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April 18, 2024

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

Submitted electronically at eplanning.blm.gov

Re: Bureau of Land Management Draft Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Development (89 Fed. Reg. 3687)

Dear Mr. Bluma:

Please accept these comments on behalf of the undersigned organizations on the Bureau of Land Management's (BLM) Draft Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Development (Solar PEIS). On behalf of our members, we share the goal of this programmatic effort to identify lands suitable for utility-scale solar development with fewer conflicts with lands and waters, fish and wildlife and habitat, cultural and Indigenous resources, and recreational opportunities. To this end, we offer the following comments.

I. Introduction and Summary

The BLM has a once-in-a-generation opportunity to develop a comprehensive plan to guide the deployment of solar energy on public lands throughout the West consistent with its multiple-use, sustained yield mission under the Federal Land Policy Management Act (FLPMA). The Solar PEIS, in conjunction with subsequent rules, must provide BLM state, district, and field office managers with the tools needed to make informed right-of-way (ROW) application decisions based on sound resource-based criteria, not political pressure.

The BLM balances its multiple-use mandate under FLPMA, including its authority to issue ROWs, by making land use plan decisions for lands and reality actions. Land use planning, specifically the designation of ROW open, avoidance, and exclusion areas, is the BLM's most efficient tool for ensuring the agency is reviewing and authorizing projects in the areas where they have the least conflicts with other resources and therefore the highest likelihood of success. In this PEIS, the BLM can use this fundamental authority to direct utility-scale solar projects to the areas where they will have the fewest impacts on other BLM-managed resources and uses. This approach avoids unnecessary damage to the environment while putting the agency on a path towards achieving Executive Order 14008 and broader decarbonization goals. Further, with the Biden Administration's recent announcement that it has met the Energy Policy Act of 2020's goal of issuing at least 25 gigawatts of electricity by 2025, we urge the agency to ensure future permitting decisions are deliberate, cautious, and fully informed by public comment and the best available science.¹

We are concerned that the BLM's approach in the Solar PEIS will not lead to improved siting of utility-scale solar energy projects, which is the BLM's stated purpose for preparing the Solar PEIS. None of the alternatives as presented will provide regulatory certainty to project proponents and will not streamline development because the design criteria are so vague that their site-specific application may or may not end up being overly restrictive and cost prohibitive (industry will say the same). A better approach would have been to do a higher resolution analysis in the Solar PEIS, more clearly define the priority locations for solar development, and reduce the number of required design features (RDFs) in areas with low resource conflicts.

The Solar PEIS sets up a scenario that will defer most decisions to the project level, which will result in a less efficient permitting process that demands more staff time and has less consistency across the agency. This is essentially a continuation of the variance process from the 2012 Plan.

To help improve the agency's proposal and analysis, we provide the comments below. As discussed in detail below, we suggest the following:

- Adopt an alternative that provides the most efficient means of siting development where it will have the fewest resource impacts and highest likelihood of successful interconnection either by:
 - Actually identifying specific locations with high potential for development where resource conflicts are lowest, or
 - Adopting a modified Alternative 5 that prioritizes responsible development based on established criteria.

¹ 43 U.S.C. § 3004(b); Department of the Interior, 'Biden-Harris Administration delivers historic milestones, new actions for clean energy on public lands,' April 11, 2024, <https://www.blm.gov/press-release/biden-harris-administration-delivers-historic-milestones-new-actions-clean-energy>.

- Expand several proposed exclusion criteria to better protect fish and wildlife habitat, including native and wild fish habitat, big game migration corridors and crucial winter range, and Greater sage-grouse.
- Clarify when and where proposed required design features apply, limiting their application where resource conflicts are low, and revise several specific RDFs to better protect fish and wildlife.
- More clearly and comprehensively address the use of compensatory mitigation to offset unavoidable impacts of solar development, including indirect and cumulative impacts.
- Ensure the reasonably foreseeable development scenario (RFDS) accurately forecasts the distribution of anticipated development across the 11-state planning area and include additional considerations and sources.

II. General Comments

a. **Continue meaningfully engaging Tribes and Indigenous Peoples throughout the planning process and on project-level reviews.**

Public lands are home to landscapes, waters, fish and wildlife, and other resources that carry ecological, cultural and spiritual significance to Tribal and Indigenous Peoples across the region. Such resources have the potential to be harmed or destroyed by solar development.

Given this, we appreciate the agency's efforts to meaningfully engage with Tribes and Indigenous Peoples in its government-to-government consultation and beyond. We urge the agency to continue this engagement consistent with the spirit and the letter of existing laws and 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. We also encourage the agency to take the next step and adopt the principles of Free, Prior, and Informed Consent (FPIC) which honors a deeper level of Tribal engagement.

The BLM must also involve Tribes and Indigenous Peoples at the project level, seeking input early and often on a proposed development and potential conflicts with resources important to Indigenous cultures. This includes, but is not limited to, the resources that may be assumed excluded under proposed Exclusion Criterion Number 17. We do ask that the agency provide additional details and explanation on why it selected Exclusion Criterion Number 17 and the process the agency will use to identify Tribal Interest Areas.

b. **Discuss how the Solar PEIS will align with other priority initiatives and ongoing planning and rulemaking efforts.**

President Biden has set ambitious goals for expanding renewable energy development in order to respond to climate change, including specific direction to the Secretary of the Interior to

increase renewable energy on public lands and waters.² Similarly, Congress has instructed 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—a goal which the Biden Administration recently met.³ Yet we know the United States, and the globe, also face significant biodiversity loss - as President Biden highlighted in 2021 with a call to action in the form of his American the Beautiful initiative.⁴ The agency should discuss how the Solar PEIS will integrate with these priorities, as well as with specific ongoing planning and rulemaking efforts. At a minimum, the agency should address in this PEIS its Greater sage-grouse planning efforts, the Conservation and Landscape Health Rule, updates to Section 368 energy corridors and the Solar and Wind Right-of-Way rule revisions.

c. Maintain adequate staffing for renewable energy coordination offices (RECOs).

Staffing capacity and expertise will be essential to achieving the BLM’s solar RFDS and avoiding unnecessary environmental impacts. The BLM should establish a renewable energy coordination office that oversees the implementation of the solar PEIS. The RECO should include traditional resource subject matter experts as well as experts in solar energy technology and siting. The BLM must have this expertise in-house in order to meaningfully communicate with energy developers and make informed planning and siting decisions for solar energy projects. The regional team should support state and district offices, especially those likely to experience high solar ROW application volumes.

d. The agency should revise and expand its NEPA analysis to support tiering at the project-level.

The PEIS should provide a substantially robust analysis to enable future project-level NEPA analysis to tier to or incorporate by reference the direct, indirect, and cumulative impacts analysis from the PEIS. Unfortunately, throughout Section 5 of the document, the analysis fails to adequately disclose the nature and types of impacts and does not sufficiently analyze the extent to which RDFs would mitigate those impacts. For example, the BLM uses a variation of the following statement under the alternatives analysis for each resource and use: “Updated and more prescriptive design features may reduce the magnitude of impacts in comparison with the No Action Alternative, especially in the five new states where 2012 Western Solar Plan design features are not currently applicable.” This statement does not describe how or the extent to which specific design features would mitigate impacts relative to the no action alternative. In Section 5.14.3, Recreation, the BLM’s impacts analysis relative to design features states: “The BLM has identified design features that will be requirements for all utility-scale

² Tackling the Climate Crisis at Home and Abroad, Executive Order 14,008, 86 Fed. Reg. 7619, 7624 (Feb. 1, 2021).

³ 43 U.S.C. § 3004(b); Department of the Interior, “Biden-Harris Administration delivers historic milestones, new actions for clean energy on public lands,” April 11, 2024, <https://www.blm.gov/press-release/biden-harris-administration-delivers-historic-milestones-new-actions-clean-energy>.

⁴ *Conserving and Restoring America the Beautiful Report*. 2021. <https://www.doi.gov/sites/doi.gov/files/report-conserving-and-restoring-america-the-beautiful-2021.pdf>

solar energy projects on BLM-administered lands subject to the ROD for this Programmatic EIS. The list of design features that have been identified to avoid, minimize, and/or compensate for potential impacts on recreation from solar energy development can be found in Appendix B.14.” This reference to Appendix B would be insufficient for a project level NEPA document to incorporate by reference any information as to how those design features mitigate impacts of utility-scale solar development on recreation.

The PEIS uses this same formula in all subsections describing design features and additional mitigation measures. The BLM should revise the PEIS to specifically describe how the design features in Appendix B and additional mitigation measures will avoid, minimize, and mitigate the anticipated nature and types of impacts for each resource and use, including any differences under the alternatives.

The analysis in Section 5 of the PEIS also assumes a uniform baseline condition and fails to differentiate the magnitude of impacts relative to the varied types of landscape characteristics where the impact may occur. This analysis is essential for understanding the difference in the nature and types of impacts of utility-scale solar in areas that are heavily disturbed or modified compared with relatively undisturbed areas. For example, Section 5.4.1.1 describes the direct and indirect impacts on vegetation as “habitat loss and fragmentation, as well as a wide variety of indirect impacts...Plant communities and habitats affected by direct or indirect impacts from project activities could incur short- or long-term changes in species composition, abundance, and distribution.” These impacts would be greatest on sites without previous anthropogenic disturbance or other prior alterations to the underlying vegetation communities. Section 5.4.1.4.2 under Alternative 4 states that: “by limiting development to previously disturbed lands, Alternative 4 would minimize disturbance to lands with native vegetation that might be developed under Alternatives 1 through 3.” Prioritizing development in disturbed areas would not only avoid new impacts to native vegetation, but also avoid most of the vegetation impacts described in Section 5.4.1.1.4. Accordingly, the BLM should revise the direct, indirect, and cumulative impacts analysis in all sections under Section 5 to clearly distinguish between the nature and types of impacts for solar projects in areas with landscape intactness compared with those that are already disturbed or degraded.

e. Include solar installation lifecycle considerations in the Solar PEIS.

The BLM should address the full lifecycle of solar installations on public lands, including the potential impacts of obtaining raw materials to how operators will dispose of panels upon decommissioning. As we note in our scoping comments, the extraction, manufacturing, transportation, installation, and disposal of solar energy infrastructure will have cumulative impacts on the physical, biological, and human resources in the planning area. The BLM should evaluate and disclose the nature and types of these indirect and cumulative impacts in the Solar PEIS.

At a minimum, the BLM should revise Section 7, Hazardous Materials and Waste, to account for the indirect and cumulative impacts of disposing of solar equipment per the RFDS. Using the RFDS findings that 87,000 to 100,000MW of solar could be deployed on BLM-administered

lands through 2045, and the assumption that there are 2,000 500-watt panels required per MW, then there would be 174,000,000 to 200,000,000 panels needing to be landfilled or recycled upon project decommissioning. The PEIS should disclose how this volume of hazardous materials and waste would impact local and regional waste and recycling facilities.

f. Apply the final Solar PEIS to projects in the earlier stages of the application process.

We recommend the BLM apply the decision from the new solar plan to all solar ROW applications that have not reached one or more of the following stages of the permitting process at the date the ROD is signed:

- Initiated project-level NEPA after publication of a notice of intent in the public register.
- Initiated the variance process.
- Received notice of highest bid under a competitive leasing process

Projects that have not achieved one of the above permitting milestones at the time the ROD for the new solar plan is signed should be subject to all the requirements of the new plan.

III. The BLM should adopt an alternative that provides the most efficient means of siting development where it will have the fewest resource impacts and highest likelihood of successful interconnection.

a. The agency's existing approach does not adequately prioritize solar development in the appropriate locations.

We are concerned that the agency's approach to identifying solar application areas under all alternatives is overly broad and blunt, does not necessarily avoid resource impacts, and is unlikely to increase permitting efficiencies. For example, the agency's use of a 10-mile buffer along existing and planned transmission to identify application areas under Alternatives 3 and 5 includes lands that are not appropriate for solar development for any number of reasons — important fish and wildlife habitat, cultural and Indigenous resources, potential harm to nearby communities, and more.

Similarly, while we appreciate the BLM responding to scoping comments that requested a stronger connection of solar application areas with transmission, Alternatives 3 and 5 would exclude low conflict development areas that are outside the 10-mile buffer but could be economically feasible to develop. For example, we compared the open areas under each alternative with TNC's Power of Place Siting Level 3 suitable areas for solar and found that Alternative 5 would exclude approximately 3 million acres of low conflict solar development areas. The suitable development areas in TNC's model account for the costs associated with transmission interconnection.

Furthermore, given the agency's blunt approach and generic accompanying analysis, we are concerned that BLM will be required to make siting decisions, conduct robust environmental reviews, and determine appropriate mitigation measures at the project level, without the benefit of tiering to this Solar PEIS. This will likely result in inconsistently permitted projects across the West, longer permitting timelines, and the loss of an important tool the agency can use to incentivize development—application streamlining.

As we suggested in our scoping comments, this Solar PEIS provides the agency an opportunity to work with conservation groups, industry, state and local government, and others to identify the areas on the ground that have the greatest likelihood of development—because of proximity to transmission, likelihood of interconnection, transmission capacity, solar resources, proper topography—and the fewest resource conflicts. These areas, once identified, should be prioritized for development over all other public lands.

While we understand the agency's hesitation to delay this Solar PEIS, we urge the BLM to take the additional time and resources now to actually identify those lands that are most appropriate for solar development. In the long run, we believe this will increase permitting efficiencies, reduce agency workloads and better balance multiple uses of public lands.

b. Given the agency's existing analysis and proposals, Alternative 5, with modifications, provides the best approach to minimizing resource impacts and incentivizing responsible development.

Under the agency's existing proposal and analysis, Alternative 5 best achieves the goal of ensuring solar development is focused on the most appropriate areas with the least resource conflicts. We appreciate the BLM's inclusion and analysis of Alternative 5, acknowledging that development should be sited near existing and planned transmission on lands that have already been disturbed and have limited resource values. Focusing solar installations in this way will allow for more responsible development while conserving important wildlife and fish habitat.

Moreover, under Alternative 5, BLM proposes to make approximately 8 million acres across the 11-state planning area available for utility-scale solar development. This is more than ten times the acreage that BLM anticipates will be developed to meet clean energy goals over the next twenty years. Alternative 5 focuses siting while still opening sufficient acreage to meet—and even exceed—clean energy demands.

Because the agency has selected such a generic approach to identifying application areas, the BLM must verify on-the-ground conditions through project-level analysis. Additionally, we urge the agency to incentivize development in low-impact areas through other means (see Section IV(b) below) and expand exclusion criteria to protect high-value habitat and resources (see Section V below). We also urge the agency to apply required design features (RDFs) in a consistent, predictable way that does not undermine the agency's goal of prioritizing development where it will have the least impact (see Section VI below).

We encourage the BLM to incorporate many elements of Alternative 5 into its ROD, and we offer the following examples of how fish and wildlife would be protected, while noting that the approach under Alternative 5 must be paired with expanded exclusion criteria and improved required design features, discussed elsewhere in this comment.

Big Game. Impacts to mapped big game migration corridors and crucial winter range would be minimized under Alternative 5 as compared to the other alternatives. Approximately 730,000 acres of big game migration corridors and 1.8 million acres of big game winter range habitat would be opened for solar development under Alternative 5 (PEIS, Chapter 5, Table 5.4.3-2). This is greatly reduced from BLM's preferred alternative, Alternative 3, which would open solar development on approximately 1.8 million acres of mapped migration corridors and 4 million acres of winter range habitat (PEIS, Chapter 5, Table 5.4.3-3).

Aquatics. Impacts to coldwater fisheries would be minimized under Alternative 5, yet specific native and wild salmonid and anadromous fish habitats need to be avoided and not open for utility-scale land use allocations. Approximately 1.1 million acres of native trout and salmon watersheds would be opened for solar development under Alternative 5 (Figure 1). We highlight some, not all, specific examples below and include some examples in Appendix A. We also present the multi-species assessments across 11 western states, later in the document, as a tool for adopting exclusion criteria for aquatics.



Figure 1. Western solar PEIS Alternative 5 overlaid with native trout and salmon watersheds in the 11 state planning area.

The Owyhee Canyonlands, Oregon is an example of an area potentially open for development under the alternatives in the solar PEIS. Oregon’s Owyhee canyon country is home to native redband rainbow trout, brown trout, chukar, mule deer, elk, large unbroken prairie for the greater sage grouse and the largest free-roaming herd of California bighorn sheep. With such incredible fish and wildlife values, the Owyhee not only nourishes some of eastern Oregon’s most cherished landscapes; it also feeds the traditions of hunters, anglers, ranchers, and other public land users.

While remoteness has long protected the canyonlands, the threats of industrial development, changing climate conditions, and more are aggressively clawing at the Owyhee’s edges. With

one of the fastest-growing urban population areas located at the Owyhee's border, there are new and growing stresses on the canyonlands' ecosystem.

Much of the Owyhee Canyonlands are included in Senator Wyden's Malheur Community Empowerment for the Owyhee Act that would designate roughly one million acres of public lands in the Owyhee as Wilderness. Under BLM Solar PEIS Alternative 3*, lands within and directly bordering the proposed wilderness designation would be available for application for solar development. These areas include lands north of Lake Owyhee, east of the Oregon Canyon Mountains, in the Cottonwood Creek WSA near Red Butte, and along Yapaa Creek (*Alternatives 3 and 5) and Cottonwood Creek south of Highway 20 (Figures 2-3).

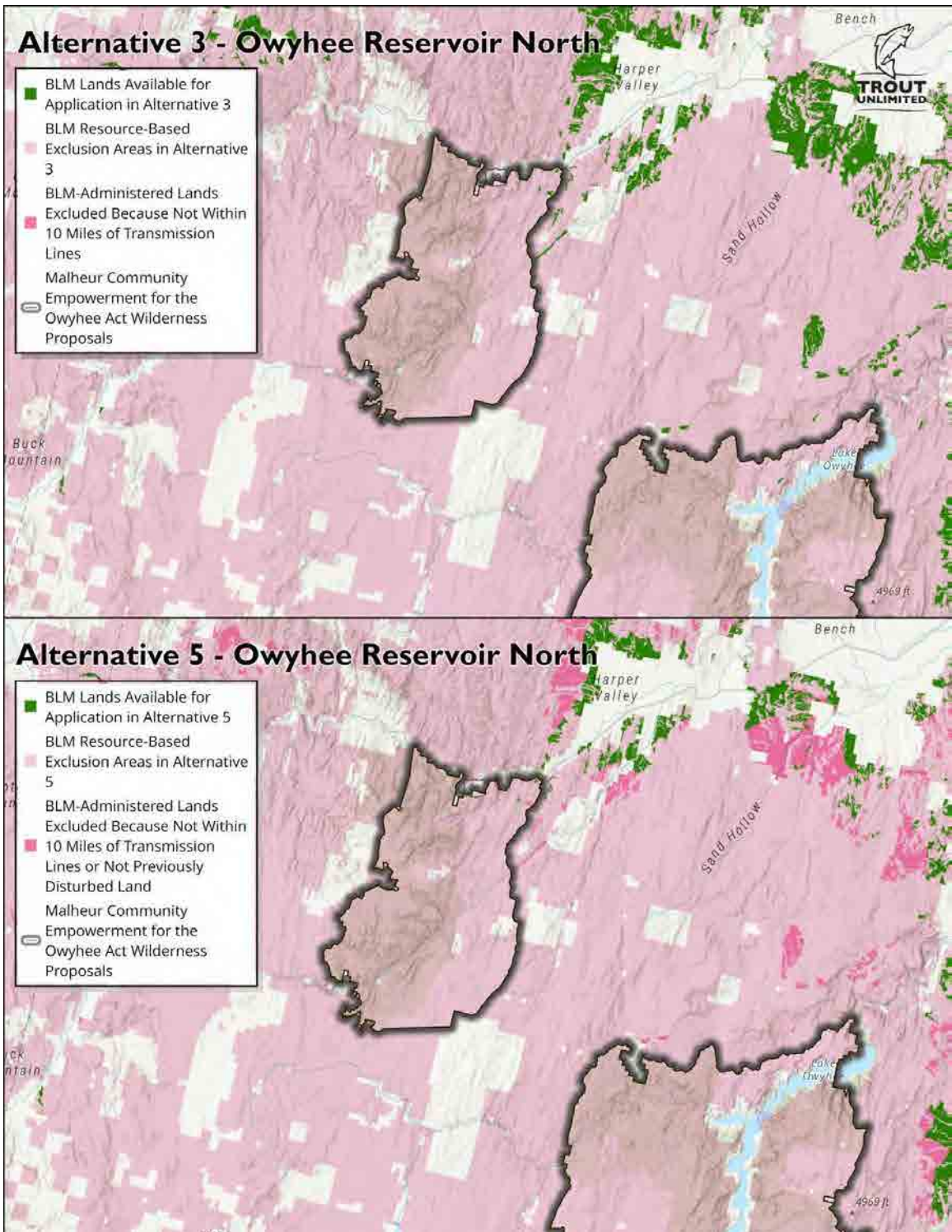


Figure 2. BLMs Alternative 3 and 5 make lands available for solar application in the Owyhee Canyonlands that are included in Senator Wyden’s Malheur Community Empowerment for the Owyhee Act.

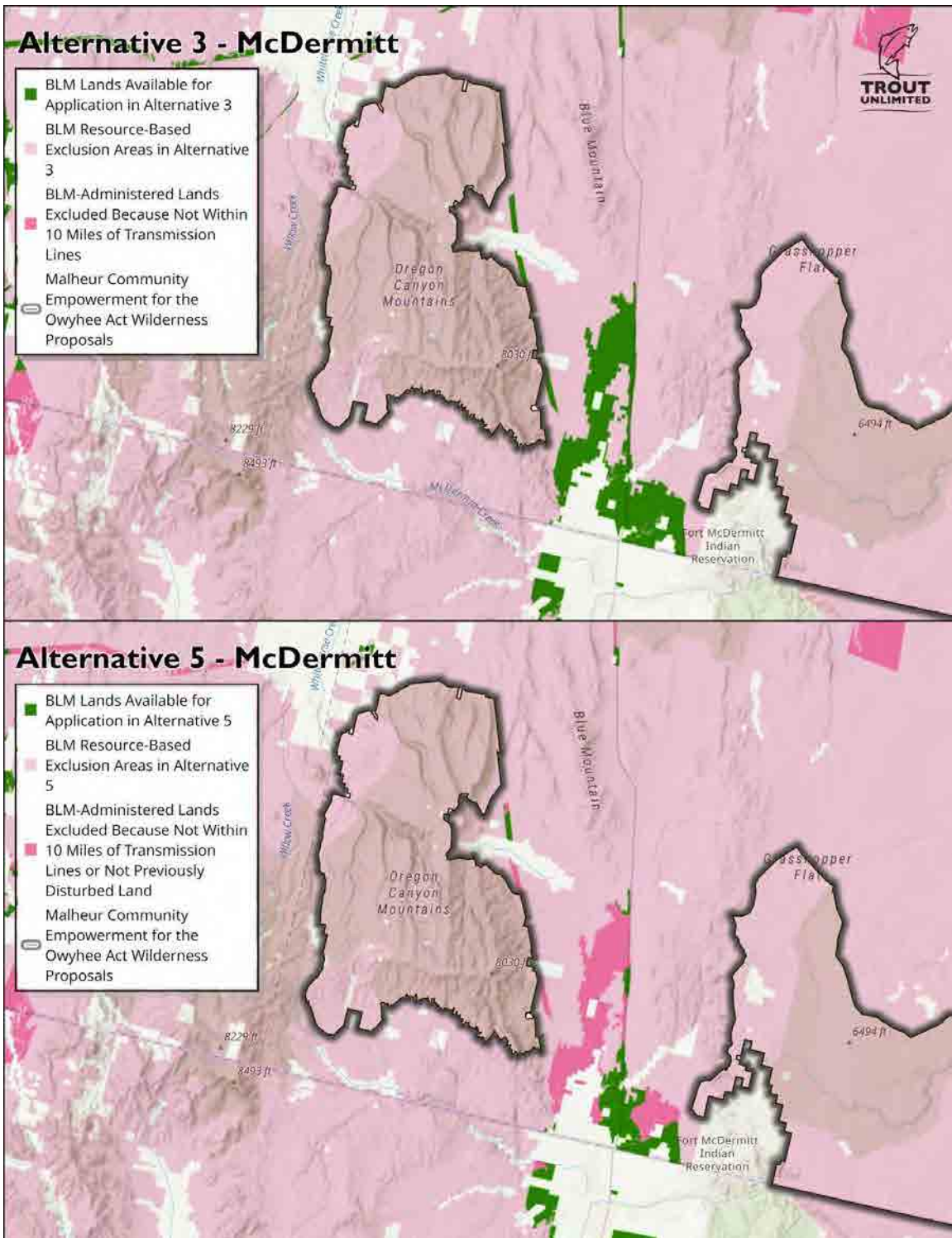


Figure 3. BLMs Alternative 3 and 5 make lands available for solar application in the Owyhee Canyonlands that are included in Senator Wyden’s Malheur Community Empowerment for the Owyhee Act.

While Alternative 5 appropriately avoids some impacts to fish and wildlife habitat by restricting what areas are open to solar applications, to better ensure development is responsibly and effectively sited, we recommend the following suggestions.

- i. The agency should revise its definition of “previously disturbed areas” to better capture vegetative conditions on the ground and incorporate known brownfields.

We appreciate the BLM including previously disturbed lands under Alternatives 4 and 5 to facilitate solar deployment in areas with potentially fewer resource impacts. The approach to identifying these lands used in Section 2.1.1.4 is not, however, of sufficient analytical depth to exclude those previously disturbed lands that may be critical to the survival of multiple species that rely on western rangelands and the related economic benefits that are critical for sustaining western economies. Specifically, the Carter et al. 2017 landscape intactness metrics and remotely sensed thresholds of 40% annual invasive cover do not allow for consideration of degraded but valuable wildlife habitat. Additionally, this approach to identifying previously disturbed lands appears to overestimate the amount of anthropogenic disturbance in many areas, which contributes to areas being identified as disturbed when in fact the landscape is largely intact with minimal disturbance .

We recommend the BLM more clearly define previously disturbed lands and evaluate the appropriateness of alternative data, including data received from other commenters during this public comment period, for use in identifying priority areas. We recommend the BLM’s definition of previously disturbed lands include, but not be limited to:

- Areas with 50% or more surface area disturbed by previous anthropogenic activity, for example, former mine lands, densely roaded areas, and oil and gas wells,
- Lands verified through current remote sensing data as having greater than 40% invasive annuals and on which there is no restoration pathway back to non-invasive vegetative communities.

We strongly encourage the BLM to administer land use allocations on previously disturbed sites, prioritizing these areas for development. According to the Government Accountability Office report 20-238⁵, agency databases include an estimated 533,652 abandoned hardrock mine features, of which 81,845 pose environmental or safety hazards. The remaining abandoned mines sites would not pose an environmental or safety liability and potentially could serve as previously disturbed sites where renewable energy projects may be more suitable than undisturbed landscapes. Notably, many of these sites that do not pose hazards are in dry locations that may also be favorable for solar energy production. For instance, a 2018

⁵ United States Government Accountability Office. Report to the Ranking Member, Subcommittee on Interior, Environment, and Related Agencies, Committee on Appropriations, U.S. Senate. Abandoned Hardrock Mines: Information on Number of Mines, Expenditures, and Factors That Limit Efforts to Address Hazards. GAO-20-238. March 2020. <https://www.gao.gov/assets/gao-20-238.pdf>

report⁶ by the Nevada Division of Minerals estimates that of the 300,000 mining related features that exist in the state, “only” 50,000 are significant physical safety hazards.

Of the hard rock mines that pose environmental or safety hazards, passing Congressional [Good Samaritan legislation](#)⁷ would allow non-liaible, third-party entities to clean up point-source abandoned mine pollution that they had no part in creating. Given the small scale of the initially proposed Good Sam pilot program, a very small subset of abandoned mine lands that would be remediated may provide opportunities for solar development if it was consistent with long-term land use objectives, but for now it’s unlikely that any of the initial pilot projects would be a good fit.

We also ask the agency to clarify how often and through what process the agency will update mapping of previously disturbed areas. On-the-ground conditions can change rapidly and an understanding of current conditions will help the agency better prioritize applications and developers determine where to focus development.

ii. While we do not oppose the use of a general exclusion for areas with at least a 10% slope, the BLM should more robustly explain the change from 5% to 10%.

We appreciate the BLM including an exclusion criterion for slope. Utility-scale solar development in steeper slope areas can lead to increased erosion hazards, sediment loading in watersheds, greater aesthetic impacts, and higher likelihood of conflicts with upland species. The BLM should revise the PEIS to include additional justification for using a 10% slope threshold rather than a 5% slope threshold, which the 2012 Western Solar Plan used.

IV. Regardless of the agency’s alternative selection, we urge the BLM to prioritize development where it will have the fewest resource impacts.

The agency should incentivize development in areas where it will have the least harm through a variety of mechanisms. The BLM should implement a pre-screening requirement whereby developers and the agency can ensure a project is appropriately sited and makes clear to a project proponent that a project will be prioritized if it avoids impacts. Further, the agency should prioritize the review of applications that meet certain criteria, discussed below.

Many of the undersigned groups submitted comments on the BLM’s Proposed Rule on Rights-of-Way, Leasing, and Operations for Renewable Energy (88 Fed. Reg. 39726) (Renewable ROW Comments), attached and incorporated by reference here. In these comments, we urged the agency to use a variety of voluntary and procedural means of prioritizing development in priority areas, including through the use of reduced rents and fees, extended term lengths,

⁶ Nevada Division of Minerals. Nevada Abandoned Mine Lands Physical Hazards Report. State of Nevada Commission on Mineral Resources. April 2019. https://minerals.nv.gov/uploadedFiles/mineralsnvgov/content/Programs/AML/2018_NDOM_AML_Final_20190430.pdf

⁷ Trout Unlimited’s Good Sam action alert. 2024. <https://www.tu.org/good-samaritan/>

removal of the competitive leasing requirement, and prioritized application review for projects in priority areas. While we acknowledge the BLM has issued its final Renewables ROW Rule, we believe our comments on the proposed rule still provide useful recommendations in this context and for the BLM as it considers the best way to avoid impacts of solar development.

In addition to the Renewable ROW Comments, we offer the following suggestions for incentivizing development in low-impact areas.

a. Implement a pre-screening process to guide developers to project locations with the least resource impacts.

In the Solar PEIS, with the variance process replaced with a screening analysis, a pre-application analysis tool would facilitate more efficient, effective and transparent leasing and permitting. By expecting developers and the BLM to screen projects for potential conflict areas upfront (Figure 4), project proponents and agencies can avoid investing significant resources in problematic applications that could otherwise avoid sensitive areas. Moreover, a pre-application screening tool will assist agencies in identifying and prioritizing those applications that have the fewest resource conflicts, as well as provide constructive feedback that applicants can use to revise proposals in order to ensure the greatest likelihood of success. The BLM should engage state and local governments, including state wildlife agencies, in the pre-screening process. This type of 'early and often' upfront coordination is essential to balance renewable energy development with conservation and avoid mistakes that we have seen with other extractive uses, such as oil and gas leasing. Additionally, the PEIS should use the prioritization and screening approach outlined in Instruction memoranda (IM) 2022-017 and 2023-015, including the initial screening criteria and prioritization checklist in IM 2022-017, as a basis for any unmapped priority area framework.

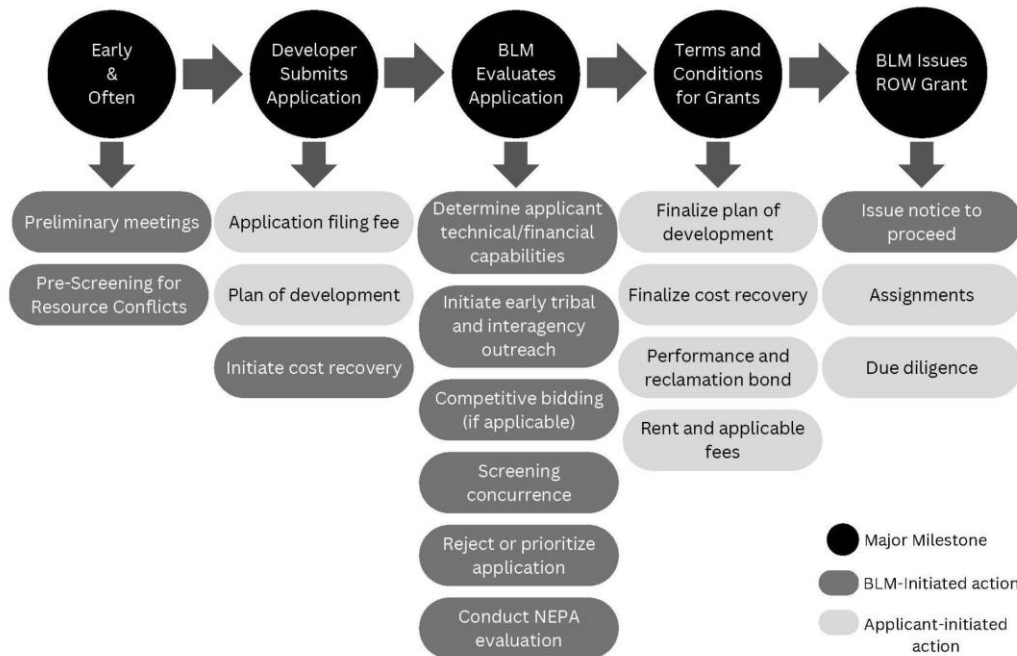


Figure 4. Proposed BLM ROW Applicant Process to guide developers to project locations with the least resource impacts.

b. Prioritize reviewing applications that meet certain criteria as a means of incentivizing development on low-conflict areas.

In lieu of identifying specific areas in which to focus development, as recommended in our scoping comments and discussed in Section III(a) above, the BLM should establish a process by which the agency will prioritize proposed projects. Doing so will help focus developers and agency resources on projects that will have the least resource conflicts. We offer the following recommendations on the criteria the agency should consider for this process.

i. Prioritize review of applications that have been pre-screened.

To the extent it is discretionary on the part of the developer, the agency should prioritize reviewing applications that have gone through the pre-screening process, discussed in Section IV(a) above. Early and often conversations between the BLM and a project proponent will help ensure proper siting and mitigation of an installation. Early review of pre-screened projects will help incentivize participation in that process and responsibly sited projects.

ii. Prioritize reviewing applications within previously disturbed areas.

To the extent the agency opens more than only previously disturbed areas to development, we urge the agency to prioritize reviewing applications within these areas. Reviewing project proposals within previously disturbed areas will incentivize developers to focus activity where there are fewer resource conflicts. This recommendation is consistent with our scoping comments and the Renewable ROW Comments (see attached).

iii. Transmission proximity and interconnection.

The BLM should consider both proximity to transmission as well as the likelihood of interconnection, which depends on other factors like capacity and line ownership/use. Nearness to transmission facilities is not alone a strong indicator of whether industry will propose a project or whether the agency should issue a permit. This recommendation is consistent with our scoping comments and the Renewable ROW Comments (see attached).

iv. Reduce rental rates and fees for projects that avoid resource conflicts.

Consistent with our comments on the Renewables ROW rule, we urge the agency to incentivize development in low impact areas through the reduction of rental rates and fees. We refer the agency to our attached comments for more detail.

v. Limit the applicability of RDFs where resource impacts are low.

We applaud the agency's effort to minimize the impacts of development through its proposed RDFs. While we have suggestions for improvement for several RDFs—see Section VI below—we suggest the agency limit the applicability of RDFs where there are few resource conflicts. If a developer proposes a project in an area with limited resource values, none or only certain RDFs should apply. For example, projects sited on brownfields should not be subject to the same requirements to avoid and minimize impacts as a project in important fish or wildlife habitat. There are fewer resources to impact and, as a result, few resources to offset.

Of course, for such incentivization to be effective, the agency must clearly state when and where developers would not be required to implement RFDs. Industry must be able to anticipate and account for potential regulatory costs and benefits when evaluating siting options.

vi. Prioritize projects that have the greatest likelihood of technical and financial capability.

The BLM should prioritize projects that are the most likely to actually be developed and generate power. The agency already considers technological and financial capability as grounds

for denying a permit.⁸ A similar approach should be adopted here for projects that the agency is considering approving. A project proponent could demonstrate technical and financial capability in a number of ways, including sharing a power purchase agreement, previous project success or proof of financial commitments.

vii. Prioritize projects that do not harm nearby communities.

The BLM's prioritization decision-making process should account for whether a project developer has established a community benefits agreement with potentially affected communities. An executed community benefits agreement should contribute to a higher prioritization outcome.

V. The agency's proposed exclusion criteria must be expanded to appropriately limit impacts to fish and wildlife habitat.

The agency's proposed exclusion criteria do not provide adequate protections for fish and wildlife habitat. This is especially true considering the agency's blunt means of identifying areas open for development, as discussed above. For the most part, the agency proposes to rely on protections outlined in existing resource management plans—most of which are decades old and rely on outdated science and on-the-ground conditions. Amending and revising these plans takes resources the BLM often does not have and years to complete.

One benefit of this programmatic approach is the agency's ability to efficiently amend all plans to protect fish and wildlife from the harms posed by utility-scale solar development and we urge the BLM to seize this opportunity to do so more effectively in the Solar PEIS. We offer the following specific suggestions.

We also ask that the agency provide a rationale and discussion for the exclusion criteria selected. As it is drafted, the Solar PEIS only addresses exclusion criteria in Table 2.1-3 and several footnotes. A more robust discussion of why the agency selected the criteria it did would help inform the public at the programmatic and project level and provide more notice to industry.

a. Exclude all native and wild salmonid and anadromous fish habitats.

Since this programmatic planning effort provides updates that respond to changes that have occurred over the 11 years since the BLM issued the Western Solar Plan the agency's proposed exclusion criteria must be expanded to limit impacts to fish and wildlife habitat, especially in the northern latitude states where the likelihood of overlapping with sensitive habitat increases. While reducing carbon emissions is essential to combat climate change and its impacts on native and wild salmonids and anadromous fish, the push to build out renewable energy infrastructure across federal land must be done thoughtfully and not at the expense of native and wild trout and salmon. According to Caro et al., we need to be mindful that climate

⁸ See 43 C.F.R. 2804.26(a)(5)(C).

change is secondary to habitat loss, fragmentation, degradation and overexploitation as the primary cause for biodiversity loss and the changes we are witnessing across landscapes.⁹

Native trout are indicators of watershed integrity.¹⁰ Trout evolved strategies to respond to disturbance (such as fire, drought, and other natural processes),¹¹ but their resilience is increasingly constrained by human-caused impacts such as habitat loss and fragmentation that reduce access to refuge habitats and reduce ability to recolonize after natural disturbance processes.^{12,13,14,15} The amount and distribution of habitat and habitat preference of the species in question plays a role in population resilience and survivability. Equally important strongholds constituted a small numerical percentage of patches (5%–21%), yet encompassed the large majority of occupied habitat by volume (72%–89%) and their protection could have significant conservation benefits for trout¹⁶.

For native trout, seventy three percent of their remaining habitat in the western U.S. is in watersheds on public lands managed by the BLM and Forest Service. Native trout were once abundant across the western U.S., but over half of them have been widely extirpated from their historical range. It is imperative for the BLM's final plan to adopt programmatic level exclusions for native and wild trout and salmon habitat. To avoid direct impacts and further loss of biodiversity¹⁷, protecting aquatic resources should be an upfront requirement, not something considered project-by-project or on a case-by-case basis. Getting this right provides certainty

⁹ Caro, T., Z. Rowe, J. Berger, P. Wholey, and A. Dobson. 2022. An inconvenient misconception: Climate change is not the principal driver of biodiversity loss. *Conservation Letters*:e12868.

¹⁰ 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>

¹¹ 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.

¹² 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.

¹³ Dunham, J. B., B. E. Rieman, and J. T. Peterson. 2002. Patch-based models of species occurrence: lessons from salmonid fishes in streams. Pages 327–334 in J. M. Scott, P. J. Heglund, M. Morrison, M. Raphael, J. Hauffer, and B. Wall, editors. *Predicting Species Occurrences: Issues of Scale and Accuracy*. Island Press, Covelo, CA.

¹⁴ 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.

¹⁵ 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. [https://doi.org/10.1890/1051-0761\(1999\)009\[0642:MSOBTI\]2.0.CO;2](https://doi.org/10.1890/1051-0761(1999)009[0642:MSOBTI]2.0.CO;2)

¹⁶ Isaak, D. J., Young, M. K., Horan, D. L., Nagel, D., Schwartz, M. K., & McKelvey, K. S. 2022. Do metapopulations and management matter for relict headwater bull trout populations in a warming climate?. *Ecological Applications*, 32(5), e2594.

¹⁷ Caro, T., Z. Rowe, J. Berger, P. Wholey, and A. Dobson. 2022. An inconvenient misconception: Climate change is not the principal driver of biodiversity loss. *Conservation Letters*:e12868.

for industry, expedites deployment of a transitioning power grid, conserves the places we hunt and fish, and provides a safeguard for valuable fish and wildlife habitat.

With BLM funding, TU, one of the undersigned organizations, and partners have developed [science-based aquatic assessment](#) and planning tools available to characterize biological resources across BLM landscapes, including multi-species models of native fish diversity that can guide conservation and restoration priorities across large landscapes based on areas of unique biological value (Figure XX-11)¹⁸, and models under development that will evaluate benefits of stream connectivity for fostering fish growth¹⁹. Multi-species assessments that prioritize landscapes based on native fish diversity, threats to habitat condition, and watershed connectivity have been completed for everything west of the continental divide, except for western Montana. Montana and northern Wyoming are soon to be completed under TU's National BLM Aquatics Program agreement to help BLM understand the biological resources relevant to landscape-scale decision-making with respect to protecting native fish diversity, restoration potential and watershed health planning. This funding is also helping us understand the growth potential in downstream habitats^{20 21} relevant to reconnection potential and assumedly emphasizing the importance of these habitats and movement corridors.

We strongly encourage the BLM to draw from these and other science resources that are based on the best available science to focus solar development on areas that minimize resource conflicts and maximize the resilience of native and wild trout and salmon populations across the West.

In Section 5.4.2-1, the draft plan assigned impact magnitudes to aquatic habitat and biota based on a project-by-project approach. We strongly encourage the BLM to adopt programmatic resource-based exclusion criteria necessary to support the full suite of life stages and life histories for native and wild salmonids and anadromous fish species. Figure 5 provides an example of the applicability of these multi-species assessments for western aquatic habitats that can be adopted for landscape scale conservation identifying Native Fish Conservation Areas²², that is, watershed-scale exclusion areas for native and wild trout and salmon and other aquatic species within its focal geography. The [web based application](#)²³ provides added

¹⁸ Desert Fish Habitat Partnership. Multi-species aquatic assessments. <https://www.desertfhp.org/multispecies-aquatic-assessments>

¹⁹ Dauwalter et al. Partnering on Multispecies Aquatic Assessments to Inform Efficient Conservation Delivery. American Fisheries Society Symposium 91:11–32 (2019).

²⁰ Al-Chokhachy et al. Canadian Journal of Fisheries and Aquatic Sciences. 79:1729–1744 (2022). [dx.doi.org/10.1139/cjfas-2021-0343](https://doi.org/10.1139/cjfas-2021-0343).

²¹ Armstrong, J. B., A. H. Fullerton, C. E. Jordan, J. L. Ebersole, J. R. Bellmore, I. Arismendi, B. E. Penaluna, and G. H. Reeves. 2021. The importance of warm habitat to the growth regime of cold-water fishes. Nature Climate Change 11:354-361.

²² Williams, J. E., R. N. Williams, R. F. Thurow, L. Elwell, D. P. Philipp, F. A. Harris, J. L. Kershner, P. J. Martinez, D. Miller, G. H. Reeves, C. A. Frissell, and J. R. Sedell. 2011. Native Fish Conservation Areas: a vision for large-scale conservation of native fish communities. Fisheries 36:267-277.

²³ Trout Unlimited's BLM solar PEIS web application. 2024. <https://experience.arcgis.com/experience/8889e20e43b64c248407611bd7e65477/>

functionality overlaying TU's priority waters, multi-species assessment for western coldwater habitat and other valuable resource layers with BLM's solar PEIS Alternative's 3 and 5. Figures 6 and 7 provide an multispecies aquatic assessment of lands available for solar application under BLM's Alternative 3 and 5, respectively, based on a conservation value for every catchment or subwatershed in a basin based on known and modeled native fish distributions (including salmonids), riverine connectivity, and threats to aquatic habitats. The conservation values are scaled between 0 (low) and 1 (high) and have been used to evaluate the landscape context of conservation projects submitted for funding through the National Fish Habitat Partnership for making efficient landscape scale planning decisions. Importantly, the Desert Fish Habitat Partnership alone serves 11 states and nearly 180 native fish species, and the Western Native Trout Initiative covers 21 salmonid species across 12 western states.²⁴

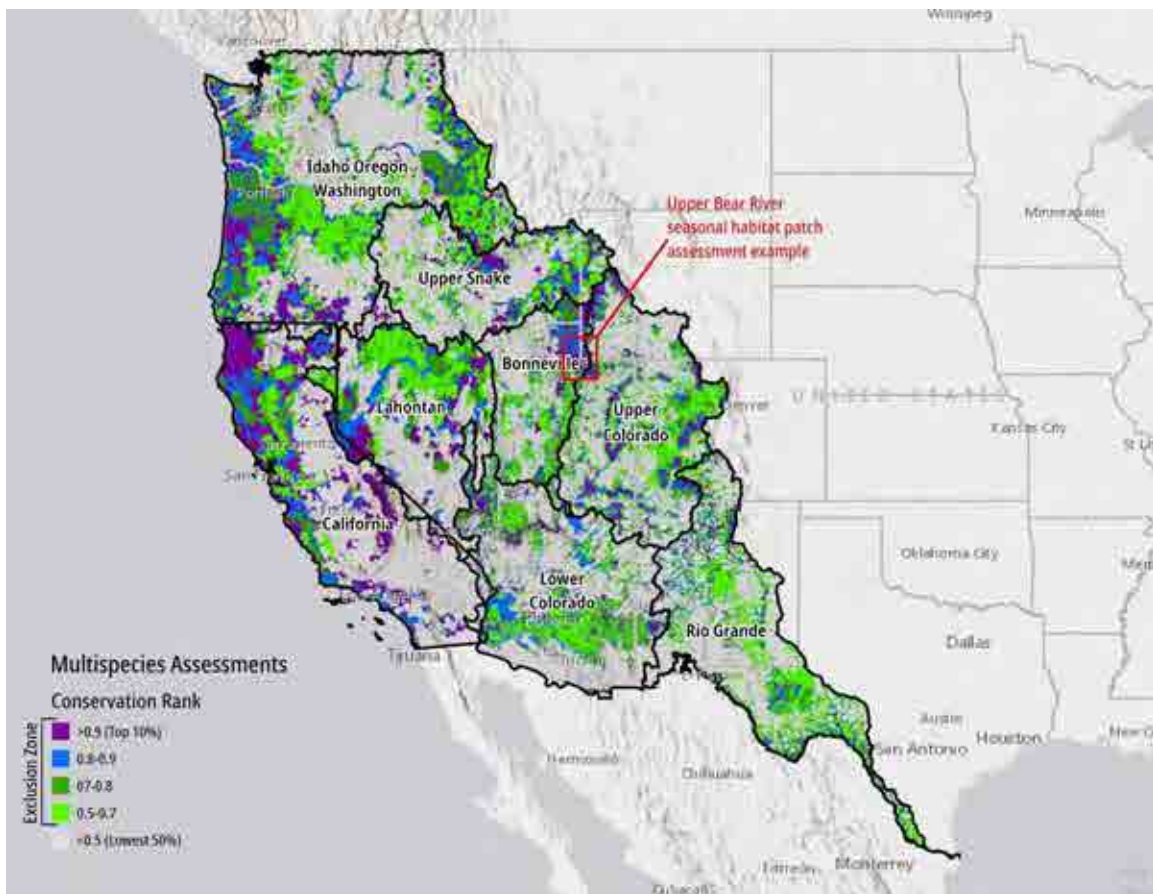


Figure 5. Example of the multispecies assessment for ranking Western coldwater habitats and highlighting an example of a Habitat Patch Assessment for landscape scale conservation rank identifying exclusion areas for native trout and salmon within its focal geography.

²⁴ Dauwalter et al. Partnering on Multispecies Aquatic Assessments to Inform Efficient Conservation Delivery. American Fisheries Society Symposium 91:11–32 (2019).

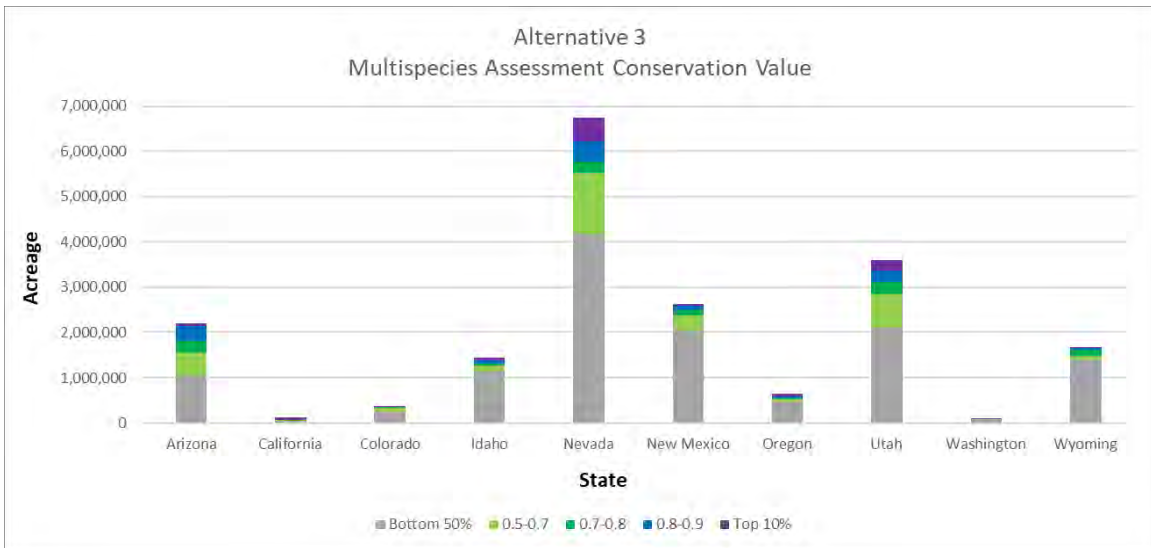


Figure 6. Example of the multispecies assessment for ranking Western coldwater habitats overlaid with BLM’s Alternative 3.

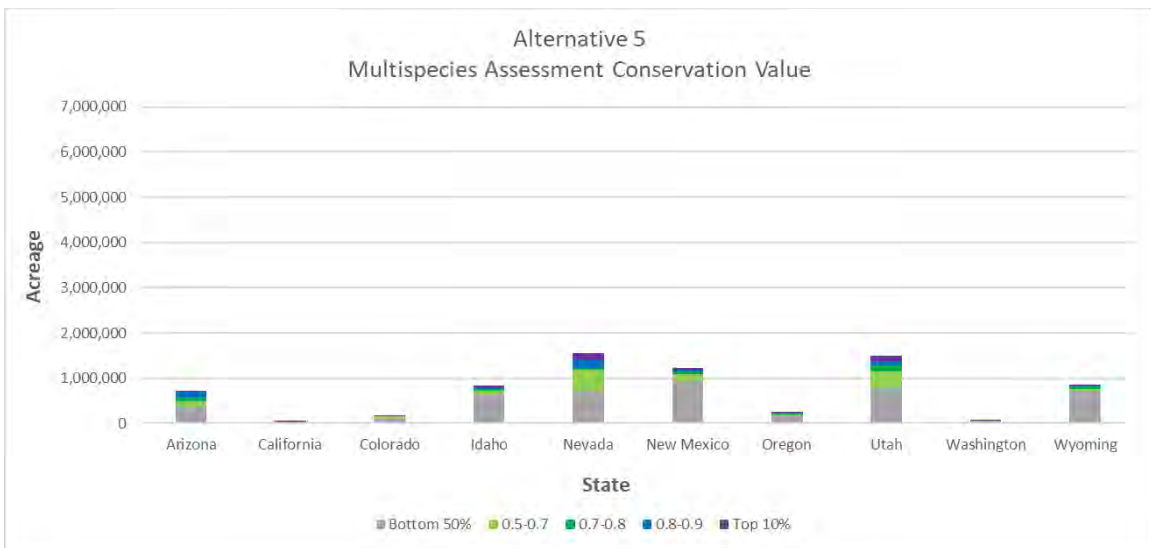


Figure 7. Example of the multispecies assessment for ranking Western coldwater habitats overlaid with BLM’s Alternative 5.

Given that there is substantial overlap with these important aquatic habitats and other resources analyzed in the PEIS we believe that BLM should be able to make this adjustment in the final PEIS.

The interconnection and transmission infrastructure associated with utility-scale solar energy facilities may have significant impacts on aquatic resources. 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. Specifically, roads are a key impact on trout and populations are negatively correlated with the density of logging roads in spawning tributary catchments.²⁵ Improper design, construction or maintenance of road-stream crossings can limit or completely prevent fish passage. In addition, roads and traffic can also impact fish and fish habitat by degrading the quality of the streambed, adjacent riparian habitat and water quality, as well as changing patterns in the flow of ground and surface water.²⁶

Public lands are vital to sustaining water resources, food security, energy security, T&E species 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 estimates²⁷ that 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.

b. Exclude big game migration corridors and crucial winter range.

As proposed, the draft PEIS only excludes solar development from big game migratory corridors and winter ranges where they are currently identified in existing land use plans (Exclusion Criteria 9). Unfortunately, the majority of land management plans across the 11 Western states in this planning area are long outdated and provide little to no management direction for big game migrations (minimally more for crucial winter range) and certainly do not account for the most current science and updated data/mapping that has been refined and expanded by state wildlife agencies in the last decade²⁸.

Both the BLM's preferred alternative and Alternative 5 include 'areas open for solar application' that overlap with numerous state-identified big game migration routes and crucial winter ranges in each of the 11 Western states. Several of these herds are world-renowned and provide significant economic and social value for hunting. In order to prevent unmitigable impacts to the most sensitive big game habitats, the BLM should modify Exclusion Criteria 9 to exclude from solar application the most sensitive big game migration corridors and seasonal habitats, utilizing data provided by state wildlife agencies.

²⁵ Baxter, C. V., Frissell, C. A., & Hauer, F. R. (1999). Geomorphology, Logging Roads, and the Distribution of Bull Trout Spawning in a Forested River Basin: Implications for Management and Conservation. *Transactions of the American Fisheries Society*, 128(5), 854–867. [https://doi.org/10.1577/1548-8659\(1999\)128<0854:GLRATD>2.0.CO;2](https://doi.org/10.1577/1548-8659(1999)128<0854:GLRATD>2.0.CO;2)

²⁶ Ottburg, F. and Blank, M. (2015). Solutions to the Impacts of Roads and Other Barriers on Fish and Fish Habitat. In *Handbook of Road Ecology* (eds R. van der Ree, D.J. Smith and C. Grilo). <https://doi.org/10.1002/9781118568170.ch45>

²⁷ Gerrard, M.B. (2022). *A Time for Triage*. 39(6) *Envtl. F.* 38.

https://scholarship.law.columbia.edu/faculty_scholarship/3867

²⁸ https://www.trcp.org/wp-content/uploads/2021/06/210604_TRCP_Report_Spreads-1.pdf

Migratory big game populations are likely to be disproportionately impacted by poorly sited utility-scale solar facilities because these facilities are fenced and impose a complete barrier to big game movements. Once severed, big game migrations may be irreversible and unmitigable due to the fact that many species have site fidelity to migration routes and pass this knowledge down from generation to generation. Avoiding development in big game migration corridors and crucial winter range is essential to prevent increased habitat fragmentation that reduces habitat connectivity and leads to the decline of healthy big game populations across the West. Our scoping comments detailed these impacts and the scientific justification thoroughly.²⁹ Further, exclusion of these habitats from being available for solar development would enable the hunting and conservation community to more aggressively advocate for solar deployment on BLM lands, significantly reducing project-level conflicts.

Fortunately, the BLM's own reasonably foreseeable development scenario (RFDS) shows that solar energy can be successfully deployed in a way that avoids conflict with known, vital big game habitats. In the draft PEIS, BLM projects that 700,000 acres will be required across the 11 western states to meet the agency's solar energy needs. The BLM's preferred alternative would make 22 million acres available for potential development, and Alternative 5 would make 8.4 million acres available. Even with the addition of big game migration corridors and crucial winter ranges as exclusion criteria, BLM would be making open for development 12 times the amount of land predicted to fully meet solar development needs.

Appendix B provides maps for the states of Arizona, Colorado, Idaho, New Mexico, Nevada, Oregon, Utah, Wyoming displaying an overlap between state-identified big game migration corridor and crucial winter range data and areas 'open for solar application' in both Alternative 3 and Alternative 5 of the PEIS.³⁰ The below table summarizes the additional acreages that would be excluded if the BLM expands Exclusion Criteria 9 in the final plan. Based on information available to us, the conflict was not significant enough in Washington, California and Montana to warrant additional exclusions. The BLM should consult with state wildlife agencies in the planning area to ensure the best available data is utilized.

²⁹ Public comments regarding the 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. Submitted by Theodore Roosevelt Conservation Partnership et al. March 1, 2023.

³⁰ A list of specific datalayers utilized for this analysis is available in Appendix B.

Table 1: Big Game Exclusion Acreages By State

State/Data Layers	Recommended Changes to Alt 3 Exclusion Areas to include Big Game (acres)	Recommended Changes to Alt 5 Exclusion Areas to include Big Game (acres)	Alt 3 Total Areas Available as "Open" w Recommended Big Game Exclusion (acres)	Alt 5 Total Area Available as "Open" w Recommended Big Game Exclusion (acres)
<u>Arizona</u>	12,388	0	2,184,532	705,669
<u>Colorado</u>	278,540	127,639	162,428	61,852
<u>Idaho</u>	223,918	110,253	1,214,862	732,855
<u>Nevada</u>	988,301	143,743	5,755,532	1,443,703
<u>New Mexico</u>	31,387	22,109	2,874,052	1,249,972
<u>Oregon</u>	256,413	122,974	386,544	138,362
<u>Utah</u>	153,829	107,519	3,448,014	1,390,982
<u>Wyoming</u>	944,487	509,352	1,903,601	863,018

Given that there is substantial overlap with these important big game habitats and other resources analyzed in the PEIS we believe that BLM should be able to make this adjustment in the final PEIS.

Adopting these recommendations will help the agency implement priorities and direction provided in DOI Secretarial Order 3362: *Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors*. SO 3362 directs BLM to work in close partnership with states and Tribes to:

Evaluate and appropriately apply site-specific management activities, as identified in State land use plans, site-specific plans, or the [State] Action Plan, that conserve or restore habitat necessary to sustain local and regional big-game populations through measures that may include one or more of the following:

. . . (iv) avoiding development in the most crucial winter range or migration corridors during sensitive seasons;

(v) minimizing development that would fragment winter range and primary migration corridors;

(vi) limiting disturbance of big game on winter range; and

(vii) utilizing other proven actions necessary to conserve and/or restore the vital big-game winter range and migration corridors across the West.³¹

These recommendations will also help the BLM implement IM 2023-005 *Habitat Connectivity on Public Lands*. IM 2023-005 directs BLM state offices to work with state and tribal wildlife managers, as well as other stakeholders, to assess data regarding connectivity, permeability, and resilience and, based on that assessment, identify where to focus management that best supports priority species.³²

c. Exclude Greater sage-grouse habitat.

The agency should explicitly exclude development in core and growth habitat for Greater sage-grouse through the BLM's ongoing efforts to update management plans to address Greater sage-grouse conservation. We offer some general comments here but ask that the agency refer to comments submitted by the undersigned organization's in the Greater sage-grouse planning process for more detailed recommendations.

Solar development and related activity and infrastructure has the potential to dramatically harm Greater sage-grouse populations. As such, the agency should exclude solar development from all priority habitat management areas (PHMA), general habitat management areas (GHMA) within at least .5 miles of PHMA, near active leks, high-value seasonal habitats and connectivity corridors. The agency should avoid development in GHMA. Impacts must be mitigated, either through application of appropriate RDFs and/or compensatory mitigation.

We also request the Final PEIS include in the range of alternatives resource-based exclusion areas for core and growth opportunity sagebrush areas. These areas are the last remaining healthy sagebrush ecosystems in the West as defined by the multi-agency Sagebrush Conservation Design, and avoiding new disturbance and fragmentation is critical for multiple species' survival including sage-grouse, pygmy rabbit, mule deer, pronghorn, and multiple other species that rely on healthy sagebrush for critical periods in their livelihoods. Excluding solar ROWs in these areas is a critical mitigation strategy and would be consistent with the BLM's investments to maintain and restore sagebrush ecosystems.

d. Mojave desert tortoise

The Mojave desert tortoise is extremely sensitive to changes in their environment. Heightened drought conditions, wildfires, and solar energy development, among other stressors, have all led to chronic declines in tortoise populations throughout its range, including in USFWS-

³¹ SO 3362, Sec. 4 Implementation, b.(5).

³² BLM IM 2023-005. (2023). Habitat Connectivity on Public Lands. <https://www.blm.gov/policy/im-2023-005-change-1>

designated recovery units (Glass et al. 2018³³). In the Final PEIS, the BLM should analyze in the range of alternatives, exclusion areas for Desert tortoise linkages as identified by the USFWS as Priority 1 and Priority 2, and further refined in Averill-Murray et al. 2013.³⁴ Such an exclusion would increase project siting, permitting, and mitigation certainty, and increase alignment of the Solar PEIS with BLM IM 2023-005 regarding habitat connectivity on public lands.

VI. The agency should modify both the application of required design features (RDFs) and several specific features themselves.

a. To better ensure regulatory certainty, the agency should clarify when and how required design features will apply to projects.

The proposed 21 categories of RDFs are appropriate for avoiding and minimizing environmental, social, and cultural impacts from solar development on BLM lands. However, there are collectively more than 600 individual design features in these categories, a number that seems daunting for any given solar project and will likely discourage applications in available and priority areas regardless of which alternative is selected.

We recommend the BLM tailor the design features to the ecoregion and site conditions where future solar projects would be located. Linking the design features to ecoregion and site conditions maximizes opportunities for individual project-level NEPA analyses to tier to or incorporate by reference the analysis in the PEIS. Appendix D of the PEIS summarizes the ecoregions in the planning area; the BLM should use this information already in the PEIS and connect it with the design features. Just as important, linking design feature requirements to site conditions will help to incentivize development of solar projects on the most disturbed sites within the lands available for application, regardless of the selected alternative. It will also result in a more efficient and effective approach for avoiding and minimizing solar project impacts. We suggest revising Appendix B so that for each of the 21 categories of design features under each stage of development, the design features fall into one of the following three categories:

- **Universally Required Design Features.** Many design features are relevant and important regardless of the project's ecoregion and local site conditions. Examples of design features that should be required for all solar projects include the features for the Cultural Resources, Environmental Justice, Geology and Soils, Hazardous Materials and Waste, Socioeconomics (including a requirement for developers to prepare Community Benefit Agreements where applicable), Tribal Interests, Water Resources, and Wildland Fire categories. In addition,

³³ Glass MS, BD Todd, KA. Buhlmann, CS Rushingand, and TD Tuberville 2024. Survival and behavior of Mojave desert tortoises head-started with and without outdoor rearing. The Journal of Wildlife Management. <https://wildlife.onlinelibrary.wiley.com/doi/10.1002/jwmg.22562>.

³⁴ Averill-Murray, R.C., C.R. Darst, N. Strout, and M. Wong. 2013. Conserving Population Linkages for the Mojave Desert Tortoise (*Gopherus Agassizii*). Herpetological Conservation and Biology 8(1):1 – 15. Bradley BA and JF Mustard. 2006. Characterizing The Landscape Dynamics Of An Invasive Plant And Risk Of Invasion Using Remote Sensing. Ecological Applications 16:1132-1147.

there are other design features such as the dust abatement design feature within the Air and Climate Resources category, or the retention of native vegetation and use of native seed stock featured in the Ecological Resources/Vegetation category, which should be used for all projects.

- **Design Features for Intact/Less Disturbed Sites.** BLM used the USGS Landscape Intactness Model (“substantial departure from baseline resource conditions”) and lands with greater than 40% invasive cover from the Multi-Resolution Land Characteristics analysis to define disturbed lands. We believe the BLM could improve the definition of intact and disturbed lands in two ways. One is to use data that captures mine lands, brownfields, grading, cultivation and other anthropogenic impacts on soil and vegetation. Clear thresholds should be identified for minimum disturbance size and impact coverage. Second, the 40% invasive species cover threshold may in some cases be too low, and in others too high to capture the restoration potential of project sites across all ecoregions and for the wide range of invasive species found in western states. We recommend that the BLM consult independent invasive species specialists to determine appropriate thresholds for groups of similar invasive species, such as by family, rate of spread, or persistence. Alternatively, the invasive species experts could confirm the 40% threshold or recommend a more appropriate threshold.
- **Best Management Practices Design Features for Highly Disturbed Sites.** Sites that are highly disturbed, as revised per our recommendations above, would be subject to the Universally Required Design Features. In addition, they would be required to select appropriate and relevant documented Best Management Practices (BMPs) for each of the design feature categories (except categories wholly incorporated in the Universally Required Design Features). We recommend that the BLM provide a list of relevant existing BMPs for each design feature category. Project proponents would choose appropriate BMPs based on site conditions and ecoregion where the project is located.

Project sites on available lands (regardless of alternative) that do not qualify for the highly disturbed category, as revised, would be subject to all listed design requirements that remain in the Final PEIS.

b. The agency should restrict the application of RDFs where resource impacts will be limited as a means of incentivizing responsible development.

As discussed in Section IV(b) above, the agency should incentivize development in areas with low resource values by limiting the application of RDFs. If projects are appropriately sited where there are fewer opportunities to harm important resources, the application of RDFs may not be necessary.

c. We urge the agency to modify the following RDFs to better mitigate impacts to fish and wildlife.

While we support the generally robust approach the BLM has taken with its proposed RDFs, we make the following suggestions to more effectively avoid and mitigate the harmful effects of solar development.

i. Aquatics

With a project-by-project approach, the Solar PEIS states use of design features (see Solar PEIS, Appendix B) should avoid or minimize impacts on aquatic species and their habitats. It is unclear how design features would be implemented since the BLM's first opportunity to formally evaluate the applicability of design features is after the project proponent has already selected a project location. As discussed in Section IV(a), we urge the agency to engage in 'early and often' coordination in site selection prior to the project proponent investing significant resources and time. Landscape scale restoration efforts are underway and incorporating exclusion criteria at this scale will be the only way to avoid impacts to sensitive fish and wildlife habitats on public lands.

Freshwater and anadromous fish need a variety of habitats for survival and to increase resiliency. We encourage the BLM to take the time to incorporate the best available science to avoid land use allocations that would compromise the range of anadromy for Salmonids lowland and valley seasonal floodplain habitat provided both contain a vast complex of channel adjacent rearing habitat as well as a massive trophic subsidy to in-channel and downstream habitats, especially in California, Oregon, Idaho and Washington.

The Solar PEIS states, "these design features would reduce, but not eliminate, impacts." However, to maintain biodiversity and healthy aquatic ecosystems, design features cannot simply reduce impacts. We are experiencing some of our worst returns on record for both salmon and steelhead. The history of habitat degradation and decline resulting in the impacts to these species creates a context in which many types of action (e.g. water reallocation or loss, loss of wetland or floodplain habitat, loss of headwater spawning and rearing habitat, etc.) in many locations are effectively unmitigable. Actions taken within the scope of this effort, therefore need to either or both exclude aquatic, riparian and adjacent habitats entirely or (in the case of water resources, rights and use) demonstrate no net impact from implementation or operations. Specific habitats to avoid and maintain connectivity in and among include but are not limited to:

- Spawning, rearing, holding and migratory habitat within the perennial channel
- Seasonal or ephemeral channel adjacent habitat types including wetlands, floodplains, side channels, oxbows, etc.
- Headwater streams, and seasonal wet meadows
- Estuaries, estuarine lagoons, and tidal marsh
- Stream, floodplain, and meadow adjacent riparian zones and uplands.

for Eastern Brook trout portfolios³⁷, 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 trout in the West to help determine and highlight the importance of these mainstem downstream habitats. Through a restoration lens, this type of assessment can also prioritize barriers for removal to expand/reconnect these habitat patches based on size of conservation populations to be reconnected, absence of or ability to remove non-natives and length of stream habitat.

The Solar PEIS states, “Overall, contributions to cumulative impacts are expected to be small, provided mitigation measures to preserve important habitat and migration corridors are implemented (or sufficient alternative lands are set aside as compensation).” There’s not enough habitat or land available to mitigate the effects of utility-scale projects. We are experiencing an imperiled state with a number of these fish populations and the naturally limited conditions make it impossible to mitigate or set aside alternate lands. Additionally, deleterious impacts from these types of projects (infrastructure, habitat loss, water allocations, ect.) have irreparable harm that limits future potential habitat making exclusion the only option.

Buffering sensitive habitat from solar energy development will require exclusion buffers of specific habitats and in combination specific buffer safeguards to protect other water resources not excluded at the programmatic level. Utility scale developments will have their own water needs which could directly or indirectly impact water quantity, quality, availability, and habitat conditions for aquatic species generally and salmonids specifically.

ii. Water Resources

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. It is important, as part of the screening criteria, that any new project a) account for where its water is going to come from and b) require that the project (based on associated adjacent habitat improvements, water rights acquisition, re-purposing of water from other/ previous projects, etc.) have a neutral or net positive affect on environmental water availability.

Water rights and water allocation issues have become increasingly controversial. The use of water for energy development 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. Pre-screening with ‘early and often’ coordination is another way to help achieve community buy-in

³⁷ Trout Unlimited. (Accessed Jan 2023). *Conservation Portfolio: Managing Trout with a Portfolio Approach*. <https://www.tu.org/science/conservation-planning-and-assessment/conservation-portfolio/>

and avoid costly litigation over water in the West. For 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.³⁸

The BLM should revise the design features under B.20.1.3 to include an RDF that requires projects in overdrafted groundwater basins to obtain the water needed for construction and operation from a source outside the basin. We also request the BLM amend RDFs WR-G-1w, WR-G-1l and WR-G-2l to specifically require that project developers disclose the source of water in project plans of development.

iii. Big game

As currently described in Appendix B, the proposed RDFs alone will not effectively avoid adverse impacts to known, mapped, big game migration corridors and winter range, and will not minimize or mitigate impacts sufficient to prevent significant population level negative impacts to affected herds. For the reasons outlined below, the RDFs do not incorporate the best available science consistent with the direction provided in DOI Secretarial Order 3362: *Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors*, and they will not provide for habitat connectivity for migratory herds of big game consistent with the intent of IM-2023-005: *Habitat Connectivity on Public Lands*.

It is unclear how the RDFs in the PEIS focused on project siting will be implemented to effectively avoid impacts. For example, the language of **Design Feature ER-C-4g** states that “Project developers shall site and design project activities away from crucial winter ranges and habitats occupied by priority species.” The language of this design feature would appear to require that developers completely avoid crucial winter ranges when siting a proposed facility, yet in Appendix B BLM acknowledges that “the applicability and overall effectiveness of each design feature cannot be fully assessed until the project level, when the project location and design are known” (PEIS, Appendix B, p. B-1). This is because the BLM’s first opportunity to formally evaluate the applicability of design features is after the developer has already selected a project location and invested significant resources to prepare a Plan of Development (POD) and right-of-way (ROW) application for developing a solar facility. In order for siting design features (like **ER-C-4g**) to be implemented as intended to avoid impacts, they need to be applied prior to the landscape-scale project site-selection by the developer, and prior to preparation of a POD and ROW application. See the discussion in Section IV(a) on a pre-screening process.

With this in mind, the analysis in the PEIS should acknowledge that the efficacy of “project siting” design features like **ER-C-4g** is limited to micro-siting decisions that can be implemented within the overall project area selected by the developer for its POD and ROW application. True landscape-scale siting decisions necessary to avoid unnecessary impacts to habitat connectivity

³⁸ 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 important landscape-scale habitats like crucial winter range can only be addressed through exclusion criteria or other incentives to avoid these habitats altogether. Another approach to address impacts through project siting would be to require a developer to bring multiple suitable landscape-scale alternative locations into the POD and ROW application process (including one that does not impact these sensitive habitats) and for BLM to evaluate these alternative locations through project level NEPA. This would be burdensome to both the developer and BLM and would not streamline development of utility-scale solar facilities consistent with the intent of the Western Solar Plan. Finally, impacts to important habitats like crucial winter range could be reduced under the framework outlined in Western Solar Plan if BLM also explicitly designated ROW applications within these habitats as having the lowest priority for processing in its revised ROW regulations¹ as previously recommended by our organizations.³⁹

Design Features ER-G-5w, ER-G-6w, ER-G-8w, ER-G-9w, and ER-G-10w are all focused on minimizing wildlife/vehicle collisions and addressing the road and traffic related impacts to big game and other wildlife from roads and vehicles. These design features fail to recognize that industrial scale solar facilities are largely unmanned and as such, traffic at these facilities post-construction poses minimal threats to wildlife. The exception is when a solar facility is developed in a configuration where the perimeter fencing channels big game and other wildlife onto nearby high-volume roadways - as happened at the Sweetwater Solar Facility in Wyoming.⁴⁰

We recommend consolidating these five design features into a single design feature focused on minimizing traffic-related impacts from construction activities, and providing appropriate roadway offsets for perimeter fencing to avoid the Sweetwater effect. This design feature should provide meaningful specific direction to limit traffic speeds and volumes during construction activities to minimize impacts to big game and other wildlife. Due to unavoidable high traffic volumes during construction activities, construction activities at these facilities should be prohibited during sensitive periods for big game (winter-early spring) and other wildlife (spring for grouse and nesting migratory birds).

Design Feature ER-G-18w contemplates identifying all “areas of habitat connectivity” within the planning area of a potential solar facility, using site-specific analysis to evaluate the effects to identified areas of habitat connectivity, and incorporating adaptive management thresholds and responses to address impacts. This approach is flawed because BLM has yet to publicly define or identify any “areas of habitat connectivity” per IM 2023-005. Without a clear, meaningful definition of “areas of habitat connectivity” incorporated into the PEIS and identification of these areas at an appropriate scale based on the best available science, there is ability for BLM to evaluate whether implementation of this Design Feature will maintain the necessary daily and seasonal movements of wildlife, including migratory big game, sufficient to provide habitat connectivity.

³⁹ [TRCP_TU_NWF_TNC_et al BLM Renewables ROW Rule Comment 8.15.2023.pdf](#)

⁴⁰ <https://www.eenews.net/articles/western-solar-boom-threatens-wildlifes-home-on-the-range/>

Design Feature ER-C-2w mandates that the project developer maximize preservation of “connectivity corridors” and “permeability for wildlife” using, among other things, novel construction methods, wildlife crossings, and fencing designs. With respect to fencing, ER-C-2w states that:

Project developers shall design and install fences that reduce impacts to wildlife and allow for wildlife passage when appropriate. Allow for wildlife movement through fencing via lifted fencing or by creating wildlife access gates.

This provision would require developers to violate the National Electric Safety Code (NESC). NESC Section 11, Protective Arrangements in Electrical Supply Stations, Rule 110, requires that utility-scale solar facilities be enclosed by a perimeter fence to restrict public access. The rule goes on to state that:

Metal fences, when used to enclose electric supply stations having energized electric conductors or equipment, shall have a height not less than 2.13 m (7 ft) overall and shall be grounded in accordance with Section 9.

Industry standard is to comply with NESC requirements and perimeter fence photovoltaic solar panel fields with 7 ft metal fencing that provides a complete barrier to medium and large terrestrial wildlife movements through these facilities. The fencing provisions of **Design Feature ER-C-2w** are misleading and should either be deleted entirely or modified to acknowledge NESC requirements. In addition, the impact analysis in the PEIS should be modified to acknowledge that utility-scale solar facilities provide a complete barrier to medium and large terrestrial wildlife movements.

Design Feature ER-C-2w also requires that facilities be constructed to maintain wildlife corridors of “sufficient width, as determined by site-specific analysis, and field verification of permeability for wildlife.” Since there is no existing published scientific research documenting the widths (or other dimensions) necessary to maintain movement corridors for migratory ungulates and other medium to large terrestrial wildlife species through utility-scale solar facilities, it is impossible to evaluate the efficacy of this design feature for maintaining existing mapped corridors and habitat connectivity and for minimizing impacts during project implementation.

The design criteria essentially create a “trial and error” approach to minimizing impacts to corridors. This approach is inadequate to guarantee conservation of known big game migrations within areas open for solar development when considering that there is no empirical evidence supporting that big game migration corridors can be restored once severed.¹ Ungulate migrations generally occur along traditional routes that are passed on from mother to young, it may be difficult or impossible to restore migratory landscapes by removing barriers once migratory subpopulations have dwindled. The only way to ensure conservation of these migrations and migratory populations of big game given the lack of proven techniques to design solar facilities in a manner that maintains migratory movements for these species is to

incorporate exclusion criteria for migration corridors in the PEIS and avoid these habitats altogether.

iv. Vegetation

We recommend the BLM prioritize solar ROWs in previously disturbed areas where the vegetation has already been removed or is dominated by invasive annual species. Projects in these areas avoid unnecessary environmental impacts in areas with intact vegetation and provide an opportunity to minimize the further spread of invasive species. We recommend that projects in areas with heavy invasive annuals implement soil stabilization and re-seeding efforts so that the project area provides an anchor point for re-established native or other desired perennial grasses.

For proposed projects that would impact perennial vegetation, ROW approval should be contingent upon achieving minimum vegetation retention standards. Leaving existing vegetation intact on site is the most effective approach for retaining vegetative cover and function. Recent examples⁴¹ demonstrate that vegetation and solar energy facilities can coexist. The Gemini Solar facility in Clark County, Nevada, for example, appears to be successfully preserving existing native vegetation during the construction phase so that it can continue to provide ecosystem value throughout project operation. We encourage the BLM to raise the bar on future projects to avoid and minimize the impacts of future projects on vegetation, habitats, and wildlife. Consistent with our recommendation above to tailor design features to ecoregion and site characteristics, for projects on sites with intact perennial vegetation, we recommend that the BLM revise the Design Features under B.4.2.2 to require projects to retain at least 50% of the existing perennial vegetation within the array portion of a project area. In the Mojave ecoregion, the BLM should include in the required minimization and mitigation strategy for Yucca, agave, and cactus species, a salvage strategy that demonstrates a minimum 50% salvage and replanting goal.

VII. BLM should clarify the need for compensatory mitigation and improve the efficacy of implementation.

We support the BLM's attempts in the PEIS to uphold the mitigation hierarchy of avoid, minimize, mitigate. This is most important because many of the anticipated impacts from solar energy development on fish and wildlife resources are shown to be unmitigable. Sections of this comment letter related to exclusion criteria provide recommendations for how the BLM can strengthen elements of the final plan to better achieve necessary avoidance of impacts to the most sensitive fish and wildlife habitats. Similarly, sections of this comment letter related to required design features provide recommendations for how the BLM can strengthen elements of the final plan to better minimize impacts to sensitive fish and wildlife habitats at the project application level. Unfortunately, the full mitigation hierarchy cannot be achieved if there is not

⁴¹ <https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html>

a clear expectation set by the BLM that adverse impacts remaining after all practicable avoidance and minimization measures have been taken will be offset.

The PEIS states that, “For those impacts that cannot be avoided or minimized, the BLM will consider implementing compensatory mitigation to offset impacts, with a goal of ensuring viability of resources over time.”⁴² The BLM then goes on to suggest that regional mitigation strategies included in the 2012 Western Solar Plan could be used to compensate for unavoidable residual impacts from solar energy development under any of the Action Alternatives in this Programmatic EIS.⁴³

First, and most importantly, we recommend that the final plan clearly state that the BLM will require compensatory mitigation at the project review stage commensurate with, and for the purpose of offsetting, remaining adverse direct or indirect impacts to fish and wildlife.

Second, we appreciate the BLM’s desire to advance regional mitigation strategies as a way to advance development and ensure no net loss of fish and wildlife resources, but to the best of our knowledge these strategies have not been implemented in the 2012 Western Solar Plan. We are also aware that the BLM has not implemented regional mitigation strategies referenced in the 2015 Greater Sage Grouse Resource Management Plan Amendments. This suggests that logistical and/or technical challenges render this approach difficult or impossible to implement, and therefore we request that the BLM update the design of any regional mitigation strategy to account for past obstacles to implementation. Any such efforts to determine appropriate mitigation and/or design a regional mitigation strategy must include consultation with state wildlife agencies within the planning area.

Finally, we recommend the BLM revise the PEIS to include a mitigation strategy specifically designed to offset the cumulative impacts of utility-scale solar energy development. The reality of the anticipated solar buildout on public lands is that some BLM district and field offices will experience significantly more solar energy ROW demand than others. The BLM should mitigate the cumulative impacts associated with higher density solar ROW application areas by requiring developers in those areas to contribute to a regional cumulative impacts mitigation fund. The BLM district or field office receiving the funds should develop a district or field office-wide mitigation strategy that outlines the local BLM office’s plans for administering the mitigation program. The BLM national RECO should have dedicated staff to assist local BLM offices with developing and implementing the strategy. Each strategy should specify how the BLM will monitor the cumulative impacts of solar development and the strategy’s success in mitigating those impacts. The plans should include adaptive management measures that enable the BLM to deny future ROW applications should the density of solar energy ROWs and associated cumulative impacts become unmitigable.

⁴² Solar PEIS, 2-25.

⁴³ *Id.*

VIII. The agency’s reasonably foreseeable development scenario (RFDS) must accurately forecast anticipated development on public lands.

The agency must ensure that the RFDS in the BLM Solar PEIS accurately estimates the amount of solar that the US will likely build on public lands. The RFDS applies a twenty-year planning scenario and anticipates 1,570 GW of solar energy development would be required for the nation to produce about 45% of its total electricity requirements from solar by 2050 and that 80–90% of that will be utility-scale solar, with the remainder coming from smaller-scale distributed solar.⁴⁴

The solar development landscape will continue to evolve. Of the 5.5 GW of utility-scale solar, wind, and battery storage that interconnected in fiscal quarter 3 of 2023 alone, more than 3 GW was new solar projects.⁴⁵ Solar also accounts for nearly 60 percent of projects in interconnection queues.⁴⁶ As of 2023, solar accounts for 83,173 MW of cumulative operating power capacity in the US.⁴⁷ In quarter 3, developers commissioned 3,121 MW of solar capacity.⁴⁸ At the end of the third quarter of 2023, the solar pipeline stood at 84,646 MW, with 855 projects in development.⁴⁹ The solar pipeline has also demonstrated consistent growth, averaging 5% per quarter over the past two years.⁵⁰ Indeed, as a base case, U.S. installed solar capacity will likely quadruple by 2034 to 670 GW with typical volumes in the 48-50 GWdc range from 2030 onward.⁵¹

To accurately estimate the amount of public lands necessary to meet clean energy demands, we urge the agency to incorporate the following additional information into its analysis:

- **Solar technology improvements.** improvements in solar technology will likely increase solar capacity and may provide an economic edge over wind and other renewable resources. The Inflation Reduction Act and the Bipartisan Infrastructure Law created ample opportunities for solar innovation. For example, concentrated solar-thermal technology will likely continue to improve making it a more cost-effective option. The US Department of Energy Solar Energy Technologies Office is pursuing efforts to make concentrated solar-thermal technology more affordable with a goal of \$0.05 per

⁴⁴ *Draft Utility-Scale Solar Energy Programmatic EIS* at C-1(citing *Solar Futures Study*, Dep’t of Energy at (Sept. 8, 2021)), <https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf>.

⁴⁵ *2023 Q3 Clean Power Quarterly*, American Clean Power Ass’n at 4 (2023), https://cleanpower.org/wp-content/uploads/2023/11/ACP_Q3-2023-Market-Report-Public.pdf.

⁴⁶ *Id.*

⁴⁷ *Id.* at 6.

⁴⁸ *Id.*

⁴⁹ *Id.* at 11.

⁵⁰ *Id.* at 16.

⁵¹ Diana DiGangi, *US deployed a record 32 GW of solar generating capacity in 2023: SEIA*, Utility Dive (Mar. 6, 2024), <https://www.utilitydive.com/news/solar-installation-capacity-manufacturing-modules/709414/> (citing *US Solar Market Insight*, Wood Mackenzie and the SEIA (Mar. 2024), <https://www.woodmac.com/industry/power-and-renewables/us-solar-market-insight/>).

kilowatt-hour for baseload plants with at least 12 hours of thermal energy storage.⁵² Likewise, the Department of Energy has and continues to create innovation efforts such as the Solar Manufacturing Incubator program to assist with developing a US supply chain, which will likely expedite solar deployment beyond the projections of the reasonably foreseeable development scenario.⁵³

- **FERC Order 2023.** FERC Order 2023 will likely assist with interconnection delays by reforming the processes used by transmission providers to study and connect generating facilities to the transmission system. This may lead to an increase in solar capacity. Traditionally, transmission providers studied requests to interconnect generating facilities on a “first-come, first-served” serial process.⁵⁴ FERC Order 2023 aims to assist with the current significant increase in requests to interconnect by creating a number of reforms including requiring transmission providers to study projects using a cluster study process, penalties for transmission providers that fail to complete studies on time, and stricter financial readiness and site control requirements to discourage speculative projects from occupying the interconnection queue.⁵⁵ Importantly, FERC Order 2023 creates a runway for more reforms to the interconnection process, so the BLM should monitor grid operators and utilities’ implementation of FERC Order 2023 and incorporate their findings into the reasonably foreseeable development scenario of the Solar PEIS.
- **Transmission development and expansion.** The planning for the solar PEIS cannot be done in a vacuum irrespective of transmission development that will also likely occur. The Solar PEIS recognizes the value and expected need for transmission growth in the US.⁵⁶ We recommend the BLM incorporate the findings of the Transmission Needs Study into the Solar PEIS analysis, as increasing interregional transmission will result in the largest benefits, the needs of the grid will shift over time, and the pressing need for transmission infrastructure, especially in areas where there are public lands.⁵⁷ Without transmission infrastructure and capacity, solar development cannot reach the areas where it is needed the most, and the BLM’s assessment is incomplete.
- **Lessons learned from oil and gas development.** Lessons learned from the pace and scale of oil and gas development across BLM lands over the last 25 years should be applied to solar development in the PEIS. Improved technology for fracking and horizontal drilling in the early 2000s made BLM’s oil and gas RFDS in RMPs and field-specific NEPA documents obsolete and led to previously unanticipated levels of

⁵² *Concentrating Solar-Thermal Power*, Dep’t of Energy, <https://www.energy.gov/eere/solar/concentrating-solar-thermal-power>.

⁵³ *Biden-Harris Administration Announces \$82 Million Investment to Increase Domestic Solar Manufacturing and Recycling, Strengthen the American Clean Energy Grid*, (Apr. 20, 2023), <https://www.energy.gov/articles/biden-harris-administration-announces-82-million-investment-increase-domestic-solar>.

⁵⁴ FERC Order 2023, FERC Docket No. RM 22-14-000 at 61 (Jul. 28, 2023).

⁵⁵ *Id.*

⁵⁶ *Solar Futures Study*, Dep’t of Energy at vi, 6 (Sept. 8, 2021) (recognizing the importance of transmission as related to solar development).

⁵⁷ *Transmission Needs Study*, Dep’t of Energy at 51, 108-’10 (Oct. 30, 2023).

development in open areas for oil and gas leasing that caused unanticipated adverse impacts to wildlife.⁵⁸

- **Western Resource Adequacy Program (WRAP).** We recommend the BLM actively engage with the WRAP to inform the RFDS of solar on public lands. The WRAP can assist the BLM in determining appropriate scenarios for solar and other generation development based on practicalities of the grid and the reliability needs of the grid.⁵⁹

We thank the BLM for developing a RFDS that describes the agency’s projected utility-scale solar build-out on public lands through 2045. Given the energy transition’s current and projected momentum, the projected demand of 87,000 – 100,000 MW seems realistic. However, we question the sources and methodology used to estimate the share of the RFDS allocated to each state. The sources listed for Tables 2.2-1 in Chapter 2 and C-2 in Appendix C are DOE 2021 and NREL 2022. Neither source appears to contain the information needed to arrive at the state-level estimates in Tables 2.2-1 and C-2 and we believe the estimates to be inaccurate. The BLM should provide more appropriate sources and estimates. For example, we question why the PEIS (Tables 2.2-1 and C-2) shows Washington as having 23,662 more acres (approximately 3,300 MW) of projected solar development than Nevada. Washington has 437,237 acres of largely non-contiguous areas of BLM-administered lands, no existing utility-scale solar projects, and the lowest solar insolation of any state in the 11-state planning area, whereas Nevada has high insolation values, large areas of contiguous public land, and over 100 authorized or pending applications for solar and other renewable energy ROWs on BLM-administered lands. In fact, TNC’s Power of Place West analysis (<https://zenodo.org/records/7460026>) projects that nearly all solar build-out on public lands through 2050 will occur in California, Nevada, Arizona, and New Mexico, with the largest footprint projected in Nevada. Collectively, these states only account for 52% of the RFDS, and Nevada only accounts for 7% of the RFDS. If the RFDS estimates for states like Nevada are lower because there are so many projects already in the queue, then the BLM should revise the PEIS to clarify how it came to this determination and describe how pending projects contribute to the state level and overall RFDS. We recommend that the BLM revisit the state-by-state estimates and project a more realistic build-out of utility-scale solar throughout the study area.

a. RFDS for water withdrawals

The estimated water withdrawals are based on two assumptions: (1) 7.5 acres of land would be needed for each MW of energy generation capacity and (2) operation-related water withdrawal for PV solar energy generation facilities ranges from 0.05 to 0.35 ac-ft/yr per MW. As listed in Table 3.1-1, construction-related water use for PV solar energy facilities ranges from 0.12 to 3.8 ac-ft per MW of energy generation capacity. The solar PEIS states large withdrawals due to

⁵⁸ *Governor: Balance Development & Conservation on Pinedale Anticline Comments for the BLM Pinedale Anticline Draft Supplemental Environmental Impact Statement*, Wyoming Office of Governor Freudenthal (Apr. 2007), <https://www.pinedaleonline.com/news/2007/04/GovernorBalanceDevel.htm>; See also Hall Sawyer, et. al. *Migratory Disturbance Thresholds with Mule Deer and Energy Development*, 84 *Journal of Wildlife Mgmt.* 930-’37 (Mar. 3, 2020), <https://doi.org/10.1002/jwmg.21847>.

⁵⁹ *The Western Resource Adequacy Program*, GridLab (Sept. 2023), https://gridlab.org/wp-content/uploads/2023/09/GridLab_WRAP-Report.pdf.

solar energy demands are not expected under the RFDS, given state and local oversight of groundwater supplies and fully allocated supplies in most regions. We would like to see more discussion and an analysis on how the lack of water may impact required mitigation efforts and implementation of design criteria. As mentioned, BLM is currently working through 11 applications for solar, wind, and geothermal projects across the Snake River plain of Idaho in the Twin Falls District alone where there is a moratorium on any new water allocations.

Again, it is critical, as part of the screening criteria, that any new project a) account for where its water is going to come from and b) require that the project (based on associated adjacent habitat improvements, water rights acquisition, re-purposing of water from other/previous projects, etc.) have a neutral or net positive affect on environmental water availability.

IX. Conclusion

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,

Arizona Wildlife Federation
Backcountry Hunters and Anglers
California Council Trout Unlimited
Colorado Trout Unlimited
Colorado Wildlife Federation
Conservation Northwest
Idaho Council Trout Unlimited
Idaho Wildlife Federation
Montana Trout Unlimited
Montana Wildlife Federation
National Wildlife Federation
Nevada Wildlife Federation
New Mexico Council Trout Unlimited
New Mexico Wildlife Federation
North American Grouse Partnership
Oregon Council Trout Unlimited
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
Utah Council Trout Unlimited
Utah Wildlife Federation

Washington Council Trout Unlimited
Wyoming Trout Unlimited
Wyoming Wildlife Federation

Cc:

Deb Haaland, Secretary, Department of the Interior
Laura Daniel-Davis, Acting Deputy Secretary, Department of the Interior
Steve Feldgus, Principal Deputy Assistant Secretary for Land and Mineral
Management, Department of the Interior
Tracy Stone-Manning, Director, Bureau of Land Management
Nada Wolff Culver, Principal Deputy Director, Bureau of Land Management
Shantha Ready Alonso, Director of Intergovernmental and External Affairs,
Department of the Interior

Appendix A. Aquatics examples

Oregon

The Deschutes River, Oregon should be closed to utility-scale solar. Oregon's Deschutes River is the most fabled trout water in the state and supports a wide range of recreational activities including fishing, rafting, hunting, mountain biking, and hiking. The Deschutes River Basin drains much of the east side of Oregon's Cascade Mountains, gathering tributaries such as the spring-fed Metolius River, snowmelt-driven Crooked River, and glacial-origin White River, on its path northward to the mighty Columbia River. The iconic Deschutes is home to a wide variety of native salmonids including redband trout, bull trout, summer steelhead, spring and fall Chinook salmon, and coho salmon.

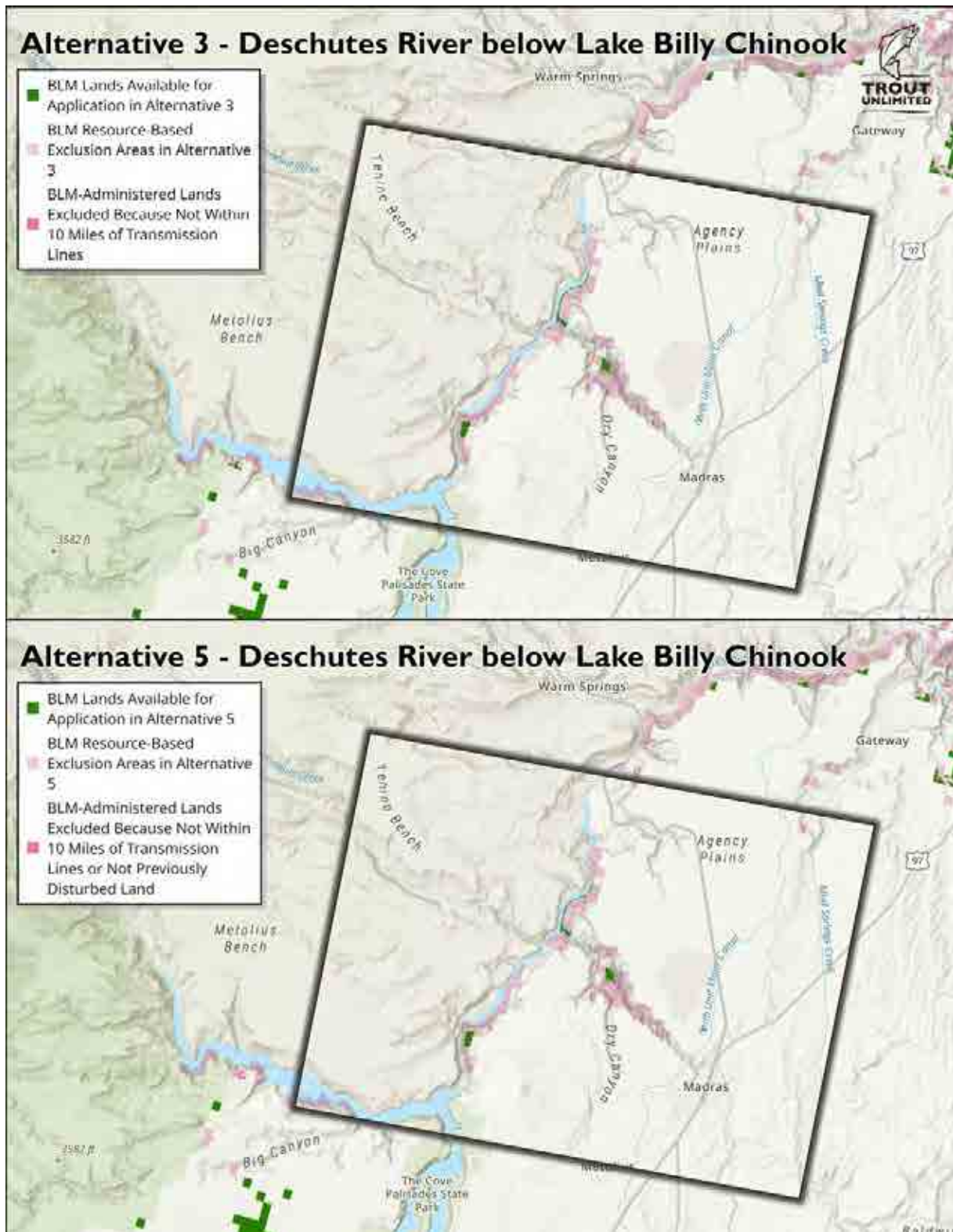


Figure 1. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land along the mainstem Deschutes River, Lake Billy Chinook, Oregon available for solar application.

BLM's Solar PEIS Alternatives 3 and 5 would make BLM land along the mainstem Deschutes River, Lake Billy Chinook (Figure 1) and key Deschutes River tributaries including Trout Creek (Figure 2), Wapinita Creek (Figure 3), and the Crooked River (Figure 4) available for application for solar development.

Trout Creek is a vital tributary of the Deschutes River and is designated critical habitat for Deschutes wild steelhead. Many of the steelhead that enter the Deschutes from the Columbia make the journey upriver to spawn in Trout Creek. Although the Deschutes is world-famous for its historically prolific runs of summer steelhead, anadromous fish returns to the basin have been low in recent years—particularly for wild summer steelhead. Water quality in the system is suffering from factors including, but not limited to, agricultural practices and tremendous growth of human population centers in Central Oregon. The effects of these issues are being compounded by drought conditions and climate change. Snowpack, streamflows, groundwater levels, and surface spring flows are all diminishing in the Basin.

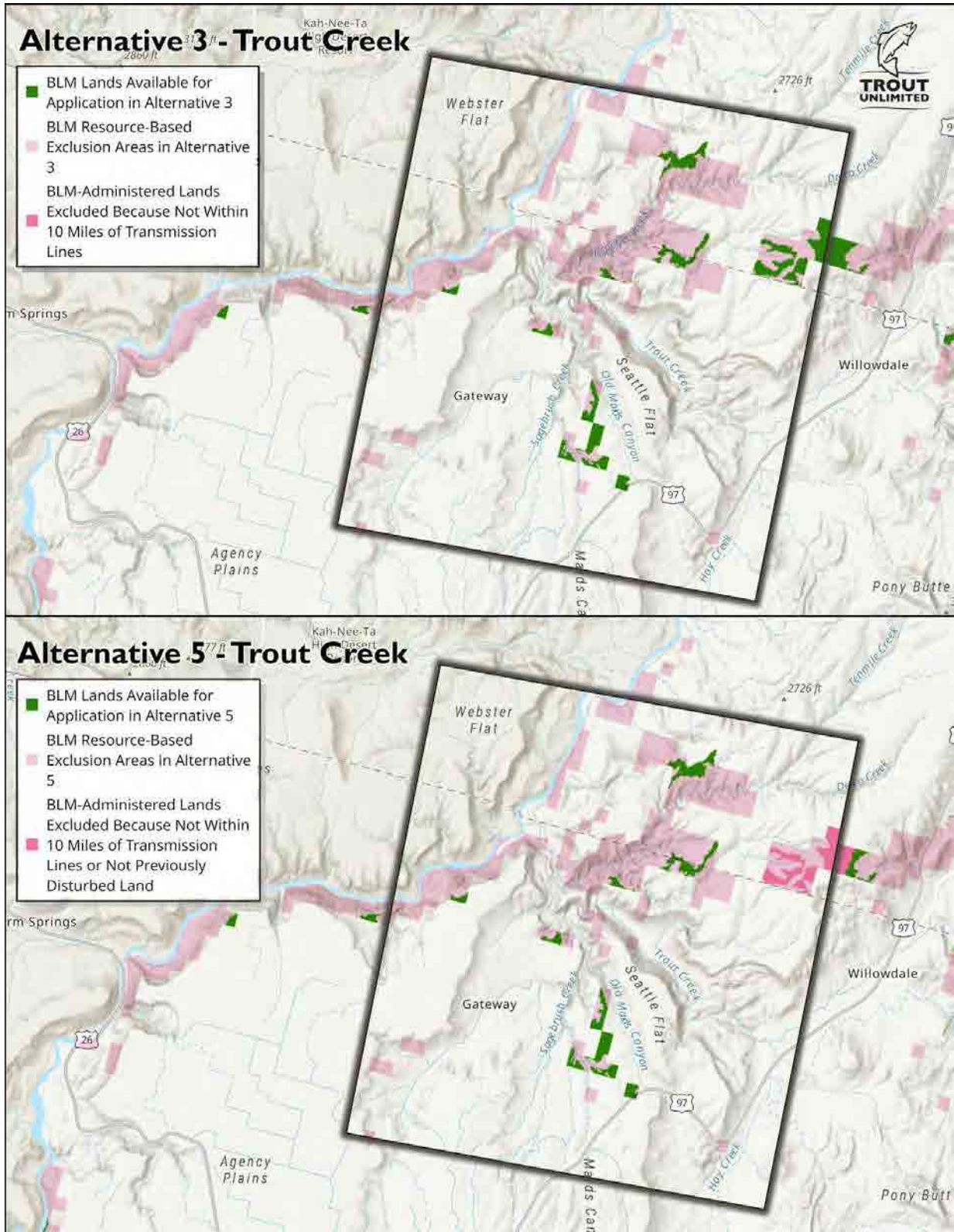


Figure 2. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land along key Deschutes River tributaries including Trout Creek, Oregon available for solar application.

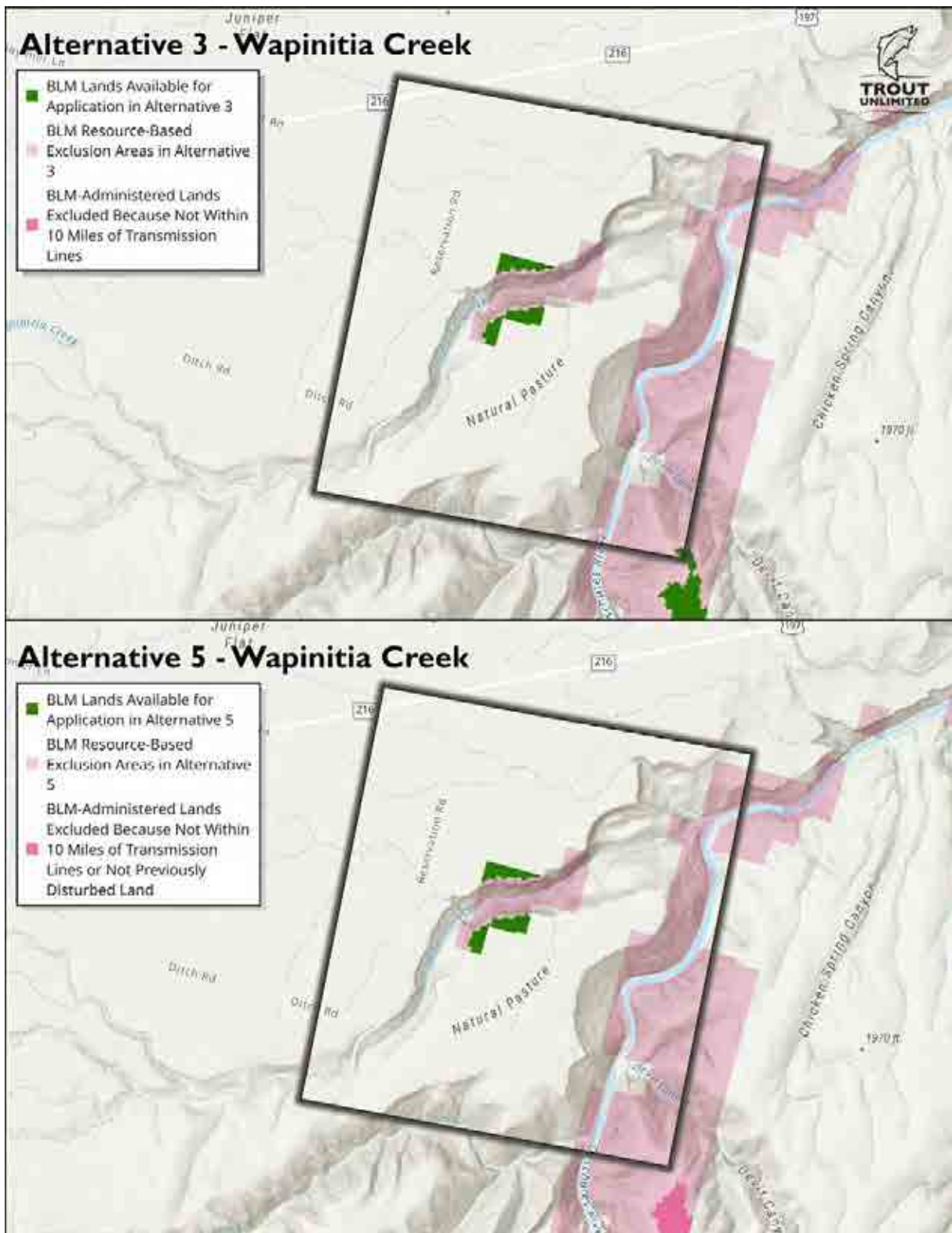


Figure 3. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land along key Deschutes River tributaries including Wapinitia Creek, Oregon available for solar application.

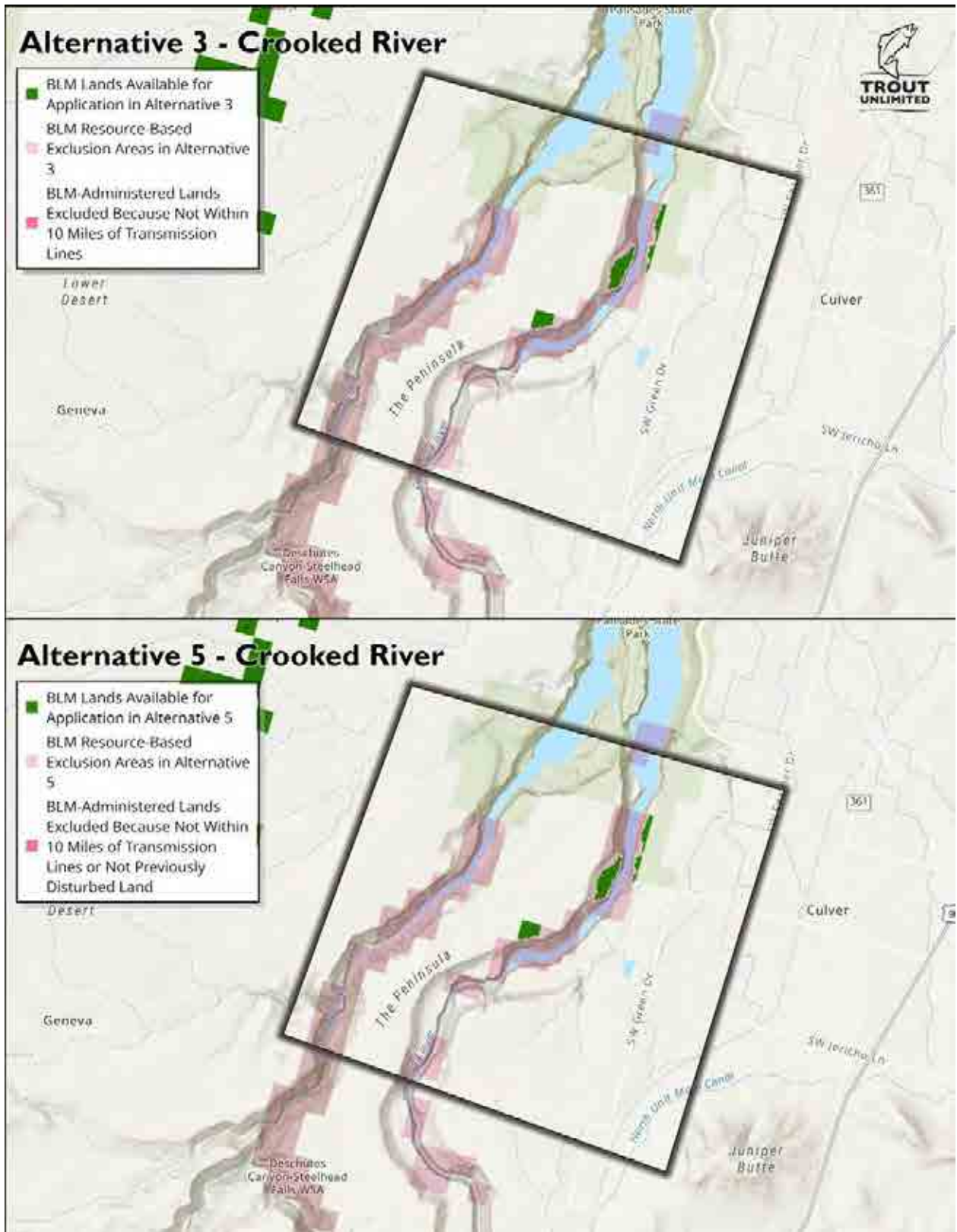


Figure 4. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land along key Deschutes River tributaries including Crooked River, Oregon available for solar application.

Washington

Under the Alternatives, Yakima River, Washington would be open for utility-scale solar application (Figure 5). Water is the basis of life in the Yakima Basin. Without water, there are no fish, no people, and no agriculture. The Yakima Basin’s annual water conditions are intricately tied to snowpack and runoff in Washington’s Cascade Mountains and foothills. Historically, the Yakima Basin supported a conservatively estimated 500,000-plus returning anadromous fish, including Chinook, Coho, and Sockeye Salmon, Steelhead, and Pacific Lamprey. These fish supported a robust ecosystem and are culturally significant foods for the Yakama Nation, whose ancestral home is the Yakima Basin. Ongoing fish and water conservation measures are improving conditions but current fish returns remain mere fractions of historic numbers. Despite the ongoing fish issues, the Yakima Basin represents a multi-billion dollar economy for the state of Washington. A key component of the local economy is recreation like fishing and boating in the famed Yakima River Canyon—home to one of Washington’s most accessible and scenic trout fisheries. The same canyon is home to Bighorn Sheep, elk, and Mule deer that must all quickly adapt to climate change and loss of habitat from development. The fish and wildlife of the Yakima Basin are not only integral to the ecosystem, they are vital to the ways of life in the valley.

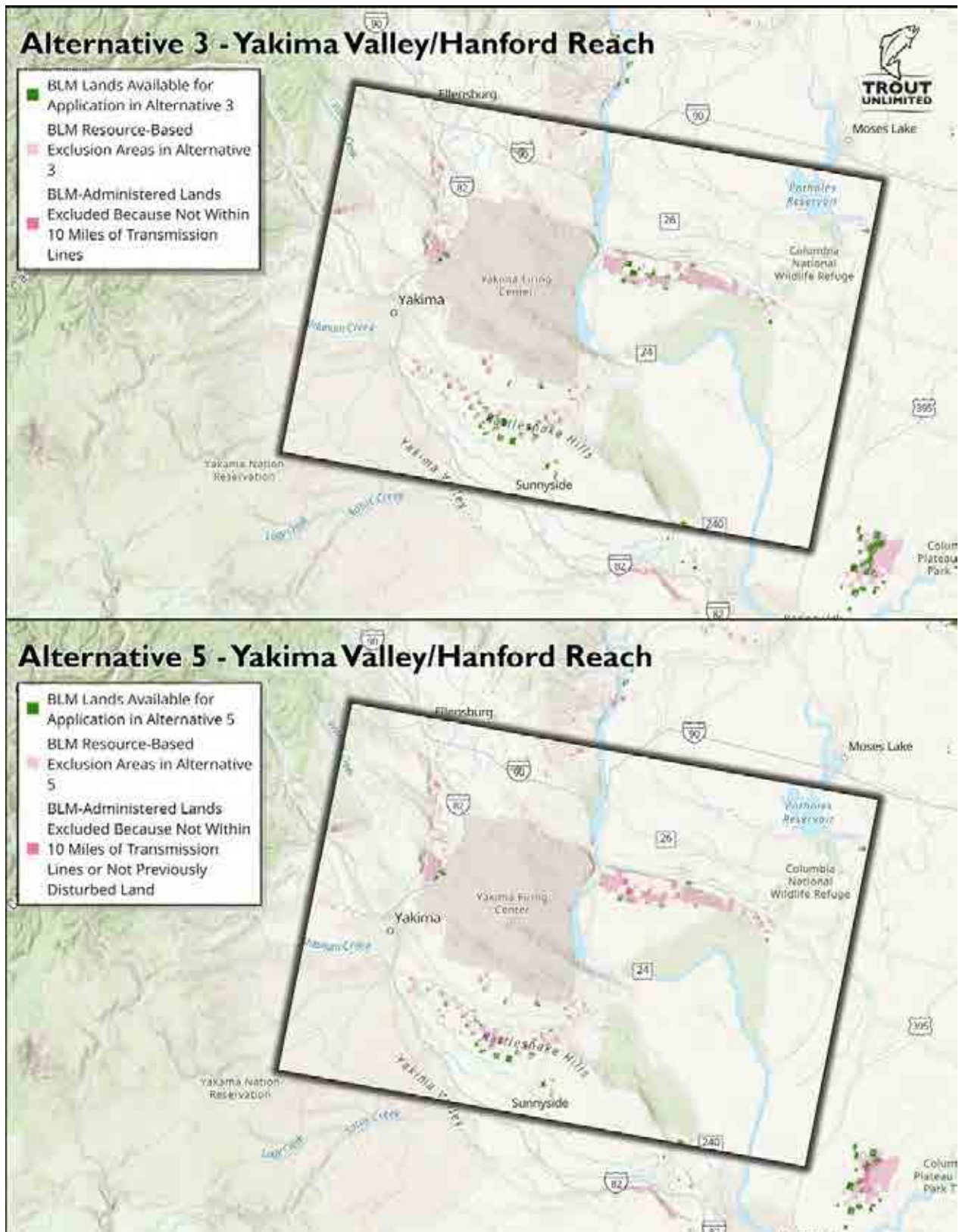


Figure 5. BLMs Alternative 3 and 5 would make lands available for solar application in the Yakima River basin, Washington.

Montana

Under Alternatives 3 and 5, Big Hole watershed in Montana would have lands available for utility scale solar, north of Dillon and west of Twin Bridges (Figure 6). This area is facing constant water shortages and drought issues in the Big Hole, and the watershed is currently facing a massive decline in the Big Hole brown trout population because of lower flows and higher temps every year. While brown trout are non-native, there are native cutthroat that inhabit many of the tributaries and even the main stem in those lands deemed available. Grayling can also be found in the upper Big Hole and found further downstream on the mainstem as well. Any additional infrastructure or industrial stressor that is introduced into that region, that could have a negative impact on the watershed, should come under intense scrutiny.

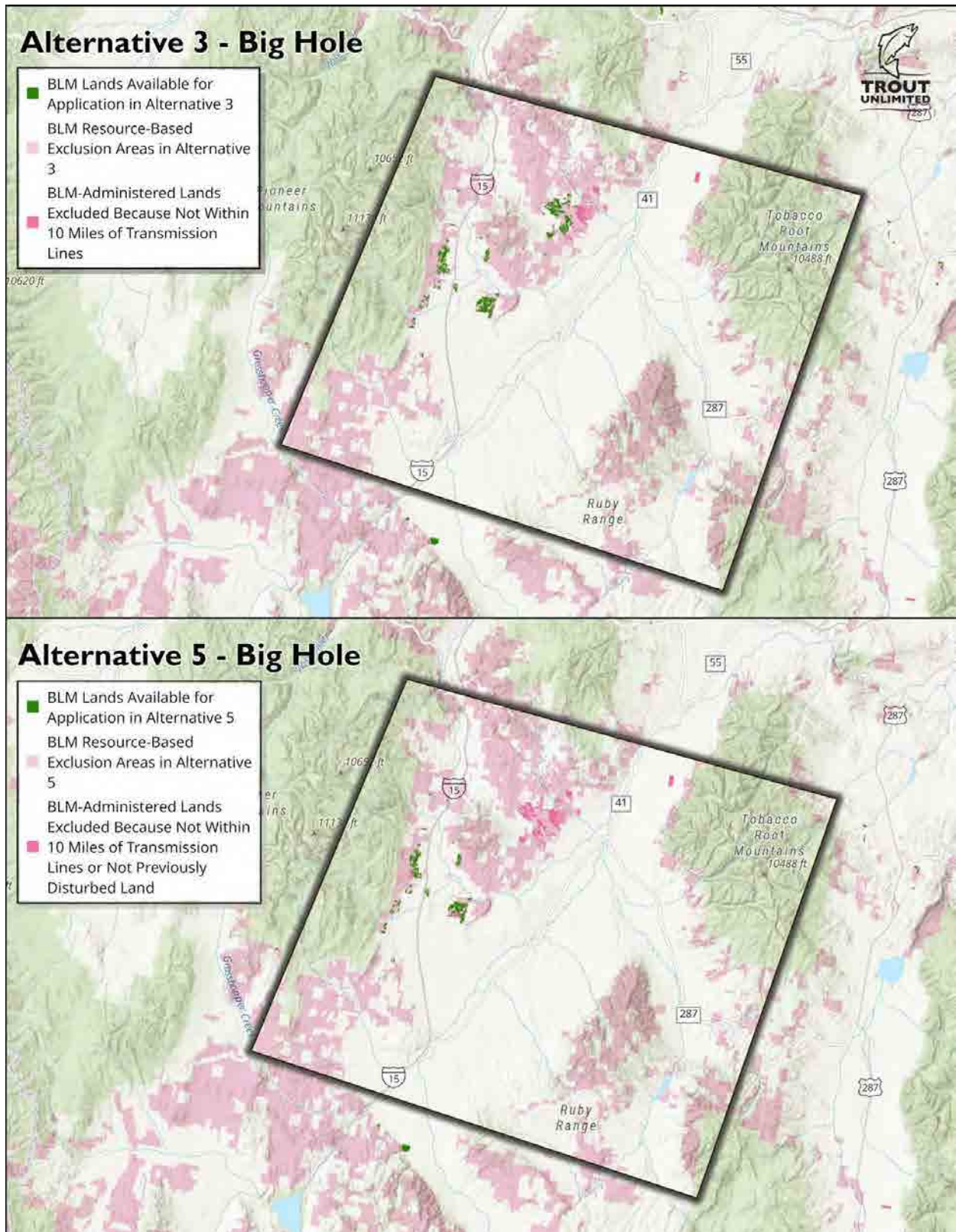


Figure 6. BLM’s Solar PEIS Alternatives 3 and 5 would make BLM land in the Big Hole watershed, Montana available for solar application.

New Mexico

In New Mexico, approximately 3.75 miles of the San Juan River is designated Special Trout Waters, which is the most popular fishing area in New Mexico for wild rainbow and brown trout (Figure 7). This area is incorporated as a part of the Navajo Lake State Park, drawing over 1 million anglers annually, and it is an important part of the local recreation economy for San Juan County. Below the community of Navajo Dam (where Hwy 173 crosses the San Juan) wild brown and rainbow trout populations support several fishing lodges and guiding businesses. Looking at Alternatives 3 and 5, the BLM Cottonwood Campground could be impacted by potential utility-scale solar development, contradicting many of the conservation and recreation values already identified by BLM in their creation of overnight campgrounds, public fishing access, trails and other recreational uses for the San Juan River. We are concerned that the San Juan's Special Trout Waters, Navajo Lake State Park, and BLM Cottonwood Campground could be negatively impacted by fragmentation and degradation of trout habitat potentially caused by an increase of solar development in the region through watershed pollution, increased road development, industrial traffic, and transmission line impacts.

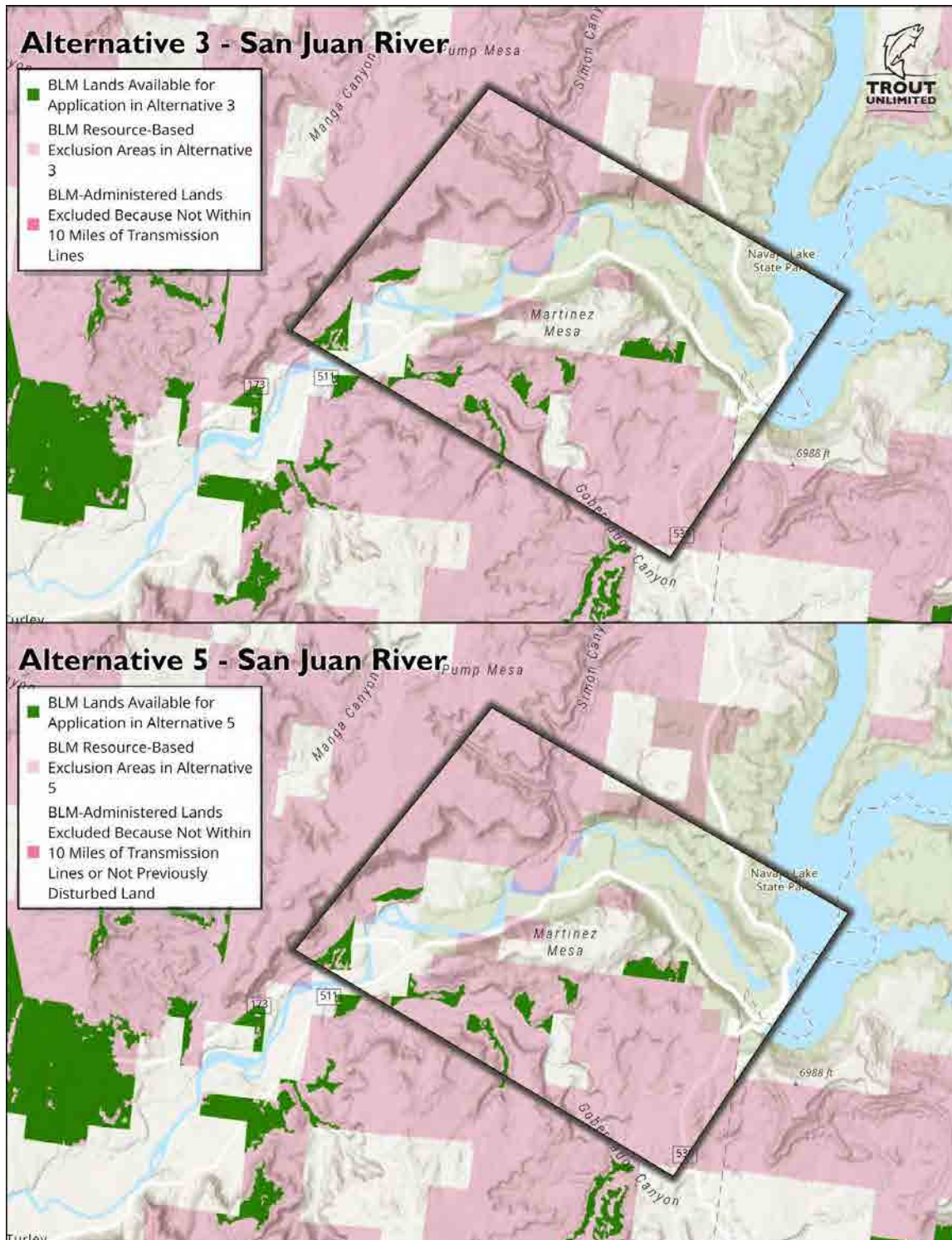


Figure 7. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land in the San Juan River watershed, New Mexico available for solar application.

Utah

In Utah, the Beaver River (Figure 8) is an active restoration site managed by the Utah Division of Wildlife Resources. Trout Unlimited has worked with them as a partner to stabilize banks and bolster wild brown trout populations. This is a potential Utah Blue Ribbon Fishery. Blacks Canyon (Figure 9) is part of the Blue-Ribbon Fisheries network in the Upper East Fork of the Sevier River. Deer Creek (Figure 10) and North Creek (Figure 11) are also both tributaries to the Upper East Fork of the Sevier River that is a Blue-Ribbon Fishery in Utah. Any disturbance in those drainages may result in degradation and destabilization of banks leading to high sedimentation rates in spawning areas for wild and native fishes in those areas.

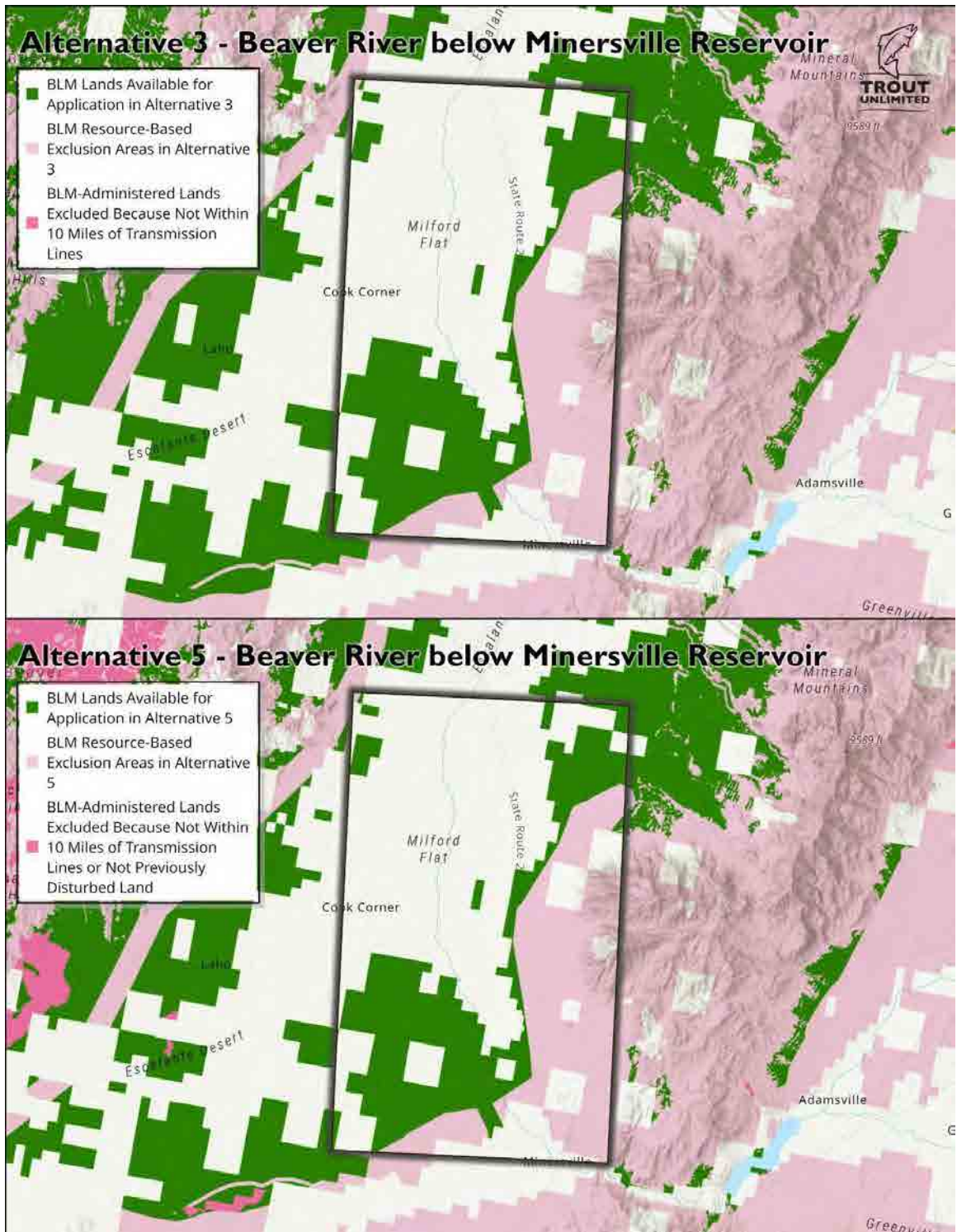


Figure 8. BLM's Solar PEIS Alternatives 3 and 5 would make BLM land in the Beaver River below Minersville, Utah available for solar application.

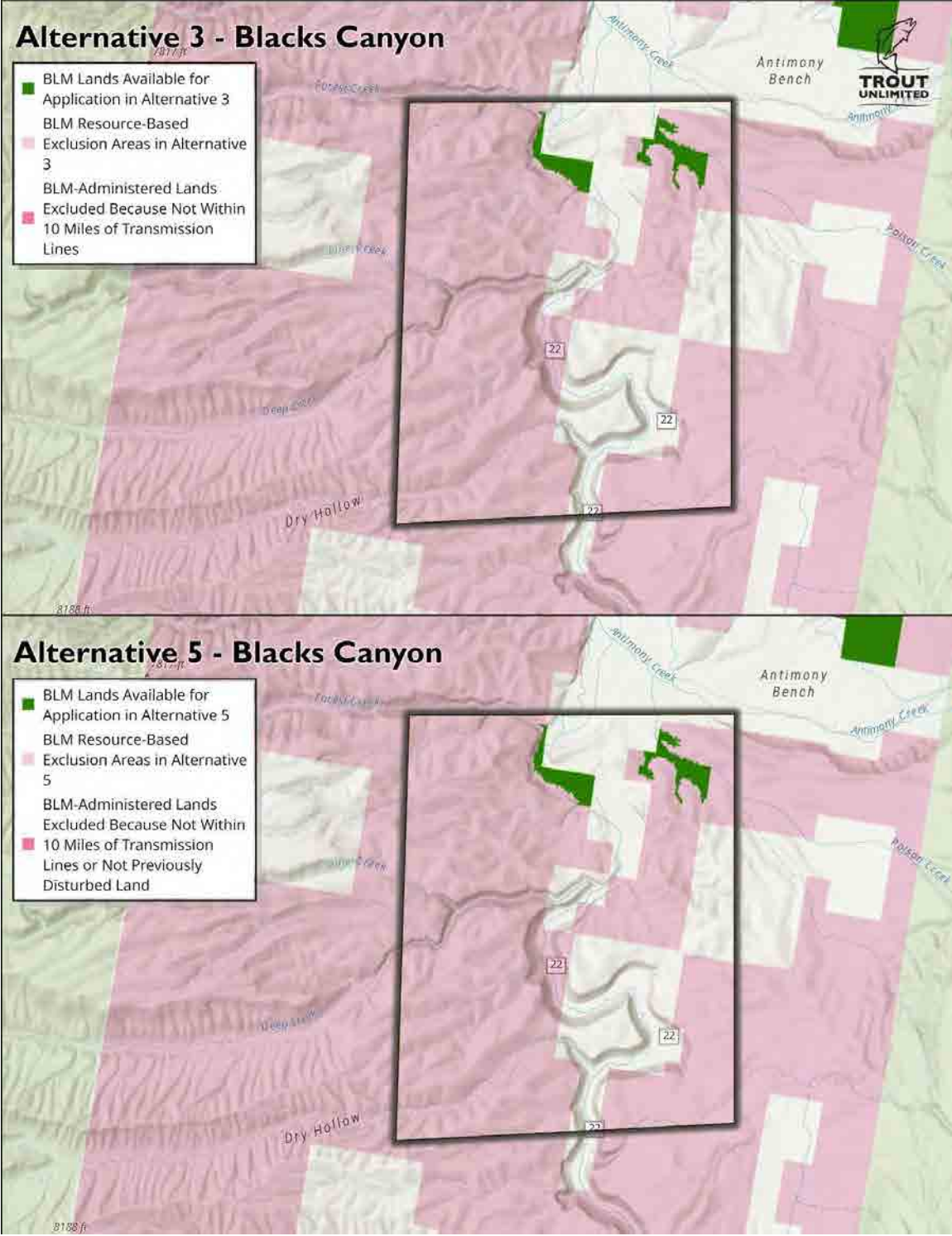


Figure 9. BLM’s Solar PEIS Alternatives 3 and 5 would make BLM land in Blacks Canyon, Utah available for solar application.

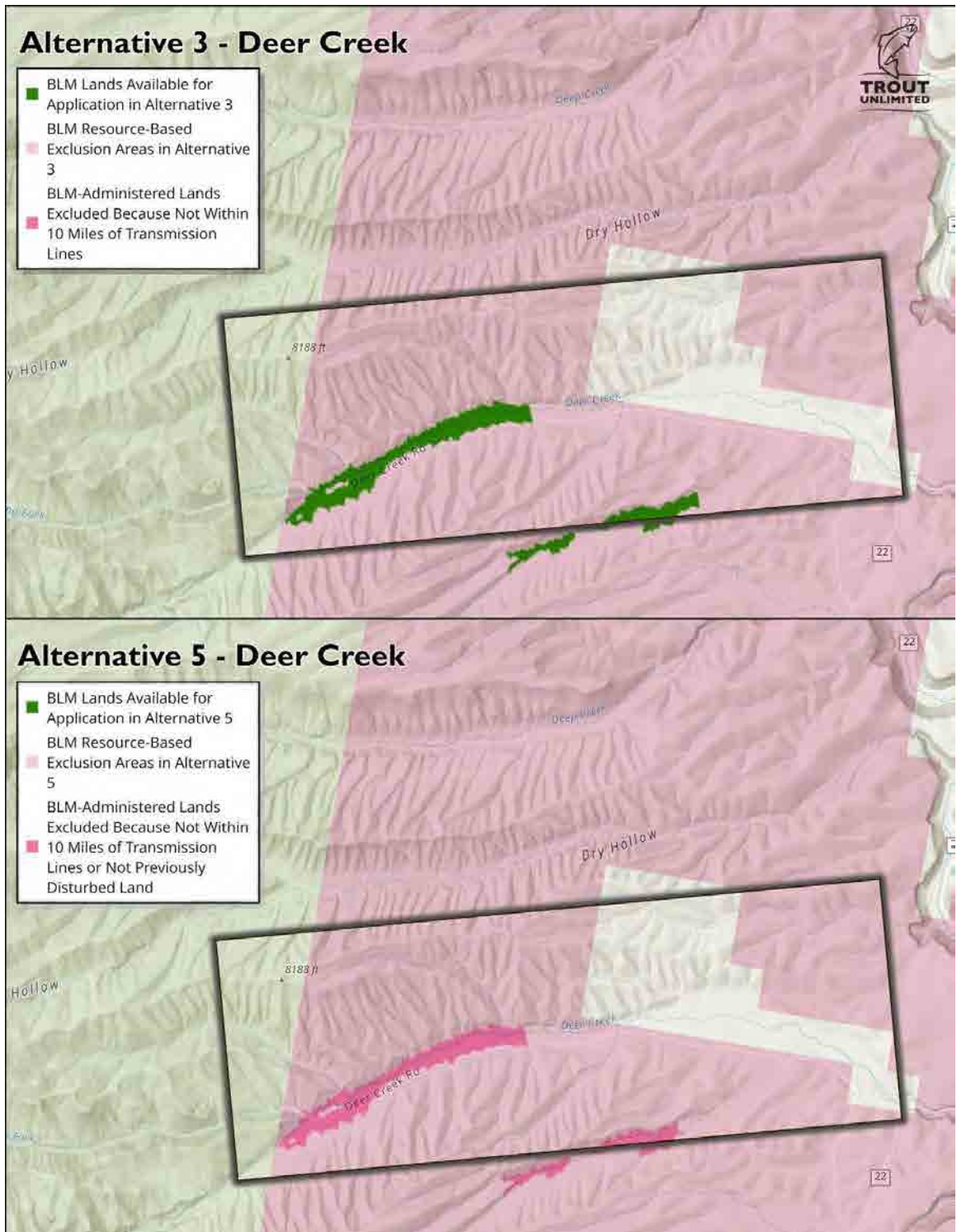


Figure 10. BLM’s Solar PEIS Alternative 3 would make BLM land in Deer Creek, Utah available for solar application.

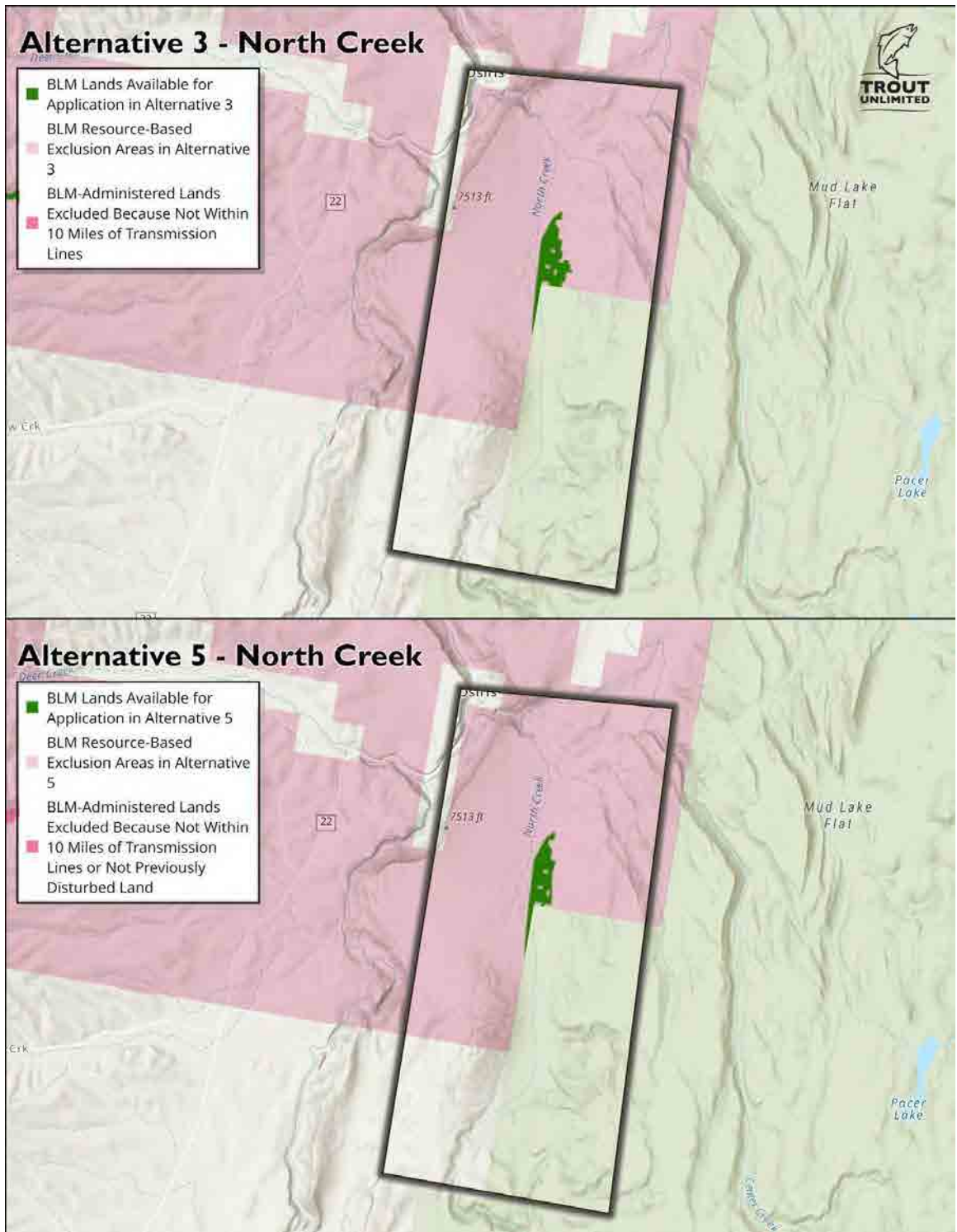


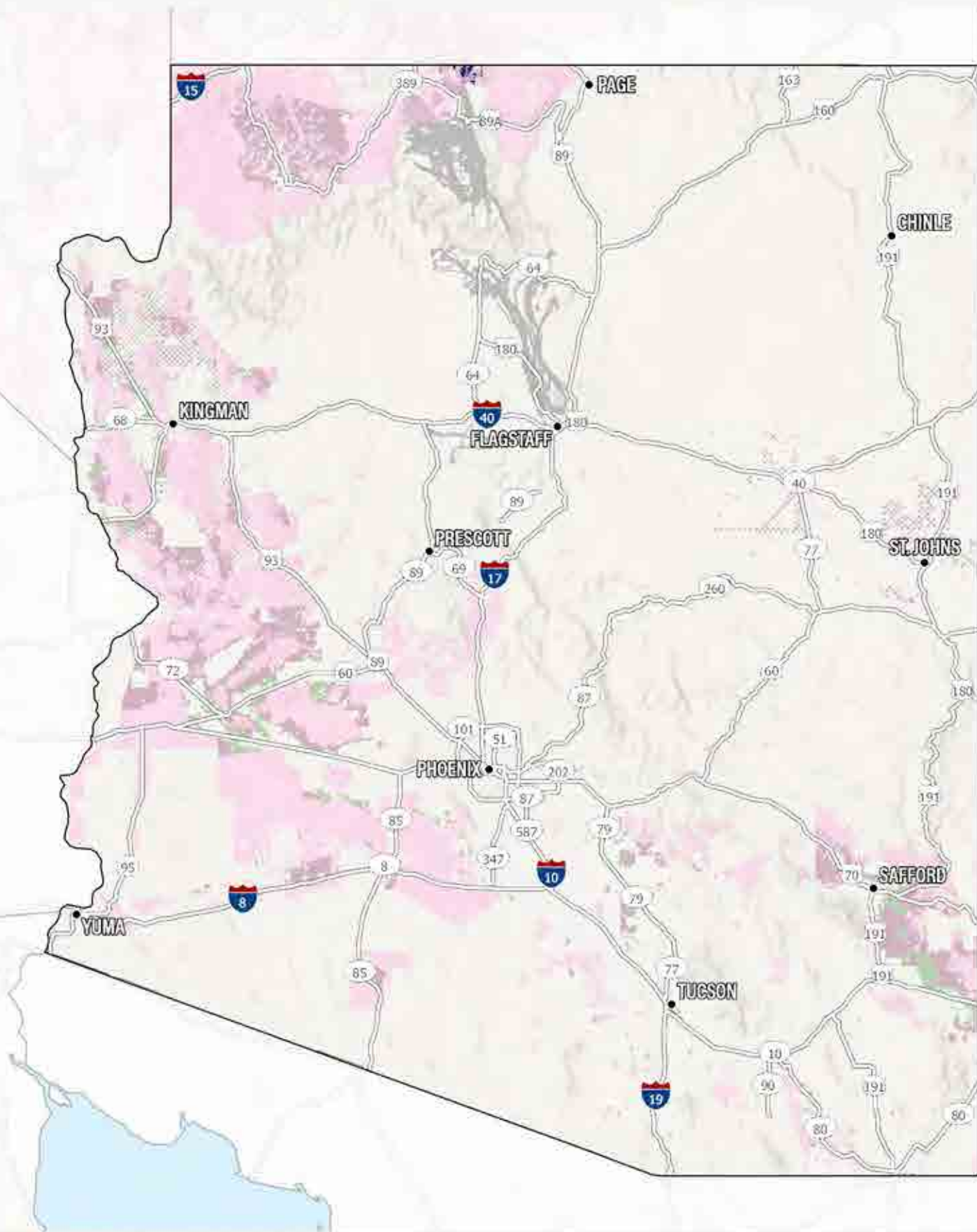
Figure 11. BLM's Solar PEIS Alternative 3 and 5 would make BLM land in North Creek, Utah available for solar application.

Appendix B. State-by-State Big Game Maps

Big Game Habitat Overlay with 'Open' and 'Exclusion' Areas - BLM Draft Solar PEIS Alternative 3 and Alternative 5.

Note: No map is provided for Arizona Alternative 5 because no additional exclusion areas are necessary.

ARIZONA



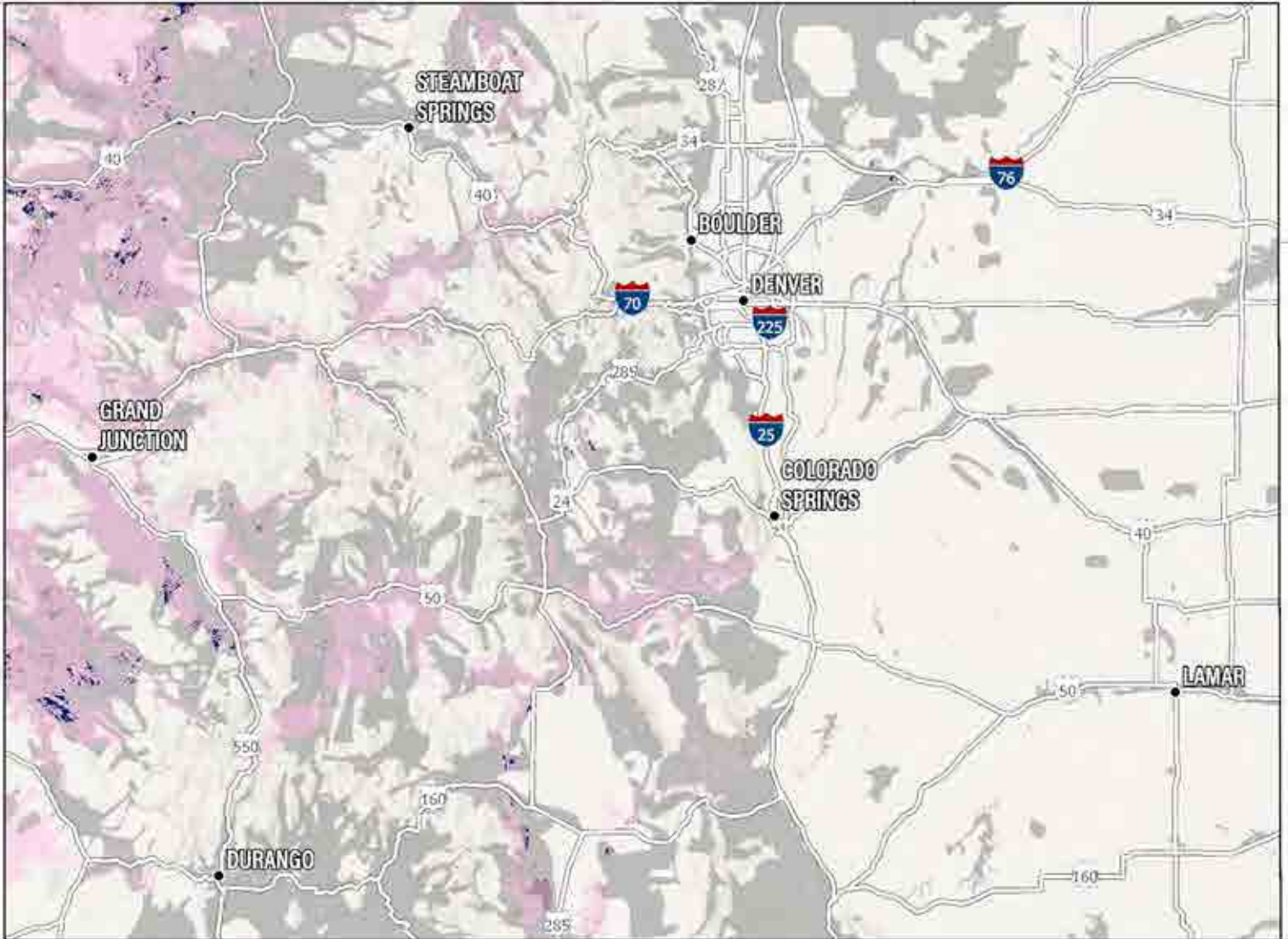
BLM Draft Solar PEIS Alternative 3

- BLM land proposed to be available for solar energy development
- BLM land proposed to be excluded for solar energy development because not within 10 miles of transmission lines
- BLM land recommended to be converted from available to excluded for solar energy development due to big game crucial habitat

● Big Game Migration Corridors & Winter Range



COLORADO



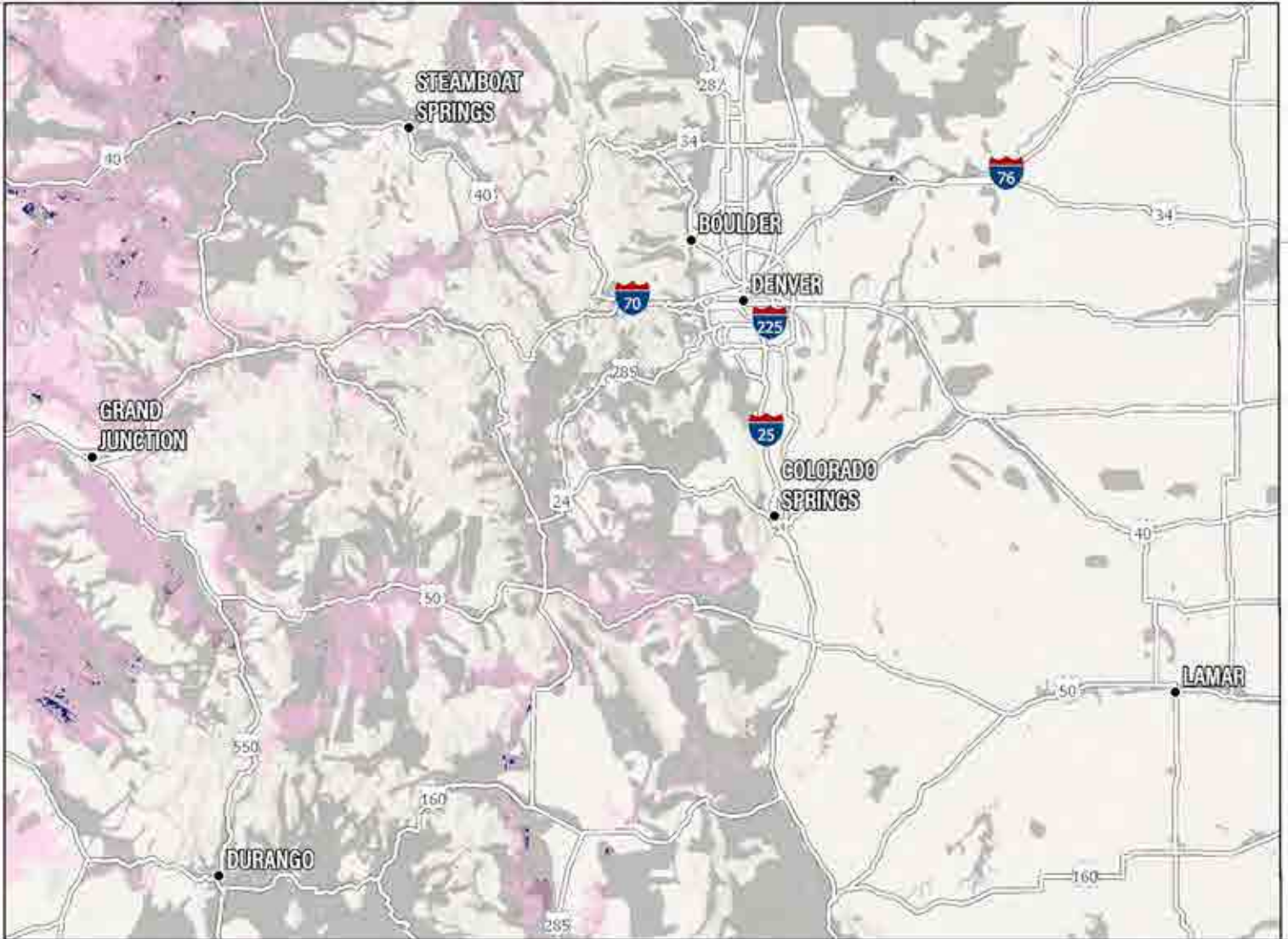
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● Big Game Migration Corridors & Severe Winter Range



COLORADO



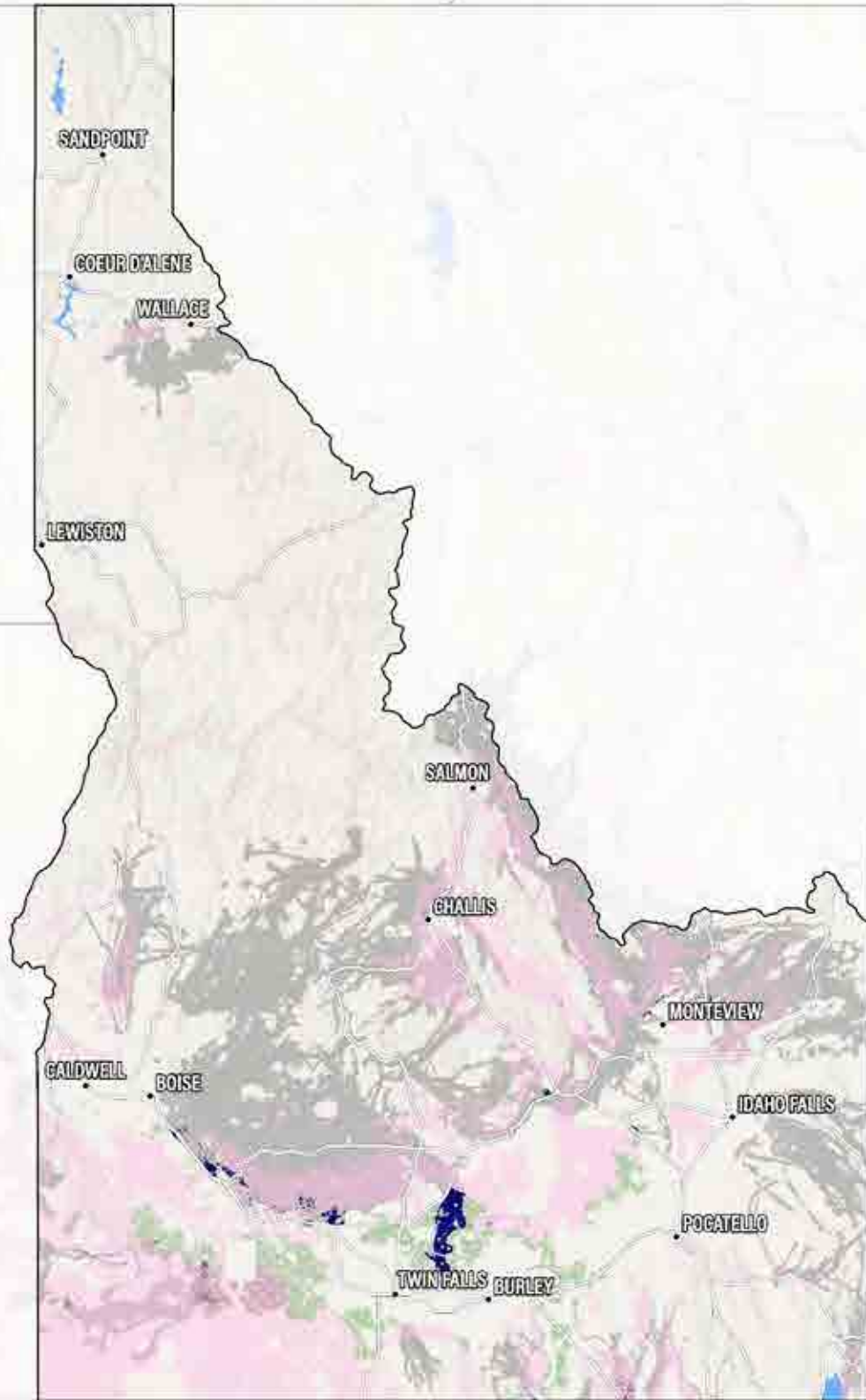
BLM Draft Solar PEIS Alternative 5

- BLM land proposed to be available for solar energy development
- BLM land proposed to be excluded for solar energy development because not within 10 miles of transmission lines
- BLM land recommended to be converted from available to excluded for solar energy development due to big game crucial habitat
- BLM land proposed to be excluded for solar energy development

● Big Game Migration Corridors & Severe Winter Range



IDAHO



BLM Draft Solar PEIS Alternative 3

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- BLM land proposed to be excluded for solar energy development because not within 10 miles of transmission lines
- Big Game Migration Corridors



IDAHO

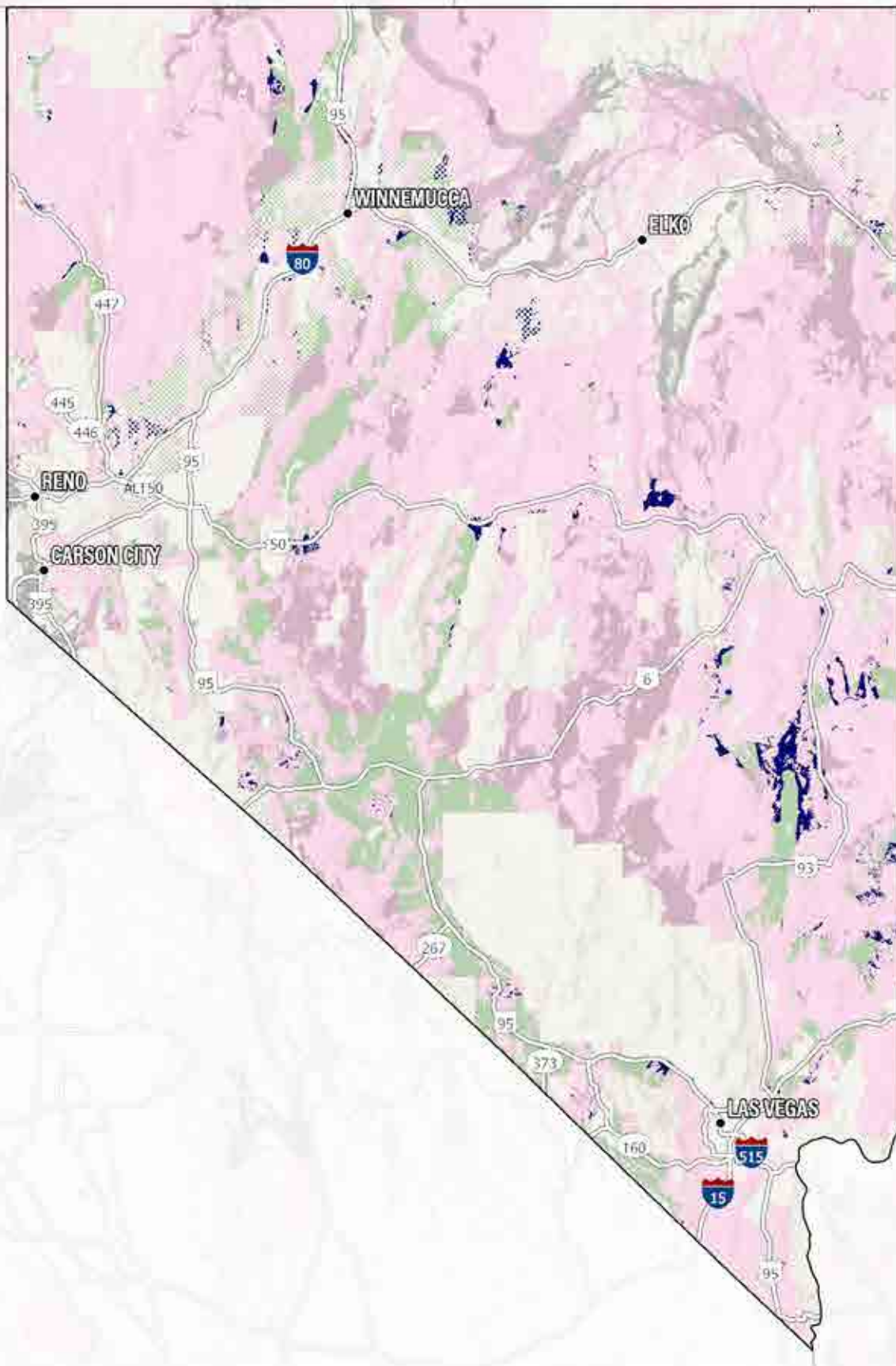


BLM Draft Solar PEIS Alternative 5






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- Big Game Migration Corridors



NEVADA

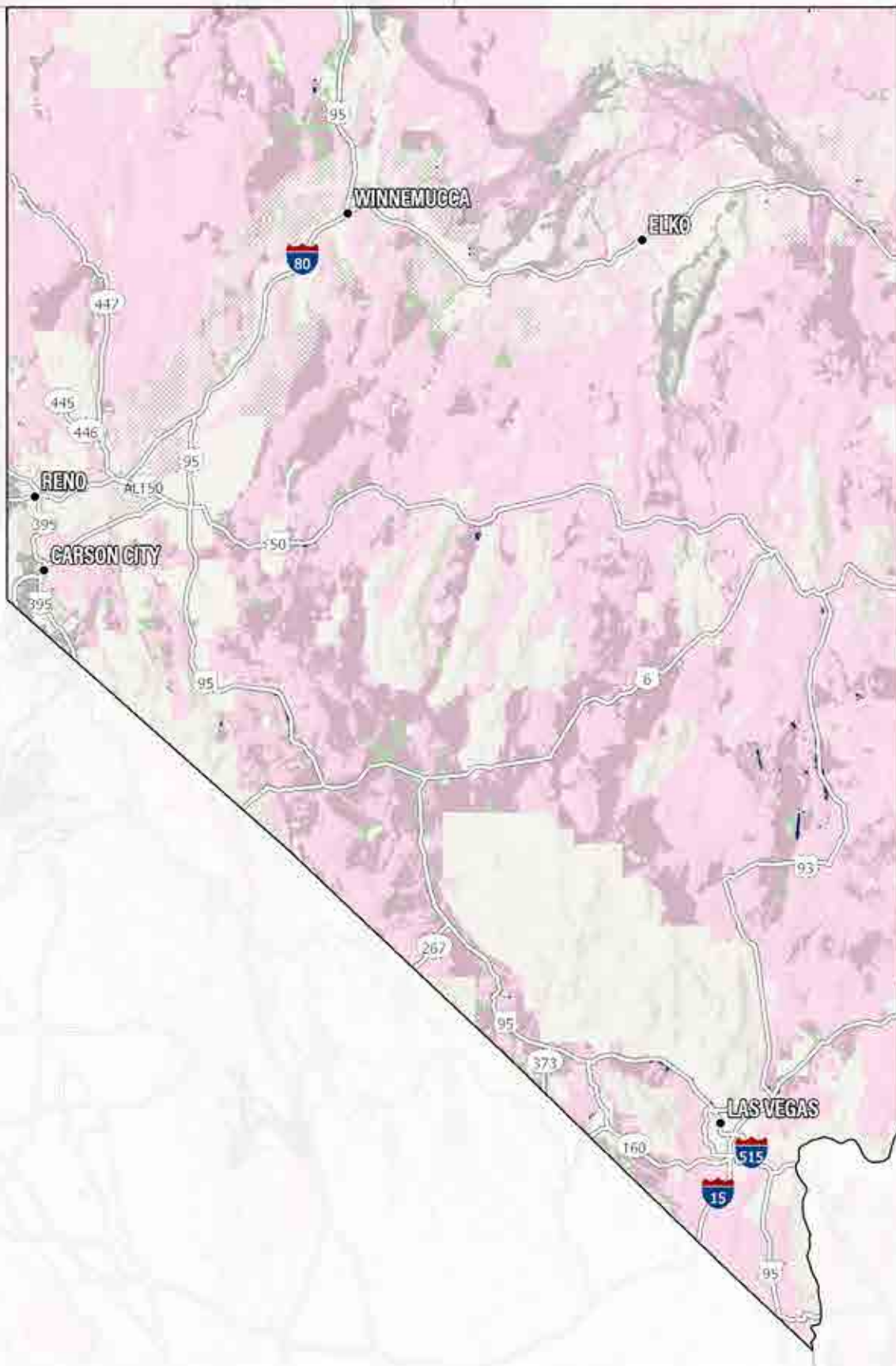


BLM Draft Solar PEIS Alternative 3






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-  Big Game Migration Corridors & Winter Range



NEVADA

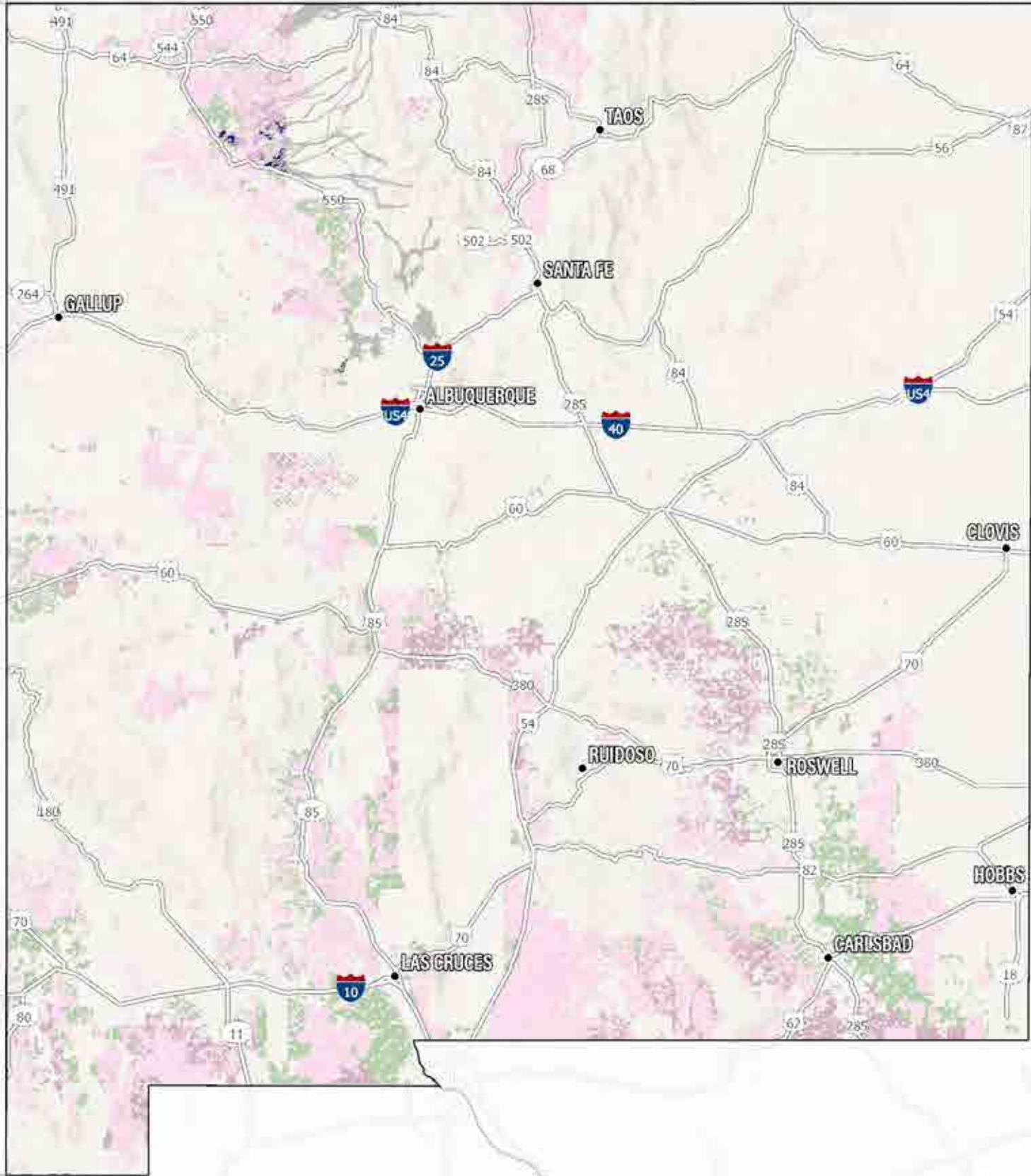


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NEW MEXICO



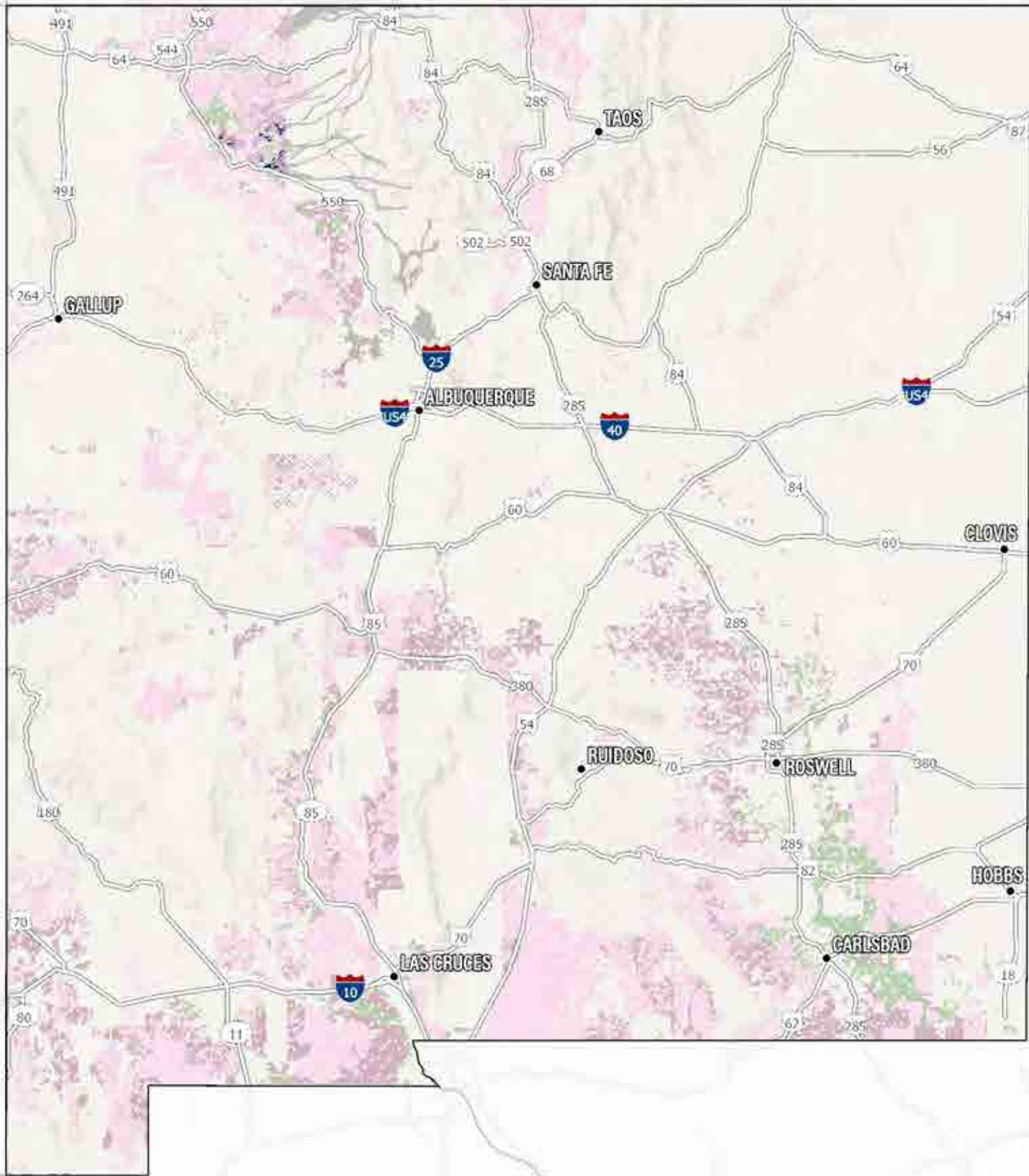
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● Big Game Migration Corridors & Winter Range



NEW MEXICO

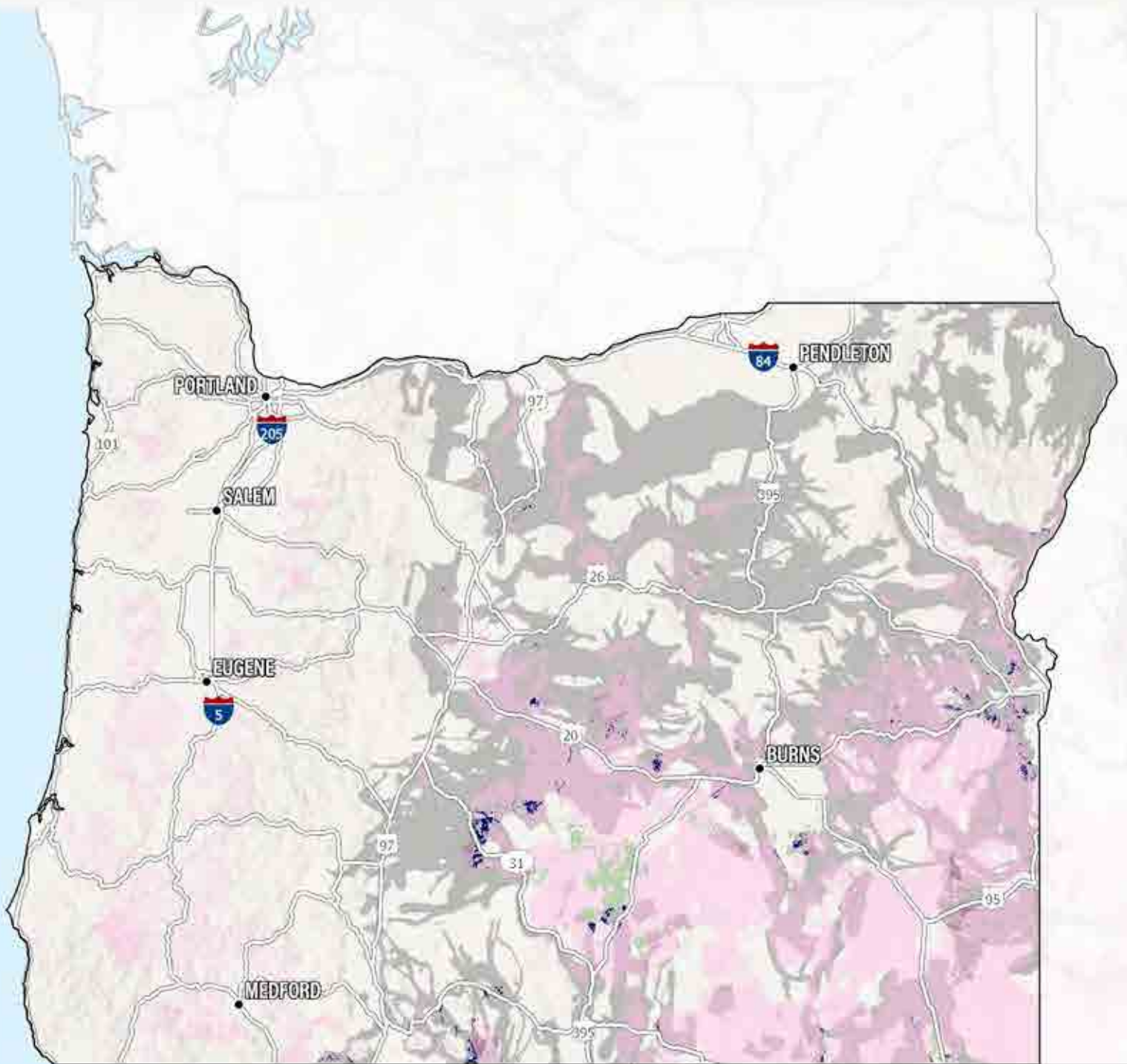


BLM Draft Solar PEIS Alternative 5






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- Big Game Migration Corridors & Winter Range



OREGON



BLM Draft Solar PEIS Alternative 3






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-  Big Game Migration Corridors & Winter Range



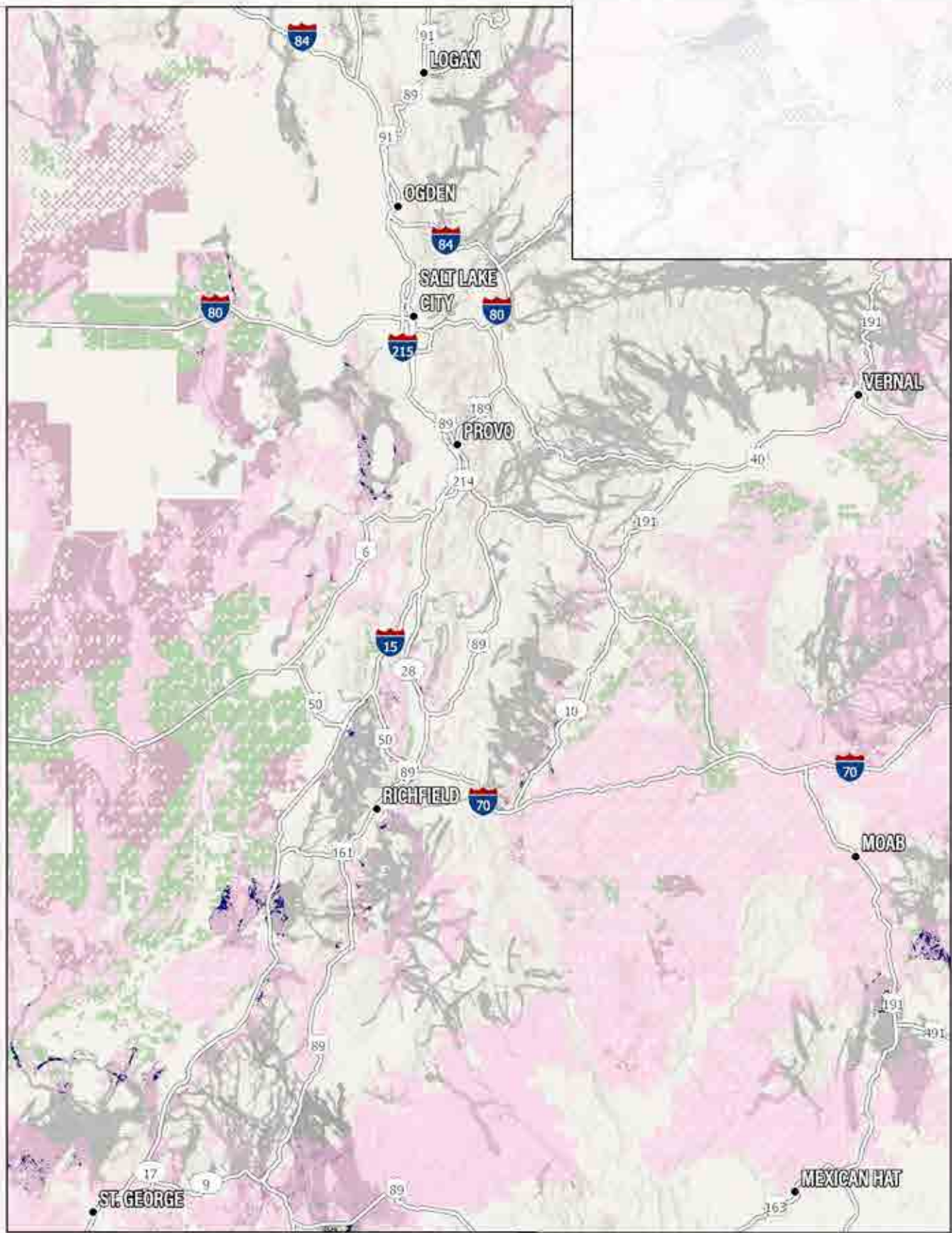
OREGON



BLM Draft Solar PEIS Alternative 5

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 -  BLM land recommended to be converted from available to excluded for solar energy development due to big game crucial habitat
 -  Big Game Migration Corridors & Winter Range
- 
1 inch equals 20 miles

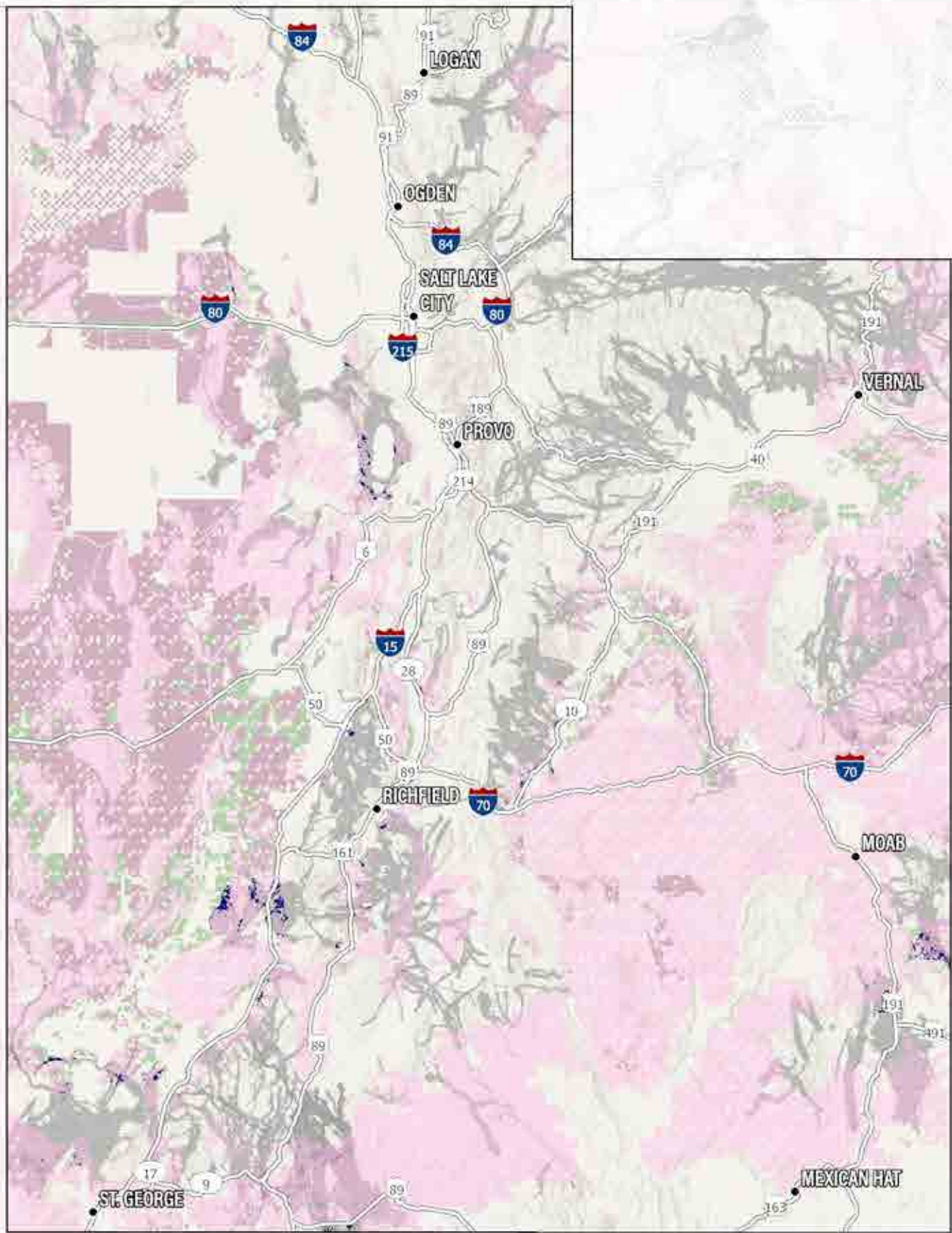
UTAH



BLM Draft Solar PEIS Alternative 3

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 - Mule Deer Migration Corridors
- 0 25 50 Miles
1 inch equals 40 miles

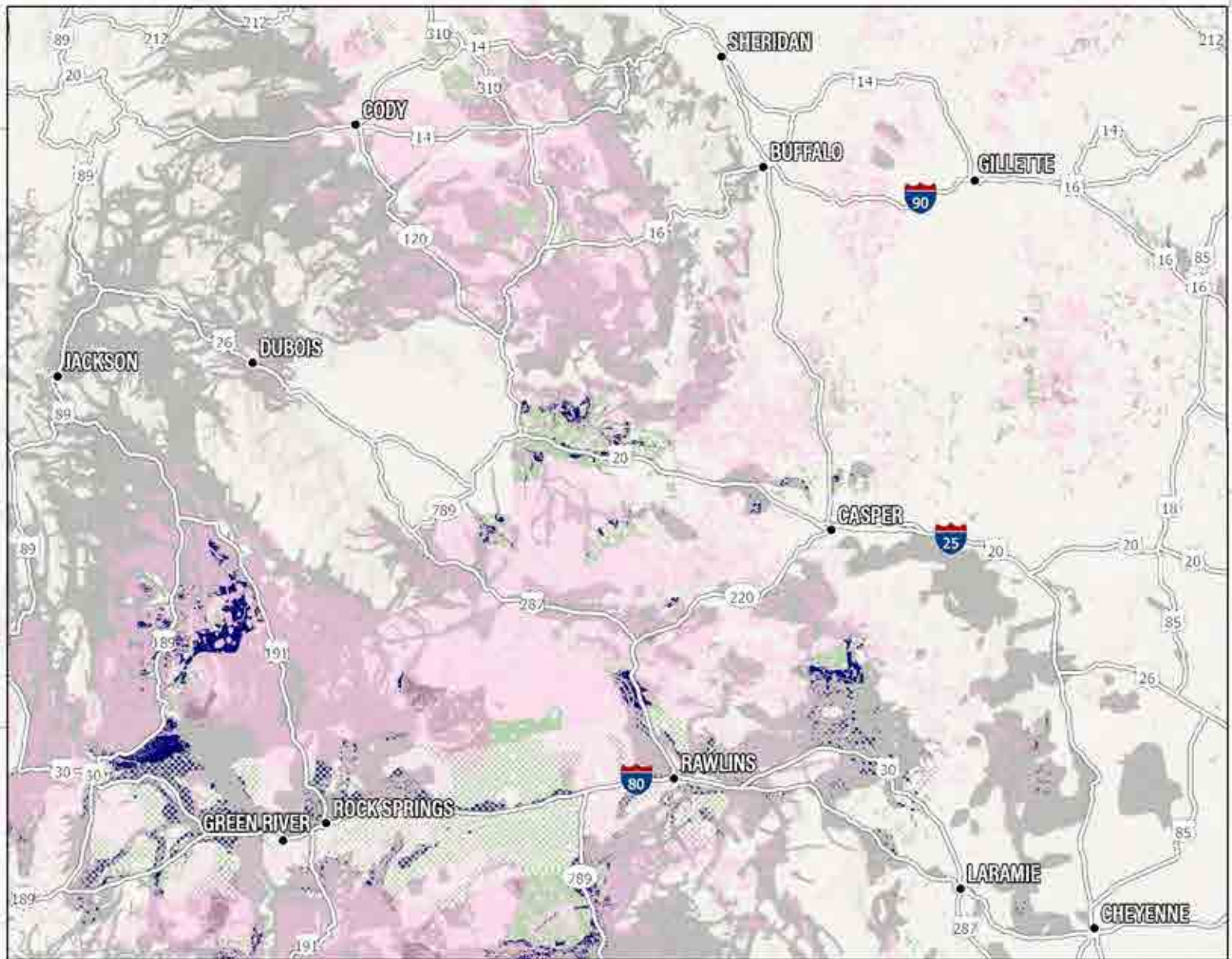
UTAH



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 - Mule Deer Migration Corridors
- 0 25 50 Miles
1 inch equals 30 miles

WYOMING



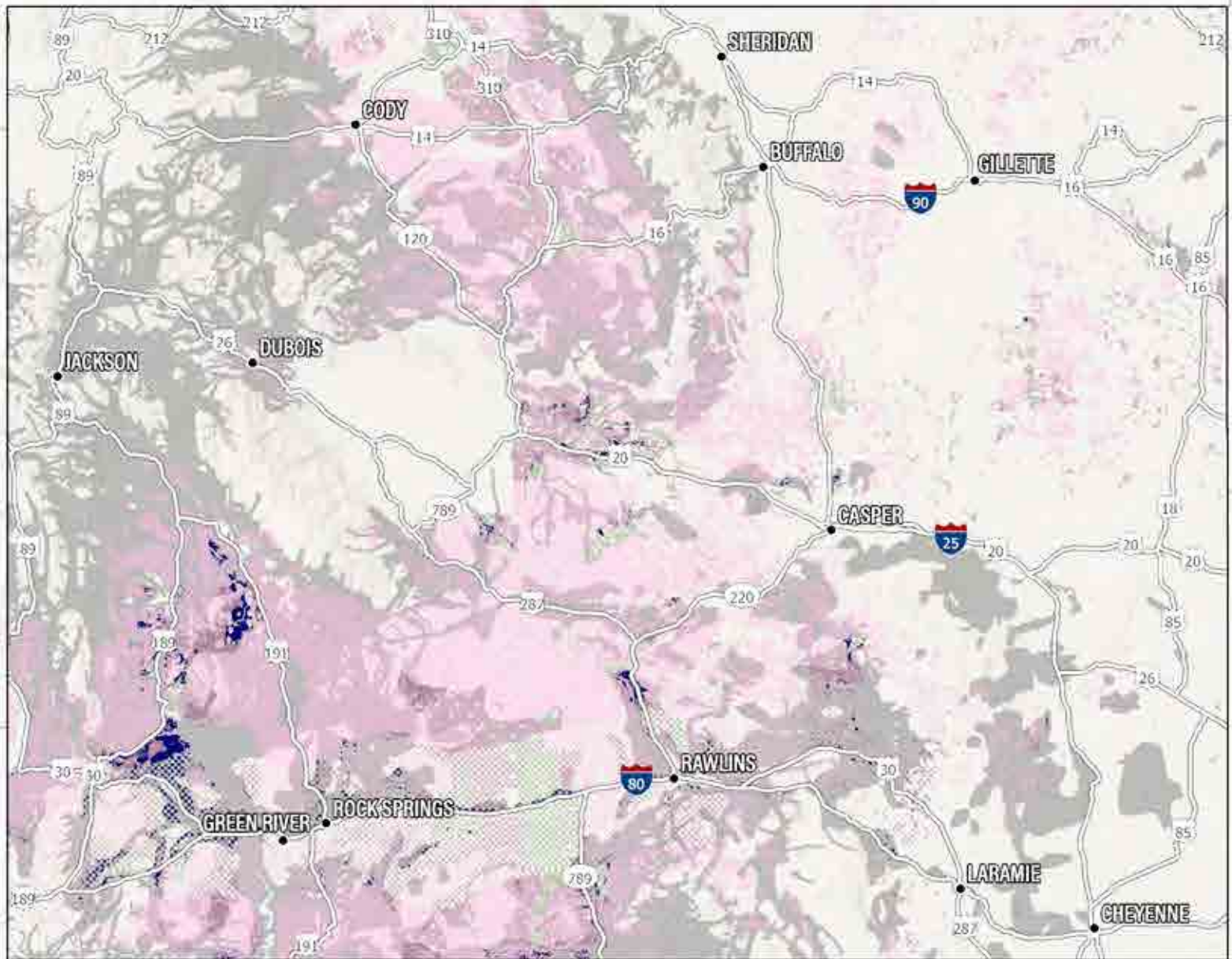
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Big Game Migration Corridors & Crucial Range



WYOMING



BLM Draft Solar PEIS Alternative 5

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Big Game Migration Corridors & Crucial Range



Specific State Agency Datasets Utilized in Big Game Maps

For more information, contact the relevant state wildlife agency.

Arizona

Kaibab North Mule Deer Migration
Kaibab North Mule Deer Winter Range
Paunsaugunt Mule Deer Migration
Paunsaugunt Mule Deer Winter Range

Colorado

Mule deer migration
Severe mule deer winter range
Elk migration
Severe elk winter range
Bighorn migration
Bighorn general winter
Severe pronghorn winter range
Pronghorn migration
Big Game Pinch Point with 0.5 mi Buffer

Idaho

AlbionMountains MD Migration
BearLakePlateau MD Migration
BennettTeapot Elk Migration
BennettTeapot MD Migration
BigJack Pronghorn Migration
BlacksCreek Elk Migration
CentennialFlats MD Migration
CentralBeaverhead Elk Migration
EastForkSalmon Elk Migration
Emmett MD Migration
Gooding Pronghorn Migration
McKinneyButte Elk Migration
MedicineLodge Elk Migration
MorganCreek Elk Migration
MtnHome Pronghorn Migration
NHanselMtns MD Migration
Owinza Pronghorn Migration
PatteeCreek Elk Migration
Pioneer Elk Migration
PioneerRes MD Migration
Reno Elk Migration
Reno MD Migration

RochatAhrs Elk Migration
SandCreek Elk Migration
ShotgunValley Pronghorn Migration
SodaHills MD Migration
SouthHills MD Migration
StoneHills MD Migration
TetonRiver Elk Migration
TetonRiver MD Migration
TexCreek Elk Migration
TexCreek MD Migration
TroutBigCreek Elk Migration
UpperSnake Pronghorn Migration

Nevada

Occupied Elk Distribution identified as Crucial Winter range
Occupied Mule Deer Distribution identified as Crucial Winter range
Occupied Pronghorn Distribution identified as Crucial Winter range
Occupied Bighorn Sheep Distribution identified as Crucial Winter range and Winter Range
Mule Deer Movement Corridors identified as Seasonal Movements, Seasonal Migration or Crucial Movement Corridor
Pronghorn Movement Corridors identified as Seasonal Movements
Bighorn Sheep Movement Corridors identified as Seasonal Movements

New Mexico

Crow Mesa Mule Deer Migration
Crow Mesa Mule Deer Winter Range

Oregon

Beulah-Malheur Mule Deer Winter Range
Beulah-Malheur Mule Deer Migration
Warner Mule Deer Winter Range
Warner Mule Deer Migration
Trout Creek Mule Deer Winter Range
Trout Creek Mule Deer Migration
Steens Mule Deer Winter Range
Southeast Mule Deer Migration
Klamath Mule Deer Winter Range
Klamath Mule Deer Migration
Juniper Mule Deer Winter Range
Juniper Mule Deer Migration
Crescent Mule Deer Winter Range
Crescent Mule Deer Migration
Ochoco Mule Deer Winter Range

Utah

Beaver Mule Deer Migration
Boulder Mule Deer Migration
Dugway Mule Deer Migration
Eagle Mountain Mule Deer Migration
Fillmore Mule Deer Migration
Kaibab North Mule Deer Migration
Kaibab North Mule Deer Winter Range
Kaiparowits Mule Deer Migration
La Sal Mule Deer Migration
Monroe Mule Deer Migration
Nebo Mule Deer Migration
Oquirrh-Standbury Mule Deer Migration
Panguitch Mule Deer Migration
Paunsaugunt Mule Deer Migration
Paunsaugunt Mule Deer Winter Range
Pine Valley Mule Deer Migration
San Juan Mule Deer Migration
Uinta South Slope Mule Deer Migration
Wasatch Manti Mule Deer Migration
West Desert Mule Deer Migration
Zion Mule Deer Migration

Wyoming

AtlanticRimNorth Mule Deer Migration
AtlanticRimSouth Mule Deer Migration
Baggs Mule Deer Migration
Bighorn North Elk Migration
Bighorn South Elk Migration
ClarksFork Elk Migration
ClarksFork Mule Deer Migration
Cody Elk Migration
Dubois Mule Deer Migration
FossilButte Elk Migration
Gooseberry Elk Migration
I80 Pronghorn Migration
Jackson Elk Migration
MedicineLodge Elk Migration
Mesa Mule Deer Migration
OwlCreekMeeteetse Mule Deer Migration
Piney Elk Migration
PlatteValley Mule Deer Migration
PlatteValleyNorth Mule Deer Migration

PlatteValleySouth Mule Deer Migration
RedDesert Mule Deer Migration
Ryegrass Mule Deer Migration
ShirleyBasin Pronghorn Migration
SierraMadre Elk Migration
SouthRockSprings Elk Migration
SouthWindRiver Elk Migration
SouthWindRiver Mule Deer Migration
Sublette Mule Deer Migration
Sublette Pronghorn Migration
UpperShoshone Mule Deer Migration
Wiggins Elk Migration
WyomingRangeNorth Mule Deer Migration
WyomingRangeSouth Mule Deer Migration