Supplemental Information

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

C.1. USFWS Section 106 NHPA Compliance Protocol for Monarch CCAA/CCA for Energy and Transportation Lands

Most covered activities and conservation measures in the Monarch CCAA/CCA do not have the potential to cause effects on historic properties. In this appendix we communicate activities that do not have the potential to effect, and when consultation with the State Historic Preservation Office and Regional Historic Preservation Officer is required. To meet the requirements of Section 106 of the National Historic Preservation Act (NHPA) during implementation of the Monarch CCAA/CCA, partners to the agreement will adhere to the following protocol.

Monarch CCAA/CCA covered activities and conservation measures that 1) Do not involve ground or structure disturbance, or 2) Do not occur within a previously known cultural site and take place on previously disturbed land do not have the potential to cause effects on historic properties. The term 'previously disturbed land' is used to describe lands that have been previously excavated, tilled, plowed, or otherwise broken for activities such as agriculture or development of infrastructure. In the context of the Monarch CCAA/CCA this includes lands such as currently existing rights of way, where lands were disturbed, for example, for the development and placement of pipelines, utility infrastructure, and roads. Most covered activities and conservation measures do not have the potential to cause effects on historic properties.

For examples of activities that have "No Potential to Cause Effects on Historic Properties" Refer to Section I. For activities that may have potential to cause effects on historic properties, follow the protocol in Section II.

Section I. Activities Not Likely to Effect Historic Properties and Cultural Sites

The U.S. Fish and Wildlife Service (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 National Register of Historic Places (aka "Historic Property"), and are therefore exempted from further Section 106 review as consistent with 36 CFR Part 800.3(a)(1). *This current exemption list was developed for use with the Nationwide Monarch CCAA/CCA for Energy and Transportation Lands.*

Note: Due to their sensitivity to interested parties, except for Section A, these exemptions shall not apply when an activity is located within any previously known cultural site, especially any identified or suspected platted or unplatted cemetery (includes prehistoric earthen burial mounds). These activities need a full Section 106 review in cooperation with the Regional Historic Preservation Officer (RHPO), or the appropriate Historic Preservation Officer from the lead Federal agency with regulatory authority.

Activities with "No Potential to Cause Effects on Historic Properties

A. No Ground or Building/Structure Disturbance

1. **Surveys and Inspections** – Field observations, data collection, investigations, and report writing that does 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. **Removal or Introduction of Plants and Animals** – The removal or introduction of 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.

B. Land Acquisition/Access

1. **Land Acquisition** – The administrative acquisition of land without immediate plans for development. Any development plans should be reviewed separately for potential.

2. **Easement/Lease** – The granting of an easement or lease on or off enrolled lands that does not anticipate any ground or building disturbance beyond what has been previously disturbed.

C. 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 disturbed soil.

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 early successional habitats.

4. **Brush removal** - Removal of dense brush using forestry mowing, chainsaws, or other mechanical methods to promote more open grassland habitat types.

5. **Mowing or haying to sustain early successional habitats** - mechanical mowing or clipping of vegetative material.

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.

D. 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/Structure Maintenance** – The routine and cyclical maintenance of buildings and structures, regardless of age, to arrest or retard wear and deterioration Major, extensive remodeling (including built-in or wall removal) which significantly alters the appearance of the interior or exterior can be done only on buildings/structures younger than 50 years from the date of the proposed activity. 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. The surface remnants of buildings and structures 50 years or older from the date of the proposed activity can be removed only if they are significantly or completely collapsed/ruined and beyond the point of reasonable stabilization/repair. The removal

can include the use of fire. Removal must be confined to areas previously disturbed from construction activities and any possibly affected undisturbed ground must be shielded from disturbance.

4. **Temporary staging and storage-** Temporary staging and material storage areas for construction. May involve use of 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** - where activities do not cause disturbance beyond level of previous 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.

E. Areas Previously Reviewed

1. **APE Previously Surveyed with Negative Results** – The Area of Potential Effects (APE) of the proposed activity has been previously subjected to a modern, 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).

Section II: Activities That Have Potential to Effect Historic Properties or Cultural Sites

A. For any activities involving Tribal and Federal Public Lands, the CCAA/CCA partner will follow the standard protocol that has been established and used for some Federally-funded projects protocol for work conducted on Tribal and Federal public lands is:

1. Project site and parameters (Area of Potential Effects and timing of activities) will be established.

2. Project site will be cross-referenced to State and Federal Cultural Resource databases within the State Historic Preservation Office (SHPO) and the Tribe, if applicable, to see if any potential impacts to known cultural resources can be identified.

3. A USFWS RHPO Review Request Form (attached), with the supporting documentation including maps and database searches will be sent to U.S. Fish and Wildlife Service (USFWS) Midwest Regional Historic Preservation Officer (RHPO) for review by Partner organizations.

4. Depending on the scope and location of the project, the RHPO, in consultation with SHPO, and, if necessary, local Tribal Historic Preservation Officer (THPO), initiates a review for the presence of any potential cultural resource effects, and offers guidance on project action. At this point, a project may be cleared for action with or without restriction, denied, or additional site reconnaissance and information requested from the applicant.
5. If necessary, additional site reconnaissance and information reporting is provided to the RHPO from which clearance or guidance will be provided by the RHPO for the project.
6. Project is implemented based on ruling and guidance by the USFWS.

B. For any activities taking place on Non-Federal Public/Non-Tribal Lands and Private Lands, the CCAA/CCA partner will follow a protocol that has been established and used for some Federally-funded projects. To assist the USFWS in their Section 106 compliance obligations, for each project area, the enrolled partner, or UIC, shall initiate procedures outlined in regulations 36 CFR Part 800 working directly with the other consulting parties (e.g. SHPO, tribes). The full protocol for work conducted on non-federal public/non-tribal lands and private lands is:

1. Project site and project parameters (Area of Potential Effects and timing of activities) will be established.
2. Project site will be cross-referenced to State and Federal Cultural Resource databases within the SHPO to see if any potential impacts to known cultural resources can be identified.
3. At this point, it is strongly recommended that the applicant work with a cultural resources professional that meets the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61, Appendix A) to help guide the applicant in the Section 106 process. If the applicant doesn't have a cultural resources professional on staff, they can hire one or other options may exist. If the project is on non-federal public lands, the governmental agency with jurisdiction over those lands may have a professional to assist the applicant. Either way, the applicant is encouraged to look to, and work with, the cultural resources professionals from any other partners in the project.
4. Resulting from this consultation, the applicant submits the project plans to the SHPO and any other consulting parties identified. The SHPO and the other parties should review the project within 30 calendar days and may request a field visit or "survey". If no response is given or no survey is requested, activities can begin as planned after the applicant notifies UIC staff of the determination (with documentation).
5. If a field survey is mutually agreed to, a cultural resources professional, meeting the above referenced standards in the academic discipline needed, must conduct it.
    a. If cultural resources are not found, the applicant notifies the consulting parties, receives concurrence, and then notifies UIC staff (with documentation) before proceeding as planned.
    b. If cultural resources are found, the applicant, in consultation with the consulting parties, will develop a plan, if necessary (most times it is not necessary if the resource(s) can be avoided), to evaluate whether or not the resource is eligible for inclusion on the National Register of Historic Places (NRHP) and what effect the project, if any, will have on the resource. Except for the stipulation below, working the consulting parties, the applicant will follow and conclude the Section 106 process and notify the UIC staff (with documentation) before proceeding as planned.

Important Stipulation: The USFWS RHPO, or the appropriate Historic Preservation Officer from the lead Federal agency with regulatory authority, shall become directly involved in the Section 106 process (through UIC 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 USFWS, or the appropriate Historic Preservation Officer from the lead Federal agency with regulatory authority, shall enter the process as a signatory to the Memorandum of Agreement (MOA) to resolve the adverse effects to the historic property. The USFWS, or the appropriate Historic Preservation Officer from the lead Federal agency with regulatory authority, would only enter into the Section 106 process earlier if any consulting party disagrees with the applicant’s determination, in writing to the USFWS (through UIC staff), after the disagreement cannot be resolved in a timely manner by the applicant.

C.2. Background on CCAA/CCA Development

The Rights-of-Way as Habitat Working Group (Working Group) was formed by UIC in 2015 as a forum for rights-of-way industry partners 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. 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.

In August 2014, the Service was petitioned by a partnership of Center for Biological Diversity, Center for Food Safety, Xerces Society, and Dr. Lincoln Brower to list the monarch butterfly under the Endangered Species Act. A subsequent suit filed by Center for Biological Diversity required a listing determination be made by June 30, 2019. In the meantime, concerted conservation efforts to protect the monarch butterfly—including developing conservation plans and demonstrating commitments to habitat creation, enhancement, and protection—are informing the Service's species status assessment and helping to address the widespread declines in other pollinator populations. This CCAA/CCA is closely aligned with the broad monarch conservation strategy identified in "All Hands on Deck" (Thogmartin et al. 2017), which envisions contributions from multiple land use sectors. Another such strategy includes the MAMCS (v1.0, 2018-2038), recently prepared by the Midwest Association of Fish and Wildlife Agencies (MAFWA 2018a), which specifically recognizes the opportunity for conservation benefits within the rights-of-way sectors, and the Working Group's role in bringing partners together.

The Working Group builds broad industry engagement in strategies that will benefit not only the monarch butterfly but also model conservation collaboration for other pollinators of concern. The development of the CCAA/CCA is one such strategy that promotes voluntary conservation action among non-Federal landowners. In October 2017, industry representatives met with the Service as part of this Working Group to discuss the feasibility of undertaking development of a CCAA/CCA during the evaluation of the monarch for potential listing. The primary outcome from this workshop was agreement between organizations to collaborate in the development of a CCAA/CCA for the monarch butterfly. In January 2018, UIC created a joint fund to pool resources from the Working Group to support the development of a collaborative CCAA/CCA prior to the listing decision by the Service.

Over the course of developing this agreement, more than 30 organizations have committed direct funding and/or in-kind technical support to the development of the CCAA/CCA (listed alphabetically).

1. Alliant Energy
2. Ameren
3. American Electric Power
4. American Transmission Company
5. Arizona Department of Transportation
6. California Department of Transportation
7. Colorado Department of Transportation
8. ComEd
9. Connexus Energy
10. Cypress Creek Renewables
11. Delaware Department of Transportation
12. Duke Energy
13. Evergy
14. Exelon Nuclear
15. Federal Highway Administration
16. FirstEnergy
17. Fresh Energy
18. Georgia Department of Transportation
19. Grow with Trees
20. Idaho Transportation Department
21. Illinois Department of Transportation
22. Indiana Department of Transportation
23. Iowa Department of Transportation
24. IVM Partners
25. MAFWA
26. Maine Department of Transportation
27. Minnesota Department of Transportation
28. National Rural Electric Cooperative Association
29. NextEra Energy
30. NiSource
31. Ohio Department of Transportation
32. Oklahoma Department of Transportation
33. Pine Gate Renewables
34. TransCanada
35. We Energies
36. Wisconsin Department of Transportation

C.1.1 Purposes Driving CCAA/CCA Development

At the time of this draft, the Service is undertaking its determination for the potential listing decision for the monarch. The decision to "preclude or remove any need to list" is based upon the removal of threats and the stabilization or improvement of the species' status across its range. The decision to list under the ESA is a regulatory process independent of a CCAA or CCA. The Service will evaluate actions and successes of this CCAA/CCA in accordance with the Service Policy for Evaluation of Conservation Efforts (PECE) during the listing determination process, as required under section 4(b)(2)(A) of the ESA. The Service will consider the contribution to conservation made by these agreements in a "five-factor analysis" used to make a listing determination. The five factors include:

1. The present or threatened destruction, modification, or curtailment of the species' habitat or range;
2. Overutilization of the species for commercial, recreational, scientific, or educational purposes;
3. Disease or predation;
4. The inadequacy of existing regulatory mechanisms; or
5. Other natural or manmade factors affecting the species' continued existence.

The intent of the CCAA/CCA is to demonstrate the significant interest and investment in habitat conservation by the transportation and energy sectors. In doing so, the CCAA/CCA effort builds upon several existing initiatives, including the Mid-America Monarch Conservation Strategy, developed under the leadership of MAFWA. MAFWA's strategy identifies conservation actions to monarch habitat across core

geographies and multiple landscape types, including rights-of-way. The CCAA/CCA supports many strategies identified by MAFWA and will help build additional industry participation.

The CCAA/CCA also supports the Western America Monarch Conservation Plan, which is currently under development by the Western Association of Fish and Wildlife Agencies (WAFWA), as well as associated state plans for monarch conservation and pollinator protection.

C.3. Advantages and Disadvantages of Issuing Individual, Programmatic or Umbrella CCAA/CCAs

With broad participation, the programmatic CCAA/CCA will improve the status of monarchs across the U.S. Its implementation will help reduce the likelihood the species may be listed under the ESA due to the types of actions covered herein. However, in the event this species is listed, a Partner's individual Certificate of Inclusion ensures that ongoing maintenance and modernization operations and any additional covered activities described in this Agreement may continue so long as the landowner is properly implementing the Agreement.

Consideration for Implementing the CCAA/CCA in Any Form

CCAA/CCAs are voluntary agreements. There are no ESA regulations currently related to monarchs in regards to ongoing maintenance and modernization operations being conducted on energy and transportation lands or easements. The monarch is currently managed by voluntary conservation efforts and will continue to be unless the species becomes listed under the ESA. Similarly, if monarchs become listed under the ESA, the Service does not have the right or authority to gain access to non-Federal lands without first asking permission and gaining the consent of the non-Federal landowner.

Disadvantages of not implementing a CCAA/CCA (in any form) include:

1. Energy and transportation Partners do not receive assurances or a Section 10(a)(1)(A) permit, consequently there would be no incidental take coverage for monarchs and no assurance that land use restrictions would not be imposed if the species is listed.
2. A lack of assurances can result in delayed project schedules, additional time and training required to implement avoidance measures required for the species, loss of operational flexibility, and added costs associated with adaptation to listing requirements.
3. Partners have less opportunity to participate in a comprehensive strategy to conserve monarchs and shape the conservation actions on their lands.
4. If there is a Federal action on the energy or transportation lands where listed species may be present, the Service may require conservation measures to minimize adverse impacts, with less flexibility and opportunity for early landowner or easement holder input.
5. Partners would not have an opportunity to directly contribute to comprehensive collaboration with industry organizations on a nationwide conservation strategy.
6. Voluntary conservation may be discouraged due to the potential for future regulatory constraints on voluntary efforts. Partners may avoid improving conditions that promoted endangered species to their properties, which then result in added restrictions.
7. The lack of assurances places additional financial, operational, emergency response, and customer support concerns on industry organizations in the event that the monarch is listed.

The parties involved in development of this Agreement considered several approaches to undertaking a CCAA/CCA: individually, or as an umbrella or programmatic CCAA/CCA.

Individual CCAA/CCA

If individual CCAA/CCAs were implemented, their cumulative contribution towards monarch conservation would likely be less pronounced than an industry-wide approach. As a result, the Service would have difficulty justifying any single individual CCAA/CCA as being of a significant enough contribution to influence a listing decision. Table D-1 compares the advantages and disadvantages of developing individual CCAA/CCAs.

Table D-1. Advantages and Disadvantages of Individual CCAA/CCAs

Advantages	Disadvantages
1. Regulatory assurances are provided for enrolled non-Federal landowners (as long as the CCAA/CCA is being properly implemented, USFWS will impose no additional regulatory requirements on participating landowners, even if the monarch is listed); 2. Decreased time needed for project reviews of any related Federal programs and activities (ESA section 7 consultation has already occurred through the agreement process, which streamlines requirements with other Federal agencies such as FHWA, NRCS, USACE, USFS, and BLM); 3. Landowners participate with the Service in selecting conservation measures that fit their individual operational plans; 4. CCAA/CCA/Section 10 permits give incidental take coverage; and 5. Landowners continue to play an important role in conserving monarch habitat. 6. Operational costs associated with planning, implementing, and tracking activities associated with species at-risk, or federally listed, is reduced under a CCAA/CCA.	In addition to the disadvantages common to all approaches noted: 1. Partners may be subject to some public disclosure of information through the required public review of the CCAA/CCA (e.g., name of partner, activities included) 2. Development of individual CCAA/CCAs may result in inconsistent and varied conservation and reporting measures being implemented across the nation. 3. Implementation of individual CCAA/CCAs means partners are solely responsible for their own implementation, without the benefit of a broader partnership or collaborative learning. 4. Multiple individual applications creates an increased administrative burden for the Service to conduct appropriate and timely review and authorization of applications received. This may result in delays for, or a lack of, authorization of applications. 5. Does not directly address the “all hands on deck” approach recommended by national and regional monarch conservation strategies. 6. Creating individual CCAA/CCA’s results in a redundancy of efforts and increased costs for each Party involved.

Umbrella CCAA/CCA

Comparatively, an umbrella CCAA/CCA can provide many of the partnership benefits not addressed by an individual CCAA/CCA. Under an umbrella CCAA/CCA, individual applicants apply for CCAA/CCA coverage under the final CCAA/CCA maintained by the Service. In doing so, the Service issues CCAA/CCA/Section 10 authorization to each of the individual Partners directly. In turn, this requires the Service to be the conduit of all information and administrative needs associated with the implementation of the Agreement and incidental take coverage it provides.

In contrast to a programmatic CCAA/CCA, an umbrella leverages more of the benefits of a partnership-focused approach. However, an umbrella CCAA/CCA requires the Service to take on much of the administrative burden associated with the Agreement. Time and resource limitations may limit the degree of information sharing, technical guidance, or program administration that may be feasible. The single largest advantage of an umbrella CCAA/CCA versus an individual CCAA/CCA is the broad applicability to multiple applicants across an industry sector. Without this efficiency, it is unlikely the Service could promote, review, and authorize dozens of individual applications (each with differing measures, activities, and terms).

Under an umbrella agreement, efficiencies are leveraged to minimize duplication of efforts or avoid conflicting agreements amongst partners working in the same sector(s).

Table D-2 compares the advantages and disadvantages of developing an umbrella CCAA/CCA as compared to developing individual agreements.

Table D-2. Advantages and Disadvantages of an Umbrella CCAA/CCA

Advantages	Disadvantages
Advantages are similar to that of individual CCAA/CCA, plus: 1. Partners may work in closer alignment with other organizations that maintain similar CCAA/CCAs issued under the umbrella agreement. 2. Information sharing between partners may be more easily facilitated by the Service. 3. Collaborative conservation under an umbrella CCAA/CCA directly addresses the “all hands on deck” approach recommended by national and regional monarch conservation strategies. 4. A single, unified umbrella CCAA/CCA would allow for less administrative burden on the Service as they review applications submitted. 5. Increased partnership facilitated through an umbrella CCAA/CCA means that there are fewer overall disadvantages as compared to an individual CCAA/CCA. 6. A unified approach to conservation activities ensures all Parties involved are consistently supporting the effort in a fair and equitable manner that is mutually beneficial to all Parties.	Disadvantages are similar to that of individual CCAA/CCA, except: 1. Implementation of individual applicants under an umbrella CCAA/CCA means that facilitation of a broader partnership will require additional and ongoing Service resources in a timely manner to ensure success. 2. Administration of an umbrella CCAA/CCA allows for less flexibility in implementation. The Service would not likely be able to manage an umbrella agreement in a flexible manner that considers individual partner needs for operation-specific needs or consideration of special circumstances. As a result, an umbrella CCAA/CCA may limit participation of some partners.

Programmatic CCAA/CCA

Over the course of developing this Agreement these advantages of a programmatic CCAA/CCA were considered and weighed against the advantages and disadvantages of alternative approaches. After consideration of the alternative approaches outlined previously, the partners involved in development of this CCAA/CCA determined that a programmatic CCAA/CCA was most advantageous to the Parties involved. Creation and implementation of a programmatic CCAA/CCA poses several advantages over the other alternatives considered (Table D-3). Namely, the programmatic poses many of the same, plus additional, benefits as compared to the umbrella approach and the individual. The primary benefit of the programmatic approach is the third-party capacity to provide administrative, technical, and logistical support to partners.

Table D-3. Advantages and Disadvantages of a Programmatic CCAA/CCA

Advantages	Disadvantages
Advantages are similar to that of an umbrella CCAA/CCA, plus: 1. It reduces the review and administrative burden for the Service by considering one application, as compared to potentially dozens of individual ones. This provides a greater likelihood of all applications being reviewed and authorized in a timely manner. 2. It promotes consistency in implementation and expectations for all Parties involved, thereby making a fair and equitable agreement for all partners involved. 3. Partners involved in a programmatic CCAA/CCA can leverage the experience and knowledge of other partners involved through ongoing learning and information sharing facilitated by the Programmatic Administrator. 4. The partnership embodies the "all hands on deck" approach to conservation required on a broad and varied geographic scale required to address monarch key threats. 5. Having a conservation agreement managed by a third-party (e.g. the Programmatic Administrator) allows for greater flexibility in implementation as compared to an umbrella CCAA/CCA. 6. Implementation costs for a programmatic CCAA/CCA are likely reduced by comparison to an individual or umbrella CCAA/CCA, where increased tracking, monitoring, reporting, and adaptation requirements are directly the responsibility of the Partner.	Disadvantages are similar to that of umbrella CCAA/CCA, except: 1. Implementation of individual applicants under an umbrella CCAA/CCA means that facilitation of a broader partnership will require additional and ongoing Service resources in a timely manner to ensure success. 2. Enrollment in a programmatic CCAA/CCA requires an administrative fee be paid to the Programmatic Administrator to help fund the administrative and technical support provided.

C.4. Adoption Rates

C.1.2 Objectives for Adoption Rate Development and Application

The concept of an adoption rate was central to the "All Hands on Deck" paper, which considered restoration of monarch habitat across the Upper Midwest of the U.S. (Thogmartin et al. 2017). In that paper, the authors elicited expert opinion from biologists, ecologists, and planners as to the conservation potential for individual land use sectors to support milkweed restoration. They also estimated likely adoption of management practices necessary for affecting restoration of suitable habitat. The adoption rate approach was also considered by the Mid-America Monarch Conservation Strategy (MAFWA 2018) to help in scenario planning and to help state conservation agencies explore conservation targets they believe would be feasible in various "sectors" of habitat, such as managed natural lands, urban lands, rights-of-way, and agricultural lands. Additionally, the expected change in benefit, measured in milkweed stems per acre, compared between current (or baseline) conditions as well as improved (or amended) conditions related to land management and adopted conservation measures were considered in development of the estimated adoption rates.

Within this CCAA/CCA, the adoption rate concept is used to help define the net conservation benefit expected from each participating sector within this agreement. We used a structured decision making process to select and define the adoption rates required for participation in this Agreement. For the purpose of this CCAA/CCA, we consider the adoption rates to represent the *percentage of total enrolled lands* on which conservation measures are implemented to enhance habitat for monarchs. Adoption rates were developed within the context of the CCAA/CCA with the following objectives in mind:

1. Provide an easy and consistent target to define net conservation benefit (NCB) that is achievable for Partners. A clear expectation encourages involvement and ensures an equitable expectation amongst Partners enrolling.
2. Account for current and expected permanent habitat losses by ensuring replacement of those lost habitat areas. The Agreement should yield a net conservation benefit. To do so, it must account for habitat losses, in addition to lands preserved or enhanced.
3. Minimize the need to quantify, calculate, and track estimates of acreage and activities for applicants and the Service to reduce administrative requirements. Many of the industry partners that may consider enrollment in this Agreement manage large networks of owned lands and easements, which can make such requirements difficult or prohibitive to implement. This Agreement is voluntary. The more difficult it becomes to implement (either for the Partners or the Service), the less likely Partners will be to enroll.
4. Maximize potential participation in the CCAA/CCA and thereby increase the overall contribution of voluntary conservation to the species.

C.1.3 Adoption Rates Proposed

Adoption rates recommended within this CCAA/CCA were developed with consideration of a combination of the rates presented in "All Hands on Deck" (Thogmartin et al. 2017) as well as industry-elicited adoption rates developed in conjunction with the CCAA/CCA. As noted, Thogmartin et al. (2017) presents published adoption rates expected to achieve conservation benefit needed for monarch habitat improvement. Several rates were developed for sector-specific rights-of-way and considered the likelihood of conservation success due to biological factors, and the feasibility/practicality of sectors implementing the management actions. Adoption rates within Thogmartin et al. (2017) generally range from 5 to 20 percent depending on the land use or sector type. Using these adoption rates, AHOD estimated that roughly 11.2 million acres across the Upper Midwest of the U.S. could be managed in rights-of-way for monarchs (see Thogmartin et al. 2017; Supplemental Table S3.2).

Elicited adoption rates for the different sectors were developed using a structured series of questions intended to help participants consider potential adoption rates for proposed conservation measures in a consistent and standardized manner. Responses were received from 17 of 24 potential CCAA/CCA applicants including representatives from four (4) sectors as follows: four (4) from gas/electric transmission, two (2) from gas/electric distribution, four (4) from electric generation (including conventional sources such as coal and nuclear, and renewables such as solar), and seven (7) from state highway managers (DOTs). Results from the elicited adoption rates were compared against estimates also elicited from industry organizations regarding expected levels of incidental take for those same lands.

Adoption rates required by Partners under this Agreement were developed through consideration of the elicited information described and the four objectives in Section 6.2.1. The proposed adoption rates recommended are equal to the minimum adoption rate elicited from those sector organizations, plus the maximum annual expected permanent loss of habitat provided by those same organizations. The sum of both estimates equals the adoption rate for those specific sector types, or:

Adoption rates (% by sector)	=	*(Minimum adoption rate of conservation measures, as % of total enrolled lands)*	+	*(Maximum annual expected permanent habitat loss, as % of total enrolled lands)*

In comparing these industry-elicited adoption rates to those presented in Thogmartin et al. (2017), three scenarios required additional consideration:

1. Where elicited minimum adoption rates were slightly below those proposed for that same sector within Thogmartin et al. (2017), the adoption rate proposed defaults to that proposed by Thogmartin et al. (2017).
2. Some sectors (such as energy distribution and generation) are not considered in Thogmartin et al. (2017). As a result, we relied upon the industry-elicited rates in these sectors.
3. For sectors not represented during the industry-elicited adoption rate development, including county and local highways, and railroads, we propose the Thogmartin et al. (2017) rates as the adoption rate for sector participation.

This approach yielded adoption rates consistent with those sectors and land cover types included within Thogmartin et al. (2017) as well as the MAMCS (MAFWA 2018) as shown in Table D-4. These adoption rates elicited by industry organizations are consistent with published conservation expectations envisioned by conservation biologists and species specialists.

Table D-4. Comparison of industry-elicited adoption rates to those presented in Thogmartin et al. (2017) and the MAMCS.

Adoption Rate Approach	Transmission	Distribution	Generation	Highways (Interstate, U.S., State)	Highways (County, Local)	Rail
Industry Partner-elicited Rates	15 to 50%	1 to 2%	6 to 31%	6 to 67%	N/A	N/A
AHOD (Sector-Mean) Adoption Rates (from Thogmartin et al. 2017)	18%	N/A	N/A	8%	5%	5%
MAMCS Adoption Rates (from MAFWA 2018)	1 to 50%	N/A	N/A	3 to 50%	2 to 25%	0 to 20%

Final adoption rates selected for each sector reflect the minimum contribution expected by each sector Partner enrolling lands in the Agreement. The selected rates account for conservation opportunities, constraints, and typical lands encompassed within each network of lands managed by the sector. As described in Section 6 (Conservation Measures) additional considerations are made for Applicants or Partners that enroll lands that may contain conditions outside the scope of what was considered in adoption rate development. Final adoption rates selected by sector are summarized in Section 6 (Conservation Measures) of the Agreement.

C.5. Goal Development and Targets

Section 1 (Introduction) of the Agreement includes a stated conservation goal for participation in the CCAA/CCA.

> *The goal of this CCAA/CCA is to encourage participation in voluntary conservation on energy and transportation lands that results in a net benefit to monarchs.*

With this goal in mind, the conservation potential of the Agreement aspires to the enrollment of up to 26 million acres of energy and transportation lands contributing over 300 million stems of milkweed, and 2.3 million acres of monarch foraging habitat, over the coming decades. This goal and estimate of conservation potential was developed so that the organizations involved in its development could communicate the scale of participation and expected benefits envisioned by the Agreement preparers.

This goal and statement of conservation potential was developed considering the following:

1. More than 30 initial organizations involved in development of the CCAA/CCA collectively manage nearly 4 million acres of rights-of-way and other associated lands across the lower 48 states of the U.S.
2. Based on information provided, industry organizations collectively involved in development of the Agreement are likely to enroll up to 4 million acres at the time of authorization. While much uncertainty remains regarding actual enrollment, we understand that the organizations involved to date represent only a portion of industry organizations possible under the Agreement. For this

reason, we anticipate the conservation potential of the Agreement to equal approximately 26 million acres.

3. Based on the conservation potential of 26 million acres, we estimated the level of participation across each sector of energy and transportation lands. Using the range of adoption rates identified for each sector (ranging from 1% to 18%), we calculated that the cumulative contributions across all sectors equals to nearly 2.3 million acres of adopted lands under the Agreement.

4. Using these estimates for adopted acres by sector, we then calculated the potential milkweed contributions provided by these lands. Milkweed contributions consist of the assumed target density of “amended” lands (i.e. adopted acres) minus the “baseline” scenario using milkweed stems per acre as our metric. Using these sector-specific milkweed densities from Thogmartin et al (2017), we multiplied the adopted acres estimates by the milkweed contributions per sector. The results yielded an estimate of nearly 300 million stems of milkweed.

While these numbers are considered to be broad estimates using some broad assumptions, they are intended to help illustrate the scale and potential contribution of a voluntary conservation agreement such as this.