource conflict and already disturbed areas that may be suitable for solar development, including degraded lands, brownfields, and former mine sites.

The BLM should also consider activity and development near proposed priority areas. Concentrating energy development on lands within and immediately adjacent to highly altered landscapes rather than in the unprotected buffer zones around lands with high ecological integrity will help to contain the human footprint on the landscape and minimize detrimental effects to fish, wildlife and ecosystem services.

---

[116] Oregon Department of Energy. Energy in Oregon. (Accessed Jan 2023). *Oregon Renewable Energy Siting Assessment (ORESA)*. https://www.oregon.gov/energy/energy-oregon/Pages/ORESA.aspx

[117] Oregon Consensus. (Accessed Jan 2023). *Oregon Smart Siting* Collaboration. Portland State University. https://oregonconsensus.org/projects/oregonsmart-siting-collaboration/

b. When identifying potential areas to prioritize for development, consider economic feasibility, especially proximity to existing transmission, electric infrastructure, and grid capacity.

To effectively incentivize development, the BLM must evaluate the economic viability of developing priority areas based on proximity to electric infrastructure and grid capacity. To the extent possible, priority areas should be near existing transmission infrastructure, particularly substations, where there is capacity and demand for energy. Rather than conducting a transmission assessment for already-identified SEZs, as the agency did for the 2012 Western Solar Plan, we urge the BLM to consider transmission infrastructure, proximity, and capacity early to initially identify potential priority areas.

As part of this effort, the BLM should include an analysis of existing grid capacity and infrastructure that will inform a reasonably foreseeable development scenario for energy transmission and generation facilities. Understanding that grid capacity is a complex and challenging process, the agency should avail itself of the expertise of other federal agencies, especially the Department of Energy (DOE). Under Section 50301 of the Inflation Reduction Act, Congress appropriated $125 million to the DOE to develop programmatic environmental documents, procure technical or scientific services for environmental reviews, develop environmental data or information systems, and engage with stakeholders and communities. We urge the DOE to utilize these dollars to better understand transmission demand and capacity across the West, informing the BLM's process of siting and permitting in a way that reduces resource impacts while meeting clean energy demands.

Additionally, we suggest the BLM review the following resources as it considers transmission capacity:

- U.S. Department of Energy, National Electric Transmission Congestion Study (September 2020) available at https://www.energy.gov/sites/default/files/2020/10/f79/2020%20Congestion%20Study%20FINAL%2022Sept2020.pdf.
- NorthernGrid, 2020-2021 Regional Transmission Plan for the 2020-2021 (December 2021), available at https://www.northerngrid.net/private-media/documents/2020-2021_Regional_Transmission_Plan.pdf
- National Renewable Energy Laboratory, Interregional Renewable Energy Zones in National Transmission Analysis (September 2022), available at https://www.nrel.gov/docs/fy22osti/83924.pdf
- Argonne National Laboratory, Geospatial Energy Mapper (January 2023), https://www.anl.gov/article/a-new-tool-helps-map-out-where-to-develop-clean-energy-infrastructure
- Relevant interconnection queues of the Regional Transmission Operator (RTO), Independent System Operator (ISO), or relevant utilities' interconnection queues

If the agency does not adequately account for transmission capacity and potential, developers will likely seek to site projects outside of priority areas, where resource impacts may be higher. Further, by incentivizing development where there is capacity on existing or permitted transmission infrastructure, the BLM will limit the potentially significant impacts associated with new transmission and interconnection lines.

c. Maximize incentives for development in priority areas.

The BLM should consider ways to more effectively incentivize development in priority areas, including reducing costs and regulatory burdens. Specifically, the agency should consider the following incentives:

- Reduce the costs and time associated with National Environmental Policy Act compliance by including a robust analysis in the Solar PEIS to which future projects could tier. The BLM could also consider establishing a categorical exclusion for certain projects that would not have a significant effect on the human environment.
- Consider reducing mitigation requirements for projects sited in priority areas, where resource impacts would be minimal or negligible.
- Continue prioritizing project applications within priority areas and ensure staff is applying the prioritization policy consistently (see more discussion below on screening and variance process).
- Expand existing and new incentives to additional SEZs identified in all eleven western states.
- Rent payment start date for successful bidders in competitive leasing areas that coincides with the start of project construction.
- A two-tiered rent system with lower rents in priority areas and higher rents in variance areas.

With a decade's worth of experience implementing the 2012 Western Solar Plan, the BLM should consider what has and has not been effective in incentivizing projects in priority areas. As the BLM noted, most of the solar projects permitted in the last decade are in variance areas rather than SEZs, indicating that the effort to incentivize development in low-impact areas has not been ineffective.[118] The agency should examine the preference for variance areas to better understand how to incentivize development in priority areas.

[118] Notice of Intent to Prepare a Programmatic Environmental Impact Statement to Evaluate Utility-Scale Solar Energy Planning and Amend Resource Management Plans for Renewable Energy Development, 87 Fed. Reg. 75284 75,286.

V. **A Variance Process is needed to focus BLM resources on ROW applications with the highest probability of success and to minimize impacts to other resource values.**

One of the purposes of the variance process outlined in the 2012 PEIS Appendix B, Section B.5.3., as modified by Instruction Memorandum (IM) 2023-15 *Variance Process for Solar Applications*, is to provide guidance for BLM to make consistent preliminary determinations on the feasibility of successful ROW applications in identified variance areas prior to undergoing an expensive and time-consuming NEPA process.[119] This preliminary evaluation of ROW applications and the administrative record it provides is critical to support the BLM's decision-making under the Federal Land Policy Management Act (FLPMA) to deny a ROW application prior to completing a NEPA process when a proposed project is located where solar development would be clearly incompatible with the area's resources and resource uses.[120] Although counterintuitive, the variance process serves to streamline permitting and deployment of solar development on public lands by focusing BLM resources on ROW applications with the fewest resource conflicts and highest probability of success.

The up-front project and resource-specific documentation provided by the ROW applicant and the pre-consultation coordination process required for the variance process as outlined in the 2012 PEIS Appendix B, Section B.5.3. and IM 2023-15 provides for both the identification and potential resolution of known resource conflicts. This information gathering and inter-agency coordination process is critical to fulfilling BLM's mission to avoid and minimize impacts to other important resources during solar development and goes well beyond the solar and wind ROW screening and prioritization criteria provided in IM 2022-07 *Initial Screening and Prioritization for Solar and Wind Energy Applications and Nominations/Expressions of Interest* and 43 CFR § 2804.35.[121]

While the prioritization criteria reflected in IM 2022-07 Attachment 2 and 43 CFR 2804.35(a)-(c) include general categories of priorities for processing ROW applications based on potential resource conflicts, several of the "medium priority" application criteria are so general in nature that they in some cases include sensitive resources incompatible with utility-scale solar development.[122] For example, criteria 43 CFR 2804.35(b)(5) – *Sensitive Habitat Areas, including*

---

[119] US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications*. *IM 2023-015*. https://www.blm.gov/policy/im-2023-015

[120] US Department of the Interior. Bureau of Land Management. (Accessed Jan 2023). *Solar Energy Permitting and Program Resources*. https://blmsolar.anl.gov/non-competitive/specific/variance/#determination

[121] US Department of the Interior. Bureau of Land Management. (2022, March 17). *Initial Screening and Prioritization for Solar and Wind Energy Applications and Nominations/Expressions of Interest*. *IM 2022-027*. https://www.blm.gov/policy/im-2022-027; National Archives and Records Administration. Code of Federal Regulations. (2023, Feb 14*). § 2804.35 How will the BLM prioritize my solar or wind energy application?* https://www.ecfr.gov/current/title-43/subtitle-B/chapter-II/subchapter-B/part-2800/subpart-2804/section-2804.35

[122] Instruction Memorandum 2022-027. (Accessed Jan 2023). *Initial Screening and Prioritization Checklist Applications for Rights of Way Grants*. https://www.blm.gov/sites/default/files/docs/2022-04/IM2022-

important species use area, riparian areas, or areas of importance for Federal or State sensitive species incorporates big game migration corridors, stopover areas, and bottlenecks – areas that are clearly incompatible with solar development.[123]

For habitats such as these that may not be mapped as exclusion areas or specifically identified as "low priority" per 43 CFR § 2804.35(c), the variance process outlined in the 2012 PEIS Appendix B, Section B.5.3. and IM 2023-15 provides a necessary backstop to ensure that impacts to these habitats are avoided and minimized consistent with other BLM policy. For example, IM 2023-05 *Habitat Connectivity on Public Lands* requires BLM to coordinate with state fish and wildlife agencies and Tribes to identify habitat connectivity areas – such as big game migration corridors, stopover areas, and bottlenecks – and manage these areas to conserve intact, connected habitat.[124]

The increased scrutiny provided by the variance process outlined in the 2012 PEIS Appendix B, Section B.5.3. and IM 2023-15 provides for the identification and potential resolution of known resource conflicts prior to undertaking the NEPA process – saving both the applicant and BLM time and money and facilitating avoiding and minimizing impacts to sensitive resources. We strongly encourage BLM to incorporate alternatives in the PEIS that maintain a rigorous variance process in the expanded Western Solar Plan to: 1) further incentivize expanded development in priority leasing areas, 2) guide allocation of BLM staff time and resources to ROW applications in variance areas with the highest probability for success, and 3) avoid and minimize impacts to sensitive habitats and resources during solar development.

a. Incorporate an update to the Variance Process in the Solar PEIS to provide consistency and regulatory certainty beyond the life of IM 2023-15.

Inclusion of the variance process in the alternatives for this PEIS is critical to updating the 2012 Western Solar Plan because the majority of solar development on public land since completion of the 2012 PEIS has occurred within variance areas.[125] While updating priority leasing area criteria to include consideration of economic feasibility and proximity to existing transmission and other needed infrastructure should alleviate future development pressure within variance

---

027_att2.pdf; National Archives and Records Administration. Code of Federal Regulations. (2023, Feb 14*). § 2804.35 How will the BLM prioritize my solar or wind energy application?* https://www.ecfr.gov/current/title-43/subtitle-B/chapter-II/subchapter-B/part-2800/subpart-2804/section-2804.35

[123] Sawyer, H., N.M. Korfanta, M.J. Kauffman, B.S. Robb, A.C. Telander and T. Mattson. 2022. Trade-offs between utility-scale solar development and ungulates on western rangelands. *Frontiers in Ecology and the Environment* 20(6), 345-351. https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2498

[124] U.S. Department of the Interior. Bureau of Land Management. (2022, Nov 18). *Habitat Connectivity on Public Lands*. *IM 2023-005, Change 1*. https://www.blm.gov/policy/im-2023-005-change-1; US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications*. *IM 2023-015*. https://www.blm.gov/policy/im-2023-015

[125] Federal Register. (2022, Dec 8). *Notice of Intent to Prepare a Programmatic Environmental Impact Statement to Evaluate Utility-Scale Solar Energy Planning and Amend Resource Management Plans for Renewable Energy Development*. https://www.govinfo.gov/content/pkg/FR-2022-12-08/pdf/2022-26659.pdf

areas (see the priority leasing area discussion above), maintaining a robust variance process in the PEIS will serve to further incentivize development in priority leasing areas.

Incorporating an updated variance process in the post-PEIS Western Solar Plan and amended RMPs within covered states is also critical to maintaining a consistent variance process beyond the life of IM 2023-015 and for providing regulatory certainty for the life of the updated 2012 Western Solar Plan. The BLM should pause any pending variance reviews that did not have a process determination as of the December 8, 2022 (publication of the NOI to initiate scoping) and apply the updated variance process to those and subsequent applications. In addition, we support a post-PEIS variance process rulemaking that reflects the guidelines described in Appendix B, Section B.5.3., as modified by IM 2023-15 and our recommendations below.

b. Improve the efficiency of project-specific NEPA reviews in Variance Areas by identifying preferred mitigation strategies and mitigation banking opportunities.

The existing variance process requires the applicant to coordinate with other regulatory agencies and document that their proposed project can meet a variety of established programmatic design features to avoid and minimize impacts to other resources and uses.[126] The applicant must also document that the project will minimize or avoid adverse impacts to specific resources, including: hunting, fishing, and other wildlife -related activities; important fish and wildlife habitats and migration/movement corridors; lands with wilderness characteristics; surface and groundwater dependent ecosystems and associated special status species; and lands donated or acquired for conservation purposes or mitigation.[127] In addition, the 2012 Western Solar Plan and IM 2023-15 include specific variance protocols for desert tortoise and Greater sage-grouse that explicitly require compensatory mitigation in certain circumstances.[128,129]

---

[126] US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications. IM 2023-015*. https://www.blm.gov/policy/im-2023-015; US Department of the Interior. Bureau of Land Management. Solar Energy Permitting and Program Resources. (Accessed Jan 2023). *2012 Solar PEIS ROD Design Features*. https://blmsolar.anl.gov/mitigation/solar-peis/

[127] US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications. IM 2023-015*. https://www.blm.gov/policy/im-2023-015; https://blmsolar.anl.gov/non-competitive/specific/variance/#factors

[128] US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications. IM 2023-015*. https://www.blm.gov/policy/im-2023-015; US Department of the Interior. Bureau of Land Management. Solar Energy Permitting and Program Resources. (Accessed Jan 2023). *Variance Protocol for Desert Tortoise*. https://blmsolar.anl.gov/non-competitive/specific/variance/factors/desert-tortoise/

[129] US Department of the Interior. Bureau of Land Management. (2022, Dec 2). *Variance Process for Solar Energy Applications. IM 2023-015*. https://www.blm.gov/policy/im-2023-015; US Department of the Interior. Bureau of Land Management. Solar Energy Permitting and Program Resources. (Accessed Jan 2023). *Variance Protocol for Greater Sage-Grouse*. https://blmsolar.anl.gov/non-competitive/specific/variance/factors/sage-grouse/

To address mitigation requirements for SEZs (now called designated leasing areas),[130] the 2012 Western Solar Plan laid the groundwork to establishing Solar Regional Mitigation Strategies (SRMSs) to streamline development in these areas. SRMSs currently exist for designated leasing areas in Arizona, Colorado, and parts of Nevada, and additional SRMSs are planned for designated leasing areas in portions of Utah and New Mexico.[131]

Although compensatory mitigation is clearly contemplated and, in some cases, explicitly required to avoid and minimize adverse impacts to specific resources from solar development in variance areas, no SRMSs or BLM-approved habitat-specific or species-specific mitigation banks exist to streamline project-specific NEPA reviews in variance areas. We strongly encourage BLM to evaluate in the PEIS preferred mitigation strategies in variance areas for the specific resources identified in the 2012 Western Solar Plan and IM 2023-15, and to facilitate landscape-scale cross-jurisdictional mitigation planning and banking where appropriate to offset adverse impacts from solar development in these areas. Identifying preferred mitigation opportunities and establishing habitat- and species-specific mitigation banks, where appropriate, would focus and streamline NEPA reviews for projects in variance areas.

VI. **The BLM should revisit mitigation requirements for solar energy on public lands that incentivize development in priority areas while also ensuring impacts to resources are avoided, minimized and, when appropriate, offset.**

The BLM should employ the full mitigation hierarchy, avoiding impacts of solar development to the greatest extent possible, minimize impacts that are unavoidable, and, to the extent impacts can neither be avoided or minimized, requiring compensation. Unavoidable direct and indirect adverse impacts to fish and wildlife resources from present and reasonably foreseeable development should be identified, analyzed, and addressed through compensatory mitigation in subsequent project-level NEPA analyses, and RMPs should include a consistent approach and ensure that authorization of projects will appropriately mitigate impacts that result in a net conservation benefit.

This approach is consistent with BLM's existing policies on mitigation, including BLM's Manual Section MS-1794 and Handbook H-1794-1. As noted in these policies, the agency has the authority under the FLPMA to require mitigation to manage lands for multiple use and sustained yield and in a way that prevents unnecessary and undue degradation.[132]

---

[130] Instruction Memorandum 2022-027. (Accessed Jan 2023). *Initial Screening and Prioritization Checklist Applications for Rights of Way Grants*. *43 CFR § 2804.12 (b)(2)*. https://www.blm.gov/sites/default/files/docs/2022-04/IM2022-027_att2.pdf

[131] US Department of the Interior. Bureau of Land Management. Solar Energy Permitting and Program Resources. (Accessed Jan 2023). *Mitigation*. https://blmsolar.anl.gov/mitigation/

[132] 43 U.S.C. §§ 1702(c), 1702(h), 1732(b).

c. Review existing required design features in light of technological advances and best available science.

The 2012 Western Solar Plan provides extensive design features that apply to all utility-scale solar development as a means of avoiding and minimizing impacts. The BLM should review these requirements for consistency with technological advances. Further, the agency should consider whether, in light of research and studies conducted over the last decade, these features adequately account for and mitigate the impacts of solar development.

d. Consider reducing mitigation requirements in priority areas where resource impacts would already be minimal.

If the BLM appropriately prioritizes development in areas with low resource value, mitigation requirements should be minimal. Limiting requirements to avoid, minimize, and offset impacts would reduce the permitting and regulatory costs for developers, further incentivizing projects in priority areas. The BLM should, of course, only reduce mitigation requirements if impacts would, in fact, be limited.

VII. Conclusion

Again, we thank the BLM for initiating a PEIS to provide a comprehensive, landscape-level, smart-from-the-start approach to effectively balance resource management and conservation needs with new renewable energy on public lands. We believe new policy and collaborative approaches are needed to build on previously disturbed land, build-out micro-stations to minimize remote transmission, and combine renewable power with other land uses, like agriculture or rooftop solar, to minimize the adverse impacts from utility-scale renewable energy development on public lands. These new approaches would reduce habitat fragmentation, loss of sagebrush ecosystems, loss of connectivity to seasonal habitats for other aquatic and terrestrial species and avoid negative impacts to big game and fish passage and migration while also alleviating human land use conflicts.

With the regulatory landscape in so much flux right now, this provides the BLM opportunity to re-think suitability criteria for utility-scale solar deployments on our western landscapes and emphasize placing solar build-outs closer to homes, businesses and other urban areas.

We look forward to working closely with the BLM on effective ways to expand our nation's capacity for producing solar energy while continuing to ensure robust protection of our public lands and waters.

Sincerely,

Backcountry Hunters and Anglers
Colorado Wildlife Federation

Fly Fishers International
Idaho Wildlife Federation
National Deer Association
National Wildlife Federation
Nevada Wildlife Federation
North American Grouse Partnership
The Nature Conservancy
The Wildlife Society
Theodore Roosevelt Conservation Partnership
Trout Unlimited
Trout Unlimited National Leadership Council – Native Trout Workgroup
Trout Unlimited National Leadership Council – Responsible Mining and Energy Workgroup
Wyoming Wildlife Federation

Cc:

Deb Haaland, Secretary, Department of the Interior
Tommy Beaudreau, Deputy Secretary, United States Department of the Interior
Laura Daniel-Davis, Principal Deputy Assistant Secretary - Land and Mineral Management, U.S. Department of the Interior
Tracy Stone-Manning, Director, Bureau of Land Management
Nada Culver, Deputy Director of Policy and Programs, Bureau of Land Management
Shantha Ready Alonso, Director of Intergovernmental and External Affairs, U.S. Department of the Interior