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Environmental Assessment

Tanana Chiefs Conference
Alaska Tribal Energy Sovereignty, Huslia, Alaska

Solar panels in Hughes, Alaska
(source: https://www.tananachiefs.org/updates-from-tcc-infrastructure/)

Hughes, Alaska Community Members in front of their solar array
(source: https://www.energy.gov/oced/energy-improvements-rural-or-remote-areas-selected-and-awarded-projects)

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ACRONYMS AND ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
APE	Area of Potential Effects
AVEC	Alaska Village Electric Cooperative
BESS	Battery Energy Storage System
CFR	Code of Federal Regulations
dB	Decibel
dBA	Decibel (A-weighted)
DOE	United States Department of Energy
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gases
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
O&M	Operation and Maintenance
PPV	Peak Particle Velocity
PV	Photovoltaic
STP	Shovel Test Pit
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USFWS	United States Fish and Wildlife Service

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SECTION 1 INTRODUCTION

1.1. Background

The Tanana Chiefs Conference (TCC) Alaska Tribal Energy Sovereignty Project was competitively selected for a DOE financial assistance award under the "Energy Improvements in Rural or Remote Areas Program" fiscal year 2024 funding opportunity, DE-FOA-0003428. The Project and award would assist with deploying high-penetration solar Photovoltaic (PV) and battery energy storage systems (BESS) into existing microgrids in up to eight remote tribal communities currently relying on diesel for 100 percent of their electrical production. This Environmental Assessment (EA) prepared pursuant to National Environmental Policy Act (NEPA) covers the systems planned for the Village of Huslia, Alaska.

DOE is relying on the National Environmental Policy Act Implementing Procedures issued via final rule and published by the Department on July 3, 2025 (90 FR 29676). In accordance with the Council on Environmental Quality (CEQ) final rule (January 8, 2026) and new DOE procedures, DOE incorporates the certifications that the page limits and deadlines were met for the EA as stated in the FONSI. DOE reviewed the proposed project against the list of categorical exclusions (CXs) in Appendix B of the NEPA implementing procedures and found that the proposed project would not meet the conditions of a CX (see CXs B4.14 and B5.16) because the proposed project would not be located on previously disturbed lands.

1.2. Purpose and Need for Action

The purpose and need for agency action is to comply with the DOE's statutory mandates in the Fiscal Year 2020 Further Consolidated Appropriations Act (H.R. 1685) and the Infrastructure Investment and Jobs Act [1] (H.R. 3684) (IIJA) to select and fund energy projects through cost-shared partnerships (cooperative agreements) with rural and remote communities.

The Energy Improvements in Rural or Remote Areas (ERA) program gives communities with 10,000 or fewer people the tools and resources they need to improve the resilience, reliability, and affordability of their local energy systems. These community-driven projects enable residents to make decisions about their own energy, economic, cultural, and geographic needs. The TCC Alaska Tribal Energy Sovereignty Project was competitively selected for a DOE financial assistance award.

DOE's purpose is to select ERA projects that:

- Fund community-driven projects that demonstrate energy systems,
- Deliver measurable and sustained benefits to people who live in areas with fewer than 10,000 people, and
- Build energy knowledge, capacity, and self-reliance throughout rural America.

The need is to respond to TCC's request for financial assistance through the cost-shared partnership to complete the construction and operation of solar PV and BESS projects in the village of Huslia, AK, which would modernize and improve reliability of grid infrastructure, offset diesel consumption, lower and stabilize energy costs, and reduce emissions.

1.3. DOE's Proposed Action

DOE's Proposed Action would be to authorize the expenditure of federal funding for TCC to design, construct, operate, and maintain high-penetration solar PV arrays and battery energy storage systems as part of the existing microgrid in Huslia, Alaska. Section 2 of this EA describes the Proposed Action in detail.

1.4. Cooperating Agencies

No cooperating agencies are involved in this effort.

1.5. Scoping, Public Involvement and Issues

As outlined in DOE's NEPA implementing procedures, DOE may engage in public scoping or public involvement opportunities; however, they are not required. TCC has engaged with the City, Tribal councils, and local community to facilitate project understanding and gather input on potential project locations and operations following construction.

SECTION 2 PROPOSED ACTION, NO-ACTION ALTERNATIVE, AND REASONABLY FORESEEABLE ACTIVITIES

2.1. Proposed Action

The Huslia, Alaska, solar PV array site (Figure 2) would be located south of the Birch Grove Subdivision in Huslia, AK. Construction activity will include clearing of approximately 2.7 acres of land and site preparation for the PV racking foundation and an equipment pad.

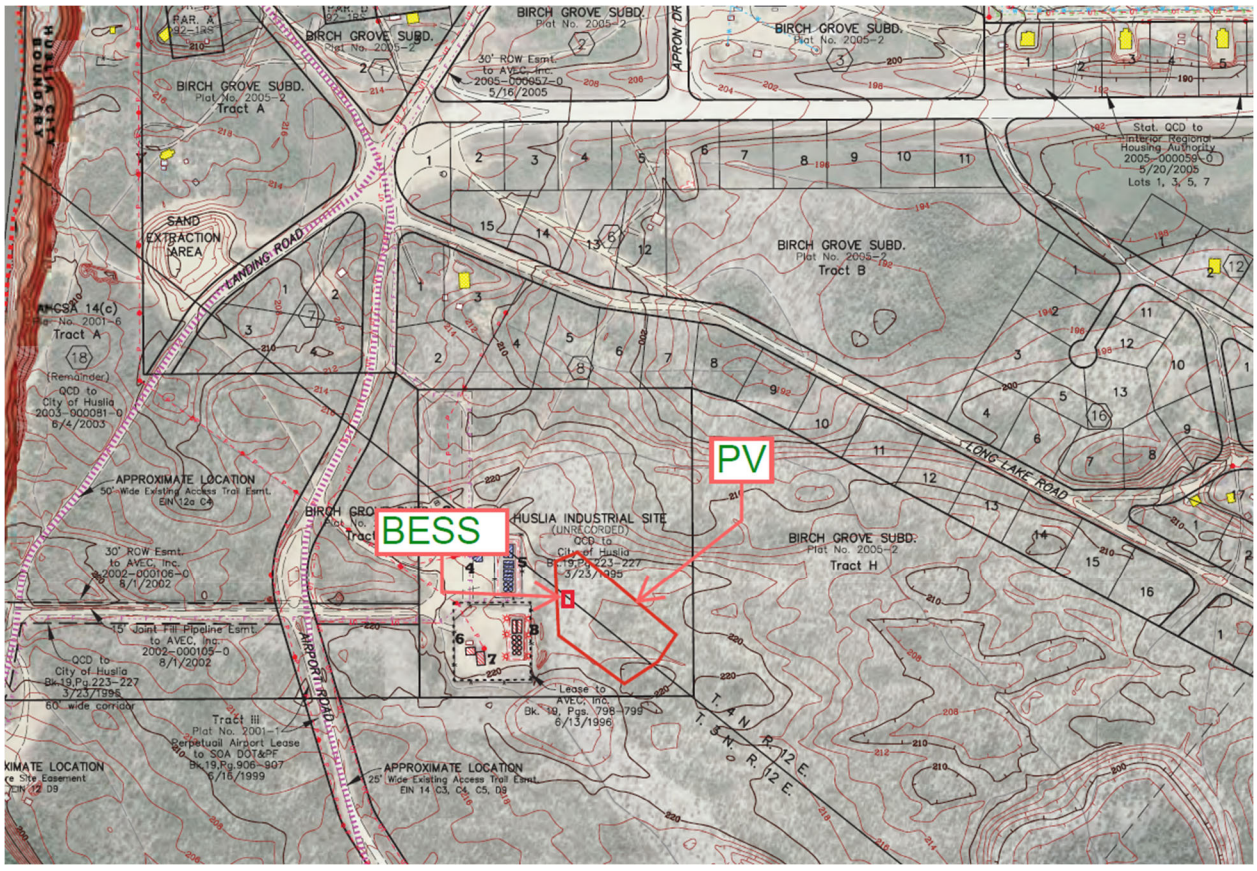

Figure 1: Huslia, AK site

Each Nuance Osprey PowerRack PV Racking foundation leg is secured to the ground by a guyed wired anchor, set to a depth of 6'-8', requiring no boring, fill, or additional concrete. The Array will consist of Four rows of (6) 24 module frames facing Southwest, and two rows of (6) 24 module frames facing Southeast. Approximately 288 earth anchors would be driven to secure the racking on the 2.7-acre site.

TCC would contract construction of PV foundation, racking, install modules and suspend aerial DC source and output circuits inside the 2.7-acre PV site footprint. The PV array racking would occupy about half of the lot with 40' spacing between rows. The distribution transformer would be seated on its own pad approximately 80-foot by 80-foot. Two approximate 10-foot by 20-foot concrete pads would also be constructed at the solar PV array site to hold inverters, associated switch gear, and a transformer. An electric conduit from the solar PV modules to the concrete pad (inverter pad) would be buried at a 24-inch depth; this trench would be around 200 feet long. Excavated soil from the trench would be used as backfill. The entire solar PV area would be enclosed with a chain link fence.

Four approximate 10-foot by 10-foot concrete pads would be constructed on site to house prefabricated BESS buildings to be delivered. The BESS building will house solar batteries. A pad mounted transformer would also be installed at the BESS building site. The utility (AVEC) would be updating electrical facilities at the power plant and adding power poles to their existing utility easement for wires connecting the inverter and transformer pad at the solar PV array site to the BESS building.

The Tribal ownership model would help operation and maintenance (O&M) of the systems, reduce energy costs and develop future renewable projects in Tribal communities across the region. TCC plans to establish a utility board of Tribal leaders from across the region to oversee the newly established independent power producer and ensure long term O&M across these systems (Seivers 2026).

2.2. Alternatives Carried Forward for Detailed Analysis

The only action alternative carried forward is the Proposed Action as presented in Section 2.1.

2.3. Alternatives Considered but Eliminated for Further Analysis

No other alternatives were considered.

2.4. No-Action Alternative

An evaluation of a No-Action Alternative is required under DOE's NEPA implementing procedures (Section 6.2(b)). Under the No-Action Alternative, DOE would not authorize expenditure of federal funds for TCC to design, construct, operate, and maintain solar arrays and battery energy storage in Huslia, Alaska. Any potential beneficial or adverse effects to the physical, biological, cultural or socioeconomic resources from the Proposed Action would not be realized.

DOE has assumed, for the purposes of comparison in this EA, the Project would not proceed without its assistance. If the Project proceeded without DOE assistance, the potential impacts essentially would be identical to those under the DOE Proposed Action.

2.5. Permitting and Authorization Summary (if applicable)

TCC submitted Applications for Department of Army Permit forms which state that no surface waters, wetlands, or floodplains would be impacted.

On March 9, 2026, TCC received verification that the work to be performed in the Village of Huslia would not require Department of the Army authorization.

An Alaska Pollutant Discharge Elimination System (APDES) permit may be required since the area of disturbance would be greater than one acre.

A storm water pollution prevention plan (SWPPP) would be used for sediment and erosion control and mitigate storm water pollutants discharged from the cleared flat PV site. No fill would be added, and the 24-inch distribution line trenching would be backfilled with the excavated soil. Vegetative cover would be allowed to grow back after the solar PV sites are constructed to reduce soil erosion.

No other permits are anticipated.

2.6. Applicant Best Practices

This section summarizes the proposed best practices made by TCC to be used during the development, permitting, and consultation processes for the Proposed Action.

The best practices summarized below were not necessarily included to decrease the level of impact below significant (i.e., the impacts may have been less than significant with or without the measures), but the best practices would help to ensure the Project is carried out in an environmentally responsible manner.

TCC's applicants proposed best practices include:

- An existing road would be used for construction access. No new roads would be constructed.
- Any soil excavated for trenching would be reused for backfill in the trench once conduit is placed.
- No fill would be added.
- A SWPPP would be implemented during construction at each site.

In addition, the following measures are identified in this EA:

- A visual inspection of the proposed solar PV array sites would be conducted prior to construction to determine whether any nesting owls or eagles may be present.
- Notify nearby residents prior to construction activities if necessary, particularly commencement of pile driving. Limit such activities to daytime hours to the extent possible.
- Inspection of construction activities should be conducted to ensure proper installation of the proposed systems to reduce fire risks.
- Construction personnel should be provided with and required to wear hearing protection.
- Ensure construction equipment is fitted with properly functioning emission and noise control systems.

- Do not permit construction equipment to idle, to the extent possible.
- A proper O&M plan, that includes vegetative maintenance, especially during warm, dry weather conditions, to further reduce the risk for fires.
- Post-construction, when determined necessary, ensure disposal of solar panels in accordance with DOE Photovoltaic End-of-Life Plan (SETO 2022).

SECTION 3 AFFECTED ENVIRONMENT AND IMPACTS ANALYSIS

3.1. Background

This section discusses the existing conditions of the physical, biological, cultural, and human environment (affected environment) that could be affected by the alternatives described in Section 2. Following the description of the affected environment, potential direct, indirect, and cumulative impacts from each alternative are analyzed.

The identification and description of activities that have the potential to create impacts on natural and human resources in areas proposed for use by the Proposed Action have been divided into two phases: (1) construction and (2) O&M phase of the solar arrays, BESS building, and associated power plant updates. The activities occurring during each phase were used, as appropriate, to evaluate resource specific impacts. It is important to note that these activities were considered within the larger context of other sources of the same or similar impact-producing actions that have occurred in the recent past, do currently occur, or could be reasonably expected to occur in the near future, within the site of the Proposed Action.

The following terms were used to characterize adverse impacts from the Proposed Action:

(1) Negligible:
- Impacts would be at the lowest levels of detection, barely or not measurable, with no perceptible consequences.

(2) Minor:
- Impacts would result in a detectable change, but the change would be slight or could be avoided with proper mitigation, or
- Impacts would not disrupt normal or routine functions of the affected resource, or
- Once the impacting agent is eliminated (i.e., construction activity), the affected resource would return to a condition with no measurable effects from the Proposed Action without requirement for any mitigation.

(3) Moderate:
- Unavoidable impacts would result in a detectable change with measurable effects and proper mitigation would reduce impact substantially during the life of the Proposed Action, or
- The affected resource would have to adjust somewhat to account for disruptions due to impacts of the Proposed Action, or
- Once the impacting agent is eliminated, the affected resource would return to a condition with no measurable effects from the Proposed Action if proper remedial action is taken.

(4) Major:

- Impacts would be unavoidable with substantial consequences, or
- Proper mitigation would reduce impacts somewhat during the life of the Proposed Action, or
- The affected resource would experience unavoidable disruptions to a degree beyond what is normally acceptable, and once the impacting agent is eliminated, the affected activity or community may retain measurable effects of the Proposed Action indefinitely, even if remedial action is taken.

3.2. Identification of Resources and Affects

TCC applied for a DOE financial assistance award to pursue deploying high-penetration solar Photovoltaic (PV) and battery energy storage systems (BESS) into existing microgrids. TCC used their knowledge of the Project area to select a site for the proposed solar PV arrays and associated infrastructure in a location that would avoid adverse impacts to the extent practicable to the natural, cultural, and social environments of the Project areas.

The following table presents a research-based, sliding-scale analysis on what resources are not present in the Project areas, what resources are present but not likely to be affected, and what resources are present and potentially affected. DOE describes the sliding-scale approach to impact analyses in their NEPA guidance (SHO 2004). For those resources that are present and potentially affected, the table includes information on effects that are readily determined as negligible or minor. For resources that require more discussion to determine the significance of the impact, additional discussion is provided in Section 3.3.

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected

Impact Topic	Not Present	Present		Rationale
		Not Affected	Potentially Affected	
Geology / Seismic			X	The proposed solar PV array would be installed with approximately 200 driven piles to a 10 feet depth. Only minimal excavation would be required for the trench connecting the solar array to the inverter pad and for the concrete. The Project area is located within an area of moderate to high potential for a damaging earthquake (Alaska Science Center 2024). Due to the minimal excavation and use of shallow (less than 10 feet deep) driven piles, negligible to minor impacts to geology would result. The Proposed Action would have no impact on seismic

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected				
Impact Topic	**Not Present**	**Present**		**Rationale**
		Not Affected	**Potentially Affected**	
				potential in the Project area during construction or the O&M phase.
Soils			X	The solar PV array would be installed with driven piles, minimizing disturbed areas and soil impacts. A short trench would be constructed between the array and the inverter pad. The trench will be backfilled with excavated soil. 10-foot by 20-foot concrete pads, would be installed within minimal to no excavation. Negligible to minor impacts to soils would result during construction. None of the impacted soils are used for agricultural purposes. The O&M phase would not impact soils.
Groundwater		X		Specific depth to groundwater information was not available for the Project area. No impacts to groundwater resources, including the potable water wells, are anticipated. The potable wells are substantially below site activities. Contamination of a shallow groundwater aquifer by O&M is not anticipated.
Wetlands	X			No wetlands are present in the Project area. USFWS mapping shows potential wetlands in the area (USFWS n.d.1). The site was selected for proximity to the utility's power plant, above the flood plain, outside of mapped wetlands, and 1,700 ft from the Koyukuk River. No fill would be added, vegetative cover would be allowed to grow back after ground is cleared to reduce erosion. TCC would avoid wetlands in construction or operation of the PV plant and BESS building.
Surface Waters		X		Surface waters would not be directly impacted, there would be no fill or

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected				
Impact Topic	**Not Present**	**Present**		**Rationale**
		Not Affected	**Potentially Affected**	
				discharges, and a SWPPP would be implemented during construction to prevent construction related discharges to any surface water (TCC n.d.1).
Floodplains	X			The Federal Emergency Management Agency (FEMA) does not have floodplain mapping available in Huslia (FEMA 2024). However, the Project would not involve any fill (TCC n.d.2). Per information provided by the Applicant, both the solar PV array site and the BESS site would be outside and above any floodplains (TCC n.d.1).
Oceanic resources and coastal zones	X			The Project area is not located along the ocean or a coastal area (Google 2024).
Wildlife & Habitat			X	The solar PV array would impact 2.7 acres of boreal forest. Alaska's boreal forests are important habitats for migratory songbirds and other wildlife species. Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-711); Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). In addition, per the State Wildlife Action Plan, there is one species of concern in Alaska – the Great Gray Owl (ADF&G 2015). It is noted that the proposed power poles would be located in already disturbed areas with minimal to no wildlife habitat value. This topic is discussed in more detail in Section 3.3 of this EA.
Threatened and Endangered Species	X			Based on information available from the Alaska Department of Fish and Game (ADF&G) the following, non-marine and non-aquatic, threatened and endangered

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected				
Impact Topic	**Not Present**	**Present**		**Rationale**
		Not Affected	**Potentially Affected**	
				species exist in Alaska (ADF&G n.d.3): Wood bison (*Bison bison athabascae*) – use meadows and riparian areas along rivers (ADF&G n.d.2). No meadows or riverine riparian areas would be impacted. No suitable habitat for wood bison exists in the Project area.
Cultural Resources			X	There are no historic properties present within the Project area. This topic is discussed further in Section 3.3.
Air Quality and GHG	X			The Project area is an air quality attainment area (EPA October 31, 2024). The General Conformity review (40 CFR Part 51 and 93) only applies to non-attainment and maintenance areas and is therefore not applicable to this Project. Additional information on the Proposed Action's potential for impact on air quality and GHG is discussed further in Section 3.3.
Socioeconomics		X		No displacements would occur. No change in social cohesion (i.e., the community would not be divided by any infrastructure) and no impact to any community facilities would occur. There would be no adverse impacts to socioeconomics. The Proposed Action would result in more reliable and lower-cost energy, which would result in a moderate to major beneficial impact.
Environmental Contamination and Waste Management		X		Based on information provided by the Applicant, no areas of known contamination exist in the Project area. Minimal excavation would occur for the trench between the solar PV array and

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected				
Impact Topic	**Not Present**	**Present**		**Rationale**
		Not Affected	**Potentially Affected**	
				inverter pad. Soils removed for the trench would be backfilled into the trench. Post construction, the eventual disposal of solar panels would be a waste concern. Disposal of solar PV panels would be handled in accordance with DOE's Photovoltaic End-of-Life Plan (SETO 2022). Disposal in accordance with this plan would result in a negligible to minor impact.
Noise and Vibration			X	A few residences are located over 500 feet from the solar PV and BESS site. This topic is discussed further in Section 3.3.
Recreation	X			No recreational resources exist in the Project area (Google 2024).
Land Use and Aesthetics		X		The Proposed Action would clear 2.7 acres of forested area and convert the site to a solar PV array and BESS. While a change in land use would occur at the solar PV site, impacts to the forested area are discussed further in Section 3.3 as part of the wildlife resource discussion. The change in land use would be negligible. The proposed solar PV array site is not easily visible from the village due to the presence of extensive areas of forested land that would remain post-construction. No visually sensitive areas have been identified based on information provided by the Applicant or through a view of aerial maps (TCC n.d.1 and n.d.2 and Google 2026). No aesthetic impacts are anticipated.
Utilities and Infrastructure			X	New power poles would be installed within an existing utility easement. The new BESS building would be added at

Table 1: Huslia, AK site Resources Not Present; Present, not Affected; and Present, Potentially Affected				
Impact Topic	**Not Present**	**Present**		**Rationale**
		Not Affected	**Potentially Affected**	
				the existing power plant site. Once constructed, O&M of the proposed solar PV array and associated infrastructure would be minor and funded as discussed in Section 2.1. The Proposed Action would have a moderate to major beneficial impact on the utility provider due to providing a more reliable and less expensive energy source.
Transportation and traffic		X		No changes to the transportation network would result from the Proposed Action.

3.3. Affected Environment and Impacts Analysis

This section describes the affected environment for those resources identified in Tables 1 and 2 as needing additional analyses, including Wildlife and Habitat, Cultural Resources, Air Quality and GHG, and Noise and Vibration. This section documents anticipated impacts to those resources from the Proposed Action.

3.3.1. Wildlife and Habitat

3.3.1.1. Description of the Affected Environment

The solar PV and BESS site is an immature boreal (northern) forest dominated by black spruce (*Picea mariana)* and a few Alaska paper birch (*Betula neoalaskana*) and Black cottonwood (*Populus trichocarpa*). Almost all ground cover is caribou moss and there are two main sand ridges that are two-three meters above ground.

Most of Interior Alaska is boreal forest with around 107 million acres of such forest (ADF&G 2015). Nearly 40 percent of Alaska's boreal forests are in protected or conservation areas. Birds represent the largest class of vertebrates (animals with a backbone) in the boreal forests. The State Wildlife Action Plan notes that boreal spruce forests tend to have lower bird densities and variety of species than deciduous forests (ADF&G 2015). According to the State Wildlife Action Plan, Alaska's boreal forests are considered healthy.

Alaska's boreal forests are important breeding grounds for many migratory songbirds (ADF&G 2015). Bird species dependent on land are the largest and most ecologically diverse component of Alaska's bird populations. Most landbird species are migratory, and four major global migration flyways merge in Alaska. As a result, birds travel to breed in Alaska from all over the world, and reproductive success in Alaska affects bird populations in both North and South America. Alaska's largest area of landbird habitat is interior boreal forest (ADF&G 2015). Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-711).

Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (66 Federal Register 3853), directs federal agencies to identify where an unintentional taking is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse impacts through enhanced collaboration with USFWS. EO 13186 was issued in part to ensure that environmental analyses of federal actions assess the impacts of these actions on migratory birds. It also states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and it prohibits the taking of any migratory bird without authorization from USFWS.

Predatory birds such as owls and eagles can also be found in Alaska's interior boreal forests. The Great Gray Owl is found, in part, throughout the boreal forests of Interior Alaska and is a Species of Conservation Need in Alaska per the State Wildlife Action Plan (ADF&G 2015). It hunts in openings, such as meadows or fields, adjacent to the forest. Depending on the practices used, tree clearing can impact owls positively (by creating small openings in which they hunt) or negatively (by creating openings too large for hunting or removing snags used for nesting and perching).

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Alaska has the largest population of bald eagles in the U.S. (ADF&G n.d.4). The highest number of nesting bald eagles are found in the islands of Southeast Alaska, but bald eagles are often found around interior lakes and rivers, such as those to the east of Project area. Bald eagles tend to nest high in trees close to water. Golden eagles are also found in interior Alaska, typically in open wooded country (ADF&G n.d.5). They typically nest on rocky cliffs but have been known to nest in large trees.

3.3.1.2. Impact Analysis of the Proposed Action

As noted, the Proposed Action includes installation of power poles within existing cleared utility easements. The construction and O&M activities at the existing already cleared utility easements and power plant sites would have no or negligible impacts on wildlife and habitats.

The clearing of 2.7 acres of forested land for the proposed solar PV array and BESS site would result in impacts to boreal forest habitat and temporary disturbance to species that occur within the Project area. The loss of 2.7 acres of forestland is negligible to minor when compared to the vast amount of healthy boreal forests that exist within Interior Alaska (107 million acres). Because extensive habitat area would remain for songbirds, the Great Gray Owl, and eagles, negligible impacts to habitat for such species would be anticipated. During construction, noise and the presence of humans may displace birds and other wildlife species temporarily. The greatest concern for displacement would be to nesting species that are rearing young. Most bird species, including the Great Gray Owl, Bald Eagle, and Golden Eagle, nest and rear young in the spring to early summer months (ADF&G n.d.4, n.d.5, & n.d.6). TCC would conduct a visual inspection of the proposed solar PV array sites just prior to construction to determine whether any nesting owls or eagles may be present. If active Great Gray Owl, Bald Eagle, or Golden Eagle nests are present, monitoring of the birds' activities should be conducted and tree clearing should be on-hold until it is determined that identified nests are inactive. With these measures in place, the Proposed Action's impact on wildlife, including the in need of

conservation Great Gray Owl, and protected eagles would be minor.

During the O&M phase of the Project, wildlife, including birds, would be expected to adjust to the presence of the solar PV array and no impact on wildlife would be anticipated. It is noted that solar PV panels have been of concern related to migrating birds and bats, including concerns over glare and potential disruption to wildlife flight patterns (Hathcock 2018). However, more recent research has shown that birds use solar fields for habitat and do not seem to be impacted by the presence of the solar panels (SETO October 24, 2024). While research is ongoing, it appears that the presence of the solar PV array would have a negligible impact on birds. As noted, the addition of power poles and the BESS building within existing cleared and developed areas would have no impact on wildlife during the O&M phase.

The State Wildlife Action Plan mentions that wildfire concerns are growing with continual warming of the climate (ADF&G 2015). Research is ongoing into the emerging issue of the role of solar panels and solar fields and the potential for fires. Some research shows that the primary concern for fires is improperly installed and maintained solar panel systems (Vaverková 2022). Proper inspections and oversight of construction activities should be conducted to ensure proper installation of the proposed systems. The same research indicates that maintenance of vegetation under and around the solar PV field is also important, especially during dry, warm weather conditions. As mentioned in Section 2.1, TCC has a plan for funding and continuing O&M after the Proposed Action is constructed. The O&M plan should include periodic and ongoing maintenance of vegetation under and near the solar PV array to reduce the risk of fire. Careful adherence to construction specifications during installation and a proper O&M plan after construction would reduce the risk of fires and would result in a negligible impact on fire risks in the Project areas.

3.3.1.3. Impact Analysis of No-Action Alternative

The No-Action Alternative would result in no change from existing conditions and would not contribute to any cumulative impacts to wildlife or wildlife habitat.

3.3.2. Cultural Resources

3.3.2.1. Description of the Affected Environment

The proposed solar PV array and BESS site is located south of the Birch Grove Subdivision. TCC extensively searched the Alaska Heritage Resource Survey (AHRS) databases to compile a record of applicable AHRS resources and technical documentation of previous cultural field surveys. For Ts'aateyhdenaadekk'onh Denh, pedestrian survey reports include hand plotted site locations that preceded more accurate GPS mapping procedures of recent years. To account for wide variances in those earlier plotted site locations, a search buffer of 500 ft outside of the Project location was employed and used for the area of potential effect (APE).

An Indigenous placename database was also assessed to identify localized understanding of the natural and social environment and their associated histories. Indigenous place names provide insights into cultural worldview and perceptions of features in the environment and can be a key component in identifying cultural resources and places of cultural significance (Smith and Kari 2023). TCC assessed The Web Atlas of Alaska Native Traditional Place

Names, a publicly available storymap of Alaska Native placenames among many languages (Smith and Kari 2023).

TCC also identified key cultural resource knowledge bearers such as stories written by Catherine Attla to search for cultural resources within the area. Other sources searched containing information included academic papers, technical cultural resources reports, archeological and anthropological journal articles, RS-2477 historic rights-of-way records, and Bureau of Indian Affairs (BIA) Native allotment records.

Two cultural resource surveys have previously occurred in the APE (1991 and 2011) and no cultural resources were identified (Skinner, D. and Sattler, R. 2025).

3.3.2.2. Impact Analysis of the Proposed Action

No aboveground cultural resources are in the vicinity of the proposed solar PV array. No above-ground cultural resources would be directly impacted by the Proposed Action. The proposed solar PV array would be in vacant forested areas. The proposed utility poles are within existing utility easements and would not substantially change the appearance of the easement areas. The proposed BESS buildings are located within previously disturbed areas already in use as power plants. For these reasons, no above ground cultural resources would be impacted.

The literature review for the Project identified several previously conducted cultural resource investigations across the footprint of the Birch Grove Subdivision. The intensity of those pedestrian field inventories varied, but none identified any cultural remains (Skinner, D. and Sattler, R. 2025).

On January 11, 2026, the 30-day consultation window closed. DOE did not receive any comments from Alaska State Historic Preservation Office (AK SHPO) with a *no historic properties affected* finding on the Proposed Action and was able to assume concurrence under Section 106 of the National Historic Preservation Act (NHPA). DOE did not receive any comments from consulting parties.

3.3.2.3. Impact Analysis of No-Action Alternative

The No-Action Alternative would result in no changes in the Project area and would have no impacts on any cultural resources.

3.3.3. Air Quality

3.3.3.1. Description of the Affected Environment

As noted in Tables 1 and 2, the Project areas are in air quality attainment and do not require a Conformity Analysis.

3.3.3.2. Impact Analysis of the Proposed Action

During construction of the Proposed Action, the operation of construction equipment would have a temporary negligible to minor impact on air quality, which would return to no measurable adverse effects following completion of construction. The contractor should ensure that construction equipment is fitted with properly functioning emissions controls and limit vehicle idling to the extent possible.

Following construction, during the O&M phase, generation of electricity using solar power would reduce the use of diesel fuel. Reduced use of diesel fuel would reduce emissions from the local power plant. A moderate beneficial impact on production of emissions would result.

3.3.3.3. Impact Analysis of No-Action Alternative

The No-Action Alternative would result in continued use of diesel fuel to produce electrical power for Huslia. No reduction in GHG emissions would result.

3.3.4. Noise and Vibration

3.3.4.1. Description of the Affected Environment

The human ear can hear a wide range of sound levels, and as a result, noise levels are described on a logarithmic scale and are quantified in terms of decibels (dB), a unit that is typically adjusted to dBA. "dBA" is the decibels on an A-weighted scale to account for the sensitivity of the human ear. Sounds at or below 70 dBA are generally considered safe (CDC 2022). The U.S. Environmental Protection Agency and the World Health Organization recommend maintaining environmental noises below 70 dBA over 24 hours and below 75 dBA over eight hours to prevent noise-induced hearing loss. Over two hours of continuous noise levels between 80 to 85 dBA has the potential to lead to hearing damage (CDC 2022).

The Occupational Safety and Health Administration (OSHA) noise standard (29 CFR 1910.95) establishes minimum workplace noise requirements and states that constant noise exposure must not exceed 90 dBA over an eight-hour period. The highest allowable sound level for constant exposed is 115 dBA, which must not exceed 15 minutes within an eight-hour period. The standards limit instantaneous exposure (impact noise) to 140 dBA. If noise levels are exceeded, employers must provide hearing protection equipment (OSHA 2008).

Table 3. Noise Levels of Common Construction Equipment.

Equipment	Typical Noise Levels (dBA) at varying distances[a]		
	50 feet	500 feet	1,000 feet
Backhoe	80	60	54
Concrete mixer	85	65	59
Loader	80	60	54
Truck	84	64	58
Pile Driver (impact)	101	77	70

[a.] *Source: FTA 2018*

Noise-sensitive receptors near the Project area include residences, approximately 600 feet from the area.

Vibration can lead to disturbance or structural damage to nearby facilities. Vibration can be caused by operating heavy construction machinery and ground-breaking construction activities (e.g., excavation or pile driving). The effects of vibration range from feeling the floor shake

and experiencing rumbling sounds to structural damage. Vibration is expressed in terms of the peak particle velocity (PPV), in inches per second, when used to evaluate human annoyance and building damage impacts. Vibration levels are highest closest to the source and dissipate with increasing distance, generally at a rate of Dref/D, where D is the distance from the source in feet, and Dref is the reference distance of 25 feet. Other factors that affect vibration include soil conditions and the type of equipment and vibration (i.e., continuous or transient). There are no federal standards for vibrations; however, various researchers and organizations have published guidelines.

For historic buildings, appropriate vibration limits vary. A conservative PPV limit of 0.1 inch per second may be used, while 0.5 inch per second or even 0.2 inch per second may be considered appropriate (Wilson Ihrig et al. 2012). For structures not designated as historic, typical PPV vibration thresholds are 0.5 inch per second for buildings structurally sound and designed to modern engineering standards and 0.3 inch per second for buildings that are found to be structurally sound, but where structural damage is a major concern. For the purposes of this analysis, conservative PPV limits of 0.1 inch per second and 0.3 inch per second are used to determine potential vibration impacts to historic structures and non-historic structures, respectively.

Humans are generally considered less sensitive to transient (impulsive) vibration, than to similar vibration from continuous (steady state) sources. For this analysis, a PPV limit of 0.2 inch per second was used for potential human response to vibration.

3.3.4.2. Impact Analysis of the Proposed Action

Noise levels from multiple sources combine logarithmically, with increases depending on the difference in decibels. Near-equal sources result in a combined increase of about 3 dBA, whereas differences of over 10 dBA result in no increase over the higher noise source (NRC 2012).

Typical noise levels of various construction equipment anticipated to be utilized during construction of the Proposed Action are shown in Table 3. During construction the proposed solar PV array site would be cleared with (likely equipment) chainsaws, a backhoe, and a truck. A backhoe is anticipated to be used to install the trench from the solar panels to the inverter pad. A concrete mixer and other trucks would likely be operating during installation of the pads. However, as mentioned, even with this equipment operating simultaneously, the concrete mixer operation would still produce the loudest and most intrusive noise during construction.

The closest residence is around 600 feet from the proposed solar PV and BESS site (Google 2026). Based on Table 3, an extrapolated exterior noise level at the residences during the concrete mixing operation would be about 65 dBA.

Standard buildings typically provide ten dB of noise reduction between exterior and interior noise levels with windows open, and 20 dB with windows closed (FHWA 2018). Therefore, inside the residence, noise would be at approximately 55 dBA with windows open. With closed windows, the temporary construction noise during the concrete mixing operation would be approximately 45 dBA. Noise from the construction activities would not be continuous but

would instead be a source that occurred sporadically. However, it is expected that nearby residences would be moderately impacted by construction noise for several months. Nearby residences should be notified prior to the start of construction activities.

Installation of the additional power poles would be a short-term operation, anticipated to be less than one day each, occurring within an existing utility easement. Some minor to moderate temporary increase in noise levels near where the poles would be installed would occur. Construction at the power plant sites for installation of the concrete pads and placement of the BESS buildings, along with other electrical and infrastructure connections, is anticipated to be completed with trucks to haul equipment to the site, a concrete mixer, and a backhoe or similar machine (i.e., forklift) to place the BESS building. The noise level with all the equipment operating simultaneously would be approximately 86 dBA. The closest residence to the proposed site is about 600 feet away. Exterior noise levels at these locations would be estimated at 65 dBA. Interior noise levels with windows open would be 55 dBA, and 45 dBA with windows closed. During the construction operations, a minor to moderate noise impact would occur. Again, nearby residences should be notified prior to construction commencing. Construction equipment should not be allowed to idle to reduce continuous noise sources and should be fitted with properly functioning mufflers.

While minor to moderate noise impacts would be expected during construction operations, these impacts would be temporary in nature, lasting only as long as construction. Elevated noise levels would dissipate once construction operations ceased. To minimize disruptions to nearby residences, construction should be limited, to the extent possible, to daylight hours.

During the O&M phase, there would be no noise impacts caused by operations or maintenance of the solar PV system and associated equipment. However, noise levels in the village may decrease due to reduced operation of diesel-powered generators for electric production. A minor reduction in noise levels may result during the O&M phase.

Adverse impacts from construction vibration may occur due to the operation of heavy machinery. Primary construction activities with the Proposed Action that could result in vibration impacts would include excavation of the trench from the solar PV arrays to the inverter pads. Table 4 presents average source PPVs at varying distances for the types of construction equipment most likely to be used during construction of the Proposed Action. These values are compared to the PPV limits discussed previously to evaluate potential for structural damage and the effects of human response from vibration.

Table 4. Vibration Levels for Construction Equipment at Various Distances from the Source.

Construction Equipment	PPV (inches per second) at						
	25 feet[a,b]	50 feet	70 feet	100 feet	150 feet	200 feet	400 feet
Large bulldozer	0.089	0.045	0.032	0.022	0.015	0.011	0.006
Loaded trucks	0.076	0.038	0.027	0.019	0.013	0.010	0.005
Small bulldozer	0.003	0.002	0.001	0.001	0.001	0.0004	0.0002
Pile Driver (impact)	0.644	0.322	0.230	0.161	0.107	0.008	0.004

Table 4. Vibration Levels for Construction Equipment at Various Distances from the Source.							
Construction Equipment	**PPV (inches per second) at**						
	25 feet[a,b]	**50 feet**	**70 feet**	**100 feet**	**150 feet**	**200 feet**	**400 feet**

[a] *Source of PPV at 25 feet: FTA 2018*
[b] *Estimated vibration levels are highest closest to the source and dissipate with increasing distance at a rate of Dref/D.*

As noted earlier, PPV values potentially causing structural impacts are 0.1 inch per second for historic structures and 0.3 inch per second for non-historic structures. Vibration levels causing a human response (annoyance) are approximately 0.2 inch per second. The closest building to the proposed solar panel site is about 600 feet away. Based on Table 4, and assuming operation of a large bulldozer, the PPV would be less than 0.006 inches per second within 400 feet of the large bulldozer. This would be unlikely to damage historic or non-historic structures. The closest building in Huslia is not historic. The closest residence is over 400 feet from the proposed solar array and BESS site and would not be impacted by vibration based on the values in Table 4.

As mentioned, at this construction site, loaded trucks and a small bulldozer (forklift) would be operating. The PPV levels for this type of construction equipment are well less than the PPV levels that would cause impact (0.1 inches per second for historic buildings, 0.3 inches per second for non-historic, and 0.2 inches per second for human annoyance).

No vibration impacts to nearby buildings or in terms of human annoyance would be anticipated during construction.

During the O&M phase, there would be no vibratory impacts caused by operations or maintenance of the solar PV system and associated equipment.

3.3.4.3. Impact Analysis of No-Action Alternative

No construction would occur with the No-Action Alternative. There would be no change in noise levels from existing and no vibratory impacts.

3.4. Relationship of Short-Term Uses and Long-Term Productivity

Short-term use of the environment, as the term is used in this document, is during construction of the Project, whereas long-term productivity refers to when the solar PV array and associated infrastructure are operational and in-use. The short-term use of the Project site for the Proposed Action would not affect the long-term productivity of the Project area.

SECTION 4 LIST OF AGENCIES AND PERSONS CONSULTED AND PREPARERS

List of Agencies and Persons Consulted

Name	Title	Organization	Role
McKenzie Herring	Reviewer	AK State Historic Preservation Office	Section 106 NHPA consultation
Drew E. Sliger	Project Manager	US Army Corps of Engineers	Clean Water Act consultation
Dereck Starr	First Chief	Huslia Tribal Council	Tribal consultation

List of Preparers

Name	Title	Organization	Role	Document Section(s)
Elise Joseph	Project Manager	DOE	Project Manager	Environmental Assessment
Gretchen Applegate	NEPA Specialist	DOE	NEPA Document Manager	Environmental Assessment

SECTION 5 APPENDICES

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