Alternative Use of Highway Rights-of-Way

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Opening Letter

Dear House and Senate Transportation Committees,

In 2024, ESHB 2134, Section 214 (7), appropriated funds to the Washington State Department of Transportation (WSDOT) "solely for the purpose of the WSDOT to study alternative uses of the right of way". The proviso directed WSDOT to explore specific activities as follows:

> "(7)(a) $500,000 of the multimodal transportation account—state appropriation is provided solely for the department to explore 27 alternative uses of the state's highway rights-of-way to address pressing public needs relating to climate change, equitable communications, renewable energy generation, electrical transmission and distribution projects, broadband projects, vegetation management, inductive charging in travel lanes, alternative fueling facilities, and other appropriate uses. In exploring alternative uses of the state's highway rights-of-way, the department shall:
>
> (i) Review the utility accommodation policy and make recommendations to update the policy to include clean energy and connectivity projects under 23 C.F.R. Part 645. At a minimum, the recommendations for updated clean energy and connectivity projects must include renewable energy and electrical transmission and distribution;
>
> (ii) Review and update the department's integrated roadside vegetation management plans to maximize carbon sequestration and develop habitat and forage for native pollinators, Monarch butterflies, and honeybees through plantings of native noninvasive flowering plants and grasses on the state highways rights-of-way and at safety rest areas;
>
> (iii) Assess the state highways rights-of-way land areas most suitable for solar development by considering slope, elevation, vegetative cover, and solar radiation; and
>
> (iv) Identify existing highway rights-of-way suitable as designated energy corridors for electric transmission and distribution and other energy infrastructure.
>
> (b) In carrying out the requirements in (a) of this subsection, the department may consult with an organization that uses an advanced rights-of-way solar mapping tool that uses ArcGIS Pro software for faster and more precise analysis of rights-of-way solar using the state's full spatial rights-of-way data sets.
>
> (c) The department must report its findings, recommendations, and status of its updates to the transportation committees of the legislature by January 15, 2025."

WSDOT engaged internal, as well as consultant, resources to support multi-faceted explorations of such alternative ROW alternative uses, including our utilities, railroad, and agreements manager; our state landscape architect; our state roadside landscape asset manager; our real estate services program administrator; and solar development and energy corridor specialists at The Ray, a non-profit transportation infrastructure organization. WSDOT also engaged a State of Washington certified women-owned small business, Communication Resources Northwest, to provide technical writing services to support the delivery of this report.

WSDOT submitted an interim version of this Alternative Use of the Highway Rights-of-Way Legislative Report in January 2025 highlighting the several initiatives undertaken in response to the proviso. These included an analysis of options for amending the utility accommodation policy, our ongoing vegetation management strategies, new pollinator and carbon sequestration demonstration projects that will inform future vegetation management strategies, suitability analyses for solar development and energy corridors, and plans to increase the robustness of our GIS datasets to support the future development and success of these initiatives.

In 2026, ESSB 6005, Section 213 (3) enabled WSDOT to continue and expand on the initiatives begun under the 2024 proviso, with direction as follows:

> "(3) $350,000 of the multimodal transportation account—state appropriation is reappropriated and provided solely for the department to explore alternative uses of the state's highway rights of-way consistent with section 214(7), chapter 310, Laws of 2024. Within amounts provided in this subsection, the department must deliver two pollinator habitat test sections in eastern Washington and recommend any additional opportunities to enhance pollinator habitat in highway rights-of-way in its final report."

This submission represents the final version of WSDOT's report, summarizing WSDOT's ongoing efforts in 2025 and 2026 in each category of exploration: new findings from the pollinator and carbon sequestration demonstration projects begun in 2024, information and findings from additional pollinator demonstration projects initiated in Eastern Washington, additional analysis and 3D modeling of land parcels highly suitable for solar development, analysis of potential energy transmission corridor pathways, and progress toward developing GIS datasets of Real Estate Services property data. This report also summarizes WSDOT's updated findings and conclusions related to the requirements of the Alternative Use of the Highway Rights-of-Way proviso.

Sincerely,

Mark Gaines
WSDOT State Design Engineer; Director, Development Division

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List of Abbreviations

BAC	Biochar-Amended Compost
BSA	Biotic Soil Amendments
CFR	Code of Federal Regulations
DEM	Digital Elevation Model
DSM	Digital Surface Model
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HATS	Highway Activities Tracking System
HECP	Hydraulic Erosion Control Products
IRVM	Integrated Roadside Vegetation Management
NHS	National Highway System
PV4EV	Photovoltaic for Electric Vehicle
RCW	Revised Code of Washington
ROW	Right-of-Way
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WSTC	Washington State Transportation Commission

Executive Summary

WSDOT initiated several efforts in response to the proviso, several of which were still in progress at the time of the interim report submission in January 2025. As of this submission, the solar and energy transmission corridor suitability analyses are complete, and the pollinator demonstration projects and Real Estate GIS mapping initiative will continue.

The research, data collection, and findings from each of these initiatives will provide ongoing value to multiple WSDOT divisions, including Utilities, Landscape, Maintenance, and Real Estate Services and support future exploration and implementations of alternative uses of the right-of-way.

Utility Accommodation Policy Amendment

RCW 47.44.010(1) does not include clean energy and connectivity infrastructure as a utility. An amendment to this RCW will enable WSDOT to update its utility accommodation policy.

Updating the UAP will require additional engineering studies and calculations to determine any additional accommodation application, installation, and maintenance requirements specific to clean energy and connectivity infrastructure.

There are several additional considerations related to compliance with the Code of Federal Regulations (CFR), additional RCWs, the Washington Administrative Code (WAC), and the 18th Amendment of the Constitution of the State of Washington. These include a departure from 150 years of precedent of accommodating only transmission/conveyance facilities in the ROW to accommodating generation facilities, implications related to clean energy providers requiring permanent access to and use of the ROW to perform regular operations and maintenance activities on clean energy facilities, and compliance issues with for-profit entities generating revenue in the ROW.

Several factors may affect a clean energy provider's return-on-investment analysis of locating clean energy and connectivity infrastructure in the ROW. In particular, the costs of applying for accommodation, initial utility facility installation costs, and uncertainty related to the lack of permanence of installed utility facilities may influence decision-making.

While WSDOT cannot accommodate clean energy and connectivity projects under23 CFR Part 645 unless the RCW is amended, WSDOT can pursue lease agreements under 23 CFR 710.405, Right-of-Way Use Agreements, or public-private partnerships consistent with RCW 47.47, Public-Private Partnership Projects, to facilitate clean energy and connectivity projects.

Vegetation Management to Maximize Carbon Sequestration and Pollinator Habitat

WSDOT's 2024 Integrated Roadside Vegetation Management (IRVM) plans identified high priority planned work for areas with maximum benefit to pollinator and carbon sequestration efforts in each of WSDOT's 24 maintenance areas.

Due to budget shortfalls in both the 2023-2025 and 2025-2027 biennia, restoration work involving pollinator habitat and carbon sequestration is limited, as roadside maintenance work related to fire prevention/safety measures and legally required noxious weed control is prioritized. With additional funding, WSDOT can prioritize further integration of pollinator/carbon sequestration restoration efforts.

WSDOT also desires to enhance its geographic information systems (GIS) mapping data in its statewide Highway Activities Tracking System (HATS) database to support pollinator and carbon sequestration restoration opportunities with current and accurate data.

WSDOT allocated approximately $150,000 of the proviso funding to initiate pollinator demonstration and carbon sequestration enhancement projects on I-5 in the vicinity of the Scatter Creek Safety Rest Area in south Thurston County, part of WSDOT's Olympic region. WSDOT created a public demonstration "lab" of restored habitat and integrated pollinator habitat to test new strategies, products and technologies, and theories using common construction methods to support repeatable strategies and costs that will inform long-term vegetation management approaches. WSDOT also planted native Oregon white oak (Garry oak), giant sequoia, and coastal redwoods in this area to expand carbon sequestration and climate resiliency opportunities.

The proviso funding allowed WSDOT to develop two additional pollinator demonstration sites in WSDOT's Eastern region to further study vegetation management strategies and explore the viability and value of community partnerships to support WSDOT landscape and maintenance activities.

WSDOT has already been successful in leveraging its investments in and lessons learned from the Scatter Creek and the Eastern region pollinator sites to maximize benefits statewide:

- In August 2026, WSDOT sought and was awarded grant funding from the Federal Highway Administration (FHWA) to implement additional pollinator habitats within the Agency's right-of-way at the northbound Smokey Point Rest Area in Snohomish County, in WSDOT's Northwest region. This funding opportunity will support further development of WSDOT's pollinator-friendly policy and expand public awareness and stewardship.

- The PheNode system installed at Scatter Creek Rest Area has proven a reliable way to remotely obtain real-time soil and environmental data as well as site images. WSDOT will be installing a PheNode sensor array (funded separately from this proviso) to support an upcoming study of roadside fire resilience. The array will monitor restoration test plots at the Ryegrass Safety Rest Area on westbound I-90. This study will help inform restoration efforts in the Spokane area in response to the catastrophic fires in Summer 2026.

Solar Development and Energy Corridor Suitability

WSDOT's consultant partner, The Ray, used a customized GIS toolset developed by the company Esri to conduct statewide suitability analyses for solar and energy transmission developments. Their analysis identified more than 3,000 acres of ROW land across 685 distinct parcels as highly suitable for solar development.

WSDOT and The Ray identified relevant factors to refine a shortlist of parcels to prioritize for further study. WSDOT's GIS and Data Systems Specialist used that shortlist, available datasets, and the Agency's Project Delivery Plan to shortlist three parcels for which The Ray created 3D models. The modeling efforts demonstrated the specific solar generation capacity and potential output for these three sites.

With future funding, WSDOT may be able to conduct more detailed engineering analyses and other planning and design work necessary to further develop solar and energy corridor designation implementation plans. Future funding would also enable exploration of potential Public Private Partnerships (P3) for implementing solar development within WSDOT's ROW.

Collaboration with The Ray

The Ray is a national, 501(c)(3) non-profit organization working with state and local partners, including the U.S. Department of Transportation as part of the Thriving Communities Program. The organization's mission is to transform transportation infrastructure to achieve a future of zero deaths, zero waste, zero carbon, and zero impact on U.S. highways. The Ray has worked with more than 50 state departments of transportation, local partners, and networked communities.

WSDOT formed a partnership with The Ray in July 2023 focused on facilitating, executing, and promoting innovative projects that prioritize road safety, improve infrastructure resiliency, protect, and restore the environment.

The Ray supported several aspects of work related to the Alternative Use of the Highway Rights-of-Way proviso, and led the solar development and energy corridor suitability analyses. The Ray provided its consulting services to WSDOT at no charge.

GIS Mapping of WSDOT Real Estate Inventory

To enable the solar development and energy transmission corridor analyses, WSDOT allocated approximately $250,000 of the proviso funding to engage consultant support to create GIS datasets of WSDOT real estate parcels, prioritizing research and mapping of parcels identified as highly suitable for solar development and energy corridors.

As of September 30, WSDOT has geo-rectified digital assets of WSDOT's Right-of-Way Plans and mapped 4,854 parcels to create highly useable and informative GIS datasets. This represents about 30-percent of WSDOT's complete real estate inventory. 2,264 of these parcels were prioritized based on results from The Ray's solar suitability analysis identifying them as highly suitable for potential solar development.

With additional funding, WSDOT can continue its current momentum of mapping the Agency's existing real estate asset portfolio, with priority to complete the mapping of parcels identified by The Ray as highly suitable for solar development and energy corridors then continue by mapping properties on Washington's Eastside, where climate conditions are most favorable for solar development.

Technical Writing Support

WSDOT allocated $40,000 of the proviso funding to engage a State of Washington certified women-owned small business, Communication Resources Northwest, to provide technical writing services to support the delivery of the interim and final legislative reports. Their team worked closely with subject matter experts within WSDOT and The Ray over the course of two years to document the initiatives undertaken in response to this proviso.

Utility Accommodation Policy

(i) Review the utility accommodation policy and make recommendations to update the policy to include clean energy and connectivity projects under 23 C.F.R. Part 645. At a minimum, the recommendations for updated clean energy and connectivity projects must include renewable energy and electrical transmission and distribution;

RCW Amendment Required to Enable Legal Update of Utility Accommodation Policy

Currently, WSDOT cannot legally update its utility accommodation policy (UAP) to include clean energy and connectivity projects, as clean energy and connectivity infrastructure is not included in RCW 47.44.010(1), which defines the structures and facilities for which WSDOT may grant franchises or permits.

An amendment to RCW 47.44.010(1) is required before WSDOT can update its UAP to classify clean energy and connectivity infrastructure as utilities that can be accommodated in the right of way through a franchise or permit and remain consistent with Washington State law.

Updating the UAP would require additional engineering studies and calculations to determine any additional accommodation application, installation, and maintenance requirements specific to clean energy and connectivity infrastructure that may be required to ensure safety to the traveling public, no adverse effects to WSDOT ROW operations and facilities, preserve the ability to make future highway improvements, and impart no monetary cost to the taxpayer or in any way use funds set aside for transportation purposes during the life of the installation.

In particular, this would include new clear zone calculations that address the significant size differences between clean energy systems, such as solar panel arrays and wind turbines, and traditional utility infrastructure (e.g., pipelines, utility poles, etc.) A glint/glare analysis to determine the visual impacts to the traveling public of light reflecting off solar panel arrays is another critical study required as a prerequisite to revising the UAP.

Such studies would require coordinated research, including engagement with other divisions within WSDOT, other state departments of transportation, and the FHWA.

WSDOT would need to then seek concurrence from the FHWA with its updated policy. Upon concurrence, FHWA can give programmatic approval of the utility accommodation policy, rather than requiring project-by-project approvals.

Recent Precedent for RCW Amendment

In 2021, the State legislature passed Engrossed Substitute House Bill (ESHB) 1457, which amended RCW 47.52.001 to "…accommodate the deployment of broadband facilities…" and added Chapter 160 to RCW 47.44 to "…enable collaboration between broadband facility owners and the department to identify opportunities for the installation of broadband facilities…" ESHB 1457 also amended RCW 47.44.010 to specifically identify "fiber optic" as a utility authorizing WSDOT to grant franchises for occupation of highway right-of-way (ROW).

Before enacting this legislation, WSDOT was only able to accommodate such infrastructure through a lease instead of a franchise. While the authorizations for a lease and a franchise both allow for a third-party facility owner to occupy the highway ROW, a lease requires WSDOT to base lease fees on fair market value.

A similar approach of amending RCW 47.44.010(1) as ESHB 1457 provided for RCW 47.52.001 may be beneficial to facilitate the coordinated installation of clean energy infrastructure, with similar benefits to the highway system as noted in RCW 47.44.160, including (a) Reducing future traffic impacts to the traveling public on the roadway; and (b) Supporting the vehicle miles traveled reduction and congestion management goals of the state by allowing for more telework.

Additional Considerations of CFR, RCW, WAC, and Constitution Compliance

- **Transmission/Conveyance vs Generation:** As currently written, RCW 47.44.010 supports accommodating ***transmission/conveyance*** facilities on WSDOT's ROW. Adding clean energy infrastructure, specifically solar photovoltaic panel arrays, as a utility structure and facility for which WSDOT may grant franchises or permits, expands the scope of this statute to include ***generation*** facilities. This would be a significant departure from WSDOT's 150 years of precedent accommodating utility transmission/conveyance infrastructure in the ROW.
- **Revenue Generation in the ROW:** Utilities are typically publicly owned and/or charge rates that are established through a public process and regulated by the Utilities and Transportation Commission (UTC). Accommodating utilities in WSDOT's ROW via franchise or permit reduces costs for rate payers and benefits the public. At present, only for-profit ventures develop, install, operate, and maintain utility-scale solar power generation capabilities and do not demonstrate the same public benefit as traditionally defined utility transmission. Allowing a for-profit organization to generate revenue in WSDOT's ROW under RCW 47.44.010 does not comply with WAC 468-30-110 (9). Such accommodation may also violate the 18th amendment of the Constitution of the State of Washington. WSDOT can currently accommodate entities that generate revenue in the ROW through lease agreements under 23 CFR 710.405, Right-of-Way Use Agreements.

- **Temporary vs Permanent Access:** Most utility facilities accommodated in the ROW by franchise or permit require temporary access for operation and maintenance activities after installation, under RCW 47.50. Solar power generation infrastructure requires regular operation and maintenance activity, requiring permanent access to, and use of, the ROW. This is a more complex situation than RCW 47.44.010 intended to cover and may conflict with additional federal and/or state laws and regulations. 23 CFR 645.205(a) stipulates that utilities accommodated in the ROW by franchise or permit must not "adversely affect highway or traffic safety, or otherwise impair the highway or its aesthetic quality."

Cost Considerations for Clean Energy Providers

If RCW 47.44.010(1) is amended and WSDOT can legally update its UAP to accommodate clean energy and connectivity infrastructure as a utility, clean energy utilities must meet all requirements of the UAP. Several factors may affect a clean energy provider's return-on-investment analysis of locating clean energy and connectivity infrastructure in the ROW. In particular, the costs of applying for accommodation, initial utility facility installation costs, and uncertainty related to the lack of permanence of installed utility facilities may influence decision-making:

- Utilities are required to pay for all costs associated with the review and approval of utility accommodation requests, including related direct and indirect overhead expenses. There is also an application fee, determined by WSDOT, based on the proposed installation's complexity and impact on the highway ROW. Given the unprecedented nature of reviewing and approving clean energy and connectivity infrastructure in WSDOT's ROW, WSDOT may not be able to provide utilities with a clear estimate of expected costs.
- A franchise allows utility occupation of the ROW for up to 50 years initially and 25 years per renewal. WSDOT's Statewide Transportation Improvement Program (STIP) plans forecast four years of prioritized multimodal transportation projects. WSDOT highway projects may impact utility facilities that occupy WSDOT's ROW. WSDOT prioritizes avoiding or minimizing impacts; when this is not possible, utility facilities may need to be adjusted or relocated to accommodate WSDOT projects. Utilities authorized to occupy WSDOT ROW under a Franchise or Utility Permit do not have a compensable property right and are therefore responsible for all costs of relocating their facilities or additional design costs incurred by WSDOT to avoid relocation.

If the RCWs are amended and WSDOT can legally update its utility accommodation policy, charging a fee (e.g., economic rent) based on fair market value for use of the ROW is at Washington State's discretion under RCW 47.44.020. At present, WSDOT does not charge such a fee for utilities accommodated in the ROW by a franchise or permit. A decision to uphold this precedent and not charge a clean energy provider economic rent for use of WSDOT's ROW may reflect favorably in return-on-investment analyses of locating clean energy and connectivity infrastructure in the ROW.

Enabling Clean Energy and Connectivity Projects Under 23 CFR Part 710

Under current Washington State law and WSDOT's UAP, WSDOT cannot accommodate clean energy and connectivity projects under 23 CFR Part 645. However, WSDOT can currently accommodate clean energy and connectivity projects through lease agreements under 23 CFR 710.405, Right-of-Way Use Agreements.

To pursue a ROW use agreement for clean energy and connectivity projects on interstate highways and ROW that is part of the National Highway System (NHS), WSDOT must first receive "a determination by FHWA that such use is in the public interest; is consistent with the continued use, operations, maintenance, and safety of the facility; and such use does not impair the highway or interfere with the free and safe flow of traffic." WSDOT "must include planning and design details about the project, including provisions for maintenance access, terms of use, maps, plans, and sketches" (23 CFR 710.405) to support the FHWA's determination and its approval of the ROW use agreement.

WSDOT must also seek the following approvals:

- FHWA must approve each use/project. "For non-Interstate projects, FHWA may assign approval authority to the State" (23 U.S.C. 106(c), 23 CFR 710.405).
- For use agreements involving interstate highways, FHWA must approve any temporary or permanent modification of access control in writing (23 U.S.C. 111(a), 23 CFR 710.403).
- For use agreements involving National Highway System (NHS) highways, the approving authority designated in the FHWA-State DOT Stewardship and Oversight Agreement must approve any temporary or permanent modification of access control.
- For use agreements involving non-NHS highways, WSDOT may approve access control modifications.

WSDOT must charge a fee (e.g., economic rent) based on fair market value for use of the ROW unless there is an applicable exception or justification that the project is in the public interest based on social, environmental, and economic considerations, in which case an exception may be approved (23 CFR 710.403). At present, clean energy and connectivity projects are not one of the listed exceptions. If Title 23 funds were used to acquire the ROW, WSDOT must charge a fair market rent fee and "the Federal share of the net income must be used for Title 23-eligible purposes" (23 U.S.C. 156(c)).

Enabling Clean Energy and Connectivity Projects through Public-Private Partnerships

WSDOT can also currently accommodate clean energy and connectivity projects through a public-private partnership (P3) consistent with RCW 47.47. WSDOT has not previously engaged in P3 models, however WSDOT and The Ray identified several examples of other states are that are using the public-private-partnerships (P3) model for implementing solar development on the ROW, described in further detail in the Solar Development and Energy Corridor Suitability section of this report.

Vegetation Management Plans, Carbon Sequestration, and Habitat Development for Native Pollinators, Monarch Butterflies, and Honeybees

(ii) Review and update the department's integrated roadside vegetation management plans to maximize carbon sequestration and develop habitat and forage for native pollinators, Monarch butterflies, and honeybees through plantings of native noninvasive flowering plants and grasses on the state highways rights-of-way and at safety rest areas;

Integrated Roadside Vegetation Management Plans

WSDOT Headquarters' Maintenance updates the Integrated Roadside Vegetation Management (IRVM) plans annually as part of an established and funded process. In 2024, updates included identification of high priority planned work for areas with maximum benefit to pollinator and carbon sequestration efforts in each of WSDOT's 24 maintenance areas. This list of focus areas included any new construction (e.g., fish passage, system expansion, and urban mobility) and areas of recent roadside restoration efforts (e.g., encampment cleanup).

The 2025 and 2026 IRVM plans included priorities to expand Maintenance efforts on combined fire prevention/safety, pollinator, and carbon restoration work in Eastern Washington, and complete planting and plant establishment for the Western Washington demonstration project.

Following new construction or restoration/encampment cleanup, newly planted or renovated sites require seasonally scheduled routine monitoring and weed control. Standard policy requires three years of contracted plant establishment. Sustaining the results the proviso seeks after the contracted years end will depend on future maintenance and preservation funding.

Highway Activities Tracking System

WSDOT maintains a statewide Highway Activities Tracking System (HATS) database in which Maintenance staff document daily work activities in the field. To support pollinator and carbon sequestration restoration opportunities with current and accurate data, WSDOT desires to enhance its geographic information systems (GIS) mapping data in HATS, including all new project design and construction and areas that include roadside restoration and areas where Maintenance removed invasive species and restored native vegetation.

Roadside vegetation management treatments are recorded in HATS as lines, points, and polygons to identify planned work locations. HATS provides a clearer understanding of asset conditions and enables WSDOT to track maintenance work as it is performed. WSDOT initiated the HATS program in 2015 and has been recording roadside vegetation management efforts since 2017.



Figure 1: WSDOT Maintenance staff use digital global positioning tablets to reference work plans and record data daily in the HATS database.

Status of Work

Maintenance experienced a budget shortfall in the 2023-2025. The 2026 supplemental transportation budget added maintenance funding for the 2025-2027 biennium. Within available maintenance and preservation funding, WSDOT focused its statewide efforts on roadside vegetation management activities that address highway safety concerns and legally required noxious weed control.

With critically necessary additions to maintenance and/or preservation funding, WSDOT can better achieve required efforts for fire prevention/safety measures and work toward prioritizing restoration work involving pollinator habitat and carbon sequestration. Additional funding can mitigate the currently declining conditions of WSDOT-managed roadsides.

WSDOT will document the Pollinator Demonstration and Carbon Sequestration Enhancement projects in HATS with GIS polygons and record restoration activities, including backdated work for site preparation that began in 2010. Maintenance will prioritize this area for ongoing weed control and plant establishment throughout the next decade.

GIS data for all new construction projects and dedicated restoration sites was also updated in HATS in 2025 and 2026. WSDOT will continue such mapping and activity tracking efforts for all new construction and focused long-term restoration efforts throughout the state.

Value of Vegetation Management

A proactive and data-driven IRVM planning process enables WSDOT to intentionally implement a lifecycle strategy for the treatment of highway roadsides. Gathering data and documenting a comprehensive record in HATS enables WSDOT to "tell the story" of the roadside's life, health, and evolution, and accurately define funding and resource requirements needed to adequately address roadside restoration and maintenance.

For the past 18 years, Maintenance has used a stretch of the I-5 corridor in the vicinity of the Scatter Creek Safety Rest Area as a model for planning and documenting a long-term vegetation management strategy that restores the roadside to a state of good repair. The Pollinator Demonstration and Carbon Sequestration Enhancement projects at Scatter Creek further these efforts and help WSDOT establish a business model for managing vegetation and soil health.

The Demonstration enables WSDOT Maintenance and Landscape teams to identify best practices and understand the long-term cost requirements and benefits of restoring and maintaining native vegetation on the highway right-of-way. This will inform future Maintenance activities and HATS recordkeeping needs, including GIS mapping, that will support appropriate and effective long-term management that supports pollinator habitat expansion and carbon sequestration efforts.

Best practices in roadside design and maintenance that support fire-resistant and fire-resilient roadsides include stands of native perennial bunch grasses and shrubs alongside an adequately wide strip of compacted vegetation-free gravel. Lessons learned from the Scatter Creek Pollinator Demonstration site, combined with related research in fire resiliency not funded by this proviso, are already helping inform restoration efforts related to the 2026 fire season, including the devastating fires in Spokane.

Ongoing Vegetation Management

WSDOT will maintain its annual IRVM planning process. The budget shortfalls will require that Maintenance continue to focus statewide efforts on addressing fire/safety concerns and legally required noxious weed control. With additional funding, WSDOT can prioritize further integration of pollinator/carbon sequestration restoration efforts.

Related Research in Fire Resiliency

WSDOT continues to conduct related and ongoing research not funded by this proviso into creating fire resilient roadsides. Such initiatives include the following:

- Successful testing of aerial drone use for herbicide applications (using contracted services and WSDOT's own herbicide drone purchased with a research grant in 2024).
- New combinations of soil residual herbicides that suppress invasive, non-native annual grasses while enabling native perennial shrub, forb, and bunch grass species to thrive without competition with annual grass for spring moisture. Native perennial bunch grasses are naturally fire resilient and less prone to combustion when existing within native rangeland plant communities.
- Precisely controlled prescribed burns using BurnBot, a technology that avoids use of open flame and enables complete clearing of undesirable vegetation and seed bank. WSDOT can then replant with desirable, fire resilient species.



Figure 2: Developed by a California-based company, BurnBot is a self-contained apparatus with integrated safety systems. WSDOT has used this technology along I-90 near Vantage and at the I-90 Ryegrass Westbound Safety Rest Area

- The PheNode system installed at Scatter Creek Rest Area, described in detail in the next section of this report, has proven a reliable way to remotely obtain real-time soil and environmental data as well as site images. WSDOT will be installing a PheNode sensor array (funded separately from this proviso) to support an upcoming study of roadside fire resilience. The array will monitor restoration test plots at the Ryegrass Safety Rest Area on westbound I-90. This study will help inform restoration efforts in the Spokane area in response to the catastrophic fires in Summer 2026.



Figure 3: PheNode monitoring system installed at the Scatter Creek Safety Rest Area Pollinator Plantings in 2025. A similar unit will be installed with the fire prevention plantings at the I-90 Ryegrass Westbound Safety Rest Area between Ellensburg and Vantage.

Pollinator Demonstration and Carbon Sequestration Enhancement Projects

WSDOT allocated approximately $150,000 of the proviso funding to support further research at its pollinator demonstration and carbon sequestration enhancement projects located on I-5 in the vicinity of the Scatter Creek Safety Rest Area in south Thurston County. These projects are a joint effort between the Design Office, the Environmental Services Office, and Maintenance Operations.

WSDOT created an approximately one-acre public demonstration "lab" of restored habitat south of the restrooms to establish and integrate pollinator habitat to expand management approaches by testing new strategies, products and technologies, and theories using common construction methods to support repeatable strategies and costs.

WSDOT expanded carbon sequestration and climate resiliency opportunities by planting native Oregon white oak (Garry oak), which increases natural prairie habitat, and planting giant sequoia and coastal redwoods, which tests theories of assisted species migration. The trees were planted north of the Grand Mound Interchange along the I-5 corridor, within the southbound and northbound ROWs, and in key areas for public education and interpretation. The Grand Mound Interchange was most recently reconstructed and planted in 2012.



Figure 4: Scatter Creek Pollinator Demonstration and Carbon Sequestration Enhancement project areas.

In December 2025, WSDOT allocated approximately $58,000 of the proviso funding to support two additional pollinator demonstration sites in Eastern Washington to test best practices for pollinator habitat establishment in a semi-arid climate and further promote the multi-faceted benefits of pollinator habitat, including culturally, ecologically, and aesthetically.



Figures 5-6: Hamilton Street (left) and Horn School Rest Area (right) Pollinator Demonstration sites.

Scatter Creek Pollinator Demonstration Site

WSDOT divided the one-acre space into two half-acre test areas East and West of the existing sidewalk leading to/from the restroom. Both the West and East areas were subdivided into four equal plots, creating a total of eight study plots. Each study plot is semi-isolated by split-rail wood fencing for ease of long-term maintenance delineation and to limit public encroachment.

Two plots, one in each area, were left untouched as a control. The other six plots were cleared and grubbed.

The three plots in the West area incorporated biotic soil amendments (BSA) while the three plots in the East area did not. This enables WSDOT to determine variability differences in seeding applications between using BSA and not using BSA. BSA are a blend of organic material, nutrient sources, and soil building and biostimulant components that increase the soil's water- and nutrient-holding capacity and promote the growth of beneficial microorganisms. These factors improve the development of deficient soils and facilitate sustainable vegetation.

Of these six plots:

- **One on each side was not further amended.**
- **One on each side was further amended with regular compost.** WSDOT is the largest end user of compost in the State, actively contributing to landfill diversion efforts. WSDOT commonly uses compost in current construction restorations practice either for soil amendment or erosion control. Using compost in the pollinator lab enables WSDOT to determine any variables in success between other methods.

- **One on each side was further amended with biochar-amended compost (BAC).** Biochar is a charcoal created when organic material, such as crop residues or livestock manure, undergoes pyrolysis, which is a process of heating material at high temperatures without oxygen present. Use of biochar as a soil amendment is relatively untested in the WSDOT roadside restoration environment. Biochar stores carbon, garnering it national attention as an effective element in carbon sequestration initiatives. Using biochar in the pollinator lab will determine levels of success in outcome in comparison to other known uses.

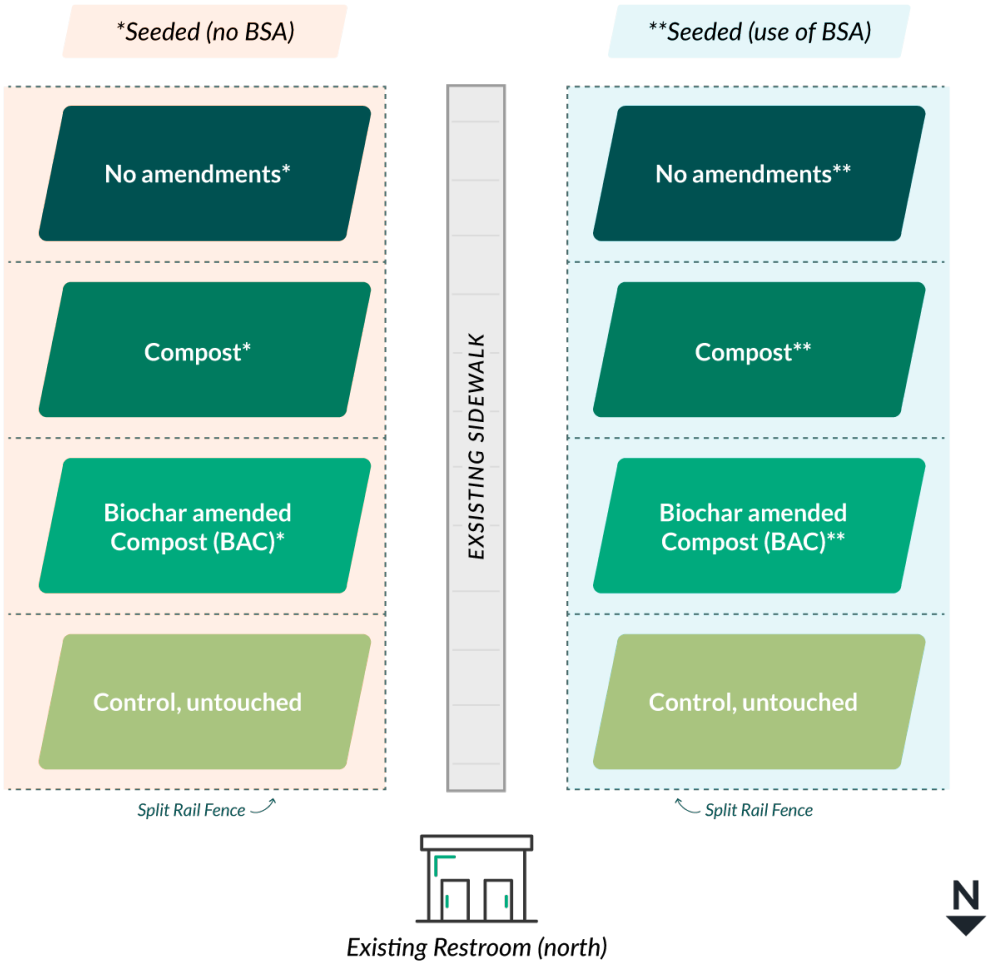


Figure 7: WSDOT identified eight test plots in its pollinator lab area:

- ***No Amendments:*** *These plots were cleared, grubbed, and seeded with no further amendments.*
- ***Compost Amended:*** *These plots were cleared, grubbed, further amended with compost, then seeded.*
- ***Biochar Amended Compost (BAC):*** *These plots were cleared, grubbed, further amended with BAC, then seeded.*
- ***Control, Untouched:*** *These plots were left untouched and in their existing condition to test potential natural recruitment from the newly restored plots.*



Figure 8: All compost used material that was derived from the same source and meets WSDOT submittal requirements. The biochar-amended compost blend is 15% biochar and 85% compost and seems to be richer and darker in color, with a more earthy smell than the compost's typical "manure" smell.

WSDOT produced and installed interpretive signage near the pollinator plot areas to engage public education. The plaques highlight the demonstration project, current efforts, and expected outcomes as well as information about the importance of pollinators, carbon sequestration, and protected species, such as the pocket gophers present on this site. The signage includes a QR code linking to WSDOT's Protecting Pollinators website, where interested parties can find more information.

Budget

Pollinator Demonstration

Cost includes site prep, procurement of native seed, soil amendments including biochar, compost and biotic soil amendment, and a landscape sub-contractor to perform the work if maintenance staff is unable to perform the work.

- Materials and Soil Amendments (soil testing, compost, biochar amended compost, mulch, fertilizer, BSA Pollinator seed mix): Approx. $14,000

- Labor, equipment, mobilization, tax (grading, compost application, seeding): Approx. $25,000
- Public Education (interpretative signs, website/ public outreach updates): Approx. $4,000
- Monitoring equipment: Approx. $17,500
- Fence installation: $20,200

Carbon Sequestration:

Cost includes site prep, procurement of trees, bark mulch, watering, and a landscape sub-contractor to perform the work if maintenance staff is unable to perform the work.

- Materials (coastal redwoods, giant sequoias, Garry oaks, bark mulch): Approx. $21,000
- Contract to plant (about 530 trees): Approx. $32,000

Eastern Washington Pollinator Demonstration Sites

WSDOT implemented two additional pollinator demonstration sites in Eastern Washington: a 0.15-acre site at the southeast quadrant of North Hamilton Street and East Trent Avenue in Spokane off of SR 290, and a 0.20-acre site at the Horn School Rest Area off US195 near Colfax.

- **The Hamilton Street site** is located within the vicinity of Gonzaga University, and the location is conducive to public and student engagement as well as other special interest groups. As a result, there is increased potential for partnerships to support site development, including placement and choices of materials that reflect regional cultural and community values, and ongoing site maintenance.
- **The Horn School Rest Area site** offers potential partnership opportunities with WSU and local interest groups, such as rotary clubs. Horn School Rest Area sits in a park-like setting, and the pollinator demonstration area would provide educational opportunities and interaction for rest area visitors. Additional pollinator habitat for bats is another benefit in this historic site.

As at Scatter Creek, WSDOT will develop and install some form of messaging (e.g., plaques, signage, or art) near both pollinator plot areas to engage public participation and highlight the sites' purpose and the importance of pollinator habitat. Messaging will feature a QR code that goes to WSDOT's Protecting Pollinators website.

Budgets

Hamilton Street Site

- Site Preparation & Soil Amendments (soil testing, soils amendments, grubbing): $4-5,000
- Hydroseeding, drill seed and or planting $4-5,000
- Existing Irrigation retrofit $8,000
- Public Education (interpretative signs/public interactive features) $5,000
- Potential design features/elements identified by community $1,500-3,000

Horn School Rest Area Site

- Site Preparation & Soil Amendments (soil testing, soils amendments, grubbing) $6-7,000
- Hydroseeding, drill seed and or planting $6-7,000
- Existing Irrigation retrofit $8,000
- Public Education (interpretative signs/public interactive features) $5,000
- Potential design features/elements identified by community $1,500-3,000

Status of Work

Scatter Creek Pollinator Demonstration

2024

WSDOT's state landscape architects developed the pollinator lab plan in August and September 2024, then engaged a women-owned landscaping business in September 2024 to execute the work. Ground clearing and seeding in the lab area was executed October 1-4, 2024, at the beginning of the seeding window to support effective germination.

- Each half acre area was cleared and grubbed (minus the unaltered control plot) to reset the area with a bare soil condition for research comparison purposes. Care was taken to avoid disturbance of pocket gopher habitat; the State biologist was onsite to monitor work and crews minimized compaction and kept the dump truck on the grass as much as possible. Pocket gophers are listed as an endangered species and WSDOT's efforts to develop pollinator habitat and implement carbon sequestration include strategies to ensure they remained unharmed.



Figure 9-10: Cleared and grubbed land.

- Soil amendments were blown on in the designated plots with consistent coverage and depth.



Figures 11-12: Applied soil amendments.

- The cleared areas were hydroseeded with a long-term hydraulic erosion control product (HECP) following standard specifications using both canons and hoses for access and minimized disturbance to the prepped areas. The seed was applied at 40 pounds per acre using an identical pollinator seed mix.



Figures 13-14: Hydroseed land.

- Installation of the split-rail fencing along each side of the pathway between the east and west lab areas was completed on November 6, 2024.



Figure 15-16: Installed split-rail fence within the pollinator lab area.

2025

- When the initial version of this report was submitted in January 2025, the seeded species were dormant for winter. There was evident growth by March and April, with the biochar amended compost and compost plots showing the most consistent emergence of growth.



Figure 17: By late March, growth was evident in the plots.

- Growth was visible in all plots by May 2025, with yellow and orange poppy flowers dotting the site. The control plots with no amendments showed less growth and far fewer flowers, with areas of spotty bare soil.



Figure 18: Poppies dotting the field.

- Blooms peaked in June 2025; nearly all of the plants had flowered, and the emergence of different species created a more natural prairie environment. The diversity of flowers and color drew visitors to the site to take photos, and the State biologist conducted an initial assessment of the plots at this time as well.



Figure 19: Blooms from different flower species reflect a natural prairie environment.

- The State biologist surveyed each area by walking parallel transects approximately 10 feet apart to ensure full visual coverage of each area. Insects were observed primarily in the treated plots and included mostly bumblebees, honeybees, and yellow jackets. No butterflies and moths were seen at a close enough range to identify type, and none were seen on flowers.

  The small number of observations and lack of pollinator diversity were likely the result of the surveys starting in mid-summer; by the last survey, the bloom was nearly over and only the more common species were present. As a result, WSDOT planned to conduct future surveys starting earlier in the year, when blooms first appear, and twice a month or more during peak bloom season. WSDOT anticipates routine site monitoring by the state biologist and will continue at dedicated intervals given continued funding availability.

  WSDOT theorized that as different species mature over the coming years, a more robust and diverse emergence will be apparent.

2026

- WSDOT's State Biologist conducted monthly site visits starting in April when flowers were beginning to bloom and continued through August, by which time nearly all of the seeded species had flowered and senesced. Each treated area was surveyed by walking parallel transects approximately 10 feet apart to ensure full visual coverage. Surveys were conducted between approximately noon and 4:00pm when insects were most active and when there was no rainfall and only a slight wind.

  A total of 146 large pollinators were identified to at least taxonomic order. Smaller insects were difficult to identify during short gusts of wind and would often remain only briefly on a flower, making a more specific identification difficult. The largest numbers of insects were observed on the plots using Biochar and no BSA. The fewest numbers were on the plots using only BSA. The following tables highlight insect observations, with insect counts noted for each test plot and overall for each month:

Soil Amendment	Number of Insects Observed in the Plot
Biochar Amended Compost (BAC) with BSA	20
Compost with BSA	10
BSA	9
Biochar Amended Compost (BAC) - No BSA	43
Compost No BSA	23
Seeded	26
Control	15

Month	Number of Insects Observed
April	7
May	24
June	66
July	31
August	18

  Yellow-faced bumblebees and honeybees were most common and easily identifiable at a distance, while solitary bees, such as hoverflies and sweat bees, were identified at a higher taxonomic level. Only three butterflies and moths were observed in passing and none landed within the study area. Insects in the 'other' category included stink bugs and small beetles.

  The consistently high temperature and lack of rainfall also contributed to rapid desiccation of the flowers later in the season, correlating with a reduction in visiting pollinators.

  Control areas outside of the test plots had a much different floral composition with far fewer flowers and therefore fewer pollinator observations.

- Additional observers conducted site visits in early May and June. By early June 2026, the Biochar-amended compost plot was observed as having the most abundant and aesthetic array of flowers, with more bees present than in other plots.



Figures 20-23: Photos taken May 3, 2026



Figures 24-27: Photos taken June 4, 2026

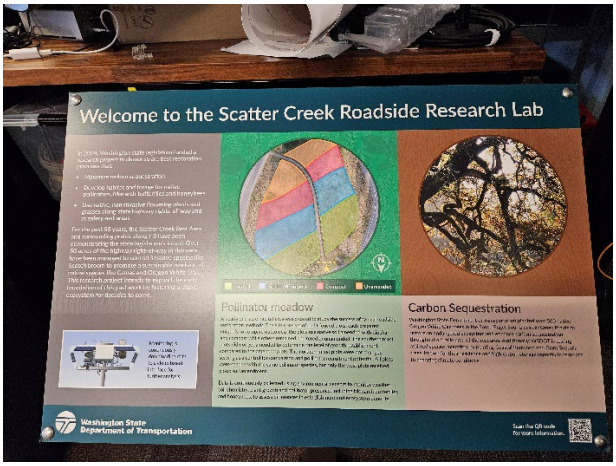
Scatter Creek Pollinator Demonstration Interpretive Signage

2025

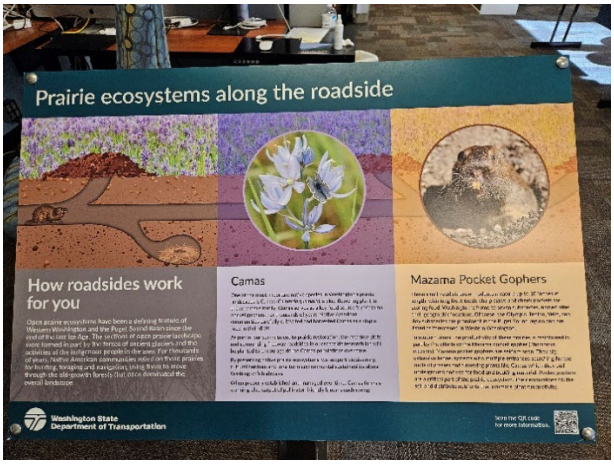
In January 2025, HQ Communications assisted with further developing the content and graphics for the four interpretive signs. The signs also include a QR code to a website that will feature ongoing data about the pollinator demonstration site.

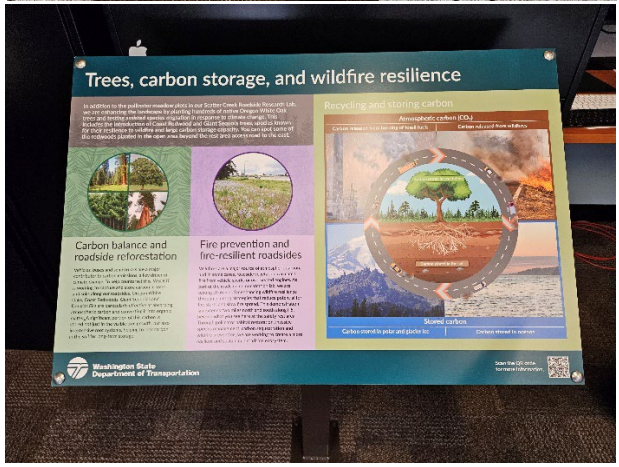
In March 2025, WSDOT engaged an on-call consultant to print and fabricate the interpretive signs for public engagement. Development and production of the signage was completed in June 2025.

WSDOT Maintenance's Signage team developed footings/foundations for the signs on site and added suitable protective coverings to mitigate impacts from weather and potential vandalism. The signs were installed in November 2025, and the QR codes actively link to the Protecting Pollinators site, which is a dedicated webpage providing ongoing information to the public related to the pollinator demonstration project.











Figures 28-31 and 32-35: Interpretive signage (before installation and six months-post-installation, respectively) describing the pollinator plots and WSDOT's vegetation management strategies support visitor education and engagement with the Research Lab project.

Eastern Washington Pollinator Demonstration Sites

2026

In winter 2025 and spring 2026, WSDOT's Eastern region Landscape and Maintenance teams began preliminary planning work to develop the Hamilton Street and Horn School Rest Area sites, including site analyses, phased approach plans, and initial concept designs.

As WSDOT Maintenance will be responsible for site construction activities and ongoing upkeep, understanding their support capacity was a key element in planning a practical scope of work to be accomplished within this proviso's timeframe and funding allotment.

Hamilton Street

The Hamilton Street site design includes interpretive signage and two planting strips in front of an existing fence, where community partners can plant and maintain plantings, and a "pollinator prairie" area behind the fence seeded with a mix of grass and local pollinator-friendly flowers to create a lower-maintenance, naturalized landscape.

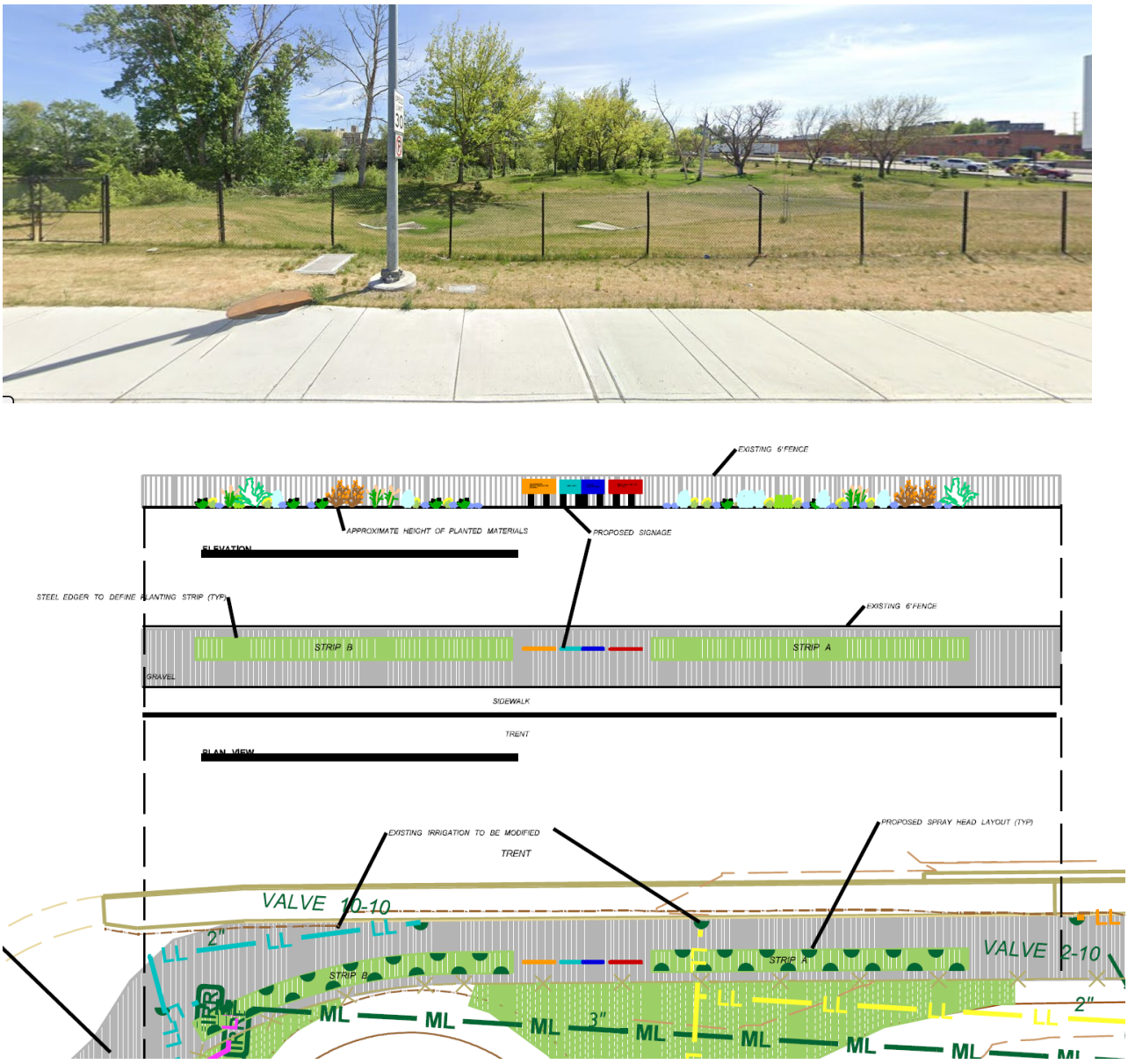


Figure 36-37: Google Street view of the existing fence around the Hamilton Street site (top) and final design concept approved by WSDOT Landscape and Maintenance featuring signage and planting strips in front of the fence (bottom).

To date, WSDOT Maintenance has removed the sod layer in front and behind the fence to prepare the ground for soil amendment and seeding, which is scheduled for Fall 2026. A layer of gravel was also added and will be graded to match the sidewalk elevation.



Figure 38: Hamilton Street Site along E Trent Ave, looking east. The vegetation from this urban pollinator site will activate this space and complement the mural across the street.

WSDOT staff reached out to several potential community partners to discuss various levels of involvement in the design, installation, and long-term stewardship of the site. Organizations contacted included neighboring Gonzaga University, Washington State University—Spokane, local Boy and Girl Scout chapters, area high schools, the Northeast Chapter of the Washington Native Plant Society, the WSU Master Gardeners program, and the Spokane Conservation District.

WSDOT representatives met with Tomson Spink, Associate Vice President of Plant and Construction Services at Gonzaga University, and the WSU Master Gardener's group to discuss partnership opportunities. The Master Gardeners expressed a high degree of interest in providing and planting appropriate plants at the Hamilton Street site.

The Hamilton Street site is also near two multiuse trails: The Centennial Trail and the Children of the Sun Trail. It is also near two community gathering hubs: No-Li Brewery and a ballfield owned by Gonzaga University. Interpretive and wayfinding signage around these sites directing the public to the pollinator garden would increase awareness and engagement. WSDOT has reached out to site owners about potential signage location on these properties.

Horn School Rest Area

WSDOT Maintenance staff started demolition at Horn School Rest Area around mid-July 2026, which included sod removal, sign relocation, irrigation changes, and light grading. They also painted a crosswalk from the restrooms to the pollinator demonstration site to alert drivers to crossing pedestrians and delineate a clear path for visitors to use once the pollinator demonstration is live.

Carbon Sequestration Enhancement

Construction to plant the Garry oaks, sequoia, and redwoods started at the end of March 2025. Trees were planted at strategic locations around the demonstration area and along a four-mile stretch of the I-5 corridor within historical and ecological locations of the Scatter Creek riparian corridor and Puget Sound Prairie ecosystem. Planting location strategies accounted for pocket gopher habitat protection.

WSDOT procured a total of 25 giant sequoias and coastal redwoods and 507 Garry oaks. The trees were field located and planted at approximately 20 feet on center in natural group masses, where appropriate, with adequate soil volume and long-term maintenance management. Bark placement and tree planting was completed on April 8, 2025.

Trees will also be mapped in WSDOT's HATS system for long-term maintenance management.

WSDOT will monitor the establishment success of the trees and develop a response management plan including replacement in the highest priority areas. Replacement may occur in the next dormant season as funding allows.

Value of the Projects

- **Informing Ongoing Restoration Practices:** WSDOT's restoration approach uses typical construction methods, practices, and readily available materials to provide insight into repeatable methods and processes, average costs, and ranges of success for the development of habitat and forage for native pollinators, Monarch butterflies, and honeybees in future real-world project applications.

  The sites will be evaluated to determine the range of success for native pollinator-friendly roadside restoration, creating a model for both eastern region urban and rural contexts, which are some of the most challenging roadside environments in the state.

- **Informing Fire Resilience:** In Summer 2026, the Spokane area experienced devastating wildfires. WSDOT is applying lessons learned from the Scatter Creek Pollinator Demonstration site to inform restoration and reseeding efforts using native and/or successfully migrated species. WSDOT will continue to learn from and apply successful measures to future wildfire and/or other roadside fire starts across the state.

- **Preserving Endangered Ecosystems:** The Horn School Rest Area is within the historic Palouse prairie ecosystem. With less than 1% of the original habitat remaining, our native Palouse prairie is the most endangered ecosystem in the continental United States, underscoring the significant value of restoration efforts and resilient landscape solutions.
- **Piloting Community Partnerships:** The Eastern region pollinator sites are demonstrating the viability and benefits of partnering with the community. The Hamilton Street site is WSDOT's first urban pollinator garden, and its location makes it highly visible and accessible to the community. The use of native plants and interpretive signage creates public awareness of and appreciation for the region's natural landscape and WSDOT's stewardship of it. The recently rebuilt Trent Street Bridge features a mural of native plants, creating opportunity for a powerful visual connection with the same native plants in the pollinator garden.
- **Generating Public Interest and Support:** The public visibility of the Scatter Creek pollinator lab has already garnered public interest and support. The interpretive signage provides further information about the value and importance of pollinator habitat and carbon sequestration efforts to climate resilience in Washington state. The Protecting Pollinators webpage accessible via QR code from the signage provides ongoing information to the public related to the pollinator demonstration project. More than 1,000 active users visited the website from January 2025 through June 2026.

  Establishing ongoing partnerships for pollinator garden care reduces WSDOT Maintenance's level of effort over time, helping stretch limited budget while simultaneously enabling innovative use of WSDOT land.
- **Sharing WSDOT's Successes:** WSDOT is proactively communicating the demonstration projects' value by authoring an article to promote public engagement with the data and WSDOT's pollinator habitat expansion efforts that will be published on various social media outlets. WSDOT has also promoted the projects with other agencies: the Scatter Creek demonstration was featured in a King County newsletter and inspired the Minnesota DOT to consider a similar pilot project in one of their rest areas.
- **Identifying Additional Funding Sources:** WSDOT continues to seek additional partnerships and grant funding opportunities for future statewide implementation opportunities. In May 2026, WSDOT submitted a grant application to the FHWA seeking funding to implement additional pollinator habitats within WSDOT's right-of-way at the northbound Smokey Point Rest Area in Snohomish County to further develop WSDOT's pollinator-friendly policy and expand public awareness and stewardship. In August 2026, WSDOT was awarded the $148,000 grant. The grant application effectively featured WSDOT's ability to leverage successes and lessons learned from Scatter Creek and the Eastern Region sites to maximize funding impact.

Two separate locations at the Smokey Point Rest Area, totaling approximately 1.2 acres, will be planted and seeded with native grasses and wildflowers that are well-adapted to the site's climate, soil, and light conditions. This will provide continuous flora resources and restored and enhanced habitat for a diversity of pollinators. WSDOT is currently working on the grant agreement and aims to obligate funds as soon as feasible in FFY 2027.

Ongoing Development and Sustainability

Using annually appropriated IRVM funds, WSDOT plans to monitor both the pollinator demonstration project area and the carbon sequestration enhancement efforts for five years:

- In years 1, 3, and 5, WSDOT Environmental Services will investigate the pollinator demonstration project for success measures of overall coverage, species diversity, weeds observed, and native pollinators (e.g., butterflies and bees) and issue a formal memo or report.

  WSDOT's Design Office will similarly investigate the carbon sequestration efforts for success measures of overall establishment, weeds observed, adaptive management, or replanting efforts and issue a formal memo or report.

- In years 2 and 4, WSDOT will conduct a site visit for general observation and any management needs for both projects.

Automated Monitoring

WSDOT used $17,527 of the proviso funding to invest in the PheNode monitoring system, which enables multi-faceted automated data collection and supports WSDOT in efficiently following up on soil tests, coverage inspections, species diversity, potential recruitment, and potential pollinator habitat richness through visual imagery with minimal labor investment.



Figure 39-40: The PheNode system enables monitoring of soil moisture, soil temperature, and electrical connectivity; data collection of wind speed/direction, gusts, rainfall, air temperature, relative humidity, air pressure, and vapor pressure; and takes photos.

Collecting data with the PheNode system is part of WSDOT's larger data-driven IRVM strategy. WSDOT plans to document PheNode data in HATS along with all maintenance actions that will be required over time to inform an effective and appropriate vegetation management approach.

The PheNode and seven wireless sensors were installed at Scatter Creek Rest Area on May 13, 2025. The main camera and sensor are located at the northeast control area and are positioned to provide a view of all four plots and to take data measurements. Seven additional sensors are located at the other plots to measure soil volumetric water content (%VWC), soil temperature, electrical conductivity (soil salinity) and soil water potential (available water).

In 2025, staff focused on testing system functions and working with the manufacturer on how to best integrate this third-party system into WSDOT's web environment. WSDOT Landscape staff also worked with WSDOT's IT group to determine the best methods for displaying real-time PheNode photos and data, such as soil temperature, moisture, and rainfall data, on WSDOT website.

WSDOT successfully used the PheNode platform to remotely obtain real-time data and images of the sites during Summer and Fall 2025 as well as Spring and Summer 2026.



Figure 41: PheNode image from 2025, demonstrating the camera's position to view all test plots.



Figure 42-45: PheNode images from May, June, and August 2026 showing the progression of wildflowers blooming at the site.

In June 2026, PheNode launched a new multi-graphing feature. Using this new feature, WSDOT analyzed data from June 2025 to June 2026, which revealed interesting information about water holding capacity at the site. The “Soil Matric Potential” measured in June 2025 (during the first bloom and just after the PheNode was installed) was quite low, meaning the soil was barely able to retain water after a rain event. In June 2026, measurements showed an approximately 50% improvement in Soil Matric Potential, indicating a significant change in the soil structure. WSDOT theorizes that the native plants' root biomass improved the soil’s water-holding capacity. WSDOT will continue to monitor and track additional improvement in water holding capacity and use this data as a baseline to compare with 2027 readings.



Figure 46: PheNode system screenshot of the Soil Matric Potential. The "0" value seen during the winter is because when the ground is saturated as a result of long, constant periods of rain, there is no water pressure to report.

WSDOT sees an opportunity to engage citizen scientists, researchers, K-12 schools, higher education institutions, and others who are interested in the ongoing research at Scatter Creek Rest Area by sharing PheNode data. Such participants can further analyze and process the information gathered from the PheNode, draw their own conclusions, and identify correlations or patterns between the PheNode data and each plot.

Example Pilot Projects

WSDOT's efforts are inspired and informed by similar and successful pilot projects implemented by other state Departments of Transportation working with The Ray, such as the Georgia Department of Transportation. Key WSDOT personnel, Washington State Transportation Commission (WSTC) personnel, and members of the Washington State legislature visited Atlanta in May 2024 to tour The Ray Highway, an 18-mile stretch "living lab" along I-85 that includes a visitor information center and demonstrates several innovative measures and technologies intended to improve the safety, ecology, and beauty of highway rights-of-way.



Figure 47: A one-megawatt solar array in the ROW at Exit 14 on I-85 leveraging 2,600 high-efficiency solar panels, with native, pollinator-friendly wildflowers planted under and around the solar panels.



Figure 48: The Pollinator Meadow, which demonstrates the beauty and ecological benefits of planting wildflowers along the roadside instead of turf grass.



Figure 49: The Landscape Laboratory, which tests plantings that support slope stabilization, non-chemical weed/invasive species control, and wildflower seed mixes for viability and seasonal blooms.



Figure 50: Georgia's first solar-powered photovoltaic for electric vehicle (PV4EV) charging station at The Ray's Visitor Center.

Solar Development and Energy Corridor Suitability

(iii) Assess the state highways rights-of-way land areas most suitable for solar development by considering slope, elevation, vegetative cover, and solar radiation; and

(iv) Identify existing highway rights-of-way suitable as designated energy corridors for electric transmission and distribution and other energy infrastructure.

WSDOT's consultant partner, The Ray, led statewide suitability analyses for solar and transmission developments, including designated energy corridors for electric transmission and distribution and other energy infrastructure.

Solar Development Suitability Analysis

The Ray used a customized GIS toolset developed by the company Esri and implemented a four-step process to conduct each analysis:

- Develop inclusion and exclusion criteria to narrow down the state ROW and identify possible solar installation sites.
- Analyze multiple factors, including solar radiation, slope, and aspect of the potential installation sites identified by inclusion criteria, to determine highly suitable potential installation sites and calculate solar potential electricity values for such sites.
- Refine the list of suitable sites to prioritize for further study.
- Create 3D models of select ROW parcels identified as highly suitable for potential solar installation that visualize potential solar panel arrays and demonstrate potential energy generation and carbon reduction values.

Status of Work

When the initial version of this report was submitted in January 2025, The Ray had completed the first and second steps of the analysis process. All steps were completed in September 2026.

Step 1: Inclusion/Exclusion Analysis

The Ray and WSDOT personnel collaboratively developed the inclusion and exclusion criteria to determine the study areas. Study areas are:

- Within five miles of a transmission line or substation.
- Outside of protected areas.
- Outside of national parks and forests.
- Outside of flood zones, wetlands, and waterbodies.
- Outside of railroad lines by at least 20 feet.
- Outside of transmission lines by at least 50 feet.
- Outside of natural gas, HGL, petroleum, and crude oil pipelines by at least 500 meters.
- Outside of road clear zones by at least 40 feet.

The Ray used publicly available assessor's data to determine which state and federal highways and interstates met this criteria. Of the identified areas, The Ray and WSDOT further refined study areas to those being a minimum of 1.15 acres and at least 60-feet wide, which is the minimum footprint recommended by solar engineers for solar infrastructure.

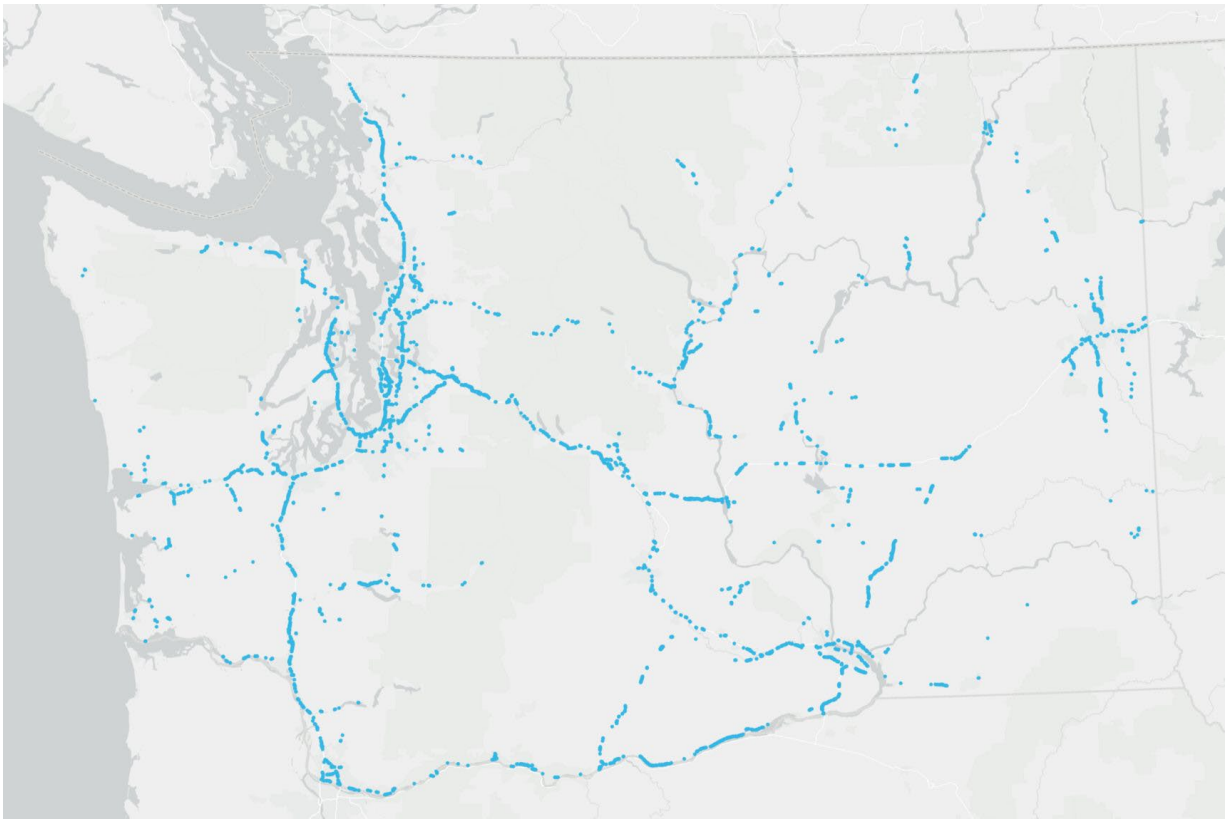


Figure 51: Land suitable for solar installation sites along Washington state and federal highways and interstates based on the inclusion/exclusion criteria.

The Ray determined that more than 11,000 acres of WSDOT ROW are suitable for potential solar installations. This represents an area with an energy generation capacity of 2,743 megawatts and a solar potential of 3,944 gigawatt-hours per year. This equates to an electricity value of $419 million annually.

Step 2: Analysis of Suitable Land

The Ray used digital surface model (DSM) and digital elevation model (DEM) datasets to further analyze the solar suitability of the identified land by solar radiation coverage (i.e., incoming solar radiation on the terrain), aspect (i.e., the directional orientation of a hillside in the terrain), and slope (i.e., the steepness of a hillside the terrain).

Land with high solar radiation coverage, a southern-facing aspect, and a slope that isn't too steep to access for installation and maintenance is optimal for solar infrastructure.

The Ray prioritized using DSM data in its analysis of solar radiation. DSM represents the top surface of all features within the area, such as trees and buildings, whereas DEM represents only the bare-earth surface. Using DSM data, where available, enabled The Ray to deprioritize further analysis of heavily treed areas, which are not conducive to solar radiation coverage or to installation and maintenance access. DEM data were used when DSM data were not available.

The Ray combined the solar radiation, aspect, and slope data to determine an overall suitability ranking for the identified land. The analysis assigned percentages of 35% to solar radiation, 25% to aspect, and 20% to slope when calculating the ranking. Land was ranked on a scale of one to 10, with scores of 8-10 indicating high suitability for solar development.

This analysis identified more than 3,000 acres of ROW land across 685 distinct parcels as highly suitable for solar development.

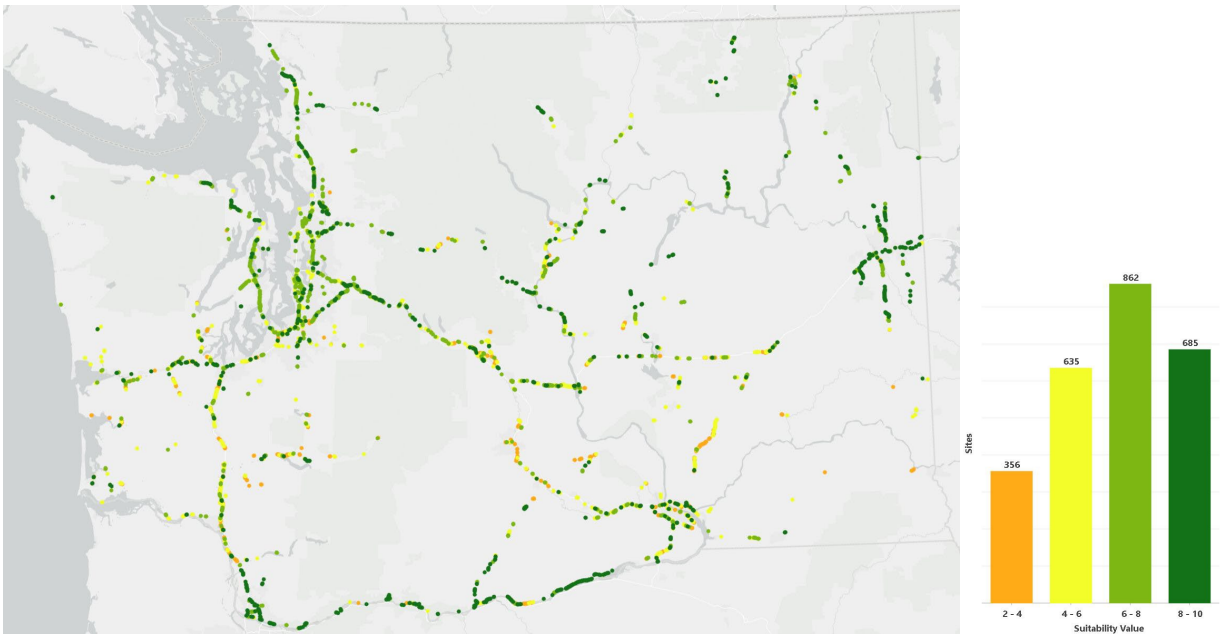


Figure 52 Land identified and ranked by suitability for solar development.

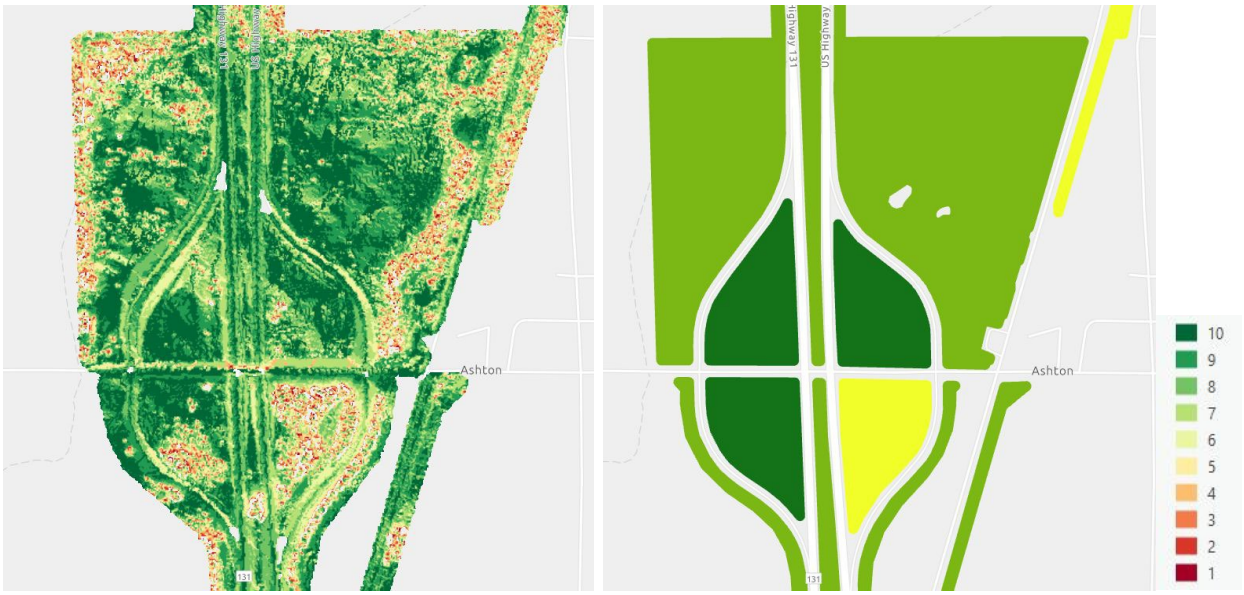


Figure 53 (left) shows the suitability values for the specific pixels in the analysis.
Figure 54 (right) aggregates this same data to each ROW parcel and assigns a single parcel suitability value.

Step 3: Refining the List of Suitable Sites

In September 2025, WSDOT and The Ray began identifying relevant factors to refine a shortlist of parcels to prioritize for further study before conducting 3D modeling. Several studies were conducted to explore various factors. In March 2026, three sites were prioritized for 3D modeling based on these studies.

Study 1: Gauging Utility Interest in Solar Development

One factor considered was utility and industry interest in solar development in certain geographic areas. The Ray convened a sub-working group to engage with both public and private utility providers and solar industry stakeholders to determine interest in potential solar developments on WSDOT ROW land within their service areas. The Ray and WSDOT engaged with the Washington Public Utility Districts Association (WPUDA) and Avista Utilities, one of the largest private energy providers in Washington State.

A key takeaway from these engagements was understanding how utilities balance their financial models for solar investment. While there is strong interest in supporting ROW solar, smaller-scale ROW installations (i.e., typically less than 10 acres per site) struggle to compete financially with greenfield solar developments that could be hundreds of acres in size. Building a competitive business case for ROW solar requires strategic coordination, policy support, or alignment with utility energy targets.

Study 2: Identifying Available Datasets to Guide Refinement Explorations

The Ray and WSDOT explored several datasets to refine the list of parcels for further study. This included several components potentially within WSDOT's GIS Workbench or other internal data sources as well as data WSDOT may be able to source from external state departments or other agencies. WSDOT can use these and other criteria and data for future analysis and selection of potential solar sites.

Data Potentially Available Internally Within WSDOT	Data Potentially Available Externally from WSDOT
Areas planned for State Transportation Improvement Plan (STIP) and Long-Range Transportation Plan (LRTP) projects.	Areas of higher-than-average energy demand and/or energy load that could benefit from additional generation capacity from ROW solar.
Locations of stormwater infrastructure (e.g., detention basins, culverts, etc.).	Utility service areas that may be interested in solar development to offset power purchases or help meet solar/renewable energy generation goals.
Locations of interchanges (often large, contiguous areas of land) and WSDOT's preference for or against siting solar in interchanges.	Areas of high/highest energy costs where solar could lower the cost of energy either for ratepayers or the solar project owner.
Data about safety incidents, such as vehicle crashes attributed to low lighting, that may support the value of adding solar to power additional lighting.	Location of planned data centers where ROW solar projects might support their increased energy demand.
Data about tree cover to inform WSDOT's tolerance for tree cover at possible solar sites.	Locations of other state facilities that could benefit from ROW solar .
Locations of high snow cover that could reduce generation capacity and increase maintenance effort.	Locations where there is more favorable public sentiment towards solar projects.
Locations of wildlife crossings, which should be given a wide berth to avoid disrupting wildlife patterns.	Locations of disadvantaged communities that experience regular energy shutoffs where nearby ROW solar could provide increased capacity.
Locations of DOT-owned facilities that could benefit from ROW solar to provide additional power capacity and/or support resiliency and/or agency renewable energy goals.	Regions in which it may be favorable for the state to demonstrate ROW solar investment.

Study 3: Exploring Communication Sites Suitable for Solar Development

Real Estate Services' GIS and Data Systems Specialist conducted a pilot study to identify communication sites aligned with areas identified by The Ray's study as highly suitable for solar development. The initial analysis found no overlap between communication sites and highly suitable solar sites, so the study area was expanded through a sensitivity analysis to identify communication sites within a reasonable distance of land that is highly suitable for solar development. This analysis yielded 11 communication sites within 8,000-feet of sites ranked by The Ray as highly suitable for solar development, with a composite score higher than 7.5:

- NEWPORT SMF
- COAL CREEK SMF
- WENATCHEE RHQ - EUCLID AVE
- PINES RD SMF
- TUMWATER HQ MATERIALS LABORATORY
- GOLDENDALE AREA 4 MF
- NORTHUP AREA 5 MF
- GROUSE CREEK SMF
- WALKER MT SMF
- CAMP MASON SMF
- MARYSVILLE WATER TANK RADIO SITE

WSDOT then used the available GIS database and layer information to identify the closest power plants to these 11 sites as well as third-party utilities with permitted accommodations for power cable installations closest to the sites.

WSDOT then reviewed this list of 11 sites against the Department's Project Delivery Plan, a six-year list of projects prioritized and programmed for delivery. This analysis revealed four sites not in close proximity to planned projects.

- NEWPORT SMF
- COAL CREEK SMF
- WALKER MT SMF
- MARYSVILLE WATER TANK RADIO SITE

WSDOT moved forward with 3D modeling of the Newport, Coal Creek, and Walker Mountain site, as the parcels are owned by WSDOT and each has been mapped and inventoried in GIS.

Step 3: 3D Modeling of Suitable Land

In May 2026, The Ray's Geospatial Solutions team completed creation of 3D models of the Newport, Coal Creek, and Walker Mountain sites using ArcGIS Pro. The 3D models enabled WSDOT to visualize the specific orientation and layout of a solar panel array customized to each of these three sites.

Using the software's 3D solar panel symbols, the team configured each symbol to match a standard four-foot by four-foot solar panel and arranged them across the selected site, accounting for the horizontal and vertical spacing recommended by the Webber Energy Group at the University of Texas at Austin.

Based on the total number of panels installed, the team calculated the overall system capacity in kilowatts (kW), the cumulative energy output in kilowatt hours (kWh), and the annual solar potential (kWh/year) using the US EIA capacity factors for Washington. The team also estimated the annual electricity value using the US EIA commercial electricity rate applicable to Washington.

Using the EPA's Greenhouse Gas Equivalencies Calculator, the team translated the site's emissions avoidance potential into relatable terms, such as equivalent annual emissions from passenger vehicles, households, or power plants, to help WSDOT effectively communicate its greenhouse gas reduction goals.

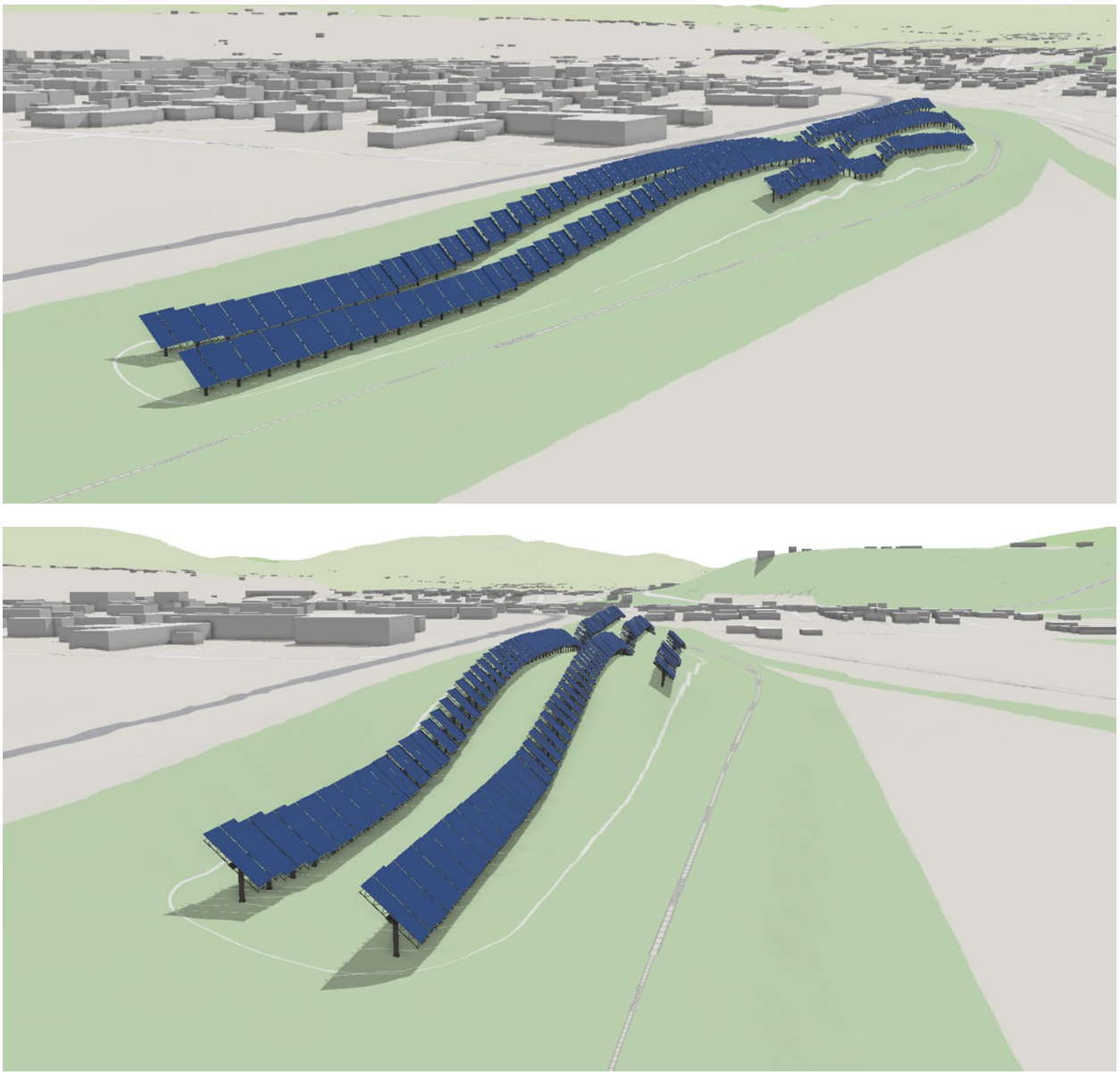
All data in the tables below is current as of January 2026.

Site 1: Newport SMF

This site is located in the City of Newport. The closest solar-suitable site to it has a score of 9.51 and an area of 1.91 acres.

Total Solar Panels (300 watts each)	Total Size Capacity	Potential Power Generation Capacity	Annual Value of Electricity
1,560	0.47 MW	549 MWH/YR	$64,412
Equivalencies			
Homes Powered for 1 Year		**51 homes**	
Electric Vehicles Powered for 1 Year		**112 EVs**	
Carbon Reduction (metric tons avoided)		**389 tons**	
Coal Reduction (pounds not burned)		**430,125 lbs.**	
Gas Reduction (gallons consumed		**43,753 gal**	
Passenger Vehicle Driving Reduction for 1 Year		**84 cars**	
Carbon Sequestered in 1 Year (acres of US forests)		**463**	





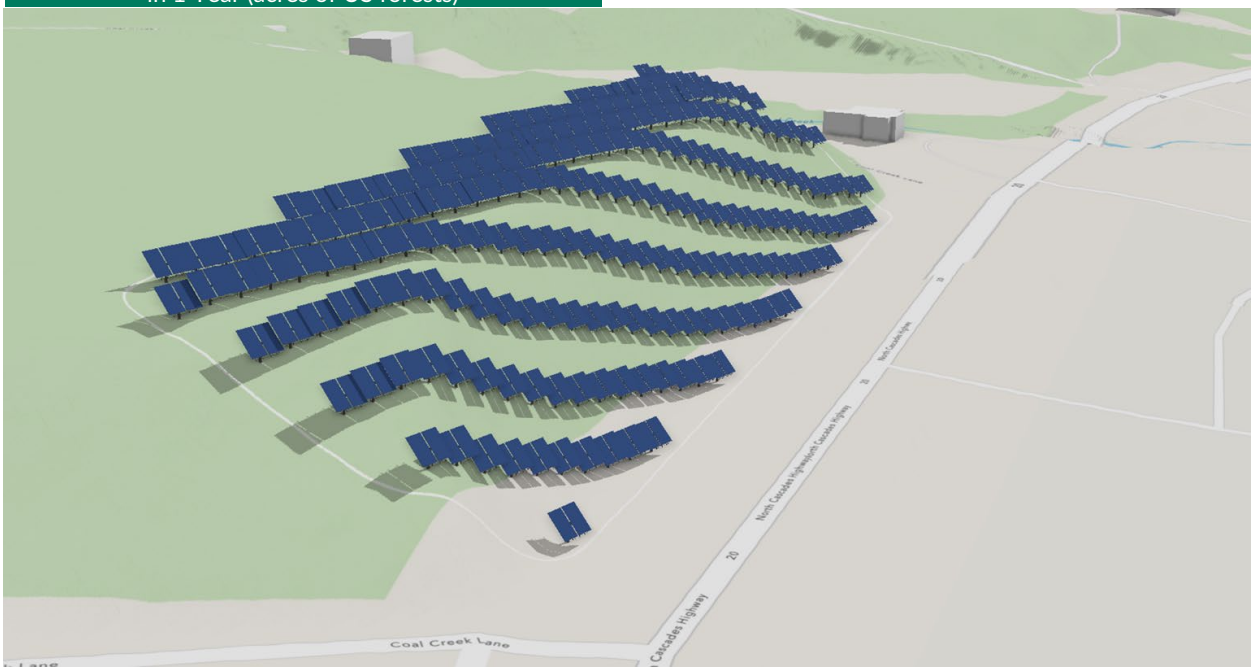
Figures 55-57: Various perspectives of solar panel arrays arranged at the Newport SMF site.

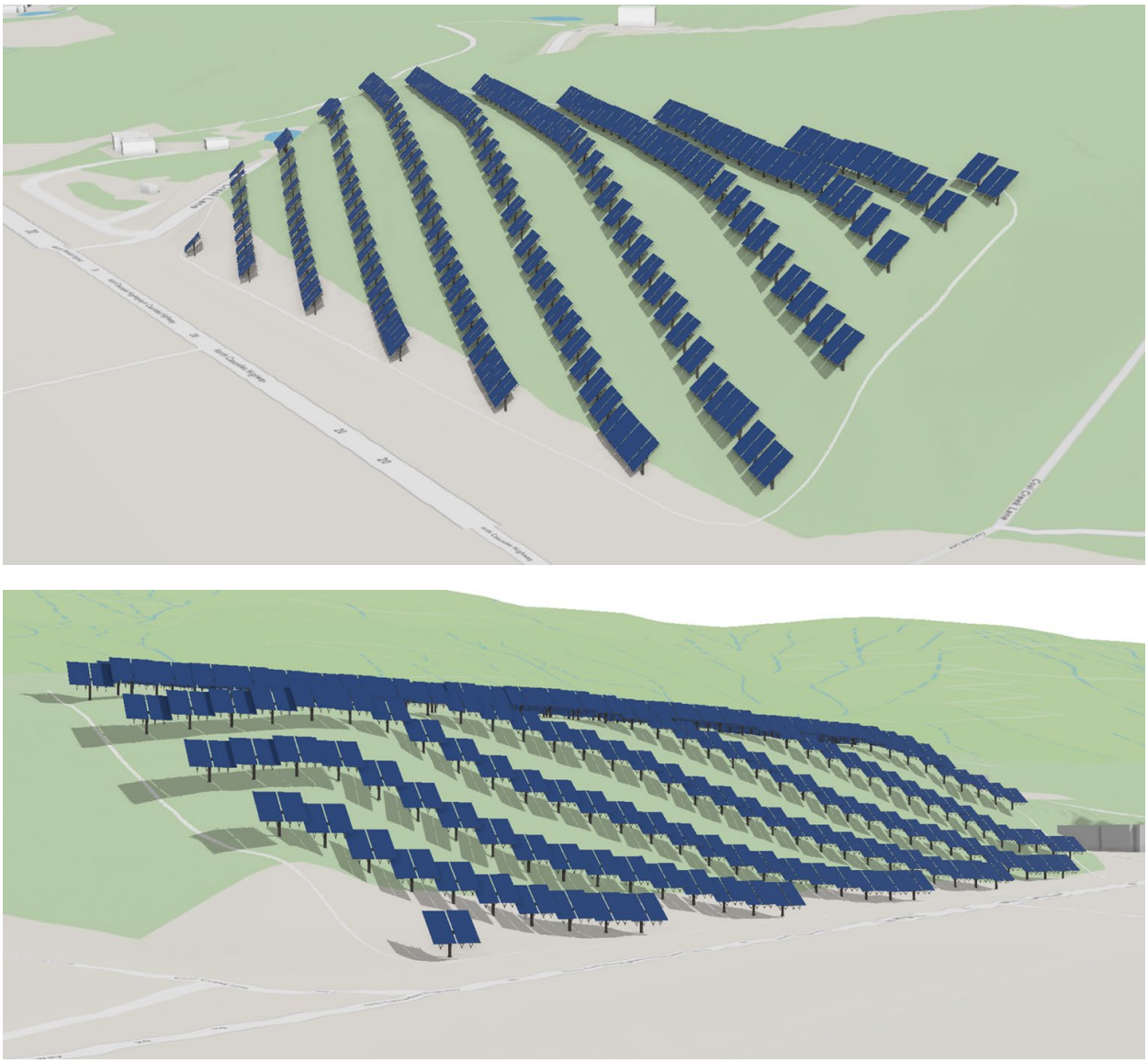
Site 2: Coal Creek SMF

This site is located in the City of Sedro-Woolley. The closest solar-suitable site to it has a score of 8.43 and an area of 2.16 acres.

Total Solar Panels (300 watts each)	Total Size Capacity	Potential Power Generation Capacity	Annual Value of Electricity
1,696	0.51 MW	560 MWH/YR	$65,697

Equivalencies	
Homes Powered for 1 Year	**52 homes**
Electric Vehicles Powered for 1 Year	**114 EVs**
Carbon Reduction (metric tons avoided)	**397 tons**
Coal Reduction (pounds not burned)	**438,706 lbs.**
Gas Reduction (gallons consumed)	**44,626 gal**
Passenger Vehicle Driving Reduction for 1 Year	**85 cars**
Carbon Sequestered in 1 Year (acres of US forests)	**472**



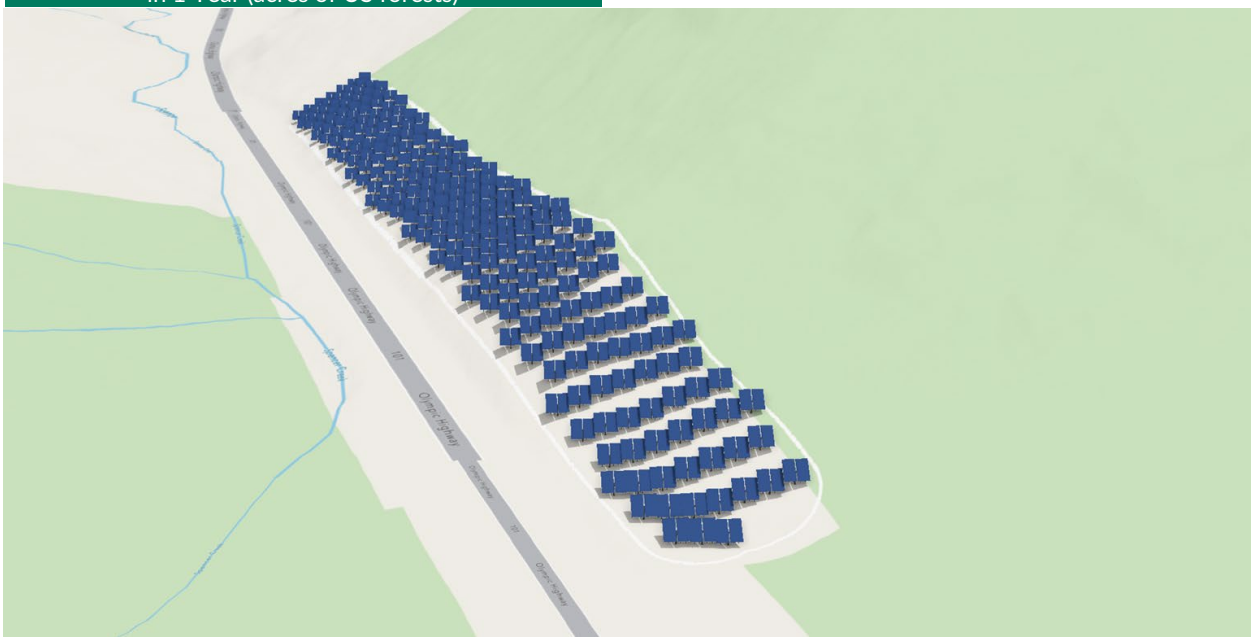


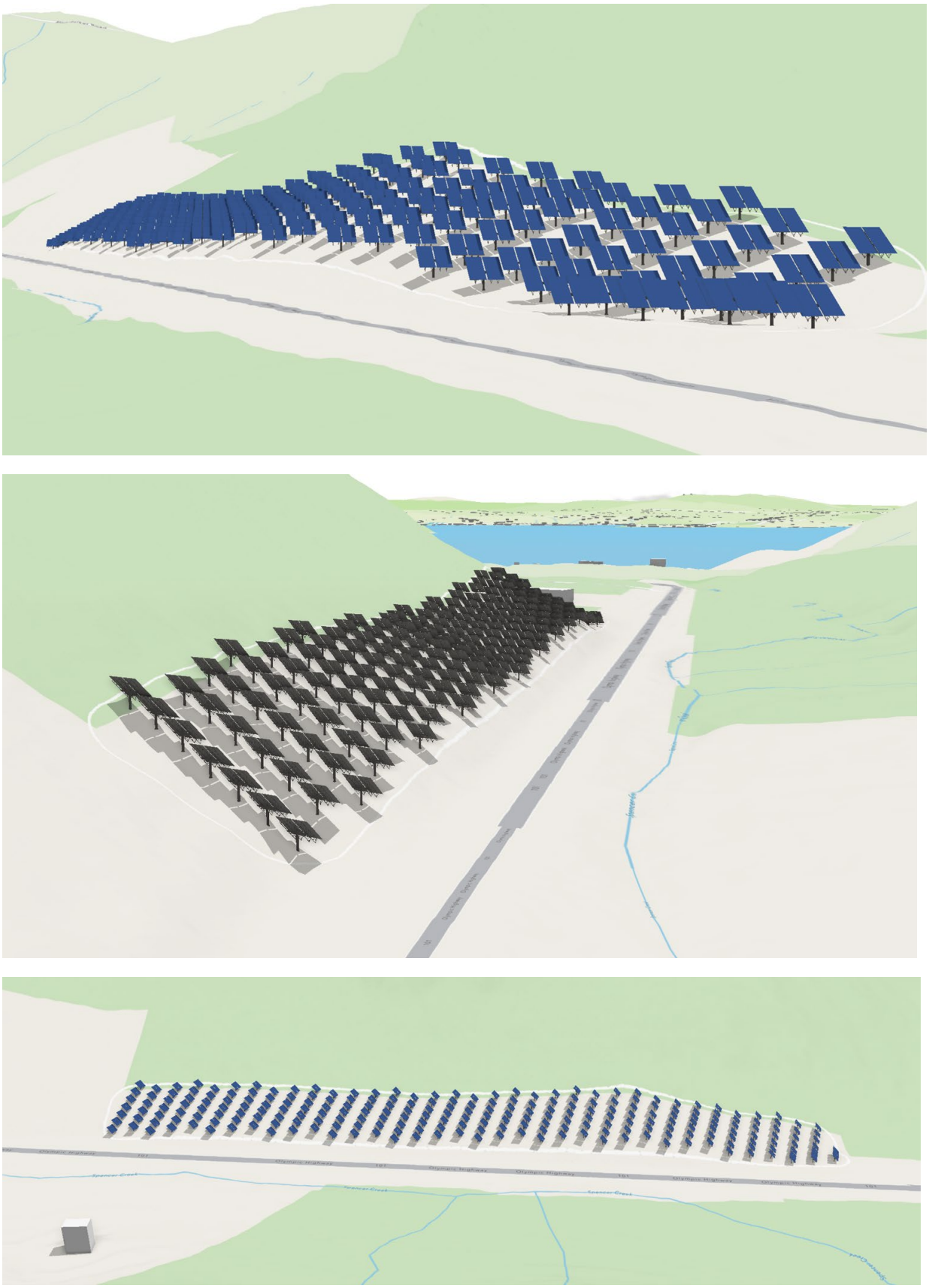
Figures 58-60: Various perspectives of solar panel arrays arranged at the Coal Creek SMF site.

Site 3: Walker Mountain

This site is located in the City of Brinnon. The closest solar-suitable site to it has a score of 7.61 and an area of 2.6 acres.

Total Solar Panels (300 watts each)	Total Size Capacity	Potential Power Generation Capacity	Annual Value of Electricity
1,920	0.58 MW	599 MWH/YR	$70,367
Equivalencies			
Homes Powered for 1 Year		**56 homes**	
Electric Vehicles Powered for 1 Year		**122 EVs**	
Carbon Reduction (metric tons avoided)		**425 tons**	
Coal Reduction (pounds not burned)		**469,892 lbs.**	
Gas Reduction (gallons consumed)		**47,798 gal**	
Passenger Vehicle Driving Reduction for 1 Year		**92 cars**	
Carbon Sequestered in 1 Year (acres of US forests)		**506**	





Figures 61-64: Various perspectives of solar panel arrays arranged at the Walker Mountain site.

Energy Transmission Corridor Suitability Analysis

Status of Work

The Ray conducted a GIS-based transmission suitability analysis in Spring 2026. Similar to the solar development suitability analysis, this analysis used Esri geospatial tools to identify suitable areas for overhead and buried transmission lines and calculate an optimal path from origin to destination in the most suitable ROW real estate.

The Ray adjusted the optimal path within suitability zones, estimated operational clearance zones for overhead transmission, and estimated vegetation for both overhead and buried transmission. The analysis did not include WSDOT's control zone standards, based on WAC 468-34-350, for aboveground utility installations within the overhead criteria of this study.

Large-Scale Pathway Suitability Analysis

In February 2026, WSDOT and The Ray identified two large-scale potential transmission routes: I-90 and US 2 from the Washington-Idaho border to I-5. These corridors would support transmission from Eastern Washington, where there is a higher concentration of sites highly suitable for solar generation, to Western Washington, where there are greater population centers:

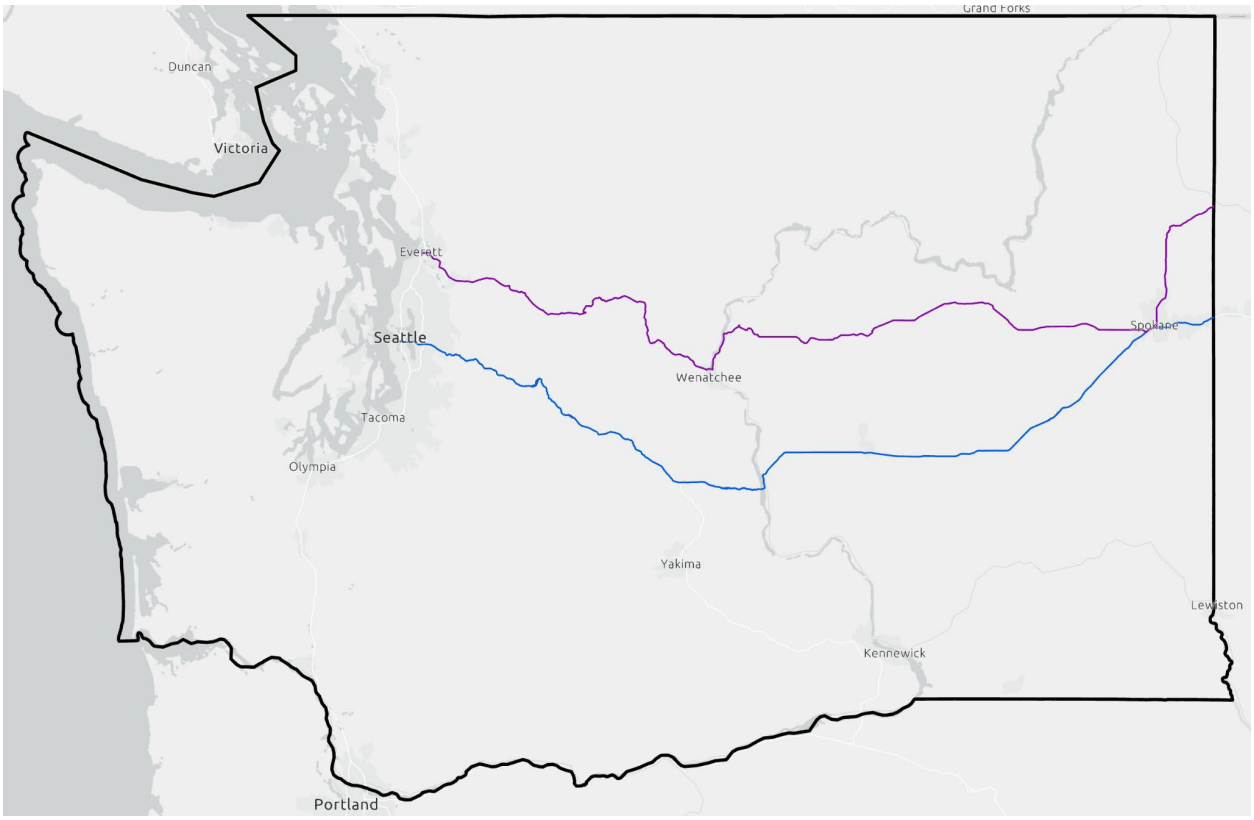


Figure 65: The Ray studied transmission suitability along I-90 and US 2, starting from Seattle and Everett, respectively, and ending at the Washington/Idaho border.

WSDOT and The Ray held biweekly technical meetings from February through May 2026 to progress both overhead and underground transmission suitability analyses for both routes.

The Ray provided standard buffer distance values associated with standard and optional criteria. For each criterion, a "Level of Challenge" value was assigned within the buffer distance. A value of one denotes "Less Challenging" and a value of ten denotes "Very Challenging." These values provided a weighting component to create suitability zones within the ROW, helping to identify the optimal route for transmission lines.

WSDOT engaged internal teams to either accept or update The Ray's Level of Challenge value and buffer distance for each criterion. The Ray primarily used WSDOT's GIS data layers for both analyses and supplemented with additional national-level authoritative data sources as needed. If certain criteria did not exist in these data layers, The Ray proceeded with its analyses without including them.

Overhead Transmission Study Areas and Associated Levels of Challenge

Distance From	Level of Challenge 1 = Less Challenging 10 = Very Challenging	Buffer Distance
Railroads	10 (due to permitting and flagging)	50 ft from the outermost track
Pipelines	3 (easy to cross pipelines)	30 ft
Existing electric transmission lines	7 for higher voltage lines (>= 230 kv) 3 for lower voltage lines (< 230 kv)	30 ft
Water features	10	30 ft
Rail bridges	7	50 ft
Road bridges	6	50 ft
Less than minimum construction distance (ROW not wide enough): 7 m (23 ft)	10	
Soils	Contaminated soil: 8 Organic soil (Histosols): 6	Contaminated soil: 50 ft Organic soil: None

Bedrock (at or near the surface)	• Metamorphic = 9
	  ◦ Quartzite or Quartz, Gneiss, Slate, Hornfels, and Anthracite
	• Igneous = 8
	  ◦ Intrusive (Plutonic): Granite and Gabbro
	  ◦ Extrusive (Volcanic): Basalt and Andesite
	• Sedimentary = 5 to 6 (avg. 6)
	  ◦ Sandstone and Siltstone = 6
	  ◦ Limestone, Shale, and Claystone= 5
	• Unknown = 7	

Wetlands	3	50 ft
Slope (percent)	• 0% - 7% = 1 • 7% - 10% = 2 • 10% - 20% = 3 • 20% - 30% = 5 • 30% - 50% = 7 • 50% - 75% = 8 • 75% - 100% = 9 • > 100% = 10	
Unstable Slope	• Slopes rated less than 150 (low to very low risk): 3 • Slopes rated 150 to 299 (medium risk): 5 • Slopes rated greater than 300 (high to very high risk): 8	30 ft
Distance from road pavement	• 0 ft: 10 • 1 ft to 40 ft (clear zone): 5 • >= 41 ft: 1	
Trees	10	

Highway crossing	High traffic road crossing = 5 Low traffic road crossing = 1	
Aerial obstacles (e.g., light poles, signs, antennas, wind turbines, smokestacks, communication or electric catenary crossings		
Residential areas	10	300 ft
Urban (as a substitute for residential areas)	8	
Commercial/Industrial areas	3	300 ft
Public facilities (e.g., schools, police offices, and DNR offices)	10	300 ft
High-risk floodplain	3	
Airport influence areas	10	2 miles
Soils: Peat and Histosol	8	
Contaminated Soil	10	50ft
Historic Sites	10	50 ft
Median	10	

Buried Transmission Study Areas and Associated Levels of Challenge

	Level of Challenge 1 = Less Challenging 10 = Very Challenging	Buffer Distance
		Small scale (1m resolution)
Railroads	10	40 ft
Pipelines	8	30 ft
Fiber	7	30 ft
Electric transmission lines	7	30 ft
Water features	8	30 ft
Culvert	8	30 ft
Rail bridges	10	40 ft
Road bridges	10	Max value of length or width + 15 ft
DOT ITS	CCTV, VMS, and Ramp Meter sites: 8 All others: 4	30 ft
Stormwater Infrastructure	8	Drywells: 25ft Infiltration Trench (Under DitchTypeBMPs): 25ft Stormwater Vaults: 25 ft Stormwater Ponds: 25ft
Fish Passage	10	30 ft
Median	10	
Less than minimum construction distance: 7 m (23 ft)	10	
Soils: Peat and Histosols	8	
Contaminated Soil	10	50 ft
Urban	8	

Slope (percent)	• 0% - 7% = 1 • 7% - 10% = 2 • 10% - 20% = 3 • 20% - 30% = 5 • 30% - 50% = 7 • 50% - 75% = 8 • 75% - 100% = 9 • >100% = 10
Unstable Slope	Slopes rated less than 150 (low to very low risk): 3 Slopes rated 150 to 299 (medium risk): 5 Slopes rated greater than 300 (high to very high risk): 8

Bedrock
(at or near surface)
	• Metamorphic = 9
	  ◦ Quartzite or Quartz, Gneiss, Slate, Hornfels, and Anthracite
	• Igneous = 8
	  ◦ Intrusive (Plutonic): Granite and Gabbro
	  ◦ Extrusive (Volcanic): Basalt and Andesite
	• Sedimentary = 5 to 6 (avg. 6)
	  ◦ Sandstone and Siltstone = 6
	  ◦ Limestone, Shale, and Claystone = 5
	• Unknown = 7

Surficial geology (lithology)	• Boulders = 9 • Diamicton = 6 • Gravel, Saprolith, and Silt = 4 • Clay, Fill, Loam, and Sand = 2
Distance from road pavement	• 0 ft: 10 • 1 ft to 40 ft (clear zone): 5 • > 41 ft: 1
Trees	10
STIPS	30 ft
DOT Facilities	30 ft

Finding the Optimal Path

The Ray's analysis identified less suitable and more suitable areas with the ROW and optimal pathways for overhead and buried energy transmission infrastructure.

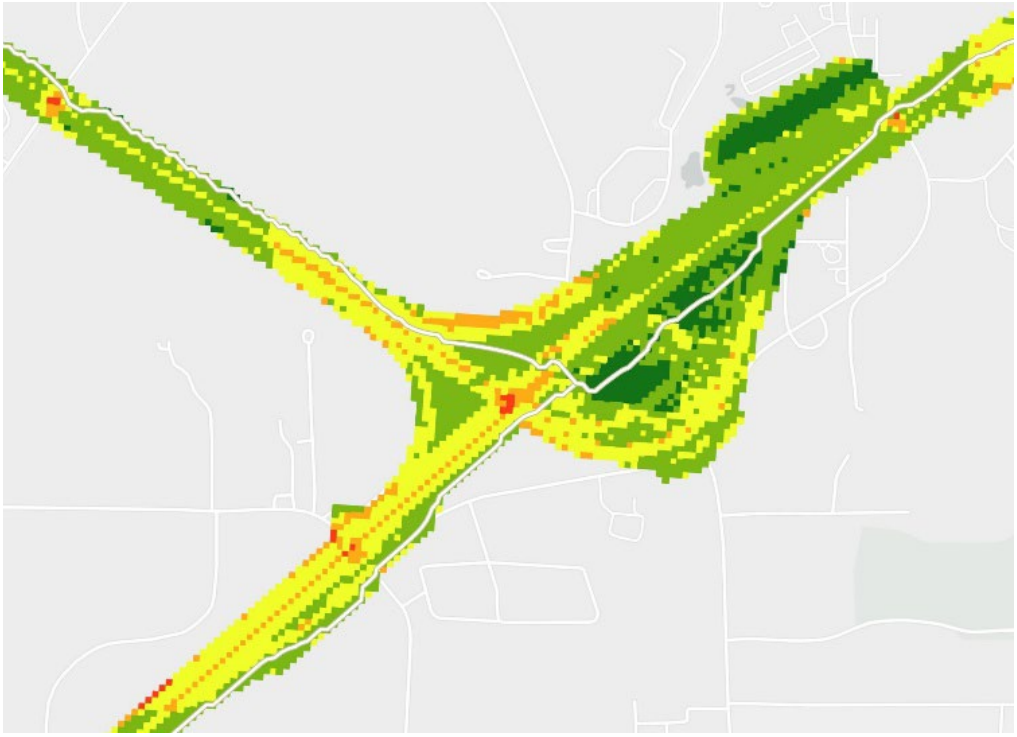


Figure 66: Suitable area for overhead transmission with the optimal pathway overlaid in white.

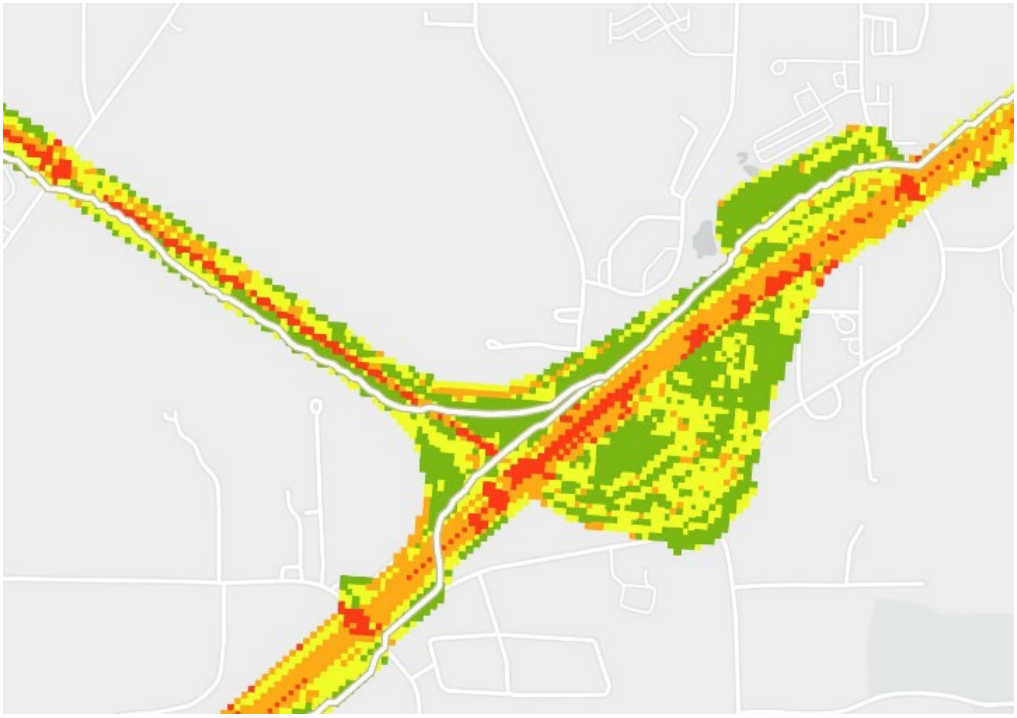


Figure 67: Suitable area for buried transmission with the identified optimal pathway overlaid in white.

The Ray's analysis found that US 2 is very narrow between Spokane and the Columbia River and runs through primarily agricultural land. I-90 has a wider ROW, generally making it more suitable as a transmission corridor.

Several factors influence suitability:

- In the Cascade region, slopes and unstable slopes affect suitability along both routes, as steep terrain creates more difficult and more challenging construction conditions.
- Wetlands and bodies of water potentially require special permitting and construction methods, such as placement of vaults for buried transmission lines.
- Dense vegetation can increase clearing and maintenance costs.
- Buildings and urban areas create routing conflicts.
- Existing infrastructure, such as railroads, pipelines, and utilities may complicate construction, especially where transmission lines would need to cross them.
- Culturally sensitive areas may restrict or discourage development.
- Existing State Transportation Improvement Plans (STIPs) may restrict transmission development.

Future Implementation Planning for Solar Development and Energy Corridor Designation

The results of The Ray's ROW solar and energy transmission corridor analyses are general information suitable for pre-planning purposes only. They are not intended nor able to replace or substitute site analysis and other planning, design, and engineering work that must be completed to confirm suitability of a given parcel for solar development or designation as an energy corridor. All information is provided "as is" with no guarantee of completeness or accuracy and without any warranties, representations or guarantees, either express or implied, or arising by operation of law, that any particular parcel is suitable for solar development or designation as an energy corridor.

While not comprehensive, these pre-planning level studies done by The Ray, using GIS data generated through WSDOT's GIS mapping efforts described in the next section of this report, serve as proof-of-concept and a significant foundation to support potential future solar power generation projects undertaken by partnerships or private companies.

With future funding, WSDOT may be able to conduct more detailed site analyses and other planning, design, and engineering work necessary to further develop solar and energy corridor designation implementation plans. In particular, a glint/glare analysis to determine the visual impacts to the traveling public of light reflecting off of solar panel arrays will be a critical future study item.

Public-Private Partnerships (P3)

WSDOT and The Ray identified several examples of other states are that are using the public-private-partnerships (P3) model for implementing solar development on the ROW.

- **Maryland Department of Transportation (MDOT):** MDOT's Solar Program includes five solar photovoltaic systems installed at different DOT-owned facilities. The DOT budget for FY26 included "A historic investment of $180 million in projected funding from the Strategic Energy Investment Fund (SEIF) to fund initiatives to support implementation of the State's Climate Pollution Reduction Plan, released in December 2023. Of the $180 million investment, which builds on an allocation of $90 million in the FY 2025 budget, $50 million will facilitate solar development on State property, starting with MDOT facilities…" The DOT is currently working to deploy these funds and may be using a P3 model to do so.
- **Pennsylvania Turnpike:** As part of its mission to become "America's First Sustainable Superhighway," the Pennsylvania Turnpike Commission issued a Request for Proposals in 2024 for Solar Generation Power Purchase Agreement (PPA). The selected partner will "design, build, finance, operate and maintain 15 facilities…on PA Turnpike-owned land adjacent to its roadway." The Turnpike will purchase the power generated at a reduced rate from the vendor for 20 years while also retaining the associated Solar Alternative Energy Credits (SAECs).
- **Connecticut Department of Transportation (CDOT):** The Connecticut Green Bank, an entity "established by the Connecticut General Assembly in July 2011," works with CDOT to identify and enter into PPA agreements with vendors to deploy ROW solar developments. They issued an RFP in 2025 for investor/owners "interested in designing, developing, installing, financing, owning, operating and maintaining solar PV projects at State of Connecticut sites."
- **Maine Department of Transportation (**MaineDOT**):** MaineDOT contracted with energy developer Cenergy Power to "own and operate the infrastructure [three ROW solar arrays] under a Net Energy Billing Credits Agreement. Additionally, Cenergy is responsible for the cost of construction, maintenance, and a 20-year land lease." Maine will purchase energy generated by Cenergy Power at a reduced rate via a PPA. The FHWA published a case study on this partnership.

- **Michigan Department of Transportation (MDOT) Value Proposition:** The Ray developed a briefing document for MDOT outlining options for implementing solar energy projects within highway ROW. It includes potential business structures with details about specific models, such as land licensing, direct ownership, and Power Purchase Agreements (PPAs), and highlights financial benefits such as opportunities for revenue generation, maintenance cost reduction, and environmental impact.
- **Georgia:**
  - The Ray Highway is a one-megawatt solar array in the ROW commercialized in 2020 as a partnership between Georgia DOT, The Ray, Georgia Power and the Georgia Public Service Commission.
  - Non-profit electric co-op Cobb EMC and natural gas provider Gas South are currently constructing a solar installation off of I-75 in Cherokee County with planned capacity of 1 MW. The project was developed in partnership with the Georgia DOT and will support Cobb EMC's new community solar project called SolarShare.
- **Central Florida Expressway:** The Central Florida Expressway (CFX) has started design-build projects for three ROW solar sites—one ground-mounted and two floating arrays on a stormwater catchment area ("flotovoltaics"). Each site is under one megawatt of production. The work was featured by NBC News in 2023.

With further funding and study, WSDOT may be able to explore similar initiatives.

Department of Energy ROWER Project

The Ray is participating in the U.S. Department of Energy (DOE) Rights-of-Way Energy Resource (ROWER) Project, an initiative that is jointly funded by the DOE and the U.S. Department of Transportation and led by the National Laboratory of the Rockies. This research project is designed to help State DOTs understand the appropriateness of their transportation ROW for energy generation, storage, and transmission. The work includes a comprehensive toolkit and interactive mapping tool to help agencies understand the concept, summarize regulatory conditions, and identify high-potential sites.

The mapping tool uses a similar yet different methodology for ROW solar and transmission than The Ray used for WSDOT. The ROWER Project data and toolkit will be made available to WSDOT and other DOTs in late 2026.

GIS Mapping of WSDOT Real Estate Inventory

(b) In carrying out the requirements in (a) of this subsection, the department may consult with an organization that uses an advanced rights-of-way solar mapping tool that uses ArcGIS Pro software for faster and more precise analysis of rights-of-way solar using the state's full spatial rights-of-way data sets.

WSDOT maintains a library of Right-of-Way Plans and Right-of-Way Maps for its real estate assets dating back decades, with multiple maps and plans for the same locations. At the outset of this proviso work, the Agency did not have a geo-rectified digital inventory or GIS datasets nor in-house GIS mapping capability within the Real Estate Services group.

WSDOT allocated approximately $250,000 of the proviso funding to engage right-of-way consultant Commonstreet Consulting to create GIS datasets of WSDOT real estate parcels. Their scope of work prioritized research and mapping of parcels identified by The Ray as highly suitable for solar development and energy corridors.

Commonstreet is a Seattle-based right-of-way consulting firm with expertise in GIS services for right-of-way applications. Its key personnel include two industry experts who previously worked for WSDOT Real Estate Services as headquarters property management program leaders. Their decades of institutional knowledge of WSDOT's real estate assets supported efficient data gathering to inform development of accurate and current GIS metadata.

Status of Work

WSDOT solicited consulting support in Fall 2024 and selected Commonstreet in late November 2024. As of January 2025, when the initial version of this report was submitted, this work was on hold, as WSDOT had not executed a contract with Commonstreet prior to Governor's Directive 24-19 freezing service contracts, which was announced in early December. When the freeze was lifted, WSDOT finalized its contract with Commonstreet in August 2025 and initiated the planned work.

In April 2025, WSDOT Real Estate Services hired a GIS and Data Systems Specialist (not funded by this proviso) to manage ongoing development and maintenance of GIS datasets for WSDOT's real estate inventory. The GIS and Data Systems Specialist's first priority was inventorying and organizing parcel data with a focus on parcels identified by The Ray's initial solar development suitability analysis.

In early December 2025, WSDOT and The Ray met to review the WSDOT-owned parcels identified based on available assessor data as highly suitable for potential solar development and develop ranking criteria with which to prioritize areas for further research and documentation. This prioritization will enable WSDOT to efficiently use the time and available funding to meet the requirements of the proviso. At a high level, WSDOT prioritized documentation of properties in Eastern Washington based on climate conditions more amenable to solar development.

Commonstreet's research and digitization effort began with gathering WSDOT's Right-of-Way Plans and Maps formats for areas designated as highly suitable for solar development and energy corridors and developing an attribute table to facilitate researching property acquisition files, deeds, permits, easements, and other information. They then geo-rectified parcel information to create "shapefiles" with multi-layered metadata. This information can be superimposed with aerial imagery of WSDOT parcels to create highly useable and informative digital datasets that will support further implementation planning for solar and energy corridor developments.

As of September 30, 2026, WSDOT has mapped 4,854 parcels as part of this proviso-funded effort. This represents about 30-percent of WSDOT's complete real estate inventory.

Of these mapped parcels, 2,264 parcels were prioritized based on results from The Ray's solar suitability analysis identifying them as highly suitable for potential solar development.

In addition, the spatial overlay between WSDOT's ROW parcel inventory and the solar suitability layer identified 888 WSDOT parcels across 19 different state routes and 50 unique plan titles. The combined acreage of these overlaid parcels is 5,058 acres, demonstrating the extent of ROW land with measurable solar potential.

Concurrently with this work though not funded by the proviso, WSDOT Real Estate Services has finalized a contract with a property management system software vendor (BEM) in order to create a Real Property Management system (RPMS). This system replaces an outdated database with broader functionality that better supports Real Estate Services' core functions in project delivery as well as conducting the property ownership research necessary for all WSDOT highway projects and answering inquiries from elected officials, internal divisions, external agencies, and the public. It will reduce the research process to an exercise that takes minutes or hours, instead of weeks or months. The GIS and Data Systems Specialist continues to lead coordination with Real Estate Services program managers to build out the property inventory database for efficient and effective use.

The digital datasets created by Commonstreet may interface with the RMPS database, supporting future explorations into solar development and other alternative uses of WSDOT real estate as well as day-to-day functions of the Real Estate Services group.

Value of GIS Mapping

The GIS mapping effort was directly necessary and beneficial to efficiently and accurately achieving the objectives of the proviso. GIS maps enabled WSDOT to efficiently validate The Ray's findings and further explore the implementation of solar development, energy transmission and distribution, and energy infrastructure installations in suitable WSDOT rights of way.

The work of Real Estate Services' GIS and Data Systems Specialist was particularly indispensable to the proviso initiatives; she served as the primary liaison to The Ray, coordinated with subject matter experts to identify analyses criteria, and used the newly created GIS datasets to identify specific WSDOT parcels aligned with The Ray's analysis of land areas suitable for solar development to enable the 3D modeling effort.

Initiating this GIS mapping activated several benefits to WSDOT as well as external agencies. Additional funding to continue mapping WSDOT's full inventory will increase each of these benefits:

- By comprehensively identifying and geo-rectifying available property information for each parcel, WSDOT can accurately validate ownership and identify any encumbrances that may affect the feasibility of further pursuing solar and other energy developments on each site, such as underground utility pipelines and whether FHWA approval will be needed for properties involving federal funds.
- This data enables Real Estate Services to collaborate effectively with other WSDOT disciplines, such as Roads, Engineering, and Traffic Control, to further explore implementation of solar development and other energy installations within the right-of-way. A coordinated effort will be needed to further investigate project feasibility, technical requirements, safety and maintenance considerations, and other factors.
- This work will also inform future conversations with utilities, solar industry stakeholders, and Real Estate Services Region teams regarding potential solar development as well as parcel usage for future transportation projects.
- GIS data can support additional suitability and geospatial analyses, such as identifying narrow or unsafe roadway segments that are most suitable for "complete streets" interventions; energy pipeline routes; urban transport infrastructure and regional mobility planning initiatives; and assessing existing ROW for Integrated Blue-Green Infrastructure potential for sustainable stormwater management infrastructure, such as bioswales, rain gardens, and permeable pavements.

- In addition to supporting future explorations of solar development and energy transmission corridors, geo-rectifying WSDOT's entire property inventory will promote efficient and accurate data management as part of WSDOT's Real Estate Services, especially the Acquisition and Property Management teams, during highway project planning and ongoing use of WSDOT-owned property. WSDOT teams could record, accurately categorize, and memorialize property data, minimizing efforts and improving accuracy for planning and estimating costs for future WSDOT right-of-way projects and executing necessary acquisitions.
- External entities, such as cities, counties, rail companies, and other agencies regularly seek property information from WSDOT to inform their own project developments. Prior to initiating the GIS mapping effort with proviso funds, WSDOT was unable to provide authoritative geospatial data to any inquiring agency or entity. With more than a quarter of parcels now mapped, WSDOT can better support local agencies that depend on accurate data to inform their own operations and projects. Completing the mapping effort will build upon this position.
- Having GIS data for the ROW will also enable WSDOT to be more responsive to legislative requests. For example, several years ago WSDOT was asked to identify ROW that would be suitable for truck parking. The Agency was unable to fulfill this request as data on property ownership was not in a searchable digital format. Moving forward with inventorying its property ownership in GIS format will better enable WSDOT to respond to similar data requests in the future and more effectively manage its real property assets.

Ongoing GIS Map Development and Maintenance

WSDOT's real estate assets currently exceed 15,000 unique parcels, and this portfolio continues to grow with every ROW acquisition for current and future highway projects.

WSDOT intends to continue an ongoing GIS mapping effort as funding and resourcing allow. Specifically, additional funding would enable WSDOT to extend its contract with Commonstreet and/or engage additional internal or consultant resources to continue the current momentum of mapping the Agency's existing real estate asset portfolio.

With additional funding, WSDOT would work first to complete mapping parcels identified by The Ray as highly suitable for solar development and energy corridors then continue by mapping properties on Washington's Eastside, where climate conditions are most favorable for solar development.

The GIS and Data Systems Specialist's knowledge of the Agency's GIS datasets will also be necessary to support future explorations of potential solar and energy transmission developments, in addition to the efficient planning of ongoing highway projects.

Findings and Conclusions

The proviso funding initiated several efforts that resulted in tremendous value to multiple WSDOT divisions, including Utilities, Landscape, Maintenance, and Real Estate Services. The research, data collection, and findings from each body of work will support new and ongoing efforts. It will also enable WSDOT to propose practical and effective directions and strategies for future explorations and implementations of alternative uses of the right-of-way.

- The pollinator habitat demonstration project and PheNode monitoring system at the Scatter Creek Rest Area in the Olympic region proved to have high return-on-investment, with multiple success factors:
    - It is actively engaging the public onsite and online to take interest and action in Washington's rich and unique ecosystems.
    - It inspired two additional demonstrations in the Eastern region undertaken with proviso funds. These demonstrations are piloting innovative community involvement that may support future partnerships in ongoing landscape and roadside maintenance activities.
    - It also resulted in compelling data that led to successful grant funding for two more pollinator habitat demonstration projects that will be initiated in the Northwest region.
    - Findings from Scatter Creek are also already informing ongoing vegetation management, roadside restoration practices, and critical fire resilience efforts across the state.
- The GIS mapping effort had immediate and critical value to other proviso initiatives:
    - The parcel mapping effort carried out by Commonstreet and the expert data analysis by Real Estate Services' GIS and Data Systems Specialist provided the information that enabled the solar and energy transmission suitability analyses performed by The Ray.
    - Of particular value was the ability to prioritize three specific parcels that showed practical potential for solar development against a variety of factors from an initial list of 685 parcels suitable for solar development
    - The GIS mapping effort will continue to create ongoing value internal to WSDOT and to external entities needing authoritative geospatial data about WSDOT real estate assets. This value will be significantly increased by additional funding that supports mapping WSDOT's complete real estate inventory.

- The solar development and energy transmission corridor suitability analyses demonstrated that combining accurate geospatial data with state-of-the-art 3D modeling and route simulations can generate highly tailored pre-planning analyses.
    - This information provides a strong foundation for future planning, design, and engineering work. Understanding a specific site's energy generation or transmission potential supports future return-on-investment analysis, which will enable WSDOT to target resources to potentially viable development opportunities.
- WSDOT's partnership with The Ray was an incredible benefit in maximizing the value of proviso funds, and The Ray provided its consulting services to WSDOT at no charge.
    - The Ray team's innovative software and depth of experience, in combination with geospatial data generated by WSDOT teams, yielded rich analysis into solar development and energy transmission corridor potential.
    - WSDOT and The Ray also identified several examples of public private partnerships (P3) implemented by other state departments of transportation that model potential design-build-operate-maintain mechanisms WSDOT might further explore.