Nationwide Conservation Benefit Agreement for Bumble Bees on Energy and Transportation Lands

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UIC Stantec

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Photos credit (cover): Rusty patched bumble bee (*Bombus affinis*) collecting pollen on a common milkweed (*Asclepias syriaca*), David Bart, Stantec

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Executive Summary

The *Nationwide Conservation Benefit Agreement for Bumble Bees on Energy and Transportation Lands* (Agreement) is a conservation benefit agreement that promotes conservation of federally listed, candidate, petitioned, or otherwise at-risk species of bumble bees native to the United States (hereinafter, covered species) and supports the issuance of an Enhancement of Survival (EOS) Permit pursuant to Section 10(a)(1)(A) of the federal Endangered Species Act (ESA). The Agreement represents a key collaboration between the University of Illinois Chicago (UIC), the Wisconsin Department of Natural Resources (WDNR), the U.S. Fish and Wildlife Service (the "Service"), and dozens of representatives from the energy and transportation sectors. Individual representatives involved in the conceptualization and preparation of this Agreement are acknowledged in Appendix A.

These collaborating companies and organizations collectively manage lands that support the nation's infrastructure relied upon by Americans in their everyday life. This includes electric companies supporting electric power generation, transmission, and distribution, as well as oil and gas extraction, transmission, and distribution, and energy operations. Transportation includes entities that sustain infrastructure needed for the transport of people, goods, services, and information including highway and road systems, water, and other liquids transport, as well as data and telecommunications.

This Agreement is a companion to the *Nationwide Candidate Conservation Agreement with Assurances for the Monarch Butterfly on Energy and Transportation* (or Monarch CCAA) authored by the Rights of Way as Habitat Working Group (Working Group, ROWHWG) in 2020. Since its authorization in April 2020, the Monarch CCAA has helped conserve over 1 million acres of monarch butterfly (*Danaus plexippus*) habitat. The Monarch CCAA has been recognized as a conservation success by conservation organizations, industry representatives, and federal and state agencies. This Agreement is building upon this success by leveraging additional conservation that aligns with the Monarch CCAA in many aspects.

Implementation of this Agreement includes activities conducted on both non-federal and federal lands. The Agreement is a voluntary agreement intended to provide a net conservation benefit to a suite of bumble bee species (covered species) by addressing both conservation objectives and on-going activities, referred to as covered activities in this Agreement. Covered activities include the potential effects of operations, maintenance, and modernization activities on energy and transportation lands. This Agreement encompasses habitat for bumble bees with species ranges across the contiguous U.S. (excluding Hawaii, Alaska, and other U.S. territories; plan area). To the extent that other insect pollinators may benefit from the same commitments made in this Agreement, it also allows for the potential inclusion of other at-risk pollinators in the future.

Within this Agreement, signatories to the Agreement (Partners) may enroll their energy and transportation lands (enrolled lands) that are included within the plan area described in Section 4.1 of this Agreement (Plan Area). Within the enrolled lands, Partners then commit to assessing the baseline conditions of the enrolled property and adopting conservation measures based on conservation objectives that are within their ability to address. Conservation measures consist of activities described in Section 6 of this Agreement (Conservation Measures) that are expected to sustain, enhance, and restore conditions favorable for bumble bee foraging, nesting, and overwintering. The net conservation benefit resulting from these enrolled commitments is on-the-ground conservation of the Partners' enrolled acres maintaining a network of bumble bee habitat across both non-federal and federal lands. Partners receive assurances from the Service that on enrolled non-federal lands, additional conservation measures, beyond those outlined in the Agreement, will not be required for any covered species. While federal Partners may not receive the regulatory assurances, their participation in the Agreement may help streamline their own Section 7 consultations related to covered species. Partners who elect the option to return to baseline when enrolling will also receive lasting assurance that they may return to baseline condition prior to termination of their

Certificate of Inclusion (CI). They also have regulatory predictability on enrolled federal lands through Section 7 of the federal ESA biological and conference opinion.

The Agreement will be administered by UIC, as the Program Administrator and Permit Holder, with regulatory oversight by the Service. The Program Administrator will be responsible for working with Partners to enroll each respective Partner's lands into the Agreement using CIs issued by the Program Administrator after verifying an Applicant's eligibility (see Appendix B). These certificates will extend the regulatory assurances provided by the EOS Permit, and the regulatory predictability provided through this Agreement and the associated Consultation document will facilitate cooperation by the Partners to collectively provide a net conservation benefit for the covered species under this Agreement. Through implementation, this Agreement will promote conservation and management of the covered species and their habitat by supporting conservation objectives, recovery actions (for listed species), and reducing or removing threats to bumble bees related to maintenance and modernization of the nation's energy and transportation infrastructure. The Partners will implement conservation measures described in this Agreement on their enrolled lands as specified within their individual Certificates of Inclusion.

This Agreement includes adaptive management principles to consider new information and research as it becomes available. The Agreement also incorporates processes to address changed circumstances over the duration of the Agreement. Using adaptive management principles, and with the consent of the Partners and the Service, this Agreement may be amended to address emerging and changing conservation needs.

This Agreement includes:

- A general description of responsibilities of all involved participating agencies and Partners, and the area covered under the Agreement,
- Background and general threats to bumble bees, the goals of this Agreement, and the conservation measures needed to address recovery needs as well as reduce or potentially remove identified threats,
- Expected benefits of prescribed actions in relation to conservation objectives, and
- A description of assurances, monitoring, annual reporting, and discussion of impact (or take, if listed) that is likely to occur from activities on enrolled lands.

With increasing land use demands for a variety of socioeconomic and ecological needs, this Agreement encourages voluntary conservation in an approach that can meet the demands of both at-risk species and infrastructure American society relies upon. As evident by the Monarch CCAA, this Agreement has potential to create a widespread network of lands managed for beneficial habitat across the nation's working lands. In doing so, the infrastructure needed for energy and transportation can voluntarily help achieve the biological conservation goal for at-risk bumble bees and play an important role in long-term conservation.

Acronyms

APE	Area of Potential Effect
BMP	Best Management Practice
CBA	Conservation Benefit Agreement
CCA	Candidate Conservation Agreement
CCAA	Candidate Conservation Agreement with Assurances
CFR	Code of Federal Regulations
CI	Certificate of Inclusion
DOT	Department of Transportation
EIS	Environmental Impact Statement
ESA	Endangered Species Act
EOS	Enhancement of Survival
ERC	Energy Resources Center at the University of Illinois Chicago
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FOIA	Freedom of Information Act
GBF	Global Biodiversity Framework
GIS	Geographic Information System
IPM	Integrated Pest Management
IVM	Integrated Vegetation Management
MAFWA	Midwest Association of Fish and Wildlife Agencies
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIPA	Pipelines and Informed Planning Alliance
RHPO	Regional Historic Preservation Officer
ROW	Right-of-Way
ROWHWG	Rights-of-Way as Habitat Working Group
SBTN	Science-based Targets Network
SHPO	State Historic Preservation Officer

SWAP	State Wildlife Action Plans
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
TNFD	Taskforce for Nature-related Financial Disclosures
UIC	University of Illinois Chicago
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WDNR	Wisconsin Department of Natural Resources

Definitions

Acres Over Baseline – The result of post-enrollment acres minus original baseline acres as determined at the termination of enrollment.

Administrative Fees – Fees that a Partner is required to pay annually when enrolling lands in the Agreement by executing the CI. Fees support the permit administration, reporting requirements, and facilitation of the Partners' collaboration needed to manage the Agreement implementation and reporting requirements.

Adaptive Management – A method for examining alternative strategies for meeting measurable goals and objectives and then, if necessary, adjusting future management actions according to what is learned to provide a net conservation benefit.

Advisory Committee – A committee of Partners enrolled in either the Monarch CCAA or this Agreement (or both) which supports the Program Administrator in the decision – making process and which reviews, discusses, and advises on questions that arise over the duration of the Agreement.

Agreement – When capitalized within this document, Agreement refers to the *Conservation Agreement for At-Risk Bumble Bees on Energy and Transportation Lands* (Bumble Bee CBA). In select cases, Agreements (plural) collectively refers to both the Bumble Bee CBA and Monarch CCAA.

Applicants – Non-federal or federal entities or organizations that manage lands associated with energy and transportation uses that are interested in enrolling in the Agreement and undertake the application steps detailed within the Agreement. Eligible Applicants have the authority and control to implement conservation measures throughout their system of enrolled lands through their lands rights (e.g., fee-title ownership, land management and access permits, easements, or other agreements) or by statutory authority. Applicants are enrolled in this Agreement through a CI and formally become a Partner to the Agreement once their CI is signed by the Program Administrator and the Service.

Assurances - On non-federal lands, Partners receive assurances that the Service will not require additional or different conservation measures for covered species, so long as the conservation benefit agreement is being properly implemented. 50 CFR 17.22(c)(5), 17.32 (c)(5). Partners who elected to return to baseline further receive assurance that a return to baseline conditions is permitted prior to withdrawal from the Agreement.

At-Risk Species – As defined by the Service, an at-risk species is a non-listed species the status of which is declining and that is at risk of becoming a candidate for listing under the Act; at-risk species may include, but are not limited to, state-listed species, species identified by states as species of greatest conservation need, or species with state heritage ranks of G1 or G2.

Baseline Condition – For the purposes of ESA Section 10 planning, the Service defines baseline conditions as population estimates and distribution or habitat characteristics across the enrolled property that currently sustains seasonal or permanent use by the covered species at the time a conservation benefit agreement is executed by the Service and the property owner, or by a programmatic permit holder and the property owner.

For this Agreement, baseline conditions are defined as the acres of natural land cover that may support covered species foraging, nesting, or overwintering within the mapped occurrence ranges of covered species at the time of individual Partner's enrollment, or during subsequent modifications to covered species or lands included. Baseline is informed by the initial field monitoring of habitat conditions documented by Partners. Baseline conditions are assessed at the time a conservation benefit agreement CI is approved by the Service and executed by the Permit Holder and Partner.

Certificate of Inclusion (CI) – A certificate documenting the Partner's voluntary agreement to enroll specified lands in the Agreement. CIs convey take authority and assurances on non-federal enrolled land to Partners and document the Partners' participation in the Agreement allowing for regulatory predictability under the programmatic Consultation document for covered species on federal lands. Through the CI, the Partner commits to implement specific conservation actions and to otherwise comply with the terms and conditions of the CI, Agreement, and the EOS Permit.

Changed Circumstances – Changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by the plan's developers and the Service for which responses can be identified in a conservation plan (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to those events).

Complete Application – Partner applications to enroll in the Agreement that conform to the overarching programmatic Agreement and contain all the information necessary for Program Administrator and the Service to determine that ESA Section 10 policies, standards, and permit issuance criteria have been met.

Conservation Benefit Agreement – Voluntary conservation agreement supporting a Service-issued EOS Permit that provides a net conservation benefit, as described in regulations at 50 C.F.R. 17.22(c) and 17.3(c), to the affected covered species on the enrolled land that is included under the permit based upon the condition of the species or habitat, effects of conservation measures, and anticipated impacts of any permitted take.

Conservation Goal – As described in Section 1 of this Agreement, the conservation goal of this Agreement is to sustain and improve covered species foraging, nesting, and overwintering habitat. This goal provides a measurable biological goal in accordance with requirements outlined in 50 CFR 17.32(c).

Conservation Measures – Measures that provide a net conservation benefit to the survival of the covered species and their habitat by contributing to conservation objectives as described in Section 6 of this Agreement (Conservation Measures). Conservation measures cannot result in incidental take of other ESA listed animals or must be conducted in compliance with the terms and conditions of existing incidental take statements (ESA Section 7), or ESA Section 10 permits. All conservation measures are conducted in accordance with existing permits, easements, and agreements that allow the Partners to access and manage their enrolled lands. Conservation measures are considered covered activities and do not include actions that pose significant environmental, socioeconomic, historic, or cultural impacts and are authorized under the EOS Permit and Consultation document (biological opinion). See Section 6 of this Agreement (Conservation Measures) for additional detail and examples of conservation measures.

Conservation Objectives – In this agreement, conservation objectives are tailored to the conservation needs of covered species. Conservation objectives may be based on covered species recovery plans, to the extent available, other relevant scientific literature, or may be established through coordination among the Program Administrator, the Service, and stakeholders of the CBA.

Consultation – As defined by the Service, the process required of a federal agency under Section 7 of the ESA when any activity authorized, carried out, or funded by that agency may affect a listed species or designated critical habitat; consultation is with the Service and may be either informal or formal. See Sections 7(a)(1) and 7(a)(2) of the ESA. For federal actions undertaken by the Service, the Service reviews their own actions and authorizations for consultation compliance.

Coordination – As defined by this Agreement, any informal correspondence, planning, or review of information carried out between multiple parties such as Applicants, Partners, the Program Administrator, and the Service, on no jeopardy or no adverse modification determinations. Informal correspondence does not constitute a consultation, formal or informal, under Section 7 of the ESA.

Covered Activities – As defined by the Service, an action or series of actions that causes take of a covered species and for which take is authorized by a permit. Within this Agreement, these actions include conservation measures designed specifically for the benefit of the covered species, plus other ongoing

activities including the management, maintenance, and modernization activities on enrolled lands that are reasonably certain to result in take of at-risk bumble bees. Covered activities cannot result in incidental take of other ESA listed animals or must be conducted in compliance with the terms and conditions of existing incidental take statements (Section 7) or Section 10 permits. Partners will develop and implement avoidance and minimization measures to ensure that covered activities do not jeopardize listed or proposed plants or destroy or adversely modify designated or proposed critical habitat[1] on enrolled lands. All covered activities are conducted in accordance with existing permits, easements, and agreements that allow the Partners to access and manage their enrolled lands. Covered activities do not include actions that pose significant environmental, socioeconomic, historic, or cultural impacts. If a covered species is listed as endangered or threatened under the ESA, incidental take of the listed species that occurs as a result of covered activities carried out by a Partner who is adhering to the terms of the CI will be authorized under the EOS Permit and Consultation document (biological opinion). See Section 5 of this Agreement (Covered Activities) for additional detail and examples of covered activities.

Covered Species – As defined by the Service, any species that are included in a conservation plan or agreement and for which take is authorized through an incidental take or enhancement of survival permit. Within this Agreement, this includes bumble bees and other species identified as targets for conservation measures and regulatory assurances within this Agreement. If covered species are listed, incidental take coverage and regulatory assurances are granted in the EOS Permit and subsequent modifications. Other insects may require conservation attention outside of the species listed in this Agreement. The Service reserves the ability to amend the list of species covered by the EOS Permit so long as the species is benefitted by the same conservation measures, affected by the same covered activities, can demonstrate enhancement via the same baseline evaluation and monitoring approach, and comply with the other terms and conditions set forth in this Agreement.

Easement – A legal right to cross or otherwise use someone else's land for a specified purpose. Easements may specify terms and conditions which allow, or prohibit, specified activities. In some instances, easement holders may issue rights to other parties to support or operate appropriate uses within an easement.

Eligible Lands – Non-federal and federal lands, properties, easements, within the plan area on which conservation measures or covered activities may occur and be enrolled in this Agreement through a CI.

Emergency – Situations involving acts of God, disasters, casualties, national defense, or security emergencies, etc. See 50 CFR § 402.05.

Energy and Transportation Lands – Broadly defined as lands that are managed by lease, easement, fee-ownership, or in other agreements for the purposes of supporting energy and/or transportation uses. Energy uses include the energy generation, transmission, distribution, and storage derived from a range of energy sources. Transportation networks consist of the interstates, highways, local roads, railroads, pipelines, cabling, canals, and other transportation routes used for the movement of people, data, goods, commodities, products, and related services. Applicants and Partners have the authority and control to implement conservation measures throughout their system of enrolled energy and transportation lands through their lands rights (e.g., fee-title ownership, land management and access permits, easements, or other agreements) or by statutory or contractual authority.

Enhancement of Survival Permit (EOS Permit or Permit) – Permit issued by the Service pursuant to Section 10(a)(1)(A) of the ESA. The Permit becomes effective upon any final rule listing a species that is not listed at the time the Permit is issued. If a covered species is listed, the Permit will provide incidental take authority for covered activities of Partners enrolled under the Agreement through a CI. The EOS Permit will convey incidental take coverage to Partners (including their authorized representatives) for their

[1] Critical habitat proposed or designated for plants or animals.

covered activities on non-federal lands. However, Partners do not receive assurances for activities on federal lands.

The issuance of EOS permits does not authorize the covered activities themselves, but instead authorizes only the take of covered species resulting from those activities. Under issued EOS permit, Partners may authorize representatives or contractors to conduct work on their behalf.

Enrolled Lands – The lands (either owned, leased, permitted, managed easements or other managing authority) within the plan area and identified by the signed CI by all Parties. The term "enrolled lands" in this Agreement is considered synonymous with "enrolled properties" used in 50 CFR 17.3. Eligible lands for enrollment include any non-federal or federal lands, properties, leases, and easements within the plan area on which conservation measures or other covered activities may occur. To the extent that federal lands are enrolled, the assurances provided under this Agreement would not apply on those lands. Partner specific estimates of enrolled lands will be included as part of each application and modified in Certificates of Inclusion annually or as necessary. See Section 4 of this Agreement (Enrolled Lands) for additional information.

Enrollment Period – An Applicant may enroll eligible lands in the Agreement up until the EOS Permit expiration. Enrollment may occur before or after the effective listing date of individual species covered by this Agreement. Partners may add, remove, or modify their enrolled lands commitments during and after any listing decision. See Section 4 of this Agreement (Enrolled Lands) for additional details.

Foraging Habitat – Areas used by bumble bee species to collect pollen and nectar from flowering plants. To be foraging habitat, an area must have flowering plants present. Foraging habitat may occur in many different landscape contexts and can vary widely. Often, high quality foraging habitat is found in grasslands (prairies, old fields, meadows), forested lands (forests, shrublands, savannas), and the transition zones between them. Foraging habitat may also be present in developed landscapes with established parks or gardens. The quality of foraging habitat can be judged by three criteria: abundance, constancy, and diversity of floral resources. Abundance refers to the absolute quantity of flowering resources present. Constancy refers to the presence of floral resources throughout the year (or active season). Diversity refers to the number of distinct flowering species present. Each of these criteria measure qualities of foraging habitat which support different stages of bumble bee life histories.

Harass – An intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. See 50 CFR § 17.3. Harass is one component of the legal definition of "take" under the ESA.

Harm – An act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. See 50 CFR § 17.3. Harm is one component of the legal definition of "take" under the ESA.

Idle Lands – See Suitable Habitat Set-Asides.

Invasive Species – As per Executive Order 13112 (Section 1. Definitions) an invasive species is a plant or animal species that is non-native (or alien) to the ecosystem under consideration and, whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Jeopardy – The outcome of an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of the entire population of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. See 50 CFR § 402.02.

Lease – A contract in which a landlord agrees to give a lessee the exclusive right to inhabit or occupy lands or real lands. Leases typically give the lessee the exclusive right to use the lands.

Maintenance – Work on enrolled lands that is planned and performed on a routine basis to preserve the condition of the energy or transportation system, including response to emergencies (defined above and as described in 50 CFR § 402.05.

Mapped Occurrences – Mapped occurrences of covered species used for targeted conservation planning and as a geographic constraint for baseline mapping estimates. Mapped occurrences as presented consist of either potential occupancy areas mapped by the Service or generalized dispersal ranges mapped by UIC, both based on occurrence data. Mapped occurrences are found online at: Agreement range maps.

Modernization – Repairs, replacements, updates or minor expansions of existing infrastructure already built on enrolled lands that occur substantially within the footprint of existing infrastructure and/or the accompanying lands that are maintained to support operations of that infrastructure, and result in no or negligible environmental impact consistent with categorical exclusions. Accompanying lands include lands under the management authority and control of the Partner that directly or indirectly support maintenance of infrastructure. Modernization activities, either individually or cumulatively, cannot result in the permanent impact of one percent or more of the Partner's enrolled lands. Examples include, but are not limited to, road surface repair, bridge and small structure repair, reconstruction, and replacement, lane widening, interchange modification or enhancement within existing developed or maintained parcels and rights-of-ways, transmission and distribution line rebuilds, pipeline replacements, energy infrastructure repair, reconstruction, replacement, and modifications, and similar activities. By contrast, modernization does not include the construction of new infrastructure (or activities associated with the construction of new infrastructure) on newly acquired, or previously undeveloped or unmaintained rights-of-way or parcels. Undeveloped land implies that the land has an absence of infrastructure. See additional examples and descriptions under Section 5 of this Agreement (Covered Activities).

Native Species – With respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem. See Service Policy 601 FW 3.

Net Conservation Benefit – As defined by the Service, the cumulative benefit provided through implementation of a conservation benefit agreement that is designed to improve the existing baseline condition of a covered species by reducing or eliminating threats, or otherwise improving the status of covered species, minus the adverse impacts to covered species from ongoing land or water use activities and conservation measures, so that the condition of the covered species or the amount or quality of its habitat is reasonably expected to be greater with implementation of the agreement than without it. If the Service determines that the species and habitat are already adequately managed to the benefit of the species, a net conservation benefit will be achieved if the property owner commits to continuing the species' management for a specified period of time, including addressing any likely future threats that are under the property owner's control, with the anticipation that the population will increase, habitat quality will improve, or both.

For this Agreement, the implementation of conservation measures on enrolled lands and their contribution towards the Agreement conservation goal and objectives provide a net conservation benefit. Net conservation benefit may be evidenced by implementation of conservation measures documented in tracking, monitoring results indicating sustained or increased areas of suitable habitat. Conserving a network of habitats may yield additional benefits such as increased bumble bee populations, conservation research on enrolled lands, or population growth, and/or range expansion of at-risk bumble bees covered by this Agreement.

Nesting Habitat – Areas used by bumble bee species to establish colonies and rear their young. Queens are thought to opportunistically locate suitable locations for nests after emerging from overwintering. Suitable locations for nests are understudied and challenging to locate but are thought to encompass many different potential settings including animal made cavities (abandoned rodent and bird nests), vegetative cavities (coarse woody debris, grass tufts, thatch, tree roots), and man-made cavities (rock piles, building foundations). Due to this variety, bumble bee nesting habitat can occur in multiple different landscape contexts including grasslands, forested lands, and developed lands. Cuckoo bumble bees, which are brood

parasites of other bumble bee species, are thought to rely solely on the nesting preferences of their host species.

Notice of Noncompliance – A written notice from the Program Administrator to the Partner identifying an alleged failure to implement the terms and conditions of the Agreement, including but not limited to, agreed upon avoidance or minimization measures, conservation measures, compliance reporting, or payment of fees.

Operations – Activities involved in the day-to-day functions of the conditions and services provided by the energy and transportation lands.

Overwintering Habitat – Areas used by bumble bee species to hibernate through winter, until emerging in spring and starting a new colony. Fertilized queens (gynes) are thought to opportunistically select suitable cavities in which they can hibernate. Much like nesting habitat, the suitability of varied overwintering sites and species preferences are understudied. Limited data suggests that bumble bees may preferentially select overwintering sites in soft, exposed substrates occurring under or near trees, along exposed banks, or in and near existing animal cavities. Overwintering habitat can likely occur in multiple different landscape contexts including grasslands, forested lands, and developed lands.

Partners – Companies, agencies, and other organizations managing lands used for energy or transportation uses that are landowners or managers via easement, permit, or other access and management type agreement, who have been issued CIs and, therefore, agree to abide by the terms and conditions thereof with respect to permitted activities on enrolled lands, as described in Section 3.3 of this Agreement (Partners).

Parties – The Parties to the Agreement are the Service and Program Administrator, and Partners holding approved CIs.

Plan Area – The area/lands eligible for enrollment into the Agreement and EOS Permit. The plan area for this Agreement is represented by lands managed by energy and transportation Partners within the existing and potential ranges of the covered at-risk bumble bee species across the contiguous U.S.

The plan area is the full geographic extent under which the Agreement is applicable. The plan area includes the geographic extent to which Partners can add, remove, modify, or amend their CI to encompass enrolled lands. See Section 4.1 of this Agreement (Plan Area) for additional details.

Permit Holder – The entity to which the EOS Permit is issued by the Service. For this Agreement, the Program Administrator is the EOS Permit holder.

Program Administrator – The organization that will hold the EOS Permit issued in association with this Agreement, subject to Service oversight consistent with 50 CFR § 13.21(e)(2). The Program Administrator will maintain positions for program administration to facilitate enrollment of Applicants in the Agreement and distribute information for conservation efforts through coordination with other state and federal agency staff and outreach to Partners, and landowners.

Project – For energy and transportation activities, a project consists of the Partner's implementation of covered activities or other conservation measures as described under Section 5 of this Agreement (Covered Activities). Depending on the type of project, its scope may be site-specific, or more broadly applicable to the network of enrolled lands.

Restoration – For this Agreement, restoration means the process of restoring or reclaiming an impacted or disturbed area to a desired vegetation type. A variety of management activities may be implemented to accomplish restoration, including but not limited to post-disturbance or maintenance re-vegetating, decommissioning, removing infrastructure and re-vegetating with plant species beneficial to covered species in those areas affected by a covered activity.

Right-of-way (ROW) – The legal right, established by usage or grant, to pass along a specific route through grounds or lands belonging to another. The legal rights associated with specific ROW is often specified in easements maintained between the ROW and the landowner for transportation or energy purposes.

Stressors – Any physical, chemical, or biological alteration of resources (i.e., increase, decrease, or introduction) that can induce an adverse organism response. Stressors can act directly on an individual, or indirectly through impacts to resources.

Suitable Habitat – In the context of this Agreement, suitable habitat consists of lands that feature the conditions and characteristics necessary to support the foraging, nesting, and/or overwintering habitats of the covered bumble bee species. The conditions and characteristics that provide suitable habitat for the covered species vary depending on landscape context, region, covered species of interest, and land use, among other factors. As such, suitable habitat cannot be defined by a single metric, but results from a diverse assemblage of natural resources which are modulated by a combination of land management practices and natural environmental factors. See Foraging Habitat, Nesting Habitat, and Overwintering Habitat.

Suitable Habitat Set-asides - Lands that sustain suitable habitat without being disturbed by any other maintenance or modernization activity.

Take – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. See the ESA §3(19).

Terminated Partner or Lands – A Partner or associated lands removed from enrollment in the Agreement pursuant to an amendment or termination of the CI.

Unforeseen Circumstances – Changes in circumstances affecting a species or geographic area covered by a conservation benefit agreement that could not reasonably have been anticipated by the Agreement's developers or the Service at the time of the agreement's negotiation and development, and that result in a substantial and adverse change in the status of the covered species. See 50 CFR 17.3.

1 Introduction

The *Conservation Benefit Agreement for At-Risk Bumble Bees on Energy and Transportation Lands* (Agreement) is a conservation benefit agreement that promotes conservation of certain listed, candidate, petitioned, or otherwise at-risk species of bumble bees native to the United States (U.S.). The Agreement represents a key collaboration between the University of Illinois Chicago (UIC) and the U.S. Fish and Wildlife Service (Service), and representatives from the energy and transportation sectors. Individual representatives involved in the conceptualization and preparation of this Agreement are acknowledged in Appendix A.

These collaborating companies and organizations collectively manage lands that support the nation's infrastructure including electric power generation, transmission, and distribution; oil and gas extraction, transmission, and distribution; energy operations; and infrastructure needed for the transport of people, goods, services, and information including highway and road systems, water, and other liquids transport, and data and telecommunications.

Any non-federal entity that manages lands associated with energy and transportation uses as described in this Agreement may choose to enroll lands as a "Partner." Partners include companies, agencies, and other organizations working in the energy or transportation sectors that are landowners or manage vegetation through an easement, permit, or other access and management type agreement, who voluntarily agree to the terms and conditions described in the CI under the Agreement that must be adhered to for the permitted activity on enrolled lands, as described in Section 3.3 of this Agreement (Partners)

This Agreement includes conservation measures that contribute to conservation objectives for covered species performed on lands associated with energy and transportation infrastructure, in conjunction with operations, maintenance, and modernization activities on enrolled lands. Implementation of conservation measures is expected to result in a net conservation benefit to the covered species on each Partner's enrollment. This benefit increases with each new enrollment and could ultimately result in a widespread network of lands throughout the nation where conservation activities are taking place. With more lands and a variety of sectors contributing to landscape level conservation, increasing amounts of habitat will be created, sustained, or enhanced. Collectively, such efforts may reduce the potential need to list some at-risk bumble bees or contribute to the recovery of listed species. Through this Agreement, the Program Administrator will work with Partners who commit to implementing conservation actions in service of conservation objectives and/or reduce or potentially remove threats to the covered species.

Section 9 of the ESA, as amended (16 USC § 1531, et seq.), prohibits "take" of the species listed as endangered. By regulation, the Service extends the take prohibition to most species listed as threatened. ESA Section 10(a)(1)(A) authorizes the Service to issue permits authorizing take of listed species in order to enhance the propagation or the survival of the species covered by the permits (EOS Permits). Service regulations provide additional requirements and detail regarding the process and criteria for obtaining EOS Permits (application requirements and issuance criteria for EOS Permits and existing conservation agreements are found in the Code of Regulations [CFR] at 50 CFR 17.22(c)).

This Agreement is associated with the EOS Permit issued to UIC, as the Program Administrator. The Program Administrator is authorized to enroll eligible applicants[2] into the Agreement through CIs. Once an Applicant receives a signed CI, they formally become a Partner to the Agreement and commit to implement

[2] Eligible Applicants are agencies, entities, or organizations that manage lands associated with energy and transportation uses that are interested in participating in the Agreement and undertake the application steps detailed within Section 4.4 (Enrollment Process) of the Agreement. Eligible Applicants have the authority and control to implement conservation measures throughout their system of enrolled lands through their lands rights (e.g., fee-title ownership, land management and access permits, easements, etc.) or statutory authority. Applicants may be enrolled in this Agreement through a CI.

specified conservation measures, monitoring, and reporting on enrolled lands, as set forth in the CI. If a covered species is listed, incidental take on non-federal lands[3] will then be covered by the Permit, and following reinitiation of intra-Service consultation, incidental take on federal lands would be covered by a biological opinion issued. A conference opinion may be adopted as the biological opinion if no significant new information has developed and no significant changes to the federal action have been made that would alter the content of the conference opinion[4].

As required by Service regulations implementing Section 10(a)(2)(A) of the ESA, the terms of this programmatic agreement require a baseline determination and have been designed to provide a net conservation benefit to the covered species on enrolled lands. Other at-risk bumble bees and other pollinators with similar habitat needs, conservation threats, or conservation objectives not yet identified may be added to this Agreement in future modifications through coordination between Parties. The basis for this determination is outlined in Section 12 of this Agreement (Expected Benefits). However, this does not predetermine the outcome of the Service's final listing decision for any species included now or in the future. The Service's final listing decisions will be based on an assessment of the current and projected future status of the species and threats to its continued existence range-wide, using the best available scientific and commercial data, under the framework set out in ESA Section 4(a). Conservation efforts such as this Agreement will be evaluated by the Service as part of this determination in accordance with Service Policy for Evaluation of Conservation Efforts (PECE; 2003) and factored into any listing decision(s) as appropriate.

This Agreement, effective and binding on the date of last signature under Section 19 of this Agreement (Notices and Reports), is between UIC and the Service. Partners will be incorporated into this Agreement via signed CIs issued by UIC as the Program Administrator.

1.1 Authority

Sections 2, 7, and 10 of the ESA, as amended, allow the Service to enter into this Agreement. Section 2 of the ESA states that, "encouraging interested persons or entities, through federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the nation's heritage in fish, wildlife, and plants." Section 7 of the ESA requires the Service to review programs that it administers and to utilize such programs to promote the purposes of the ESA. By entering into this Agreement, the Service is utilizing its candidate conservation programs to further the conservation of the nation's fish and wildlife. Lastly, Section 10(a)(1)(A) of the ESA authorizes the issuance of EOS permits for acts that would otherwise be prohibited by Section 9 if such acts are expected to enhance the propagation or survival of the affected species as described in 50 CFR 17.22(c) and 17.32(c).

1.2 Purpose and Goal of this Agreement

This Agreement represents a unique opportunity for collaborative conservation. Representatives from organizations involved in the development of this Agreement collectively manage millions of acres of rights-of-way, fee-owned lands, or other associated lands across the contiguous U.S. Considering this scale, this Agreement can create and connect available pollinator habitats, provide diverse foraging, nesting, and

[3] On non-federal, enrolled lands, the Permit provides assurances from the Service that additional conservation measures for the covered species above and beyond those explained in the Agreement will not be required on non-federal, enrolled lands should any covered species..

[4] The conference opinion cannot be adopted as the biological opinion if significant new information is developed and/or if significant changes to the federal action have been made that would alter the content of the conference opinion. Because the conference opinion is based on the best available science at the time, for the sake of this analysis regarding permit issuance, it is assumed that the conference opinion will be adopted as a biological opinion if a covered species is listed. For succinctness in the Agreement, take on federal lands is referred to as authorized through the incidental take statement of the biological opinion.

overwintering habitat for covered species, and offer safe havens from major disturbances or future development.

The conservation goal of this Agreement is to sustain and improve covered species foraging, nesting, and overwintering habitat. This measurable biological goal for the Agreement can be compared over time against baseline conditions. Partners will monitor and verify the condition of physical characteristics of foraging, nesting, and overwintering habitat via the tracking and monitoring included in Section 14 of this Agreement. We expect the outcome of this goal will result in covered species populations being sustained or increased across their geographic range. While this Agreement may not be solely responsible for individual species recovery, widespread enrollment can deliver landscape-scale conservation needed to sustain and increase populations and contribute to their recovery. The conservation objectives identified in Section 6 of this Agreement are aligned with accompanying measures designed to contribute to this goal by reducing stressors and threats, sustaining or improving habitat, and encouraging conservation engagement. The extent of their implementation offers direct measurable contributions to reducing threats and sustaining or improving habitat.

The Parties, in a collaborative effort organized by UIC, have pursued this programmatic Agreement to fulfill the EOS permitting requirements of ESA Section 10(a)(1)(A) and relevant regulations. This programmatic Agreement, led by UIC, is aligned with the mission of the Working Group facilitated by UIC's Energy Resources Center. The Working Group brings together unique partners from multiple industries to access the latest tools and resources, share knowledge, and build capacity for habitat conservation on working landscapes. Together, the Working Group supports pollinators and other wildlife, creates healthier ecosystems, and enhances safe, reliable transportation and energy systems.

The Working Group builds broad industry engagement in strategies that will benefit not only the covered species included in this Agreement but also model conservation collaboration for other species of conservation concern. The development of programmatic voluntary conservation agreements (such as this Agreement) promotes voluntary conservation action among non-federal Partners. This Agreement includes both federal and non-federal lands to support its strategic objectives and conservation goal. Through the integrated Agreement, energy and transportation lands are eligible for enrollment across both federal and non-federal lands allowing for seamless and consistent management despite underlying variation in land ownership.

1.3 Agreement Strategy

In addition to the conservation goal, the cooperating partners used the following strategic objectives to guide development of this Agreement:

- Address conservation objectives and known threats for listed and at-risk bumble bees.
- Maintain a public-private collaboration between the Service, and transportation and energy sector managers to facilitate voluntary conservation and communicate its benefits.
- Ensure regulatory certainty and maximize operational flexibility on lands enrolled for the safe and reliable operations, maintenance, and modernization needs of the nation's infrastructure.
- Minimize the administrative requirements of the Parties involved to promote increased engagement in voluntary conservation.

These strategic objectives help frame this Agreement's approach and its contributions to conservation objectives for covered species on the lands managed by Partners. By committing upfront to voluntary conservation for these species, this Agreement can provide energy and transportation land managers certainty that their operations, maintenance, and modernization practices covered within this Agreement can continue in a safe, reliable, and cost-effective manner in the event the Service lists at-risk bumble bees.

To promote and sustain engagement at a landscape scale, the administrative needs of the Agreement cannot add heavy administrative burdens on the Service, the Program Administrator, nor Partners.

Implementation of this Agreement is directed by the two integrated conservation agreements consisting of this CBA for activities conducted on non-federal lands and an integrated Candidate Conservation Agreement (CCA) for conservation measures and other covered activities implemented on federal lands. Unlike the CBA component of this Agreement, CCAs only apply to candidate species. In addition, based on guidance on CCAs published by the Service, "*there are no specific requirements for entering into a CCA and no standard has to be met; no incidental take permit or assurances are provided under these Agreements"* (USFWS 2017). The purpose of the CCA component of the integrated Agreement is to support streamlined Section 7 consultation for federal Partners. Federal entities may also enroll in, and align their conservation with, the program requirements in support of their own Section 7 consultations for the Agreement's covered species as it relates to the covered activities and enrolled lands covered. This Agreement includes both federal and non-federal lands to support its strategic objectives and conservation goal. Through the integrated Agreement, energy and transportation lands are eligible for enrollment across both federal and non-federal lands allowing for seamless and consistent management despite underlying land ownership.

Broad, non-traditional, conservation partnerships are needed to achieve the scale and long-term period of habitat restoration needed to conserve the covered species. Such efforts have been recommended in strategies and conservation plans such as the *National Strategy to Promote the Health of Honey Bees and Other Pollinators* (Vilsack and McCarthy 2015), the *Recovery Plan for Rusty Patched Bumble Bee* (*Bombus affinis,* USFWS 2021a), the *Strategy to Protect State and Federally Recognized Bumble Bee Species of Conservation Concern: Washington State* (Martin et al. 2023), and the Xerces Society's *Conserving Bumble Bees. Guidelines for Creating and Managing Habitat for America's Declining Pollinators* (Hatfield et al. 2012), along with many other initiatives currently in development.

2 Background and Purpose

2.1 Agreement Development

The idea for an at-risk bumble bee agreement is rooted in discussions around voluntary conservation agreements during Working Group meetings in 2017. At that time, participants in the Working Group were interested in developing a pollinator conservation agreement for energy and transportation lands. After conversations with the Service, the initial focus for pollinator conservation planning was centered on monarch butterflies. A little over two years later, in April 2020, the Monarch CCAA (ROWHWG 2020) was finalized and approved by the Service.

In late 2021, the Working Group returned its focus to expanding the scope of voluntary conservation to include additional at-risk species that benefit from similar conservation measures as those promoted by the Monarch CCAA. The Working Group selected at-risk bumble bees as a focus based on the potential overlap in benefits when conducted in conjunction with the Monarch CCAA. A subset of Working Group members and Service personnel explored the concept of a bumble bee-focused agreement in late 2021 through early 2022. In early 2022, the WDNR, working closely with the UIC, submitted an ESA Section 6 non-traditional grant funding request to the Service for development of an at-risk bumble bee conservation agreement. Funding for the effort was awarded in early 2023. Following the announcement, the Working Group commenced outreach and development of this Agreement. This agreement is consistent with the Working Group mission objective to engage diverse stakeholders in a collaborative environment that promotes pollinator habitats and healthy ecosystems along rights-of-way.

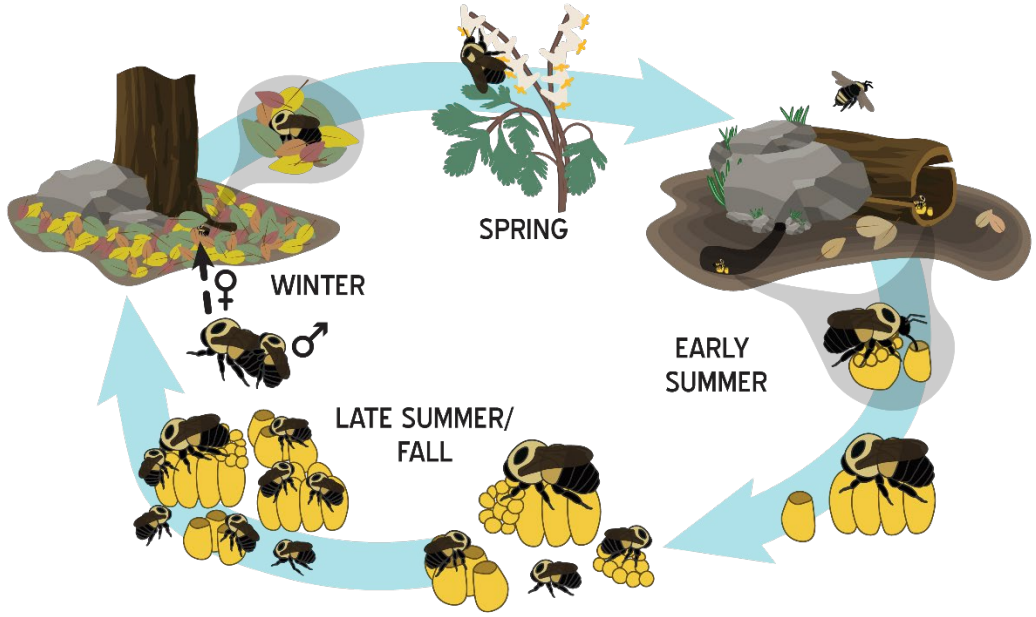
2.2 Species and Management Needs

2.2.1 Bumble Bee Ecology, Habitats, and Threats

Bumble bees are insects in the genus *Bombus* (family Apidae, order Hymenoptera) of which approximately 46 species are known to occur naturally in the United States and Canada (Williams et al., 2014). Bumble bees are generally large bees, with distinctive hairy bodies and bright black and yellow coloration. They are eusocial, developing a complex colony system founded by a solitary fertilized queen after emergence in the spring from overwintering. In most bumble bee species, this solitary queen lays eggs which produce female workers throughout the spring and summer that forage for pollen and nectar from flowering plants to support the continued production of eggs and rearing of more workers. Cuckoo bumble bees are obligate brood parasites of one or more host bumble bee species and do not produce workers of their own. Queen cuckoo bumble bees locate an active nest of their host species by scent, then kill the resident queen, eggs, and larvae, while benefitting from foraging efforts by the existing host workers.

Towards the end of the season, both cuckoo and non-cuckoo colonies produce male reproductive individuals and new queens, which take flight after maturation to mate. Following mating, males die while females overwinter in a suitable cavity or substrate. The bumble bee colony life cycle is illustrated in Figure 2-1.

Figure 2-1. Bumble Bee Colony Life Cycle



Source: Hemberger and Gratton 2024

All bumble bees require suitable habitat with similar conditions and characteristics to be successful.

Suitable habitat for bumble bees can be broadly defined as lands that feature the conditions and characteristics necessary to support the primary stages of the bumble bee life cycle: foraging, nesting, and overwintering. The conditions and characteristics that provide such suitable habitat vary depending on landscape context, region, and the species of interest, among other factors. As such, suitable habitat cannot be defined by a single metric uniformly, but instead results from a diverse assemblage of natural resources which are modulated by a combination of land management practices and environmental factors. Despite this inherent variability, foraging, nesting, and overwintering habitats are thought to have similar qualities across many (if not all) bumble bee species.

Foraging habitats are areas used by bumble bee species to collect pollen and nectar from flowering plants (resources). To be considered foraging habitat, flowering plants must be present. Foraging habitat may occur in many different landscape contexts and can vary widely. Often, high quality foraging habitat can be found in grasslands (prairies, old fields, meadows), forested lands (forests, shrublands, savannas), and the transition zones between them. Foraging habitat may also be present in developed landscapes with established parks or gardens. The quality of foraging habitat can be judged by three criteria: abundance, constancy, and diversity of floral resources. Abundance refers to the absolute quantity of flowering resources present. Constancy refers to the presence of floral resources throughout the year (or active season). Diversity refers to the number of distinct flowering species present. Each of these criteria measure qualities of foraging habitat which support different stages of bumble bee life histories.

Nesting habitats are areas used by bumble bee species to establish colonies and rear their young. Queens are thought to opportunistically locate suitable locations for nests after emerging from overwintering. Suitable locations for nests are understudied and challenging to locate but are thought to encompass many different potential settings including animal made cavities (abandoned rodent and bird nests), vegetative cavities (coarse woody debris, grass tufts, thatch, tree roots), and man-made cavities (rock piles, building foundations). Due to this assumed variety, it is thought that bumble bee nesting habitat can occur in multiple different landscape contexts including grasslands, forested lands, and developed lands (as analyzed by Liczner and Colla 2019). Cuckoo bumble bees are thought to rely solely on the nesting preferences of their host species.

Overwintering habitats are areas used by bumble bee species to hibernate through winter, until emerging in spring and starting a new colony. Fertilized queens opportunistically select suitable cavities in which they can hibernate, or may also select suitable locations and then create or dig their own cavities (Xerces Society personal communication). Much like nesting habitat, the suitability of varied overwintering sites and species preferences are understudied. Limited data suggests that bumble bees may preferentially select overwintering sites in soft, exposed substrates occurring under or near trees, along exposed banks, or in and near existing animal cavities. Overwintering habitat can likely occur in multiple different landscape contexts including grasslands, forested lands, and developed lands (as analyzed by Liczner and Colla 2019).

In addition to habitat similarities, bumble bee species across the U.S. face similar threats from impacts to habitat and exposure to stressors (Cameron and Saad 2020). Impacts to habitat may include the decrease in abundance, quality, and/or connectivity of foraging, nesting, and/or overwintering habitats. The transition of once common grassland and forested landscapes to other land uses is thought to have led to widespread decreases in abundant and diverse food resources necessary to support adequate foraging habitat for pollinators such as bumble bees (Goulson et al. 2015; Sánchez-Bayo and Wyckhuys 2019). Remaining suitable habitat is often fragmented from other continuous habitat areas, making it challenging or impossible for bumble bee species to locate (Goulson et al. 2008; Williams and Osborne 2009). Declines in foraging habitat and floral resource availability may have nutritional consequences for bumble bee species that make them less fit in the face of multiple stressors (Goulson et al. 2015). Land conversion and use may also have an impact on bumble bee nesting and overwintering. While little is known about bumble bee nesting and overwintering preferences, habitats, and specific stressors, it is hypothesized that more frequent disturbances from human activities may reduce the available habitat for potential nesting and overwintering sites or directly impact already existing nesting and overwintering sites (Winfree et al. 2009).

In addition to habitat changes, specific stressors that have been identified as potential causes of recent bumble bee decline may include climate changes, prevalence of contaminants, pollutants, and hazardous conditions due to human development and activity, and pathogen spread, among others (Goulson et al. 2015; Cameron and Sadd 2020). Global climate changes may lead to multiple conditions which negatively impact bumble bee species including changing temperature and precipitation regimes, more frequent extreme weather events, and phenological mismatches between bumble bee activity and floral resources (Kerr et al. 2015; Koch et al. 2019; Jackson et al. 2022). Exposure of bees to pollutants in the environment has been the topic of much study and debate in recent decades, and evidence suggests that pesticide

exposure may lead to lethal and sublethal impacts in bumble bees (Gill et al. 2012; Fauser-Misslin et al. 2013). Exposure to pathogens is another threat that has been identified as likely impacting bumble bees across North America (Cameron et al. 2016). It is thought that pathogens such as the microsporidium *Varimorpha bombi* and parasites such as *Crithidia bombi* spilled over to wild North American bees from commercially reared bee species (Szabo et al. 2012; Cameron et al. 2016).

While many possibly additive hypotheses have been posed as to the factors that are causing widespread declines in bumble bees, research is needed to address species-level responses to stressors. Further, little is known about many bumble bee species individually in terms of habitat suitability, preferences, and behavior (among other ecological considerations). As many stressors are continental in scale, many bumble bee species are threatened by similar factors and may benefit from similar activities or measures that avoid or minimize the impact of stressors.

In the context of this Agreement, these identified threats have been captured as drivers of the specified Conservation Objectives and their Conservation Measures (Section 6, Conservation Measures), with the exception of those that are outside the direct control of Partners to this Agreement (for example, climate changes).

2.2.2 Covered Species Population Trends, Habitats, and Threats

At the time of development, this Agreement includes eleven at-risk bumble bees (Table 2-1) as covered species. For this Agreement, "at-risk" refers to certain species experiencing severe population declines, including species petitioned, under review, proposed, or already listed under the ESA. This Agreement may be amended in the future to add new covered species as described in Section 9 of this Agreement (Duration of Agreement and Permit). In that event, Table 2-1 would be updated to reflect additional covered species.

Ranges and generalized historical and contemporary occurrences for each species are included in an online map which can be accessed at the following address:
https://experience.arcgis.com/experience/82b6ac3cae4b4574b883b69216e5365d

Table 2-1. At-risk Bumble Bee Species and Their Conservation Status

Common Name	Scientific Name	ESA Status	Estimated Declines
Rusty patched bumble bee	*Bombus affinis*	Endangered	70-95 percent decline[5]
Crotch's bumble bee	*Bombus crotchii*	Not federally listed	68 percent decline[5]
Franklin's bumble bee	*Bombus franklini*	Endangered	Last observed in 2006[5]
Southern plains bumble bee	*Bombus fraternus*	Petitioned	42 percent decline[6]
Morrison's bumble bee	*Bombus morrisoni*	Petitioned	58 percent decline[5]
Western bumble bee	*Bombus occidentalis*	Petitioned, Under Review	40-57 percent decline[5]

[5] IUCN species assessments published at www.iucnredlist.org
[6] 2022 listing petition (Tyler 2022).

Common Name	Scientific Name	ESA Status	Estimated Declines
American bumble bee	*Bombus pensylvanicus*	Petitioned, Under Review	51 percent decline[5]
Yellow banded bumble bee	*Bombus terricola*	Not federally listed	50 percent decline[5]
Ashton's cuckoo bumble bee	*Bombus bohemicus*	Not federally listed	73 percent decline[7]
Variable cuckoo bumble bee	*Bombus variabilis*	Petitioned, Under Review	Nearly a 100 percent decline[5]
Suckley's cuckoo bumble bee	*Bombus suckleyi*	Proposed, Endangered	85 percent decline[8]

Rusty patched bumble bee (Bombus affinis)

Rusty patched bumble bee was historically distributed across the upper Midwest and east coast of the U.S. However, in recent years, the species has experienced a large decline in population and occupied range that is thought to be a consequence of multiple independent and synergistic threats including *V. bombi*, overuse of pesticides, and reduction in prevalence of suitable habitat (USFWS 2016, 2021a, and 2023). Of the eleven species initially included in this Agreement, rusty patched bumble bee is by far the best studied and understood, likely due to the attention it has been afforded at the federal level; the Service completed a species status assessment in 2016, listed the species as endangered under the ESA in 2017, and finalized a recovery plan for the species in 2021. At present, the range of rusty patched bumble bee has contracted approximately 70-95 percent from its historic extent (Hatfield et al. 2014a). It has been observed nesting in wooded and developed areas and is assumed to preferentially overwinter in loose substrates near trees or banks within wooded areas, although confirmation of these assumptions is needed (USFWS 2022). This species also has multiple documented floral associations, although like other bumble bees is considered a generalist forager. Native plants it has been observed foraging on include wild bergamot (*Monarda fistulosa*), prairie clover (*Dalea* spp.), hyssop (*Agastache* spp.), goldenrod (*Solidago* spp.), asters (*Symphyotrichum* spp.), leadplant (*Amorpha canescens*), Joe-Pye weed (*Eutrochium* spp.), coneflowers (*Echinacea* spp., *Ratibida* spp.); sunflowers (*Helianthus* spp.), white turtlehead (*Chelone glabra*), and native wild blueberries and cranberries (*Vaccinium* spp.; USFWS 2017).

Crotch's bumble bee (B. crotchii)

Crotch's bumble bee is a bumble bee species with a limited distribution in the U.S. state of California, where it inhabits grassland and scrublands across multiple ecoregions. This species was once common in the Central Valley region but has experienced significant population and range declines (Williams et al. 2014; Hatfield et al. 2014b). Extensive land conversion to agricultural and urban development, and subsequent loss of habitat within the Central Valley, are considered primary causes of its decline, although other threats are likely important drivers of decline for this species as well. Crotch's bumble bee is currently a Candidate Species for listing under the California State Endangered Species Act. Very little is known about the nesting and overwintering behaviors, locations, and preferences of Crotch's bumble bee (Xerces et al. 2018). This species is considered a generalist forager and commonly associated with species in the bean (Fabaceae),

[7] Guzman et al. 2021

[8] USFWS 2024. Suckley's Cuckoo Bumble Bee (Bombus suckleyi) Species Status Assessment

milkweed (Apocynaceae), aster (Asteraceae), mint (Lamiaceae), and forget-me-not (Boraginacaeae) families (Xerces et al. 2018).

Franklin's bumble bee (B. franklini)

Franklin's bumble bee is a species that is thought to have the most limited distribution of all known North American bumble bees and one of the most limited distributions or bumble bees in the world (Williams et al. 1998; Williams et al. 2014). This species is presumed to live in an approximately 13,0000 square mile area of the Klamath Mountain region of southern Oregon and northern California, preferring open meadows in proximity to seeps, however, it has not been observed since 2006 (USFWS 2021b). The Service completed a species status assessment for Franklin's bumble bee in 2018 and subsequently listed the species as endangered under the ESA in 2021. It is thought that Franklin's bumble bee is threatened by similar threats as other bumble bee species including impacts to habitat and exposure to stressors, although driving factors for this species' disappearance remain unclear (USFWS 2021b). Very little is known about the nesting and overwintering behaviors, locations, and preferences of Franklin's bumble bee (USFWS 2021b). It has been associated with a number of flowering plants within its distribution, including wild lupines (*Lupinus* spp.), California poppy *(Eschscholzia californica*), horsemint (*Agastache urticifolia*), and mountain penny-royal (*Monardella odortissima*).

Southern plains bumble bee (B. fraternus)

The Southern plains bumble bee was once found across the Midwest, Great Plains from Texas to North Dakota, and along the southeastern coastal plain in grasslands, savannas, and open woodlands of 26 U.S. states. Presently, southern plains bumble bee is thought to be extirpated from at least five of those states, and has experienced a sharp decline of an estimated 42 percent of its range in recent decades (Hatfield et al. 2014c; Guzman et al. 2021). Like other bumble bees, the southern plains bumble bee faces multiple and interacting threats including impacts to habitat exposure to stressors, and subsequent and compounding small population size (Center for Biological Diversity 2022). As a result of sharp declines and continued threats, the Center for Biological Diversity petitioned the Service to list the southern plains bumble bee as threatened or endangered under the ESA in 2022, and in 2024 the Service published it's 90-day finding that listing this species may be warranted based on the information presented in the petition. Very little is known about the nesting and overwintering behaviors, locations, and preferences of southern plains bumble bee (Center for Biological Diversity 2022). This species has been associated with and suggested to prefer flowers in the aster (Asteraceae), bean (Fabaceae), and mint (Lamiaceae) families, although is assumed to be a generalist like other bumble bees.

Morrison's bumble bee (B. morrisoni)

Morrison's bumble bee inhabits dry open grassland and scrub habitats in the mountain and desert west regions, east to New Mexico and Texas, and north to South Dakota (Williams et al. 2014). Similarly, to other bumble bees, this species has experienced a dramatic decline of an estimated 58 percent in the last decade (Hatfield et al. 2014d; Xerces 2023) In 2023, the Service was petitioned by Xerces Society to list Morrison's bumble bee under the ESA. Threats to this species appear to be similar to other bumble bees, broadly, but factors contributing to the observed decline are unclear. Only one record of Morrison's bumble bee nesting has been reported (Xerces 2023). Otherwise very little is known about this species' nesting and overwintering behaviors, locations, and preferences. Morrison's bumble bee has been observed foraging on many species, and in particular has been associated with wild bergamot (*Monarda* spp.), loosestrifes (*Lythrum* spp.), thistles (*Cirsium* spp.), and willowherbs (*Zauscheneria* spp.; Williams et al. 2014).

Western bumble bee (B. occidentalis)

Western bumble bee is also formerly a common and widespread bumble bee with a historic range that extended throughout western North America. However, in recent decades, western bumble bee has gone from being one of the most common bees in the West to being almost nonexistent in large portions of its historic range. It is estimated that this species has potentially declined up to 93 percent in recent decades (Cameron et al. 2011; Hatfield et al. 2014e; Graves et al. 2020). Western bumble bee was petitioned by

Defenders of Wildlife in 2015 for listing under the ESA, and currently the species is under review by the Service. Threats to western bumble bee include habitat loss, pesticides, disease spillover from commercial bumble bees, and climate change (as summarized in Defenders of Wildlife 2015; Janousek et al. 2023). Very little is known about this species' overwintering behavior and preferences, and nesting colony behavior is presumably similar to that over other species, with preferences towards nesting in litter or abandoned rodent nests (Hobbs 1968). Western bumble bee is a generalist forager and has been documented visiting a diverse array of different flowering plant species across its range. There has been little study into specific preferences held by this species (as summarized in Defenders of Wildlife 2015).

American bumble bee (B. pensylvanicus)

Once a common bumble bee across nearly the entire continental U.S., the American bumble bee has declined by approximately 51 percent according to some estimates (Hatfield et al. 2014f). In the last 20 years, the American bumble bee has become extirpated from at least eight states, mostly in the northeast, and it is in decline elsewhere (Tyler et al. 2021a). As a result, the Service was petitioned to list this species under the ESA in 2021 by the Center for Biological Diversity. The decline of American bumble bee is believed to be the result of synergistic impacts of threats including habitat loss, pesticides, disease, climate change, competition, and loss of genetic diversity (as summarized in Tyler et al. 2021). Very little is known about this species' overwintering and nesting behavior, locations, or preferences, but evidence suggests that this species prefers nesting above ground (Williams et al. 2014; USDA NRCS 2021). Similarly, little is known about this species' preferences for floral resources; it is broadly assumed to be a generalist forager.

Yellow banded bumble bee (B. terricola)

The yellow banded bumble bee once ranged across 25 U.S. states and 12 Canadian provinces; however, it is believed to be extirpated from the Pacific Northwest and Southeast Plains regions. In the present day, the species appears to be concentrated in the midwestern and northeastern United States (and southeastern Canada). The species was proposed for listing under the Endangered Species Act in 2016, but the Service found that listing for this species was not warranted in 2019 (84 FR 41694). The species utilizes a variety of habitats including both human dominated and natural landscapes such as agricultural lands, urban areas, woodlands, and grasslands (Williams et al. 2014). Like other bumble bees, the yellow banded bumble bee is vulnerable to a variety of factors including habitat degradation and loss, pathogens, and climate change (Williams et al. 2007). This species may be particularly vulnerable infection from *V. bombi* (Cameron et al. 2011). Very little is known about the nesting and overwintering preferences and behaviors of this species, specifically, and most of the assumed needs of this species are based on other, related bumble bees (USFWS 2018b). This species has been observed emerging early in the season and is thus thought to be especially reliant on early-season blooming floral resources such as woodland spring ephemerals (USFWS, 2018b). Further, they have also been observed foraging regularly on milkweeds (*Asclepias* spp.), beardtongues (*Penstemon* spp.), bonesets (*Eupatorium* spp.), toadflax (*Linaria* spp.), wild bergamot (*Monarda* spp.), currants (*Ribes* spp.), meadowsweets (*Spiraea* spp.), and vetches (*Vicia* spp.; Williams et al. 2014).

Ashton's cuckoo bumble bee (B. bohemicus)

Ashton's cuckoo bumble bee appears to be declining rapidly in North America, occurring in only seven known sites, although the species is considered data deficient by the IUCN (Hatfield et al. 2016). Ashton's cuckoo bumble bee is a brood parasite of rusty patched and yellow banded bumble bees (Williams et al. 2014). Among other threats, cuckoo bumble bees are especially at risk of decline and extinction if their host species is declining. Aside from relying on host species for nesting habitat, very little is known about overwintering habitat of this species (Hatfield et al. 2016). While cuckoo bumble bees largely do not collect pollen, they may still feed on flowers. Ashton's cuckoo bumble bee has been observed feeding on wild onions (*Allium* spp.), spikenards (*Aralia* spp.), button bushes (*Cephalanthus* spp.), bonesets (*Eupatorium* spp.), beardtongues (*Penstemon* spp.), brambles (*Rubus* spp.), and goldenrods (*Solidago* spp.; MNHP 2020).

Variable cuckoo bumble bee (B. variabilis)

The variable cuckoo bumble bee has largely disappeared from recent records. Its last confirmed observation was in 1999 despite increasing survey efforts. The variable cuckoo bumble bee was historically widespread throughout the Eastern U.S. and is a brood parasite of the American bumble bee. Among other threats, cuckoo bumble bees are especially at risk of decline and extinction if their host species is declining (Tyler et al. 2021b). Aside from relying on host species for nesting habitat, very little is known about overwintering habitat of this species (Hatfield et al. 2016). While cuckoo bumble bees largely do not collect pollen, they may still feed on flowers. Variable cuckoo bumble bees have been observed feeding on asters (*Symphyotrichum* spp.), beggarticks (*Bidens* spp.), coneflowers (*Echinacea* spp.; *Ratibida* spp.), sunflowers (*Helianthus* spp.), and goldenrods (*Solidago* spp.; Williams et al. 2014)).

Suckley's cuckoo bumble bee (B. suckleyi)

Suckley's cuckoo bumble bee was historically widespread throughout the northwestern U.S. The species occurred in prairies, grasslands, meadows, savannas, and agricultural landscapes. Suckley's cuckoo bumble bee is a brood parasite of the Western bumble bee and potentially other species which utilize a similar life strategy. Among other threats, cuckoo bumble bees are especially at risk of decline and extinction if their host species is declining (Tyler et al. 2021b) Additional threats likely affecting Suckley's cuckoo bumble bee include habitat loss, disease, and low genetic diversity (Center for Biological Diversity 2020). Suckley's cuckoo bumble bee has been observed feeding on asters (*Symphyotrichum* spp.), thistles (*Cirsium* spp.), goldenrods (*Solidago spp*.), and species in the bean family (Fabaceae).

Other species

The combination of threats affecting these species and related habitat requirements are not unique to the covered species currently included in this Agreement. Threats like habitat loss, pesticides, disease spillover, and climate change affect many other species of bumble bees and other insect pollinators. These combined threats may continue to contribute to declines of other species in the future. When other at-risk species (either bumble bees or other insect species) are affected by similar threats and benefit from similar conservation objectives to the conservation measures identified in this Agreement, the Program Administrator may consider modification of this Agreement to incorporate other species into this voluntary conservation framework as a covered species. The procedure described in Section 9.4 (Amendment of the 10(a)(1)(A) Enhancement of Survival Permit) for future amendments that allow this Agreement to be responsive to species declines and new knowledge pertaining to bumble bees and insect pollinators.

2.2.3 Contribution to Conservation Actions within this Agreement

This Agreement addresses conservation of multiple covered species – each with their own distinct geographies, phenology, and natural history. Despite these differences, many habitat requirements, threats to survival, and opportunities to conserve bumble bees are shared across species. To generate relevant and succinct conservation measures, this Agreement uses the recovery actions for rusty patched bumble bee (USFWS 2021a) alongside other bumble bee and pollinator conservation assessments (Tyler 2022, 2021a, 2021b, Hatfield et al. 2012, Evans et al. 2008) to guide conservation objectives, with the understanding that similar recovery actions may be helpful to other species facing similar threats. The Agreement's conservation objectives are to:

1. Maintain, protect, and enhance nesting and overwintering habitat.
2. Manage, protect, and enhance foraging habitat.
3. Minimize exposures to stressors and direct impacts.
4. Increase knowledge of population trends, species distribution, stressors, and measures to effectively conserve the species.
5. Encourage advanced conservation commitments.

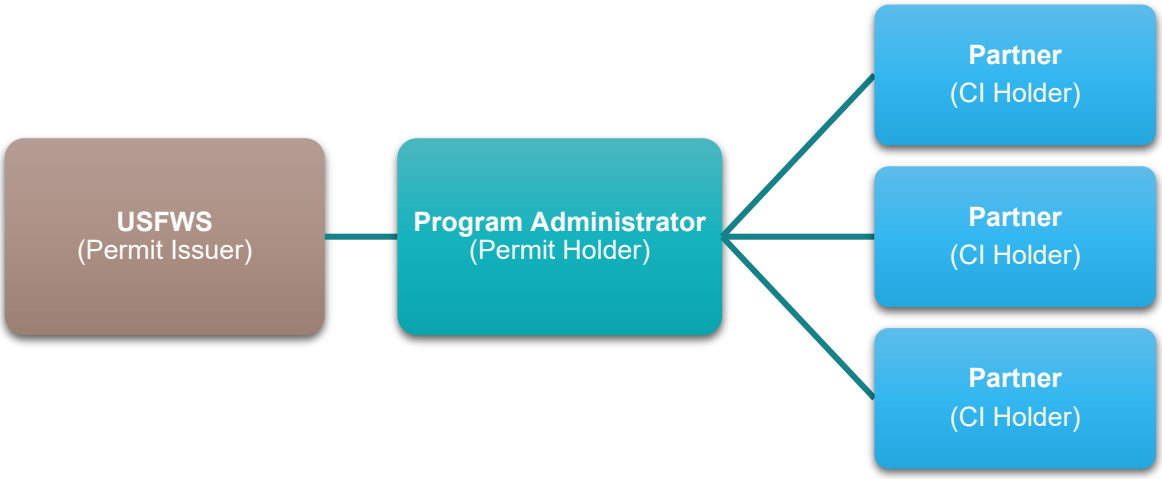
These conservation objectives are described in more detail in Section 6 of this Agreement (Conservation Measures). The Service issues EOS Permits to authorize take of covered species, above the baseline condition[9] when the primary purpose of the associated conservation agreement is to implement beneficial actions that address threats to the covered species, establish new wild populations, or otherwise benefit the covered species. By addressing these needs, this Agreement aids Service-led efforts to protect and recover at-risk species. In contrast, for covered, non-listed species, conservation measures may contribute to a reduction of threats such that populations may be sustained or increased regardless of any listing decision.

Conservation measures outlined within this agreement aid in the recovery of covered species through a combination of habitat restoration, beneficial vegetation management, a reduction of threats posed by maintenance activities, and an increase in knowledge and research to inform future bumble bee and other pollinator conservation. These are the areas of greatest authority and control for participating Partners where landownership, easement rights, managing agreements, and/or operational requirements allow. Providing diverse and resilient habitats enhancing landscape connectivity through enrolled lands will help address identified threats and aid in the recovery of covered species.

3 Parties Involved

This section briefly describes the Parties that will enter into this Agreement. The obligations of each party are summarized in Section 7 of this Agreement (Obligations of the Parties). The Parties encompassed by this Agreement include the Service, the Program Administrator, and Partners (Figure 3-1).

Figure 3-1. The Relationship of Parties Included within the Agreement.



3.1 The Program Administrator

The Program Administrator will hold the EOS Permit issued in association with this Agreement, subject to Service oversight consistent with 50 CFR § 13.21(e)(2). The Program Administrator will maintain positions for program administration to facilitate enrollment of Applicants in the Agreement and distribute information for conservation efforts through coordination with other state and federal agency staff and outreach to

[9] 50 CFR 17.22(c)(1)(iv) indicates that baseline must be established by all Partners at the time of application. While initial establishment of baseline is required, a return to baseline is optional for Partners. See Section 4.4.3 (Baseline Determinations) and Section 9.6.2 (Return to Baseline) of this Agreement for additional details.

Partners and landowners. The Program Administrator will also serve as the fiscal agent for this Agreement, including management of a non-wasting endowment to fund permit and program administration activities that will benefit the covered species through coordination of annual Partner reporting and collaboration that addresses habitat restoration, enhancement, and the removal of threats.

UIC is applying for the EOS Permit that will establish this Agreement. The University of Illinois System (including UIC) is a body corporate and politic of the State of Illinois and is a 501(c)(3) organization. As part of UIC, the Energy Resources Center (ERC), located within the College of Engineering at UIC, will serve as the lead department. The ERC is an interdisciplinary public service, research, and special projects organization that works to improve energy efficiency and the environment. Originally created to be a "fast response" team of experts, the ERC currently provides technical assistance, sophisticated modeling capabilities, educational outreach, and program implementation across the public and private sectors. The ERC is committed to providing the most comprehensive and up-to-date solutions to the energy and environmental problems affecting institutional, industrial, residential, and commercial sectors.

The ERC organizes the Working Group, which formed in 2015 as a forum for industry to collaborate and share ideas on habitat conservation on working landscapes, particularly within transportation and utility rights-of-way. Today, more than 200 transportation, energy, government, and non-profit organizations across the U.S. and Canada are engaged in the Working Group. Representatives from the organizations involved in the Working Group are subject matter experts regarding industry operations, environmental regulations, and opportunities for meaningful conservation.

The Working Group’s stated mission is to engage diverse stakeholders in a collaborative environment that promotes pollinator habitats and healthy ecosystems on energy and transportation lands by providing expertise, cost-effective best management practices, and industry-driven tools and resources. In doing so, the Working Group provides educational and networking opportunities, leverages knowledge, and resources across sectors, and serves as a central point for coordination and information exchange on managed habitat in the transportation and energy sectors. The Working Group builds broad industry engagement in strategies that will benefit not only the monarch butterfly and bumble bees but also model conservation collaboration for other pollinator species of concern. The development of this Agreement is one such strategy that promotes voluntary conservation action among non-federal landowners.

3.2 U.S. Fish and Wildlife Service

The Service, by delegation from the Secretary of the Interior, is responsible for the implementation and enforcement of the ESA with respect to certain species, including the covered species if listed. The Service is authorized to enter into this Agreement and to issue the associated EOS Permit by 50 CFR §§ 17.22(c), 17.32(c) under relevant ESA Section 10 permitting policies. The Service is responsible for overseeing the administration of this Agreement and for monitoring and enforcing the terms of this Agreement and EOS Permit, as necessary.

3.3 Partners

The Partners in this Agreement are non-federal and federal entities that manage lands associated with energy and transportation uses and who choose to enroll lands in this Agreement. The Applicants eligible to become a Partner in this Agreement are any person or entity with a fee simple, leasehold, easement, or other lands interest on lands managed for energy and transportation purposes. Partners must be able to carry out the conservation measures and other covered activities described in this Agreement and the attached CI, subject to applicable local, state, and federal law, on enrolled lands within the extent of the plan area. By executing a CI (Appendix B) or a version thereof, the Partner agrees to the obligations and responsibilities identified in the CI and this Agreement.

3.4 Advisory Committee

The purpose of the Advisory Committee is to provide collaborative support to the Program Administrator so that they can implement this Agreement and make decisions based upon informed guidance and recommendations of enrolled Partners. The Program Administrator will be the primary decision maker regarding participation in this Agreement, using the informed perspective of Advisory Committee members.

To align with the existing Advisory Committee for the Monarch CCAA, the Advisory Committee will consist of 12 Partners enrolled in this Agreement. Of these 12 members, six will be representatives of the energy sector (generation, distribution, and transmission) and six will be representatives of the transportation sector (interstate, state, county, and local roads, freight and passenger rail, and canals). Initial membership will consist of existing Advisory Committee members supporting the Monarch CCAA program as we expect the same or similar Partners to be interested in enrolling in this Agreement. Partner members will be permitted to serve on the Advisory Committee for a term of three years initially, with a potential for a six-year term if nominated and re-elected by the standing Advisory Committee. In addition to Partner members, the Advisory Committee may also contain several permanent, non-voting members that may include representatives of the Program Administrator, the Service, or other organizations that represent current or potential Partners to the Agreement.

This committee will support the Program Administrator in the decision-making process and will review, discuss, and advise on questions that arise over the duration of the Agreement. The Advisory Committee will be expected to adhere to the terms and conditions of the committee bylaws, which initially will be the existing Monarch CCAA Advisory Committee bylaws. Upon request of the Program Administrator, the Advisory Committee will provide decision support related to enrollment approval, modifications or amendments to the Agreement, termination/suspension/transfer of Partners under the Agreement, or other topics requiring consideration.

4 Enrolled Lands

Applicants may enroll properties in the Agreement, including owned, leased, and easement lands, and lands owned by permits and/or other agreements within the plan area as set forth in this section.

4.1 Plan Area

This Agreement encompasses a plan area consisting of energy and transportation lands within the ranges of covered species across the contiguous U.S. (Figure 4-1).

4.2 Enrolled Lands

Within this plan area, Partners may enroll their energy and transportation lands as enrolled lands. Enrolled lands may include both non-federal and federal lands, as follows:

- Enrolled lands not under federal ownership are those where the Agreement assurances apply and on which incidental take of the covered species is authorized by the Service under the EOS Permit.
- Enrolled lands under federal ownership that are either:
    - Lands where a non-federal Partner maintains an interest (via easements, leases, permits, or other agreements) located on federal lands for support of energy or transportation infrastructure, which may include work associated with conservation measures and other covered activities described within this Agreement, or

- Lands where a federal Partner is an agency that maintains an interest (via fee lands, easements, leases, permits, or other agreements) located on federal lands for support of energy or transportation infrastructure, which may include work associated with conservation measures and other covered activities described within this Agreement.

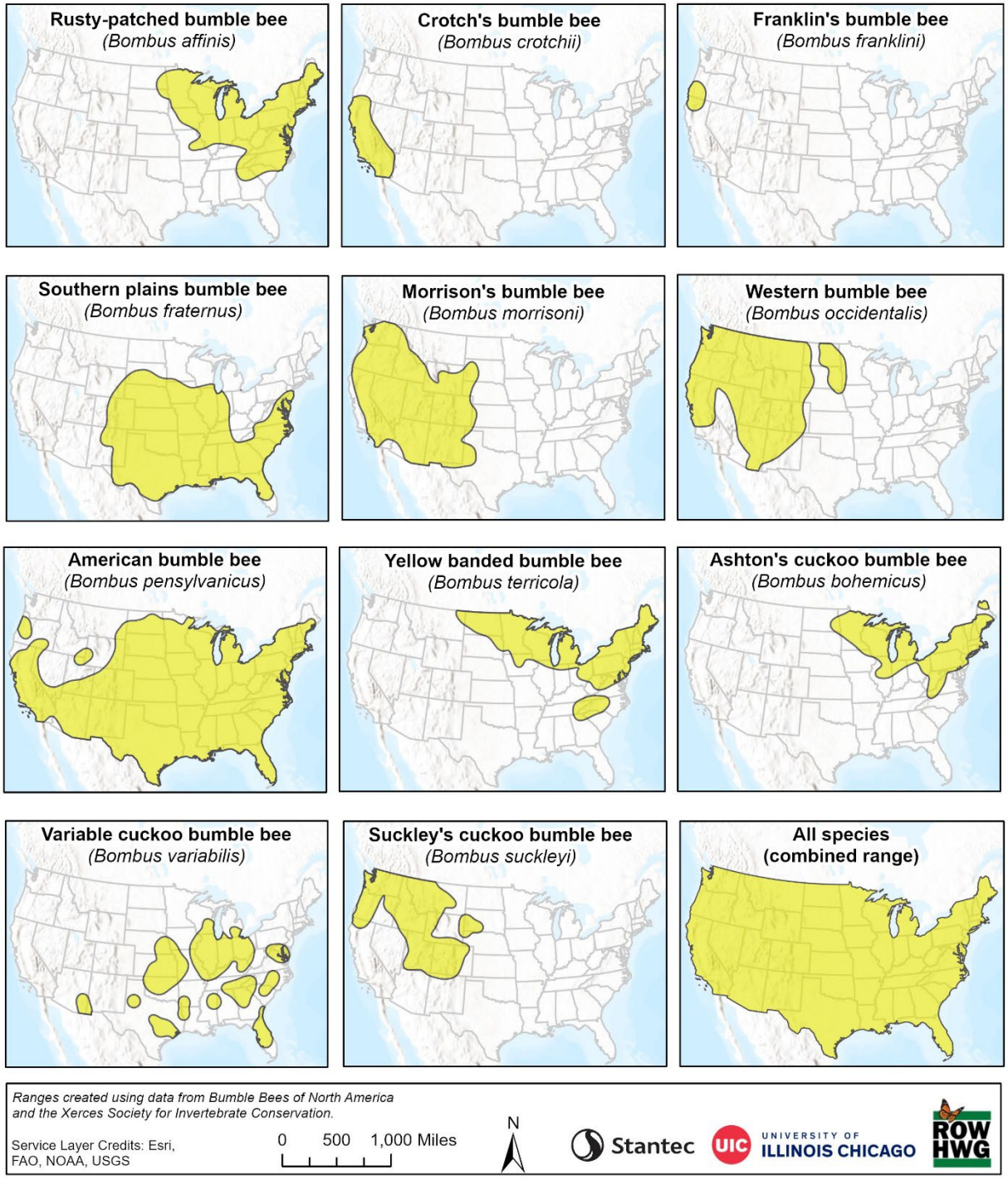
Assurances and incidental take are not authorized through the EOS Permit on federal lands, but Partners have regulatory predictability through the ESA Section 7 consultation conducted in association with this Agreement.

Enrollment of lands under this Agreement is voluntary. This Agreement will cover those properties that have existing, historical, or potential suitable habitat for covered species where they are likely to or have been documented to occur within their range(s) (Figure 4-1). Enrolled lands may include all or some combination of suitable habitat types, or areas with the potential to create those habitats.

An application for a CI will be completed and signed to enroll proposed lands. Each application will include the required elements summarized in Section 4.4 of this Agreement (Enrollment Process).

Figure 4-1. Covered Bumble Bee Species Range Maps

Estimated ranges of the initial covered species of bumble bees included in this Agreement within the contiguous United States. Ranges are based on current and historic observations.



4.3 Enrollment Period

Eligible Applicants may be enrolled at any time over the duration of this Agreement. Enrollment through the process described below in Section 4.4 of this Agreement (Enrollment Process) must be completed.

For this Agreement, lands owned, leased, easement-held, or otherwise managed by enrolled Partners, including lands acquired post-listing, can be added, transferred, or removed, to/from the existing enrolled lands as a modification to the CI (as explained in Section 9.2 of this Agreement, Modification of Certificates of Inclusion) to encourage consistent land management, maintained enrollment, adoption of conservation measures, and increased habitat managed for covered species. Changes in enrolled lands (added or removed) will be documented in Partner annual reports and submitted to the Program Administrator and the Service, and modifications will be made to the Partner's CI according to the requirements summarized elsewhere within this Agreement (Sections 4.5, Prioritizing Applications, 9.2, Modification of Certificates of Inclusion, and 14.1, Compliance Tracking and Reporting).

4.4 Enrollment Process

The enrollment process for this Agreement is illustrated in Figure 4-2.

Figure 4-2. Overview of the Agreement Enrollment Process

4.4.1 Enrollment Steps

1. **Pre-application Review**: Interested Applicants are encouraged to conduct the following pre-application review steps prior to applying for enrollment in the Agreement:

   a. Applicant reviews the Agreement range maps to determine potential overlap with covered species, estimated bumble bee ranges, and mapped occurrences.

   b. Applicant selects lands to enroll based on available mapping and estimates acreages based on the best tools available to them:

      i. Total enrolled lands acres, described in Section 4.2 (Enrolled Lands), plus

      ii. Baseline acres (semi-natural and natural cover) within mapped occurrences. Baseline determination is required for Applicants and provides the option to return to baseline conditions prior to CI termination or the EOS Permit expires. See Section 4.4.3 (Baseline Determinations) for additional information regarding baseline determinations.

c. The Applicant will also review the Agreement obligations, define their anticipated enrolled lands, and identify the conservation objectives, species threats, conservation measures, and land cover types applicable to covered species on enrolled lands.

d. If the Applicant has remaining questions about application preparation or enrollment, the Applicant will contact the Program Administrator.

2. **Application Preparation**: The Applicant shall provide the Program Administrator with sufficient information regarding the lands they seek to enroll so that the Program Administrator can verify whether the Partner operates in the plan area and is eligible for enrollment. The Applicant will collect the following information to help characterize the lands they plan to enroll:

   a. A description of land use and operations, including the estimated acreage included within the portion, or full extent, of the lands to be enrolled. The Applicant will supply a total estimated acreage of lands proposed for enrollment, including an estimate of annual average acres where conservation measures will sustain potentially suitable habitat, see “Definitions” in the CI (Appendix B).

   b. The conservation measures and other covered activities, as well as relevant geographies to be included for any take authorization that may occur above the baseline condition are defined in the Applicant’s CI. It is in a Partner’s best interest to be strategic and specific about the activities and geographies enrolled, so it is clear which activities are covered under the Enhancement of Survival Permit.

   c. A map(s) or Geographic Information System (GIS) file(s) of the extent of lands proposed for enrollment that identifies areas by fee simple, easement, leasehold, or other lands interest.

   d. The conservation objectives targeted by the Applicant enrollment as described in Section 6.3.1 of this Agreement (Conservation Measures Selection).

   e. A description of conservation measure commitments in the CI, and how those conservation measures will be implemented. The Applicant will generally describe the locations or opportunities throughout their lands where conservation measures will be applied and any anticipated constraints to implementing the conservation measures described in Section 6 of this Agreement (Conservation Measures).

   f. Timeline for achieving the full extent of conservation measures specified in the application. It is anticipated that most Partners will be able to fully implement their enrollment commitments in the first full calendar year following their CI approval.

      For Partners that may require additional time to fully achieve their commitments, they have the option to define their “ramp-up” period, which may include up to five years from the date of their fully executed CI to achieve full implementation across all enrolled lands. Listed covered species will not be eligible for take coverage until all commitments are fulfilled by a Partner or authorized otherwise by the Service. The application will outline the timeline for achieving full implementation and forecast the expected annual acres of conservation measures that can be achieved in the interim period (no longer than five years) until full enrollment is achieved. For CI approval, Applicants that include a ‘ramp-up’ timeframe will also include a subsequent commitment duration demonstrating the full enrollment and net conservation benefit intended within the Agreement for at least five years at the full implementation (Section 9.5, Renewal).

   g. Estimated baseline acres and conditions. Baseline acres consist of mapped natural land cover suitable for covered species located within mapped occurrences at the time of enrollment. Baseline acres allow for quantification of acres over baseline at some future date, which can be applied to take of covered species only at levels at or above the original baseline condition. Baseline acres may be estimated through the determination process identified in Section 4.4.3 of this Agreement

(Baseline Determinations), or the most current guidelines available for calculating baseline acres available in the Agreement Toolkit.

Baseline conditions will be determined by completing the first year of monitoring required as described in Section 14. The initial year of field monitoring will serve as part of the baseline condition for the enrolled lands to represent and communicate the net conservation benefit.

h. Planned monitoring that the Applicant intends to conduct as described in Section 14 of this Agreement (Monitoring Provisions).

i. Acknowledgement that an implementation plan will be completed within one year from the date of their fully executed CI. Partners already enrolled in the Monarch CCAA may update or modify their existing implementation plan to incorporate considerations for both the Monarch CCAA and this Agreement in a combined implementation plan. An implementation plan will be created by the Partner and address the following:

    i. Roles and responsibilities - who (within their organization) is involved in implementation of the conservation measures, and applicable communication structure.

    ii. How the Partner intends to implement the conservation measures, tracking, monitoring, adaptive management, and reporting required in the Agreement, including:

        > Timing and prescriptions for conservation measures,

        > Timing expectations for tracking, monitoring, and reporting,

        > Targeted implementation ramp up periods and targets (if applicable),

        > Proposed approach to implement monitoring,

        > Adherence to any applicable quality control procedures internal to the Partner organization, and

        > Funding for implementation (whether funding for conservation measures and other requirements comes from capital expenditures or operations and maintenance budgets).

        > Use of best management practices and guidance available on the Bumble Bee Agreement Toolkit website.[10]

j. ESA Section 7 analysis information needed by the Service to ensure that actions carried out under the Agreement will not jeopardize any listed or proposed species or destroy or adversely modify designated or proposed critical habitat. This will include:

    i. A full list of the federally listed endangered, threatened, and proposed species generated from the Information for Planning and Consultation (IPaC) tool that may occur within the extent of enrolled lands and of any designated or proposed critical habitats that overlap with those lands.

    ii. Specific measures that the Partner will use in conjunction with their implementation of the covered activities including program-specific conservation measures to avoid or minimize effects to each of the plants and critical habitats (for plants and animals) on the list.[11]

[10] An existing integrated vegetation management (IVM) plan (if consistent with conservation measures proposed in the application and includes all information listed above) may suffice for this description or provide the basis for one.

[11] Additional avoidance and minimization measures for federally listed wildlife may be requested by the Service for populations or locations known to be at higher risk of extirpation potentially resulting from covered activities.

iii. If an Applicant's enrolled lands completely overlap their lands enrolled in the Monarch CCAA, then the existing ESA Section 7 analysis conducted for that agreement may fulfill the Section 7 analysis needs for the Agreement with the inclusion of any species or critical habitat proposed or finalized since the Applicant's enrollment in the Monarch CCAA. Applicants will note this within their application and provide a copy of the most up-to-date Section 7 analysis as an attachment, subject to Service review.

iv. See *Guidelines for Section 7 Consultation Application Requirements for Certificate of Inclusion Applicants* in the Agreement Toolkit for detailed guidance on these two steps.

k. Acknowledgement that, as a Partner,

i. Organizations are responsible for their own compliance with applicable state and federal laws related to listed species, historic and cultural resources, and other environmental resource protection. The Service's protocol for complying with Section 106 of the National Historic Preservation Act (NHPA) is included as part of Appendix C (Supplemental Information), and

ii. The organization will communicate and coordinate with underlying landowners (as necessary) regarding the terms and conditions of the EOS Permit.

This information will be used to process and prioritize the application's review by the Program Administrator, and verify Applicants understand requirements necessary to fully implement the Agreement. Once compiled, the Applicant will supply the application package to the Program Administrator.

3. **Application Review**: The Program Administrator will prioritize applications (if necessary) received by application date, baseline acres, anticipated acres of conservation measures being implemented, and other decision factors determined by the Program Administrator, if applicable (see Section 4.5 of this Agreement, Prioritizing Applications). The Program Administrator will review applications and be responsible (with support from the Service, as warranted) for the final decisions on application approvals. The Service will review applications to confirm consistency with the intra-Service ESA Section 7 consultation.

4. **Certificate of Inclusion Issuance**: Once the individual application is verified for completeness and satisfies the requirements of this Agreement, the Program Administrator will provide the Applicant with an approved CI (see Appendix B) under the Service-approved EOS Permit (which takes effect for covered species listed under ESA) and programmatic consultation document.

   Upon signature of the CI by both the Applicant and the Program Administrator, the Applicant officially becomes a Partner under this Agreement. The application will remain on file for the duration of the Partner's involvement in the Agreement. The Program Administrator will provide the Service a copy of the signed CI and application within 30 days of the issuance of the CI. Within 90 days from the date the Applicant executes the CI, the Applicant will remit to the Program Administrator the administrative fees as described in Section 17 of this Agreement (Administrative Fees).

4.4.2 Consortium Applications

In most cases, Applicants are expected to consist of single companies or transportation agencies. However, some Partners may already operate contractually, or in conjunction with other companies or agencies (i.e., generation and transmission cooperatives, energy corporations with subsidiary companies, and local road authorities that operate in conjunction with state transportation agencies). Where preferred for operational flexibility, applications can consist of consortiums of several organizations provided that:

a) All interested organizations in the consortium are named Applicants and named permittees on the CI, and understand that all are responsible for maintaining compliance (i.e., if one of the interested and named consortium members is out of compliance, all the interested and named members are

out of compliance),

b) One Applicant in the consortium is designated the point of contact and CI administrator for the consortium. This contact will act as the consortium administrator in relation to the subsidiary Applicants and be responsible for tracking and demonstrating overall consortium compliance,

c) The enrolled lands estimated account for the full extent of all Applicants included,

d) All other application requirements can be fulfilled for all consortium Partners, and

e) The terms and conditions of this Agreement can be upheld by all consortium Partners included. Consortium applications are subject to all other requirements (tracking, monitoring, and reporting) of the enrollment process and the Agreement. Applying as a consortium is one method that Partners can use to work closely together to find efficiencies in monitoring and applying conservation measures.

Once the Agreement is authorized and a CI is issued, the consortium Partners implement the conservation measures they have committed to under the Agreement, and then track, report, and monitor their contributions to the Agreement according to the requirements described herein. The enrollment and implementation process are summarized in Figure 4-2.

4.4.3 Baseline Determinations

Baseline determination is required at enrollment in the Agreement so that net conservation benefit to covered species may be documented. If or when a non-federal Partner decides to unenroll from the Agreement, non-federal Partners have the option of returning to baseline by determining the acres over baseline that were generated over the duration of their enrollment. Returning acres to baseline may be subject to other laws, land rights, restrictions, or authorizations applicable to the Partner. Acres over baseline can only be achieved if the covered species has been documented as expanding across enrolled lands geography and mapped natural land cover used for calculating acreage is similar or higher than the original baseline.

Federal Partners enrolling under the integrated CCA are not required to estimate baseline nor able to return to baseline but may use a baseline estimation to support demonstration of conservation benefit for Section 7 consultation for the covered species.

Timing

Applicants must determine baseline acres at the time of enrollment. Once enrolled, Partners may conduct baseline modifications associated with modifications to their original CI either when new acreage or a covered species is added. Any lands removed as a result of a Partner's CI modification will be excluded from final acres over baseline calculated. Only the extent of enrolled lands at the time of CI termination will be used to determine acres over baseline.

Determination Process

Partners will complete the following process to determine their baseline acres at the time of enrollment. Partners may need to amend their baseline estimates when covered species or enrolled lands are added or removed. When a Partner notifies the Program Administrator of their CI termination, this same process may be repeated with the extent of enrolled lands and most current bumble bee occurrence area data available to determine their final acres over baseline.

The protocol described below may be periodically updated over the duration of the Agreement as new datasets and analysis technologies become available. If updated, the most up to date version of this process will be published within the Bumble Bee Agreement Toolkit.

When enrolling, Applicants should review the bumble bee occurrence area data first and determine the appropriate option for their planned enrollment.

- Option 1. If the Applicant's planned enrollment *does not* intersect any mapped bumble bee occurrence areas, then there are zero baseline acres at the time of enrollment.
- Option 2. If the Applicant's planned enrollment *does* intersect any mapped bumble bee occurrence areas, then they are required to complete the baseline acres determination at the time of enrollment.

Data needed to determine baseline acres at the time of enrollment include:

- Most recent version of the bumble bee occurrence area data,
- Most recent version of the National Land Cover Database (NLCD) data, and
- Geospatial data (ROW or parcel boundaries, centerlines, etc.) representing the enrolled lands.

Once relevant data is in hand, Partners should use the following steps to complete the determination. Determination will require the use of GIS software such as ArcGIS Pro or similar.

1. Ensure geospatial data representing enrolled lands is adequately mapped. For example, if raw data representing enrolled ROW are comprised of centerlines, buffer the lines as necessary to generate approximate polygons based on ROW width(s).
2. Once enrolled lands data have been verified, buffer enrolled lands polygons by 200 feet and overlay the NLCD raster to this buffered area. This buffer will ensure that overlap between the NLCD data and Partner enrolled lands is complete.
3. Once clipped, convert resulting NLCD raster data to multipart vector polygon features based on land cover classes.
4. Add a field to the attribute table of the resulting NLCD polygons labeled "Suitability." Assign values of "*suitable*" or "*unsuitable*" based on land cover class.[12] Land cover classes *suitable* for covered species baseline acreage include natural and semi-natural cover that may offer foraging, nesting, or overwintering habitat. Land cover classes that are *unsuitable* include lands that are unlikely to offer foraging, nesting, or overwintering habitat for covered species. Suitability for each NLCD cover class is specified in Table 4-1, below.
5. After adding suitability field, clip the NLCD polygons to the enrolled lands area (non-buffered).
6. Clip the resulting polygons further to only bumble bee occurrence area polygons. You will do this independently, for each bumble bee species you are seeking to cover under this Agreement. For example, baseline will be calculated on a species basis for rusty patched bumble bee, and separately, also on a species basis, for American bumble bee.
7. To the resulting layer, the NLCD polygons within both the enrolled lands and bumble bee occurrence areas, add a field to the attribute table labeled "Acreage," and use the Calculate Geometry function to calculate the acreage of each feature.
8. To estimate baseline acres, find the sum of all suitable acres of land within bumble bee occurrence areas within enrolled lands boundaries.

[12] Suitability is intended for the purposes of baseline determination only. Covered species are habitat generalists and adaptable to various site conditions. Real world conditions and regulatory determinations may result in different site-specific suitable habitat determinations based on conditions observed at their time of consideration. Suitability designations for baseline determination purposes quantify land covers that are most reliable in providing suitable habitat for covered species. Categories classified as "suitable" broadly align with the highest suitable habitat values identified for non-crop cover types in Koh et al. (2017).

Table 4-1. NLCD Landcover Classes and Respective Suitability as Potential Baseline Habitat for Covered Species.

Color	Code	Name	Suitability
	11	Open Water	Unsuitable
	12	Perennial Ice/Snow	Unsuitable
	21	Developed, Open Space	Suitable
	22	Developed, Low Intensity	Suitable
	23	Developed, Medium Intensity	Unsuitable
	24	Developed, High Intensity	Unsuitable
	31	Barren Land (Rock/Sand/Clay)	Unsuitable
	41	Deciduous Forest	Suitable
	42	Evergreen Forest	Suitable
	43	Mixed Forest	Suitable
	51	Dwarf Scrub	Suitable
	52	Shrub/Scrub	Suitable
	71	Grassland/Herbaceous	Suitable
	72	Sedge/Herbaceous	Suitable
	73	Lichens	Suitable
	74	Moss	Suitable
	81	Pasture/Hay	Suitable
	82	Cultivated Crops	Unsuitable
	90	Woody Wetlands	Suitable
	95	Emergent Herbaceous Wetlands	Suitable

Baseline assessments of habitat condition help characterize the net conservation benefit of habitat sustained on enrolled lands through Partner commitments. Habitat condition data will be collected by monitoring conducted during the first five years of enrollment on suitable habitat within enrolled lands. Monitoring plots will be sampled in accordance with the protocols and requirements outlined in Section 14 (Monitoring Provisions). The results of this first five years baseline assessment will be provided to the Program Administrator in conjunction with the annual reporting requirements described in Section 14 of this Agreement.

The sample size, annual variation in plot locations, regional or climate variations, and randomly selected plot placements limit the ability of a single year's monitoring effort to fully represent the diversity or richness of habitat features across enrolled lands. Therefore, while the first five years of data provides the initial comparison of habitat condition, a single year's data may not be considered an absolute metrics for baseline conditions. Instead, these data can be used to illustrate the variability of habitat conditions on enrolled lands. Over time, comparisons may be supported by sampling original baseline data locations, or comparison to aggregate monitoring data collected by the Partner. Partners opting to support research as a conservation measure in lieu of field-based monitoring may use Tier 2 or Tier 3 scorecard results (or similar) from their prior year's Monarch CCAA monitoring results as an indicator of habitat conditions. If not previously enrolled in the Monarch CCAA, then Partners opting to support research as a conservation measure would either 1) use the completed research if it collects data aligned with variables described in Section 14, or 2) a subsequent and initial monitoring effort of their enrolled lands.

Return to Baseline Tracking

When a Partner notifies the Program Administrator of their desire to terminate their Certificate of Inclusion, the Partner is responsible for defining the number of acres and timeline needed to return enrolled habitat acres to baseline levels identified during initial enrollment. The Partner's return to baseline plan will be provided to the Program Administrator and Service for compliance verification.

For covered species, the Partner will be responsible for maintaining a ledger to document reductions in covered species habitat to verify that no losses below baseline levels are authorized by the Service. The ledger will be provided to the Program Administrator and Service for verification. Each ledger will contain the following fields to summarize the acres over baseline calculated:

- **Covered species name** - Add the names of species for which coverage was granted through the Agreement in the "Covered Species" cells.
- **Baseline acres calculation date** – The date of the original baseline determination at enrollment.
- **Baseline acres calculated** – Acres by species of the original baseline determination at enrollment.
- **Acres over baseline calculation date** – The date of the determination made post-enrollment.
- **Acres over baseline calculated** – The result of post-enrollment acres minus original baseline acres.
- **Authorized Service approval date** – Verification of estimate provided by an authorized Service representative.

The Program Administer will provide a template ledger for Partner use within the Bumble Bee Agreement Toolkit. A Partner must use the required ledger documentation in order to receive incidental take coverage prior to Certificate of Inclusion termination. Each ledger will summarize:

- **Covered species name** - Add the names of species for which coverage was granted through the Agreement in the "Covered Species" cells.
- **Acres over baseline calculated** – The result of post-enrollment acres minus original baseline acres.
- **Activity** – A short descriptor of the activity expected to result in take.
- **Acres removed by activity** – The amount of acreage either permanently or temporarily removed as a result of the activity. The resulting acreage of temporary impacts may be determined by coordination between the former Partner and Service prior to the activity.
- **Balance remaining** – The remaining acres over baseline resulting from the subtraction of losses resulting from the cumulative activities authorized by the Service to ensure net conservation benefit is maintained by the Agreement.

Should a Partner decide to terminate their Certificate of Inclusion (see Section 9.6 of this Agreement), the Partner, Program Administrator, and the Service will determine a schedule for termination providing ample time to return the Partner's property to the baseline condition, if the Partner elects to do so (see 50CFR 17.22(c)(viii)). Partners are not obligated to return to baseline prior to final Agreement termination but forego take coverage for acres over baseline upon their Certificate of Inclusion termination. As Partner timing and constraints may vary, timelines for Certificate of Inclusion termination will be negotiated individually by Partner when they indicate a desire to leave the Agreement. Partner constraints, such as land rights or ownership (lease, easement, or other legal property agreement) may impact a Partner's ability to return to baseline and must be considered during this process. Returning acres to baseline may be subject to other laws, land rights, restrictions, or authorizations applicable to the Partner.

While implementing the return to baseline, a Partner will still be subject to the Agreement requirements for conservation measures, monitoring, reporting, and other administrative commitments identified. However, conservation and monitoring are exempted for those acres where return to baseline is undertaken. For every activity that requires take authorization of a covered species, the terminating Partner will be required to determine the acres of habitat impacted as a result of the proposed activity. The terminating Partner is required to maintain this ledger until the balance remaining for all covered species equals zero acres, or the Certificate of Inclusion is terminated, whichever comes first. At this point, coverage for activities under this Agreement will no longer be valid, and other take permits may be required. See Section 9.6.2 for additional information regarding return to baseline.

4.5 Prioritizing Applications

If necessary, the Program Administrator will prioritize applications based on the following criteria:

1. **Application date** – First, applications will be reviewed in the order in which they are received.
2. **Expected net conservation benefit** – If two applications are received on the same day, the application providing a higher net benefit will be reviewed first. Net benefit will be evaluated by:
    a. Amount of baseline acres (i.e., Applicants with more baseline acres of covered species will receive priority).
3. **Support during phases of Agreement development** – Further prioritization will occur based on previous Applicant support. After considering the two previous priority factors, Applicants that supported UIC during development of the Agreement during Phase 1 (Initial Draft Agreement Preparation), Phase 2 (Agreement Review and Finalization), and/or Phase 3 (Early Implementation Transitioning) will be considered in the next tier of prioritization. In order of consideration will be:
    a. Applicants that have supported Phases 1, 2, and 3.
    b. Applicants that have supported 2 out of 3 phases.
    c. Applicants that have supported only one phase.
4. **Other decision factors determined by the Program Administrator** – Last, as applications are reviewed, other factors may affect the Administrator's decision on which applications to prioritize. Other factors may include program-specific considerations such as application completeness, or modifications required to authorize the CI. Applications requiring additional information or corrections may be delayed to allow processing of other applications while the Administrator awaits a response from Applicant information requests. Upon receipt of the required information, the Program Administrator will re-instate the priority of the application according to the first two prioritization criteria (date received and net benefit).

4.6 Changes to Enrolled Lands

After the effective date of the CI, Partners and the Program Administrator will update the Partner's description of lands to reflect approved additions to enrolled lands, plus any removal of enrolled lands resulting from transfer of ownership, changes in consortium members, voluntary removal by the Partner or termination of enrollment because of noncompliance as provided in Sections 7, 8, and 9 of the Agreement. The Program Administrator and the Service will ensure enrolled lands are within the expectations of the program consultation and that net conservation benefit is still being met on enrolled lands. The Program Administrator will summarize the collective program changes in enrolled lands to the Service through annual reporting requirements.

As an example, changes in enrolled lands proposed by the Partners will be processed by the Program Administrator as a modification to the Partner's CI (Section 9.2 of this Agreement, Modification of Certificates of Inclusion). Energy and transportation lands occasionally transfer between entities for

administrative, logistical, or operational purposes. Maintaining consistency in management of conservation measures and regulatory assurances over time is an important requirement for participation by these industry Partners. Doing so minimizes management confusion, inconsistency in conservation practices, and compliance risks. In turn, this promotes ongoing engagement by Partners and commitment to conservation measures and benefits produced by this Agreement. Section 9.2 of this Agreement (Modification of Certificates of Inclusion) explains modifying enrolled lands through changes to CIs in detail.

4.7 Description of Lands Covered

This section describes the types of lands considered under the term “energy and transportation lands” and the operational considerations, opportunities, and constraints for bumble bee conservation on these lands. This Agreement addresses opportunities and constraints through the adaptive management flexibility to strategically place conservation measures where they benefit bumble bees and where land use and authorities are compatible. Partners have options for shifting placement of conservation measures over time to address conservation needs of the species, interests of other underlying or adjacent landowners, local laws, regulations, or other constraints that may limit the ability to apply conservation measures.

Covered lands are broadly defined as lands that are managed by lease, easement, fee-ownership, or in other agreements for the purposes of supporting energy and/or transportation uses. Energy uses include the energy generation, transmission, distribution, and storage derived from a range of energy sources. Transportation networks consist of the interstates, highways, local roads, railroads, pipelines, cabling, canals, and other transportation routes used for the movement of people, data, goods, commodities, products, and related services. Energy and transportation lands are ubiquitous across the North American landscape, located across mountains, forests, grasslands, deserts, farms, parks, and cities. Though often overlooked as terrestrial habitat, energy and utility rights-of-way comprise about 12 million acres of land in North America (Peterson et al. 2015 as cited by the Midwest Association of Fish and Wildlife Agencies (MAFWA) 2018a), and transportation rights-of-way, including those along roads and railroads, represent even greater acreage of habitat. State Departments of Transportation (DOT) managed roadsides alone consist of over 17 million acres of land in the U.S. (Hopwood et al. 2015). Other development related to transportation of information and data, including broadband and fiber corridors and data centers, are greatly expanding throughout the country. These facilities may be co-located on other energy or transportation lands and may require similar vegetation management practices. Not excluding areas of overlap, these energy and transportation lands comprise nearly 35 million acres, or 1.8 percent of the contiguous U.S. land base.

4.7.1 Conservation on Energy and Transportation Lands

Energy and transportation lands, particularly those managed using Integrated Vegetation Management (IVM), have the potential to be held in grassland, meadow, prairie, or shrub-scrub type communities (Lanham and Whitehead 2011) that may sustain bumble bees and other invertebrate pollinators, especially when those habitats provide abundant and/or continuous floral resources (Darst et al. 2024; Payne et al. 2024; Goulson et al. 2015; Hemberger et al. 2023; Roulston and Goddell 2011). When applied in a limited extent or frequency, habitat maintained by these tools can support undisturbed nesting or overwintering areas for covered species (Hatfield et al. 2012; Schweitzer et al. 2012). This combination of foraging, nesting, and overwintering habitats help link fragmented habitats and offer covered species refugia in landscapes posing other threats to their survival (Hopwood et al. 2015). As such, energy and transportation lands present an incredible opportunity to provide valuable wildlife habitat to species that depend on early successional plant communities and structures, such as bumble bees (Hill and Bartomeus 2016; Russell et al. 2005; Russell et al. 2018; Steinert et al. 2020). This Agreement acknowledges the important role these lands have in pollinator conservation by:

- **Protecting and sustaining covered species habitat.** While not protected as traditional permanent conservation lands, many energy and transportation lands are either fee-owned lands,

leases, easements, or subject to other land management agreements. Their designated area for operations and widths required for safety and security help (either temporarily or permanently) protect many acres of natural vegetation from future conversion or development. As a result, these lands can support acres of sustained, managed areas for pollinators.

- **Enhancing and improving covered species habitat.** Vegetation management is a regular requirement for nearly all lands and easements enrolled in this Agreement. By committing to the conservation measures contributing to conservation objectives for covered species on their lands, Partners will conduct vegetation management in a manner that may enhance habitat resources and address recovery needs for covered species. Over time, these best practices will not just sustain habitat on lands enrolled but also enhance and improve conditions for bumble bees and other insect pollinators across wider landscapes surrounding enrolled lands.

- **Restoring and expanding covered species habitat.** Partners enrolling in this Agreement are tasked with building, maintaining, and upgrading energy and transportation infrastructure of the U.S. While restoring habitat may not be a primary function of their operations, actions such as planting of native species, and using vegetation management to enhance suitable habitat (where allowed by land ownership and operational constraints), have the potential to restore, connect, and expand the acres of habitat available to create a net conservation benefit (Russo et al. 2021, Russell et al. 2005).

- **Reducing exposures and direct impacts.** Land management can pose risks of direct impacts or indirect risks from physical, chemical, and biological exposures. Vehicle and equipment collisions, pesticide use, other chemical exposures, and use of commercial hives and colonies near locations where at-risk species are likely present are risks that can be reduced. Conservation measures included in Section 6 of this Agreement (Conservation Measures) address multiple risk exposures through adapting practices on energy and transportation lands.

- **Fostering increased monitoring and research**. Participation in the Monarch CCAA has resulted in over 6,000 individual datapoints being sampled for nectar plant coverage and presence of milkweed over the first four years of the program. In addition, supplemental measures conducted by Monarch CCAA Partners have facilitated support for research projects and partnerships that did not exist prior to that agreement. In a similar fashion, the Agreement may foster new research partnerships, involvement in existing citizen science programs, and strengthen knowledge and conservation of bumble bees. Increasing knowledge through monitoring and research provides a conservation benefit by expanding knowledge of populations, habitat quality, and species needs during different life stages.

The conservation objectives used to guide commitments within this Agreement are described in Section 6 of this Agreement (Conservation Measures). By adopting these beneficial practices, conservation measures will result in Partners making a net conservation benefit to covered species. Strategies for increasing or improving bumble bee and insect pollinator habitat on energy and transportation lands will vary depending on the ownership, safety concerns and regulations, and competing vegetation management objectives in any specific location. In addition to linear rights-of-way, energy and transportation lands also include individual parcels that may contain infrastructure associated with rights-of-way operations. Energy sector lands may include parcels for generation sites, substations, pump stations, operation centers, or other office or storage facilities. Transportation lands may include parcels dedicated to facilities such as rest areas, local storage and maintenance, and regional operations and management. Parcels are also obtained and maintained in preparation for future project needs.

While energy and transportation managers have management responsibility over the lands supporting their infrastructure, they may or may not have full ownership over those lands. However, via a range of possible land interests (fee-owned, leased, easement-held, land rights agreements, or by permit) they have control to implement vegetation management and the ability to adapt some of those practices as conservation

measures. Management of rights-of-way for biodiversity and target species is also encouraged in industry guidelines such as:

- Utility Arborists Association's *Managing Compatible Vegetation for Targeted Species and Biodiversity A Companion to the Integrated Vegetation Management Best Management Practice, 3rd Edition* (UAA 2022),
- American Petroleum Institute's *Guidance for Conservation Programs on Pipeline Right-of-Ways* (API 2022),
- Xerces Society's *Climate Smart Right-of-Way Habitat* Guidance (Xerces 2019).
- Federal Highway Administration's (FHWA) *Roadside Best Management Practices that Benefit Pollinators* (Hopwood et al. 2015),
- Xerces Society's *Habitat Enhancement And Best Management Practices In Highway Rights-Of-Way* (Xerces 2015).

Conservation leveraged under this Agreement can also support Partner organization sustainability initiatives aligning with the AR3T Framework recommended by the Science-based Targets Network (SBTN) and by the Taskforce for Nature-related Financial Disclosures (TNFD) (TNFD 2023). The AR3T Framework includes four types of actions contributing to nature-positive conservation: avoid, reduce, regenerate, restore. Each of these actions are represented by the conservation objectives and measures identified in this Agreement. The final aspect of AR3T, transformative action, is represented by systemic change inside Partner organizations strengthening or adopting new conservation practice as part of their business operations that contribute to species conservation and societal needs. Together, these actions can also contribute to the global goals for biodiversity outlined in the Kunming-Montreal Global Biodiversity Framework (GBF), which includes targets for at least 30 percent of land be conserved and managed through ecologically representative, well-connected, effective, area-based conservation measures, as well as targets for reducing invasive species and pollution impacts on biodiversity (UN-CBD 2022).

Energy and transportation lands are similar in the way they are managed in comparison to lands managed by other sectors or purposes. Across energy and transportation lands, similarities include:

- **Common management objectives:** Partners have lands that can be managed to maintain habitat for, and practices can be modified to benefit, covered species while supporting common operations, maintenance, and modernization activities associated with energy and transportation infrastructure.
- **Authority and control:** Partners have ability to manage vegetation and address the same conservation objectives on lands they have management interests in, whether fee-owned, leased, easement-held, or by permit.

4.7.2 Electric Utility Rights-of-Way

Electric utility rights-of-way can take many forms, as infrastructure specifics range from high voltage transmission power lines, switching stations and substations, to lower voltage distribution power lines. Depending on the voltage of the power line, the width of the right-of-way (ROW) can vary to meet engineering, construction, and operational standards that change depending on the voltage and type of line in any location.

Transmission Power Line Rights-of-Way

Transmission power lines are high-voltage facilities that provide the means for bulk movement of electricity from a generation site, such as a power plant, energy facilities, to an electrical substation. The distinction between transmission and distribution lines is largely determined by their function on the overall system. Transmission lines can have lower voltage, especially those serving small, more isolated, customers.

Transmission lines form a network, typically between the generation site and distribution substation, which provides a path for power to flow through a large area or region (Warwick 2002).

As mentioned above, the widths of the rights-of-way for transmission lines can vary by voltage. Technical references (such as the current version of FAC-003) from the North American Electric Reliability Corporation (NERC) lists the minimum distance from centerline of the circuit to the edge of the active transmission rights-of-way. These widths typically range anywhere from 50 feet to 200 feet in minimum total rights-of-way width.

While some electric rights-of-ways may occur on fee-owned lands, typically, electric rights-of-ways acquire rights from a landowner through an easement to locate the transmission line on their private lands. This provides the utility the right to construct, operate, maintain, and access the utility lines on the land. Easement agreements generally require implementation of rights-of-way BMPs designed to ensure that the power line structures and wires are kept clear of other structures and vegetation that may interfere with electric reliability. Landowners granting those easements may continue to operate the lands at their discretion if it is not prohibited in the easement agreement. This can create constraints in restoration and maintenance of rights-of-way vegetation if maintenance and care of natural land cover supporting pollinators does not align with the landowner's interest. In some cases, easements may only allow use of certain management tools (such as mowing or brush removal) or pose some other restriction. Such restrictions may impact which conservation actions are within the control of the utility. Successful implementation of this Agreement and its conservation measures may require coordination and communication with local landowners.

Transmission line rights-of-ways are commonly maintained on a vegetation management rotation that can range between three to seven years (shorter or longer depending on type of vegetation and other factors) and may include mowing, herbicide treatment and/or selective vegetation control. Rotation time is developed to ensure that required minimum vegetation clearance distances are maintained. With appropriate vegetation management, these locations can provide significant habitat opportunities for bumble bees and other insect pollinators. Many of the conservation measures included in this Agreement build on IVM practices that may be used on transmission line rights-of-way. Selection of the appropriate tools within the context of IVM may be dependent not just on bumble bee biological needs, but system safety and reliability, plus any other applicable easement restrictions.

Distribution Power Line Rights-of-Way

Distribution power lines are lower in voltage than most transmission power lines, providing the last leg of the electricity's journey to the end users, including homes and businesses. Distribution lines are typically the link between substations receiving power from the high-voltage transmission lines and the end user and may be situated either above or below ground. These linear rights-of-way are much smaller than the transmission line rights-of-way (linear rights-of-way are usually around 20 to 30 feet wide) and can be found in both developed urban areas and open rural areas. Distribution poles and lines are often located within existing road rights-of-way or developed lands. If a distribution line is located within a road ROW, the owner of the road holds title to and may maintain the vegetation within the easement (such as a state or municipal transportation department). Distribution lines may also be located on "cross-country" easements (i.e., linear corridors not adjacent to a road).

Like transmission line maintenance, rotations are developed to maintain required minimum vegetation clearance distances to avoid unscheduled outages of electric power. If distribution rights-of-ways are within an easement owned exclusively by the utility, they are commonly kept on a mowing and spraying rotation that can range between one to five years. This rotation also includes tree trimming where necessary to ensure overhead lines remain clear of branches. Also, like transmission line rights-of-way, distribution rights-of-way may be acquired through an easement.

Maintaining vegetation via easements presents the same challenges for rights-of-way restoration and maintenance for pollinator habitat (i.e., the easement-granting landowner maintains ultimate control of

those lands). However, unlike transmission lines, there is a greater degree of overlap with distribution and other rights-of-way and developed lands. In many cases, the entity overlapping the distribution easement (e.g., DOTs or private landowners) maintains primary management control over vegetation. This overlap inhibits the ability for distribution managers to control and manage vegetation within distribution rights-of-way. As a result, compared to other enrolled land types, distribution lines pose limited ability to contribute to conservation objectives for bumble bees through vegetation management conservation measures. Where they are co-located with other Partners in this Agreement, this Agreement allows for Partners to collaborate on conservation measures to ensure success. Partners will note where overlap of conservation measures occur with other Partners in their annual compliance reporting and the Program Administrator will work with Partners to ensure enrolled acres aren't double counted for the purposes of program totals.

4.7.3 Substations and Other Parcels

Substations can include switching stations, collector stations, and distribution stations. All serve the purpose of either providing reliability backup, changing electricity flow, or changing voltages from a higher voltage to a lower voltage or vice versa. Generally, these fenced-in stations are installed on a crushed rock pad to ensure proper drainage and that the electrically charged structures stay dry and safe. Vegetation growth is typically managed to little or no growth within the fenced, crushed rock pad as it may compromise the safety of personnel working at the site. Therefore, substations are typically on annual or more frequent maintenance schedules that require the application of a residual herbicide to prevent vegetation growth throughout the station. Substations can be of various sizes depending on the voltage and location.

Many stations may be located on larger pieces of land than is required for the station. These parcels may provide open space buffer zones outside of the fenced-in station, areas that are not covered in crushed rock, and may potentially be enhanced or planted into pollinator habitat. In some cases, these sites may be designed with stormwater ponds or other vegetated zones where pollinator habitat can be incorporated. Local municipalities may require screening vegetation via either ordinances or construction permits, but there may be opportunities to coordinate with municipalities to restore pollinator habitat.

Other parcels used to support electric uses may include office and storage facilities or other lands held in ownership or easement as buffering lands. These other parcels may vary in vegetation management requirements depending on the extent of existing or adjacent energy infrastructure. In some cases, these other parcels may allow for more flexible vegetation management regimes, dedicated restoration efforts, and demonstration projects.

4.7.4 Energy Generation Sites

Energy generation constitutes land managed for the generation of fuels and electricity and includes acreage surrounding energy generation sites, substations, and battery storage. Some lands maintained for current (or future) generation needs include land previously mined for coal, recreation areas, and lands leased to farmers, service centers and other buildings for employees and equipment, among others. Areas surrounding energy generation facilities may be maintained in low-growing vegetation which may or may not include floral or nesting resources used by bumble bees. Where compatible, incorporating native vegetation and sustaining diverse plant communities on energy generation sites can support a conservation benefit to bumble bees and other insect pollinators using these lands. Vegetation management on these parcels are covered under this Agreement to manage and maintain lands as pollinator habitat. Construction of new infrastructure (or related activities) on newly acquired, or previously undeveloped or unmaintained parcels not associated with existing infrastructure is outside the scope of what is defined as modernization, and thus, are not covered activities in this Agreement (Section 5, Covered Activities).

Constraints on vegetation may sometimes exist due to the requirements for energy generation infrastructure itself including safety, maintenance, and other conditions. Examples include buffer areas around a power plant that must be managed to ensure the plant itself is accessible, physically safe, and emergency

response ready. Companies that own generation facilities may proactively purchase additional lands around their facilities to serve as additional buffer lands, or when tentatively planning future projects.

Additional factors may include compatibility with operations, extent of prior land disturbance, buffers along waterways and wetlands, drought resistance, wildlife benefit, soil moisture content and drought tolerance, supply availability, cost of installation and maintenance, and the seeding rate. Neighbors or community relations may similarly influence the presence of pollinator habitat that may be addressed through education and outreach as well as thoughtful siting of pollinator enhancements. Some energy generation facilities may maintain large acreage of fee-owned buffering lands consisting of forest, shrubland, desert scrub, rangeland, grassland, or wetlands. Maintaining these lands with bumble bee conservation measures can help sustain and enhance these areas for recovery needs.

Some energy generation sites may be sited entirely via leases or easements with landowners. These easements often extend for the life of the generation facility (typically 20 to 30 years) and require the removal of all facilities at the end of the easement life. Depending on the terms of these easements, company management of lands surrounding the facilities may or may not be allowed. There may be limited potential for localized habitat restoration along access roads, or at operations and maintenance buildings. In situations where vegetation management rights are outside of the Partner's control, those lands may not be appropriate to enroll in the Agreement since the conservation objectives are outside the control of the Partner.

4.7.5 Pipeline Rights-of-Way

Like electric transmission and distribution, oil and gas rights-of-way commonly have a defined width according to diameter and pressure of the pipeline. A ROW easement allows the utility company to keep the easement clear of any trees or other structures that may interfere with the ability to operate and maintain the integrity of the pipeline, perform essential maintenance, or place additional lines in the ROW. Access to the ROW must always remain available to the utility company to walk or drive the entire line and perform safety inspections. Pipelines and their rights-of-way exist throughout the country in both urban and rural areas. Easement ownership of these structures depends on the location of the pipeline. Like electric rights-of-way, pipelines may be located or co-located within road rights-of-way owned by others or may be on private land in an easement owned exclusively by the utility. Like electric utilities, the oil and gas rights-of-ways are comprised of larger (intrastate, interstate, and interregional) transmission routes that transport high volumes to the smaller distribution network of smaller pipelines that ultimately end at homes, businesses, and other customers.

The rights-of-way associated with pipelines are generally easements on private lands and are either not owned by the utility or are within road rights-of-way where easements are held by a state or local transportation department. Typically, the utility acquires rights from private landowners through an easement to locate the pipeline on their lands. This provides the utility the right to construct, operate, maintain, and access the utility lines on the land. If current land practices promote appropriate vegetation management according to rights-of-way best management practices, the landowner may continue to operate the lands at their discretion if it is not prohibited by the easement document. Generally, a pipeline easement does not allow the planting of woody vegetation due to potential interference of root systems with pipes, or placement of structures over the top of the easement for safety.

The Pipeline and Hazardous Materials Safety Administration (PHMSA), through the Pipelines and Informed Planning Alliance (PIPA), has recommended practices to manage vegetation on rights-of-way that were developed by teams of industry representative stakeholders. Pipeline safety is the primary focus of these regulations. All pipeline managers are encouraged to become aware of, and implement, the PIPA recommended practices where appropriate. One such recommended practice is BL12, "Notify Stakeholders of Rights-of-way Maintenance Activities." Within this recommended practice is a discussion regarding the basis for maintaining the rights-of-way, specifically addressing vegetation management requirements. The PIPA states, "The transmission pipeline operator must maintain the rights-of-way vegetation so that it will

not hinder pipeline inspection and maintenance activities." As with other rights-of-way, managing for these activities requires the company to manage vegetation in a state of grasslands, or other open habitat, which may be suitable to bumble bee foraging and nesting habitat conditions.

Many natural gas distribution companies have assets that meet the definition of a transmission class pipeline and therefore fall under the above guidance. Like transmission class pipelines, there are no specific regulations for vegetation management on natural gas distribution rights-of-way or recommended practices specifically for distribution pipelines. However, vegetation management on gas distribution rights-of-way is determined by understanding the requirements of distribution integrity management plans focused on safety and maintenance. Many of these activities are administered most effectively in clear rights-of-way, free of obstructions and woody vegetation encroachment.

The width of a pipeline rights-of-way depends on the diameter and pressure of the line and the number of lines in each ROW. Rights-of-way widths can vary but are not arbitrary. The widths must meet engineering or construction standards for safe operation and maintenance. Therefore, rights-of-way for smaller distribution lines can range from five to 25 feet wide while typical transmission lines usually consist of 50-foot permanent rights-of-way. Often a temporary construction easement adjacent to the permanent 50-foot easement is used during the construction of the pipeline and may vary from 25 to 100 feet in width. When construction is complete, this temporary construction easement is voided and then returned to the landowner, restored to its previous, preconstruction condition.

Oil and Gas Transmission

The Federal Energy Regulatory Commission (FERC) defines transmission as, "moving bulk energy products from where they are produced or generated to distribution lines that carry the energy products to consumers." (FERC 2023). For pipelines, large diameter transmission lines deliver gasoline, home heating oil, crude oil, or natural gas. These are usually operated under high pressure to move large quantities of product throughout the nation to local stations where the product may either be used at the site or diverted into smaller distribution lines. Larger cross-country transmission pipelines are usually easier to locate as they have above ground posts marking the easement. These posts are seen most often at locations where the pipeline crosses under roads or other infrastructure. The location of underground facilities is recorded in lands easements and in utility records and can be field identified through contacting the appropriate "digger's hotline" depending on locale.

Management of oil and gas easements requires maintaining open grasslands, or other land cover free of woody vegetation that can hinder access or pose risks to safety and security. In doing so, many oil and gas transmission rights-of-way may offer similar conservation opportunities as electric transmission rights-of-way.

Oil and Gas Distribution

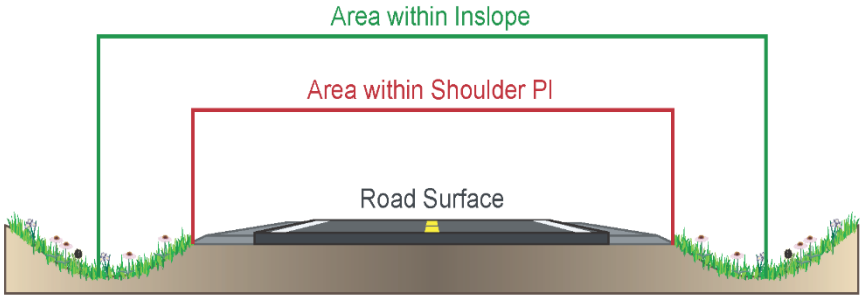
Natural gas is delivered directly to homes and businesses in relatively small diameter distribution lines buried under the street and through private yards. These distribution rights-of-ways on private land are typically small, possibly only a few inches in diameter and rarely have above ground markers showing where the easement occurs, making them less obvious. Prior to the end user's lands, distribution lines are commonly placed on existing rights-of-way for other utilities or transportation. As a result, those primary easement holders, or landowners, actively manage vegetation in these areas. Consequently, very little active management of vegetation occurs within oil and gas distribution networks as distribution companies generally lack the control (or need) to manage vegetation in their easements. This, again, is similar to how electric distribution operates and manages lands. Depending on the extent of natural land cover potential on the system, areas with little or no potential for bumble bee suitable habitat (e.g., highly urbanized lands, or open water) may not be appropriate to enroll in the Agreement.

4.7.6 Transportation Rights-of-Way

Transportation networks consist of the interstates, highways, local roads, airports, ports and waterways, trails, and railroads used daily for commuter transportation, as well as the movement of goods and services. As reflected by the previous discussion of energy lands, transportation rights-of-way and their associated lands are comprised of fee-owned lands, easements, and other access agreements across road and rail networks of various sizes.

The management and maintenance of these transportation networks are focused on the efficient movement of traffic with safety the primary focus. For this reason, roadsides (and to a similar extent rail) are managed with consideration for several zones. Figure 4-3 illustrates how these zones are generally situated relative to roadsides. Each state and local road authority may maintain these areas differently based on operational requirements, policies, local laws, and regulations.

Figure 4-3. Operational Rights-of-Way Zones Used for Initial Categorization of Activities.



As illustrated in Figure 4-3, typical operational zones on road rights-of-way include:

- *Road surface:* Road pavement or another traveled surface.
- *Area within shoulder point of intersection (PI):* Zone that includes the road surface itself, as well as an unvegetated shoulder. The shoulder may consist of gravel, crushed stone, concrete, or other hard surface generally free of vegetation.
- *Area within inslope:* Inslope (or foreslope) is used to facilitate the draining of water from a road surface to an inside ditch. Width of this area will vary by road size. Vegetation in this area is generally frequently managed with mowing to short heights (<6-inches) and the application of chemical herbicides to control weeds.
- *Roadside:* Remaining area, or horizontal width, of road rights-of-way located outside of the area within the inslope. Width of this area will vary by road size and other factors. For this Agreement, this is the primary zone containing opportunity for habitat within the rights-of-way. In some cases, large medians may also contain habitat.

Transportation corridors vary in width and management control depending on their context. Corridors located in suburban and rural landscapes typically contain more diverse land cover, which allows for greater conservation opportunity under this Agreement. Areas outside of routine management or excess rights-of-way parcels provide a significant opportunity for additional habitat.

Transportation rights-of-way have been identified as an important potential source of bumble bee and pollinator habitat across the country. However, there has been speculation that such habitat areas might prove to be an ecological trap – a location appearing to provide valuable habitat for wildlife yet ultimately resulting in population loss through collision (Baxter-Gilbert et al. 2015, Muñoz et al. 2015). As for many animals, vehicles are a source of mortality for bumble bees and other pollinators. Risks may be elevated within narrow road medians, where habitat patches are surrounded in close proximity by roads on both

sides (Keilsohn et al, 2018, Meinzen et al. 2024). However, additional research suggests that mortality due to collisions is reduced by the increased presence of high-quality habitat in roadsides, including for bumble bee queens (Dániel-Ferreira et al. 2022, Xerces 2018, Skórka et al. 2013 and 2018).

Access-controlled Highways (Interstates and Tollways)

Areas adjacent to pavement and / or gravel shoulders range from 15 to 30-feet in width and are routinely managed to maintain low vegetation to provide for the safety of the motoring public. These areas adjacent to pavement are not generally considered suitable habitat for bumble bees and other pollinators. However, these areas may offer habitat that extends from the routinely mowed area to the access control fence (if present) The area inside the access control limits is generally protected from mowing and disturbances outside of authorized personnel.

High Traffic Volume Highways

These roads include higher traffic highways, including, but not limited to, U.S. or state marked routes. Like access-controlled highways, high volume highways maintain areas of low height vegetation (and / or bare ground) adjacent to pavement to allow errant motor vehicles the potential to recover if they leave the pavement. Depending on traffic volume and regional considerations, these areas may be considered suitable habitat for bumble bees and other pollinators. Areas outside of the inslope offer potential habitat that extends from the edge of the inslope to the ROW boundary. In states where rural highways are typically not controlled by fencing, those areas may be subject to unapproved management by others. If properly signed and maintained, those areas are primarily maintained by the transportation agency, and the potential for viable habitat is more likely.

Managed areas (signed and protected remnant vegetation, threatened and endangered species areas, waysides, and excess rights-of-way) already exist along many roadside ROW. These locations may be signed (if appropriate) to identify the asset and to prohibit mowing or spraying.

Low Traffic Highways, County, and Local Roadways

These roads include low traffic highways, including, but not limited to county, township, or other roads not designated as an interstate, U.S., or state marked route, or managed as limited-access highways. The ROW width varies significantly but is often between 30 to 75 feet in total width, including both pavement and shoulders. These rights-of-way may be managed by a county, municipality (i.e., township, village, city), or their contractors. Opportunities for bumble bee habitat conservation may vary by location, operational capacity, easement width, and surrounding land use.

4.7.7 Railroads

The nation’s rail network has been used for nearly 200 years. It delivers approximately one-third of the nation’s exports and delivers five million tons of freight and approximately 85,000 passengers each day (ASCE 2017a). Vegetation is typically managed along rail rights-of-way using herbicide treatments of the track bed base (i.e., ballast) to facilitate required inspections, decrease fire potential, maintain safe walking areas for train inspections, and provide visual clearance for motorists and pedestrians so they can safely view approaching trains.

As noted, many energy companies and transportation agencies own and/or manage many different types of land beyond the rights-of-way as well. Similarly, railroad companies often own non-operating properties, which consist of unused portions of railyards, abandoned railroad tracks, or other properties that are not currently in operation, which pose opportune locations for habitat conservation projects where resources are available.

Much like highway rights-of-way, railroad rights-of-way generally consist of an area immediately adjacent to the track where vegetation is routinely managed for safety. This area is not typically compatible with bumble bee and other pollinator habitat due to its frequent management interval.

However, the remainder of the rail rights-of-way beyond this area adjacent to the track are managed less frequently and therefore could serve as potential habitat for bumble bees and other pollinators. Current management includes occasional mowing, brush removal, and/or broadcast herbicide use. Adapting these measures through scheduled vegetation removal, or targeted herbicide treatments may pose potential improvements for pollinator habitat.

Other Transportation Management Lands

In addition to roadsides, state DOTs or county road departments may also maintain parcels that can benefit bumble bees and other pollinators. Rest areas, storage and maintenance facilities, and wetland or other mitigation sites all have potential for suitable habitat that can be enhanced for foraging, nesting, and overwintering habitat benefits. These areas often provide opportunities for restoring natural vegetation or enhancing existing areas of natural vegetation. They may be highly visible to the public, such as rest areas along roadsides, which may be suitable locations for possible bumble bee and other pollinator plantings and have added potential for public involvement and outreach. Other lands may have conservation potential, but are less visible, such as parcels outside the operational ROW, undeveloped land previously purchased for building or future rights-of-way development, picnic areas, and some mitigation sites.

4.7.8 Other Transportation Networks

Other transportation networks supporting the nation's infrastructure are neither roads nor rail. Such networks may include artificial waterways or canals used for shipping and water transport, airports for people and goods transport, paths or trails for motorized and non-motorized travel, and infrastructure used for transmitting data and information.

These other transportation networks support the movement of people, goods, commodities, data, information, and other products like air, water, wastewater, or chemical compounds. Like other energy and transportation lands, these networks vary in ownership and vegetation management regimes but are generally maintained for open herbaceous cover and accessibility for maintenance and safety standards.

Canals are used across the contiguous U.S. for commercial shipping. Ditches and channels are another transportation network used for transporting water (primarily for water supply or irrigation). Some canals may also support energy uses for cooling generation sites. Despite the diversity of potential uses, canals often support miles of natural cover along their margins in areas maintained for safety, security, and bank stabilization. When maintained in a manner that sustains natural cover and a diversity of flowering plants, these areas can support bumble bee and other pollinator foraging, nesting, and overwintering habitat.

Data transmission is an area of increasing transportation use. With the expansion of internet infrastructure across the U.S. comes an increasing need for miles of data cable (broadband, fiber, and other cables) as well as the development of large internet data centers. Together this network of data and information transmission presents another opportunity for pollinator conservation. Data cable infrastructure, often co-located with other energy and transportation lands, offers potential for collaboration in vegetation management. Data centers, much like electric generation sites, often include buffering lands that may be vegetated with diverse seed mixes that support bumble bee and other pollinator foraging, nesting, or overwintering habitat.

5 Covered Activities

The term "covered activities" refers to ongoing activities described below that are proposed for incidental take coverage of the covered species under this Agreement. Covered activities are primarily comprised of those actions designed to benefit the covered species (i.e. conservation measures) but also include ongoing activities conducted by Partners. These activities are carried out as part of the ongoing operations, maintenance (including vegetation management), and modernization of infrastructure on energy and

transportation lands as described in this section. These activities are reasonably certain to result in take of the covered species specified within, or amended to, this Agreement. Take is assumed when activities remove or disturb foraging, nesting, or overwintering habitat in areas where the covered species are reasonably certain to occur or by taking those covered species directly pursuant to the Agreement and accompanying EOS Permit during the term of the CI. Under this permit, take is authorized above the baseline condition to ensure the cumulative actions of a Partner provide a net conservation benefit to covered species.

All covered activities are conducted in accordance with existing permits, easements, and agreements that allow the Partners to access and manage their enrolled lands. Covered activities only include actions that pose no or negligible environmental, socioeconomic, historic, or cultural impacts (i.e., activities do not trigger the preparation of an Environmental Impact Statement or Environmental Assessment. See additional details under Section 5.4 (What is Not a Covered Activity?) in this Agreement. Take of covered species listed as endangered or threatened under the ESA that occurs as a result of covered activities will be authorized for Partners adhering to the terms of the CI.

Covered activities include actions:

- Designed to benefit the covered species and/or associated with the general operations, maintenance (including vegetation management), and ongoing modernization of infrastructure on enrolled lands as described within this Agreement,
- Occurring on enrolled lands in areas of suitable bumble bee habitat (see Definitions),
- Occurring at times and locations where take is “reasonably certain” to occur due, in part, to the likely presence of one or more of the specified species (e.g., within mapped occurrence areas for listed species) by removing or disturbing foraging, nesting, or overwintering habitat or direct take of nests, or adult life stages. Take is expected to occur over the baseline condition and would still provide an overall net conservation benefit on each Partner’s enrolled lands, and
- Conducted in compliance with the Agreement and CI, plus all applicable federal, state, and local statues and regulations.

Covered activities cannot result in take of other ESA listed animals unless they are conducted in compliance with the terms and conditions of existing take statements issued within a Biological Opinion under ESA Section 7 or other Section 10 permits. Partners will develop and implement avoidance and minimization measures to ensure that covered activities do not jeopardize listed or proposed plants or destroy or adversely modify designated or proposed critical habitat. The need for avoidance and minimization measures specific to listed species will be determined by the Service and Applicant during review of applications for CIs.

The operations, maintenance, and modernization activities described herein are expected to result in either temporary or permanent impacts to the covered species. These anticipated impacts are expected to be minimal as compared to the net conservation benefit created by Partners engaging in the conservation required by participating in this Agreement. The anticipated impacts of these covered activities are described in Section 11 (Expected Impacts of Take) and Section 12 (Expected Benefits) of this Agreement.

5.1 General Operations and Access Activities

Operation of rights-of-way and facilities on energy and transportation lands for their intended use is fundamental to their role in America’s energy and transportation infrastructure. Operations as defined herein includes the specific components required for infrastructure to perform its intended basic functions. Access is an important requirement for rights-of-way as they are routinely accessed for inspections, maintenance, and emergency prevention and response.

The following categories of activities are included in this group:

- General operation of infrastructure
- Vehicle and equipment access
- Surveys and inspections
- Use of existing roads and access routes on enrolled lands
- Emergency response[13]

5.2 Maintenance Activities

Maintenance consists of work on enrolled lands that is planned and performed on a routine basis to maintain and preserve the condition of the energy or transportation system or to respond to specific conditions and events that restore these systems to an adequate level of service.

5.2.1 Vegetation Management

Vegetation management is a maintenance activity routinely conducted on existing rights-of-way and owned lands to ensure safe and reliable operation and access to infrastructure and facilities. Vegetation management activities can either be considered as conservation measures or other covered activities. This distinction is dependent on timing, site conditions, management objectives, and techniques used. To distinguish whether routine vegetation management is considered a conservation measure, it must do all of the following:

a. Establish, restore, and/or maintain bumble bee habitat as part of the site or treatment management objectives,

b. Be likely to benefit the specified bumble bees in the area(s) being managed, and

c. Include measures to avoid or minimize loss or negative impacts to specific bumble bee habitat resources or bumble bees life stages (e.g., timed to avoid removal of high-quality foraging resources, timed to avoid impacts to active bumble bees).

If the activity does all of these, it would be considered a conservation measure. Otherwise, it would fall under other covered activities. These other covered activities may result in take of covered species over the baseline. Thus, the combination of all activities (including conservation measures) will still provide a net conservation benefit on each Partner's enrolled lands.

Conservation measures to benefit suitable habitat as described in Section 6 of this Agreement (Conservation Measures) are vegetation management or other conservation activities undertaken to benefit bumble bees and their habitat. Implementing conservation measures requires access to the enrolled lands and poses potential temporary but negligible impacts to habitat while activities are being conducted. Conservation measures include various vegetation management activities with the goal of benefitting habitat, including targeted use of herbicides, removal of dense woody vegetation, prescribed burning, seeding of native species and associated site preparation. It also includes maintaining suitable habitat on idle lands or set asides.

Vegetation management that may temporarily impact habitat includes activities that are conducted for maintenance purposes outside the scope or intent of those defined as conservation measures. The primary distinction between vegetation management (as other covered activities) and similar actions (as conservation measures) is that "other covered activities" are conducted within suitable habitat and in a manner reasonably certain to result in take of at-risk bumble bees. This includes vegetation management

[13] Any take of other listed species caused by emergency response may require an after-the-fact consultation. This agreement does not preclude any necessary emergency responses that may cause take of other listed species. According to the USFWS (1998), An emergency is "a situation involving an act of God, disasters, casualties, national defense or security emergencies, etc., and includes response activities that must be taken to prevent imminent loss of human life or lands."

activities such as broadcast application of herbicides and other pesticides (e.g., plant growth regulators, fungicides) in areas of suitable habitat during the bumble bee active season, mowing during the bumble bee active season to remove woody vegetation or to create temporary access routes, periodic mowing and haying, and vegetation management applicable to other legal or regulatory requirements that may be incompatible with habitat. Vegetation removal can also include activities such as side trimming, pruning, hand clearing, disposal of cut material through burning, chipping, dragging, and hauling, and additional vegetation management controls that may be considered as part of IVM planning and implementation protocols in accordance with ANSI A300 guidelines, or Partner-specific vegetation management procedures.

5.2.2 Asset Maintenance

Infrastructure maintenance includes structural repairs, replacement, and maintenance. This includes, but is not limited to, guy wire replacement, culvert replacement, pole wrapping or painting, gas leak repairs, structural testing and treatments, above and below ground structural replacements or repairs, and woodpecker assessments and patching. This also includes pavement repair, mill and overlays, shoulder repairs, painting and striping, guardrail installation or replacement, signage and lighting installation or replacement, maintenance hole/inlet cleaning, installation and maintenance of curb and gutter, culverts, bridges and piers, scour aprons, cattle grates, and similar structures.

Facilities management and maintenance includes vegetation maintenance such as mowing, invasive weed control, and other maintenance on ash landfills, stormwater management facilities, mitigation sites[14], and undeveloped lands, as well as routine vegetation maintenance of developed lands such as mowing and invasive weed control. It also includes the maintenance of buildings, facilities, and structures on service centers, generation stations, and substations, and general facilities building and maintenance within developed areas.

Temporary staging and storage involve the use of temporary staging and material storage areas, on and off ROW. It may also involve the use of matting or other access pads in wetlands, waterway crossings or other environmentally sensitive areas. Temporary staging and storage areas are typically removed shortly after the completion of maintenance, followed by vegetation restoration activities.

Temporary disturbance resulting from maintenance including small buildings, lighting, and storage areas associated with existing infrastructure; stormwater facilities maintenance; grading and excavation; installation and maintenance of sediment and erosion control BMPs, and site clean-up and restoration, including grading and reseeding occurring substantially on- and off-ROW on lands previously used for operations and maintenance purposes.

5.3 Modernization Activities

Modernization activities on energy and transportation lands include the ongoing work undertaken to repair, replace, upgrade, and for minor expansion of the existing energy and transportation infrastructure of the nation. Modernization represents a suite of ongoing activities that are necessary to maintain and improve safety, security, and cost-effectiveness or infrastructure investments. The importance of modernizing infrastructure is demonstrated by laws like the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act), which recognize modernization as an ongoing activity needed to sustain and improve roads, bridges, air travel, energy production and delivery, and internet services (White House 2021). These

[14] Management of permittee responsible mitigation lands in the Agreement may be incorporated as enrolled lands provided 1) the Partner has authority and control over that lands and the ability to provide the appropriate conservation measures to create bumble bee habitat, and 2) the Partner isn't already required to maintain that area as habitat specifically for bumble bees. Specifically, the Partner would need to go beyond required mitigation to provide additional habitat for bumble bees.

ongoing activities consist of occasional upgrading and modernization of the infrastructure and facilities on existing rights-of-way and owned lands.

Modernization is defined as land disturbing activities involving the repair, replacement, upgrading, or minor expansion of existing infrastructure that occurs on enrolled lands, substantially within the footprint of existing infrastructure and/or the accompanying lands that are maintained to support or enhance operations of that infrastructure now and into the future with no or negligible environmental impact consistent with categorical exclusions[15]. By contrast, modernization does not include the construction of new infrastructure (or activities associated with the construction of that new infrastructure) on newly acquired, or previously undeveloped or unmaintained rights-of-way or parcels (see next section for additional detail).

Concisely put, modernization includes activities ongoing on enrolled lands that:

- Repair, replace, upgrade, or support minor expansion of existing infrastructure, and
- Are located on enrolled lands that include, or are adjacent to, existing infrastructure.

As defined, modernization broadly includes the repair, replacement, updating, or minor expansion of existing infrastructure already built that result in no or negligible environmental impact. The term 'adjacent' implies enrolled lands that are directly abutting or otherwise spatially connected to other enrolled lands containing infrastructure. Thus, adjacency ensures activities are 'substantially within the footprint of existing infrastructure and/or the accompanying lands. In contrast, lands geographically isolated from other infrastructure of the same use present clear scenarios where 'modernization' does not apply. Modernization activities must not, either individually or cumulatively, 1) result in permanent loss of suitable bumble bee habitat on more than one percent of a Partner's enrolled lands, or 2) have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is normally required. Scenarios outside of these conditions are considered 'new construction,' which refer to activities not covered by this Agreement. See the summary included under Section 5.4 (What is Not a Covered Activity?). All Partners must have authority and control over the lands enrolled via fee ownership, lease, easement, or other land rights agreements. Thus, land rights must be acquired prior to enrollment in this Agreement. It may require multiple years for Partners to enroll these acquired lands due to the social, economic, contractual, and administrative requirements for acquiring new land rights. In this manner, enrollment presumes that lands surpass being 'newly acquired' by the time they are included in a Partner's CI.

Examples of modernization activities include, but are not limited to, those listed in Table 5-1. The distinction between modernization occurring on enrolled lands substantially within the footprint of existing infrastructure and adjacent lands with no or negligible environmental impact (a covered activity) versus new construction in areas previously undeveloped or unmaintained (not a covered activity) is based on the type of activity, the type of infrastructure present, and its location relative to existing infrastructure or maintained lands as summarized in Table 5-2.

[15] No or negligible environmental impacts are a condition of categorical exclusions used by the Service and defined in the Departmental Manual, Series 31, Part 516, Ch 8.

Table 5-1. Examples of Modernization and Comparison to Excluded New Construction Activities

Infrastructure	Agreement Modernization Examples	Excluded New Construction Examples
Electric transmission and distribution	Transmission and distribution line rebuilds, re-rates, upgrades. Pole replacements or reconductoring.	New transmission and distribution line construction on previously undeveloped ROWs outside of existing corridors.
Oil and gas pipelines	Transmission and distribution pipeline rebuilding, replacement, or upgrades.	New transmission and distribution pipeline construction on previously undeveloped ROWs outside of existing corridors.
Energy generation site developments	Replacement, modification, or upgrading of existing infrastructure. Minor expansion of existing projects on enrolled lands to accommodate upgrades.	Construction of new facilities on previously undeveloped lands unconnected to existing facilities.
Interstate, US, and state highways	Road surface repair, bridge replacement, lane widening, interchange modification.	New highway routes on previously undeveloped lands outside of existing road corridors (e.g., relocation or new routes).
County and local roadways	Road surface repair, bridge replacement, lane widening, interchange modification.	New road routes on previously undeveloped lands outside of existing road corridors (e.g., relocation or new routes).
Other transportation (for water, data, and other transport)	Replacement, modification, or upgrading of existing facilities, cabling, canals, or line routes.	Construction of new facilities on previously undeveloped lands unconnected to existing project areas.

Table 5-2. Key Considerations for Delineating Included Modernization vs. Excluded New Construction Activities

Consideration	Agreement Modernization is…	Excluded New Construction is…
What type of activity is being conducted?	Repair, replacement/upgrading of existing infrastructure.	Construction of new infrastructure in a location where it was not already present, or directly adjacent to already present infrastructure.
What types of infrastructure are included?	Infrastructure of the same sector or use (e.g., electric, gas, transportation, data and internet).	Construction of different types of infrastructure other than what exists on the site. For example: • *New bridge construction or road routes adjacent to a gas pipeline.* • *New energy generation construction adjacent to a transmission line.* • *New electric or gas corridor routes adjacent to roads.*
Where is the activity located on enrolled lands?	Within the footprint of existing infrastructure or adjacent enrolled lands supporting infrastructure. Adjacent includes enrolled lands that are directly abutting or otherwise spatially connected to enrolled lands containing infrastructure.	On undeveloped lands not adjacent to existing facilities.

Considering these comparisons, it is the responsibility of the Partner to ensure that modernization activities align with the examples and considerations summarized here, as well as the permit authorizations accompanying this Agreement. Any of the Parties may verify that an activity is a EOS-permitted modernization activity by evaluating the following checklist.

Does the activity:

- Occur on enrolled lands containing, or adjacent to, existing infrastructure?
- Consist of a repair, replacement, upgrading, or minor expansion activity?
- Comply with all local, state, tribal, and federal laws, including all applicable authorizations being obtained prior to the activity?
- Not likely result in take of other federally listed species unless authorized by another permit?
- Result in no or negligible environmental impacts?
- Not individually, nor cumulatively, result in the permanent impact of one percent or more of the Partner's enrolled lands?

If "Yes" to all, then it is covered under modernization unless determined otherwise by the Program Administrator or the Service.

As part of its take analysis, the Service is expected to define a threshold for take that is reasonably certain to occur as a result of covered activities including modernization. One percent represents a high-end estimate of modernization activities based on an elicitation of industry input. Thus, lesser amounts of take are expected to result in increased net conservation benefits. This threshold ensures that the net conservation benefit envisioned by the Agreement is maintained over its duration. Partners are required to self-verify that they have not exceeded their one percent modernization acre threshold as part of their annual reporting. To aid the program in verifying covered activities are below this threshold, Partners are required to notify the Program Administrator, who will notify the Service of any individual activities covered under this Agreement that will permanently remove 10 or more acres of suitable habitat. Should the extent of modernization encroach near this program threshold, or by individual Partners, the Program Administrator and the Service reserves the right to verify estimates of habitat loss for activities conducted under this Agreement from Partners to verify that the expected levels of take are not exceeded.

5.4 What is Not a Covered Activity?

The descriptions provided within this section are provided as examples and are not inclusive of all operations, maintenance, and modernization activities that may occur over the duration of this Agreement. Operations, maintenance, and modernization activities are generally considered to be covered activities unless they are excluded by the list below. Covered activities do not include:

- Activities conducted on lands not enrolled in the Agreement.
- The construction of new infrastructure on newly acquired, or previously undeveloped rights-of-way or parcels or those not previously associated with transportation or energy infrastructure uses. Undeveloped land implies that the land has an absence of infrastructure. Once infrastructure is constructed independent of this Agreement, in compliance with all necessary permits, the ongoing operation, access, maintenance, and modernization activities may be covered activities under the scope of this Agreement if enrolled.
- Activities associated with the construction of that new infrastructure, including access and pre-construction vegetation management.
- Activities that are outside the scope of direct and indirect effects considered by the Agreement's biological or conference opinion.
- Activities that pose significant environmental, socioeconomic, historic, or cultural impacts, such as activities or actions that warrant evaluation in an Environmental Assessment or Environmental Impact Statement.
- Activities that, either individually or cumulatively, result in permanent loss of suitable bumble bee habitat on more than one percent of a Partner's enrolled lands.
- Activities that knowingly take covered species nests or overwintering sites.
- Broadcast or aerial applications of insecticides known to negatively affect bees.
- Bumble bee surveys that capture and handle listed bumble bees without the appropriate recovery, research, or other authorizations by the Service.

5.5 Neighboring Landowner Covered Activities

Extending incidental take coverage to the underlying or adjacent landowners of lands enrolled in the Agreement can help minimize landowner concerns and thereby encourage sustaining habitat for the covered species. Under this Agreement, non-federal landowners whose properties are located on or adjacent to enrolled lands may receive take coverage for any of the ESA-listed covered species within the entirety of the underlying or abutting parcel, or within 200 meters (656 feet)[16], whichever distance is shortest. Underlying or adjacent landowners affected by listed covered species that may hold lands on or adjacent to the Agreement's habitat conservation efforts are held harmless for take resulting from their actions on their lands during the permit duration.

To be eligible, landowners must:

- Be a non-federal landowner,
- Have a federally listed covered species mapped within the vicinity of their lands as indicated by the Service on publicly available mapped occurrences, or an IPaC query[17], and
- Own lands on or adjacent to lands currently (or previously) enrolled in the Agreement.

Permit coverage extended via this Agreement and accompanying permit to underlying and neighboring landowners only applies to the take of listed covered species for existing and ongoing land management and maintenance activities.

To receive coverage, the neighboring or underlying landowner will need to submit a neighboring landowner enrollment form to the Program Administrator, which is available via the Bumble Bee CBA website. The application form must include 1) a baseline condition assessment although, on-site monitoring to support the baseline assessment is not required; and 2) give permission with reasonable notice for the Service, the Program Administrator, or a representative to enter the property to capture and relocate, salvage, or implement measures to reduce anticipated take of the covered species. This will result in the neighboring landowner receiving a certificate that applies the authorization and assurances in the permit to the neighboring property owner. It does not authorize any other regulatory approvals that may be necessary for a landowner's activity to be compliant with all local, state, federal, or tribal laws. It is the sole responsibility of the landowner to verify their regulatory obligations prior to commencement of an activity.

[16] As summarized in Section 7 guidance for rusty patched bumble bee (USFWS 2021c), the Service assumes that most rusty patched bumble bee workers forage within 200 m (656 feet) of their nest based on the study of the closely related buff-tailed bumble bee citing Wolf and Moritz (2008).

[17] USFWS consulting maps and IPaC species lists are periodically updated as data becomes available.

6 Conservation Measures

6.1 Conservation Objectives for Covered Species

The conservation objectives and accompanying measures described in this section are designed to fulfill the conservation goal identified in Section 1 of this Agreement (Introduction) by creating a net conservation benefit through implementing conservation on energy and transportation lands that reduce direct impacts, reduce exposure to stressors, and that protect, manage, create, expand, and/or enhance foraging, nesting, and overwintering habitat. Addressing conservation objectives creates benefits that exceed the adverse impacts to covered species from ongoing covered activities and conservation measures, so that the condition of the covered species or the amount or quality of its habitat is reasonably expected to be greater with implementation of the Agreement rather than without it. As described in Section 2.2.3 (Contribution to Conservation Actions within this Agreement), conservation objectives involved in this Agreement include those highlighted in Figure 6-1 and described below.

Figure 6-1. Conservation Objectives

Objective 1. Maintain, protect, and enhance nesting and overwintering habitat.

Many energy and transportation lands maintain open greenspace as buffers for safety, security, and reliability purposes. These lands may be managed in a manner that maintains and supports pollinator habitat (USDA 2015, Xerces 2018, Russo et al. 2021). This objective includes required measures by which Partners ensure that portions of enrolled lands remain undisturbed throughout the year. Managing land to preserve undisturbed ground can be an important practice to protect covered species nesting and overwintering locations (Hatfield et al. n.d.). Committing a subset of lands to remain undisturbed each year provides opportunities for covered species to take advantage of landscape variation and diverse vegetation structure for nesting and overwintering sites. These undisturbed lands will ensure direct impacts to actively overwintering bumble bees are minimized on these lands. This objective also includes requirements for avoiding observed nesting or overwintering sites where covered species are known to occur. Nest and overwintering sites may be difficult to identify. Partners are not expected to survey to confirm lack of nesting or overwintering sites. Rather, Partners may identify known nest or overwintering sites through documented worker or public observations on enrolled lands. Together these measures help protect active sites and maintain and enhance the habitat conditions that support nesting and overwintering.

Objective 2. Manage, protect, and enhance foraging habitat.

This objective leverages pollinator-friendly IVM practices such as those previously listed under Section 4.7 in this Agreement and encourages application in a manner that sustains floral resources. This supports a landscape of sustained or increased floral diversity needed for covered species nutritional requirements (Chau and Rehan 2024; Novotny et al. 2023; Vaudo et al. 2023). Those same practices may also enhance floral resources by reducing invasive species and successional growth of woody vegetation where its expansion would reduce covered species forage or critical early spring floral resources. These measures can enhance or improve foraging habitat conditions by increasing the richness and diversity of native plants.

These same conditions may also offer benefits to suitable nesting and overwintering habitat needs of the covered species (Pollinator Partnership 2023; Russo et al. 2021; UAA 2019).

Objective 3. Minimize exposure to stressors and direct impacts.

The covered species face multiple stressors such as habitat loss, frequent disturbance, climate change, invasive species, and non-target exposure to pesticides (Williams and Hemberger 2023, Center et al. 2021, Goulson et al. 2015). Studies such as Mitchell et al. (2020) determined that some plants in roadsides can contain high concentrations of heavy metals and sodium which can be toxic to pollinators, potentially setting an ecological trap. However, these levels decreased with distance away from the road. Measures that address this objective are targeted to operational needs that can avoid or reduce exposures to stressors potentially present on enrolled lands through adjusting timing or application of practices or by minimizing use of pesticides. Many conservation measures under this objective are designed to reduce floral attractants that might serve as population sinks, such as those in narrow road medians (Keilsohn et al 2018, Meinzen et al. 2024).

As noted in Section 2 of this Agreement (Background and Purpose), competition from bees introduced for commercial uses has been cited as a contributing factor to declining native bee populations. Competition is suspected as a potential stressor in various studies (Schaffer et al. 1983, Goulson et al. 2003, Mallinger et al. 2017), but the extent of direct, long-term, and population-level effects on wild bees is not well understood (Mallinger et al. 2017). Diverse pollinator habitat (especially in agro-ecosystems) landscapes may be able to support both diverse native pollinators and commercial beekeeping (Evans et al. 2018, Cox-Foster 2024), yet these landscapes present complex interactions between honeybees, bumble bees, and other native bees (Davis et al. 2025, Travis et al. 2025, Page and Williams 2023). Evans et al. (2018) also noted that native bees may be more susceptible to potential negative effects of limited forage availability making high-quality habitats like grasslands and forests important for native bees. Results from a study in the northern Great Plains indicated that increased honey bee colonies, combined with the decrease in available floral resources, may lead to greater competition within and among honey bees and native bees. Carrying capacities or thresholds are unknown (Smart et al. 2021, Cox-Foster 2024). Measures aimed at reducing commercial bee competition under this objective build on these studies by not prohibiting honeybees or commercial bumble bees, but encouraging colony placement and densities that reduce the potential for competition to covered species.

Objective 4. Increase knowledge of population trends, species distribution, stressors, and measures to effectively conserve the species.

Scientists have identified several knowledge gaps about bumble bee biology and ecology (Graves et al. 2020, Schweitzer et al. 2012). Gaps in knowledge can limit the effectiveness of conservation actions for bumble bees. Knowledge gaps vary but include incomplete knowledge of nesting and overwintering requirements and habitats, a lack of understanding of the complex life history of certain species, and inadequate population baseline or trend data (Hatfield 2021). This objective aims at building opportunities for new research, partnerships, and monitoring efforts aimed at increasing knowledge about the presence and absence of covered species, effects of vegetation management and conservation measures on their habitat requirements, plus other areas of biological and ecological interest.

Objective 5. Encourage advanced conservation commitments.

There are additional commitments that may be made above and beyond those addressed by the other objectives. Through participation in this Agreement, Partners are encouraged to make advanced conservation commitments. Specifically, this measure includes commitments that may extend beyond the current use of, or modification to, existing measures and tools available. These advanced commitments may build on other commitments made through this Agreement, and may include habitat creation, invasive species control and prevention, and the mapping of high-quality habitats.

Recognizing the need for pollinator conservation, many BMPs and conservation plans already exist for pollinators and bumble bees specifically (such as those noted previously in Section 5 of this Agreement

(Covered Activities), and available on the Xerces Society website[18]. Many of these resources contain conservation measures applicable for use on energy and transportation lands. These and other resources have been considered in the development of the conservation measures included in this Agreement. These conservation measures may also address conservation measures for monarch butterfly and be used in conjunction with the Monarch CCAA (ROWHWG 2020). Unlike the Monarch CCAA, conservation measures in this Agreement will be applied across enrolled lands (rather than only on adopted acres in quantities determined by sector, see ROWHWG 2020). In practice, this may result in implementation across the same lands if a Partner is enrolled in both voluntary conservation agreements. As described in Section 14 (Monitoring Provisions), Partners in this Agreement will track acres where conservation measures are applied as part of annual reporting.

Conservation measures cannot result in take of other ESA listed animals or must be conducted in compliance with the terms and conditions of existing[19] take statements (ESA Section 7), or ESA Section 10 permits. Partners will develop and implement avoidance and minimization measures to ensure that conservation measures are not likely to jeopardize listed or proposed plants or destroy or adversely modify designated or proposed critical habitat[20]. The Service may require Applicants to adopt select avoidance and minimization measures for listed and proposed animal species to ensure enrollees avoid causing take. These instances will be limited to activities or locations where occupied habitat is present, avoidance is not likely, and covered activities are reasonably certain to cause take as described in Service guidance (USFWS 2018 or most current). All conservation measures will be conducted in accordance with existing permits, easements, and agreements that allow the Partners to access and manage their enrolled lands. Conservation measures do not include actions that pose significant environmental, socioeconomic, historic, or cultural impacts. Like the other covered activities, conservation measures applied under this Agreement must also comply with Section 106 of the NHPA if they are reasonably certain to cause take. However, most conservation measures do not have potential to affect historic properties and may be exempt (See Supplemental Information C.I. Section I of this Agreement).

6.2 Implementing Conservation Measures on Easements

This Agreement improves habitat for covered species by leveraging the existing IVM practices already implemented across the energy and transportation sectors. Conservation measures committed to by Partners under this Agreement are often variations of actions that may already occur. However, the conservation measures are structured in a way that promotes approaches to these routine activities in a manner that improves bumble bee habitat by contributing to conservation objectives for bumble bees (See Section 2 of this Agreement, Background and Purpose).

As stated elsewhere in this Agreement, Partners enrolling fee-title owned lands retain full control to contribute to conservation objectives for bumble bees through these conservation measures. However, on enrolled easement or leased lands, the Partner does not retain full land rights. In these instances, the underlying landowner may retain ultimate control of how they manage the lands within the easement. Each relationship on easements between Partners and underlying landowners is dictated by the land-rights agreement in place for that parcel. Nothing in this Agreement changes or alters those agreements, or the land rights of the Partner or underlying landowner.

To address the network of easement land rights, compliance with environmental laws and regulations, as well as state laws and individual Partner policies related to work on easement lands, this Agreement directs

[18] https://xerces.org/publications/guidelines

[19] ESA Section 10 permits or Section 7 take statements that exist, or obtained, prior to activities being conducted under the Agreement.

[20] Critical habitat proposed or designated for plants or animals.

the Partner to maintain a context-specific approach to their implementation of conservation measures on easements. Partners including easements as enrolled lands within the Agreement agree to obtain consent from landowners before taking any actions that are outside the scope of their existing easement agreement. Such consent requests will be completed in accordance with Partner-specific procedures and policies. When implementing conservation measures on easement or leased lands, the Partner must limit their conservation measures to only those activities allowed under its easement or lease, or obtain additional consent from the underlying landowner, namely:

1. Where conservation measures coincide with activities authorized under existing leases, easements, or other land-rights agreements, the Partner will follow its organization's applicable procedures regarding landowner notification or consent and conduct activities only within the scope of what is allowed under the easement or lease.
2. Where conservation measures do not coincide with easement or lease authority, the Partner will either a) not conduct that activity beyond the scope of what is allowed by its easement or lease, or b) obtain the required consent or authorization from the underlying landowner prior to conducting the activity.
3. Partners will obtain consent or authorization from the underlying landowner before intentionally seeding or planting native plants on active cropland specifically for the purpose of creating bumble bee habitat.

Table 6-1 outlines potential vegetation management scenarios encountered on easement lands and the expected approaches Partners will take to implement conservation measures.

Table 6-1. Clarification on Consent and Easement Land Use in the Agreement

The table below clarifies how conservation measures are expected to be implemented on easement lands.

Land Use	Percent of Enrolled Lands[21]	Scenario	Approach	Rationale
ROW on active cropland easements	Estimated 40 – 60 percent of energy ROWs; less than 5 percent of highway ROWs; highly variable across Partners.	Partner intentionally converts active cropland to natural land cover for the purpose of creating bumble bee habitat.	Partner will obtain consent or authorization from the underlying landowner before intentionally seeding or planting native plants on active cropland specifically for the purpose of creating bumble bee habitat.	Most conservation measures rely upon managing existing natural vegetation where it occurs. Intentional conversion to habitat is typically, but may not always be, considered outside the scope of most easement or lease agreements.
ROW vegetation management; not on active cropland	Estimated 40 – 60 percent of energy ROWs; more than 95 percent of highway ROWs; highly variable across Partners.	Partner maintains existing vegetation (i.e., not active cropland) in accordance with their easement or lease agreement.	Partner is responsible for ensuring conservation measures are implemented consistent with their easement or lease authority. Where activities do not coincide with easement or lease authority, additional consent or authorization will be obtained prior to work.	This is considered as a status quo approach to how Partners currently operate under existing easement agreements.
ROW maintenance or operations with ground disturbing activities; not on active cropland	Likely to be less than 2-5 percent of enrolled lands in a year.	Partner revegetates natural land cover disturbed during operations and maintenance activities.	Partner will apply seed mixes or planting in accordance with their own revegetation standards and permit requirements, and/or in accordance with the scope of seeding and planting allowed under their easement or lease agreements.	Partners are often required to revegetate existing areas of natural land cover that experience ground disturbance during operations and maintenance activities. Federal, state, and local permits often require these seed mixes to include native flowering plants.

[21] Percentage of enrolled lands are generalized estimates based on descriptions of enrolled lands provided by industry partners participating in the Monarch CCAA and in development of this Agreement. Actual percentages may vary depending on geography, land cover, land use agreements, and energy or transportation infrastructure.

6.3 Conservation Measures

The conservation measures in this Agreement were designed to meet the net conservation benefit standard specifically for lands managed by the energy and transportation sectors. Energy and transportation lands are already actively managed in many cases to prevent the growth of trees and woody vegetation. This results in lands that are generally maintained as grassland, meadow, prairie, or shrub-scrub type habitats, all of which provide habitat for covered species during at least part of their life cycle.

As described in Section 5 of this Agreement (Covered Activities), these lands contain infrastructure dedicated to energy generation, delivering energy and commodities, and transportation corridors for travel and commerce. Most covered activities occurring on these lands are temporary and infrequent in their impacts. The conservation measures in this Agreement were tailored to address these unique characteristics of energy and transportation lands and the covered activities to provide habitat for covered species. Other sectors (e.g., agriculture) and landowners may adopt conservation measures for bumble bees and other pollinators that differ from those in this Agreement, as the activities that occur on their lands may be different. The Parties recognize that this Agreement does not set expectations nor implied standards for any future conservation agreements or management measures for covered species. Thus, for example, a bumble bee or pollinator conservation agreement for agricultural lands may have a different set of conservation measures tailored to agricultural activities and the conservation needs of the species on those lands.

Each Partner enrolling in this Agreement will identify the suite of applicable conservation measures that:

a) Contribute to conservation objectives within control of the Partner, and

b) Can be implemented over the course of the Agreement.

The selection and implementation of conservation measures designed to contribute to recovery of covered species by reducing or eliminating threats or otherwise improving the status of covered species. Because maintenance schedules vary each year, implementation is unlikely to be uniform across enrolled lands from year-to-year. Thus, a Partner's enrollment involves annually complying with the minimum expectations for selected conservation measures as defined in Table 6-2 to address these conservation needs for the covered species targeted by this Agreement.

6.3.1 Conservation Measures Selection

Partners must identify a suite of conservation measures they will commit to implementing as part of participating in this Agreement. In selecting conservation measures, Partners must:

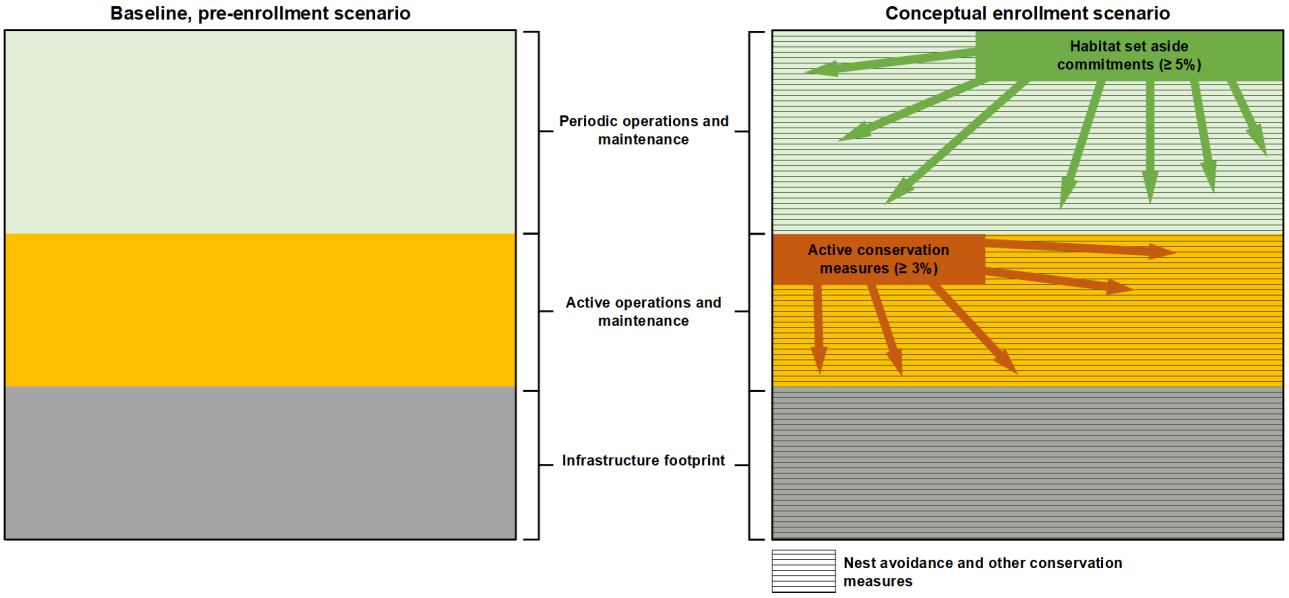
1. Commit to the two mandatory measures included in the first conservation objective (maintain, protect, and enhance nesting and overwintering habitat).
2. Choose three of the remaining four conservation objectives to address through conservation measures.
3. Select at least one conservation measure for each of the three conservation objectives selected.
4. Specify the conservation measures selected in their application.
5. Implement selected measures once their CI is approved, according to their implementation schedule.
6. Update or modify their CI if a conservation objective or selected conservation measure changes over time.

Partners may use Table 6-2 to identify and select at least one conservation measure for each conservation objective. To ensure the conservation measures result in a net conservation benefit, Partners must adhere to the following minimum extents with regard to their chosen conservation measures:

1. Under Objective 1, Partners must annually commit 5 percent of enrolled lands as suitable habitat set-asides. This measure is mandatory of all Partners. Lands identified as suitable habitat set-asides may change from year-to-year.
2. Under Objective 2, Partners must annually commit to implementing “active” conservation measures on a minimum cumulative 3 percent of enrolled lands. “Active” refers to vegetation management practices that are typically conducted on an annual basis on enrolled lands identified under Objective 2. Locations managed with active conservation measures may change year-to-year. Partners may choose which individual or combination of conservation measures are used to meet this extent, including targeted herbicide treatments, seeding and planting diverse and native floral resources, conservation mowing, brush removal, prescribed burning, and prescribed grazing.
3. Under Objectives 3 through 5, minimum expectations are described for each individual conservation measure.

The percentages identified are intended as minimum commitments within these two objectives for participation in the Agreement. As illustrated by Figure 6-2, these commitments are applied in corresponding areas of active and periodic operations and maintenance. These commitments are designed to create a net conservation benefit by improving the existing baseline condition of a covered species by reducing or eliminating threats or otherwise improving the status of covered species. ‘Active’ operations and maintenance includes activities conducted on an annual basis whereas ‘periodic’ implies operations and maintenance that may be more sporadic or unscheduled. The five percent requirement for annual suitable habitat set aside recognizes Partner commitments to avoid disturbance in lands that may otherwise have potential for disturbance. Similarly, the three percent minimum requirement for active vegetation management conservation measures recognizes that these commitments may require adaptation and adjustment to defined best practices that minimize temporary habitat loss and enhance suitable habitat for the covered species. The minimum percentages required were informed by minimum contribution levels reported in the Monarch CCAA by individual Partners, as well as input elicited by industry representatives involved in development of this Agreement. Some Partners may be able to exceed this minimum commitment. The Program Administrator and/or the Service will identify opportunities for incentivizing commitments above this minimum threshold, which may include options for streamlined reporting, temporary fee discounts, or other benefits.

Figure 6-2. Conceptual Application of Conservation Measures on Enrolled Lands



The Service and Program Administrator recognize each Partner manages a unique system of lands and that conservation measure implementation will be based on site-specific conditions. Conservation measures are selected during the initial application and can be updated through modification of the CI. The Service recognizes not all conservation measures listed will be appropriate for all lands. Partners will base conservation measures on the conservation objectives within their control and management ability with respect to those actions. We expect most or all Partners to implement actions from Objective 1 (which is mandatory) and Objective 2, with other objectives and measures varying by Partner. Should an Applicant propose, or Partner implement, a combination of conservation measures that *excludes* active measures in Objective 2, the Program Administrator will review those situations closely to confirm that the objectives selected and measures proposed or implemented will achieve the net conservation benefit as outlined in the biological opinion.

Table 6-2 describes the conservation and commitment expectations, as well as identified further guidance for each specific measure. In conjunction with 50 CFR 17.3, a net conservation benefit is created by Partner commitments to conservation measures addressing threats that are under the Partner's control with the anticipation that the covered species populations will increase, habitat quality will improve, or both. Because active management of enrolled lands does not occur on every acre every year, the location specifics, Partner management abilities, and/or management constraints will dictate the implementation of specific conservation measures on enrolled lands. For all conservation measures employed by a Partner, the Partner will detail in their implementation plan how they plan to use BMPs and guidance to implement bumble bee conservation measures, and update implementation as appropriate.

The following resources informed the development of the conservation measures defined in the summary list below and in Table 6-2. Partners enrolled in this Agreement may find the resources below useful in planning or implementing their conservation measures. Other useful guidance and materials may be published outside of those resources listed here:

- Xerces Society's Conservation Guidelines
- USFWS Conservation Guidance for the Rusty Patched Bumble Bee
- Transportation Research Board's Pollinator Habitat Conservation Along Roadways Guidance

- USFS and NatureServe's Conservation and Management of North American Bumble Bees
- Pollinator Partnership's Ecoregional Planting Guides
- USDA Agronomy Technical Note 9: Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices
- Bumble Bee Conservation Trust Grassland Management for Bumble Bees
- Rangeland Management for Pollinators (Black et al., 2011)

Conservation Objectives and Measures Summary List

1. **Manage, protect, and enhance nesting and overwintering habitat. (Mandatory)**
    a. Suitable habitat set asides (mandatory)
    b. Avoidance of known or observed nest sites (mandatory)
2. **Manage, protect, and enhance foraging habitat.**
    a. Targeted herbicide treatments
    b. Seeding and planting diverse and native floral resources
    c. Conservation mowing
    d. Brush removal that sustains native floral resources
    e. Prescribed burning
    f. Prescribed grazing
3. **Minimize exposure to stressors and direct impacts.**
    a. Targeted herbicide treatments
    b. Reduce managed bee conflicts
    c. Mowing to reduce exposures to pesticides and physical risks
    d. Reduce exposures to mowing-related stressors
    e. Reduce pesticide exposures via Partner-specific IPM planning
4. **Increase knowledge of population trends and conservation needs.**
    a. Collect and share data on bumble bee presence
    b. Conduct bumble bee surveys using Service-approved protocols
    c. Fund or conduct research that informs bumble bee conservation
5. **Encourage advanced conservation commitments.**
    a. Implement BMPs to limit the spread of invasive species
    b. Control invasive species for conservation purposes
    c. Create new bumble bee habitat areas
    d. Enrollment in complementary certification programs that amplify conservation
    e. Maintain a bumble bee conservation program for staff and contractors
    f. Map high-quality habitat areas

Table 6-2. Conservation Measures, Commitment Expectations, and Guidance for Partners

Conservation measures in Table 6-2 are listed in the order presented in Table 6-2.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
Suitable habitat set asides **(Mandatory)**	Retain at least 5 percent of enrolled lands as suitable foraging, nesting, or overwintering habitat protected from temporary or permanent loss or impacts from construction, maintenance, or vegetation management covered activities throughout an annual growing season. Avoid and minimize non-essential disturbances to vegetation and soils in areas identified as idle lands and set asides during a year. Suitable habitat set aside areas may change spatially on an annual basis as new habitat becomes available and operations, maintenance, and modernization activities occur. Where compatible with other management objectives (e.g., safety, security, reliability), retain woodlands and woodland edges as these may provide suitable nesting, foraging, and overwintering habitat. If implementing this conservation measure as part of Monarch CCAA enrollment, the activity fulfills these requirements when conducted in areas that overlap this Agreement's enrolled acres.	Examples: • Sustain idle lands in between vegetation management treatments or cycles. • Designate species habitat 'preserves' that will be either temporarily or permanently protected from disturbance or maintenance. • Avoiding disturbance of existing bumble bee suitable habitat in forests during nesting and overwintering periods as noted in https://www.fws.gov/sites/default/files/documents/ConservationGuidanceRPBBv1_27Feb2018_0.pdf

[22] All conservation measures are to be implemented in a manner compatible with infrastructure and required maintenance regimes for safety, security, and reliability. Implementation of conservation measures will be tied to the constraints imposed on the specific energy or transportation Partner.

[23] Commitment expectations are intended as the sideboards for implementation. Because specific timing or prescriptions may vary by land use or geographic region, Partners should review the description provided, verify their implementation aligns with the description, and describe its implementation in their application and implementation plan.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
Avoidance of known or observed nest sites **(Mandatory)**	Avoid ground disturbing impacts to locations immediately surrounding locations where nests and overwintering sites of covered species are known to occur and are actively occupied. Avoidance distances from a known active nest vary by activity type: • Targeted vegetation management only within 10 feet, • No ground disturbing activities within 30 feet, • No broadcast herbicide applications within 300 feet. Avoidance distances may be adjusted to site-specific conditions as approved in coordination with the Program Administrator and the Service. Partners must notify the Service and the Program Administrator and provide photo documentation when a nest is identified to confirm occupancy by covered species. Known nest and overwintering sites include nest and overwintering sites mapped or communicated based on prior identification or knowledge. Observed nest and overwintering sites include previously undocumented nest and overwintering sites that are observed by personnel in the field. Partner personnel conducting fieldwork will use available resources in the Bumble Bee Agreement Toolkit to complete a training on how to identify bumble bee nests. For nests identified, partners may use direct observation to confirm nest site abandonment and are not required to conduct surveys to confirm nest absence.	• When nests or overwintering sites for covered species are detected, follow appropriate and specified avoidance distance guidance to minimize direct impacts. • Consider reporting any observations of covered species to USFWS or other organizations (iNaturalist, Bumble Bee Watch) • Temporary work stoppage and area buffers around active nest sites may be required.
Targeted herbicide treatments	When applying herbicides, implement targeted or spot treatments on undesirable (invasive, noxious, or incompatible) vegetation in a manner that applies chemicals to a specific plant or group of plants while avoiding or minimizing impacts to off-target vegetation. Applications will be conducted by qualified trained applicators, comply with label instructions and regulations and use minimal the number of applications to achieve vegetation objectives. Careful targeted applications shall mitigate off-target effects on desirable vegetation that contributes floral resources to bumble bees. If implementing this conservation measure as part of Monarch CCAA enrollment in “adopted acres” for that CCAA, the activity fulfills these requirements when conducted in areas that overlap this Agreement’s enrolled acres.	• Spot spraying of invasive, defined noxious weeds, and/or incompatible woody vegetation. • Targeted herbicide treatments may be applied in conjunction with other conservation measures such as site preparation for native seed mix installations or follow-up treatment of previously mown brush.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
		• Targeted herbicide treatments may include avoiding spraying species that are actively in bloom.
Seeding and planting diverse and native floral resources	Seeding or planting that encourages floral diversity and establishment of native species that will promote a landscape with high floral diversity and abundance. Seed mixes must include at least three or more native plant species that bloom during each of the spring, summer, and fall periods (per UIC 2019). Where available, mixes should include geographically-appropriate, high-nutrient and immune-building species (via seed or plugs) to increase nutritional benefits for bumble bees. High-nutrient and immune-building plant species include native species in the following genera: • Bergamot (*Monarda* spp.), • Prairie clover (*Dalea* spp.), • Hyssop (*Agastache* spp.), • Goldenrod (*Solidago* spp.), • Asters (*Symphyotrichum* spp.), • Leadplant (*Amorpha* spp.), • Joe-pye weed (*Eutrochium* spp.), • Sunflowers (*Helianthus* spp.) and • Coneflowers (*Echinacea* spp., *Ratibida* spp.). • Other species may also qualify if listed in plant lists published by USFWS, conservation organizations specializing in native pollinators, or peer-reviewed scientific literature. A mix including both native and non-native species (may be acceptable in areas subject to the following conditions: • Areas maintained through frequent mowing (e.g., mowing at regular intervals that prevents vegetation reaching its natural mature height), or • Where native species alone do not satisfy necessary erosion control expectations (e.g., state or local regulations, time or resource availability), or • Provide for conservation grazing management (e.g., grazing within energy	• Apply seed mixes to bare soils, such as those recently cleared, graded, or disturbed from construction or covered activities. • Inter-seed existing vegetation to incorporate high-nutrient species or enhance habitat quality. • Remove existing vegetation cover that is of low value to bumble bees and replace with native species of high value to bumble bees.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	generation sites, or on rights-of-way or buffering lands). All seed mixes or plugs installed must not include state or federally regulated species or species that are locally known to reduce floristic diversity or cause other ecological harm. Seed or plant material used must not be treated with systemic insecticides, which may be directly toxic to foraging bumble bees.	

Conservation mowing	Conduct mowing and/or haying practices in a manner consistent with the intent and recommendations outlined in published BMPs for native bumble bees or covered species, and in conjunction with operational needs.
	
	Conservation mowing may include one or more of the following:
	
	• Mow foraging habitat during species' overwintering period to avoid impacts to individual bees and reductions in forage resources during the bumble bee foraging season.
	
	• If mowing is necessary during the growing season (e.g., within energy generation sites, for roadside maintenance, or temporary access routes), either:
	  ○ Mow an area only once each year, or
	  ○ Spatially stagger mowing activities, so that no more than one-third of foraging habitat is mown to ensure adequate floral resources are present in the immediate landscape, or
	  ○ Consider the surrounding landscape context and mow no more than one-third of enrolled lands per year.
	
	• For seeded areas, mow only at the frequency necessary to establish and maintain high-quality native habitats that are compatible with rights-of-way operations. In some areas the appropriate frequency of mowing may change as newly restored communities mature and outcompete weeds that may initially necessitate more frequent mowing.
	
	If implementing this conservation measure as part of Monarch CCAA enrollment, the activity fulfills these requirements when conducted in areas that overlap this Agreement's enrolled acres
		• Implement rotational mowing to spatially stagger mowing across managed lands so that no more than one-third of foraging habitat is mowed to allow flowering plants to bloom across unmown areas.
		
		• Document and map areas mowed to inform planning schedules based on accurate management history.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance

Brush removal that sustains native floral resources	Implement one or more of the following:
	• Enhance early successional bumble bee habitat by removing dense brush and invasive species using forestry mowing, chainsaws, or other physical or mechanical methods.
	• Retain native tree and shrub species, where compatible, that may provide valuable early spring flowering resources for bumble bees. Species that may provide early flowering resources include those in the following genera (not exhaustive):
	  ○ Apples (*Malus* spp.)
	  ○ Basswoods (*Tilia* spp.)
	  ○ Blueberries (*Vaccinium* spp.)
	  ○ Buckeyes (*Aesculus* spp.)
	  ○ Native lilac, New Jersey tea (*Ceanothus* spp.)
	  ○ Dogwoods (*Cornus* spp.)
	  ○ Elderberries (*Sambucus* spp.)
	  ○ Maples (*Acer* spp.)
	  ○ Redbuds (*Cercis* spp.)
	  ○ Rhododendrons and azaleas (*Rhododendron* spp.)
	  ○ Serviceberries (*Amelanchier* spp.)
	  ○ Willows (*Salix* spp.)
	• Avoid, where possible, conducting brush mowing or removal during times when early flowering native woody species are in bloom. These may provide important floral resources in spring or early summer.
	If implementing this conservation measure as part of Monarch CCAA enrollment, the activity fulfills these requirements when conducted in areas that overlap this Agreement's enrolled acres.
		• Remove incompatible plants in densely covered areas not containing suitable habitat for bumble bees (dense thickets or colonies of invasive species) at any time.
		• Targeted removal of incompatible plants to minimize removal of early spring flowering species.
		• Removal of early (or late season) flowering shrubs from high-speed of high traffic volume roadsides and other sites that risk threat exposures may be preferred to minimize exposures to early or late season foraging queens.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
Prescribed burning	When using prescribed fire, implement regionally appropriate prescribed burning practices to promote and/or maintain suitable foraging, nesting, and overwintering habitat suitable for bumble bees, such as: • Create or use existing firebreaks that will result in a mix of burned and unburned vegetation which will provide refuge for bumble bees *within* and *adjacent* to the immediate burn area. • Avoid high heat intensity fires that can harm or kill nesting and overwintering bees. This may involve either burning reduced fuel loads or minimizing fuel loads prior to a burn through grazing or mowing. • Check local USFWS and resource agency guidelines for region-specific timing and restrictions related to covered species. If implementing this conservation measure as part of Monarch CCAA enrollment, the activity fulfills these requirements when conducted in areas that overlap this Agreement's enrolled acres.	• Burn foraging habitat during the bumble bee inactive season. • Work with the local field office to determine suitable dates for your location. • If bumble bees are likely to be present and active in the burn area, burn no more than one-third of the site and no more frequently than once every 3-6 years.
Prescribed grazing	Prescribed grazing is the controlled harvest of vegetation, with grazing or browsing animals, managed with the intent to promote or sustain floral diversity and abundance throughout the growing season and minimize use of mechanized or chemical vegetation treatments, or other disturbance to habitat. Implement suitable stocking rates, livestock types, and other BMPs specified for sustainable grazing on bumble bee habitat that do not have negative impacts on bumble bee floral and vegetative resources. This may include specific timing and livestock types depending on floral and vegetative resources available. Implementation requires development and adherence to a grazing management plan for which encouraging diverse and abundant flowering resources for the covered species is a primary objective. Allow suitable recovery time on lands after grazing to ensure floral resources recover to sustain suitable covered species habitat.	• Implement grazing at low stocking densities or for limited durations to restore or maintain an early successional habitat that promotes diverse and abundance nectar and pollen floral resources for the focal bumble bee species. • Install temporary fencing to create ungrazed areas *within* areas being grazed to provide forage reserves. • Engage in partnerships with conservation organizations and agencies that can assist in development of a grazing

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	If implementing this conservation measure within the Monarch CCAA, the activity fulfills these requirements when implemented in areas that provide habitat for one or more of the covered species.	management plan geared towards conservation objectives.
Reduce managed bee conflicts	For Partners with lands that authorize or manage bee hives or colonies, implement the following: Discourage/Avoid placement of managed bee hives/colonies in natural areas with high quality bumble bee foraging and nesting habitat.Place hives/colonies as far away as possible from natural areas, or at least 1 km [0.6 mi]) away from forests and woodlands. Follow all proper disposal methods following the use of managed hives/colonies; take care not to release bees into the wild after use. In areas with existing hives, keep domesticated hive/colony density below 0.5 hive/ac (0.5 hive/0.4 ha), if possible, particularly in areas that are on or near locations with recent bumble bee observations. Apiaries authorized or managed by Partners on enrolled lands should be a) at least 4 miles apart, and b) limited to no more than 20 hives in each apiary.	• Discourage hive placement in areas with higher potential for native bumble bee interactions such as forests, shrublands, and grasslands dominated by native species.
Mowing to reduce exposures to pesticides and physical risks	Implement one or more of the following: Mow inslope areas (e.g., first 15 feet from road edge) frequently enough to discourage development of floral resources in these areas to reduce potential exposure of bumble bees to pesticide uses or contaminants. Mow vegetation to prevent flowering and reduce attraction to bees prior to pesticides being applied, or in locations where soil contamination may have direct or indirect impacts to bees (e.g., landfills, remediation sites, or similar settings). Mow roadway medians less than 60 feet in width to prevent flowering and reduce attraction to covered species.	• Limit active season mowing to a narrow band to maintain visibility and remove habitat immediately adjacent to roadsides.
Reduce exposures to mowing-related stressors	Use one or more of the following when mowing to reduce disturbance to potential nests or overwintering queens, or to allow time for bees to avoid mowing equipment.	See guidance as published in the USFWS Conservation Guidance for the Rusty Patched Bumble Bee.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	• Mow no lower than a minimum height of 8-10 inches (20 – 25cm) if possible. • Mow at a slower speed (< 8 mph). • Use a flushing bar to ensure that individual bees can avoid injury or death by mowing equipment. • Mow natural and semi-natural grasslands and other foraging habitat during the covered species' inactive season.	
Reduce pesticide exposures via Partner-specific IPM planning	Prepare or maintain a current version of a Partner-specific integrated pest management (IPM) plan that describes: • Pesticides (e.g., herbicides, insecticides, rodenticides, and fungicides) being applied on enrolled lands, • Potential effects on covered species considered, • Procedures and/or measures used to reduce or eliminate pesticide applications, and • Economic thresholds dictating pesticides use decisions. To be eligible, Partners must provide a copy of the most current version and annually verify its use in annual reporting. In lieu of an IPM plan, a Partner may alternatively provide a) applicable company policies and procedures that demonstrate avoidance of pesticide use, and b) alternative non-pesticide measures used.. Under either approach, Partners will annually provide verification that the IPM plan or policy is in use by staff and contracted personnel using documentation available.	• Create and update a Partner-specific IPM plan informed by chemicals applied during Partner operations. • Publish a company-approved policy regarding the avoidance and minimized use of pesticides in operations or at facilities to demonstrate commitments to reducing exposures.
Collect and share data on bumble bee presence	Collect bumble bee observations or conduct monitoring through existing national or regionally specific programs such as: • Bumble Bee Watch • Wisconsin Bumble Bee Brigade • Bumble Bee Atlas	• Conduct monitoring in conjunction with one or more existing bumble bee observation programs. • Conduct stand-alone bumble bee surveys on a subset of enrolled

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	• Backyard Bumble Bee Count · iNaturalist A number of survey attempts for observations of any bumble bee species must be equal to the minimum number of habitat monitoring plots required per year on enrolled lands (see Table 14-4) to qualify. Both positive and negative results (which might not otherwise be captured using the above programs) should be reported to the Program Administrator. The use of new technologies to collect these data (cameras, eDNA, acoustics, or other tools) may be considered by the Program Administrator as technologies become available. Guidelines for their application to this conservation measure will be described within the Agreement Toolkit as they are considered.	lands and include results in annual reporting documents.
Conduct bumble bee surveys using USFWS-approved protocols	Conduct or support presence / absence surveys using USFWS-approved protocols performed by qualified surveyors on enrolled lands. To be eligible, each survey effort must include at least six, 30-minute surveys per 3 acres of best habitat surveyed during covered species active foraging seasons, or other timing recommended by USFWS.	• Conduct or support Recovery Monitoring surveys via federal protocols for listed species, such as rusty patched bumble bee.
Fund or conduct research that informs bumble bee conservation	Fund, conduct, sponsor, or collaborate on research projects that address conservation knowledge needs associated with covered species and provide results that can inform conservation decisions. This may include, but not limited to, studies that contribute to understanding bumble bee distribution, demographics, health, and population trends, habitat use, and preferences of covered species use, effectiveness of conservation treatments and techniques, effects of stressors on bumble bee health, effectiveness of novel survey methods (eDNA, unmanned aerial vehicles, and more), and other related topics. Partners interested in using this conservation measure must submit a brief research plan to the Program Administrator for review and comment prior to research beginning. Research must result in a technical paper that describes the research purpose, methods, analysis results, and discussion of findings. Research must either be: • Published in a journal, online, in conference proceedings, and/or • Presented at conference(s) or technical workshops.	• Bumble bee population research conducted on enrolled lands that is provided to the Program Administrator and USFWS. • Evaluations of management techniques and resulting habitat responses that are analyzed and presented at a technical workshop with an accompanying technical paper documenting methods. • Publications documenting bumble bee population trends and or habitat responses to treatments within peer-reviewed journals or proceedings publications.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	Publications, presentations, data, and other materials summarizing results will be shared with the Program Administrator and USFWS upon completion. Projects that require multi-year study efforts are required to submit interim annual updates to the Program Administrator and USFWS. Partners who choose to engage in this conservation measure will be required to share all research plans, data, methodologies, statistics and analyses, and resulting reports and publications with the Program Administrator and Service. Upon the successful completion of a research study under this measure, Partners will be responsible for coordinating a presentation to the Rights-of-Way as Habitat Working Group members where research, outcomes, and interpretations are shared. Finally, the Program Administrator, Advisory Committee, and Service reserve the right to utilize the results of all research undertaken as a conservation measure to inform the evolution, addition, or removal of conservation measures employed by this Agreement.	
Implement BMPs to limit the spread of invasive species	Use invasive species prevention measures to prevent the spread of noxious weeds and invasive plant species due to Partner activities in areas of suitable habitat. Requires a documented policy, procedure, or specifications that direct personnel to apply invasive species BMPs when conducting work in areas of suitable habitat.	• Removal of dirt, debris, and plant parts from equipment. • Washing equipment in between mobilizations. • Avoiding access through invasive species populations where possible. • Tailor management timing to prevent weed seed establishment and plant distribution.
Controlling invasive species for conservation purposes	Direct control of invasive and noxious plant species using mowing, targeted herbicide use, prescribed burning, or other methods with the primary objective of suppressing, reducing, or eliminating noxious or invasive plant species for habitat conservation. This measure includes treatments that are completed *in addition to* operationally required treatments. In contrast, treatments applied *primarily for* requirements	• Mowing of fast-growing annual invasive species. • Herbicide treatments that control invasive grasses to promote increased floral diversity.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	associated with operational needs such as line clearance, line-of-sight visibility, vegetation height reductions, or similar are not applicable. To be eligible, control of invasive and noxious species must not already be legally required for operations and maintenance of the energy and transportation lands. Such treatments may be tracked as part of other applicable conservation measures such as brush removal, targeted herbicide use, or others.	• Herbicide application to control persistent noxious weeds that reduce the diversity of floral resources available.
Create new bumble bee habitat areas	Creation of new habitat through direct seeding or planting to convert prior unsuitable land covers (e.g., row crop) to grasslands that provide suitable habitat for covered species. Seed mixes or plantings applied during habitat creation must align with the "seeding and planting diverse and native floral resources" measure requirements. Creation of new habitat is subject to the limitations of land ownership interests which may include fee owned, as well as easements, leases, or other land management agreements. See Section 6.2 of this Agreement (Implementing Conservation Measures on Easements) for additional details regarding the applicability of this measure based on land ownership.	• Conversion of a developed or cultivated land cover to native grassland. • Installation of pollinator gardens and meadows. • Restoration of diverse grasslands completed in partnership with underlying or adjacent landowners. • Woodland and forest enhancements or establishment for bumble bee foraging, nesting and overwintering, such as planting of native species or invasive species removal.
Enrollment in complementary certification programs that amplify conservation	Enrollment or certification in complementary non-federal programs that reduce and/or target vegetation management in ways that support other conservation measures. Applicable programs or certifications: • Provide third-party and objective evaluations that demonstrate voluntary commitment to managing habitat for conservation, education, and/or outreach purposes,	• Right of Way Stewardship Council Accreditation • Wildlife Habitat Council Certification • Xerces Society Bee Better Certifications • National Wildlife Federation's

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	• Encourage use of integrated vegetation management or integrated pest management, • Recognize vegetation management's value in pollinators and/or biodiversity conservation in its goals or objectives, • Require enrollees to adhere to standards, specifications, or policies that strengthen benefits for covered species and biodiversity. Depending on the program, enrollment may apply to an entire system of lands, or to specific sites. To be eligible, Partner must demonstrate that enrolled lands from this Agreement are included current enrollment or certification in one or more programs that fit these criteria.	Certified Wildlife Habitat • Other programs may be suitable. Verify in the Bumble Bee Agreement Toolkit or with the Program Administrator as applicable.
Maintain a bumble bee conservation program for staff and contractors	This measure includes the combination of both training and signage as follows: **Conduct training** with company personnel and/or contractors with to encourage and educate workers on the importance of bumble bee and pollinator conservation, as well as compliance with this Agreement. To be eligible, trainings must be conducted no less frequently than every other year. Trainings may consist of bumble bee identification, habitat requirements, avoidance practices, and understanding of conservation needs. Annual refreshers or updated training efforts can help enhance organization culture around conservation. Partners are required to summarize the type and number of trainings conducted, dates completed, course instructor name and affiliation, and estimated number of people engaged. Partners must provide examples of training materials if requested by the Program Administrator or USFWS. **Install signage** for either habitat protection and/or educational purposes around high-quality habitat areas. Habitat protection signage notifies vegetation management personnel to avoid impacts to habitat areas by signifying "Do Not Mow," "Do Not Spray," or similar advisement. Educational signage may be placed in publicly accessible locations to educate on the value of habitat or conservation. To be eligible, Partners must install or replace signage on at least two high-quality	Examples: • Bumble bee agreement updates and reminders shared during annual training sessions. • Online trainings describing bumble bee conservation needs and habitat requirements. • Orientations to avoiding and minimizing disturbance, application of seed mixes, bumble bee identification, or other topics. • Installing signs along created habitat areas as part of environmental education and public outreach. • Replacing signs in locations of high-quality habitat to protect against unintentional mowing or spraying.

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
	habitat areas in a calendar year. Partners must provide photos of the signage and an example of a sign installed in a representative habitat area. High-quality habitat includes areas of abundant native floral species richness and/or diversity and conditions necessary for covered species nesting and overwintering habitat.	• Installing signs around location mapped as high-quality habitat (see related conservation measure).
Map high-quality habitat areas	Mapping areas within enrolled lands that contain high-quality bumble bee habitat for future planning reference. Mapping should be completed using appropriate geospatial tools and provided with the annual report. Partners will share mapped areas of high-quality habitat with the Program Administrator directly through geospatial data files attached to their annual report, or by uploading appropriate data to the ROWHWG Geospatial Database. Within the annual report, Partners will describe the methodology used in the identification and qualification of high-quality habitat areas. For each high-quality area mapped and shared with the Program Administrator, Partners should also provide a brief summary explaining: • Criteria used to define high-quality habitat areas. • How use of these mapped areas may be used to inform decisions regarding maintenance, operations, and modernization activities on their enrolled lands.	Examples of high-quality habitat features: • High abundance of native plant species and low prevalence of invasive plant species. • High diversity of native flowering plants that provide robust nectar resources throughout the growing season. • The presence of features that may support suitable nesting and overwintering sites. • Intact remnant habitats that have been minimally or not disturbed by infrastructure or other development. Examples of qualification strategies: • High scores (>80) on the Rights-of-Way as Habitat Working Group Tier 3 Pollinator Habitat Scorecard • Floristic Quality Assessment • Xerces Habitat Assessment

Conservation Measure[22]	Commitment Expectations[23]	Examples and Further Guidance
		Guides

7 Obligations of the Parties

7.1 Program Administrator

The Program Administrator agrees to:

1. Hold and maintain compliance to their obligations under the 10(a)(1)(A) EOS Permit issued under the Agreement.
2. Work with potential Applicants to develop mutually agreeable applications that adhere to the terms and conditions of the Agreement, and help enrolled Partners by administering a program for CIs.
3. Foster collaboration amongst Partners by sharing information, as appropriate, on various aspects of the Agreement implementation (effectiveness of conservation measures, best practices for tracking/reporting, emerging technologies or science, or similar), maintaining a resource website and toolkit, and helping connect Partners who have potential to collaborate on conservation measures. Information sharing will not include any confidential business or proprietary information per the terms and conditions specified in Section 8 of this Agreement (Confidentiality).
4. Suspend, in whole or in part, or revoke, the CI of Partners found to be in non-compliance with the requirements of the Agreement. The Program Administrator or Service may suspend or revoke the CI for cause in accordance with the laws and regulations in force at the time of such suspension or revocation (50 CFR 13.28(a)). If the Program Administrator or the Service determines that a Partner is violating the terms of the Agreement or their CI, written notice shall be sent to the Partner advising of the nature of the violation and identifying corrective actions required to bring the Partner back into compliance with the Agreement. Take authorization and the regulatory assurances associated with the CI may be suspended or revoked if the Partner does not remedy the violation within thirty (30) days, or any other deadline as specified in the notice, after receipt of the notice. Notices of compliance violations will be copied to the Service. Remedy of the violation will be completed in accordance with Section 16 of this Agreement (Disputes and Resolutions).
5. Facilitate an Advisory Committee comprised of Partners that represent the participants in this Agreement. Rely upon the Advisory Committee to inform and support decision making over the duration of the Agreement as warranted. At the request of the Program Administrator, the Advisory Committee may inform decisions related to enrollment approval, modifications to CIs or requests to amend the Agreement, termination, suspension, or transfers under the Agreement, or other topics requiring consideration.
6. Assemble annual reports for activities under this Agreement by May 15 for the previous calendar year. Reports will include results of monitoring (as applicable), challenges noted during implementation or administration, adaptive management triggers observed, and the number of Partners participating through CIs and the total acres of enrolled lands under this Agreement by county or in the case of conservation measures applied programmatically or system-wide, by state.

7.2 U.S. Fish and Wildlife Service

The Service agrees to:

1. Provide assurances that Partners will not be required to carry out additional conservation measures for covered species on enrolled non-federal land beyond those of this.

2. Work with the Program Administrator and Partners as needed to provide technical assistance and share the best available information to inform ongoing implementation and advise when and if any adaptive management triggers require follow up actions.
3. When a request for an amendment to the permit is received, review and issue amendment, as appropriate, within a timely manner.
4. Provide oversight on the issuance of CIs in consultation with the Program Administrator.
5. Suspend, in whole or part, or revoke, the CI of Partners found to be in non-compliance with the requirements of the Agreement. The Program Administrator or Service may suspend or revoke the CI for cause in accordance with the laws and regulations in force at the time of such suspension or revocation (50 CFR 13.28(a)). If the Program Administrator or the Service determines that a Partner is violating the terms of the Agreement, written notice shall be sent to the Partner advising them of the nature of the violation and identifying corrective actions required to bring the Partner back into compliance with the Agreement. Take authorization and the regulatory assurances associated with the CI may be suspended or revoked if the Partner does not remedy the violation in accordance with Section 16 of the Agreement (Disputes and Resolutions).
6. Suspend, in whole or in part, or revoke the EOS Permit if the permit terms are not being properly implemented.
7. Annually review the compiled monitoring and reporting on the implementation and effectiveness of the Agreement. The Service will advise the Program Administrator on any recommendations or required changes in conservation strategy considering the adaptive management scenarios in Section 10 of this Agreement (Adaptive Management), or other changed circumstances.

7.3 Partners

To meet the requirements of this Agreement and provide a net conservation benefit to the covered species, all Partners must adhere to the following actions for their enrolled lands:

1. Abide by all terms of the Agreement and CI, including provisions associated with implementation, tracking, monitoring, reporting, paying fees, and alerting the Program Administrator/Service if there are compliance issues and/or unforeseen/changed circumstances.
2. Within one year following the full execution of an individual CI, submit an implementation plan to the Program Administrator to document Partner-specific considerations for implementation and compliance documentation.
3. Implement conservation measures agreed to in the CI across all enrolled lands following the full execution of an individual CI and annually thereafter, regardless of whether the covered species have been listed at the time of full execution of this Agreement. This includes:
    a. Commit to the two mandatory measures included in the first conservation objective (maintain, protect, and enhance nesting and overwintering habitat).
    b. Implement at least one conservation measure for three other conservation objectives selected by the Partner.
    c. As described in Section 6.3.1 of this Agreement, Partners must annually commit five percent of enrolled lands as suitable habitat set-asides. If selecting Objective 2, Partners must commit to annually implementing “active” conservation measures on a minimum cumulative three percent of enrolled lands.
    d. For all conservation measures implemented, Partners will meet or exceed the commitment expectations outlined in Table 6-2.

4. Achieve the target for implementation on enrolled lands within the first five years of enrollment, and annually thereafter over the duration of the Partner's enrollment within the Agreement. Depending on measures selected and existing Partner resources, Applicants may propose a "ramp-up" period to undertake to their maximum extent of anticipated conservation commitments. Applicants proposing a ramp-up period may be subject to additional review to ensure that the ramp-up period proposed will achieve the net benefit as envisioned within the biological opinion and accompanying effects analysis. Ramp-up periods cannot exceed five years from CI issuance. The Applicant will propose the expected interim targets to be met annually until the full extent of implementation is achieved.
5. Track the implementation of conservation measures for compliance verification as described in Section 14 of this Agreement (Monitoring Provisions).
6. Complete annual compliance monitoring reporting by January 31 of any given year, as specified in the CI. Compliance reporting will be submitted annually to the Program Administrator according to provisions in Section 14 of this Agreement (Monitoring Provisions).
7. If requested, provide the Service and the Program Administrator, or their agreed upon representatives, access to the enrolled lands to identify or monitor covered species and their habitat, evaluate conservation measures, and monitor effectiveness and compliance with individual Partners at mutually agreeable times. All applicable safety trainings and appropriate measures will be communicated to the Program Administrator, the Service, or their designee by the Partner in a timely manner prior to site access. All representatives of the Program Administrator, the Service, or their designee must adhere to all Partner-specific and site-specific health and safety compliance requirements, including associated training, certifications (if applicable), and protocols.
8. Allow the Program Administrator to share, as requested and authorized by written consent, with the Service or other Partners to the Agreement, habitat and other planning or monitoring information related to the enrolled properties. Information sharing will not include any confidential business or proprietary information per the terms and conditions specified in Section 8 of this Agreement (Confidentiality).

7.4 Agreement Advisory Committee

The Program Administrator will be supported in decision making by an Advisory Committee. The purpose of the Advisory Committee is to provide collaborative support to the Program Administrator so that the Program Administrator can implement the Agreement and make decisions based upon informed guidance and recommendations of enrolled Partners. The Program Administrator will be the ultimate decision maker regarding participation in the Agreement, using the informed perspective of Advisory Committee Members enrolled and in good standing.

This team will be governed by the bylaws that were created by the partnering organizations involved in development of this Agreement. A copy of these bylaws will be maintained by the Program Administrator as part of the implementation toolkit.

Together, the Advisory Committee will:

1. Review, discuss, and advise the Program Administrator on questions that arise over the Agreement,
2. Represent and advise on decisions, on behalf of Partners,
3. Review and revise Advisory Committee bylaws, when necessary,
4. Inform, vote, and support decision making of the Program Administrator related to items including, but not limited to:

- Modifications or amendments to the Agreement,
- Overseeing and approving Advisory Committee work,
- Agreement review process and renewal,
- Support with Agreement decisions, public relations, and communications,
- Developing and implementing Agreement strategy, and,
- Advising on content and materials produced during Agreement implementation.

8 Confidentiality

The Parties recognize that energy and transportation infrastructure information can be confidential and sensitive business information held and not routinely disclosed and may be exempt from disclosure under the federal or Illinois Freedom of Information Act (FOIA). Such confidential, proprietary, and sensitive business information includes but is not limited to the following:

- Any maps depicting lands enrolled by an individual Partner that specifically identify the Partner, or specific location of lands,
- Information describing critical infrastructure information, or critical energy/electric infrastructure information designations,
- Identifying information about an individual Partner's acreage and its specific location or position, or
- Any information that contains proprietary business information as identified and designated by the Partner supplying that information.
- Information submitted online to the Service via the IPaC tool.

Partners should prominently mark each page of any documents containing confidential, sensitive, or proprietary information as "Proprietary/Confidential/Not for Release" as appropriate. Accordingly, the Program Administrator shall limit access to the foregoing information to only employees or agents of the Program Administrator, the Service, and the Partner that provided the information, unless otherwise authorized in writing by the Partner, or as may be required by law, court order or administrative action. The Program Administrator shall only allow such access to the information via methods allowed by the applicable Partner(s) and solely for the purpose of allowing the relevant information for monitoring and reporting, as described herein. The Program Administrator will not authorize anyone to download, possess, or distribute the information, unless otherwise authorized in writing by the Partner.

The Service and the Program Administrator shall take all reasonable steps to maintain confidentiality under the relevant laws, as well as the Service and the Program Administrator, and their employees and/or agents. Neither the Service nor the Program Administrator are responsible for any information ultimately subject to disclosure under the relevant public open record laws. The Program Administrator and Service will provide a Partner with advanced notice of the request for disclosure and allow an opportunity to refuse.

For disputes and resolutions being reviewed by the Advisory Committee, the Program Administrator will take similar confidentiality measures when considering the sharing of information with Partners acting within the capacity of the Advisory Committee and involved with reviews or compliance considerations being considered. The Program Administrator shall only allow such access to the information via methods allowed by the applicable Partner(s) and solely for the purpose of allowing the relevant information for the specified request provided in writing.

If the Service, or the Program Administrator, receives a request under the federal or Illinois FOIA for information identified and labeled as potentially confidential, and has responsive documents in its possession containing such information, the Service or the Program Administrator will consult with the Partner that submitted the information and provide an opportunity for the Partner to object to disclosure prior to determining if the information is exempt from disclosure pursuant to the FOIA, pursuant to applicable exemptions in the federal or Illinois FOIA. Additional information regarding the Service's process for responding to FOIA requests for possibly confidential information is set out at 43 CFR 2.26-2.36 (2013).

9 Duration of Agreement and Permit

9.1 Duration

The Agreement will be in effect for 35 years following its approval and signing by the Service and the Program Administrator, unless terminated or revoked before that time. This Agreement targets this extended duration to minimize the potential for unnecessary amendments or disruptions in coverage resulting from a shorter duration.

Partners enrolling in this Agreement under a CI will be asked to commit to an initial implementation period of a minimum of five years following initial ramp-up timeframes (if applicable). For example, should a Partner require several years to achieve the full implementation of conservation measures, they would be expected to maintain that involvement for an additional five years.

Participation in this Agreement is voluntary, and Partners can terminate their participation at any time. Partners are required to notify the Service prior to termination. In accordance with Section 4.4 of this Agreement, Partners may only return any acres above baseline prior to termination of their CI. Following termination, the Partner would no longer have assurances related to covered species. Termination of a CI is subject to the requirements of Section 9.6 of this Agreement (Termination of a Certificate of Inclusion by a Partner).

The ESA Section 10(a)(1)(A) permit authorizing take of the species will become effective for covered listed species following execution of the Agreement, and immediately following the effective date of any final rule listing of currently unlisted, covered species, and will expire at the permit expiration date or as otherwise specified upon unanticipated suspension or termination. However, the EOS Permit and Agreement may be extended beyond the specified terms prior to permit expiration through the permit renewal process and with agreement of the Parties. CIs cannot extend past the end date of the Agreement or Permit.

9.2 Modification of Certificates of Inclusion

Throughout the life of the Agreement and Permit, Partners may work with the Program Administrator to make modifications and update CIs. Modifications to the CI may be made at any time. Most modifications, or updates, are expected to be made in conjunction with annual reporting. The Program Administrator cannot modify a CI without Partner consent.

The Program Administrator may approve modifications to the CIs that are within the parameters established within this Agreement and the associated Permit and the consultation document. For example, Partners may request to add or remove coverage for certain lands after initial enrollment when, for example, a Partner acquires or decommissions lands, finds that bumble bee habitat is expanding into unenrolled areas, or finds that enrolled lands don't support bumble bee habitat and assurances are no longer desired. In this example the Partner must notify the Program Administrator in writing and include documentation of the location of these areas. The Program Administrator will then report these, and other, modifications to the CIs to the Service on an annual basis.

When Partners evaluate additional lands for enrollment, they will consider whether the additions require updates to their original application materials based on ESA Section 7 compliance or baseline determination requirements. If a review in IPaC indicates listed wildlife, critical habitat, or listed or proposed wildlife or plants, may be affected that are not already addressed by an existing ESA Section 7 consultation or Section 10 permit, Partners will contact the Program Administrator and the Service to update and modify their Section 7 documentation to ensure consistency with the programmatic consultation. If the lands added or changed in the Partner's enrollment exceed five percent of their previous enrolled lands, then the Partner will update their baseline determination to incorporate those additional lands. Lands previously enrolled will maintain their prior baseline evaluation.

These changes will be documented in writing by Partners via annual compliance reporting (see Section 14.1 of this Agreement, Compliance Tracking and Reporting). The Program Administrator will then review the updated description and verify the changes through appropriate document review. If the documentation provided is acceptable and determined to comply with the Agreement and EOS Permit, the Program Administrator will acknowledge the change via an updated CI reflecting the changes in enrolled lands and provide a copy to the Service. The Program Administrator will include a cumulative summary of changes to enrolled lands during annual reporting to the Service. However, approval of the updated enrolled lands by the Program Administrator prior to the submittal of the annual report is not required provided the revisions are consistent with the terms of the CIs, the EOS permit, the programmatic consultation, and this Agreement.

9.3 Modification of the Agreement

Any of the Parties may propose modifications to this Agreement by providing written notice to, and obtaining the written concurrence of, the other Parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. Modifications or amendments to the Agreement would require Service approval and their consideration on whether a requested change may be a minor or major amendment to the Agreement.

The Service may approve minor modifications that do not significantly change the analysis of impact in the programmatic consultation as analyzed at the time of the Agreement and Permit approval without public notice. Examples of minor modifications such as these include updates or changes to covered species aligning with the procedure summarized below, adaptation of conservation measures, monitoring expectations, language clarifications, updates regarding the administration of the Agreement (for example, modifying the roles of the Parties).

The Service will not, through modification of the Agreement or otherwise, impose any new requirements or conditions on, or change any existing requirements or conditions applicable to a Partner or successor in interest to the Partner to compensate for changes in the conditions or circumstances of the covered species except as stipulated in 50 CFR 17.22(c)(5) and 17.32(c)(5).

9.4 Amendment of the 10(a)(1)(A) Enhancement of Survival Permit

The EOS Permit may be amended to accommodate changed circumstances in accordance with all applicable legal requirements, including but not limited to the ESA, NEPA, and the Service's permit regulations at 50 CFR 13 and 50 CFR 17. The Party proposing the amendment shall provide a statement describing the proposed amendment, the reasons for it, and its expected results. The Parties will use their best efforts to respond to proposed amendments in a timely manner. Examples of changes that require amending the Permit include additions or changes to covered species, permit renewal, changes to the plan area, or the succession or transfer of the Permit and Agreement (i.e., a new Program Administrator).

The Program Administrator may request modification of the Agreement to add, remove, or update the covered species. The ESA requires consideration on a species-specific basis. When a species addition to the Agreement is proposed by any of the Parties, the Program Administrator will follow a series of steps:

1. Species considered for inclusion may be proposed by any of the Parties. Species considered for inclusion will be:
    a. Bumble bees or other insect pollinators that may benefit by the conservation framework included in this Agreement to address conservation objectives addressing threats associated with habitat loss, habitat degradation, pesticide exposure, pathogens, or climate change. Should the requirements of or amendments to this Agreement align with conservation needs of other insect pollinators besides bumble bees, these species may also be considered.
    b. Potentially impacted by the same covered activities noted in Section 5 of this Agreement (Covered Activities).
2. The Program Administrator will convene the Advisory Committee (see Section 3.4 of this Agreement, Advisory Committee) to discuss potential inclusion and accompanying modification requirements. With the input of the Advisory Committee, the Program Administrator will add to, remove from, or otherwise modify this Agreement, including the addition of other bumble bee or insect species.
3. The Program Administrator will notify the Service of any proposed covered species during annual reporting (See Section 14 of this Agreement, Monitoring Provisions).
4. Aside from updates to their conference or biological opinion(s), the Service will confirm any other requirements for modification within 90 days of the Program Administrator notification. All modifications should be compliant with the federal law requirements pursuant to the Agreement approvals (ESA, National Environmental Policy Act (NEPA), and NHPA).
5. The Program Administrator and Service will establish a modification timeline based on requirements identified. Modifications that only require a conference or biological opinion update are expected to require one year or less to complete.

In the event of a species removal from the Agreement, the Program Administrator will follow a similar procedure, first identifying the respective species proposed for removal from the Agreement, and second consulting with experts to confirm the species removal from the Agreement. Rationale for removal from the Agreement will be presented and reviewed by the Service and other Parties prior to execution.

9.5 Renewal of Certificates of Inclusion or the (10)(a)(1)(A) Enhancement of Survival Permit

The Program Administrator will encourage all Partners to participate for extended periods. For Partners requiring a ramp-up period, the Program Administrator expects Partners to remain in the Agreement at least five years following ramp-up.

The Program Administrator will contact all Partners at least 90 days prior to expiration of their CI. The Partner can either request a CI renewal or allow their CI to expire. If the Partner renews the CI before the expiration date, the existing commitments and assurances will continue. If the Partner does not wish to renew, it may simply let the CI expire. Once expired, the conservation measures may cease, and the Partner will no longer receive the take coverage or assurances provided by the EOS Permit, or incidental take coverage provided through the Consultation document. If the Partner wishes to renew after their original CI term has expired, the Program Administrator will decide whether an “as-is” renewal is acceptable or if changed circumstances merit modifications to the CI. Changed circumstances may include modifications and updates to the original management guidelines contained in this Agreement.

If the Program Administrator decides to renew the Agreement, the Program Administrator will review any changed circumstances with the Service to determine whether modifications to the existing Agreement may be needed prior to renewal. The Program Administrator will then submit a permit application to the Service prior to the expiration of the Permit. A permit renewal is considered a new agency decision as described in 50 CFR 17.22(c)(7).

If the Program Administrator decides to terminate this Agreement or not to renew upon expiration of this Agreement, the Partners have the option of negotiating a new Conservation Benefit Agreement with the Service, transitioning to an individual Conservation Benefit Agreement, or transferring the Program Administrator role to another organization. The Service will work efficiently to process any EOS permit applications to limit disruption to Partners.

9.6 Termination of a Certificate of Inclusion by a Partner

This Agreement and associated CIs are voluntary agreements. Partners may terminate their CI, or enrollment of specified lands in an existing CI at any time. Enrolled lands remaining within the CI will still be required to meet conservation management standards outlined by the Agreement. Similarly, the Partner may terminate a CI in its entirety at any time. The Program Administrator may request any final tracking or reporting for any remaining conservation measures yet to be submitted (i.e., tracking, annual compliance reporting).

9.6.1 Terminated Lands

Lands removed pursuant to an amendment to, or termination of, the CI are referred to as “terminated lands.” The Partner must provide 30-days written notice to the Program Administrator and Service that they are voluntarily removing enrolled lands from the Agreement or terminating the CI. Operations on land that is removed from a CI through total termination or by removing a portion of the land are no longer bound by the Agreement but, consequently, would no longer receive coverage under the EOS Permit or programmatic consultation for listed species. The terminated lands would also no longer receive assurances under the EOS Permit. The Administrator will report changes to the CI annually to the Service. Should the terminated lands include suitable habitat for covered species that are listed, the Program Administrator and/or Service will clarify expectations for documenting the return of any lands to the baseline acres originally included at the onset of enrollment.

As provided 50 CFR 17.22(c)(8) and 17.32(c)(8) the Program Administrator may terminate the EOS Permit or a Partner may terminate a CI prior to the Agreement or CI expiration date provided that the Partner remains in good standing under the terms of their CI. If terminating their obligations under this Agreement, the Program Administrator is required to surrender the EOS Permit, thus extinguishing take authority (for any covered species) and the assurances granted by the permit. Likewise, if a Partner terminates the CI or is unable or unwilling to continue implementation of the conservation measures and stipulations of the CI or the Agreement and to otherwise comply with the CI, the take authority and assurances conveyed to the Partner by the EOS Permit through the CI are relinquished. A Partner must provide 30-days written notice to the Program Administrator and the Service of intent to terminate a CI.

In the event of termination of a CI, either voluntary or for cause, as described in this section, any funds that have been paid by the Partner to the Program Administrator prior to the time of termination will be retained by the Program Administrator for ongoing bumble bee conservation support, including Agreement administration, and will not be refunded. The EOS Permit assurances and incidental take coverage will no longer be in effect upon termination of, or lands removed from, the CI.

9.6.2 Return to Baseline

Prior to terminating their CI, terminating Partners who previously elected to return to baseline conditions will provide additional information at the time they indicate a desire to terminate their CI to the Program

Administrator. The terminating Partner will be responsible for updating their analysis estimating the natural land cover acres (i.e., bumble bee habitat) resulting in acres over baseline within mapped occurrences repeating the baseline analysis completed during enrollment, which is described under Section 4.4 of this Agreement (Enrollment Process).

The analysis and resulting estimate of natural land cover acres created over baseline acres will provide a preliminary "acres over baseline" estimate. The preliminary acres over baseline estimate will be submitted to the Program Administrator and the Service for review and confirmation. The Program Administrator and the Service will provide their written confirmation of the analysis and its findings. Once approved, the terminating Partner may debit future habitat disturbance and resulting take from the acres over baseline for each covered species present in the enrolled lands at the time of termination. Any disputes with the analysis will be resolved using the process defined under Section 16 of this Agreement (Disputes and Resolutions). Any disputes left unresolved at the end of the process will result in unapproved acres over baseline.

Prior to CI termination, terminating Partners will be responsible for maintaining their ledger of debits from the final acres over baseline as acres are applied to subsequent take. Ledgers will be provided to the Service upon request and document total acres over baseline, summary of debits, dates and locations applied, and accompanying the Service authorizations for debits. Ledgers will be maintained by Partners for the duration of the period when they are exiting the Agreement. Following final CI termination, no additional take of acres over baseline will be permitted for former Partners. If implementing the return to baseline, a Partner will still be subject to the Agreement requirements for conservation measures, monitoring, reporting, and other administrative commitments identified. However, conservation and monitoring are exempted for those acres where return to baseline is undertaken. Returning acres to baseline may be subject to other laws, land rights, restrictions, or authorizations applicable to the Partner. See Section 4.4.3 for additional information regarding return to baseline.

9.7 Termination of the Enhancement of Survival Permit by the Program Administrator

The Program Administrator must provide 120-day written notice to the Service and all Partners to terminate the EOS Permit. Upon notice, or prior to, the Program Administrator will work with the Advisory Committee, the Partners, and the Service to determine the approach to succession, transfer, or termination of the Agreement and address mutual interests of all Parties at that time. If the EOS Permit is terminated, this Agreement and the CIs issued pursuant to it are also terminated.

9.8 Termination or Revocation of the Enhancement of Survival Permit by the Service

In addition to the provisions in Section 7 of this Agreement (Obligations of the Parties) and previously described in this section, the Service may revoke the EOS Permit for cause as provided in Section 7 of this Agreement (Obligations of the Parties) subject to the criteria for revocation as described in 50 CFR 17.22(c)(9) and 17.32(c)(9). If the EOS Permit is revoked, this Agreement and the CIs issued pursuant to it are terminated.

So long as the Permit remains in effect and a Partner is in compliance with its CI, that Partner shall be deemed to have the full benefits and authorities of the Permit within the Partner's property covered by the CI. In the event that the Service may seek to suspend, terminate, or revoke the Permit for reasons not the fault of a Partner, and that Partner is in compliance with the terms of its CI, the Service shall seek to craft a remedy that does not affect that Partner's rights, benefits, and responsibilities under the Permit prior to suspending, terminating, or revoking the Permit. Additionally, the Service agrees that a breach by a Partner of its obligations under a CI will not be considered a violation by the Permittee or any other Partner under this Permit as long as the Program Administrator's obligations are maintained. In the event a Partner has

materially breached its CI and, after a reasonable notice and opportunity to cure, such Partner fails to cure, remedy, rectify, or adequately mitigate the effects of such breach, then the Program Administrator may terminate that Partner's CI in accordance with Section 9.6 of this Agreement (Termination of a Certificate of Inclusion by a Partner).

9.9 Succession and Transfer

9.9.1 Transferring Certificates of Inclusion

This Agreement shall be binding on and shall inure to the benefit of the Partners and their respective successors and transferees, (i.e., new owners, leases, or easement managers) in accordance with applicable regulations (50 CFR 13.24 and 13.25). Successors or transferees do not need to be existing Partners in the Agreement. However, the successors and transferees will be required to adopt the role as Partner and adhere to the terms and conditions of the Agreement and the associated CI. The rights and obligations under the CI shall run with the ownership and/or management of the enrolled lands and are transferable to subsequent non-federal landowners pursuant to 50 CFR 13.25.

Ownership interest in the enrolled lands can be transferred before or after any decision to list the covered species targeted by this Agreement. Request for the transfer of the lands and/or CI shall be transmitted to the Program Administrator for approval at least 30 days before transfer. The request shall include the detailed descriptions of the location and acreage of the lands, and documentation of the ownership interest of the new CI holder. The Program Administrator will notify the Service of updates to CI holders as part of the annual reporting process.

9.9.2 Transferring Enhancement of Survival Permit and Agreement

As noted previously in Section 9.7 of this Agreement (Termination of the EOS Permit by the Program Administrator), the Program Administrator must provide 120-day written notice to the Service and all Partners to transfer or terminate the EOS Permit. Upon notice, or prior to, the Program Administrator will work with the Advisory Committee, the Partners, and the Service to determine the approach to succession, transfer, or termination of the Agreement and address mutual interests of all Parties at that time.

10 Adaptive Management

This Agreement will be in effect for 35 years following its approval and signing by the Service and the Program Administrator, unless terminated or revoked before that time. Despite best efforts in its development, this Agreement is unlikely to foresee all circumstances, or adaptation needs that may occur over this timeframe. To acknowledge this consideration, this Agreement incorporates adaptive management principles. Adaptive management is a method for examining alternative strategies for meeting the conservation goal and objectives of the Agreement, and then, if necessary, adjusting management actions according to what was learned. Management adjustments are a regular part of managing lands for effective conservation delivery. Numerous variables could impact the success of conservation measures and reduce the amount and/or quality of suitable bumble bee habitat. Rather than identifying the range of possible conservation measure adjustments that could be implemented, this Agreement identifies when adjustments must be made at a program level (i.e., triggers or thresholds that address habitat conditions that must be met by the Agreement), and provides resources (through the CBA toolkit, and ROWHWG website) and technical assistance so that Partners have the best available information when making management adjustments throughout their enrolled lands. This framework allows Partners to have flexibility and incorporate the best information to make management adjustments to benefit bumble bees, while ensuring a net conservation benefit for covered species is maintained throughout enrolled lands.

When adaptive management thresholds are triggered, the Program Administrator and/or other identified Parties will review the trigger, the corresponding program considerations, and the anticipated response expected under the individual scenario to determine next steps. If applicable, a summary of management adjustments will be included in relevant Partners' annual compliance reporting. Table 10-1 summarizes the adaptive management scenarios anticipated over the duration of the Agreement that can address unintended biological responses to conservation measures, new and emerging information relating to bumble bee species included in or appropriate for addition to the Agreement, or adjustments related to program administration needs.

Table 10-1. Adaptive Management Strategies

Triggering Scenario	Source of Change	Trigger(s)	Evaluation Frequency	Program Considerations	Anticipated Response(s)
Conservation Emergency	USFWS communications, USFWS occupied conservation grid data or mapped ranges.	A covered species is documented by the Service or Program Administrator as having a greater than 50 percent reduction in occupied range from the date the Agreement is executed, as determined by occupied grid cells, or other geospatial range mapping.	Annually	Changes in species-range wide conservation measures or implementation may be needed to address urgent conservation needs or improve conservation delivery. Partners will not be required to commit additional monetary resources without consent.	The Program Administrator will discuss conservation concerns with the Advisory Committee and Service to consider amending the Agreement to enhance the delivery of suitable bumble bee habitat across the enrolled lands.
New Insect Pollinator Listing, or New Information About At-Risk Species	Petition or 12-month finding recommending consideration for a new insect pollinator species to be listed under the ESA, or new or emerging information regarding threats to other, non-petitioned, bumble bee species that may be at-risk and suitable for inclusion.	Inclusion of a bumble bee or other insect pollinator that may be enhanced through conservation measures included in the Agreement. Other insect pollinators may include solitary bees, butterflies and moths, wasps, flies, and beetles.	As needed when new listing petitions or reviews are conducted, or new information becomes available.	Program Administrator, the Advisory Committee, and the Service will evaluate petitioned or recommended insect pollinators and determine if incorporation into the Agreement can yield conservation benefits by addressing overlapping habitat and conservation needs.	The Program Administrator, the Advisory Committee, and the Service will engage in conversation over possible modification of the Agreement, or amendment to the EOS Permit, to include petitioned or recommended species for listing. This will include an evaluation of habitat overlap, conservation measures needed, additional compliance requirements, and timeline needed for modification. Changes to the Agreement are likely to require a formal amendment to the EOS Permit.

Triggering Scenario	Source of Change	Trigger(s)	Evaluation Frequency	Program Considerations	Anticipated Response(s)
New Conservation Measures Proposed	New knowledge or recommendations suggest that adapting existing, or creating additional, conservation measures may be beneficial to covered species.	The Advisory Committee or Program Administrator proposes a non-mandatory conservation measure be added or modified to those listed in Table 6-2.	If or when circumstance occurs.	The Program Administrator will work with Partners and the Service to determine if/what components of the Agreement may be affected by changes in conservation measures.	The Service will review the proposed conservation measures changes with the Program Administrator and finalize the scope and minimum expectations of the proposed measure to verify consistency with the Agreement's take statement.
Partner-level Adaptive Management	Monitoring results demonstrate a sustained decrease in the frequency and abundance of habitat features greater than 10 percent below baseline conditions.	Partner-specific monitoring results demonstrate a sustained decrease below 10 percent of the average habitat condition. This is assessed by comparing the 5-year average habitat condition score from the Partner's past five consecutive monitoring years as compared to the average habitat condition score from the five years of initial baseline condition habitat sampling.	Annually, during annual reporting.	The Program Administrator will work with the Partner to review monitoring results and the documented decrease in baseline conditions. Together, the Partner and Program Administrator will evaluate possible causes of the decrease, such as the Partner's monitoring, conservation measures, or other implementation. External conditions such as drought, land use changes outside of Partner control, or other factors will be considered as well.	The Partner will discuss adaptive management approaches with the Program Administrator to sustain habitat conditions that do not fall below baseline conditions.
Program-level Adaptive Management Evaluation Proposed	A review of Partner reporting by the Program Administrator indicates that the existing trigger for Partner-level adaptive management evaluation is not	Program-level evaluation of Partner-specific adaptive management identifies improvements for updating triggers or identifies other needs addressed based on data collected by Partners.	If or when circumstance occurs.	Adaptive management is an important tool to demonstrate that baseline conditions are sustained or improved by enrollment. Adaptive management identified in this Agreement is based on collaborative input by the Service, the Program Administrator, and potential	The Program and Service, in collaboration with Partners, will review monitoring results and adaptive management triggers and responses made at the time of evaluation. If alternative triggers or approaches to evaluating baseline conditions are identified, the Program and

Triggering Scenario	Source of Change	Trigger(s)	Evaluation Frequency	Program Considerations	Anticipated Response(s)
	yielding the intended accuracy or appropriate triggers originally envisioned.			Partners. As the program is implemented, additional data and learning may indicate that modified triggers may provide a more accurate or appropriate response.	Service will work together to identify a suitable modification. Changes in adaptive management are intended to inform and improve net conservation benefit. Potential future changes shall not be punitive or alter the compliance expectations of Partners.
New Monitoring Method(s) Proposed	New knowledge, tools, or technology allow for adapting monitoring in a manner that may be beneficial to covered species.	The Advisory Committee or Program Administrator proposes a non-mandatory alternative monitoring approach be added or modified to Section 14.2.	If or when circumstance occurs.	The Program Administrator will work with Partners and the Service to determine if/what components of the Agreement may be affected by changes in monitoring.	The Service will review the proposed monitoring changes with the Program Administrator and finalize the scope and minimum expectations of the proposed updates to verify consistency with the Agreement's take statement.
Changes in Technology	Evidence that new technology results in impacts to the covered species of a substantially different nature than the impacts included in the analyses informing the Agreement.	The Program Administrator, in consultation with the Partners, determines that the technology associated with conservation measures or other covered activities has changed.	If or when circumstance occurs.	The Program Administrator will work with Partners and the Service to determine if/what components of the Agreement may be affected by changes in technology.	Program Administrator, in consultation with the Service, will consult with Partners to determine if appropriate modification or amendment to the Agreement or CIs to account for new impacts.

Triggering Scenario	Source of Change	Trigger(s)	Evaluation Frequency	Program Considerations	Anticipated Response(s)
Administrative Fees Need Updating	Financial stability of program administration endowment based on data with financial reporting.	Administrative costs are not being met, or administrative endowment does not support program's annual needs.	Annually	Changes in program support or administrative fee sum and structure may be needed to balance endowment based on program needs.	Conduct a cost-savings analysis of program to identify possible cost savings measures. Administrative fees may be updated to ensure the program administration is adequately funded. These fees will not be applied retroactively.

11 Expected Impacts of Take

11.1 Analysis Considerations

Under the ESA Sec. 3(19) "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct". The Interior Secretary further defines "harm" as that "which actually injures or kills wildlife, including acts which annoy it to such an extent as to significantly disrupt essential behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering; significant environmental modification or degradation which has such effects." (50 CFR 17.3).

For listed covered species included in this Agreement (see Section 2.2, Species and Management Needs) under the ESA, a variety of management and development actions will have the potential to result in take of the species. For example, direct mortality of the covered species from covered activities may occur from mowing vegetation that contains unknown bumble bee nests, occupied overwintering sites, or foraging individuals. Covered activities may harm bumble bees if they result in disturbance to breeding and foraging. Similarly, management activities for covered species conservation purposes, targeted herbicide applications, prescribed burning, and seeding of native seed mixes, all have the potential to result in take depending on whether suitable bumble bee habitat exists at the management site, the timing of the management actions, and other factors.

This section summarizes potential expected impacts or take of listed covered species that are reasonably certain to occur as a result of covered activities. There are several challenges related to estimating the amount of take that is expected to occur under this Agreement. First, the plan area includes entire ranges of eleven (11) bumble bee species within the contiguous U.S. Differences in range extents across the plan area may lead to spatial disparities in expected impacts or take. Second, the species' presence on enrolled lands and their exposure to covered activities will be influenced by the time of year, variations in weather and climatic patterns among years, and the extent and quality of habitat on the enrolled lands. Impacts to covered species will also depend on the location, timing, and manner of the covered activities taking place. Lastly, participation in the Agreement may vary over its duration, causing overall impacts or take to fluctuate over time.

The extent of take that occurs will likely depend on the number of acres that Partners enroll under the Agreement, which is unknown at this time. Covered activities are reasonably certain to harm, injure, or kill bumble bees and therefore result in incidental take. However, the condition of the covered species or the amount or quality of its habitat is reasonably expected to be greater with implementation of conservation measures under this Agreement than without it. Various assumptions necessary for the analysis have been made to provide a transparent and reasonable estimate of the number of bumble bees subject to adverse effects including mortality.

By implementing conservation measures to address conservation objectives on all enrolled lands, the creation, restoration, enhancement, and protection of suitable habitat in this Agreement will result in a net conservation benefit by reducing threats and increases in habitat available to the covered species. Take (as defined above) and benefits resulting from the implementation of conservation measures were assessed evaluating the effects of temporary and permanent removal, destruction, creation, restoration, or maintenance of suitable foraging, nesting, and overwintering habitat for the covered species as surrogate measures for the take or benefit of individual bumble bees. The covered species targeted by this Agreement are dependent on foraging, nesting, and overwintering habitats which provide energy and shelter necessary for the completion of their lifecycles and continuance through each season. Impacts, either positive or negative, to the respective habitats in an area occupied by the covered species may impact the species' continued existence themselves, leading to a determination of take or benefit.

11.2 Take Estimation

Take resulting from covered activities includes both temporary and permanent impacts to suitable habitat. Overall, benefits from conservation measures included in this Agreement are expected to outweigh any adverse effects to covered species, thus providing a net conservation benefit resulting from each Partner's enrolled lands (see Appendix D for specific net conservation benefit calculations). Take may include but is not limited to, injury or death of individuals resulting from both conservation measures and other covered activities. The Service's assessment of the adverse effects or potential risks to the covered species and their habitats from implementation of the Agreement are detailed within the findings of the Service's biological and conference opinion regarding this Agreement, and Appendix D.

Incidental take is reasonably certain to occur on enrolled lands but will be more than offset by Partners as they implement conservation measures designed to provide a net benefit to the covered species, primarily through adaptation of ongoing vegetation management strategies.

11.2.1 Take Resulting from Temporary Impacts

Most covered activities occurring along rights-of-way and other lands are temporary in their duration and relatively minor or infrequent in their impacts. As such, habitat loss associated with these covered activities is negligible and temporary. Temporary habitat losses will be regained through the implementation of conservation measures (Section 6 of this Agreement, Conservation Measures) and natural site revegetation, resulting in no net-loss of bumble bee habitat for most impacts resulting from covered activities along energy and transportation lands.

The covered activities outlined in this Agreement (Section 5, Covered Activities) include activities that are already occurring as part of routine operations, maintenance, and modernization on transportation and energy lands. Ongoing operations, maintenance, and modernization of infrastructure within the enrolled lands are expected to be consistent with pre-Agreement levels (frequency, duration, and magnitude) of impacts.

Activities expected to lead to temporary habitat losses by way of quality reductions include the maintenance of managed bee hives on enrolled lands, the mowing of foraging habitat (or other vegetation removal activity), and the application of broadcast herbicide treatments. Due to the nature of the enrolled lands, and the easements and landowner relationships Partners must maintain, the placement of managed bee hives on enrolled lands may be unavoidable. Through the Agreement, Partners will be encouraged to minimize the placement of managed bee hives on their enrolled lands to the extent practicable. However, in the case where placement is unavoidable, the permit will grant coverage to impacts this may have on the covered species and associated foraging habitat. Through industry elicitation, the occurrence and extent of managed bee hives placed on enrolled lands are likely to be negligible or non-existent, and thus, the impact of this scenario on the covered species and foraging habitat is minimal (Appendix D).

Vegetation management that may temporarily impact foraging habitat includes both conservation measures and other covered activities that are conducted for maintenance purposes outside the scope or intent of those defined as conservation measures. Conservation measures include practices that target control of vegetation that may impact habitat and/or minimize off-target habitat loss. This includes practices like targeted herbicide applications, timing or rotational mowing, or conservation grazing. Vegetation management activities conducted for maintenance purposes include broadcast application of herbicides in areas of suitable foraging habitat, mowing areas of suitable foraging habitat during the bumble bee active season to remove woody vegetation or to create temporary access routes, and vegetation management applicable to other legal or regulatory requirements that may be incompatible with habitat. Vegetation removal may also include activities such as side trimming, pruning, hand clearing, and disposal of cut material through burning, chipping, dragging, and hauling, among others. When it occurs, broadcast herbicide applications are typically applied to all vegetation in a treatment area regardless of species or target. Broadcast treatments are assumed to be limited in application to problematic access areas or

locations required for supplemental seeding and are anticipated to occur on approximately 5 percent of enrolled lands annually. Broadcast herbicide applications would have a negative short-term and temporary effect on loss of foraging habitat, without enhanced foraging abundance and diversity. Unlike targeted herbicide applications, broadcast applications would also reduce native plant species and would not have the long-term sustained positive influence on foraging abundance and diversity that targeted applications would have. Broadcast application would result in reduced availability of nectar and pollen resources; however, with avoidance and minimization measures these impacts would not likely adversely affect bumble bee populations. Avoidance and minimization measures would include the minimization of application extent, retainment of untreated areas, and use of application BMPs (USFWS 2021a; USFWS 2020).

The mowing of habitat without timing or spatial restrictions can also result in direct mortality to adults and the temporary loss of foraging habitat, which may reduce floral resources (nectar and pollen) available in the area over time. Mowing (including mowing to reduce exposures to pesticides and physical risks, conservation mowing, and mowing of foraging habitat) is anticipated on approximately 26 percent of enrolled lands annually and is assumed to occur in areas around infrastructure, including areas that require mowing for vegetation height management. In most areas, avoidance and minimization measures would include ensuring a mower height of greater than 8 inches, reducing mower speeds, and mapping and tracking mowing activities. However, even with avoidance and minimization measures, mowing of foraging habitat is likely to adversely affect bumble bee populations on enrolled lands (USFWS 2018a; 2023).

Activities expected to lead to temporary habitat losses by way of temporary removals include small-scale (<0.25 acres) and large-scale (>0.25 acres) ground disturbing activities that are temporary in nature (i.e., restored to natural vegetation once completed). Ground disturbance, including grading and excavation associated with operations, maintenance, and modernization activities may have an effect on foraging habitat via the removal of nectar resources, soil compaction, and potential spread of invasive plant species. Further, the ground disturbance of these activities is expected to lead to injury or mortality to any nests and overwintering sites present in the footprint of the disturbance. Effects from these ground disturbing activities can be minimized or avoided via the use of avoidance and minimization measures. Small and temporary ground disturbance are expected to have neutral population effects, but if appropriate BMPs are utilized for disturbance and restoration, effects would be minimal and temporary. Therefore, small and temporary effects are not likely to adversely affect bumble bees on enrolled lands should avoidance and minimization measures and BMPs be implemented. Large and temporary ground disturbances may have negative population effects, but with the use of appropriate AMMs and BMPs for the effects are expected to be temporary. However, these temporary impacts are likely to adversely affect bumble bees on enrolled lands.

This Agreement is intended to improve vegetation management practices (relative to bumble bees and other insect pollinators) within energy and transportation sectors. Vegetation management is an on-going practice that focuses primarily on maintenance, safety, and reliability, and not on habitat conservation. This Agreement formalizes habitat conservation for the covered species on the enrolled lands by promoting conservation measures that adapt the timing, frequency, or method of common operations, maintenance, and modernization activities applied by Partners. The conservation measures selected by Partners create a net conservation benefit by reducing threats and stressors, and sustaining, creating, and/or enhancing habitat for covered species. Undertaking these actions addresses the conservation goal and objectives described in this Agreement. Considering these assumptions, the actions undertaken by this Agreement do not pose a significant negative change from current operations but instead improve suitable habitat available for covered species on enrolled lands.

11.2.2 Take Resulting from Permanent Impacts

Other covered activities may result in permanent covered species habitat loss; however, losses will be negligible. Lands with established energy and transportation uses are unlikely to experience large-scale permanent conversion or development. By their nature, these lands maintain areas of natural cover for safety, security, accessibility, and service reliability purposes. Through potential Partner elicitation, the

implementation of covered activities that result in permanent habitat loss under the Agreement is estimated to be small, but not zero (Appendix D). Specifically, activities expected to lead to permanent habitat loss include small-scale (<0.25 acres) and large-scale (>0.25 acres) ground disturbing activities where natural vegetation will not be restored after completion. While new infrastructure development is not permitted by this permit agreement, the modernization of existing infrastructure may include small-footprint expansions or assets that are not compatible with natural vegetation supporting foraging habitat for the covered species. Further, the ground disturbance of these activities is expected to lead to injury or mortality to any nests and overwintering sites present in the footprint of the disturbance. However, for both small and large scales, it is anticipated that the extent of these permanent habitat losses will be 1 percent (respectively) over the 35-year term of the permit, based on Partner elicitation conducted during the development of the Monarch CCAA, for similar covered activities (Table 3 in USFWS 2020). As such, small and permanent habitat removals are expected to have neutral population effects, but with the use of appropriate BMPs for disturbance, the effects would likely be minimal and permanent. Small and permanent ground disturbance is not likely to adversely affect bumble bees on enrolled lands. Large and permanent ground disturbance would have negative population effects, and proper implementation of avoidance and minimization measures would not reduce all impact. Thus, large and permanent habitat removing activities are expected to adversely affect the covered species (USFWS 2021a).

Partners are not required to track individual actions that result in the temporary or permanent removal of covered species habitat. However, Partners are required to undertake additional coordination if or when any individual project results in 10 acres or greater of permanent habitat removal. Partners will notify the Program Administrator and the Service of these instances to ensure any large-scale impacts to covered species habitat are tracked by the Program and Service over time. If a Partner is suspected through documentation provided by the Program Administrator or the Service as exceeding the take thresholds defined in the EOS permit and accompanying analysis, the Program Administrator may request the Partner provide documentation to evaluate and verify the extent of previous impacts and Partner compliance with the biological opinion issued for the Agreement.

According to 50 CFR 17.3, a net conservation benefit can be achieved if the lands enrolled are committed to continuing the species' management for a period of time and addressing any likely future threats that are under the property owner's control, with the anticipation that the population will increase, habitat quality will improve, or both. By enrolling in this Agreement, Partners formalize their commitments to conservation for the duration that they are enrolled, which helps ensure a portion of lands are protected from development or disturbance, as well as implementing conservation measures. As conservation measures are required to occur on all enrolled lands, habitat created, maintained, restored, and enhanced annually is anticipated to provide an equal or greater conservation benefit than the negative impacts of any permanent habitat loss within enrolled lands. By addressing conservation objectives needed for the covered species, the conservation measures are expected to support more robust and expanded covered species and pollinator populations. This expected increase in covered species populations and potential range will outweigh the small amount of permanent habitat loss anticipated.

11.2.3 Take Estimation Approach and Results

To estimate take associated with the Agreement, a consistent estimated nest density for the covered species across the covered lands was applied. Assumptions were based on the rusty patched bumble bee section 7 guidance and assumed that the covered species are distributed equally across their respective ranges at a density of one nest for 0.13 nests per acre, equivalent to 34 nests/km^2 of suitable nesting habitat (moderate density as described in USFWS 2021a; Appendix D). While this assumption removes likely differences in nest density by species, land use and habitat condition, landscape context, and broader geography, this conservation assumption can be used to quantitatively assess the impacts of each action on potential nests and aid in ensuring a net conservation benefit is delivered.

To understand the effects of actions that are specified in the Agreement, feedback, estimates, and data were elicited from energy and transportation organizations interested in enrolling in the Agreement upon its

execution. Specifically, organizations were asked to estimate the extent (percentage of potential enrolled lands) to which the specific activity occurs on their lands under present scenarios (pre-enrollment; baseline scenarios), and the extent (percentage of potential enrolled lands) to which the specific activity may occur on their lands under possible enrollment.

Nine responses were received from representatives of all sectors envisioned for inclusion of the Agreement. On average, respondents had an average of 20 years of experience in their respective roles and/or fields and held a somewhat high level of confidence in their responses (mean of 6.5 on a scale of 0 through 10, with the latter representing highest confidence).

To further inform extent estimations of the actions specified in the Agreement, additional data collected by the Monarch CCAA Program Administrator was used to assess the reported implementation of overlapping conservation measures (or conservation measures included in both the Monarch CCAA and this Agreement) on enrolled lands in that Agreement. Specifically, the reported implementation of the following conservation measures was assessed:

- Targeted herbicide application,
- Conservation mowing,
- Brush removal,
- Prescribed burning,
- Prescribed grazing, and
- Seeding diverse floral resources.

The elicitation of information from representatives of potential Partners to the Agreement, as well as the assessment of reported implementation of conservation measures in similar Agreements, allowed the generation of estimates for the expected extent, on a percentage basis, of both conservation measures and covered activities in both baseline and enrollment scenarios. The effects of both a baseline and enrollment scenario were analyzed across four primary sectors envisioned for enrollment in the Agreement, on which the extent of land management actions varies based on operational constraints:

- Energy generation lands
- Transportation lands
- Transmission and distribution corridors
- Other campuses and parcels (other non-linear energy or transportation assets)

The estimated extent of the actions and their impacts covered by the Agreement are likely high-end estimates. The representatives that participated in this exercise are those presently involved with the Monarch CCAA, Rights-of-Way as Habitat Working Group, or other organizations and generally have some of the highest standards for assessing vegetation management practices in the industry. It is anticipated that many potential Partners may need to change current practices to comply with Agreement requirements and ensure the net conservation benefit is delivered. As such, it is expected that the quantitative estimates of net conservation benefit provided by this analysis, in terms of covered species nests affected, are likely on the low end of what is possible through widespread adoption of the Agreement.

Based on the described assumptions and methodology, the subsequent descriptions of Agreement effects will be broken down by anticipated impact on the covered species and habitat (foraging, nesting, and overwintering) along the following gradient:

- Creates new habitat,
- Enhances existing habitat,

- Encourages overarching, systemic changes and measures,
- Results in temporary habitat losses, and
- Results in permanent habitat losses.

Descriptions of the effects of specific activities, with sector-specific extent estimates are described in Appendix D. Table 11-1 displays a breakdown of the estimated number of nests effected by cumulative actions per 1,000 acres enrolled in the Agreement overall and by land use sector, under baseline and enrollment scenarios, on an annual basis. Positive values indicate actions that are expected to result in positive effects on the covered species nests, while negative values indicate actions expected to result in negative effects on the covered species nests.

Table 11-1. Annual estimates of effects of cumulative actions on covered species nests in baseline and enrollment scenarios, by sector. The final column shows the net change from baseline to enrollment scenarios, demonstrating the net conservation benefit provided by the Agreement per every 1,000 enrolled acres. See Appendix D for additional information.

Sector	Baseline Scenario: Nests Effected	Enrollment Scenario: Nests Effected	Net Change in Nests Effected
Combined lands	57	79	22
Energy generation lands	76	89	13
Transportation lands	79	93	14
Transmission and distribution corridors	-1	13	14
Campuses and parcels	-18	113	131

11.2.4 Take of Other Listed Species Resulting from this Agreement

Actions that may cause take of other listed wildlife species are outside the scope of this Agreement. However, these species have already been consulted on under section 7(a)(2) or may also be covered pursuant to other permits under Section 10 of the ESA. For actions that are reasonably certain to result in take of a federally listed wildlife species, Partners need to pursue the appropriate ESA Section 7 consultation or Section 10 permit. In these instances, the Service provides incidental take statements along with its biological opinions for actions that involve a federal nexus. The incidental take statements include terms and conditions that, if complied with by the agency, exempt the anticipated take.

All covered activities are expected to adhere to the eligibility requirements discussed in Section 5 of this Agreement (Covered Activities) and not exceed the extent or frequency analyzed within the biological opinion accompanying the EOS Permit. To meet the minimum standard for take established in the incidental take statement that the Service provides with its biological opinion, it will not be necessary for the Partners to track take of individual covered species. Instead, the total number of conservation objectives and conservation measures implemented must be adhered to and tracked.

12 Expected Benefits

12.1 Contributions to Regional and National Conservation Goals

In recent years, several national, regional, state, and non-governmental planning efforts have been conducted to define bumble bee conservation needs and priorities for implementation across the United States. These plans range from guidelines published in academic proceedings and other technical resources, to avoidance and minimization efforts published as rules under the ESA and other legislative

action targeting research, public awareness, and conservation. In addition, agency and industry partners have shown interest in adapting their land management practices in manners which reduce unintended and negative impacts to bumble bee species, as well as many other pollinators. Some of these planning efforts include:

- **The Recovery Plan for Rusty Patched Bumble Bee** published in 2021 by the U.S. Fish and Wildlife Service following the listing of species as Endangered under the ESA in 2017 describes the goals for the species' recovery and the actions that will be necessary to meet them. The Recovery Plan offers goals, actions, costs, and timelines for multiple Conservation Units within the range of the rusty patched bumble bee and can be used at multiple organizational levels to encourage implementation of conservation at different scales.
- Xerces Society for Invertebrate Conservation's **Conserving Bumble Bees: Guidelines for Creating and Managing Habitat for America's Declining Pollinators** provides a straightforward guide to the benefits that bumble bees provide, the threats bumble bees currently face, and strategies to manage land and habitat in ways that will ultimately benefit bumble bees and other pollinators. This guide synthesizes information about different land management strategies and how they can most effectively be implemented to limit detrimental effects to bumble bees. The guide also offers identification tools and a series of regional lists of native, high-quality plants that support bumble bees.
- **National Strategy to Promote the Health of Honey Bees and Other Pollinators** (Vilsack and McCarthy 2015) outlined a comprehensive approach to tackling and reducing the impact of multiple stressors on pollinator health, including pests and pathogens, reduced habitat, lack of nutritional resources, and exposure to pesticides. This Agreement supports the third goal outlined in this strategy: restore or enhance 7 million acres of land for pollinators through federal actions and public-private partnerships.
- **States with pollinator protection legislation** that consider the issues impacting pollinator health and conservation. For example, Washington State SSB 5552 passed in 2019 created the state Pollinator Health Task Force and SB 5253 passed in 2021 provided funding for recommendations made by the Pollinator Health Task Force to protect pollinators. SB 5253 provided funding for education and communication initiatives, partnerships with federal agencies and neighboring states to promote pollinator health, and other habitat creation initiatives on public projects, among other things. Similar efforts providing funding for research, habitat conservation, and regulating beekeeping and pesticide use, have been passed in other states as well, including Arizona, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia, and West Virginia.
- **State pollinator protection and wildlife action plans** with goals of promoting pollinator conservation outside of legislation and other initiatives. As of 2019, thirty-one states across all regions have published pollinator protection plans (Whitney & Stringer, 2021). Additionally, all states have published wildlife action plans (SWAP) as a contingent for receiving federal funding. These plans are not regulatory, but guide decisions and funding towards species with greatest conservation needs, which may include pollinators (Harris et al. 2023).
- The **Center for Pollinator Conservation** was established by the U.S. Fish and Wildlife Service in 2022 to address the continued decline of pollinator species across the country. The Center promotes collaboration between regulators, landowners, scientists, and program leaders in coordinating and sharing practices for pollinator conservation, evaluating pollinator health across the country, and developing plans and decision-making tools to help meet short- and long-term pollinator conservation. Agreements like this promote the broad collaboration intended by the

creation of this Center.

- **New England Pollinator Partnership** is an agreement between the U.S. Fish and Wildlife Service, U.S. Department of Agriculture (USDA) Natural Resources Conservation Center (NRCS), and participating landowners which encourages the implementation of conservation measures that will benefit pollinator species (particularly rusty patched bumble bee and monarch butterfly). Conservation measures highlighted under this agreement include increasing the abundance of pollinator habitat and reducing exposure to pesticides. In exchange for participating in applicable NRCS programs and conservation measures, landowners are provided regulatory assurances. This agreement is a unique example of interagency cooperation and consultation established for the benefit of pollinator species, including at-risk bumble bees.

Implementation of the conservation measures outlined in this Agreement, which are targeted to address conservation objectives of bumble bees, will contribute to these broad conservation goals and efforts being established across the U.S., while also supporting ongoing operations across the nation's energy and transportation infrastructure lands. This Agreement requires Partner's enrolled to provide a net conservation benefit on enrolled lands while supporting on going activities (covered activities). Thus, Partners will contribute to these goals and efforts by being employed to reverse pollinator decline.

12.2 Scale of Benefits

Rights-of-way and accompanying lands for roads, highways, railroads, and energy transmission and distribution play a critical role in the current landscape. While much of these lands may contain infrastructure, facilities, or routinely mowed areas as required for safety and security, portions of the lands with suitable natural cover containing flowering plant species can support nesting, overwintering, and foraging habitat for bumble bees as well as many other pollinator species (Xerces Society 2015, Hopwood 2008). This Agreement recognizes that these lands already play an important role in bumble bee conservation yet can be enhanced in many ways to the additional benefit of the covered species.

The full extent of potential bumble bee habitat benefits created by this Agreement is currently unknown. The variability in the landscape across the national footprint, the varying degree of habitat value, and uncertainty of the number of participants and acres to be enrolled at this time, all add uncertainty as it relates to full habitat benefits. On these lands, the spatial distribution and availability of bumble bee habitat will increase across the landscape of enrolled lands. Nationally, millions of acres are potentially available to provide additional benefits to bumble bees through this Agreement.

12.3 Conservation Measures and Conservation Objectives

Under the Agreement, Partners will adopt a series of conservation measures (see Section 6, Conservation Measures) that address conservation objectives identified to net conservation benefit the covered species. These conservation measures have been designed to address recovery actions previously identified to benefit the rusty patched bumble bee, as habitat requirements, significant threats, and conservation opportunities are likely similar among bumble bee and other insect pollinator species targeted by this Agreement (USFWS 2021a; see Section 2.2.3 Contribution to Conservation Actions within this Agreement).

For many rights-of-way, the implementation of these conservation measures involves the adoption of IVM, or other targeted vegetation management strategies. Covered species foraging, nesting, and overwintering habitat can be enhanced by many of these conservation measures, which employ specific timing and spatial considerations when removing or trimming vegetation. These specific considerations ultimately result in avoidance of the most detrimental impacts to suitable habitat and individuals. This may include limiting the extent of these practices to a subset of areas to promote landscape heterogeneity or implementing these practices during the dormant season to avoid the removal of vital foraging resources and direct mortality to active individuals. Targeted use of herbicide is one example where a spatial consideration will be implemented; Partners will use a low-volume, spot spray approach to reduce undesirable and invasive

weeds on their enrolled lands rather than a broadcast spray which could negatively affect flowering nectar plants vital for covered species. This approach has been shown to be effective in increasing both the plant and bee species richness on utility ROW (Russo et al., 2021). Similarly, implementing a full integrated vegetation management regime involving conservation mowing and targeted herbicide treatment, with both spatial and timing considerations, has been shown to increase bee richness and abundance (Russell et al., 2018), indicating that the conservation measures specified by this Agreement could increase the overall quality of covered species habitat on enrolled lands.

Minimizing exposure of covered species to harmful pesticides is another important component of the conservation measures outlined in this Agreement. Overuse of pesticides can have multiple negative impacts on bumble bees including precipitating a reduction in flowering resources (jeopardizing vital habitat) and potentially having direct lethal and sublethal impacts (leading to reduced fitness and/or mortality). For Partners enrolling in this Agreement, herbicides are the primary pesticides used in vegetation management regimes; insecticides and fungicides are less common. A direct reduction in herbicide use can be accomplished through transitioning to a targeted strategy or embracing a cyclical vegetation management approach where lands are “set aside” for multiple years at a time with no disturbance. The cyclical vegetation management approach on utility corridors has been suggested to lead to heterogeneous vegetation and higher insect pollinator richness compared to lands mowed on an annual basis (Garfinkel et al., 2022).

Bumble bees also face increased threats from harmful pests, pathogens, parasites, and diseases spread through contact with managed species of bees, including the widespread, non-native honey bee, other commercially reared bumble bee species, and other managed bees. Where property rights allow, these risks can be mitigated by reducing managed bee conflicts; specifically, by Partners reducing the presence of managed bees on their enrolled rights-of-way. By removing (or not allowing the placement of) an abundance of managed bees near populations of this Agreement’s covered species, transmission of these harmful agents could be reduced (Colla et al., 2006; Murray et al., 2013).

Lastly, increasing collective knowledge and understanding of bumble bee biology, ecology, threats, and conservation needs is of utmost importance to the prolonged existence of the species targeted by this Agreement. As some bumble bee species have a relatively cryptic life history, many gaps remain in our understanding the myriad causes of recent declines, and thus the measures that can be developed and implemented to combat them. This Agreement will encourage Partners to engage in and support research and surveys that monitor bumble bee populations and may help elicit understanding of their life histories and requirements. Ultimately, this will aid in broad scale understanding of these species and better implementation of conservation measures over time.

13 Assurances Provided

13.1 Assurances by the Service

Upon approval of the Agreement and satisfaction of all other applicable legal requirements, the Service will issue an EOS Permit, in accordance with Section 10(a)(1)(A) of the ESA, to the Program Administrator. The Program Administrator will then extend the coverage afforded by the EOS Permit to all enrolled Partners holding a CI, authorizing incidental take of covered species. The obligations of Program Administrator and the Partners become effective upon execution of the CI. The EOS permit will become effective for federally listed species immediately following execution. For non-listed covered species, the take authorized through the permit becomes effective upon the effective date of the species’ listing provided the permittee signed the permit within 90 calendar days of issuance and has properly implemented the conservation benefit agreement since signing the permit. The permit would include the ESA’s regulatory

assurances on enrolled non-federal lands set forth at 50 CFR 17.22(c)(5) and 17.32(c)(5), should the species become listed.

Through this Agreement and Permit, the Service may not require additional or different conservation measures to be undertaken by a permittee without the consent of the permittee, beyond those voluntarily agreed to and described in the Agreement. The assurances apply on non-federal lands only where the EOS Permit associated with the Agreement and the CI itself are being properly implemented on non-federal land, and only with respect to species covered by the Agreement.

14 Monitoring Provisions

This Agreement includes provisions for compliance tracking and evaluating the effectiveness of conservation delivery undertaken by Partners as described herein. The provisions included verify the delivery of the Partner conservation measures, allow the Program Administrator and the Service to communicate the effectiveness of the Agreement, and for all Parties to learn and adapt from the implementation and any changed circumstances that may occur over the Agreement's duration. Compliance tracking and monitoring will be summarized as part of annual reporting. Partners will describe local or regional considerations, define roles and responsibilities, and how specific provisions will be conducted on enrolled lands as part of their implementation plan.

14.1 Compliance Tracking and Reporting

The Partner is responsible for annual compliance tracking and reporting specified herein as related to implementation of the Agreement and fulfillment of its provisions, including implementation of agreed-upon conservation measures, in accordance with the executed CI. Compliance tracking will require information on which conservation measures were implemented, as well as when and to what extent they were undertaken within the enrolled lands. Table 14-1 summarizes the required data collected by Partners to document the implementation of conservation measures on the enrolled lands.

Partners enrolled in this Agreement will be required to submit annual compliance reporting. These reports will document when, where, and how specific conservation measures were implemented on enrolled lands. The process Partners will follow each year can be summarized in the following broad steps illustrated in Figure 14-1.

Figure 14-1. Annual Implementation, Tracking, and Reporting

14.1.1 Tracking Conservation Measures on Enrolled Lands

In many cases, conservation measures may be conducted in specific locations. These occurrences may be documented in a tracking log, or via a geospatial record. For the purposes of tracking conservation measures, the information in Table 14-1 is required, unless stated as being optional. For tracking, one of several optional methods are available to Partners, including but not limited to:

- An individually maintained tracking spreadsheet,
- A downloadable tracking spreadsheet template,
- An online geospatial database mapping tool, or
- An online database entry form.

Consistency in the required data will be maintained across all options for tracking purposes. Each Partner will select their preferred tracking method(s) based on their software platforms, operational procedures, and information technology capabilities. To the extent possible, this Agreement intends to mirror the approach used by Partners enrolled in the Monarch CCAA to ensure consistency and minimize administrative requirements among all Parties between each Agreement.

Conservation measures conducted programmatically, as part of Partner operations (e.g., statewide conservation mowing), may be tracked at the state level, or a finer scale if desirable. These program-level activities are often tracked within partnering organizations using various methods and software that allow for follow up tracking, if requested by the Program Administrator. Other measures, such as native seed installation or prescribed fire, are often conducted in specific and well-defined locations. Tracking individual sites and their associated acreage on which conservation measures were applied is more appropriate in these situations. However, it is anticipated that large-scale tracking is likely the most applicable method for Partners and conservation measures that are widely employed across enrolled lands. These may include measures such as habitat set asides, conservation mowing, or targeted herbicide treatments, among others. For tracking conducted on a statewide, countywide, or regional scale, Partners should be able to provide documentation of implementation when, and if, requested by the Program Administrator and the Service. Documentation may include, but is not limited to, general mapped treatment locations, treatment records, documentation of departmental policies, or other forms deemed appropriate.

Table 14-1. Compliance Tracking Fields

Field Name	Description
Activity Area	Unique ID of the site (or area) upon which the activity (or activities) was implemented.
Organization	Partner organization name responsible for implementing the conservation measure.
Acres	Acreage of the conservation measure implemented; can be auto-filled if using online mapping tools.
State	The state in which the site is located; can be auto-filled if using online mapping tools.
County	The county (or counties) in which the site is located; can be auto-filled if using online mapping tools.
Conservation Measure	Activity implemented. Select from dropdown menu of options populated from the conservation measure activity table.

Field Name	Description
Monitoring Status	Whether the effort was or was not monitored (include results as appropriate, see Table 14-2).
Date Completed	Date on which effort implementation was completed, or date of last activity.
Partner Overlap	A yes/no indication as to whether another Partner manages enrolled lands that overlap with this location. Within this field or the Comments field, Partners will report percent of overlap on enrolled lands, or the estimated amount of overlapping enrolled lands with conservation measures.
Comments	Optional field for site- or measure-specific notes.

14.1.2 Overlap Accounting in Enrolled Lands

Tracking of conservation measures and field monitoring conducted on a Partner's enrolled lands is the principal method of quantifying the net conservation benefit to covered species delivered by this Agreement. Because some infrastructure on energy and transportation lands are often co-located, some degree of overlap between Partners that maintain rights-of-way may occur. In such cases, both Partners may be conducting conservation measures, and thus counting those enrolled lands twice, each individually in their own reporting. However, this "double-counting" of enrolled lands at a program-level has potential to result in less net benefit than anticipated by the sum of total enrolled lands across Partners. To address this concern, the Program Administrator, in working closely with individual Partners, will ensure that overlap in conservation measures tracked is accounted for in annual reporting.

The Program Administrator will facilitate the accounting of the program's enrolled lands and extent of conservation measure implementation as part of annual reporting. In doing so, the Program Administrator will expect Partners to identify (within their tracking or annual reporting) the other Partner(s) with whom they maintain overlapping enrolled lands with. To assist the Program Administrator in accounting, the Partners will either:

- Coordinate directly with their overlapping Partner(s) to determine allocation of those specific enrolled lands between Partners, or
- Quantify and include the amount of overlapping enrolled lands in that year's reporting.

Using this information, the Program Administrator will then quantify the program's collective *enrolled land acres delivered* (sum of lands enrolled, excluding overlap) and compare that against the collective *enrolled land acres committed* (sum of estimated lands enrolled; overlap between Partners not accounted for) for the year to demonstrate that net benefit has been achieved.

14.1.3 Annual Reporting

Compliance tracking will be used to inform the annual compliance reporting expected of Partners. See Table 14-2 for specific requirements for annual reporting. Annual compliance reporting will be the primary documentation summarizing the Partner's achievement of net conservation benefit, compliance with this Agreement and CI, observations of covered species, and any modifications proposed to the Partner's enrolled lands. In their annual report, Partners describe the implementation of the Agreement considering their CI and implementation plan requirements. They will also summarize the acreage and type of lands added, removed, or transferred over the past calendar year.

The Partner will also identify potential deviations experienced in implementation over the past year. Anticipated scenarios that may arise include, but are not limited to:

- Tracked conservation measures that do not comply with the conservation objectives required in the CI. Under this scenario, the Partner is out of compliance with the Agreement and is expected to discuss the variance with the Program Administrator, evaluate reasons for not achieving compliance, and establish a plan for addressing concerns identified. See Section 16 of this Agreement (Disputes and Resolutions) on how this scenario would be resolved.
- Implementation of conservation measures reported does not align with the implementation strategy defined in the Partner application and implementation plan. If encountered, the Partner and Program Administrator would evaluate the implementation challenges, the Partner's implementation plan, and define schedule for full implementation. For example, if a conservation measure were not conducted as indicated in the implementation plan due to delays in training or communication, limitations due to weather or seasonal variation, or some other factor, the Partner would note the change and whether it was a one-time occurrence or indicative of a long-term change in implementation.

The Program Administrator will provide reporting guidance and templates to Partners to ensure consistency in annual reporting and aid program compilation. Collectively, the annual tracking and reporting will inform:

- Confirmation of enrolled lands' location and extent,
- Types and estimated acres of conservation measures applied on enrolled lands,
- Changes or unforeseen circumstances encountered,
- Opportunities for adaptation and improvements, and
- Any additional requests from the Partner or Program Administrator.

Each Partner will submit the required annual reports to the Program Administrator by January 31 of each year, or as specified in the CI. The Program Administrator will then provide a compiled annual report including monitoring results and summaries of implementation status of approved CIs to the Service by May 15, for the prior calendar year. This schedule may be modified as agreed upon by the Parties. The first compliance report will be submitted to the Service following the first full year of the Agreement's implementation. Assuming the Agreement is authorized before January 1, 2026, the first compliance report will be submitted by the Program Administrator to USFWS by May 15, 2027, then annually thereafter.

Table 14-2. Annual Compliance Reporting Information Requirements

Information Needed	Description	Potential Source(s) of Information
Partner information	Partner contact and contact information. Include assigned CI agreement number.	Partner knowledge and records
Target species	Identification of which covered species are targeted for conservation benefit on the Partner's enrolled lands.	Partner knowledge, geospatial data, and program mapping.

Summary of annual conservation benefit contributions	A concise summary of system of lands managed over the past year in the Agreement. Describe:
	• Summary of conservation measures implemented. Verify if same as initial application, or any added, removed, or changed measures.
	• Extent to which conservation measures were implemented (system-wide, on individual parcels, any regional differences, and similar information), and on how many acres (by state for programmatic conservation measures, and at county level for others, or more local).
	• How many acres are enrolled in total.
	• Observations of covered species noted over the past calendar year.
	• Provide:
	  ○ Tracking sheet, or shapefile, of implemented conservation measures.
	  ○ Describe any areas where implementation or benefits deviated from anticipated direction.
	  ○ Summarize any unforeseen or changed circumstances that impacted annual contribution.
		Partner knowledge, geospatial data, management records, or other tracking platform(s) used by Partner

Summary of monitoring conducted	A concise summary of monitoring conducted and any summarized results, if conducted. Describe: • Where monitoring was conducted (including location information or a map). • For standard monitoring, the method used and, if applicable, notes regarding implementation. • For supplemental monitoring or research done in lieu of monitoring the method(s) used, a summary of lessons learned, or any results that inform future implementation. • A short description of standard monitoring results relative to habitat conditions. If using supplemental monitoring or research done in lieu of monitoring, describe how results inform or demonstrate improvements over baseline conditions or how knowledge gained provides a net conservation benefit. • Summary of results including a short narrative, plus applicable tables or figures. (e.g., results of bumble bee surveys including both positive and negative results, confirmed improvement of suitable habitat, unexpected results, and any recommendations for future implementation or monitoring)	Monitoring data
Summary of any outreach conducted	Summarize any optional supplemental efforts undertaken for education, outreach, and promotion of bumble bees, the Agreement, or pollinator conservation.	Partner knowledge, data, records, or other tracking method used by Partner

Information Needed	Description	Potential Source(s) of Information
Modernization compliance verification	A self-verifying check that the Partner has not exceeded their one percent modernization acre threshold. This may also include the coordination of any individual activities covered under this Agreement that are expected to permanently remove 10 or more acres of suitable habitat (see Section 5.3).	Partner knowledge, data, records, or other tracking method used by Partner
Upcoming year annual forecast	Review and verify (or update) annual estimates of enrolled lands, conservation measures forecasted, and any adaptive management that needs to occur.	Partner knowledge, data, records, or other tracking method used by Partner

14.2 Monitoring Requirements

The purpose of monitoring in this Agreement is to:

1. Verify habitat presence in areas of natural landcover where conservation measures are implemented,
2. Encourage data collection within existing programs already conducted by the Service, other federal and state agencies, non-profits, universities, and citizen science groups to track and monitor at-risk bumble bees, and
3. Allow for flexibility and adaptability to Partner abilities, habitat conditions, conservation measures, and likely results that may occur across the geographic range included in the Agreement.

Partners enrolled in this Agreement are required to monitor habitat conditions on enrolled lands where conservation measures are implemented. Monitoring expectations including extent, frequency, and protocols are described below in Section 14.2.1 (Data Collection Approach).

Biological monitoring and research efforts are already occurring across many energy and transportation lands. This Agreement encourages continued engagement in monitoring programs and resources already available to Partners. This program anticipates that many of the Partners enrolling in this Agreement are either already enrolled in the Monarch CCAA or are conducting their own monitoring as part of other citizen-science, pollinator certification, academic, or governmental programs. These efforts likely collect data on bumble bee habitat characteristics and should be acknowledged as a valuable tool for data collection and outreach. These efforts and the data they amass can be used by the Program Administrator or the Service to validate that bumble bee habitat is created or sustained on the lands enrolled. In doing so, participation in this Agreement supports these existing monitoring efforts and can also foster new and additional research and monitoring that can inform conservation. This Agreement aims to allow Partners the flexibility to engage in monitoring and research that best suits their organizational needs and goals. A few examples of how Partners may do this, outside of traditional monitoring, include pairing monitoring with efforts conducted as part of the Monarch CCAA or engaging in third party research initiatives that increase knowledge on bumble bees and bumble bee conservation.

14.2.1 Data Collection Approach

It is recommended that Partners engage with the tools already available through the Working Group to complete monitoring for this Agreement. These tools are widely used by organizations across energy and transportation lands. Their use will ensure data collected is easily compiled, compared, and communicated with the Service and outside stakeholders. In order to satisfy the requirements of this Agreement, Partners

should use the ROWHWG's Tier 3 Pollinator Habitat Scorecard. However, Partners will only be required to submit data to relevant questions within that scorecard, which are described in more detail below.

While use of the ROWHWG's Tier 3 Pollinator Habitat Scorecard is the recommended approach for completing monitoring in this Agreement, the Program Administrator and the Service recognize that Partners may already be engaged in data collection using other data collection methods which collect the same information. As such, Partners are permitted to use alternative data collection approaches if they can demonstrate the alternative approach collects the appropriate, and required, data fields and that these data can be shared in a consistent and accurate manner.

Partners will review the required protocols applicable to their selected monitoring approach and ensure the proper training, qualifications, and capabilities are available to ensure completion on an annual basis. If Partners will be using sampling efforts conducted for the Monarch CCAA for this Agreement as well, they must ensure an appropriate data collection approach is used to satisfy requirements of both Agreements.

Monitoring conducted in the first five years of enrollment will provide a baseline habitat condition assessment. This habitat condition will help characterize the net conservation benefit sustained on enrolled lands through Partner commitments. Monitoring plots will be sampled in accordance with the protocols and requirements outlined in Section 14.2.3 (Sampling Requirements). The results of this baseline condition assessment will be provided to the Program Administrator in conjunction with the annual reporting requirements described in Section 14 of this Agreement. The sample size, annual variation in plot locations, regional or climate variations, and randomly selected plot placements limit the ability of a single year's monitoring effort to fully represent the diversity or richness of habitat features across enrolled lands. Therefore, while the first year's data provides the initial comparison of habitat condition, a single year's data may not be considered an absolute metrics for baseline conditions. Instead, these data can be used to illustrate the variability and trends of habitat conditions over time when compared to subsequent years sampling data by a Partner. Partners opting to support research as a conservation measure in lieu of field-based monitoring may use Tier 2 or Tier 3 scorecard (or similar) results from their prior year's Monarch CCAA monitoring results as an indicator of habitat conditions.

Overall, approaches that are sufficient for completing monitoring in this Agreement include the following:

Rights-of Way as Habitat Working Group Pollinator Habitat Tier 3 Scorecard (Recommended)

Many Monarch CCAA Partners use the Working Group's Tier 3 Pollinator Habitat Scorecard (UIC 2019), which is used to collect habitat quality data in a standardized manner. Data collected by the Tier 3 Pollinator Habitat Scorecard include metrics that answer the questions posed by habitat monitoring within this Agreement, including answering within each plot:

1. What is the percent cover of potentially flowering plants?
2. How many different potentially flowering plant species are present?
3. Does the plot have potential nesting and overwintering resources?

The Tier 3 Pollinator Habitat Scorecard also includes additional questions such as percent cover of invasive species, adjacent land use, and potential habitat threats and opportunities (among others), all of which are important for understanding habitat suitability for bumble bees generally, but are not required to be recorded by Partners of this Agreement. It is anticipated that by identifying key (required) questions, monitoring for this Agreement will remain flexible for Partners with varying degrees of training and expertise while encouraging use of the Tier 3 Pollinator Habitat Scorecard which will allow for education, growth, and partnership opportunities over time.

For Partners who are also enrolled in the Monarch CCAA and annually collect data points on lands where adopted acres (of the Monarch CCAA) and enrolled lands (of this Agreement) overlap, monitoring results may be used to verify habitat presence and condition for both monarch butterflies and bumble bees so long as required data for both Agreements have been collected. In essence, the specified frequencies and

expectations outlined in the Monarch CCAA may be sufficient for the requirements of both Agreements, assuming that lands are enrolled in both Agreements appropriately, and minimum expectations are met. If a Partner wishes to "double count" their monitoring efforts and satisfy the requirements of both Agreements, they must use at least the Tier 1 Pollinator Habitat Scorecard with additional inclusion of the three required questions for covered species under this Agreement. Use of the Tier 3 Pollinator Habitat Scorecard is recommended because it fulfils requirements of both Agreements in a single data collection tool. The Program Administrator will review the data collected by Partners enrolled in both agreements to summarize observations relevant to bumble bee habitat on lands enrolled in this Agreement.

Rights-of Way as Habitat Working Group Pollinator Habitat Tier 2 Pollinator Habitat Scorecard

The Tier 2 version of the Pollinator Habitat Scorecard is widely used by Monarch CCAA Partners. Use of the Tier 2 Pollinator Habitat Scorecard for this Agreement is also recommended for its efficiency and overlap between agreements. The Tier 2 scorecard sampling must include and score all required data fields noted in Table 14-3 below. As with the Tier 3 scorecard, Partners with overlapping enrollment in both the Monarch CCAA and this Agreement may use monitoring results to verify habitat presence and condition for both monarch butterflies and bumble bees so long as required data for both Agreements have been collected.

Alternative Habitat Assessments

Other alternative assessment protocols and strategies are available that may be preferred by Partners based on existing use or regional preferences. While these alternatives are not the recommended approach by this Agreement, the following methods may be suitable for habitat monitoring and data collection. Use of alternative protocols and strategies may be permitted if Partners can demonstrate the alternative approach collects the required data fields and that these data can be shared in a consistent and accurate manner.

- **Third Party Research.** Some Partners may engage with research entities such as academic institutions, government agencies, consultants, or others to conduct rigorous scientific studies and research on enrolled lands. Where these studies are employed and add to scientific knowledge of bumble bee conservation, these results can validate the presence of habitat, as well as its specific contributions to target species and conservation science on enrolled lands. Partners may choose to engage in research supported by third party organizations *in lieu of* habitat monitoring by electing to **fund or conduct research that informs bumble bee conservation** as a conservation measure described in Section 6 (Conservation Measures). Partners committing to fund or conduct research will help address a vital conservation objective highlighted by this Agreement: to increase knowledge of populations trends and bumble bee conservation.

  Minimum expectations for scientific studies and research conducted in lieu of monitoring will be set and communicated by the Program Administrator and shared with Partners in a document published on the Agreement Toolkit website. Briefly, the Program Administrator, Service, and relevant Advisory Committee members will maintain an updated list of potential research topics and questions that are pertinent to addressing gaps in understanding of the covered species. Partners who choose this conservation measure must ensure the research they are engaging in addresses a listed topic, or request an alternative. Prior to selection of this conservation measure, Partners must submit a brief research plan (template will be provided in the Toolkit) detailing the question(s) being addressed, specific Partner involvement (hosting, funding, conducting), and brief methodologies for data collection, analysis, reporting, and communication over the course of the project (for the duration that this conservation measure will be utilized by the Partner). The Program Administrator will review all submissions and assess if proposed plan meets specified expectations. The Program Administrator reserves the right to refuse approval of research plans that do not sufficiently address the stated questions, or otherwise do not meet minimum expectations as stated.

  Partners who choose to engage in this conservation measure will be required to share all research plans, data, methodologies, statistics and analyses, and resulting reports and publications with the

Program Administrator and Service. Upon the successful completion of a research study under this measure, Partners will be responsible for coordinating a presentation to the Rights-of-Way as Habitat Working Group members where research, outcomes, and interpretations are shared. Finally, the Program Administrator, Advisory Committee, and Service reserve the right to utilize the results of all research undertaken as a conservation measure to inform the evolution, addition, or removal of conservation measures employed by this Agreement.

- **Xerces Society's Habitat Assessment Guides**: Xerces Society has created in-depth assessment forms for bumble bee habitat evaluations including the Rusty Patched Bumble Bee Habitat Assessment and the Pacific Northwest Bumble Bee Habitat Assessment Form & Guide. These guides evaluate the foraging, nesting, or overwintering habitat available to bumble bees, while also considering effects from the surrounding landscape. Either may be used as regionally appropriate to a Partner's enrolled lands.
- **USFWS Bumble Bee Assessments**: The Bumble Bee Survey Field Data Sheet and Rusty Patched Bumble Bee Survey Protocols are assessments developed by USFWS which may be required in other regulatory settings. Like the Xerces Society's guides, these assessments record presence of bumble bees, the foraging, nesting, or overwintering habitat on site, and the surrounding landscape effects on bumble bee communities. The protocols and associated field sheet allow for the collection of some habitat and site condition databases. Both documents are subject to occasional updates. Please visit the official USFWS website resources for the most recent versions. These are best used in conjunction with other, more detailed, habitat assessments such as the Xerces assessments.

The Program Administrator will request monitoring data and summary of results from Partners during annual reporting. Responses provided by Partners will be aggregated into the Program reporting summarizing data on reporting variables highlighted in Table 14-3.

Partners are encouraged to incorporate additional monitoring above the required frequencies outlined in Section 14.2.3 of this Agreement (Monitoring Expectations). Additional monitoring efforts, while not required as part of this Agreement, can benefit Partners by addressing important questions related to implementation of this Agreement. Additional data garnered from monitoring efforts can help document changes resulting from the implementation of conservation measures and ultimately guide Partners in adapting management strategies to increase efficiency, increase benefits, and communicate successes. Additional monitoring also has the potential to greatly increase the amount of data related to bumble bee individuals, populations, habitat conservation, and threats, which is a vital component of these species' recoveries. Further, this additional information on enrolled lands provides both the Program Administrator and the Service a greater level of confidence that the Agreement is functioning and delivering the conservation results as intended.

Table 14-3. Required and Optional Monitoring Data Fields

Information Needed	Description	Potential Source(s) of Information
Partner information	Partner contact and contact information. Include assigned CI agreement number.	Partner knowledge and records
Surveyor information	Person(s) that conducted monitoring sampling.	Partner knowledge and records
Sampling Method(s)	Identify data collection method used on enrolled lands, which may include one or more of the following: • Tier 3 Pollinator Habitat Scorecard Or • Tier 2 Pollinator Habitat Scorecard, versions including questions previously in 14.2.1, or in Findings data required below)	Partner knowledge, implementation plan, and sampling data

Information Needed	Description	Potential Source(s) of Information
	Other methods require confirmation with Program Administrator such as: • Third-Party Research or Monitoring • Xerces Society's Habitat Assessment Guides • USFWS Bumble Bee Assessments • Other (Partner specified)	

Findings	Partner summary of findings noting *required* data collected:
	• Number of samples collected
	• Timing and location of sampling
	• Percent cover of potentially flowering plant cover
	• Number of potentially flowering plant species
	• Nesting and overwintering resource observations
	
	Plus, any of the following *optional* data collected:
	• Native and/or invasive species percent cover
	• Bumble bee or other pollinator observations
	• Floral indicator species, document as:
	  ○ Dominant potentially flowering nectar and pollen producing plant species observed, or
	  ○ Presence of any high value nutrient plant species as noted in Table 6-2 or conservation reference guides.
		Partner sampling provided in a spreadsheet using a Program-provided template.

Discussion	Partner discussion on inferences made from annual sampling approach and findings.	Partner sampling

14.2.2 Monitoring Expectations

Monitoring is expected annually both on a Partner-level and on a program-level. On the Partner-level, monitoring informs whether suitable habitat exists where Partners have applied conservation measures across a wide and diverse network of enrolled lands. The Program Administrator annually compiles and analyzes these data to ensure the Agreement is providing the habitat quality and abundance necessary to achieve a net conservation benefit (See Adaptive Management Table 10-1).

Program-level Monitoring

At the program level, the cumulative results of monitoring (i.e., as reported by Partners as a whole) must demonstrate the implemented conservation measures are providing the foraging, nesting, and overwintering resources necessary for the covered species. The Program Administrator will compile a summary of the Partner-level monitoring conducted and its findings regarding Partner observations of the percent cover of flowering nectar plants, number of native nectar plant species, nesting and overwintering habitat resources, and as available, percent cover of native and/or invasive species, adjacent land use, bumble bee and other pollinator observations, presence of plant species known to be of high quality or preference to the covered species, records of dominant species, and habitat threats and opportunities.

Partner-level Monitoring

At the Partner level, results of monitoring provide insight on how a Partner's enrolled lands are contributing to the success of the Agreement as a whole and allows Partners to evaluate habitat response to conservation measures. Monitoring by each Partner is intended to answer the following questions:

1. Do the enrolled lands support the foraging, nesting, and overwintering habitat needs of covered species?

2. Are the conservation measures sustaining, creating, or enhancing habitat resources on enrolled lands?

For the first question, monitoring results that verify the presence of habitat features such as diverse flowering plants or plant communities, plus physical habitat structure needed for nesting and overwintering, help confirm that enrolled lands are supporting the intended conservation goal. For the second question, conducting monitoring on lands where conservation measures are, or have been previously, applied verifies that those actions are being conducted in a manner that helps sustain and improve habitat resources.

Adaptive management is intended to help sustain a Partner's habitat conditions such that it does not fall below baseline conditions. A decrease in habitat conditions may either be the result of conditions that a Partner can control (e.g., monitoring approach or conservation measures implemented), while others may be outside of their control (e.g., prolonged droughts reducing flowering plant abundance or land use changes by landowners outside the authority of a Partner's easements). As noted in Section 10 of this Agreement, if monitoring results demonstrate a sustained decrease in the frequency and abundance of habitat features sampled for five consecutive years based on the scorecard results, the Partner will discuss adaptive management opportunities with the Program Administrator. Adaptive management triggers are assessed by comparing the average habitat condition score of a Partner's past five consecutive monitoring years as compared to the average habitat condition score from the first five years of baseline condition habitat sampling. If triggered, the adaptive management discussion would include a review of the decreases documented by Partner monitoring, an evaluation of potential causes, and an exploration of ways that the Partner can address any habitat condition declines within their control.

Partners who choose to engage in third party supported research initiatives may also augment traditional monitoring through programs that record data relating to bumble bee individuals and populations. Through these initiatives, it is envisioned that Partners will be able to verify which species are using enrolled lands, and the effects and benefits of conservation measures.

14.2.3 Sampling Requirements

Sampling requirements are necessary to ensure data collected through monitoring is standardized across Partners. The following sections outline the minimum sampling expectations for Partners enrolled in the Agreement. Partners will be responsible for determining the exact methods and monitoring implementation that best suit their organizational capacity. Sampling conducted as part of Monarch CCAA participation fulfills the requirements of this Agreement's protocol if key questions and resulting data specified in this Agreement are collected (e.g., use of the Tier 3 Pollinator Habitat Scorecard).

Frequency

The frequency of sampling (i.e., the minimum number of sample plots required for compliance with the monitoring component of the Agreement) corresponds to the extent of the enrolled lands, which is specific to each Partner. Sampling is intended to characterize areas where conservation measures are applied, facilitate adaptive management actions where they are needed, and to be readily accomplished by ROW managers.

The sampling frequency required for Partners was established to balance monitoring effort with the other requirements that Partners are responsible for, including conservation measure implementation, tracking, reporting and normal operations and maintenance of their enrolled lands. Informed by Monarch CCAA participation, the Program acknowledges that extensive annual monitoring is not feasible for most potential Applicants. Thus, the desired frequency is intended to balance logistical constraints of Partners alongside information needed to confirm conservation delivery of the Agreement.

Considering sampling may overlap with Monarch CCAA monitoring, sampling frequency is established at frequencies generally aligning with participation in that companion agreement. For consistency, Partners are expected to base their frequency on enrollment:

- If a Partner is already enrolled in the Monarch CCAA alongside this Agreement and enrolled lands in the CBA overlap with adopted acres in the Monarch CCAA – they may use the sampling frequency required by the Monarch CCAA (See Table 14-4 in the Monarch CCAA).
- Partners enrolled solely in this Agreement are required to conduct annual sampling based on the Partner's total enrolled lands as described in Table 14-4 below.

Table 14-4. Sampling frequency required for monitoring

Estimated Enrolled Lands (Acres)	Required Monitoring Samples (Annually)
Fewer than 5,000	10 plots
5,001 to 25,000	30 plots
25,001 to 100,000	50 plots
100,001 to 300,000	70 plots
300,001 to 600,000	100 plots
600,001 or more	100 plus one additional plot for each 5,000 acres exceeding 600,001 enrolled acres.

Timing

Monitoring is intended to verify the presence of habitat conditions on enrolled lands where conservation measures are implemented. As such, sampling can be conducted any time during the growing season but is ideally carried out during peak bloom periods when bumble bees (specifically the covered species) are present on the landscape. This timing corresponds to the periods where flowering plants will likely be in bloom, and thus easier to detect by sampling personnel. Partners should conduct monitoring when responses to conservation measures are most likely to be evident. Thus, monitoring may be conducted prior to, during, or following the implementation of respective conservation measures. Partners are responsible for making this decision based on what best suits the goals of their organization and implementation strategy.

Plot Location and Size

Plot locations will be randomly or systematic-randomly selected by the Partner prior to the time of survey. If systematic-randomly selected, plots will be distributed to represent the entirety of a Partner's enrolled lands, but otherwise randomized. It is the responsibility of the Partner to determine how to distribute and randomize plot locations.

Randomization of plots is intended to remove bias in the selection of plot locations prior to sampling in the field. When planning the distribution of plots, Partners must consider several key factors:

- Location and size of the site managed by conservation measures. If implementation of conservation measures occurred over a large area, several sample points may be necessary to characterize the vegetative response and effectiveness.

- Type of conservation measures implemented. Partners are required to implement more than one conservation measure. Partners should sample in at least one location of each conservation measure implemented annually.
- Geographic extent of enrolled lands. Partners are expected to select plot locations across the full geographic extent of their enrolled lands. Plots should not be limited to a small portion of the Partners enrolled lands, within a single project, or otherwise not distributed throughout the extent where conservation measures are being implemented. Partners with large systems of enrolled lands may work with the Program Administrator to establish a multi-year strategy, which may include annual geographic constraints on sampling locations, to cover the extent of their enrolled lands.

Sampling for monitoring will be conducted with a 1,500 square foot (sf) plot, oriented as either a rectangle (150 feet x 10 feet) or a circle (22-foot radius). This plot size aligns with other pollinator habitat monitoring protocols, including those specified in the Monarch CCAA. This alignment will allow Partners enrolled in both Agreements to maintain a singular protocol.

Sampling Protocol

The following monitoring protocols are adapted from the Monarch Joint Venture's Roadside Habitat for Monarchs assessment protocol (NCHRP; Monarch Joint Venture 2019). This protocol has been used in the Monarch CCAA and adapted to be applicable across energy and transportation lands of varying sizes and configurations. It has been modified to ensure that data collected would include information necessary for monitoring specified within this Agreement.

1. Select Location of Sample Plots. Partners randomly distribute sample plots across their enrolled lands to ensure geographic dispersion (see factors described above) in a quantity corresponding to the minimum required based on their total enrolled lands (Table 14-4).

   Random selection of sample plots within enrolled lands can include, but is not limited to, GIS random point generation, pre-determined random intervals along a corridor, or another method that allows for selecting plot locations randomly prior to being in the field. Each Partner will be required to describe their approach to random plot selection in their respective implementation plan.

2. Define Sample Plot Boundaries. Personnel conducting monitoring efforts will locate the randomly selected plot location. Once at the appropriate location, plot boundaries should be oriented in parallel to the orientation of the corridor or area sampled, if utilizing a rectangular plot. Plots (both rectangular and circular) should be placed near the center of the corridor being sampled, when possible, to avoid edge effects.

   In situations where Partners want to characterize a large or diverse mosaic of lands, sampling multiple subplots at a randomly selected location may be valuable if the area being evaluated is notably variable. The resulting set of multiple evaluations at a random location may be averaged to obtain a single result. Depending on the characteristics of the habitat in these locations, the number of subplots may vary.

3. Observe Habitat and Record Data. Personnel meander through the plot and record data. The goal is to see the plants throughout the defined area. Specific meander movements throughout the plots will vary depending on the protocol used and local site characteristics including vegetation and topography. At a minimum, data that will be recorded in the plot should include variables listed in Table 14-3. Partners may choose which approach to data collection best suits their monitoring efforts. Potentially suitable options are described below. Partners are encouraged to take photographs of the plot at the time of sampling to document conditions. Partners may choose to submit photographs as part of their annual reporting. The Program Administrator may also request photos as additional documentation of monitoring conducted and habitat conductions on enrolled lands.

Surveyor Experience and Training

Monitoring surveys are intended to be quickly and efficiently conducted by personnel working in the area as part of other job duties, where possible. The methods included are intended to be completed by any individual with the following skills:

- A basic understanding of the Agreement requirements and sampling protocol,
- Ability to properly differentiate between flowering plants (dicots) and other plants (monocots such as grasses or sedges), and invasive species,
- Understanding of potential bumble bee nesting and overwintering habitat resources,
- Ability to use identification tools that can aid in identification of dominant plant species. This may include use of online or mobile device applications that use image analysis for identification, as well as individuals with direct experience with plant identification or use of field guides or identification keys.

Partners may find it useful to establish a training program to ensure data collected as part of this Agreement is standardized and high quality. Partners may also choose to collaborate or partner with outside parties (researchers, consultants) to conduct the required monitoring.

14.2.4 Monitoring Reporting Frequency

Monitoring reporting will be solicited at the end of the first year of implementation, and annually thereafter. If a Partner's initial enrollment occurred late in the calendar year, with little or no time for implementation or monitoring during the growing season, monitoring would not be required until the following year. In such instances, the Partner should confirm expectations with the Program Administrator. Ongoing monitoring reporting may be provided annually on a schedule aligned with compliance tracking reporting. Alternatively, less frequent reporting on monitoring is also allowed provided that a) the Partner conducts the same number of sites as expected annually to account for longer monitoring duration, and b) the Partner is currently fulfilling their obligations of the Agreement. Frequencies for reporting other than annually must be specified in the CI application. Partners may choose to monitor, and report results more frequently, if desired.

The Program Administrator and the Service reserve the ability to request more frequent reporting if deadlines are missed, reporting is incomplete, or other obligations have not been successfully met.

15 Notification of Take Requirement

The objective of this Agreement is to maintain, conserve and secure covered species populations across their range for the duration of this Agreement. However, it is anticipated that during maintenance and management of both managed habitat and unmanaged habitat some take of covered species will occur. Upon approval of this Agreement, and satisfaction of all other applicable legal requirements, the Service will issue the EOS Permit, in accordance with Section 10(a)(I)(A) of the ESA to the enrolled Partner. This permit will become effective for listed species upon execution and will authorize incidental take of covered species that results from covered activities on enrolled lands.

Although management practices will be designed to enhance and increase covered species habitat, take from covered activities may not be avoidable. Incidental take could occur because of the covered activities described in Section 5 (Covered Activities), including from beneficial conservation measures in Section 6 of this Agreement (Conservation Measures). Most of these impacts are expected to be limited and sporadic in nature. Enhancement of survival permits authorize take of covered species, above the baseline condition, when the conservation measures and other ongoing activities in the Agreement are of the nature of providing a net conservation benefit to the covered species.

For purposes of this Agreement, the Service does not believe that a pre-take notification requirement is practicable or appropriate. Because the conservation measures and other covered activities occur on a regular basis, many of which may be conducted outside of covered species habitat, or are infrequent or temporary in their impacts, the Service expects that incidental take in the form of mortality resulting from impacts from covered activities would be minimized. Furthermore, locating individual covered species prior to impact is not practicable for Partners to implement over the course of their management activities within this Agreement.

16 Disputes and Resolutions

16.1 Dispute Resolution

The Parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by all Parties. The Agreement does not create, nor constitute a partnership, joint venture, or similar agreement between Partners or Parties. Under the Agreement, the Program Administrator retains decision-making authority for resolutions that pertain directly to the execution of the Agreement and its terms and conditions. The Service, issuing the EOS Permit, retains the authority to ensure implementation is upholding the Agreement and its terms and conditions.

16.1.1 Compliance Notice

In response to an alleged failure to implement a condition of this Agreement, the Program Administrator may either directly contact or provide written notice to a Partner. This notice shall require the Partner to submit, within 30 calendar days of the date of the Compliance Notice or other specified time, a written explanation or statement in response that includes: (a) corrective steps taken by the Partner and results achieved, (b) a schedule and description of corrective steps that will be taken and results expected, or (c) a statement denying that the alleged failure has occurred and additional information supporting the statement.

The Program Administrator shall notify the relevant Service contact of the potential compliance issue at the time they send a written Compliance Notice to the Partner, including any consideration for protecting confidential information (Section 8 of this Agreement, Confidentiality). The Program Administrator will determine if further Service coordination is required for resolution.

The Program Administrator shall respond in writing to the Partner's response and either: (a) accept the Partner's response and state that the notice is resolved (a Notice of Resolution), or (b) not accept the Partner's response. The Service will be provided a notice of resolution in writing by the Program Administrator.

16.1.2 Deficiency Notice

If a Partner fails to respond to a Compliance Notice or the Program Administrator disagrees with the Partner's response, the Program Administrator may issue a written Deficiency Notice. A Deficiency Notice shall require the Partner to provide, within 30 calendar days of the date of the Deficiency Notice, a written explanation or statement in response that includes: (a) corrective steps taken by the Partner and results achieved, (b) a schedule and description of corrective steps that will be taken and results expected, or (c) a statement denying that the alleged failure has occurred with additional information supporting the statement and a request for discussions.

After coordination with the Advisory Committee, and the Service, if necessary, the Program Administrator shall respond in writing to a Partner's response and either: (a) accept the Partner's response and provide a Notice of Resolution, or (b) not accept the Partner's response.

16.1.3 Notice of Noncompliance

If a Partner fails to respond to Deficiency Notice or if the Program Administrator and the Partner cannot resolve the issue through discussions, the Program Administrator shall issue a Notice of Noncompliance in writing. Notices of Noncompliance shall require the Partner to submit, within 30 calendar days of receipt of the Notice of Noncompliance, a written explanation or statement in response that includes: (a) corrective steps taken by the Partner and results achieved, (b) a schedule and description of corrective steps that will be taken and results expected, or (c) a statement denying that the alleged failure has occurred with additional information supporting the statement and a request for discussions.

The Advisory Committee will make a recommendation to the Program Administrator regarding whether to accept or not accept the Partner's response. The Program Administrator, with input from the Advisory Committee, will decide on whether to accept or not accept the Partner's response. The Program Administrator shall respond in writing to the Partner's response and either: (a) accept the Partner's response and state that the notice is resolved (a Notice of Resolution), or (b) not accept the Partner's response. If the Program Administrator does not accept the Partner's response, the Notice of Noncompliance will be considered unresolved, and the Partner may be subject to termination as described in Section 9 of this Agreement (Duration of Agreement and Permit).

16.1.4 Advisory Committee and Program Administrator Review

At any time before a response is due to the Program Administrator, a Partner may seek review of any Compliance Notice, Deficiency Notice, Notice of Noncompliance or proposed termination by submitting a written request to the Advisory Committee. The Program Administrator and the Partner each may prepare a statement of position for review by the Advisory Committee or request a face-to-face review. The Advisory Committee shall review statements, information provided in a face-to-face and other information available to it and issue a recommendation to the Program Administrator, including any recommended corrective action(s).

The Program Administrator shall review the recommendation of the Advisory Committee, confer with the relevant Service contact, or its designee, and issue its findings and any required corrective action(s) in writing.

The Partner and the Program Administrator shall comply with the findings, and the Program Administrator will issue a written Notice of Resolution once the Partner complies with its findings. If the Partner fails to implement the required corrective action(s) within 30 calendar days of its receipt of the findings, the Program Administrator shall notify the Partner in writing that the Notice of Noncompliance has not been addressed and may either provide notice to the Service or terminate the CI of the Partner at that time.

16.1.5 Content and Service of Notices, and Management of Notices and Responses

All Compliance Notices, Deficiency Notices, and Notices of Noncompliance shall be sent either electronically, or by U.S. mail, with a return receipt, to the company representative designated in a Partner's CI. All Compliance Notices, Deficiency Notices, and Notices of Noncompliance shall concisely identify the terms or conditions of this Agreement or the CI that the Program Administrator believes the Partner has not implemented.

16.2 Remedies

Each Party shall have all remedies otherwise available to enforce the terms of the Agreement and the EOS Permit. No Party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement, or any other cause of action arising from this Agreement.

16.3 Termination for Noncompliance

If a Partner, after Notice of Noncompliance and subsequent response (or lack thereof), still remains in noncompliance on lands enrolled under the CI, an appropriate action may be to terminate the CI as it relates to the individual easement(s), lease(s) or parcel(s) of land on which the noncompliance occurred. Depending on the scale or scope of the violations, the failure to resolve three Notices of Noncompliance within a three-year period for lands enrolled can result in termination of the entirety of a Partner's CI. The Program Administrator and the Service, however, recognize that termination of the CI is a severe and dramatic action limited to unusual circumstances after all efforts to address noncompliance have been exhausted.

The Partner shall be notified in writing by the Program Administrator of the proposed termination by certified or registered mail addressed to the contact's name listed in the CI. This notice shall identify the lands for which the CI will be terminated, the reason(s) for the termination, and inform the Partner of the right to object to the proposed termination. Upon receipt of a notice of proposed termination, the Partner may file written objection to the proposed action within 45 calendar days of the date the Partner received the notice of proposed termination. The objection must articulate why the Partner objects to the proposed termination and may include supporting documentation. The Advisory Committee will review the written objection and all documentation and will issue a recommendation to the Program Administrator on the proposed termination.

The Program Administrator will confer with the relevant Service coordinator. The Program Administrator will decide on the proposed termination within 45 calendar days after the end of the objection period and notify the Partner in writing of its decision and the reasons thereto. The Partner reserves the right to all legal remedies, whether at law or in equity, arising from a decision to terminate some or all of the CI.

16.4 No Third-Party Beneficiaries

This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a Party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing law.

17 Administrative Fees

Each Partner will confer with the Program Administrator to determine the applicable administrative fee required for participation in the Agreement. Administrative fees will be used to support ongoing administration of the EOS Permit, including technical support to the Partner, as well as compilation and reporting to the Service for annual monitoring results.

Administrative fees set by the Program Administrator will be set at a level that supports the expected range of costs required to operate the program described in this Agreement. The administrative fees required of each Partner will be calculated using a transparent and consistent method so that fees are fairly and equally considered across Partners. Calculation of fees considers a series of factors that relate to the administrative need, as well as net conservation benefit generated by each Partner. Such factors may include, but may not be limited to, those described in Table 17-1. The Program Administrator will maintain a copy of the fee calculation method on the implementation toolkit website.

Table 17-1. Factors Considered in Determining Partner-specific Administrative Fees

Administrative Fee Consideration	Rationale

Size of enrolled lands	A greater sum of enrolled lands equates to a higher conservation benefit. Increased size requires more implementation, tracking, monitoring, and reporting. Partners with larger enrolled lands may require additional technical or administrative support will be considered.
Net conservation benefit	The program encourages maximum net conservation benefit by Agreement participation. As an incentive to deliver enrolled lands, a per-acre fee discount for large amounts of acres where conservation measures are implemented and tracked will be considered. Combined enrollment in both the Monarch CCAA and this Agreement will also be considered for a fee discount to encourage their combined conservation commitments.
Upfront commitment to the development of the Agreement	Development of this Agreement would not be possible without the upfront support of the organizations that voluntarily committed time, expertise, and/or funding. In recognition of these voluntary upfront contributions, a fee discount may be made available for early supporters.
Administrative program costs	The expected range of costs is based on a range of potential participation and anticipated requirements of the Program Administrator.
Others	Over the duration of the Agreement, other factors may be considered as administrative needs and net conservation benefit contributions are considered.

Partners shall be responsible for paying the annual administrative fee determined by the Program Administrator for each year their CI is in effect. Annual administrative fees will be determined at the application stage of the Agreement and renewed annually from the calendar date of initial payment, or on a schedule agreed upon by the Program Administrator. A Partner shall have the right, at its sole discretion, to prepay more than the minimum calculated administrative fees in any given year, including the right to prepay several years of administrative fees at a single time.

18 Availability of Funds

The Service is subject to the requirements of the Anti-Deficiency Act (31 USC § 1341 & 48 CFR § 32.702) and the availability of appropriated funds. Nothing in this Agreement will be construed by the Parties to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury. The Parties acknowledge that the Service will not be required under this Agreement to expend any federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures in writing. Likewise, a Partner may terminate its participation in the Agreement pursuant to Section 9.6 of this Agreement (Termination of a Certificate of Inclusion by a Partner) based on the unavailability of legislative funding.

19 Notices and Reports

Any notices and reports, including monitoring and annual reports, required by this Agreement shall be delivered to the persons listed below, as appropriate:

Program Administrator

Energy Resources Center
The University of Illinois at Chicago
1309 S Halsted Street, M/C 156
Chicago, IL 60607

Ecological Services Program Leader, U.S. Fish and Wildlife Service

Ecological Services
Midwest Region
U.S. Fish and Wildlife Service
5600 American Blvd. West, Suite 990
Bloomington, MN 55437

IN WITNESS WHEREOF, THE PARTIES HERETO have, as of the last signature date below, executed this Candidate Benefit Agreement to be in effect as of the date that the Service issues the Enhancement of Survival Permit.

Clifford Haeffke

Program Administrator — Date

University of Illinois at Chicago — May 1, 2026

KAREN HERRINGTON — Digitally signed by KAREN HERRINGTON
Date: 2026.04.30 14:53:36 -05'00'

Ecological Services Assistant Regional Director — Date

U.S. Fish and Wildlife Service, Midwest Region

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[24] The Conservation Technical Team helped inform ideas and provided technical support. Participation does not necessarily imply endorsement of the agreement.

Appendix B Certificate of Inclusion in the Nationwide Conservation Benefit Agreement for Bumble Bees on Energy and Transportation Lands

B.1 Certificate of Inclusion Tracking Number _____

This Certificate of Inclusion (CI) certifies that _____ (Partner), as the owner, leaseholder, or easement holder (or authorized agent thereof) of the lands(s) identified in Exhibit 1 (Enrolled Lands) to this CI, hereby agrees that activities conducted on the enrolled lands are subject to the terms and conditions of the attached Enhancement of Survival Permit, Permit No. [insert Permit No.] (the Permit, Exhibit 1) and the Nationwide Conservation Benefit Agreement for Bumble Bees on Energy and Transportation Lands (Agreement; Exhibit 2). The Permit was issued on [insert date] by the U.S. Fish and Wildlife Service (the Service) to the Board of Trustees of the University of Illinois, a body corporate and politic of the State of Illinois, on behalf of the University of Illinois at Chicago (UIC; the Program Administrator) under the authority of Section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (ESA), 16 U.S.C. 1531-1544. This Permit was issued in conjunction with, and to support, the Agreement. The purpose of the Permit and the Agreement is to support UIC's ongoing and future efforts to promote conservation within energy and transportation lands and promote conservation by industry representatives. The definitions and acronyms set forth in the Agreement that is attached hereto shall apply to this CI, unless otherwise specified.

This CI documents the Partner's voluntary agreement to enroll specified lands in the Agreement. Through this CI, the Partner voluntarily commits to implement specific conservation actions that will reduce and/or potentially remove threats to the species as provided in this CI, the Agreement, and the Permit. Pursuant to this CI and the Permit, incidental take of covered species as a result of the conservation measures and other covered activities identified in the Agreement on or associated with enrolled non-federal lands, in the event a covered species is federally listed as endangered or threatened, is authorized. The Permit further provides the Partner (and their authorized representatives working on their behalf) with assurances regarding the imposition of additional conservation measures and land use restrictions for covered species on enrolled non-federal lands, as specified in the Permit and the Agreement, in the event a covered species is federally listed. The incidental take authorization and assurances provided by the Permit are conditioned on the Partner's compliance with the terms and conditions of this CI, the Agreement, and the Permit.

This CI is effective upon signature of this CI by the Partner and the Program Administrator. Unless terminated as provided in Section B.7 below, this CI shall continue from its effective date through the duration of the Agreement and Permit as defined in the Agreement. In the event of a conflict between the terms and conditions of this CI and the Agreement or Permit, the terms and conditions of the Agreement or Permit in effect at the time of enrollment shall govern. If the terms and conditions of the Permit and the Agreement conflict, the terms of the Permit shall govern.

By signing below, the Partner acknowledges that it has read and understands this CI and the Agreement in effect on the date of the Partner's signature. The Partner further commits to comply with the terms and conditions of the Agreement and the Permit attached to this CI. Finally, the Partner acknowledges that this CI and the Agreement may not be sufficient to prevent the listing of a covered species.

B.2 Enrolled Lands

B.2.1 Summary of Enrolled Lands

Partner Name and Contact Information:	
Description of Enrolled Properties (or Attach Detailed Map):	
Total Acres of Enrolled Properties (all properties covered by permit):	
Duration of Certificate of Inclusion (years from last signature; end date):	
Conservation Measures to be Taken on the Enrolled Lands:	
Maximum Acreage Of Modernization Allowed Within Current Enrollment:	

B.2.2 Baseline Analysis

Baseline Estimate on the Enrolled Lands for each selected Covered Species:

Common Name	**Scientific Name**	**Baseline Acres**	**Return to Baseline Eligible**
Rusty patched bumble bee	*Bombus affinis*		☐
Crotch's bumble bee	*Bombus crotchii*		☐
Franklin's bumble bee	*Bombus franklini*		☐
Southern plains bumble bee	*Bombus fraternus*		☐
Morrison's bumble bee	*Bombus morrisoni*		☐
Western bumble bee	*Bombus occidentalis*		☐
American bumble bee	*Bombus pensylvanicus*		☐
Yellow banded bumble bee	*Bombus terricola*		☐
Ashton's cuckoo bumble bee	*Bombus bohemicus*		☐
Variable cuckoo bumble bee	*Bombus variabilis*		☐
Suckley's cuckoo bumble bee	*Bombus suckleyi*		☐

B.2.3 Partner Affirmation

By executing this CI, the Partner affirms that it is a Lands Owner of the enrolled non-federal lands as defined by 50 CFR §17.3, which provides that a Lands Owner for these purposes is a person or entity with a fee simple, leasehold, or lands interest (including owners of water or other natural resources), sufficient to carry out the conservation measures and any other management activities contemplated by this CI, the Agreement and the Permit, subject to applicable state law, on enrolled, non-federal land. As to enrolled federal lands, the Partner affirms that it is a person or entity with a leasehold or other lands interest sufficient to carry out the conservation measures and any other management activities contemplated by this CI and the Agreement on enrolled lands with underlying federal ownership.

B.2.4 Additions to Enrolled Lands

The Partner may seek to enroll additional eligible lands in this CI during the enrollment period as set out in Section 4 (Enrolled Lands) of the Agreement.

B.2.5 Transfer of Enrolled Lands

If the Partner transfers its lands interest in all or a portion of its enrolled lands, it shall notify the Program Administrator as described in Section 9 (Duration of Agreement and Permit) of the Agreement. Coverage under the Permit for such lands will be transferred to the new Lands Owner of the Agreement.

B.2.6 Termination of Enrolled Lands or this CI

A Partner may terminate enrollment of lands in this CI, or terminate this CI in its entirety, in accordance with Section 4 (Enrolled Lands) of the Agreement. The Program Administrator may also terminate enrollment of lands, or this CI as provided in the Agreement. The process and effect of termination of this CI is described in Sections 7 (Obligations of the Parties) and 9 (Duration of Agreement and Permit) of the Agreement.

B.2.7 Revisions to Enrolled Lands

B.2.1 (Partner Application; Summary of Enrolled Lands) may be revised in accordance with the procedures outlined in Section 4 (Enrolled Lands) of the Agreement.

B.3 Participant Agreement to Implement Conservation Measures

The Partner agrees to comply with the requirements of this CI, the Agreement attached, and the Permit. This Agreement includes the Partner's commitment to implement conservation measures on enrolled lands as provided in their application and Section 6 (Conservation Measures) of the Agreement.

The Partner shall also notify and educate all relevant personnel, agents, and contractors about the requirements of this CI and the Agreement, and take steps necessary to ensure that such personnel, agents, and contractors comply with these requirements in their activities on the enrolled lands.

B.4 National Historic Preservation Act

The Partner must comply with all applicable laws and regulations required to protect cultural or archaeological resources pursuant to Section 106 of the National Historic Preservation Act.

B.5 Participant Compliance

B.5.8 Unpaid Administrative Fees

If the Partner fails to remit an administrative fee in accordance with Section 4 (Enrolled Lands) or Section 17 (Administrative Fees) of the Agreement, the Program Administrator may suspend this CI as to the enrolled lands for which the administrative fee is due until such administrative fee is paid. The Program Administrator will notify the Partner 15 business days after the due date of the administrative fee. If the administrative fee is not paid within 30 business days of receipt of the notice, the Program Administrator will issue a Notice of Noncompliance to the Partner. Upon receipt of the administrative fee, the Program Administrator will issue a Notice of Reinstatement to the Partner.

B.5.9 Compliance

Partner agrees to comply with the Disputes and Resolutions process described in Section 16 of the Agreement to resolve any compliance concerns identified.

B.6 Termination for Noncompliance

Lands enrolled under this CI may include tens or hundreds of thousands of acres. If a Partner, after Notice of Noncompliance and subsequent response (or lack thereof), still remains in Notice of Noncompliance on lands enrolled under this CI, an appropriate action may be to terminate this CI as it relates to the individual easement(s), lease(s), or parcel(s) of land on which the noncompliance occurred. Depending on the scale or scope of the violations, the failure can result in termination of some or all of this CI. The Program Administrator and the Service, however, recognize that termination of this entire CI is a severe and dramatic action limited to unusual circumstances after all efforts to address noncompliance have been exhausted.

In issuing the Notice of Noncompliance, the Partner shall be notified in writing by the Program Administrator of the proposed termination by certified or registered mail addressed to the contact name in Section 14 of this CI. This notice shall identify the lands for which this CI will be terminated, the reason(s) for the termination. Upon receipt of a notice of proposed termination, the Partner may file written objection to the proposed action within 45 calendar days of the date the Partner received the notice of proposed termination. The objection must state the reasons why the Partner objects to the proposed termination and may include supporting documentation. The Advisory Committee will review the written objection and all documentation and will issue a recommendation to the Program Administrator on the proposed termination.

The Program Administrator will confer with the relevant the Service Agreement Coordinator. The Program Administrator will decide on the proposed termination within 45 calendar days after the end of the objection period and notify the Partner in writing of its decision and the reasons thereto. The Partner reserves the right to any and all legal remedies, whether at law or in equity, arising from a decision to terminate some or all of this CI.

B.7 Lands Access

The Partner agrees to provide access to enrolled lands as provided in Section 7.3 (Partners) of the Agreement.

B.8 No Waiver

The Partner, by entering into this CI, does not concede its agreement with, or endorsement of, any or all of the underlying studies and conclusions in the Agreement. Further, the Partner does not waive any legal rights or remedies that may exist outside of this CI. The Partner is also not responsible for work being accomplished by the Service, the Program Administrator or any third parties using the Partners' contributed funds.

B.9 Release

If at any time any administrative or legal challenge to the Agreement prevents the implementation of this CI, the Partner shall be excused from its performance and shall release the signatories of the Agreement and CI from any legal claims of the Partner's related to this CI and Agreement. If at any time any administrative or legal challenge to the Agreement prevents the implementation of this CI, the Program Administrator agrees to release the Partner from any legal claims related to this CI and Agreement. Partners' obligation to make payments of administrative fees as described in Section 17 (Administrative Fees) of the Agreement shall be suspended if any administrative or judicial challenge prevents the implementation of this Agreement or its CIs. If a Partner voluntarily terminates the Agreement, or the Partner is terminated for nonperformance or noncompliance, all funds paid by that Partner will be retained by the Program Administrator for use in Agreement administration or monarch conservation. In the event of an external termination of the Agreement (e.g., transfer of the Agreement, or lack of conservation need), the Program Administrator will work with Partners to determine the appropriate refund amounts for any pre-paid annual administrative fees beyond the final year of the Agreement, or Program Administrator involvement.

B.10 Amendment

As described in Section 10 (Adaptive Management) of the Agreement, the effectiveness of the conservation measures in the Agreement will be reviewed by the Program Administrator, the Service, and Partners periodically over the life of the Agreement. However, changes to the Agreement in effect at the time after the Partner executes this CI may only be applied to the Partner upon its written consent. This CI, except for Exhibit 2 (Agreement), may be amended with the written consent of each of the Parties hereto. Exhibit 1 may be revised in accordance with the procedures outlined in Section 4 (Enrolled Lands) of the Agreement. The Parties agree to process requests for amendments in a timely manner. This CI will only be amended upon written agreement of both the Program Administrator and the Partner. This CI may also be amended to accommodate changes to applicable legal requirements, including but not limited to the Endangered Species Act, the National Environmental Policy Act, and the Service's permit regulations at 50 CFR § 13 and 50 CFR § 17. The proposer of the amendment shall provide a statement describing the proposed amendment and the reasons for it.

B.11 Multiple Originals

This CI may be executed in any number of multiple originals. A complete original of this CI shall be maintained in the records of each of the Parties hereto.

B.12 Reporting Requirements

The Partner will comply with the reporting requirements outlined in Section 14 (Monitoring Provisions) of the Agreement.

B.13 Confidentiality

The Parties recognize that energy and transportation infrastructure information is confidential and sensitive business information held and not routinely disclosed and may be exempt from disclosure under the federal and/or Illinois Freedom of Information Act (FOIA). All Parties will adhere to the confidentiality requirements described in Section 8 of the Agreement.

B.14 Contacts

Any notice permitted or required by this CI, the Agreement or the Permit shall be transmitted within any time limits described in this CI, the Agreement or the Permit to the persons set forth below. Notice may be provided electronically (via email) or in writing unless the form of notice is otherwise identified in this CI, the Agreement, or the Permit. Any notice provided by electronic mail is deemed received upon the sender's receipt of an electronic mail from the intended recipient confirming delivery. Lack of receipt within five (5) business days may result in follow- up via phone call, or a duplicate notice provided in writing. Notice in writing shall be given five (5) business days after deposit in the United States mail, sent certified and postage prepaid, and return receipt requested. All notices and correspondence will be addressed to the contacts listed below. Should either party designate other contacts for day-to-day communications, that notification will be sent to the Program Administrator in writing similar to other notices outlined here:

Partner: _____

Contact Name _____

Title _____

Address: _____

_____

Telephone: _____

Fax: _____

Email: _____

UIC/Permit Holder Representative:

Contact Name _____

Title _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

B.15 Signatures

IN WITNESS WHEREOF THE PARTIES HERETO have executed this Certificate of Inclusion to be in effect on the date of the last signature below.

Partner and Affiliation Date

Program Administrator/Permit Holder Representative Date

Appendix C Supplemental Information

This Appendix provides additional background information regarding the specific aspects within the Agreement.

C.1 Section 106 Compliance Protocol

This protocol was developed specifically for partners to the Monarch CCAA to create a process for compliance with Section 106 of the NHPA while conducting covered activities and other conservation measures as specified in CIs This protocol has been adapted for use in this Agreement to assist the Service in their Section 106 compliance obligations for activities where take of covered species is authorized by the EOS Permit and consultation documents associated with the Agreement; this protocol should only be used for those activities and lands specified in the CI.

Most covered activities and other conservation measures in the Agreement do not have the potential to cause effects on historic properties as defined by the NHPA:

> ***Historic lands*** (or ***historic resource***) are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a lands or resource. (NHPA 54 U.S.C. § 300308). For the purposes of this protocol, *historic lands* also include sites considered as traditional cultural properties (TCP).

This appendix specifies activities that, for the purposes of implementing the Agreement:

- Do not have the potential to affect historic properties, or
- When Partners must consult with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or Service Regional Historic Preservation Officer (RHPO)

The issuing of a permit by the Service triggers an undertaking. As such, compliance with Section 106 of the NHPA is required. For the purposes of compliance with Section 106 of the NHPA, the Service should **only** be considered the lead federal agency when/if no other federal agency is involved with the proposed activity.

Similarly, some Partners may already have established programs for reviewing Section 106 compliance (see guidance at https://www.achp.gov/program_alternatives). If so, the Partners shall identify their alternative programs in relation to conservation measures and covered activities included within their application for enrollment in the Agreement. Partners may also develop other program alternatives specifically for the Agreement; however, the steps below must be used until alternatives are established.

If another federal agency is involved or if the Partner has an established program alternative already in place, follow the procedures outlined by that federal agency or alternative. The Service will automatically accept that other federal agency as lead and will adopt their Section 106 compliance conclusions. Partners should maintain documentation of those conclusions for their records and make them available to the Program Administrator or Service upon request. **If there is no other federal agency or program alternative involved with the proposed activity, the Service will accept lead federal agency status and the Partner shall follow the steps outlined below.**

Note: The Agreement is issued with a specified duration. At some point during that time, subsequent procedures may be developed that supersede the approach described herein. If a new programmatic consultation protocol is developed, the Program Administrator will engage in such a process by engaging the appropriate Partners. Upon completion, the Program Administrator will notify all Partners at the time such an approach is approved. The Partner should contact the Program Administrator or the Service Agreement Coordinator to verify the most applicable procedure available before proceeding with the proposed activities.

Step 1. Does the Activity Occur within the Scope of the Partner's Certificate of Inclusion under the Agreement?

CIs associated with the Agreement cover incidental take of covered species through effects to suitable habitat, or directly to individuals. Thus, the CI and therefore compliance with Section 106 for the purposes of the Agreement does not apply to activities a) that are not specified in the CI, or b) for CI activities that are not likely to take covered species. Partners shall maintain documentation of those conclusions for their records and make them available to the Program Administrator or Service upon request.

If activities are conservation measures or other covered activities on enrolled lands as specified in the CI AND are likely to take covered species, then proceed to Step 2.

Step 2. Will the Activity Result in Ground, Building/Structure, or Infrastructure Disturbance?

Covered activities (including conservation measures) in the Agreement are not likely to affect historic properties and do not require further Section 106 review if they do not involve ground, or building/structure, or infrastructure disturbance. The Service considers the activities listed below as having no potential to cause effects on any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP (aka "Historic Lands") and are therefore exempted from further Section 106 review as consistent with 36 CFR Part 800.3(a)(1).

1) **Surveys and Inspections** – Field observations, site inspections, data collection, investigations, driving along previously established paths or roads, and report writing that do not involve disturbance of the ground or buildings/structures.
2) **Public Education and Outreach** – Classroom and outdoor education activities that do not involve ground or building/structure disturbance.
3) **Hand Removal or Introduction of Plants and Animals** – The removal or introduction of plants or animals to the natural environment without ground or building/structure disturbance.
4) **Proposals, Plans or Protocols** – The writing or implementation of research or management activities that take place entirely within extant offices and laboratories.
5) **Other Non-Construction Activities –** Activities which do not involve or lead directly to construction, such as planning and research activities; grants for training; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed.

Therefore, if the proposed activity does not result in ground disturbance, building/structure, or infrastructure disturbance, or fits within one or more of these exemptions, the Service considers it to have no potential to cause effects on historic properties. Partners shall maintain documentation of those conclusions for their records and make them available to the Program Administrator or Service upon request. This would conclude the Service's Section 106 compliance for this activity.

If the activity includes ground, building/structure, or infrastructure disturbance, further review is warranted, proceed to Step 3.

Step 3. Does the Activity Occur Within a Known Cultural Site?

Due to their sensitivity to interested parties, any activity located within any previously known cultural site, including an archaeological site, traditional cultural lands, and especially any identified or suspected religious/sacred site such as a platted or unplatted cemetery (includes prehistoric earthen burial mounds) must be reviewed further.

The Partner should make a reasonable and good faith effort to learn if any known cultural sites are within the Area of Potential Effect (APE). Efforts to identify known sites can include walking over the entire direct APE, talking with the landowner, THPOs and others, checking the SHPO's known sites/surveys database, and reviewing historic documents, such as old plat maps and aerial photos.

Cultural sites may have been identified as “historic properties” through prior consultations, or through verbal or written communications with federal, tribal, or state historic preservation offices. Partners may also cross-reference the project site to state and federal cultural resource databases within the SHPO and/or the THPO to determine if the site is a known historic land.

Partners shall determine whether the activity would occur in a known cultural site or not. Partners shall maintain documentation of the conclusions below for their records and make them available to the Program Administrator or Service upon request.

If the activity does not occur within a known cultural site, or avoids the boundaries of a known cultural site, proceed to Step 4.

If the activity occurs within a known cultural site, and scope of activity cannot be modified to avoid the boundaries of a cultural site, the activity has potential to affect historic properties and a full Section 106 consultation is required, proceed to Step 5.

Step 4. Does the Activity Have the Potential to Affect Historic Lands?

The Service considers the activities listed below as having no potential to cause effects on any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP (aka “Historic Lands”), provided they a) do not occur within a known cultural site, and b) do not result in soil disturbance beyond the extent or depth of previously disturbed land (i.e. largely within the impacted footprint of the existing infrastructure and previous ground disturbance). These activities are exempted from further Section 106 review as consistent with 36 CFR Part 800.3(a)(1).

A. General Habitat and Vegetation Management

1) **Seeding and Planting**- Active planting of an area to promote preferred vegetation. Seeding and planting may use minimally invasive techniques such as broadcast seeding or no-till drill without disturbance of soil below the lowest level of previous disturbance.
2) **Herbicide Application** – Use of equipment and vehicles to apply herbicides via foliar applications and other techniques to control invasive plants, noxious weeds, and incompatible vegetation.
3) **Controlled Grazing** – Use of controlled grazing to sustain covered species habitat.
4) **Brush Removal** - Removal of dense brush using forestry mowing, chainsaws, or other mechanical methods to promote covered species habitat.
5) **Mowing or Haying** - Mechanical mowing or clipping of vegetative material to sustain covered species habitat.
6) **Noxious/Invasive Weed/Woody Species Control** - The control of surface vegetation (weeds and woody species) by prescribed burning, hand, and mechanical mowing, cutting, and clipping, or chemical control practices without disturbance of soil below the lowest level of previous disturbance.

B. Maintenance and Modernization Construction

1) **General Improvement and Maintenance –** Improvement and maintenance of existing infrastructure where lands have been previously disturbed and where activity will not disturb the soil beyond area of previous disturbance.
2) **Building/Infrastructure Maintenance** –Within energy lands this includes, but is not limited to, guyed wire replacement, culvert replacement, pole wrapping or painting, gas leak repairs, structural testing and treatments, above and below ground structural replacements, and woodpecker assessments and patching. On transportation lands this includes, but is not limited to, pavement repair, mill and overlays, shoulder repairs, painting and striping, guardrail installation or replacement, lighting installation or

replacement, manhole/inlet cleaning, installation and maintenance of curb and gutter, culvert installation and maintenance, bridges and piers, scour aprons, cattle grates, and similar structures.

3) **Building/Structure Removal** - The removal of buildings and structures younger than 50 years from the date of the proposed activity or have been determined to be ineligible for listing in the NRHP with SHPO concurrence.

4) **Temporary Staging and Storage -** Temporary staging and material storage areas for construction using construction matting or other access pads in wetlands, waterway crossings or other environmentally sensitive areas. Temporary staging and storage areas are removed, and vegetation is typically restored following construction.

5) **Construction within Previously Disturbed Lands** - Activities that do not cause disturbance beyond the extent or depth of previously disturbed land (i.e., largely within the impacted footprint of the existing infrastructure and previous ground disturbance). On energy lands this includes, but is not limited to, construction of structures and pipe segments, re-conductoring, burying lines (conductors, fiber optic, or other), adding or modifying overhead lines or pole attachments, demolition and removal of existing structures and pipe segments, construction of substations, and installation of new structures or pipe within existing rights-of-way. On transportation lands this includes, but is not limited to pavement replacement, roadway construction or repair, bridge and culvert widening, extensions or replacement, lane and shoulder widening or extension. Construction of pathways (bike lanes, sidewalks, trails, or other paths), rail replacement, construction of noise walls or retaining walls, burying lines (conductors, fiber optic, or other), adding or modifying overhead pole attachments, bank stabilization activities that are hard armoring through rip rap, concrete, sheet piling, or similar methods that are unlikely to allow vegetation establishment, and, construction within the existing rights-of-way including rest areas, roundabouts, interchanges, truck escape ramps, weigh stations, spoils disposal or waste management areas, and similar facilities.

   For both energy and transportation lands, this includes facility construction and building maintenance, including small buildings, lighting, storage areas, and stormwater facilities maintenance; grading and excavation; installation and maintenance of erosion control BMPs, site clean-up and restoration, including grading and reseeding on existing rights-of-ways.

C. Areas Previously Reviewed

1) **Area of Potential Effect (APE) Previously Surveyed with Negative Results** – The APE of the proposed activity has been previously subjected to a rigorous scientifically-conducted archaeological and/or architectural identification survey by professionals and no sites/buildings/structures were found (with documented evidence that the survey[s] was conducted and concurrence was achieved from all consulting parties, especially SHPO).

If the proposed activity fits within one or more of these exemptions, the Service considers it to have no potential to cause effects on a historic lands. Partners shall maintain documentation of those conclusions for their records and make them available to the Program Administrator or Service upon request. This would conclude the Service's Section 106 compliance for this activity.

If the proposed activity does not fit within one or more of these exemptions, it is considered to have potential to affect a historic lands, proceed to Step 5.

Step 5. An Activity that has the Potential to Affect a Historic Lands: Formal Section 106 Consultation

For an activity that has the potential to affect historic lands, Partners will assist the Service in their Section 106 compliance obligations by completing consultation. For each project area, the enrolled Partner will initiate procedures outlined in regulations 36 CFR Part 800 working directly with the other consulting parties (e.g., SHPO, THPO etc.).

At this stage, it is **strongly recommended** that Partners work with cultural resources professional that meets the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61) to review the activity, guide the Partner through the consultation process, and identify ways to avoid impacts to known historic properties through a change in the scope of activities. The Partner is encouraged to look to, and work with, the cultural resources professionals from any other partners in the project.

The full protocol for consulting on an activity that has the potential to affect historic lands includes:

1. Define the project site and parameters (APE and timing of activities).
2. Cross-reference the project site to state and federal cultural resource databases within the SHPO and/or the THPO, if applicable, to see if any potential impacts to known cultural sites can be identified (if not done already).
3. Project information resulting from the review and consultation above will be submitted to the relevant SHPO and any other consulting parties identified as having an interest in the APE (e.g., THPOs/tribes). The Partner should clearly state to the consulting parties that this is a Service undertaking. A specific SHPO's review form can be used, or correspondence with equivalent information, with the supporting documentation including maps and database searches can be sent to the appropriate SHPO/THPO for review. Some SHPOs/THPOs may choose to engage the Service directly, rather than the Partner, and, if so, the review process and timing will be different depending on the Service Region involved.
4. The SHPO and the other parties should review the project within 30 calendar days (a THPO or tribe may need a longer time frame) and may request a field visit or "survey". If no response is given or no survey is requested, activities can begin as planned and the Partner shall document this for their records, to provide to the Program Administrator and Service on request. This would conclude the Service's Section 106 compliance for this activity.
5. If a field survey is mutually agreed to, a cultural resource professional, meeting the above referenced standards in the academic discipline needed, is required to conduct it.
    a. If cultural sites are not found, the Partner notifies the consulting parties, receives concurrence, and then shall document this for their records, to provide to the Program Administrator and Service on request. This would conclude the Service's Section 106 compliance for this activity.
    b. If cultural sites are found, the Partner, in consultation with the consulting parties, will choose to avoid the site or develop a plan to evaluate whether or not the site is eligible for inclusion on the NRHP and what effect the project, if any, will have on the site. Except for the stipulation below, working the consulting parties, the Partner will independently follow the Section 106 process to the end and shall maintain documentation for their records, which will be available to the Program Administrator and Service on request. This would conclude the Service's Section 106 compliance for this activity.

Important Stipulation: The Service RHPO may become directly involved in the Section 106 process (through the Program Administrator or Partner staff) if the process reaches 36 CFR Part 800.6 "Resolution of adverse effects" before the conclusion of the Section 106 process. At that time, the Service shall enter the process as a signatory to a Memorandum of Agreement (MOA) to resolve the adverse effects to the historic lands. The Service would only enter into the Section 106 process earlier if any consulting party disagrees with the Partner's role in the undertaking or determination, in writing to the Service, after the disagreement cannot be resolved in a timely manner by the Partner.

Appendix D Summary of Effects

D.1 Effects Analysis for Baseline and Enrollment Scenarios

The implementing regulations for Section 7(a)(2) of the Act define the “action area” as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action [50 CFR §402.02]. Enrolled lands may include all or some combination of suitable habitat types, or areas with the potential to create those habitats. To assess effects of enrollment in the Bumble Bee CBA, covered activities (including those considered conservation measures) were analyzed based on three factors relative to the covered species: exposure to the action, biological effects of the action, and comparison of consequences resulting from the two scenarios. The two scenarios analyzed include pre-enrollment operations and maintenance (e.g., without enrollment in the Agreement) compared to enrollment (e.g., participation in the Agreement) summarized in Tables D-1 through D-5. Calculations of extent were used to estimate the number of nests affected per acre, summarized annually and over a 35-year period (the proposed duration of the Agreement permit term).

Given the uncertainty of the extent of covered lands (action area) to be enrolled in the Agreement and the uncertainty in biological understanding of some aspects of the covered species, certain assumptions about the covered species are necessary to quantitatively assesses the effects of the Agreement and ensuing actions, and ultimately demonstrate that the actions of the Agreement will provide a net conservation benefit to the covered species. In the analysis of the Agreement's effects, we assumed a consistent estimated nest density for the covered species across the covered lands. Specifically, we based this assumption on the rusty patched bumble bee Section 7 guidance and estimated that the covered species are distributed equally across their respective ranges at a density of one nest for every 2.2 hectares (5.4 acres) of suitable nesting habitat (USFWS 2021). While this assumption removes differences in nest density that likely vary by species, land use and habitat condition, landscape context, and broader geography, this conservation assumption can be used to quantitative assess the impacts of each action on potential nests, and aid in ensuring a net conservation benefit is delivered.

In each table, actions have been grouped based on their mode of implementation or expected impacts. Rows colored in green include actions considered as conservation measures, which are expected to reduce threats or improve habitat conditions. These include actions such as maintaining suitable habitat set-asides, use of targeted herbicides, mapping high-quality habitat, conservation mowing or grazing, and other practices. Yellow colored rows indicate actions considered to be other covered activities associated with operations, maintenance, or modernization activities. These actions have been grouped by the extent (i.e., large or small) and type of impact (i.e., temporary or permanent). For example, operations and maintenance activities are represented by a mix of small ground-disturbing activities with permanent impacts, plus other activities that may be large or small, yet temporary in their impacts (e.g., the Ground Disturbance, Small and Permanent category). Modernization activities are represented by disturbances that may be larger in their extent and more permanent in impact (e.g., the Ground Disturbance, Large and Permanent category). Industry representatives from multiple sectors, along with Service biologists, reviewed the list of actions for consistency with the covered activities included in this Agreement. Industry representatives also provided input on the timing, frequency, and extent of proposed actions based on their professional experience. Effects of actions were assessed using a combination of published Service guidance, biologist input, and industry representative feedback.

To assess exposure, each action was assigned a timing (i.e., what part of the covered species lifecycle the action occurs), whether the action has direct or indirect interactions with covered species, and how the action might affect the covered species (e.g., positive, negative, neutral; Table D-1). To assess biological effects, each action was assigned a resource that was affected by the action, life stage of the covered species affected, and functions of the species affected (Table D-1). Each of the exposure and biological effects designations were treated consistently throughout the remainder of the analysis.

D-1. Activity description, assessment of exposure, and biological effects of the actions considered.

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing**[25]	**Direct Interactions**[26]	**Effects to Resources (stressor)**[27]	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected**[28]
Avoidance of Known Nest Sites	Avoiding ground disturbance within 20 feet of identified and actively used nest locations.	Active, Overwintering	None	Positive, Preservation of nesting sites.	Sustains overwintering and nesting habitat	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Temporary Set-Asides	Retaining areas of undisturbed habitat throughout a calendar year.	Active, Overwintering	None	Positive, Preservation of nesting sites.	Sustains overwintering, nesting, and foraging habitat	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Ground Disturbance, Small and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and restored to natural vegetation once complete.	Active, Overwintering	Direct mortality to nests, overwintering queens, or adults	Negative, Potential for degradation of suitable habitat.	Removal of nectar resources, soil compaction, spread of invasive plant species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Ground Disturbance, Large and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and restored to natural vegetation once complete.	Active, Overwintering	Direct mortality to nests, overwintering queens, or adults	Negative, Potential for degradation of suitable habitat.	Removal of nectar resources, soil compaction, spread of invasive plant species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Ground Disturbance, Small and Permanent	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and result in	Active, Overwintering	Direct mortality to nests, overwintering	Negative, Potential for degradation of suitable habitat.	Removal of nectar resources, soil compaction, spread	Colony Establishment, Foraging,	Breeding, Foraging, Nesting, Overwintering

[25] Active (foraging and nesting), Overwintering

[26] Direct interaction includes crushing, strike, nest disturbance, and other results of activities that cause direct injury or mortality to individuals.

[27] Indirect interaction includes changes to the environment that result in a change to the quantity or quality of a resource (can be negative, neutral, or positive).

[28] Resource functions include breeding, foraging, nesting, and overwintering.

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing**[25]	**Direct Interactions**[26]	**Effects to Resources (stressor)**[27]	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected**[28]
	permanent habitat loss (i.e., developed land).		queens, or adults		of invasive plant species	Nesting, Overwintering	
Ground Disturbance, Large and Permanent	Modernization activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and result in permanent habitat loss (i.e., developed land).	Active, Overwintering	Direct mortality to nests, overwintering queens, or adults	Negative, Potential for degradation of suitable habitat.	Removal of nectar resources, soil compaction, spread of invasive plant species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Targeted Herbicide Application	Targeted herbicide applications applied directly to specific target species.	Active	None	Neutral, Short-term and temporary foraging loss, but sustained of increase long-term foraging abundance and diversity.	Reduced availability of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Mowing to Reduce Exposures to Pesticides and Physical Risks	Regular mowing inslope areas (transportation Partners) to prevent the development of floral resources in areas that may expose species to contaminants.	Active	None	Neutral, Limited loss of foraging habitat, increased avoidance of species occupancy in contaminated areas.	Reduced availability of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Reduce Pesticide Exposures Through Partner-Specific Policies and Planning	Pesticide reduction through use of IVM, policies, and other company planning.	Active	None	Neutral, Short-term and temporary foraging loss, but sustained of increase long-term foraging abundance and diversity.	Reduced availability of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Broadcast Herbicide Application	Herbicide applications applied to all vegetation in treatment area regardless of species or target.	Active	None	Negative, Short-term and temporary foraging loss, without enhanced foraging abundance and diversity.	Reduced availability of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing**[25]	**Direct Interactions**[26]	**Effects to Resources (stressor)**[27]	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected**[28]
Conservation Mowing	Reduced mowing to limit temporary loss of foraging habitat.	Active	Direct mortality to adults	Positive, Timed, periodic, or rotational mowing sustains areas of foraging habitat and minimizes temporary foraging losses.	Temporary reduction of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Brush Removal that Sustains Native Resources	Use of forestry mowing, chain sawing, or other physical and mechanical methods to remove woody vegetation and enhance early successional habitat.	Active	Direct mortality to adults	Positive, Timed, periodic, or rotational brush removal sustains areas of foraging habitat and minimizes temporary foraging habitat loses.	Temporary reduction of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Mowing of Foraging Habitat	Mowing of foraging habitat without timing or spatial restriction.	Active	Direct mortality to adults	Negative, Temporary loss of foraging habitat may reduce floral resources available in an area.	Temporary reduction of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Prescribed Burning and Prescribed Grazing	Use of prescribed burning and/or prescribed grazing to sustain floral resources.	Active, Overwintering	None	Positive, Short-term and temporary foraging loss, but sustained of increase long-term foraging abundance and diversity.	Temporary reduction of nectar and pollen	Colony Establishment, Foraging, Nesting	Foraging
Reducing Managed Bee Conflicts	Placement and management of managed hives according to conservation measures in the Agreement	Active, Overwintering	None	Positive, Potential foraging competition and or spread of pathogens reduced.	Direct or indirect competition for floral resources	Colony Establishment, Foraging, Nesting	Foraging, Nesting

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing**[25]	**Direct Interactions**[26]	**Effects to Resources (stressor)**[27]	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected**[28]
Maintaining Managed Bee Hives	Maintaining managed honeybee or bumble bee hives	Active, Overwintering	None	Negative or Neutral, Potential foraging competition and or spread of pathogens.	Direct or indirect competition for floral resources	Colony Establishment, Foraging, Nesting	Foraging, Nesting
Seeding Diverse Floral Resources	Use of diverse native seed mixes providing high-value foraging resources as part of post-disturbance revegetation efforts.	Active, Overwintering	None	Positive, Potential foraging enhancement.	Direct or indirect competition for floral resources	Colony Establishment, Foraging, Nesting	Foraging, Nesting
Implement BMPs to Limit the Spread of Invasive Species	Preventing spread of invasive species through the implementation of appropriate documented policies, procedures, and/or BMPs	Active	None	Positive, Sustains native floral abundance and diversity.	Temporary short-term reduction of nectar and pollen; long-term sustained or increased floral diversity	Colony Establishment, Foraging, Nesting	Foraging
Control Invasive Species for Conservation Purposes	Direct control of invasive and noxious plant species with the primary objective of achieving conservation goals (not required for O&M)	Active	None	Positive, sustains native floral abundance and diversity.	Temporary short-term reduction of nectar and pollen; long-term sustained or increased floral abundance and diversity	Colony Establishment, Foraging, Nesting	Foraging
Create New Bumble Bee Habitat Areas	Conversion of non-habitat land covers into suitable habitat (grasslands, shrublands, or forest)	Active, Overwintering	None	Positive, Potential foraging and nesting enhancement.	Direct or indirect competition for floral resources	Colony Establishment, Foraging, Nesting	Foraging, Nesting
Map High-Quality Habitat Areas	Mapping areas within enrolled lands that contain high-quality habitat for future planning reference	Active, Overwintering	None	Positive, potential protection of high-quality habitat areas from unwanted degradation, increased knowledge from	Increased knowledge and understanding of resources used by various species; increased awareness of high quality areas	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing[25]**	**Direct Interactions[26]**	**Effects to Resources (stressor)[27]**	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected[28]**
				tracking and monitoring			
Collect and Share Data on Bumble Bee Presence	Acquiring additional data and knowledge about covered species and associated pollinators to improve and expand conservation.	Active, Overwintering	None	Neutral in short-term, but increased knowledge can inform long-term positive outcomes.	Increased knowledge and understanding of resources used by various species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Conduct Bumble Bee Surveys Using USFWS-Approved Protocols	Conduct or support presence/absence surveys using USFWS-approved protocols performed by qualified surveyors on enrolled lands.	Active, Overwintering	None	Neutral in short-term, but increased knowledge can inform long-term positive outcomes.	Increased knowledge and understanding of resources used by various species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Fund or Conduct Research that Informs Bumble Bee Conservation	Fund, conduct, sponsor, or collaborate on research projects that will inform bumble bee conservation knowledge gaps.	Active, Overwintering	None	Neutral in short-term, but increased knowledge can inform long-term positive outcomes.	Increased knowledge and understanding of resources used by various species	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Enrollment in Complementary Certification Programs that Amplify Conservation	Enrollment in complementary programs that reduce and/or target vegetation management in ways that support other conservation measures and advanced conservation efforts	Active, Overwintering	None	Neutral in short-term, but engagement with advanced conservation programs can lead to positive changes in habitat and resources in the long-term	Potential for increased conservation and enhancement of breeding, foraging, nesting, and overwintering habitat.	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering
Maintain a Bumble Bee Conservation Program for Staff and Contractors	Conducting training with company personnel and/or contractors with appropriate expertise to encourage and educate on the importance of bumble bee conservation.	Active, Overwintering	None	Positive, training and education or personnel can increase awareness of bumble bees, habitat needs, threats, and	Increased knowledge and understanding or resources used by various species; increased awareness of	Colony Establishment, Foraging, Nesting, Overwintering	Breeding, Foraging, Nesting, Overwintering

ACTION		EXPOSURE			BIOLOGICAL EFFECTS		
Activity	**Description**	**Timing[25]**	**Direct Interactions[26]**	**Effects to Resources (stressor)[27]**	**Resources Affected**	**Life Stage Affected**	**Resource Functions Affected[28]**
				stressors and lead to conservation benefits	threats and stressors		

D.2 Analyzing Consequences of Covered Activities

To assess the consequences of each action, the analysis identified effects on individuals, the permanence and likelihood of effects, and the type of impact (Table D-2). *Individual effects* are the anticipated effects to individuals of the covered species. *Permanence* refers to the longevity of the impact. Impacts can be either *temporary* (e.g., lands will return to potentially suitable habitat following disturbance) or *permanent* (e.g., lands will not return to potentially suitable habitat). *Likelihood* refers to the likelihood of the action occurring. Type refers to the general direct of impact expected from the defined action and can be *negative* (causing harm to the covered species), *neutral* (causing neither harm nor benefit), or *positive* (causing benefit to the covered species).

The analysis also identified effects beyond the level of individuals; applying to the population as well. A summary assessment of net effects is included in Table D-3. When applicable, strategies for avoidance, minimization, or mitigation (AMM) were identified. Further, a determination was generated based on the likelihood of the AMMs to reduce impacts. Determinations were consistent with those used in a biological assessment, including “no effect” (NE), “may affect, but not likely to adversely affect” (NLAA), and “may affect, likely to adversely affect” (LAA). Activities with no negative impact on the covered species, but which are expected to benefit the covered species, were labeled as “NE; Positive” to improve clarity on their inclusion. Relevant literature used to inform the determinations is included in the final column in Table D-3.

D-2. Assessment of effects of covered species to individuals.

ACTION	INDIVIDUAL EFFECTS SUMMARY				
Activity	**Description**	**Individual Effects**	**Permanence**	**Likelihood**	**Type**
Avoidance of Known Nest Sites	Avoiding ground disturbance within 20 feet of identified and actively used nest locations.	Sustained Breeding, Foraging, Nesting, Overwintering conditions	Temporary	Likely	Positive
Temporary Set-Asides	Retaining areas of undisturbed habitat throughout a calendar year.	Sustained Breeding, Foraging, Nesting, Overwintering conditions	Temporary	Likely	Positive
Ground Disturbance, Small and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and restored to natural vegetation once complete.	Direct mortality, reduced forage	Temporary	Unlikely	Negative
Ground Disturbance, Large and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and restored to natural vegetation once complete.	Direct mortality, reduced forage	Temporary	Likely	Negative
Ground Disturbance, Small and Permanent	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and result in permanent habitat loss (i.e., developed land).	Direct mortality, reduced forage	Permanent	Unlikely	Negative
Ground Disturbance, Large and Permanent	Modernization activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and result in permanent habitat loss (i.e., developed land).	Direct mortality, reduced forage	Permanent	Likely	Negative
Targeted Herbicide Application	Targeted herbicide applications applied directly to specific target species.	Sustained or increased forage diversity	Temporary	Likely	Neutral
Mowing to Reduce Exposures to Pesticides and Physical Risks	Regular mowing inslope areas (transportation Partners) to prevent the development of floral resources in areas that may expose species to contaminants.	Reduced exposure to contaminants and other hazards	Temporary	Likely	Positive
Reduce Pesticide Exposures Through Partner-Specific Policies and Planning	Pesticide reduction through use of IVM, policies, and other company planning.	Sustained or increased forage diversity	Temporary	Likely	Neutral
Broadcast Herbicide Application	Herbicide applications applied to all vegetation in treatment area regardless of species or target.	Reduced forage	Temporary	Likely	Negative

ACTION	INDIVIDUAL EFFECTS SUMMARY				
Activity	**Description**	**Individual Effects**	**Permanence**	**Likelihood**	**Type**
Conservation Mowing	Reduced mowing to limit temporary loss of foraging habitat.	Sustained or increased forage diversity	Temporary	Likely	Positive
Brush Removal that Sustains Native Resources	Use of forestry mowing, chain sawing, or other physical and mechanical methods to remove woody vegetation and enhance early successional habitat.	Sustained or increased forage diversity	Temporary	Likely	Positive
Mowing of Foraging Habitat	Mowing of foraging habitat without timing or spatial restriction.	Reduced forage	Temporary	Likely	Negative
Prescribed Burning and Prescribed Grazing	Use of prescribed burning and/or prescribed grazing to sustain floral resources.	Reduced forage	Temporary	Likely	Positive
Reducing Managed Bee Conflicts	Placement and management of managed hives according to conservation measures in the Agreement	Direct or indirect competition for foraging	Temporary	Unknown	Positive
Maintaining Managed Bee Hives	Maintaining managed honeybee or bumble bee hives	Direct or indirect competition for foraging	Temporary	Unknown	Negative or Neutral
Seeding Diverse Floral Resources	Use of diverse native seed mixes providing high-value foraging resources as part of post-disturbance revegetation efforts.	Sustained or increased forage diversity	Permanent	Likely	Positive
Implement BMPs to Limit the Spread of Invasive Species	Preventing spread of invasive species through the implementation of appropriate documented policies, procedures, and/or BMPs	Sustained or increased forage diversity	Temporary	Likely	Positive
Control Invasive Species for Conservation Purposes	Direct control of invasive and noxious plant species with the primary objective of achieving conservation goals (not required for O&M)	Sustained or increased forage abundance and diversity	Temporary	Likely	Positive
Create New Bumble Bee Habitat Areas	Conversion of non-habitat land covers into suitable habitat (grasslands, shrublands, or forest)	Sustained or increased forage diversity	Permanent	Likely	Positive
Map High-Quality Habitat Areas	Mapping areas within enrolled lands that contain high-quality habitat for future planning reference	Sustained Breeding, Foraging, Nesting, Overwintering conditions	Permanent	Likely	Positive
Collect and Share Data on Bumble Bee Presence	Acquiring additional data and knowledge about covered species and associated pollinators to improve and expand conservation.	Direct mortality, or temporary capture	Temporary	Unknown	Neutral in short-term
Conduct Bumble Bee Surveys Using	Conduct or support presence/absence surveys using USFWS-approved protocols performed by qualified surveyors on enrolled lands.	Direct mortality, or temporary capture	Temporary	Unknown	Neutral in short-term

ACTION	INDIVIDUAL EFFECTS SUMMARY				
Activity	**Description**	**Individual Effects**	**Permanence**	**Likelihood**	**Type**
USFWS-Approved Protocols					
Fund or Conduct Research that Informs Bumble Bee Conservation	Fund, conduct, sponsor, or collaborate on research projects that will inform bumble bee conservation knowledge gaps.	Direct mortality, or temporary capture	Temporary	Unknown	Neutral in short-term
Enrollment in Complementary Certification Programs that Amplify Conservation	Enrollment in complementary programs that reduce and/or target vegetation management in ways that support other conservation measures and advanced conservation efforts	Sustained Breeding, Foraging, Nesting, Overwintering conditions	Temporary	Likely	Neutral in short-term
Maintain a Bumble Bee Conservation Program for Staff and Contractors	Conducting training with company personnel and/or contractors with appropriate expertise to encourage and educate on the importance of bumble bee conservation.	Sustained Breeding, Foraging, Nesting, Overwintering conditions	Temporary	Likely	Positive

D-3. Assessment of effects of covered species to the population and other effects.

ACTION		POPULATION AND OTHER EFFECTS				
Activity	**Description**	**Population Effects**	**Avoidance, Minimization, Mitigation (AMM)**	**Remaining/Net Effects**	**Determination assuming AMM[9]**	***Information Sources***
Avoidance of Known Nest Sites	Avoiding ground disturbance within 20 feet of identified and actively used nest locations.	Positive	Not applicable	None	**NE; Positive**	*USFWS 2021, UIC 2023*
Temporary Set-Asides	Retaining areas of undisturbed habitat throughout a calendar year.	Positive	Not applicable	None	**NE; Positive**	*USFWS 2021, 2020; UIC 2023*
Ground Disturbance, Small and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and restored to natural vegetation once complete.	Neutral	Use appropriate BMPs for disturbance and restoration	Minimal and temporary	**NLAA**	*USFWS 2021, 2023; UIC 2023*
Ground Disturbance, Large and Temporary	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and restored to natural vegetation once complete.	Negative	Use appropriate BMPs for disturbance and restoration	Temporary	**LAA**	*USFWS 2021, UIC 2023*
Ground Disturbance, Small and Permanent	Operations and maintenance activities with grading, excavating, digging, or similar soil disturbing that are less than 0.25 acres in extent and result in permanent habitat loss (i.e., developed land).	Neutral	Use appropriate BMPs for disturbance	Minimal and permanent	**NLAA**	*USFWS 2021, 2023; UIC 2023*
Ground Disturbance, Large and Permanent	Modernization activities with grading, excavating, digging, or similar soil disturbing that are more than 0.25 acres in extent and result in permanent habitat loss (i.e., developed land).	Negative	Use appropriate BMPs for disturbance	Permanent	**LAA**	*USFWS 2021, UIC 2023*
Targeted Herbicide Application	Targeted herbicide applications applied directly to specific target species.	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Minimal and temporary	**NLAA**	*USFWS 2021, 2020; UIC 2023*
Mowing to Reduce Exposures to Pesticides and Physical Risks	Regular mowing inslope areas (transportation Partners) to prevent the development of floral resources in areas that may expose species to contaminants.	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Minimal, permanent	**NE; Positive**	
Reduce Pesticide Exposures Through Partner-Specific	Pesticide reduction through use of IVM, policies, and other company planning.	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	Minimal and temporary	**NLAA**	*USFWS 2021, 2020; UIC 2023*

ACTION		POPULATION AND OTHER EFFECTS				
Policies and Planning						
Broadcast Herbicide Application	Herbicide applications applied to all vegetation in treatment area regardless of species or target.	Negative	Minimize extent of applications; retain untreated areas; use application BMPs	Temporary	**LAA**	*USFWS 2021, 2020; UIC 2023*
Conservation Mowing	Reduced mowing to limit temporary loss of foraging habitat.	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Temporary	**NLAA**	*USFWS 2018, UIC 2023*
Brush Removal that Sustains Native Resources	Use of forestry mowing, chain sawing, or other physical and mechanical methods to remove woody vegetation and enhance early successional habitat.	Positive	Activity can be scheduled or timed to avoid and minimize impacts similar to other measures such as conservation mowing.	Temporary	**NLAA**	*USFWS 2018, UIC 2023*
Mowing of Foraging Habitat	Mowing of foraging habitat without timing or spatial restriction.	Negative	Mower height > 8"; reduced mower speeds; mapping and tracking	Temporary	**LAA**	*USFWS 2018, UIC 2023*
Prescribed Burning and Prescribed Grazing	Use of prescribed burning and/or prescribed grazing to sustain floral resources.	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Temporary	**NLAA**	*USFWS 2018*
Reducing Managed Bee Conflicts	Placement and management of managed hives according to conservation measures in the Agreement	Positive	Activity already avoids and minimizes impacts as a conservation measure.	None	**NE; Positive**	*USFWS 2018, UIC 2023*
Maintaining Managed Bee Hives	Maintaining managed honeybee or bumble bee hives	Negative	Avoid placement in or near natural areas and use in open systems; maintain low hive densities; properly dispose of bees and hives.	Minimal	**LAA**	*USFWS 2018, UIC 2023*
Seeding Diverse Floral Resources	Use of diverse native seed mixes providing high-value foraging resources as part of post-disturbance revegetation efforts.	Positive	Activity already avoids and minimizes impacts as a conservation measure.	None	**NE; Positive**	*USFWS 2018, UIC 2023*
Implement BMPs to Limit the Spread of Invasive Species	Preventing spread of invasive species through the implementation of appropriate documented policies, procedures, and/or BMPs	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Temporary	**NLAA**	*USFWS 2021, 2020, 2018*
Control Invasive Species for Conservation Purposes	Direct control of invasive and noxious plant species with the primary objective of achieving conservation goals (not required for O&M)	Positive	Activity already avoids and minimizes impacts as a conservation measure.	Temporary	**NLAA**	*USFWS 2021, 2020, 2018*

ACTION		POPULATION AND OTHER EFFECTS				
Create New Bumble Bee Habitat Areas	Conversion of non-habitat land covers into suitable habitat (grasslands, shrublands, or forest)	Positive	Activity already avoids and minimizes impacts as a conservation measure.	None	**NE; Positive**	*USFWS 2018, UIC 2023*
Map High-Quality Habitat Areas	Mapping areas within enrolled lands that contain high-quality habitat for future planning reference	Positive	Activity already avoids and minimizes impacts as a conservation measure.	None	**NE; Positive**	
Collect and Share Data on Bumble Bee Presence	Acquiring additional data and knowledge about covered species and associated pollinators to improve and expand conservation.	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	Minimal	**NE; Positive**	*USFWS 2019*
Conduct Bumble Bee Surveys Using USFWS-Approved Protocols	Conduct or support presence/absence surveys using USFWS-approved protocols performed by qualified surveyors on enrolled lands.	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	Minimal	**NE; Positive**	*USFWS 2019*
Fund or Conduct Research that Informs Bumble Bee Conservation	Fund, conduct, sponsor, or collaborate on research projects that will inform bumble bee conservation knowledge gaps.	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	Minimal	**NE; Positive**	*USFWS 2019*
Enrollment in Complementary Certification Programs that Amplify Conservation	Enrollment in complementary programs that reduce and/or target vegetation management in ways that support other conservation measures and advanced conservation efforts	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	Minimal	**NE; Positive**	
Maintain a Bumble Bee Conservation Program for Staff and Contractors	Conducting training with company personnel and/or contractors with appropriate expertise to encourage and educate on the importance of bumble bee conservation.	Neutral	Activity already avoids and minimizes impacts as a conservation measure.	None	**NE; Positive**	

D.3 Scenario Effects Comparison and Net Conservation Benefit of Enrollment

Using the elicited input from industry representatives and Service biologists, the effects of covered activities were multiplied across the anticipated extent of those actions occurring on enrolled lands. *Annual* and *35-year extent* estimates were made for each action under both pre-enrollment (Table D-4) and enrollment (Table D-5) scenarios. *Extent* refers to the amount of enrolled land on which an activity may be expected to occur based on industry representatives' input. These estimates of extent represent the mean values of sector-specific input from industry partners and implementation of similar actions in the Monarch CCAA. Estimated extents for each action across sectors, at both pre-enrollment and enrolled levels, were used to calculate the net effect on bumble bee nests assumed to be present across the enrolled lands.

These annual and 35-year net effects were converted to acres affected by each action and the assumed number of nests affected by each action. *Assumed nests affected* calculations assume an average of 0.13 nests per acre, equivalent to 34 nests/km^2. This is the 50th percentile or moderate nest density documented for *B. terrestris* based on USFWS (2021a). Because the extent of potential enrollment is unknown and likely to vary over time, the acres and their potential “assumed nests affected” were calculated based on the extent and type of each action on an enrolled system of 1,000 acres. This allows the relative effects assumed to be scaled up or down based on energy and transportation lands enrollment changes.

Population effects (as shown in Table D-3) noted as positive or negative are carried through the effects estimates. Actions with neutral effects result in a "0" value, colored in yellow, regardless of their extent. Neutral actions either do not result directly in on-the-ground effects, or their effects are considered insignificant to be quantified in net effects. Nests affected by each action have been summed to produce an *annual net nests affected* score for the system on an annual basis and a 35-year basis. Negative scores (colored in red) indicate the net harm of the actions based on the effects and extent analyzed. Positive scores indicate a net benefit of the cumulative actions and are colored in green.

Based on these methods, an assumed 57 nests per 1,000 acres are assumed to be sustained each year *without enrollment*. Over a 35-year duration, results assume approximately 41 nests are sustained per 1,000 acres in the pre-enrollment scenario (Table D-4). In the absence of the Agreement, nest benefits are still assumed to occur based on existing AMMs implemented voluntarily by the industry, in particular by Partners already enrolled in the Monarch CCAA. This analysis indicates that potential nests are positively impacted by temporary habitat set-asides, targeted herbicide application, and conservation mowing. Annual nest impacts are not expected to be cumulative; beneficial actions may occur on overlapping areas during the permit term. Thus, net (positively impacted) nests are expected to be lower than those estimated annually.

The estimates for the extent of the actions of the Agreement are likely conservative, or low-end, estimates of change. The representative organizations that informed pre- and post-enrollment scenarios are those presently involved with the Monarch CCAA, Rights-of-Way as Habitat Working Group, or other organizations, and generally have high levels of beneficial practices in their existing vegetation management practices in the industry. This analysis anticipates that many potential Partners may make larger changes to their current practices to comply with the Agreement requirements as compared to this cohort. We anticipate that the representatives polled for this analysis underestimate increases in the extent of beneficial actions (conservation measures) and decreases in the extent of temporary or permanent habitat loss (covered activities). For example, the mean extent of *pre-enrollment* “temporary set-asides” was estimated as 21% compared to 24.5% post-enrollment. Whereas an organization not already making these commitments would start their pre-enrollment “temporary set-asides” at 0%. Thus, we expect that the quantitative estimates of net conservation benefit provided by this analysis, in terms of potential covered species nests affected, are likely on the low end of what is possible through widespread adoption of the Agreement.

D-4. Analysis of the pre-enrollment scenario

ACTION				
Activity	**Annual Extent**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Avoidance of Known Nest Sites[5]	0.0%	0.0%	0.0	0.0
Temporary Set-Asides[30]	21.4%	21.4%	214.0	214.0
Ground Disturbance, Small and Temporary[31]	1.0%	3.5%	10.0	35.0
Ground Disturbance, Large and Temporary[32]	1.8%	5.0%	18.0	50.0
Ground Disturbance, Small and Permanent[33]	0.3%	1.0%	3.0	10.0
Ground Disturbance, Large and Permanent[34]	0.2%	1.0%	2.0	10.0

RESULTS[29]			
Annual Net Nests Affected	**57.1**	**35-Year Net Nests Affected**	**41.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
0	0.00	0	0
214	27.8	214	27.82
0	0.0	0	0
-18	-2.3	-50	-6.5
0	0.0	0	0
-2	-0.3	-10	-1.3

[29] Assumes a 1,000-acre scale and 0.13 nests per acre, equivalent to 34 nests/km2. This is the 50th percentile or moderate nest density documented for *B. terrestris* based on USFWS 2021 estimates citing Chapman et al 2003 (as cited in Charman et al. 2010); Darvill et al. 2004; Dreier et al. 2014; Knight et al. 2005; Kraus et al. 2009; Wolf et al. 2012; Wood et al. 2015).

[30] Annual extent of set-asides are based on minimum applied under the Monarch CCAA, which is used as the minimum expectation in the measure description. Maximum extent is assumed to be 10% due to the maximum available natural land cover likely available for lands enrolled in this sector.

[31] Temporary and small disturbance is expected to be small on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[32] Temporary and large disturbance is expected to be small on an annual basis. Temporary areas are typically revegetated and returned to their prior vegetative cover. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[33] Permanent and small disturbance is expected to be negligible on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[34] Permanent and large disturbance is expected to be negligible on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

ACTION				
Activity	**Annual Extent**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Targeted Herbicide Application[35]	4.9%	7.0%	49.0	70.0
Mowing to Reduce Exposures to Pesticides and Physical Risks[36]	1.7%	1.7%	17.0	17.0
Reduce Pesticide Exposures Through Partner-Specific Policies and Planning[37]	22.2%	33.3%	222.0	333.3
Broadcast Herbicide Application[38]	7.7%	15.3%	77.0	153.3
Conservation Mowing[39]	8.3%	8.3%	83.0	83.0
Brush Removal that Sustains Native Resources[40]	2.0%	3.5%	20.0	35.3

RESULTS[29]			
Annual Net Nests Affected	**57.1**	**35-Year Net Nests Affected**	**41.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
49	6.4	70	9.1
17	2.2	17	2.2
0	0.0	0	0
-77	-10.0	-153.25	-19.9
83	10.8	83	10.8
20	2.6	35.25	4.6

[35] Herbicide applications vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[36] This activity occurs infrequently.

[37] Establishment and use of an IPM plan will minimize pesticide exposure potential across the portion of enrolled lands where pesticides would otherwise be applied. Assumes pesticides would be applied only around infrastructure for maintenance purposes.

[38] Broadcast herbicide assumed to be limited in application to problematic areas, or locations required for supplemental seeding.

[39] Conservation mowing assumed to vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[40] Brush removal assumed to vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

ACTION				
Activity	**Annual Extent**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Mowing of Foraging Habitat[41]	15.2%	30.9%	152.0	308.8
Prescribed Burning and Prescribed Grazing[42]	2.8%	2.8%	28.0	28.0
Reducing Managed Bee Conflicts[43]	0.0%	0.0%	0.0	0.0
Maintaining Managed Bee Hives[44]	0.0%	0.8%	0.0	7.5
Seeding Diverse Floral Resources[45]	1.6%	3.0%	16.0	30.0
Implement BMPs to Limit the Spread of Invasive Species[46]	23.2%	32.5%	232.0	325.3
Control Invasive Species for Conservation Purposes[47]	1.8%	1.8%	18.0	18.0

RESULTS[29]			
Annual Net Nests Affected	**57.1**	**35-Year Net Nests Affected**	**41.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
-152	-19.8	-308.75	-40.1
28	3.6	28	3.6
0	0.0	0	0
0	0.0	-7.5	-0.9
16	2.1	30	3.9
232	30.2	325.25	42.3
18	2.3	18	2.3

[41] Mowing assumed to occur in areas around infrastructure, including areas that require mowing for vegetation height management.

[42] This activity occurs infrequently.

[43] Reducing managed bee conflicts is assumed to affect the entirety of the site based on the flight distances of both bumble bees and honey bees.

[44] Maintaining managed bee hives is assumed to affect the entirety of the site based on the flight distances of both bumble bees and honeybees.

[45] Seeding of diverse floral resources may vary greatly depending on the site.

[46] Implementing invasive species prevention would be implemented across the extent of acres where activities occur on an annual basis. Over the maximum duration, prevention measures would likely be applied throughout the site.

[47] Controlling invasive species may vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

ACTION				
Activity	**Annual Extent**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Create New Bumble Bee Habitat Areas[48]	1.1%	2.5%	11.0	25.0
Map High-Quality Habitat Areas[49]	0.0%	0.0%	0.0	0.3
Collect and Share Data on Bumble Bee Presence[50]	0.0%	0.0%	0.0	0.0
Conduct Bumble Bee Surveys Using USFWS-Approved Protocols[51]	0.0%	1.3%	0.0	12.5
Fund or Conduct Research that Informs Bumble Bee Conservation[52]	0.1%	1.3%	1.0	12.5
Enrollment in Complementary Certification Programs	0.1%	25.0%	1.0	250.0

RESULTS[29]			
Annual Net Nests Affected	**57.1**	**35-Year Net Nests Affected**	**41.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
11	1.4	25	3.3
0	0.0	0.25	0.1
0	0.0	0	0
0	0.0	0	0
0	0.0	0	0
0	0.0	0	0

[48] Seeding of diverse floral resources may vary greatly depending on the site. Amounts assume that sites typically include establishment at the time of enrollment.

[49] Mapping of high-quality habitat resources may vary greatly depending on the site. Assumes high quality areas will be limited to a portion of a site.

[50] Data collection activities are assumed to occur in limited locations, likely in conjunction with annual monitoring efforts. Typical sampling of 10-30 plots annually yields 0.3 - 1.0 acres of sampled area. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

[51] Assumes similar spatial coverage as the presence data collection when applied. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

[52] Assumes similar spatial coverage as the presence data collection when applied. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

ACTION				
Activity	**Annual Extent**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
that Amplify Conservation[53]				
Maintain a Bumble Bee Conservation Program for Staff and Contractors[54]	0.%	1.3%	0.0	12.5

RESULTS[29]			
Annual Net Nests Affected	**57.1**	**35-Year Net Nests Affected**	**41.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
0	0.0	0	0

[53] Enrollment in other certifications may vary greatly depending on the site, certification program, and criteria met. Assumes certifications maybe limited to a portion of a site.

[54] Spatial extent assumes similar coverage as the nest avoidance measure. Training may apply to a wider area but is assumed as a minimal extent for effects analysis purposes.

D-5. Analysis of the enrollment scenario

BASELINE EXTENT				
Activity	**Annual Extent[8]**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Avoidance of Known Nest Sites[31]	5.60%	14.25%	56.0	142.5
Temporary Set-Asides[56]	24.5%	24.5%	245.0	245.0
Ground Disturbance, Small and Temporary[57]	1.0%	3.5%	10.0	35.0
Ground Disturbance, Large and Temporary[58]	1.9%	4.5%	19.0	45.0
Ground Disturbance, Small and Permanent[59]	0.3%	1.0%	3.0	10.0
Ground Disturbance, Large and Permanent[60]	0.2%	1.0%	2.0	10.0

RESULTS[55]			
Annual Net Nests Affected	**78.9**	**35-Year Net Nests Affected**	**133.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
56.0	7.3	142.5	18.5
245.0	31.9	245.0	31.9
0	0.0	0	0.0
-19.0	-2.5	-45.0	-5.9
0	0.0	0	0.0
-2.0	-0.3	-10.0	-1.3

[55] Assumes a 1,000-acre scale and 0.13 nests per acre, equivalent to 34 nests/km2. This is the 50th percentile or moderate nest density documented for *B. terrestris* based on USFWS 2021 estimates citing Chapman et al 2003 (as cited in Charman et al. 2010); Darvill et al. 2004; Dreier et al. 2014; Knight et al. 2005; Kraus et al. 2009; Wolf et al. 2012; Wood et al. 2015).

[56] Annual extent of set-asides are based on minimum applied under the Monarch CCAA, which is used as the minimum expectation in the measure description. Maximum extent is assumed to be 10% due to the maximum available natural land cover likely available for lands enrolled typical across sectors.

[57] Temporary and small disturbance is expected to be small on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[58] Temporary and large disturbance is expected to be small on an annual basis. Temporary areas are typically revegetated and returned to their prior vegetative cover. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[59] Permanent and small disturbance is expected to be negligible on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[60] Permanent and large disturbance is expected to be negligible on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

BASELINE EXTENT				
Activity	**Annual Extent[8]**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Targeted Herbicide Application[61]	6.7%	14.5%	67.0	145.0
Mowing to Reduce Exposures to Pesticides and Physical Risks[62]	1.7%	1.7%	17.0	17.0
Reduce Pesticide Exposures Through Partner-Specific Policies and Planning[63]	22.8%	33.3%	228.0	333.3
Broadcast Herbicide Application[64]	6.0%	8.9%	60.0	88.8
Conservation Mowing[65]	9.4%	11.3%	94.0	113.3
Brush Removal that Sustains Native Resources[66]	2.1%	4.0%	21.0	40.3
Mowing of Foraging Habitat[67]	14.8%	28.2%	148.0	282.0

RESULTS[55]			
Annual Net Nests Affected	**78.9**	**35-Year Net Nests Affected**	**133.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
67.0	8.7	145.0	18.9
17.0	2.2	17.0	2.2
0	0.0	0	0.0
-60.0	-7.8	-88.8	-11.5
94.0	12.2	113.3	14.7
21.0	2.7	40.3	5.2
-148.0	-19.2	-282.0	-36.7

[61] Herbicide applications vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[62] This activity is unlikely to occur within this sector.

[63] Establishment and use of an IPM plan will minimize pesticide exposure potential across the portion of enrolled lands where pesticides would otherwise be applied. Assumes pesticides would be applied only around infrastructure for maintenance purposes.

[64] Broadcast herbicide assumed to be limited in application to problematic areas, or locations required for supplemental seeding.

[65] Conservation mowing assumed to vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure or by greenspace required for security, safety, operational needs, or other activities.

[66] Brush removal assumed to vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[67] Mowing assumed to occur in areas around infrastructure, including areas that require mowing for vegetation height management.

BASELINE EXTENT				
Activity	**Annual Extent[8]**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Prescribed Burning and Prescribed Grazing[68]	2.8%	2.8%	28.0	28.0
Reducing Managed Bee Conflicts[69]	0.0%	25.0%	0.0	250.0
Maintaining Managed Bee Hives[70]	0.0%	0.8%	0.0	8.0
Seeding Diverse Floral Resources[71]	2.7%	7.9%	27.0	78.8
Implement BMPs to Limit the Spread of Invasive Species[72]	23.2%	32.5%	232.0	325.3
Control Invasive Species for Conservation Purposes[73]	3.3%	3.6%	33.0	36.3
Create New Bumble Bee Habitat Areas[74]	1.2%	2.5%	12.0	25.0
Map High-Quality Habitat Areas[75]	0.4%	1.2%	4.0	11.5

RESULTS[55]			
Annual Net Nests Affected	**78.9**	**35-Year Net Nests Affected**	**133.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
28.0	3.6	28.0	3.6
0.0	0.0	250.0	32.5
0.0	0.0	-8.0	-1.0
27.0	3.5	78.8	10.2
232.0	30.2	325.3	42.3
33.0	4.3	36.3	4.7
12.0	1.6	25.0	3.3
4.0	0.5	11.5	1.5

[68] This activity occurs infrequently.

[69] Reducing managed bee conflicts is assumed to affect the entirety of the site based on the flight distances of both bumble bees and honey bees.

[70] Maintaining managed bee hives is assumed to affect the entirety of the site based on the flight distances of both bumble bees and honeybees.

[71] Seeding of diverse floral resources may vary greatly depending on the site.

[72] Implementing invasive species prevention would be implemented across the extent of acres where activities occur on an annual basis. Over the maximum duration, prevention measures would likely be applied throughout the site.

[73] Controlling invasive species may vary spatially on an annual basis. The maximum extent is assumed to be limited by the extent of area occupied by infrastructure, or by greenspace required for security, safety, operational needs, or other activities.

[74] Seeding of diverse floral resources may vary greatly depending on the site. Amounts assume that sites typically include establishment at the time of enrollment.

[75] Mapping of high-quality habitat resources may vary greatly depending on the site. Assumes high-quality areas will be limited to a portion of a site.

BASELINE EXTENT				
Activity	**Annual Extent[8]**	**35-Year Extent**	**Annual Extent (Est. Acres)**	**35-Year Extent (Est. Acres)**
Collect and Share Data on Bumble Bee Presence[76]	0.2%	1.5%	2.0	15.0
Conduct Bumble Bee Surveys Using USFWS-Approved Protocols[77]	0.2%	1.5%	2.0	15.0
Fund or Conduct Research that Informs Bumble Bee Conservation[78]	0.1%	1.3%	1.0	12.5
Enrollment in Complementary Certification Programs that Amplify Conservation[79]	1.7%	25.3%	17.0	252.5
Maintain a Bumble Bee Conservation Program for Staff and Contractors[80]	14.4%	25.3%	144.0	252.5

RESULTS[55]			
Annual Net Nests Affected	**78.9**	**35-Year Net Nests Affected**	**133.1**
Acres Affected	*Assumed Nests Affected*	*Acres Affected*	*Assumed Nests Affected*
0	0.0	0	0.0
0	0.0	0	0.0
0	0.0	0	0.0
0	0.0	0	0.0
0	0.0	0	0.0

[76] Data collection activities are assumed to occur in limited locations, likely in conjunction with annual monitoring efforts. Typical sampling of 10-30 plots annually yields 0.3 - 1.0 acres of sampled area. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

[77] Assumes similar spatial coverage as the presence data collection when applied. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

[78] Assumes similar spatial coverage as the presence data collection when applied. Results inform overall species conservation, which yields a net benefit at individual sites and beyond.

[79] Enrollment in other certifications may vary greatly depending on the site, certification program, and criteria met. Assumes certifications may be limited to a portion of a site.

[80] Spatial extent assumes similar coverage as the nest avoidance measure. Training may apply to a wider area but is assumed to a minimal extent for effects analysis purposes.

D.4 Summary of Effects and Net Conservation Benefit

Based on these methods, more than 78 nests per 1,000 acres are assumed to be sustained yearly *with enrollment*. Over a 35-year duration, results assume approximately 133 nests are sustained per 1,000 acres *with enrollment* (Table D-5). Nest benefits are assumed to exceed those in the pre-enrollment scenario because of the additional conservation commitments implemented by enrolled Partners.

Compared to 57 nests per 1,000 acres assumed to be sustained each year *without enrollment*, the enrollment scenario result of 78 nests per 1,000 acres represents an increase of more than 21 nests per 1,000 acres, or a 37 percent annual increase compared to the pre-enrollment scenario. Over a 35-year duration, compared to 41 nests per 1,000 acres assumed to be sustained each year *without enrollment*, the enrollment scenario result of 133 nests per 1,000 acres represents an increase of more than 92 nests per 1,000 acres, or a 224 percent increase compared to the 35-year pre-enrollment scenario.

Actual rates of nesting may vary. Estimates of nests are included for analysis purposes only as an indicator of effects resulting from this Agreement. This analysis demonstrates that the anticipated reduction of threats and positive habitat benefits resulting from the conservation measures implemented will result in a net conservation benefit to the covered species on enrolled lands.

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