DRAFT Habitat Conservation Plan

Alliant Energy

Nine Wind Projects in Minnesota and Iowa

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Acronyms and Abbreviations

ac	Acre
Alliant	Alliant Energy's Interstate Power and Light Company and Wisconsin Power and Light Company
Alliant Projects	nine of Alliant's wind energy facilities
AWWI	American Wind Wildlife Institute
BESS	battery energy storage systems
Bent Tree	Bent Tree Wind Energy Project
Bent Tree North	Bent Tree North Wind Energy Project
CBD	Center for Biological Diversity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
COD	commercial operations date
BO	Biological Opinion
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CBD	Center for Biological Diversity
CFR	Code of Federal Regulation
Covered Activities	activities that are likely to result in incidental take, are reasonably certain to occur over the life of the permit, and for which the applicant or landowner has some form of control
Covered Lands	Plan Area and the Permit Area
Covered Species	INBA, NLEB, LBBA, TRBA
EchoSense	Detection and Active Response Curtailment (formerly DARC)
English Farms	English Farms Wind Energy Project
EoA	Evidence of Absence
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FR	Federal Register
ft	foot
ft/s	feet per second
Franklin County	Franklin County Wind Energy Facility
Golden Plains	Golden Plains Wind Energy Project
freewheeling	turbines operating with no curtailment
ha	hectare
HCP	Habitat Conservation Plan
HCP Handbook	*Habitat Conservation Planning and Incidental Take Permit Processing Handbook*
HUC	Hydrologic Unit Code
IDNR	Iowa Department of Natural Resources
IEoA	Informed Evidence of Absence
IDNR	Iowa Department of Natural Resources
IEoA	Informed Evidence of Absence
INBA	Indiana bat
ITP	Incidental Take Permit
IUB	Iowa Utilities Board
km	kilometer
Kossuth	Kossuth Wind Energy Project
LBBA	little brown bat
m	meter
mi	mile
m/s	meters per second
Magnolia	Magnolia Land Partners, LLC
met	meteorological
MidAmerican	MidAmerican Energy Company

MidAmerican EIS	*Final Environmental Impact Statement for Proposed Habitat Conservation Plan and Incidental Take Permit for the MidAmerican Energy Company Wind Energy Portfolio*
MidAmerican HCP	*Final Habitat Conservation Plan for the MidAmerican Energy Company Iowa Wind Energy Portfolio*
MISO	Midcontinent Independent System Operator
MNDNR	Minnesota Department of Natural Resources
NEPA	National Environmental Policy Act
NERC	North American Electric Corporation
NLCD	National Land Cover Database
NLEB	northern long-eared bat
NMFS	National Marines Fisheries Service
NREL	National Renewable Energy Laboratory
O&M	Operations and Maintenance
OCRU	Ozark-Central Recovery Unit
PCM	post-construction monitoring
Pd	*Pseudogymnoascus destructans*
Permit	Incidental Take Permit
Permit Area	subsection of the Plan Area
pers. comm.	personal communication
Plan Area	geographic area where all activities covered by the HCP will occur
Project	one of Alliant's nine wind energy facilities
Projects	nine of Alliant's wind energy facilities
PSCW	Public Service Commission of Wisconsin
Richland	Richland Wind Energy Project
REA	resource equivalency analysis
RPU	Representation Unit
SCADA	supervisory, control and data acquisition
SEC	Securities and Exchange Commission
Section 7 ITA	Section 7 Incidental Take Authorization
SSA	Species Status Assessment
SSM	Scattered Staggered Monitoring
TAL	Technical Assistance Letter
TRBA	tricolored bat
Upland Prairie	Upland Prairie Wind Energy Project
USC	US Code
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WEG	*Land-Based Wind Energy Guidelines*
WEST	Western EcoSystems Technology, Inc.
Whispering Willow East	Whispering Willow East Wind Energy Project
Whispering Willow North	Whispering Willow North Wind Energy Project
Whispering Willow South	Whispering Willow South Wind Energy Project
WNS	white-nose syndrome

1.0 INTRODUCTION

1.1 Overview and Background

Alliant Energy's (Alliant) Interstate Power and Light Company and Wisconsin Power and Light Company currently own and operate nine wind energy facilities (individually Project, and collectively Projects or Alliant Projects) that include 765 turbines and total more than 1,651 megawatts of wind generation capacity in Iowa and Minnesota.

Alliant has prepared this Habitat Conservation Plan (HCP) in support of an application for an Incidental Take Permit (ITP or Permit) for the Alliant Projects under Section 10(a)(1)(B) of the Endangered Species Act (ESA; 1973; 16 US Code [USC] Sections [§§] 1531-1544 [1973]). This HCP was developed in accordance with the ESA (Section 10(a)(2)(A)) and Federal Regulations (50 Code of Federal Regulations [CFR] §§ 17.22(b)(1)[1985], 17.32(b)(1) [1985]). This HCP focuses on four bat species of concern (see Section 1.6, below)[1].

Alliant began coordinating with the US Fish and Wildlife Service (USFWS) in May 2019 regarding the company's wind energy fleet in Iowa and Minnesota. In these initial meetings, Alliant shared biological information regarding the Projects, site-specific studies conducted to-date, opportunities for mitigation, and publicly available data to incorporate into Alliant's HCP. This coordination continued through a series of meetings, conference calls, and written exchanges that have occurred through development of the current HCP.

This HCP incorporates the foundation of research, conservation strategies, and partnerships developed for the *Final Environmental Impact Statement for Proposed Habitat Conservation Plan and Incidental Take Permit for the MidAmerican Energy Company Wind Energy Portfolio* (MidAmerican EIS; USFWS 2019d) and the *Final Habitat Conservation Plan for the MidAmerican Energy Company Iowa Wind Energy Portfolio* (MidAmerican HCP; MidAmerican 2019), which was developed collaboratively between MidAmerican, the USFWS, and the State of Iowa. The MidAmerican HCP was the first multi-site HCP developed and permitted in the region, and entailed collection of substantial site-specific data prior to ITP issuance, including post-construction monitoring (PCM) and research studies (MidAmerican 2019). Following the general approach from the MidAmerican HCP, Alliant has also collected pre-ITP data and conducted research at the Alliant Projects to develop this HCP. Additionally, publicly available pre-ITP data from the MidAmerican HCP was also incorporated where appropriate.

[1] The MidAmerican Wind I-X HCP (MidAmerican 2019) also included bald eagles (*Haliaeetus leucocephalus*); however, through coordination with the USFWS, Alliant has elected to seek eagle incidental take coverage under a separate permitting process. Alliant developed Eagle Conservation Plans and submitted eagle ITP applications in December of 2020, pursuant to the Bald and Golden Eagle Protection Act (1940) as well as the USFWS's implementing regulations, as revised in 2016 (see 50 CFR 13 and 22 [USFWS 2016h]).

Upon completion, Alliant will have invested nearly $4.33 million to facilitate development of the HCP. The Alliant HCP will contribute to a continued effort to collect site-specific scientific information to support a coordinated mitigation strategy in Iowa and Minnesota between state and federal agencies, wind energy companies, and other stakeholders that will provide substantial conservation benefits for wildlife species, particularly bats.

1.2 Purpose and Need

Alliant's purpose for the Projects is to maximize the non-carbon emitting energy production, using reliable, low-cost wind, in support of the company's vision to reach net-zero carbon dioxide emissions by 2050. The Projects contribute to the reduction in emissions from Alliant's generation fleet, which consists of coal- and natural gas-fueled generating units, as well as wind, solar, battery energy storage systems (BESS), hydropower and other sources. Alliant plans to retire all coal from their generation fleet by 2040 and anticipates that by 2030, carbon emissions from Alliant's energy generation in Iowa (including the Bent Tree Wind Energy Project [Bent Tree] in Minnesota) will be reduced by 50% due to coal plant retirement and renewable energy generation.

The Projects also provide significant economic benefits to surrounding communities in the form of payments to landowners, local spending, and annual community investment. The development, construction, and operation of each Project generated hundreds of temporary construction jobs and created approximately eight full-time, permanent jobs per Project. The Projects help provide energy security across the nation by diversifying the electricity generation portfolio, protecting against volatile natural gas price spikes, and utilizing a renewable, domestic source of energy.

Alliant has developed this HCP in support of its ITP application. There are two species of ESA-listed bats, Indiana bat (INBA; *Myotis sodalis*) and northern long-eared bat (NLEB; *M. septentrionalis*), that occur in all or portions of Iowa, and the NLEB range extends into Minnesota. Iowa and Minnesota are also within the range of little brown bat (LBBA; *M. lucifugus*), a species currently under discretionary review by the USFWS to list under the ESA, and within the range of tricolored bat (TRBA; *Perimyotis subflavus*), which is proposed for listing[2]. Based upon past and ongoing coordination with the USFWS, Alliant determined that obtaining an ITP for its Projects was prudent to ensure operation of its wind energy fleet would not adversely impact these species and to provide a mechanism to implement conservation measures for listed and unlisted species in Iowa and Minnesota.

Alliant's needs for the HCP are to achieve regulatory certainty and incidental take authorization for the INBA, NLEB, LBBA, and TRBA (collectively, Covered Species) under the ESA across its entire Iowa and Minnesota wind energy fleet under one conservation plan and one National Environmental Policy Act (NEPA) review. Accordingly, the purposes of this HCP are to: (1) assess the impacts of the Projects on the Covered Species; (2) provide mechanisms to avoid, minimize, and mitigate to the maximum extent practicable the impacts of the taking of the Covered Species; and (3) ensure that incidental take from the Projects will not appreciably reduce the likelihood the Covered Species will survive and recover in the wild. The HCP will also support conservation of

[2] 87 Federal Register (FR) 56381 (2022).

other non-listed bat species through the proposed conservation measures that will minimize potential mortality and protect habitat suitable for all bat species. In addition, this HCP describes the monitoring that will be used to confirm compliance with the ITP. The HCP also identifies funding assurances to ensure implementation of monitoring, mitigation, and any changed circumstances. This HCP includes all elements necessary to meet the criteria for ITP issuance.

Alliant also expects to develop additional renewable energy projects in Iowa and Minnesota. As additional projects are developed, Alliant may work with the USFWS to incorporate the projects into this HCP through the amendment process (Section 8.4) or Alliant may develop an independent HCP to obtain incidental take coverage for any new projects.

1.3 Permit Duration

Alliant is seeking a 30-year ITP. This requested Permit term is sufficient to include the remaining operational life of each of the Alliant Projects (Chapter 2.0). If, at the end of the 30-year term of the ITP, Alliant decides to continue to operate any or all of the Projects, Alliant has the option of Permit renewal (Section 8.5) or to apply for a new Permit.

1.4 Covered Lands

The Alliant Projects are located in the following Iowa counties: Clay, Dickinson, Franklin, Kossuth, Poweshiek, Sac, and Winnebago; as well as Freeborn County in Minnesota (Figure 1.1). The lands considered within this HCP include the Plan Area (geographic area where all HCP-covered activities will occur) and the Permit Area (subsection of the Plan Area; Covered Lands).

1.4.1 Plan Area

The Plan Area is the geographic area where all activities covered by the HCP will occur (Figure 1.1). It includes any and all areas that may be within the HCP's sphere of influence, whether or not take is likely to occur in those areas. The Plan Area for the HCP includes the Permit Area (defined below), as well as all areas influenced by the HCP's biological goals and objectives, such as the mitigation, monitoring, and adaptive management measures associated with this HCP (Chapter 5.0). The Plan Area includes lands involved in off-site mitigation projects associated with this HCP, which are not likely to overlap with the Permit Area lands (Section 5.3). For the purposes of this HCP, the Plan Area is defined as the State of Iowa plus Freeborn County in Minnesota, which is the total area where the HCP applies (USFWS and National Marine Fisheries Service [NMFS] 2016; *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* [HCP Handbook]; Figure 1.1).

1.4.2 Permit Area

The Permit Area is a subsection of the Plan Area and consists of all areas where incidental take of the Covered Species is expected to occur and which will be authorized by the ITP. Alliant has determined the Permit Area includes all easements, fee lands, and lands leased or owned by Alliant for operation of the nine Projects, defined as the Project areas (Chapter 2.0). Alliant has authorization to conduct the activities required for construction, operations and maintenance (O&M), and decommissioning of the Projects within these lands, and the actions/activities that could lead to incidental take of the Covered Species within these lands. Project components

including the turbines, underground electrical collection system, substations, O&M facilities, met towers and access roads are located within these lands. The primary components of the Projects that could cause take of the Covered Species are the wind turbines; the Permit Area includes the location of all turbines (see Chapter 2.0).

The total area under lease for all the Projects combined covers approximately 283,623 acres (ac; 114,778 hectares [ha]). More detailed descriptions of the Projects and Permit Area can be found in Sections 2.1, 2.2, and 3.1.

1.5 Covered Species

Alliant is applying for an ITP for Covered Species for incidental take resulting from the Covered Activities (i.e., activities that are likely to result in incidental take, are reasonably certain to occur over the life of the permit, and for which the applicant or landowner has some form of control; see Section 2.2). The INBA is listed as endangered under the ESA (USFWS 1967, 2007, 2015a, 2015d). The NLEB was originally listed as threatened under the ESA (USFWS 2015c, 80 Federal Register [FR] 17974 [2015]), with the final 4(d) Rule for the species published January 14, 2016 (USFWS 2016c, 81 FR 1900 [2016]), exempting the incidental take of NLEB resulting from most otherwise lawful activities, including incidental take due to the operation of wind turbines. However, in 2020, the threatened listing for the NLEB was ruled to be unlawful and, in March 2021, a federal judge ordered the USFWS to determine whether the NLEB warrants listing as an endangered species under the ESA by December 2022. On November 30, 2022, the USFWS published a final rule reclassifying the NLEB as an endangered species and removing the species-specific 4(d) rule (87 FR 73488 [2022]), effective March 31, 2023 (88 FR 4908 [2023]). Both INBA and NLEB are included as Covered Species under this HCP.

In addition, LBBA is currently under review for federal listing (USFWS 2021a) and TRBA is proposed for federal listing as endangered (87 FR 56381 [2022]). Both are included in this HCP as Covered Species so that each is addressed in the event that it is listed within the permit term. During the 1982 amendments to the ESA, Congress considered treatment of non-ESA-listed species and intended the Section 10 process would provide for conservation of listed and non-listed species and protect Section 10 permittees from the uncertainties of future species listings (H.R. Report No. 97-835, 97th Congress, Second Session; 50 FR 39681 [1985]). Chapter 7 of the HCP Handbook describes treatment of unlisted species in HCPs. If an unlisted species is “adequately covered” under an HCP as if it was listed pursuant to Section 4 of the ESA, with the HCP measures for the species satisfying permit issuance criteria under ESA Section 10(a)1(B) and the measures described in the HCP for conservation of the unlisted species are implemented consistent with the HCP, then, in the event the species is listed, the permittee will be in full ESA compliance for the species, the No Surprises Assurances will apply (see Section 8.1), and no further action will be required of the permittee (USFWS and NMFS 2016).

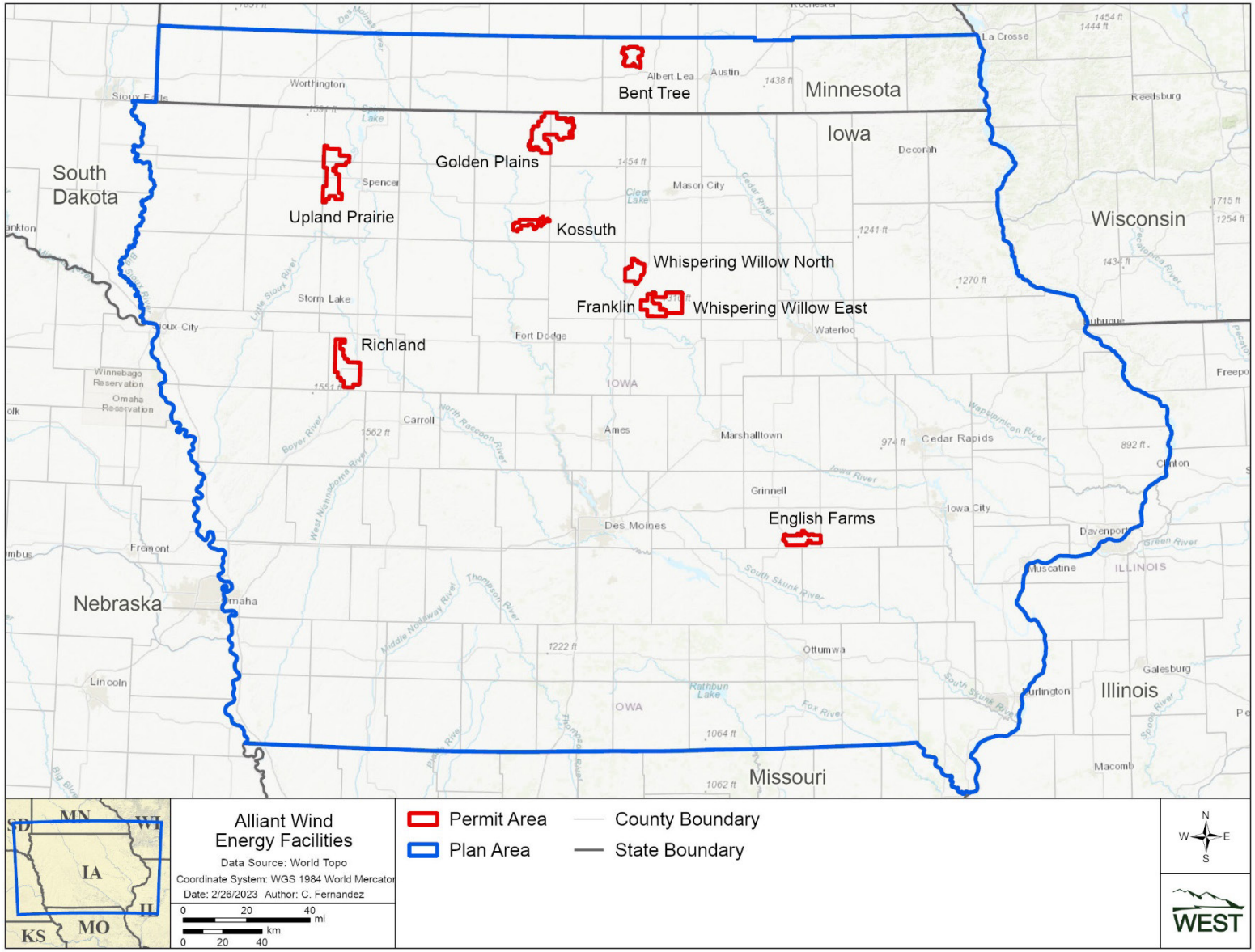

Figure 1.1. Location of the Plan Area and Permit Area for the Alliant Energy Habitat Conservation Plan.

The potential future listing of additional bat species currently unknown that could be taken by the Covered Activities is considered a changed circumstance and is addressed, below, in Section 8.2 of this HCP.

1.6 Regulatory Environment

1.6.1 Endangered Species Act

Section 9 of the ESA prohibits the "take" of any endangered or threatened species of fish or wildlife listed under the ESA. Under the ESA, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened or to attempt to engage in any such conduct (16 USC § 1532(19) [1973]). Under Section 10 of the ESA, the USFWS may authorize, under certain terms and conditions, any taking otherwise prohibited by Section 9(a)(1)(B) if such taking is incidental to, and not the purpose of, an otherwise lawful activity. This Section 10 take authorization is known as an ITP.

Harass in the definition of "take" in the ESA means an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3 [1975]). Harm in the definition of take in the ESA means an act that actually kills or injures wildlife (50 CFR § 17.3). Such acts 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.

To qualify for an ITP, a non-federal landowner or land manager must develop, fund, and implement a USFWS-approved HCP. The HCP must specify the following information described in ESA Section 10(a)(2)(A) and 50 CFR §§ 17.22(b)(1) and 17.32(b)(1):

1. The impact that will likely result from such taking;
2. The measures the applicant will undertake to monitor, minimize, and mitigate such impacts, the funding that will be available to implement such measures, and the procedures to be used to deal with unforeseen circumstances;
3. The alternative actions the applicant considered that would not result in take and the reasons why such alternatives are not proposed to be utilized; and
4. Such other measures that the Director of the USFWS may require as necessary or appropriate for purposes of the HCP.

The USFWS will issue an ITP if it finds that the following criteria of ESA Section 10(a)(1)(B) and 50 CFR §§ 17.22(b)(2) and 17.32(b)(2) are met:

1. The taking will be incidental to otherwise lawful activities;
2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings;

3. The applicant will ensure that adequate funding for the HCP and procedures to deal with unforeseen circumstances will be provided;
4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild;
5. The applicant has met the measures, if any, required by the Director of the USFWS as being necessary or appropriate for the purposes of the plan; and
6. The Director of the USFWS has received such other assurances, as he or she may require, that the plan will be implemented.

1.6.2 National Environmental Policy Act

Issuance of an ITP is a federal action subject to compliance with NEPA (42 USC §§ 4321 et seq. [1970]) and Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR §§ 1500–1508 [1970]). To comply with NEPA, before issuing an ITP, the USFWS must exercise careful decision-making when issuing the Permit with respect to the human environment. The CEQ regulations provide direction to Federal agencies to determine what actions are subject to review; ensure that relevant environmental information is identified and considered early in the review process; ensure that Federal agencies conduct environmental reviews in a coordinated, consistent, predictable and timely manner; and to promote concurrent environmental reviews by federal agencies (40 CFR 1500.1(b)).

NEPA review also provides an opportunity for the public to be involved in the acting agency's decision-making process. Public involvement begins with the scoping process, intended to help identify issues that should be addressed in the NEPA review. Through the scoping process, the USFWS will solicit input from other federal, state, and local agencies, as well as from other interested parties (e.g., general public, non-governmental organizations) regarding the scope of the NEPA review and the range of reasonable alternatives. The public will have the opportunity to comment on the draft HCP, associated NEPA review document, and other application materials.

1.6.3 Regulation of Electric Utilities

1.6.3.1 Rate Regulation over Alliant's Wind Projects

Alliant is a rate-regulated utility, meaning its retail customer rates and service quality are regulated by the Iowa Utilities Board (IUB) and the Public Service Commission of Wisconsin (PSCW). As stated above, Bent Tree, one of the Alliant Projects, is located in Minnesota and followed the siting and permitting regulations for Large Wind Energy Conversion Systems through the Minnesota Public Utilities Commission. However, the rate regulation for Bent Tree follows the Wisconsin regulations pursuant to orders of the PSCW because that is the customer base for energy generated from the project. Several of Alliant's wind energy facilities are located in Iowa and the company has sought and received from the IUB approval of the rate principles that will apply in the event the Projects are part of a future rate case. A small portion of Alliant's generation resources, including wind generation, are allocated to Alliant's Wisconsin customers pursuant to orders of the PSCW. The IUB approved the rate principles for each of Alliant's wind projects in Iowa, finding the Projects will provide Alliant's customers with low-cost, reliable, and renewable

energy resources and will support the transition away from traditional generation resources that have increased environmental impacts.

To date, Alliant has not exceeded any cost cap established by the IUB, and, thus, has succeeded in providing affordable renewable resources to its customers. The company is proud of this accomplishment, and the purpose and need for this HCP is tied to Alliant's goal to continue to construct and operate its renewable energy developments for its customers while providing them with reliable, environmentally responsible energy.

Further, Alliant is a member of the Midcontinent Independent System Operator, Inc. (MISO), a reliability coordinator designated by the North American Electric Corporation (NERC). Alliant must comply with mandatory NERC standards, which include, but are not limited to, providing capacity, energy, frequency response, voltage regulation, and other emergency service to the bulk electric system.

In the case of environmental measures addressed in an advanced ratemaking principles application, such as ESA compliance, Alliant must evaluate available scientific information and determine what measures are reasonable and prudent to implement to avoid, minimize, and mitigate the take of listed species. Costs that are unnecessary or excessive and not reasonably connected to avoiding, minimizing, or mitigating take of listed species based on the best available data may not be considered reasonable or prudent.

Key to Alliant's goal of providing low-cost, reliable, renewable energy is the need for wind generation resources to be built and operated in an environmentally responsible manner while maximizing the wind generation resources during key periods of the year when energy demands are relatively high, so as to avoid the need to rely on traditional generation resources. For example, this HCP will fully offset any impacts to the Covered Species by making operational changes to minimize impacts and by mitigating any remaining impacts through land and habitat conservation. The combination of minimization and mitigation described in Sections 5.2 and 5.3 fully offsets the impacts of the taking while optimizing the output of renewable energy from the Projects. Further, reducing the renewable energy output by expanding the proposed operational changes by Project, timing, or duration would not increase the biological benefit to the Covered Species because the expected reduction in take of the Covered Species is small when compared to the expected gain in bat conservation through the mitigation. Alliant believes this HCP strikes the right balance between its responsibilities to its customers and the IUB, and a robust approach to achieving compliance with the ESA.

1.6.3.2 Electric Reliability Requirements

As stated above, Alliant is a member of the MISO, which has authority to dispatch all of Alliant's generation, wind and non-wind. MISO, IUB, and the PSCW are also responsible for determining the amount of generation capacity that Alliant must have to reliably serve its customers, which includes having a "reserve margin" of additional capacity to account for times when capacity will not be available (because of maintenance or weather). Alliant's generation must be available at

certain times and must have the capability to respond to requests from MISO for generation, including requirements to increase or decrease generation output.

In addition, all of Alliant's Projects are part of the bulk electric system, as defined by the NERC; NERC has been designated by the Federal Energy Regulatory Commission as the responsible electric reliability organization under the Energy Policy Act of 2005. As a result, Alliant must comply with mandatory NERC standards, which include, but are not limited to, providing capacity, energy, frequency response, voltage regulation, and other emergency service to the bulk electric system. These reliability requirements serve as an additional consideration on the operation of the wind projects. For example, Alliant must ensure that constructed, operating wind projects and other generation assets are able to respond to calls for power from MISO in a specified timeframe. This consideration further influences the manner and amount that Alliant is able to curtail or constrain operations of its generation assets, including its wind projects.

2.0 PROJECT DESCRIPTION AND COVERED ACTIVITIES

2.1 Project Description

Alliant began acquiring and developing wind energy facilities in 2009. Alliant selected areas and Projects that avoided or minimized impacts to streams and wetlands, cultural resources, and threatened and endangered species and their habitats. As the USFWS' wind energy guidance evolved over time, Alliant incorporated additional best practices into its wind development program.

Alliant, as part of this HCP, currently operates nine wind projects in Iowa and Minnesota (Table 2.1), consisting of 765 turbines that vary by type and project (Table 2.2). The Projects are operated locally from the control room in the O&M buildings and remotely monitored from Cedar Rapids, Iowa, through a remote operations control center. All O&M activities are conducted and supported by permanent staff located at each Project. Each turbine has a supervisory, control and data acquisition (SCADA) operations and communications system, which provides automated independent and remote operation of the turbine. The SCADA data provides detailed information for each turbine's operation and performance, allowing real-time control and continuous monitoring to ensure optimal operation and identification of potential problems. In the event of emergency notification or critical outage, a local wind technician is either onsite or available on-call to respond.

Additional infrastructure supporting wind energy generation at the Alliant Projects include access roads, collection and communication lines, substations, meteorological (met) towers, and O&M facilities[3]. Access roads at the Projects include upgraded existing roads and new roads constructed in accordance with local building requirements and industry standards to accommodate the construction, operation, and maintenance of the Projects. Access roads may include crane pads at each turbine site that are designed to accommodate heavy construction

[3] Whispering Willow East and Franklin County share one O&M facility.

and maintenance cranes. Electrical power generated by the wind turbines is transformed and collected through a network of collection circuits buried underground. Communications cables are also typically buried underground alongside or with the collection cables. The O&M facilities consist of building space for offices, the control room and SCADA system, equipment storage, and space for other activities (e.g., training).

A preventative maintenance and inspection schedule has been employed at all of the Projects. Inspections of wind turbines determine the need for component repair and routine or other maintenance. Site maintenance activities include periodic mowing around O&M facilities or, in limited cases, other areas adjacent to the leased corridor that are not farmed or otherwise maintained by the landowner; periodic herbicide treatment for access roads; building inspection and repairs, as needed; occasional grading of roads to restore or repair road surface and drainage, as needed; and routine security inspection and removal of hazards (e.g., downed trees or encroaching branches), as needed on Project components.

Once the useful life of the turbines at a Project is near completion, or when availability of new technology determines that repowering and/or refurbishment is a viable option, Alliant will assess the viability of continuing to operate existing turbines, repowering/refurbishing a Project by installing new or refurbished turbines, or completely decommissioning a Project. If a Project is to be decommissioned, the turbines, infrastructure, and facilities are typically removed according to Project permit requirements and landowner specifications, and are taken away, recycled, or disposed of at a licensed and appropriate waste management facility. The decommissioning process is similar in scope and duration to the construction process. If Alliant decides to repower or refurbish a Project at some point during the permit term (outside of Bent Tree, Franklin County, and Whispering Willow East refurbishing, which are included as Covered Activities as described in Section 2.2.2), this would be considered a changed circumstance and would follow the process described in Section 8.2.7.

2.2 Covered Activities

The HCP Handbook states that an applicant should “include in the HCP a description of all actions within the planning area that: (1) are likely to result in incidental take, (2) are reasonably certain to occur over the life of the permit, and (3) for which the applicant or landowner has some form of control” (Covered Activity).

Alliant has determined that operation of Project turbines over the Permit term may result in incidental take; operation of the Project turbines is, therefore, a Covered Activity under the HCP. In addition, actions to implement mitigation under the HCP is a Covered Activity. No incidental take is expected to occur from operation or activities associated with auxiliary facilities or structures at any Project. Alliant will implement avoidance measures where necessary for construction, repowering/refurbishing, maintenance, and decommissioning of the Projects (Section 5.2) to avoid take from other Project activities.

Table 2.1. Wind Energy Projects Operated by Alliant Energy in Iowa and Minnesota.

Project Name	County (State)	Commercial Operation Date(s)	Approximate Project Area (hectares [acres])	Number of Turbines	Turbine Size (MW)	Total Project Size (MW)
Bent Tree	Freeborn (MN)	2011	7,916 (19,561)	122	1.65	201
English Farms	Poweshiek (IA)	2019	8,710 (21,524)	69	2.3/2.5	171
Franklin County	Franklin (IA)	2012	7,991 (19,746)	60	1.65	99
Golden Plains	Kossuth/Winnebago (IA)	2020	25,871 (63,929)	82	2.3/2.5	200
Kossuth	Kossuth (IA)	2020	5,503 (13,599)	56	2.3/2.8	150
Richland	Sac (IA)	2020	18,093 (44,708)	53	2.3/2.5	130
Upland Prairie	Dickinson/Clay (IA)	2019	20,445 (50,520)	121	2.3/2.5	300
Whispering Willow East	Franklin (IA)	2009	12,003 (29,661)	121	1.65	200
Whispering Willow North	Franklin (IA)	2020	8,245 (20,375)	81	2.3/2.5	200
Total			**114,778 (283,623)**	**765**	**1.65–2.8**	**1,651**

MW = megawatt.

Table 2.2. Turbine Specifications for each of the Projects Operated by Alliant Energy in Iowa and Minnesota.

Project Name	Turbine Type (number of turbines)	Tower Height (m [ft])[1]	Rotor Blade Diameter (m [ft])[1]	Max Height to Tip (m [ft])[1]
Bent Tree	Vestas 1.65 (122)	80.0 (262.0)	82 (269)	121.0 (397.0)
English Farms	GE 2.3 (11); GE 2.5 (58)	80.0 (262.0); 88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)
Franklin County	Vestas 1.65 (60)	80.0 (262.0)	82 (269)	121.0 (397.0)
Golden Plains	GE 2.3 (31); GE 2.5 (51)	80.0 (262.0) ;88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)
Kossuth	GE 2.3 (11); GE 2.8 (45)	80.0 (262.0); 88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)
Richland	GE 2.3 (12); GE 2.5 (41)	80.0 (262.0); 88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)
Upland Prairie	GE 2.3 (16); GE 2.5 (105)	80.0 (262.0); 88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)
Whispering Willow East	Vestas 1.65 (121)	80.0 (262.0)	82 (269)	121.0 (397.0)
Whispering Willow North	GE 2.3 (13); GE 2.5 (68)	80.0 (262.0); 88.6 (290.6)	116 (381); 127 (417)	138.0 (453.0); 152.1 (499.0)

[1.] More than one specification for Projects with multiple phases or turbine types.

m = meter; ft = feet.

2.2.1 Operation of the Projects

Commercial operation of the Projects first began in December 2009 at the Whispering Willow East Wind Energy Project (Whispering Willow East) facility; other Projects came online in the years 2011, 2012, 2019, and 2020 (Table 2.1). Alliant anticipates that each Project will have a useful operational life of at least 20–30 years from the date of commercial operation. Spinning rotor blades[4] are known to cause injury to and mortality of bats, including the Covered Species, through collisions of bats with turbine blades (Horn et al. 2008, American Wind Wildlife Institute [AWWI] 2020, Lawson et al. 2020). Due to the potential mortality of the Covered Species from operation of Projects, operation of all of the turbines at the nine Projects is included as a Covered Activity in this HCP.

2.2.2 Refurbishment of Bent Tree, Franklin County, and Whispering Willow East

Alliant is currently in the process of refurbishing the 122 existing Bent Tree turbines, the 60 existing Franklin County turbines, and the 121 existing Whispering Willow East turbines. For these 3 refurbishment projects, the scope of work is considered to be a like-for-like replacement of components, with no change in energy output or physical design. Existing foundation, supporting tower structures, blades and underground collection systems will not be changed. The replacement components will consist of internal components within the hub, and all or parts of the gearbox and turbine nacelle assemblies. Turbine model specifications will remain the same as those noted in Sections 3.1.1, 3.1.3, and 3.1.8, respectively. The continued operation of the refurbished Bent Tree, Franklin County, and Whispering Willow East turbines is a Covered Activity. The refurbished process impacts are expected to be minimal, as tired mobile cranes utilizing the existing wind turbine access roads are being utilized to eliminate the need for crawler crane movement considerations. No tree clearing work will be required. The potential impacts and avoidance and minimization measures associated with refurbishing activities are further described in Sections 4.1 and 5.2. It is anticipated that all refurbished activities would occur from 2024 through 2026. The total number of refurbished Bent Tree, Franklin County, and Whispering Willow East turbines is expected to remain the same.

2.2.3 Mitigation Measures

The HCP includes measures to minimize and mitigate the impacts of the take resulting from Covered Activities to the maximum extent practicable. These measures are described in detail in the Conservation Program (Chapter 5.0). The mitigation measures are not likely to cause take, but are expected to result in beneficial impacts because they are intended to provide conservation benefits to the Covered Species. Because the authority to implement mitigation measures within

[4] Bat deaths and injuries were initially thought to also result from decompression sickness, or barotrauma, which is a phenomenon in which bats flying in close proximity to rotating turbine blades are thought to experience rapid or excessive pressure change, resulting in pulmonary trauma, or lung damage due to expansion of air in the lungs that is not accommodated by exhalation (Baerwald et al. 2008). However, more recent studies have shown that the pressure changes bats may experience when flying near wind turbines are much smaller than those that would be expected to result in mortality; therefore, it is unlikely that barotrauma is responsible for a significant number of turbine-related bat fatalities and the majority of turbine-related fatalities are due to collision or impact trauma (Lawson et al. 2020).

occupied habitat of the Covered Species is granted in the ITP, mitigation measures are included as a Covered Activity in this HCP.

3.0 COVERED SPECIES ECOLOGY AND ENVIRONMENTAL BASELINE

The following sections describe the environmental setting of the Permit Area. Brief overviews of Covered Species ecology are included in Sections 3.3–3.6. More detailed information on the life history, habitat requirements, demographics, range, or other facets of the Covered Species' basic ecology can be found in the MidAmerican HCP, the MidAmerican EIS, and the USFWS Species Status Assessments (SSAs) for the three listed and proposed listed species (MidAmerican 2019, USFWS 2019a, 2019c, 2019d, 2021b, 2022a). Data specific to the Alliant-sponsored studies and research is used and referenced as appropriate throughout the HCP.

3.1 Environmental Setting

The Projects are generally located in the western two-thirds of Iowa (Figure 1.1) and fall within the Western Corn Belt Plains ecological region that encompasses most of Iowa. The Western Corn Belt Plains extend into surrounding states (Auch 2007); it is primarily a level-to-rolling glacial till plain with hilly, loess-covered plains in the west. Elevations within the Permit Area range from approximately 840–1,473 feet (ft; 256–449 meters [m]) above sea level. Cultivated crops and hay/pasture together account for more than 93% of the land cover within the Permit Area (National Land Cover Database [NLCD] 2019; Appendix A). See Appendix A for more detailed information related to the land cover in each Project area.

3.1.1 Bent Tree Wind Energy Project

Bent Tree is located across approximately 19,561 ac (7,916 ha) in northwestern Freeborn County, Minnesota. Bent Tree is located within the Eastern Iowa and Minnesota Drift Plains Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Bent Tree Project area is predominantly cultivated crops (91.5%; NLCD 2019). Natural habitats consist of deciduous forest, emergent herbaceous wetlands, herbaceous, open water, mixed forest, woody wetlands, and evergreen forest, but these are a relatively small portion of the land cover within the Bent Tree Project area (3.5%).

Bent Tree became operational in 2011, prior to the recommendations outlined in the *Land-Based Wind Energy Guidelines* (WEG; USFWS 2012c) and prior to the NLEB federal listing, proposed TRBA listing, or the emergency petition to list LBBA. However, as part of Project siting and design, recommendations from state and federal agencies were incorporated to minimize impacts to environmental resources, including bats. A Biological Preservation Survey was completed to inventory biologically important areas such as native prairies, forests, and wetlands. The Project was sited primarily in cultivated croplands, away from suitable summer bat habitat, including an avoidance of state wildlife management areas, scientific and natural areas, and county parks (Alliant 2020a). PCM surveys were also conducted at Bent Tree in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

In 2023, Alliant began initial coordination with local, state and federal agencies to refurbish the 122 existing Bent Tree turbines, with a target commercial operation date (COD) most likely in 2026. Since this is a "like-for-like" refurbishment approach, the turbine locations and number of turbines would stay the same, with the size and MW output of turbines staying the same.

3.1.2 English Farms Wind Energy Project

The English Farms Wind Energy Project (English Farms) is located across approximately 21,524 ac (8,710 ha) in southeastern Poweshiek County, Iowa. English Farms is located within the Rolling Loess Prairies Level IV Ecoregion, is within the range of all Covered Species (it is the only Project within the INBA range; Figure 3.1). Land cover within the English Farms Project area is predominantly cultivated crops (86.3%; NLCD 2019). Natural habitats consist of herbaceous, deciduous forest, mixed forest, open water, emergent herbaceous wetlands, and woody wetlands; however, these are a minor portion of the land cover within the English Farms Project area (2.1%).

English Farms became operational in 2019 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around English Farms was identified in 2016 during pre-construction surveys via satellite imagery and desktop analysis, based on agency guidance regarding INBA summer habitat at the time, which a USFWS-approved bat biologist then verified in the field. The final mapped potential suitable summer habitat met the definitions outlined in the USFWS *Range-Wide Indiana Bat Summer Survey Guidelines* (2016a) and was consistent with agency guidance regarding INBA summer habitat at the time. To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands, at least 1,000 ft (305 m) from mapped suitable summer INBA habitat (Alliant 2020b).

Alliant obtained a Technical Assistance Letter (TAL) in February 2019 through coordination with the USFWS for initial operation of the English Farms Project due to being within the INBA range. Under the TAL, Alliant committed to PCM during the fall bat migration period (August 1 – October 15) for the first three years of Project operations. For the first year of operations in 2019, Alliant operated the turbines per the conditions of the TAL (all 69 turbines curtailed at a cut-in speed of 6.9 m/second [m/s; 22.6 ft per second [ft/s] from August 1 – October 15), and Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) developed and implemented a PCM study to estimate the bird and bat fatality rates resulting from Project operations for the 2019 fall bat migration season (Burns & McDonnell 2020a; see Sections 3.3.2 and 3.7 for a summary of the PCM survey results).

For the second year of operations in 2020, Alliant contracted Burns & McDonnell to develop and implement a PCM study to estimate bird and bat fatality rates resulting from Project operations for the 2020 fall bat migration season (Burns & McDonnell 2020b). Concurrently with the second year of PCM at English Farms, Natural Power Consultants LLC, in collaboration with the US Department of Energy through a research Section 7 Incidental Take Authorization (Section 7 ITA), conducted a research study at the English Farms Project from August 6 – October 16, 2020, to evaluate the effectiveness of bat smart curtailment (i.e., curtailing turbines when bat calls are

recorded using acoustic technology) in reducing bat fatalities. Because the studies were conducted concurrently, the PCM study was designed to accommodate for the research study requirements, including assigning turbines into three treatment groups based on operational curtailment levels: no curtailment (control), 6.9 m/s blanket curtailment (i.e., all turbines curtailing up to a designated cut-in speed), and 6.9 m/s bat smart curtailment (Burns & McDonnell 2020b; see Sections 3.3.2 and 3.7 for a summary of the PCM survey results).

For the third year of operations in 2021, a modified research study was conducted, similar to the 2020 study, to evaluate the effectiveness of the EchoSense system (formerly known as DARC [detection and active response curtailment]) system in reducing bat fatalities. The 2021 PCM study was, again, conducted concurrently with the EchoSense research study from August 1 – October 17, 2021. Turbines were placed into one of two treatment groups: blanket curtailment up to 5.0 m/s (16.4 ft/s) and bat smart curtailment (EchoSense) up to 5.0 m/s. Searches were conducted every three days, with 20 turbines searched as cleared full plots and 49 turbines searched as road and pad plots (Burns & McDonnell 2021; see Sections 3.3.2 and 3.7 for a summary of the PCM survey results).

In May 2022 the USFWS issued an amendment to the TAL, in which Alliant committed to continue to implement avoidance measures and monitoring efforts for INBA at English Farms until this HCP is finalized and the permit decision is made. Under the amended TAL, English Farms implemented bat smart curtailment using the EchoSense system at all turbines when wind speeds were below 6.9 m/s and conducted PCM (road and pad searches twice per week at all turbines) during the fall bat migration period from August 1 – October 15, 2022 (Burns & McDonnell 2022), and from August 1 – October 13, 2023 (Burns & McDonnell 2023); see Sections 3.3.2 and 3.7 for a summary of the PCM survey results).

3.1.3 Franklin County Wind Energy Project

The Franklin County Wind Energy Facility (Franklin County) is located across approximately 19,746 ac (7,991 ha) in western Franklin County, Iowa. Franklin County is located in the Des Moines Lobe Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Franklin County Project area is predominantly cultivated crops (95.0%; NLCD 2019). Natural habitats consist of herbaceous lands, emergent herbaceous wetlands, deciduous forest, woody wetlands, open water, and mixed forest, but these are a minor portion of the land cover within the Franklin County Project area (0.3%).

Franklin County became operational in 2012 and siting and design of the Project occurred prior to the recommendations outlined in the WEG and prior to federal listing considerations for NLEB, TRBA, and LBBA. However, as part of Project siting and design, recommendations from state and federal agencies were incorporated to minimize impacts to environmental resources, including bats. A preliminary avian and bat assessment was conducted for the Project in 2008, which identified bat habitat at the Project site, but no threatened and endangered bat species concerns were identified at the time of original Project development. The Project was sited primarily in cultivated croplands, and all turbines are located over 1,000 ft from suitable summer bat habitat (Alliant 2020g); however, the Project is located 2.0 miles (mi; 3.2 kilometers [km]) from

Mallory Memorial County Park, which contains forested riparian habitat along the Iowa River and where NLEB have been documented during IDNR acoustic surveys (Blanchong 2017, Matteson and Murray 2020). PCM surveys were also conducted at Franklin County in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

In 2023, Alliant began initial coordination with local, state and federal agencies to refurbish the 60 existing Franklin County turbines, with a target COD most likely in 2024. Since this is a "like-for-like" refurbishment approach, the turbine locations and number of turbines would stay the same, with the size and MW output of turbines staying the same.

3.1.4 Golden Plains Wind Energy Project

The Golden Plains Wind Energy Project (Golden Plains) is located across approximately 63,929 ac (25,871 ha) in northeastern Kossuth County and northwestern Winnebago County, Iowa. Golden Plains is located within the Des Moines Lobe Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Golden Plains Project area is predominantly cultivated crops (93.1%; NLCD 2019). Natural habitat is sparse and includes emergent herbaceous wetlands, herbaceous, deciduous forest, woody wetlands, open water, and mixed forest (1.1% of the Golden Plains Project area).

Golden Plains became operational in 2020 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around Golden Plains was identified in 2016 during pre-construction surveys via satellite imagery and desktop analysis, based on agency guidance regarding NLEB summer habitat at the time. Forested patches were categorized into commuting/travel habitat (less than 15 ac [six ha]), small roosting/foraging habitat (15–50 ac [six to 20 ha]), and large roosting/foraging habitat (greater than 50 ac). Forested habitat patches greater than 15 ac were buffered by 1,000 ft and any wooded habitat within 1,000 ft of those larger patches was considered potential summer foraging habitat. No forested patches greater than 15 ac were located within the Project area and no suitable summer foraging habitat was identified. Based on this assessment, the USFWS concurred there is limited suitable summer habitat for bats in the Project area (Alliant 2020c). To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands and no turbines were sited within 1,000 ft of suitable summer NLEB habitat (Alliant 2020c). PCM surveys were also conducted at Golden Plains in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

3.1.5 Kossuth Wind Energy Project

The Kossuth Wind Energy Project (Kossuth) is located across approximately 13,599 ac (5,503 ha) in southeastern Kossuth County, Iowa. Kossuth is located within the Des Moines Lobe Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Kossuth Project area is predominantly cultivated crops (94.9%; NLCD 2019). Natural habitat is sparse and includes deciduous forest, emergent herbaceous wetlands, herbaceous, open water, and woody wetlands (0.6% of the Kossuth Project area).

Kossuth became operational in 2020 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around Kossuth was identified in 2018 during pre-construction surveys via satellite imagery and desktop analysis, based on agency guidance regarding NLEB summer habitat at the time. Forested habitat patches were categorized as either less than 10 ac (four ha) or greater than 10 ac. Forested habitat patches greater than 10 ac were buffered by 1,000 ft and any wooded habitat within 1,000 ft of those larger patches was considered potential summer foraging habitat. No forested patches greater than 10 ac were located within the Project area and the closest suitable summer foraging habitat was identified just west of the Project along the forested corridor of the East Fork Des Moines River. To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands and no turbines were sited within 1,000 ft of suitable summer NLEB habitat (Alliant 2020d). PCM surveys were also conducted at Kossuth in 2021 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

3.1.6 Richland Wind Energy Project

The Richland Wind Energy Project (Richland) is located across approximately 44,708 ac (18,093 ha) in western Sac County, Iowa. Richland is located within the Loess Prairies and Steeply Rolling Loess Prairies Level IV Ecoregions, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Richland Project area is predominantly cultivated crops (91.4%; NLCD 2019). Natural habitat is sparse and includes deciduous forest, emergent herbaceous wetlands, herbaceous, open water, and woody wetlands (0.6% of the Richland Project area; NLCD 2019).

Richland became operational in 2020 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around Richland was reviewed via satellite imagery, and, according to the NLCD, only 18.9 ac (7.6 ha) of forested habitat is present within the Project area, largely limiting the potential suitable summer foraging habitat for bats; an NLEB-specific habitat assessment was not completed (Alliant 2020e). To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands and no turbines were sited within 1,000 ft of suitable summer bat habitat (Alliant 2020e). PCM surveys were also conducted at Richland in 2021 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

3.1.7 Upland Prairie Wind Energy Project

The Upland Prairie Wind Energy Project (Upland Prairie) is located across approximately 50,520 ac (20,445 ha) in southwestern Dickinson County and northwestern Clay County, Iowa. Upland Prairie is located primarily within the Loess Prairies Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Upland Prairie Project area is predominantly cultivated crops (91.3%; NLCD 2019). Natural habitat includes herbaceous, emergent herbaceous wetlands, mixed forest, open water, shrub/scrub, deciduous forest, and

woody wetlands; however, these are a relatively small portion of land cover within the Upland Prairie Project area (3.1%).

Upland Prairie became operational in 2019 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around Upland Prairie was identified in 2017 during pre-construction surveys via satellite imagery and desktop analysis, based on agency guidance regarding NLEB summer habitat at the time. Forested patches were categorized into commuting/travel habitat (less than 15 ac), small roosting/foraging habitat (15–50 ac), and large roosting/foraging habitat (greater than 50 ac). Forested habitat patches greater than 15 ac were buffered by 1,000 ft and any wooded habitat within 1,000 ft of those larger patches was considered potential summer foraging habitat. Approximately 233 ac (84 ha) of suitable summer foraging habitat was identified within the Project area. To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands and no turbines were sited within 1,000 ft of suitable summer NLEB habitat (Alliant 2020f). PCM surveys were also conducted at Upland Prairie in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

3.1.8 Whispering Willow East Wind Energy Project

The Whispering Willow East is located across approximately 29, 661 ac (12,003 ha) in western Franklin County, Iowa. Whispering Willow East is located within the Des Moines Lobe Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Whispering Willow East Project area is predominantly cultivated crops (88.1%; NLCD 2019). Natural habitat is relatively sparse and includes herbaceous lands, woody wetlands, open water, mixed forest, emergent herbaceous wetlands, and evergreen forest (5.0% of the Whispering Willow East Project area).

Whispering Willow East became operational in 2009, prior to the recommendations outlined in the WEG and prior to federal listing considerations for NLEB, TRBA, and LBBA. However, as part of Project siting and design, recommendations from state and federal agencies were incorporated to minimize impacts to environmental resources, including bats. A preliminary avian and bat assessment and a threatened/endangered species assessment were conducted for the Project in 2008 and 2009, respectively, which identified bat habitat at the Project site, but no threatened and endangered bat species concerns were identified at the time of original Project development. The Project was sited primarily in cultivated croplands and generally avoided forested habitat; however, the Project area overlaps Mallory Memorial County Park, where NLEB have been documented during IDNR acoustic surveys (Blanchong 2017, Matteson and Murray 2020). Per agency recommendations, two turbines were relocated during the siting process to increase the distance from Mallory Memorial County Park; however, six Whispering Willow East turbines are located within 1,000 ft of either a stream or wooded habitat (Alliant 2020g). PCM surveys were also conducted at Whispering Willow East in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

In 2023, Alliant began initial coordination with local, state and federal agencies to refurbish the 121 existing Whispering Willow East turbines, with a target COD most likely in 2025. Since this is a "like-for-like" refurbishment approach, the turbine locations and number of turbines would stay the same, with the size and MW output of turbines staying the same.

3.1.9 Whispering Willow North Wind Energy Project

The Whispering Willow North Wind Energy Project (Whispering Willow North) is located across approximately 20,375 ac (8,245 ha) in western Franklin County, Iowa. Whispering Willow North is located within the Des Moines Lobe Level IV Ecoregion, and is within the range of the NLEB, LBBA, and TRBA (Figure 3.1). Land cover within the Whispering Willow North Project area is predominantly cultivated crops (93.6%; NLCD 2019). Natural habitat includes emergent herbaceous wetlands, herbaceous lands, open water, deciduous forest, and mixed forest, and represents a minor portion of the Whispering Willow North Project area (1.0%).

Whispering Willow North became operational in 2020 and the pre-construction bat surveys were conducted to follow recommendations outlined in the WEG and based on guidance from agency coordination during Project development (see Section 3.7 for a summary of the pre-construction field survey results). Suitable summer bat habitat in and around Whispering Willow North was identified during pre-construction surveys via satellite imagery and desktop analysis, based on agency guidance regarding NLEB summer habitat at the time, which was then verified in the field by a USFWS-approved bat biologist. Approximately 220 ac (89 ha) of suitable summer foraging habitat was identified within the Project area. To avoid and minimize impacts to all bats, including the Covered Species, all Project turbines were sited primarily in cultivated croplands and no turbines were sited within 1,000 ft of suitable summer NLEB habitat (Alliant 2020h). PCM surveys were also conducted at Whispering Willow North in 2020 to further inform bat risk (see Section 3.7 for a summary of the PCM survey results).

3.2 White-nose Syndrome in the Plan Area

Currently, the most severe range-wide threat to the Covered Species is white-nose syndrome (WNS; USFWS 2010, Thogmartin et al. 2012). The disease is caused by a fungal pathogen (*Pseudogymnoascus destructans* [Pd]) that infects hibernating bats (Blehert et al. 2009, 2011; Minnis and Lindner 2013). WNS has spread steadily westward from four caves in New York, where it was originally discovered in 2006 (US Geological Survey [USGS] 2009). WNS has been confirmed in 37 states and four provinces, spanning from eastern Maine to western Washington, and southern Canada to Texas (White-Nose Syndrome.org 2022; Figure 3.2). In Iowa, the Pd fungus was first found at a hibernaculum in the winter of 2011-2012 (Iowa Department of Natural Resources [IDNR] 2012, White-Nose Syndrome.org 2022). Hibernating bats infected with WNS were first confirmed in southeastern Iowa during the winter of 2014-2015 in Des Moines and Van Buren counties (IDNR 2015). The Pd fungus was first found in southern Minnesota in 2015-2016, and hibernating bats with WNS were first confirmed in several counties across eastern Minnesota in 2017-2018 (White-Nose Syndrome.org 2022).

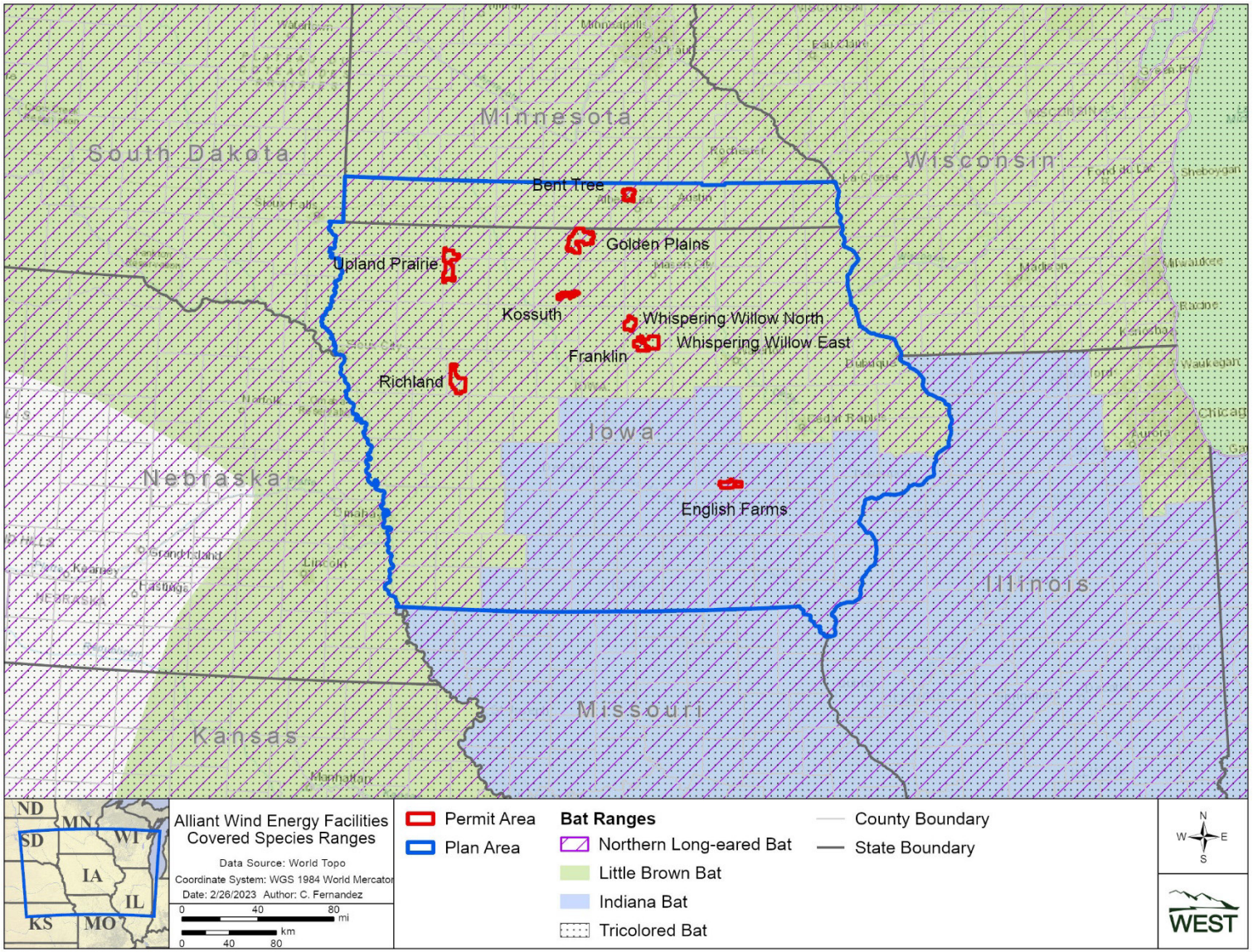

Figure 3.1. The location and range of Alliant Energy's wind projects within the ranges of the Covered Species: Indiana, northern long-eared, little brown, and tricolored bats.

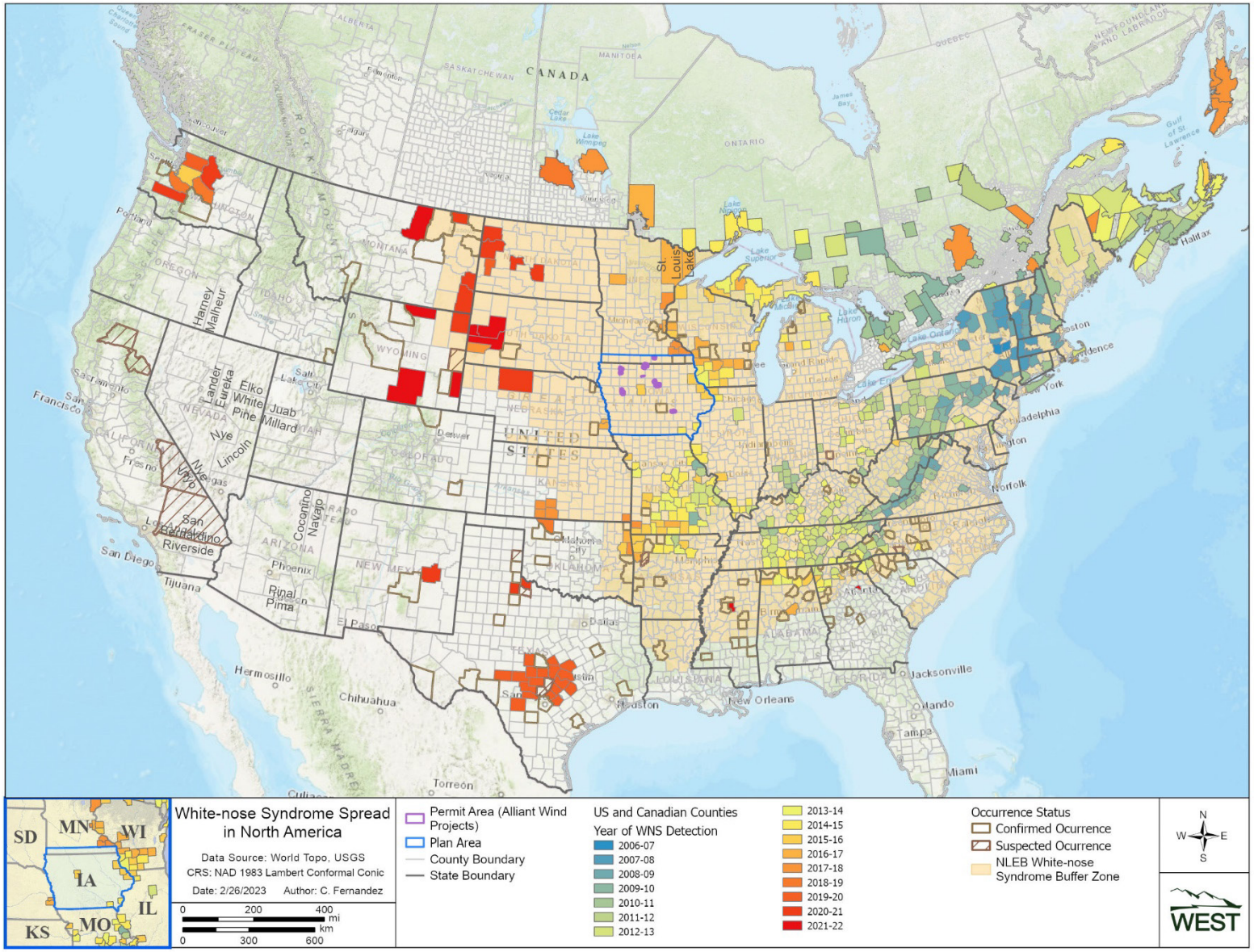

Figure 3.2. White-nose syndrome occurrence over time by county, shown with Alliant Energy's wind project locations.

While WNS has not been officially documented in any of the counties where the Alliant Projects are located, intensive WNS sampling has not occurred in either state. All cave-hibernating bats should be assumed to be affected by WNS in both Iowa and Minnesota, regardless of known occurrence in the specific county.

3.3 Indiana Bat

The INBA is a small, relatively long-lived, insectivorous bat. The INBA overwinters in caves and manmade structures, roosts in maternity colonies in forested habitat in the summer, and migrates between the two habitats in the spring and fall (USFWS 2007). Most hibernacula are in karst areas of the east-central US; however, INBAs are also known to hibernate in human-associated, cave-like structures, such as abandoned mines, buildings, tunnels, and dams (Kurta and Teramino 1994, Hicks and Novak 2002, Butchkoski and Hassinger 2002, USFWS 2007). INBAs tend to hibernate in large, dense groups. The most suitable caves are large and complex, allowing for airflow and buffering changes in temperature (Brack 2004, USFWS 2007, Boyles 2008). Females exhibit high fidelity to summer roosting areas, where they raise pups in maternity colonies (Kurta 2004). Roosts are usually located in dead trees, though partly dead or live trees may also be used (USFWS 2007). Females prefer to raise their young in a mosaic of woodland and open areas (USFWS 2007). INBAs forage in forest, wooded riparian corridors, and native vegetation adjacent to these habitats (Kiser and Elliot 1996).

Overall data on species composition of fatalities observed at wind energy facilities indicate that cave-dwelling bat species compose only about 10% or less of the total bat fatalities (USFWS unpublished data, as cited in USFWS 2015e, AWWI 2018, 2022). These data suggest that cave-dwelling bat species are probably not flying within the rotor-swept zone as frequently as long-distance migrating tree bats. Documented mortality of myotids at wind facilities has historically occurred primarily during the late summer and fall migration period (USFWS 2011c, 2011b, 2012a, 2012b; Pruitt and Reed 2022). Thirty-nine INBA fatalities have been documented, to date, at wind facilities (Pruit and Reed 2022, Western EcoSystems Technology, Inc. [WEST] 2021). The majority of these documented fatalities occurred during the fall migration period. However, it should be noted that of the 19 INBA fatalities found in 2021, eight occurred during the summer or maternity roosting season (47%; Pruit and Reed 2022), which is somewhat anomalous given the timing of earlier fatalities that occurred primarily during the fall migration season.

3.3.1 Status and Distribution

3.3.1.1 Rangewide

The range of the INBA includes all or parts of 22 states in the eastern US (Gardner and Cook 2002, USFWS 2007; Figure 3.1). As of 2015, over 90% of the population hibernated in five states: Indiana (35.5%), Missouri (35.5%), Kentucky (12.6%), Illinois (10.7%), and New York (3.0%; USFWS 2015b); with most (86.4% of the total population) hibernating in 17 hibernacula (USFWS 2015b).

Since the release of the first INBA Recovery Plan (USFWS 1983), the USFWS implemented a biennial monitoring program at Priority 1 and Priority 2[5] hibernacula (USFWS 2007). In 1965, the overall population was estimated to be over 880,000 individuals. While variation in the data collection has led to variable estimates, in general, there has been a long-term declining population trend, with approximately 496,027 individuals reported in 2001 (USFWS 2015b). The population showed a gradual increase to 635,349 INBAs by 2007, but fell to 523,636 bats in 2015 (USFWS 2015b). In 2019, from the most recent data available, the total population of INBAs was estimated to be 537,297 individuals (Figure 3.3). This is about 19% lower than the estimated 2007 population of 664,637 INBAs (i.e., since the arrival of WNS in the species' range) and 4% lower than the estimated 2017 population of 559,412 INBAs (USFWS 2019a).

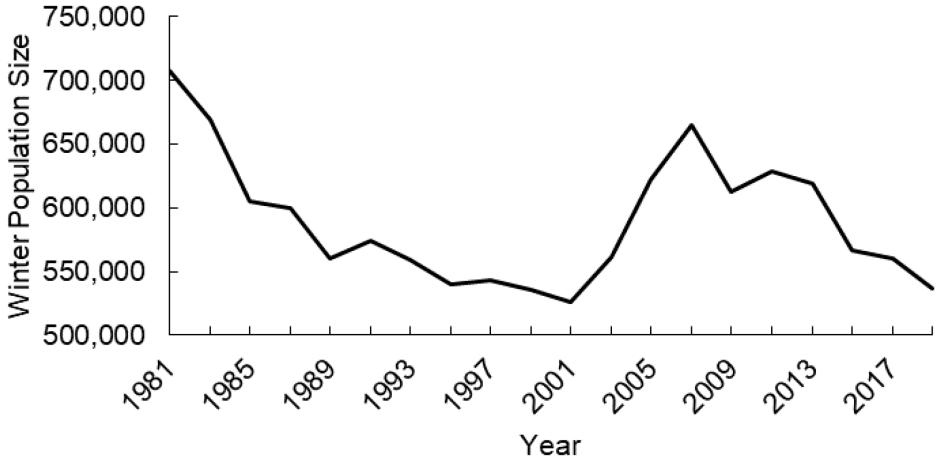

Figure 3.3. Nationwide population counts for the Indiana bat. These estimates are based on winter surveys conducted at known hibernacula throughout the species' range. Data from the US Fish and Wildlife Service (2019a).

3.3.1.2 Ozark-Central Recovery Unit

The USFWS divides the INBA's range into four recovery units (USFWS 2007). One of Alliant's Projects falls within the Ozark-Central Recovery Unit (OCRU), which includes part of Iowa. The INBA population within the OCRU has been relatively stable, with a current estimate of 276,317 individuals (USFWS 2019a; Table 3.1). The OCRU represents 51.4% of the 2019 range-wide population of INBAs (USFWS 2019a). There were 126 extant and historic INBA hibernacula[6] within the OCRU in 2007 (USFWS 2007), but the current number of extant hibernacula has not been reported by the USFWS.

[5] The *Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision* classifies hibernacula into four groups based on how important they are (priority) to the species population and distribution. Priority 1 hibernacula are essential to the recovery and long-term conservation of the species and have a current or historically observed winter population of 10,000 or more individuals. Priority 2 hibernacula contribute to the recovery and long-term conservation of the species and have a current or historical population of more than 1,000, but less than 10,000 individuals. Priority 3 sites have a current or historical population of 50–1,000 bats, and Priority 4 sites have a current or historical population of fewer than 50 bats (USFWS 2007).

[6] This value excludes the previously unknown Indiana bat hibernaculum discovered in Missouri in 2012 (USFWS 2019c).

Table 3.1. Indiana bat population estimates for the Ozark-Central Recovery Unit (US Fish and Wildlife Service [USFWS] 2019a).

State[1]	2011	2013	2015	2017	2019
Illinois	57,212	66,817	69,924	81,143	78,403
Missouri	212,942	214,453	216,289	217,884	195,157
Arkansas	1,206	856	1,398	1,722	2,749
Oklahoma	13	5	5	8	8
Total	**271,373**	**282,131**	**287,616**	**300,757**	**276,317**

1. There have been no extant winter populations of Indiana bats recorded since 1995 in Iowa, nor have sites been surveyed since that time, so there are no population estimates (MidAmerican 2019; Schorg, USFWS, personal communication, February 18, 2023).

3.3.1.3 Iowa

The range of the INBA in Iowa is approximately the southeastern third of the state (Figure 3.1). There are some records of INBAs roosting in Iowa, and the species is thought to occur regularly in the southeast quadrant of the state, from Guthrie County east to the Mississippi River, and Boone County south to the Missouri State line (McPeek 2015, USFWS 2023a; Figure 3.1). Mist-netting shows the INBA has been present in Iowa within the last 50 years; from 1965 – 1991, 69 INBAs were captured in these studies (Bowles et al. 2009). There are no hibernacula counts or records of extant winter populations in the state (Table 3.1). The INBA range does not extend into Minnesota.

3.3.2 Occurrence in the Permit Area

Only one Alliant Project, English Farms, occurs within the range of the INBA in Iowa and the OCRU (Figure 3.1), located on the northwestern edge of the species' range. INBAs were confirmed to occur in Poweshiek County in 2014, according to the IDNR Natural Areas Inventory database (IDNR 2022). No INBA maternity colonies have been recorded in Poweshiek County; however, maternity colonies have been recorded in neighboring Jasper County to the west, Marion County to the southwest, and Iowa County to the east (USFWS 2007). Additionally, USFWS records indicate both lactating and post-lactating female INBAs were captured near Lake Cimmaron in 2009 and 2013, just west of Montezuma and approximately three mi (five km) northwest of English Farms, and roosts were also documented in the area in 2013 (Schorg, USFWS, personal communication [pers. comm.], February 13, 2023). All known INBA hibernacula are located either east (in Dubuque County, Iowa) or south (in west-central Illinois and northeast Missouri) of English Farms by close to 100 mi (161 km; USFWS 2007, 2019c). With the discovery of a Priority 1 hibernaculum in northeast Missouri, it is now thought that some of the INBAs summering in Iowa may migrate in a southeasterly direction to this hibernaculum (USFWS 2019c).

Bat acoustic surveys were conducted at English Farms in the summers of 2012, 2013, and 2014. After qualitative (visual) examination, two bat passes were identified as possible INBA bat passes in 2012, 16 bat passes were identified as possible INBA bat passes in 2013, and eight bat passes were identified as possible INBA bat passes in 2014 (Ecology and Environment, Inc. 2016; Table 3.2). In 2018, Alliant contracted Western EcoSystems Technology, Inc. (WEST) to re-analyze the bat acoustic data collected at English Farms to obtain a second expert opinion on whether INBA calls were, in fact, recorded during the past acoustic surveys during the summer. WEST used a combination of quantitative and qualitative call analysis to review the data from

nights where the original analysis indicated that INBA presence was possible. The WEST quantitative analysis was conducted using a more modern and updated software (Kaleidoscope Pro Version 4.2.0) compared to the original analysis. An experienced bat biologist who met required USFWS qualifications conducted the WEST qualitative analysis. No INBA calls could be confirmed upon re-analysis of the acoustic data (WEST 2018). Calls previously classified as INBA were either reclassified to other bat species or as unknown species due to poor quality (WEST 2018). Therefore, INBA are likely absent from English Farms during the summer.

As outlined above in Section 3.1.2, English Farms operated under a TAL in 2019, a research Section 7 ITA in 2020 and 2021, and a revised TAL in 2022 and 2023, and five years of PCM surveys have been conducted for the Project. No INBAs were found as fatalities during 2019, 2021, 2022, or 2023 (Burns & McDonnell 2020a, 2021, 2022, 2023). However, one INBA fatality was discovered during a standardized search at a control turbine on September 4, 2020 (Burns & McDonnell 2020b; Table 3.3), when the research Section 7 ITA was in place.

3.4 Northern Long-Eared Bat

The NLEB requires a stable environment, mostly caves, in which to hibernate during the winter, and woodland habitat in which to roost during the summer, and migrates between the two in spring and fall (USFWS 2014, 2022). They often overwinter in caves, abandoned mines, or deep rock crevices (Caceres and Barclay 2000, Lemen et al. 2016), where they generally compose a small proportion of the population in a given hibernaculum, as they generally hibernate singly or in small groups (Pearson 1962, Caire et al. 1979, Stones 1981, USFWS 2022a). For roosting during the summer maternity season, NLEBs most frequently select mature-growth forests with decaying or live trees with cavities or exfoliating bark (Foster and Kurta 1999, Lacki and Schwierjohann 2001, Ford et al. 2006). The insectivorous NLEB does not typically forage in intensively harvested forest stands or open agricultural areas, and instead flies in or near intact forest whenever available (Patriquin and Barclay 2003, Henderson and Broders 2008).

Fifty-six NLEB fatalities have been publicly documented at wind energy facilities; however, no NLEB fatalities have been reported since 2015 (WEST 2021). NLEB fatalities have been found primarily during late summer and fall[7] (WEST 2021), when the collision risk appears to be higher. As stated above, available bat fatality data from wind energy facilities suggests that cave-dwelling bat species, including NLEB, are probably at a lower risk of turbine collision than migrating tree bats. However, wind energy mortality is estimated to occur over 49% of the species' range (USFWS 2022a). The NLEB was originally federally listed as a threatened species with a 4(d) rule (USFWS 2015c), primarily due to the threat from WNS (see discussion of WNS spread in Section 3.2, above). Take prohibitions for the species were designed to protect it during sensitive life stages in areas affected by WNS, but the incidental take of NLEBs resulting from most otherwise lawful activities was not prohibited while the 4(d) rule was in effect, including incidental take due to the operation of wind turbines. On November 30, 2022, the USFWS published a final

[7] Fifty-three of the 56 publicly documented NLEB fatalities have seasonal data available. Of these 53 fatalities, 31 occurred from August – November (WEST 2021).

rule reclassifying the NLEB as an endangered species and removing the species-specific 4(d) rule (87 FR 73488 [2022]), effective March 31, 2023 (88 FR 4908).

3.4.1 Status and Distribution

3.4.1.1 Rangewide

The NLEB is found in 37 states in the US, ranging from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, extending southward to parts of southern states from Georgia to Louisiana, and reaching into eastern Montana and Wyoming (USFWS 2022a). In Canada, the species is found in eight provinces, from the Atlantic Coast and west towards the southern Yukon Territory and eastern British Columbia (USFWS 2014). The winter and summer geographic ranges of the species appear to be identical (Barbour and Davis 1969).

While the distribution of NLEBs is widespread, individuals are present in an irregular, patchy distribution. NLEBs rarely occur in large numbers (Barbour and Davis 1969), but are considered more common in the northern part of their overall range (Harvey 1992, Center for Biological Diversity [CBD] 2010). The rangewide NLEB population was estimated to be approximately 6.5 million adults in 2016 (USFWS 2016d). WNS has been deemed the most severe threat facing NLEB populations rangewide (USFWS 2014, 2022a), and is the primary reason the species was listed as threatened under the ESA (USFWS 2016b). WNS has resulted in population declines of 97–100% across 79% of the species' range (USFWS 2022a). Current estimates from the USFWS in 2023 indicate a range-wide total population of 201,266 adults (USFWS 2023b).

3.4.1.2 The Midwest Representation Unit

The Midwest Representation Unit (RPU) includes portions of Iowa and Minnesota where the Alliant Projects are located, in addition to northern Missouri, northcentral Illinois, and the western extent of the NLEB range across Kansas, Nebraska, North and South Dakota, Wyoming, and Montana). As of 2016, the Midwest was thought to support 43% of the US population, with an estimated 2.8 million adult NLEBs (USFWS 2016d). However, it was acknowledged at the time that this was likely an overestimate, as the impacts of WNS had not been fully realized in this region. Hibernacula counts in Missouri suggest that Midwest populations have since experienced declines similar to those documented in the northeast. From 2012 – 2017, winter counts in Missouri declined by 99.9% (from 4,591 to two; Colatskie 2017). Recent estimates for the Midwest RPU showed a 24% decline in winter abundance, a 70% decline of extant winter colonies, and a 91% decline in summer abundance from 2010 – 2019 (USFWS 2022a).

3.4.1.3 Iowa and Southern Minnesota

Based on historical and recent survey data, NLEBs are believed to potentially occupy suitable habitat throughout Iowa and Minnesota. Currently, much of the forested habitat potentially used by NLEBs exists in floodplain riparian forest, as well as smaller patches of remaining upland forest (Figure 3.4). Acoustic surveys conducted by the IDNR from 2016 – 2018 indicated relatively widespread distribution of NLEB across central and western Iowa, with likely presence of the species recorded at 91 of 242 sites in the 61 counties that were sampled (Matteson and

Murray 2019). While state-specific population trajectories were not assessed as part of the 2022 NLEB Species Status Assessment, the USFWS derived a probable population decline of 50-90% for NLEB in Iowa and southern Minnesota since 2016 (Cheng et al. 2021, USFWS 2022c), indicating that the NLEB is currently less widespread and abundant within the Plan Area. The current population estimates for Iowa and Minnesota are 1,196 and 11,232 adult NLEBs, respectively (USFWS 2023b). The Plan Area includes nine of the 87 counties in Minnesota, or roughly 10%. Applying this percentage to the adult NLEB population in Minnesota, the Plan Area likely supports approximately 2,319 adult NLEBs (1,196 in Iowa and 1,123 in Minnesota).

Most locations of NLEB hibernacula in Iowa and Minnesota remain undocumented. Many of the potential caves and mines that could be used as hibernacula occur in karst geology in the eastern part of Iowa, and karst geology is limited in Freeborn County in Minnesota (Figure 3.4; Pruszko and Bowles 1986, Dixon 2011) and NLEBs are known to regularly hibernate in caves in eastern Iowa (Laubach et al. 1994). Under an ESA Section 6 grant, the IDNR sponsored surveys for potential bat hibernacula in February and March 2017 that used dogs trained in scent tracking to investigate areas with potentially suitable habitat for wintering bats, as part of the research conducted for the MidAmerican HCP. The surveys identified 19 locations of potential hibernacula along rock outcroppings within Madison, Boone, Mahaska, and Hardin counties in central Iowa (Hurt 2017).

3.4.2 Occurrence in the Permit Area

All of the Alliant Projects are within the NLEB range. Most of the Projects contain relatively small, isolated blocks of potential tree-roosting habitat (see Section 3.1 and forested habitat in Appendix A). Of the counties where the Alliant Projects are located (see Section 1.4, above), NLEBs have only been confirmed to occur in Franklin, Kossuth, and Poweshiek counties (IDNR 2022, Minnesota department of Natural Resources [MNDNR] 2022a). NLEBs were recorded in Poweshiek County near Lake Cimmaron (three mi northwest of English Farms) as recently as 2013 (Schorg, USFWS pers. comm. February 13, 2023). In Minnesota, the closest known hibernacula for NLEBs are located in Fillmore County, Minnesota (two counties east of Freeborn County; Schorg, USFWS, pers. comm. January 11, 2024). In Iowa, the nearest suspected NLEB hibernacula are located about 28 mi (45 km) to the northwest of the English Farms Project in north-central Jasper County (USFWS 2016d) and about 26 mi (42 km) southwest of the English Farms Project in southwest Mahaska County (Hurt 2017).

Summer acoustic surveys were conducted at six of the nine Alliant Projects (Table 3.2). Whispering Willow East, Bent Tree, and Franklin County became operational in 2009, 2011, and 2012, respectively; therefore, they were proposed/developed prior to the survey guidelines outlined in the WEG. For this reason, no pre-construction bat acoustic surveys were conducted at these three projects. From the data collected at the six projects where surveys were conducted, only one NLEB call was qualitatively identified at Kossuth (Table 3.2). Similar to what was described above for INBA, the original analysis of acoustic data from English Farms classified several bat passes as NLEB calls; however, re-analysis by WEST in 2018 using updated acoustic software and a USFWS qualified bat biologist did not classify any bat passes as NLEB calls at English Farms during the summer (WEST 2018).

WEST conducted PCM at Whispering Willow East (Pickle and O'Neil 2021b) and Franklin County (Pickle et al. 2021a) from April 13 through October 16, 2020; at Bent Tree (Pickle and O'Neil 2021a), Golden Plains (Pickle et al. 2021b), Upland Prairie (Pickle et al. 2021c), and Whispering Willow North (Pickle et al. 2021d) from July 1 through October 16, 2020; and at Kossuth (Voth et al. 2022a) and Richland (Voth et al. 2022b) from July 1 through October 14, 2021. Burns & McDonnell conducted five years of PCM at English Farms from August 1 through October 15, 2019, August 5 through October 16, 2020, August 1 through October 17, 2021, August 1 – October 15, 2022, and August 1 – October 13, 2023 (Burns & McDonnell 2020a, 2020b, 2021, 2022, 2023). During these standardized PCM searches, 1,200 bat fatalities were recorded, representing eight bat species, but no NLEB fatalities were found (Table 3.3).

3.5 Little Brown Bat

LBBAs can be found in a variety of habitats, including fragmented agricultural landscapes and suburban areas where insects are abundant for foraging (Fenton and Barclay 1980, Henderson et al. 2009). In the fall, LBBAs migrate to hibernacula (e.g., caves) where they swarm and mate before commencing hibernation (Thomas et al. 1979). LBBAs hibernate in dense clusters in winter, most frequently on the walls and roofs of high-humidity caves and mines, often returning to the same locations year after year (Fenton and Barclay 1980). In the spring, reproductive females typically return to their natal roosts to form maternity colonies situated in dark, warm, undisturbed locations such as attics, barns, or tree cavities (Kalcounis and Hecker 1996, Crampton and Barclay 1998). LBBAs mainly forage for small flying insects over water (Anthony and Kunz 1977), but also around agricultural areas, meadows, forests, and cliff faces.

As stated above, while cave-dwelling bat species, including LBBA, are likely at a lower risk of collision than tree-roosting migratory bat species, because over 1,900 LBBA fatalities have been publicly documented at wind energy facilities to date, occurring primarily during late summer and fall (WEST 2021), it is clear that at least a portion of migrating LBBAs are flying above the tree canopy at rotor-swept heights during migration. Additionally, due to population reductions due to WNS, the USFWS is gathering information and reviewing the listing status of LBBA under the ESA (Kunz and Reichard 2010, USFWS 2011a). Given the potential for listing and documented collision fatalities at wind turbines, LBBA is included among Covered Species in this HCP.

3.5.1 Status and Distribution

3.5.1.1 Rangewide

The range of the LBBA extends over most of the US and Canada, extending from Nova Scotia into southern Alaska, and south to southern California and northern Florida, including all of Iowa and southern Minnesota (Figure 3.1). LBBAs are limited to regions having caves and mines with suitable temperatures and humidity for hibernation and compatible hibernation seasons (Humphries et al. 2002, 2006).

Until recently, the LBBA was considered common and widespread. The largest populations of LBBAs historically occurred in the Appalachian Mountains and the eastern Midwest, likely due to the high densities of caves in those regions (Culver et al. 1999). Since the arrival of WNS,

populations of LBBAs have declined throughout their range; while several bat species have contracted WNS, the LBBA has experienced the greatest mortality (Frick et al. 2010). The LBBA population was estimated to be about 6.5 million in 2006 (Frick et al. 2010). Since that time, WNS has led to population decreases from 30.0% to 99.0% in the northeastern US, with a mean decrease of 73.0% (Frick et al. 2010). A study in Indiana found a 79.6% decline for LBBAs after the introduction of WNS to the state in 2010/2011 (Pettit and O'Keefe 2017). These trends indicate that the LBBA could be extirpated from its core range by 2026 (Frick et al. 2010). The USFWS is currently gathering information about the LBBA and reviewing its listing status under the ESA (Kunz and Reichard 2010, USFWS 2011a).

3.5.1.2 Iowa and Southern Minnesota

LBBAs are believed to occupy suitable habitat consisting of both forest and anthropogenic structures throughout both Iowa and Minnesota. LBBAs were captured during mist-netting efforts conducted from 1965 – 1991, showing that they have historically been present in Iowa (Bowles et al. 2009). In a 2005-2006 capture study conducted at 45 barns and two corn cribs with known bat activity in south-central Iowa (including eight structures in Mahaska County where the Prairie Project is located), LBBAs were captured in about half of all structures. LBBA groupings consisted of fewer than 50 individual LBBA in over 90% of the structures where they were captured; the largest LBBA grouping captured was 151 bats. The authors described barns as a moderately used resource for LBBA in south-central Iowa (Benedict et al. 2017). The IDNR's 2016 – 2018 acoustic data currently represent the best information regarding LBBA occurrence in Iowa, and these show that LBBA presence is likely across most of the Permit Area (Matteson and Murray 2019).

LBBAs have been documented hibernating in caves in Iowa and Minnesota, with records from the following counties in northeastern Iowa: Clayton, Delaware, Fayette, Floyd, Jackson, Jones, and Winneshiek (Dixon 2010). This species likely also uses caves in other locations in Iowa that that have not been studied (Dixon 2011).

The size of the LBBA population in Iowa and in southern Minnesota is unknown. To provide a coarse estimate of the statewide LBBA population size, MidAmerican conducted a desktop assessment as part of the MidAmerican HCP (MidAmerican 2019). This assessment estimated approximately 295,000 LBBAs in Iowa (range 118,496–470,709). However, this population size is likely an overestimate of the current LBBA population, due to the increased prevalence of WNS in both Iowa and Minnesota. In 2022, the USFWS estimated the pre-WNS Iowa population of LBBAs at 127,000 (USFWS 2022c), and a post-WNS state-wide population of 17,780 LBBAs (assuming an 86% decline; Cheng et al. 2021, USFWS 2022c). While the LBBA Species Status Assessment is not yet publicly available, the USFWS derived a probable population decline of 57% for LBBA in Iowa and southern Minnesota since 2016 (Schorg, USFWS, pers. comm., July 8, 2021, Cheng et al. 2021, USFWS 2022c). Post-WNS populations of LBBA in Iowa and southern Minnesota are likely somewhere between 17,780 (USFWS 2022c) and 126,680 (assuming a 57% decline from the MidAmerican estimate).

3.5.2 Occurrence in the Permit Area

All of the Projects are within the LBBA range. Most of the Projects contain relatively small, isolated blocks of potential tree-roosting habitat (Section 3.1; Appendix A). Because LBBAs are not listed in Iowa, they are not tracked through the IDNR Natural Areas Inventory database (IDNR 2022). LBBAs are a species of species concern in Minnesota, but have not yet been documented to occur in Freeborn County in Minnesota, where the Bent Tree Project is located (MNDNR 2022a). In Minnesota, the closest known hibernacula for LBBAs are located in Fillmore County, Minnesota (two counties east of Freeborn County; Schorg, USFWS, pers. comm. January 11, 2024). LBBAs were recorded in Poweshiek County near Lake Cimmaron (three mi northwest of English Farms) as recently as 2013 (Schorg, USFWS pers. comm. February 13, 2023). In Iowa, the nearest known LBBA hibernacula are located approximately 38 mi (61 km) to the northeast of the Franklin County, Whispering Willow East, and Whispering Willow North Projects in north-central Floyd County (Dixon 2010, 2011).

Summer acoustic surveys were conducted at six of the nine Alliant Projects (Table 3.2). From the data collected at the six projects where surveys were conducted, LBBA calls were recorded at Kossuth and Upland Prairie (Table 3.2). Surveys at English Farms, Golden Plains, and Whispering Willow North did not specifically record LBBA calls during surveys; however, high-frequency bat passes were recorded during surveys that were not confirmed as NLEB or INBA; therefore, summer presence of LBBA at these projects is likely (Table 3.2). High frequency bat passes recorded at Richland were qualitatively reviewed to identify *Myotis* species, and determined that no little brown bat calls were recorded during the acoustic surveys (Table 3.2).

During standardized PCM searches at the Alliant Projects, 1,200 bat fatalities representing eight bat species were recorded; only three LBBA fatalities were found (two found at Golden Plains on July 31, 2020 and one found at English Farms on September 5, 2021; Table 3.3).

3.6 Tricolored Bat

The TRBA exhibits strong fidelity to hibernacula and summer roost sites (LaVal and LaVal 1980, Veilleux and Veilleux 2004). Because the TRBA hibernates longer than most bats, fall migration and swarming is earlier and spring migration occurs later than in other species (LaVal and LaVal 1980). Mating among TRBAs occurs in fall and again in spring (Fujita and Kunz 1984). The TRBA hibernates in caves, mines, and other manmade structures, often in association with other species, such as INBA, NLEB, and LBBA (Fujita and Kunz 1984). Most TRBA roost in trees in summer and rarely occur in buildings, although TRBAs have been documented roosting in buildings in the summer (Harvey et al. 2011). Females generally give birth to a pair of pups and gather in maternity colonies in summer while males appear to roost singly (Fujita and Kunz 1984).

Over 700 fatalities of TRBAs have been publicly documented at wind energy facilities, to date, occurring primarily during late summer and fall (WEST 2021), indicating some risk of collision with wind turbines. Similar to LBBA, due to population reductions due to WNS and documented population declines at hibernacula, the USFWS reviewed a June 2016 petition to list the TRBA under the ESA (CBD and Defenders of Wildlife 2016). On September 14, 2022, the USFWS

published a proposed rule to list the TRBA as an endangered species, with the public comment period closing on November 14, 2022 (87 FR 56381 [2022]).

3.6.1 Status and Distribution

3.6.1.1 Rangewide

The TRBA occurs throughout most of eastern North and Central America and in parts of the Midwestern US (Fujita and Kunz 1984). Four major threats causing population declines were identified by the USFWS in the most recent and comprehensive status assessment for the species: WNS, wind-related mortality, habitat loss, and climate change (USFWS 2021b). Current TRBA population status based on past declines indicate rangewide winter abundance has declined by 52% and the number of extant winter colonies has declined by 29%, with a shift towards smaller colony size (USFWS 2021b). While TRBA winter abundance has declined rangewide, the extent of this decline varies spatially, ranging from 24–89% declines (see Sections 3.6.1.2 and 3.6.1.3, below; USFWS 2021b). TRBA occurrence and abundance has also declined rangewide based on summer data, with rangewide TRBA summer occupancy declining 28% from 2010 – 2019 (USFWS 2021b). Acoustic detections for the species and summer mist-net captures have declines 53% and 12%, respectively, compared to pre-WNS rates (USFWS 2021b). Based on available data, TRBA populations will continue to decline rangewide, with rangewide abundance projected to decline by 89%, the number of winter colonies projected to decline by 91%, and a projected 65% spatial extent decline by 2030 (USFWS 2021b). The best available data regarding current abundance estimates approximately 50,000 TRBAs rangewide (see Figure 5.2 in USFWS 2021b).

3.6.1.2 Northern Representation Unit

The Permit Area and Plan Area fall within the TRBA Northern RPU, which historically contained approximately 58% of winter hibernacula and 66% of the total TRBA abundance (USFWS 2021b). Abundance has declined by 57% and the number of winter colonies has declined by 24% within the Northern RPU (USFWS 2021b). The Northern RPU still accounts for a large proportion of the total rangewide abundance, with the best available data regarding current abundance estimating approximately 33,000 TRBAs within the Northern RPU (see Figure 5.4 in USFWS 2021b).

3.6.1.3 Iowa and Southern Minnesota

Iowa and Minnesota are both at the western edge of the species' range (Figure 3.1). The IDNR's 2016 – 2018 acoustic data currently represent the best information regarding TRBA occurrence in Iowa, and these show that TRBA presence is likely across most of the Permit Area (Matteson and Murray 2019). Iowa Grotto (a non-profit organization dedicated to the exploration, preservation, and study of Iowa caves) has documented hibernacula in Iowa. Their findings suggest TRBA hibernacula are most common along the Mississippi River corridor in areas where karst geology is present (Figure 3.4), specifically Clayton, Dubuque, Fayette, Floyd, Jackson, Jones, and Winneshiek counties in Iowa, where 38 caves containing hibernating bats were documented (Dixon 2010). TRBAs likely use caves in other locations in Iowa and Minnesota that have not been studied (Dixon 2011).

The TRBA population in Iowa and southern Minnesota is unknown, and was not specifically assessed as part of the most recent and comprehensive status assessment for the species (USFWS 2021b). However, a desktop assessment conducted as part of the MidAmerican HCP (MidAmerican 2019) estimated approximately 161,731 TRBAs in Iowa (range 10,311–294,603). However, this population size is likely an overestimate of the current TRBA population, due to being calculated prior to the onset of WNS in both Iowa and Minnesota. While state-specific population trajectories were not assessed as part of the 2021 TRBA Species Status Assessment, the USFWS derived a probable population decline of 50% for TRBA in Iowa and southern Minnesota since 2016 (Schorg, USFWS, pers. comm., July 8, 2021, Cheng et al. 2021, USFWS 2022c), indicating that the TRBA is currently less widespread and abundant within the Plan Area. Taking both the 50% decline estimated for Iowa and southern Minnesota and the 57% decline in abundance estimated for the Northern RPU and applying it to the MidAmerican population size estimate, the number of TRBAs in Iowa could range from 4,434–147,302 and is likely closer to the lower end of this estimated range based on the current rangewide abundance of 50,000 TRBAs (USFWS 2021b).

3.6.2 Occurrence in the Permit Area

All of the Projects are within the TRBA range. Most of the Projects contain relatively small, isolated blocks of potential tree-roosting habitat (Section 3.1; Appendix A). Because TRBAs are not listed in Iowa, they are not tracked through the IDNR Natural Areas Inventory database (IDNR 2022). TRBAs are a species of concern in Minnesota, but have not yet been documented to occur in Freeborn County in Minnesota, where the Bent Tree Project is located (MNDNR 2022b). TRBAs were recorded in Poweshiek County near Lake Cimmaron (three mi northwest of English Farms) as recently as 2013 (Schorg, USFWS pers. comm. February 13, 2023). In Minnesota, the closest known hibernacula for TRBAs are located in Fillmore County, Minnesota (two counties east of Freeborn County; Schorg, USFWS, pers. comm. January 11, 2024). In Iowa, the nearest known TRBA hibernacula are located approximately 38 mi to the northeast of the Franklin County, Whispering Willow East, and Whispering Willow North Projects in north-central Floyd County (Dixon 2010, 2011).

Summer acoustic surveys were conducted at six of the nine Alliant Projects (Table 3.2). From the data collected at the six projects where surveys were conducted, TRBA calls were recorded at Kossuth, Richland, and Upland Prairie (Table 3.2). Surveys at English Farms, Golden Plains, and Whispering Willow North did not specifically record TRBA calls during surveys; however, high-frequency bat passes were recorded during surveys that were not confirmed as NLEB or INBA; therefore, summer presence of TRBA at these projects is likely (Table 3.2).

During standardized PCM searches at the Alliant Projects, 1,200 bat fatalities representing eight bat species were recorded; only four TRBA fatalities have been found, all at English Farms (one during the second year of PCM surveys on August 23, 2020 and three during the third year of PCM surveys on August 20, September 6, and September 12, 2021; Table 3.3).

3.7 Summary of Covered Species Occurrence in the Permit Area

The Covered Species may migrate through any of the Alliant Projects within the species' ranges during the spring and fall migrations (Figure 3.1), and may occur at the Projects within the species' ranges during the summer maternity season (particularly LBBA and TRBA, Table 3.2). The Covered Species are not expected at any of the Projects during fall swarming and staging or during the winter hibernation season. These conclusions are based on the biology of the Covered Species and the location of the Projects relative to resources for the Covered Species on the landscape as described in the preceding sections and in the MidAmerican HCP. Additionally, these conclusions are supported by Project-specific acoustic surveys conducted in the summer and PCM surveys conducted during the fall migration season.

As stated above, Alliant leveraged the existing data gathered for the MidAmerican HCP as much as applicable, in addition to the Alliant Project-specific data outlined above. PCM data summarized in the MidAmerican HCP indicated that the highest risk period, for both the Covered Species as well as all bat species, was from July 15 through September 30 (MidAmerican 2019). The data gathered both pre- and post-construction for the Alliant Project confirms that the general seasonal occurrence and risk patterns documented at the MidAmerican projects is applicable for the Alliant Projects and this HCP.

4.0 IMPACT ASSESSMENT

This chapter describes potential direct and indirect effects of the Covered Activities and quantifies anticipated take that may arise from those effects. The ESA Section 7 implementing regulations (50 CFR § 402.02 [1986]) define "effects" as those direct and indirect effects of an action on the Covered Species (or its critical habitat), together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline. The USFWS also recommends that the potential direct and indirect effects of a project that are not expected to result in take provide context for the take assessment and assist the USFWS in expediting and satisfying the requirements of the ESA Section 7 process.

4.1 Direct and Indirect Effects Not Expected to Result in Take

4.1.1 Direct Effects

Direct effects are the results of a proposed action that occur at the same time as the action. For the purposes of an HCP, direct effects are an immediate consequence of the Covered Activities.

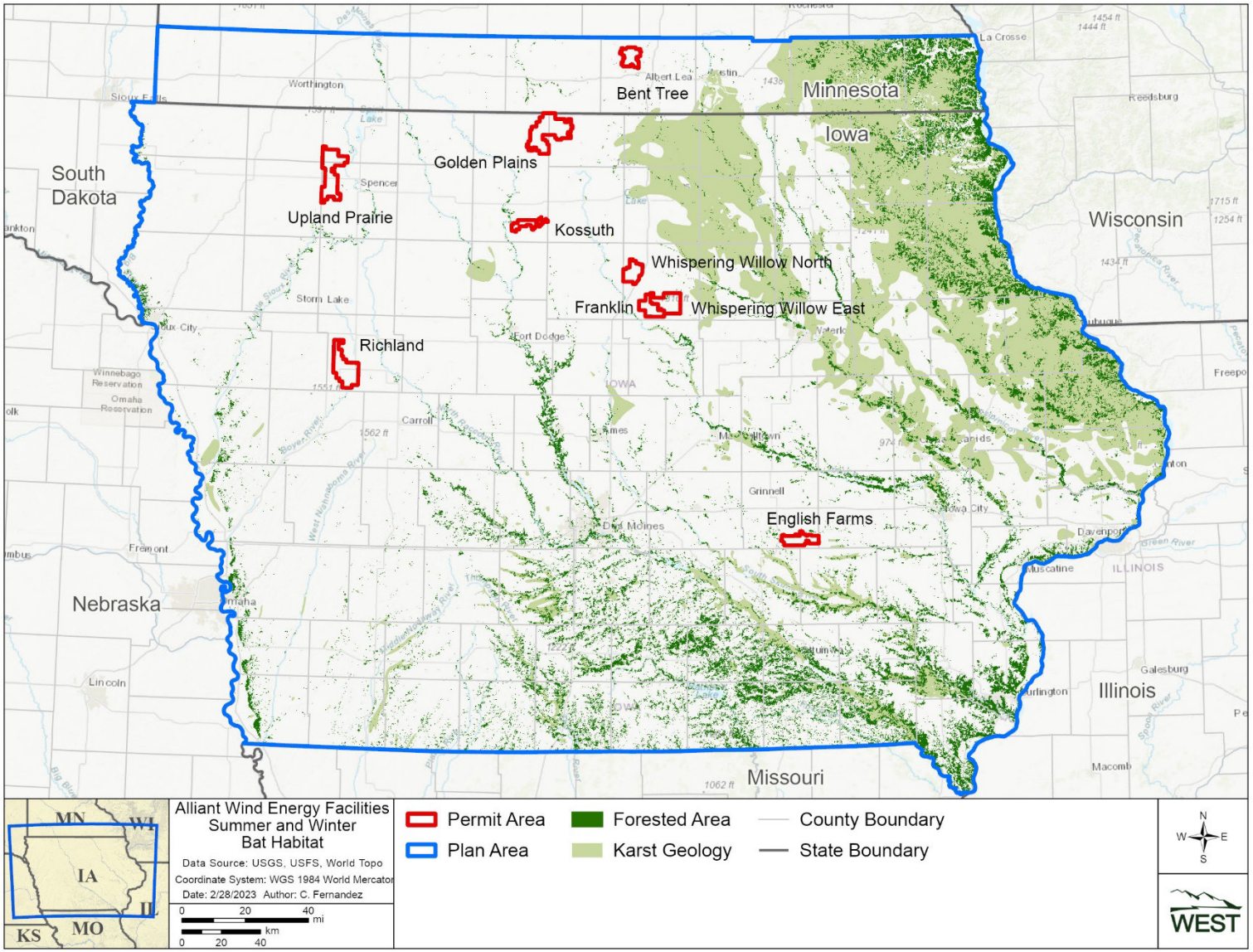

Figure 3.4. Forested areas and karst geology with the potential to form caves, representing potential summer roosting and foraging habitat and winter hibernacula, respectively, for the Covered Species.

Table 3.2. Results of summer acoustic surveys for the Covered Species at the Alliant Projects.

			Probable Presence in Summer?				
Project	**County (State)**	**Survey Year**	**INBA**	**NLEB**	**LBBA**	**TRBA**	**Citation**
Bent Tree	Freeborn (MN)	N/A	Outside range	N/A	N/A	N/A	N/A
English Farms	Poweshiek (IA)	2012, 2013, 2014	No	No	Likely*	Likely*	Ecology and Environment, Inc. 2016, WEST 2018
Franklin County	Franklin (IA)	N/A	Outside range	N/A	N/A	N/A	N/A
Golden Plains	Kossuth, Winnebago (IA)	2018	Outside range	No	Likely*	Likely*	Solick et al. 2019
Kossuth	Kossuth (IA)	2018	Outside range	Yes	Yes	Yes	Burns & McDonnell 2018a
Richland	Sac (IA)	2016, 2018	Outside range	No	No	Yes	Stantec 2018, Burns & McDonnell 2018b
Upland Prairie	Clay, Dickinson (IA)	2017	Outside range	No	Yes	Yes	WEST 2017
Whispering Willow East	Franklin (IA)	N/A	Outside range	N/A	N/A	N/A	N/A
Whispering Willow North	Franklin (IA)	2017	Outside range	No	Likely*	Likely*	Burns & McDonnell 2017

N/A = no surveys conducted; project developed prior to the *Land-Based Wind Energy Guidelines* (USFWS 2012c) and associated survey recommendations.

* Surveys at English Farms, Golden Plains, and Whispering Willow North did not specifically record LBBA or TRBA during surveys; however, bat passes within their call frequency (high frequency) category were recorded; therefore, summer presence of LBBA and TRBA at these projects is likely.

INBA = Indiana bat; NLEB = northern long-eared bat; LBBA = little brown bat; TRBA = tricolored bat.

WEST = Western EcoSystems Technology, Inc.; Burns & McDonnell = Burns & McDonnell Engineering Company, Inc.; Stantec = Stantec Consulting Services Inc.

Table 3.3. Results of post-construction monitoring surveys for the Covered Species at the Alliant Projects.

Project	County (State)	Survey Dates	Number of Fatalities				Citation
			INBA	NLEB	LBBA	TRBA	
Bent Tree	Freeborn (MN)	July 1 – October 16, 2020	Outside range	0	0	0	Pickle and O'Neil 2021a
English Farms	Poweshiek (IA)	August 1 – October 15, 2019 August 5 – October 16, 2020 August 1 – October 17, 2021 August 1 – October 15, 2022 August 1 – October 13, 2023	1	0	1	4	Burns & McDonnell 2020a, 2020b, 2021, 2022, 2023
Franklin County	Franklin (IA)	April 13 – October 16, 2020	Outside range	0	0	0	Pickle et al. 2021a
Golden Plains	Kossuth, Winnebago (IA)	July 1 – October 16, 2020	Outside range	0	2	0	Pickle et al. 2021b
Kossuth	Kossuth (IA)	July 1 – October 14, 2021	Outside range	0	0	0	Voth et al. 2022a
Richland	Sac (IA)	July 2 – October 14, 2021	Outside range	0	0	0	Voth et al. 2022b
Upland Prairie	Clay, Dickinson (IA)	July 1 – October 16, 2020	Outside range	0	0	0	Pickle et al. 2021c
Whispering Willow East	Franklin (IA)	April 13 – October 16, 2020	Outside range	0	0	0	Pickle and O'Neil 2021b
Whispering Willow North	Franklin (IA)	July 1 – October 16, 2020	Outside range	0	0	0	Pickle et al. 2021d

INBA = Indiana bat; NLEB = norther long-eared bat; LBBA = little brown bat; TRBA = tricolored bat.

Burns & McDonnell = Burns & McDonnell Engineering Company, Inc.

4.1.1.1 Maintenance

Maintenance activities conducted at the Projects such as turbine maintenance, road grading, O&M facility repair and upkeep, grounds upkeep, and SCADA upgrades, are not expected to lead to impacts that result in take of the Covered Species. Maintenance of turbines involves periodic activities typically conducted inside turbines or the O&M building. Occasionally, a crane may be required to access the rotors or nacelles for maintenance activities. Turbines are shut down for maintenance activities and, therefore, do not present a hazard to bats. Routine maintenance activities do not generate excessive noise and are conducted during daylight hours, a time when the Covered Bat Species are typically not active.

It is unlikely that tree removal will be necessary for regular maintenance activities, given the location of the Project infrastructure away from trees and the low amounts of forest cover in the Projects. Emergency tree removal of hazard trees that pose an imminent risk to human life and property may be conducted as needed. Alliant will notify the USFWS in advance of emergency tree removal activities if such removal has the potential to impact the Covered Species (e.g., if the tree is a potential roost tree). If such impacts are foreseeable, Alliant will notify USFWS and, if appropriate, have a qualified biologist conduct an emergence survey at the tree(s) requiring removal following the USFWS' Emergence Survey Protocol (Appendix E of USFWS 2020a).

4.1.1.2 Decommissioning

Each of the Projects may be decommissioned at the end of its operational life. This may occur sooner than the end of the Permit term, depending on when a Project was built, and whether it will be repowered or refurbished. The decommissioning process will include the dismantlement and removal of Project facilities from the site. Decommissioning activities occur during daylight hours and would not create hazards for active bats. During the decommissioning process, turbines would be locked to prevent blades from spinning, which would avoid the potential for collision. It is unlikely that tree removal will be necessary for decommissioning activities; however, if there is any tree removal necessary for decommissioning to be completed during the protective timeframes for any Covered Species, the same procedures will be followed as described above (Section 4.1.1.1) for maintenance. Decommissioning of the Project is, therefore, not expected to cause direct or indirect effects that would result in take of Covered Species.

4.1.1.3 Operation

In addition to other direct effects that may result in take (discussed in Section 4.2 and Section 4.3), operation of the Projects has the potential to result in effects to migrating or foraging individuals of the Covered Species if bats are forced to take an alternate route to avoid a wind energy facility (i.e., displacement). However, empirical data indicate bats are not being displaced by wind energy facilities due to the presence of bat fatalities found under turbines and through direct observations. By observing bat flight activity using thermal infrared cameras at wind energy facilities, researchers have documented bats flying and foraging in close proximity to wind turbines and even investigating spinning turbine blades (Ahlén 2003, Horn et al. 2008). Acoustic bat and mist-netting studies conducted as part of the MidAmerican HCP development indicated that bats can be present even when turbines are operating nearby (WEST 2016, MidAmerican 2019). These

minimal displacement effects are not expected to result in impacts rising to the level of take of any of the Covered Species.

4.1.1.4 Mitigation

Implementation of the HCP will include measures to mitigate for the impacts of the take (see Section 5.3). Because the mitigation measures are intended to provide conservation benefits to the Covered Species and other wildlife, they are not expected to result in effects that would lead to take, and are expected to result in beneficial effects to the Covered Species.

4.1.2 Indirect Effects

Implementing regulations of the ESA (50 CFR § 402.02) define indirect effects to be those that are caused by the proposed action, but are reasonably certain to occur at a later date.

4.1.2.1 Maintenance, Operation, and Decommissioning

Maintenance and decommissioning activities are not expected to result in indirect effects that would occur later in time. It is unlikely that tree removal will occur during regular maintenance operation, or decommissioning activities, given the location of Project infrastructure away from trees and the relatively low amounts of forest cover in the Projects; therefore, these activities are unlikely to result in indirect effects through loss of habitat. If trees need to be removed during the Permit term, procedures will be followed as described above for maintenance (Section 4.1.1.1).

4.1.2.2 Refurbishing Turbines

Refurbishment of the Bent Tree, Franklin County, and Whispering Willow East turbines (see Sections 2.2.2, 3.1.1, 3.1.3, and 3.1.8) is not expected to result in indirect effects to the bat species, including the Covered Species. For these 3 wind farms, refurbishing consists of like-for-like replacement of certain components of the existing turbines and does not require any additional land conversion or tree removal. Direct impacts to the Covered Species from operation of the refurbished turbines are discussed in Section 4.2 and Section 4.3.

4.1.2.3 Mitigation

Implementation of the HCP will include measures to mitigate the impacts of the take. Indirect effects from the mitigation, those reasonably expected to occur but later in time, for example, increases in survival and elimination of future threats, are expected to be beneficial effects as the mitigation projects become established on the landscape and provide conservation benefits to the Covered Species and other wildlife.

4.2 Take of Covered Bat Species

4.2.1 Development of Take Predictions

Operation of the turbines is the only activity occurring at the Projects that may result in take of the Covered Species. The Informed Evidence of Absence (IEoA) approach was used to calculate take predictions for the Covered Species due to turbine collisions. IEoA is an “informed” variation of the Evidence of Absence (EoA) approach, which is both a statistical framework and a software package developed by the USGS to estimate the occurrence of rare events (Dalthorp and

Huso 2015, Huso et al. 2015, Dalthorp et al. 2017). EoA uses project-specific monitoring data (specifically carcass counts and the probability of detection) to estimate the likely take of Covered Species for a project or fleet. IEoA uses species-specific data to inform the fatality prior distribution within the EoA model to incorporate more data into the take predictions.

For the Alliant take predictions, PCM data collected in 2015 and 2016 for the MidAmerican HCP was used to inform the IEoA model priors. Alliant-specific carcass counts and the probability of detection from the PCM data collected at the Alliant facilities in 2020 and 2021[8] (see Appendix D) were used as the IEoA model inputs. However, while the MidAmerican fleet was operating under no curtailment regime in 2015-2016 (i.e., freewheeling), the Alliant fleet was curtailing by feathering the turbines under manufacturer's cut-in speeds in 2020 and 2021. Additionally, WNS effects likely were not fully realized in Iowa in 2015-2016, as bats with WNS were first confirmed in Iowa the previous year, and bats infected with WNS were not confirmed in Minnesota until 2017-2018 (White-Nose Syndrome.org 2022). Therefore, the PCM data for the two fleets was not collected under the same operational or environmental conditions. Through coordination with the USFWS, Alliant adjusted the IEoA model priors to account for these discrepancies. A more detailed methodology for the take prediction analysis is available in Appendix B.

4.2.1.1 Incorporating Differences in Operational Regimes between MidAmerican and Alliant Baseline Data

Bat mortality resulting from turbine collision is inversely related to wind speed (e.g., Arnett et al. 2008, Horn et al. 2008). Curtailing or feathering turbines at night during periods of low wind substantially reduces bat mortality (Appendix C). Feathering turbine blades and raising the typical cut-in speed of 3.0–3.5 m/s (9.8–11.5 ft/s) to 4.0 m/s (13.1 ft/s) generally results in at least a 35% reduction in bat mortality (Appendix C). Feathering turbine blades with a raised cut-in speed of 5.0 m/s can result in up to an 80% reduction in bat mortality, but generally results in at least a 50% reduction (Arnett et al. 2011; Appendix C). While further increases in cut-in speed result in greater protections for bats, in some cases fatality rates at higher cut-in speeds are statistically indistinguishable from those at 5.0 m/s (Appendix C).

As stated above, the MidAmerican fleet was freewheeling in 2015-2016 while the Alliant fleet was feathering turbines under manufacturer's cut-in speeds (3.0–3.5 m/s from May 1 through October 15) in 2020-2021. Alliant estimates that incidental take of the Covered Species was likely reduced by up to approximately 35% in 2020-2021 due to this operational regime, based on available curtailment studies (Appendix C). Therefore, Alliant scaled down the MidAmerican priors being used to inform the take prediction analysis for the Alliant fleet by 35% to account for

[8] Monitoring occurred at seven Alliant wind facilities in 2020: Bent Tree, Franklin County, Golden Plains, Upland Prairie, Whispering Willow North, Whispering Willow East, and English Farms, and at two Alliant wind facilities in 2021: Kossuth and Richland. Data from these PCM studies were used to develop inputs for the take prediction analysis. In 2020 and 2021, all turbines were operated with feathering up to manufacturer's cut-in speeds at all facilities except for English Farms, at which a concurrent curtailment research study was being conducted. In 2020, approximately two-thirds of the English Farms turbines were operating under experimental curtailment regimes; therefore, to use comparable data from the normally operating turbines at the other eight Alliant projects with PCM data, only the data from the turbines feathering under manufacturer's cut-in speeds at English Farms was used for take predictions. In 2021, all of the English Farms turbines were operating under experimental curtailment regimes. Therefore, none of the 2021 English Farms PCM data was used to inform the take predictions.

the discrepancy in operational regimes between the two datasets. While Alliant is proposing to raise cut-in speeds above manufacturer's levels for several projects and widen the curtailment window compared to pre-permit operations under the proposed HCP minimization regime (see Section 5.2.2), it was determined through coordination with the USFWS that no further reduction beyond 35% would be applied to the priors to maintain conservative authorized take levels (see Section 4.2.1.3 for additional discussion).

4.2.1.2 Incorporating Probable Population Declines due to White-nose Syndrome

In addition to the operational discrepancies between the MidAmerican and Alliant datasets, the environmental conditions also differed between the MidAmerican PCM conducted in 2015-2016 and the Alliant PCM conducted in 2020-2021 due to WNS spread across Iowa and southern Minnesota. As stated above, WNS effects were likely not yet being realized in Iowa in 2015-2016, whereas in 2020-2021, WNS had likely negatively impacted bat populations in Iowa. As a result, it is very likely that fewer Covered Species occur on the landscape than when the MidAmerican data was collected in 2015-2016. Based on coordination with the USFWS, Alliant assumed the following probable population declines for the Covered Species in Iowa and southern Minnesota between 2015-2016 and 2020-2021 (Schorg, USFWS, pers. comm., July 8, 2021[9]; Cheng et al. 2021, USFWS 2019a, 2022c).

- INBA: 8% estimated population decline (estimated decline of the winter INBA colony within the Sodalis Nature Preserve; USFWS 2019a)
- NLEB: 50–90% estimated population decline
- LBBA: 57% estimated population decline
- TRBA: 50% estimated population decline

These estimated population declines are particularly relevant for LBBA and TRBA, whose populations were apparently relatively stable in Iowa in 2015-2016, due to WNS effects not being fully realized for these species at this time (see Sections 3.2 and 4.2.1). For context, 73 LBBA fatalities and 46 TRBA fatalities were found at the MidAmerican projects in 2015-2016, whereas only three LBBA fatalities (two found at Golden Plains and one found at English Farms) and four TRBA fatalities (all found at English Farms) were found at the Alliant Projects in 2020 and 2021. It should be noted that more turbines were searched across the MidAmerican projects than Alliant, the MidAmerican projects were freewheeling while the Alliant fleet was curtailing turbines under manufacturer's cut-in speeds (3.0–3.5 m/s), and search effort and methodologies were not the same. However, a qualitative comparison (applying basic turbine scaling and the estimated 35% reduction to account for the discrepancies in the number of turbines and the operational regimes between the MidAmerican and Alliant fleets) shows that only a sixth of LBBA fatalities and a third of TRBA fatalities were observed at the Alliant Projects compared to what would be expected if

[9] While the estimated population declines for NLEB, LBBA, and TRBA were obtained via pers. comm. with the USFWS, these estimates were inferred from preliminary broad-scale population modeling that was being conducted in support of the USFWS's species status review efforts at the time of take prediction development. They also represent the best available information at the time. Additionally, while the 2021 TRBA SSA and the 2022 NLEB SSA provide population decline estimates for the various RPUs, the SSAs do not provide state-specific population decline estimates.

no population declines had occurred. Similarly, between 2020 and 2021, only one LBBA fatality and six TRBA fatalities have been found across the MidAmerican fleet as part of their HCP compliance monitoring (Schorg, USFWS, pers. comm., February 18, 2023). This provides some empirical support for the biological assumption that having fewer of the species on the landscape would lead to a corresponding approximate reduction of collision risk. Therefore, Alliant scaled down the MidAmerican priors for LBBA by 57% and for TRBA by 50% to account for the effects of WNS, in addition to the 35% reduction that was applied to the priors across the Covered Species to account for the operational discrepancies.

Based on coordination with the USFWS, the 8% estimated population decline for INBA is not likely substantial enough to change the risk profile for this species. Therefore, no additional adjustment was made to the MidAmerican priors for INBA. The estimated population decline for NLEB due to WNS was between 50% and 90%. While this is a substantial population decline, NLEBs have rarely been found as fatalities at wind facilities, even prior to the introduction of WNS. For example, no NLEB fatalities were found at the MidAmerican facilities in 2015-2016, no NLEB fatalities were found at the Alliant facilities in 2020 or 2021, the total number of NLEB fatalities found in Iowa is low (the most recent and only NLEB fatalities reported to the USFWS in Iowa were found in August of 2013 [Chodachek et al. 2014, USFWS 2023d]), and no NLEB fatalities are known to have been found at any wind facilities in Minnesota (WEST 2021, USFWS 2023d). Therefore, the biological assumption that is supported by empirical data for LBBA and TRBA—namely, that having fewer species on the landscape would correspond with a reduction in collision risk—does not necessarily hold true for NLEB. Therefore, no additional adjustment was made to the MidAmerican priors for NLEB.

4.2.1.3 Requested (Authorized) Take

Based on uncertainty surrounding the take predictions, it is important when establishing requests for ITPs to use take rates that are high enough so the actual take is not underestimated, while also not overestimating take. For the Alliant HCP, the requested or authorized take is the most conservative take level, while still accounting for the operational regime and the effects of WNS. The authorized take is the take prediction at the 95th quantile of the IEoA take prediction distribution for each of the Covered Species (Table 4.1).

As noted in Section 4.2.1.1, Alliant will implement the proposed minimization regime outlined in Section 5.2.2 as part of the HCP. The minimization regime was developed based on information provided in the MidAmerican HCP and the project-specific studies conducted for the Alliant Projects. These data enabled Alliant to divide each of the nine covered facilities into one of three categories (higher risk, moderate risk, and typical risk; similar to the MidAmerican HCP [2019] minimization regime) to focus its operational minimization on Projects where impacts to Covered Species are most likely to occur (see Section 5.2.2). Under the proposed minimization regime, cut-in speeds will be raised above manufacturer's levels for several projects and the curtailment window will be widened compared to pre-permit operations (see Section 5.2.2). While Covered Species take may be reduced beyond 35% at some of the Alliant Projects due to additional minimization (e.g., English Farms will feather below 5.0 m/s during the highest risk period [July 15 – September 30] under the proposed minimization regime), because the majority of the Alliant

Projects will still be feathering up to manufacturer's cut-in speeds for most of the bat active season, it is difficult to quantify the additional minimization benefit. Therefore, based on coordination with the USFWS, no further reduction beyond 35% was applied to the priors as part of take prediction development. This approach takes the HCP minimization regime into account while maintaining conservative authorized take levels (see Section 5.2.2 for additional details about the minimization regime under this HCP).

Alliant will implement the HCP, including upfront mitigation, to cover the authorized take levels at the 95th quantile for all the Covered Species, with the exception of TRBA which will require mitigation true-up assessments (see Section 5.3.4). Annual mortality can be expected to vary from year to year due to natural fluctuations in factors such as abundance, weather and seasonal patterns, and variables that may influence exposure to turbines such as prey availability and weather variables. Alliant's adaptive management protocol, described in Section 5.5, identifies triggers and responses to provide opportunities for early intervention if take levels are higher than anticipated. Alliant will monitor the amount of take annually through the ITP compliance monitoring and, if adaptive management thresholds are exceeded, Alliant will implement changes in the monitoring regime or operational minimization measures to ensure that take is reduced in future years and the overall Permit limit is not exceeded (see Chapter 5.0 for adaptive management protocols).

Table 4.1. Summary Authorized Covered Species Take Predictions.

	Indiana Bat	Northern Long-eared Bat	Little Brown Bat	Tricolored Bat
Annual Authorized Take (95th quantile)	4.1	8.2	117.9	84.0
Authorized Take Over 30-Year Permit	123	246	3,536	2,520

4.3 Impacts of the Take

4.3.1 Impact Assessment Model – Resource Equivalency Analysis Framework

Seeking a common framework for comparing resources lost through wind energy activities with resources gained through compensatory mitigation, the USFWS Region 3 has developed a "resource equivalency analysis" (REA) model for INBAs (USFWS 2016e), NLEBs (USFWS 2016g), and LBBAs (USFWS 2016f). The REA model (version 1) for TRBAs was recently developed and provided to Alliant in December of 2022 (USFWS 2022b).

The REA models are generally comprised of two parts: a species-specific demographic model that reflects the best scientific understanding of that species' biology, and a resource equivalency model to calculate the amount of mitigation (credit) needed to offset the projected loss in reproductive potential (debit). The demographic models, which are predefined for the user, are used to calculate losses in reproductive potential from project impacts. The user provides information on permit duration, authorized take, and the direction of population trends to calculate the amount of mitigation (in the form of habitat protection or restoration) required to offset those impacts. The REA models are designed to evaluate the level and types of mitigation appropriate to compensate for the direct take of bats from wind energy projects. It is not constructed to analyze population-level impacts. At this time, mitigation options include winter habitat (hibernacula)

protection, summer habitat protection, summer habitat restoration, and open foraging habitat (for TRBAs only). This approach currently represents the only USFWS-approved tool for quantifying INBA, NLEB, and LBBA mitigation debits and credits. For TRBAs, using the REA model is a USFWS-approved tool for quantifying mitigation debits and credits; however, use of the TRBA REA is not mandated by the USFWS and alternative mitigation approaches may be appropriate in some cases (Schorg, USFWS, pers. comm., December 16, 2022).

4.3.2 Impacts of Taking of Indiana Bats

Alliant is requesting take of up to 123 INBAs over the 30-year life of the permit, based on an annual take of 4.1 INBAs (Table 4.1). The impacts of taking of INBAs are qualitatively informed by the following:

- One Alliant Project, English Farms, is within the range of the INBA in Iowa and the OCRU, totaling 69 turbines.
- All 69 turbines at English Farms will be curtailed up to 5.0 m/s (using either blanket curtailment or a smart curtailment strategy) from July 15 – September 30 (see Section 5.2.2).
- Based on acoustic analysis, INBA are likely absent from the Project during the summer (see Sections 3.3 and 3.7). Forested habitat at each of the Alliant Projects is scarce, and turbines were sited away from potential summer habitat (see Section 3.1 and Appendix A); therefore, risk to INBA is likely limited to the fall migration season and summer risk is low.
- One INBA fatality was found at the English Farms Project in September during the 2020 monitoring studies at a control turbine that was feathering up to manufacturer's cut-in speed of 3.0 m/s; no INBA fatalities were found at English Farms in 2019, 2021 or 2022.
- Sixty-five INBA fatalities have been found range-wide at wind facilities to date, primarily during the fall migration period (Pruitt and Reed 2022; WEST 2021; Schorg, USFWS, pers. comm., December 27, 2023).
- The range of the INBA in Iowa is primarily in the southeastern third of the State, and English Farms is at the northwestern edge of the species range. The density of INBAs at the edges of its range is likely less than the density in the center of the species' range.

The geographic location of English Farms, the one Alliant Project within the INBA range, suggests INBAs migrating through the Permit Area in the spring and fall may be mostly females. Female INBAs disperse from hibernacula to join summer maternity colonies while male INBAs typically remain closer to hibernacula throughout the summer (Gardner and Cook 2002, Whitaker et al. 2002, USFWS 2007). All known INBA hibernacula are located either east (a historic hibernacula in Dubuque County, Iowa) or south (in west-central Illinois [Blackball Mine, INBA designated critical habitat] and northeast Missouri [Sodalis Nature Preserve, an INBA Priority 1 hibernacula]) of the Projects by close to 100 mi (USFWS 2007, 2019c). With the discovery of a Priority 1 hibernaculum in northeast Missouri, it is now thought that some of the INBAs summering in Iowa may migrate in a southeasterly direction to this hibernaculum (USFWS 2019c). Most of the female INBAs occupying summer habitat in and around the Projects are expected to be migrating to and from these locations in the spring and fall. Therefore, if collision

risk is generally equal for both sexes, INBA fatalities at English Farms are more likely to be females due to their greater likelihood of occurrence within the Permit Area during migration. Fatality data for INBAs suggest females and males are equally likely to be killed by turbines; ten of the 19 identifiable INBA fatalities documented to date have been females (ten females, nine males, and 15 unknown sex; Pruitt and Reed 2022).

However, based on the assumptions that female adult INBAs are more likely to occur at English Farms during the spring and fall migratory periods and that migrating juveniles occur at a 1:1 sex ratio, Alliant believes that a 3:1 ratio of female to male bats potentially taken is a reasonable assumption. Therefore, without distinguishing between adults and juveniles, approximately 75% of the INBAs that may be taken at English Farms are assumed to be females. This ratio is consistent with recommendations from the USFWS and is used in the following sections to quantify the impacts of the taking of INBAs.

4.3.2.1 Project-level Impacts

Given the permitted take level, up to 4.1 INBAs may be taken each year during the 30-year ITP term. Approximately 75% of the incidental take is expected to be attributed to females, which would result in an average annual take of 3.1 female INBAs (juvenile and adults). Using the USFWS' *Region 3 Indiana Bat Resource Equivalency Analysis Model for Wind Energy Projects* (2016e; Appendix E) and assuming a declining population, the total estimated lost reproductive capacity resulting from the take is 147 female INBA pups, resulting in a total estimated impact of 239 female INBAs (take of 92 female INBAs + lost reproduction of 147 female INBA pups = 239 total lost female INBAs) over the 30-year ITP term. Mitigation actions, therefore, will have a target increase of 239 INBAs to account for this lost reproductive capacity.

4.3.2.2 Population-level Impacts

Based on data from genetic, banding, and telemetry studies, Alliant anticipates that INBAs migrating through the Project areas belong to the OCRU population (USFWS 2007). Thus, Alliant evaluated the impacts of the taking as they pertain to the OCRU population and at the range-wide population level. Little information is available about the local or regional INBA population sizes. It is likely, with the presence of a Priority 1 hibernacula in northeast Missouri which houses over 167,000 INBAs in the winter (USFWS 2015d), and the much smaller hibernacula sizes for the other hibernacula in Iowa and northeast Missouri (all Priority 3 or 4 hibernacula [USFWS 2007]), that a large portion of the INBAs that would occupy the Permit Area in the summer could be from the Priority 1 hibernacula. This population was used as the regional population on which to assess the impacts of the taking.

The average annual loss of 4.1 INBAs represents much less than 1.0% of both the 2019 population of 276,317 INBAs in the OCRU (USFWS 2019a) and the 2015 population of 167,000 INBAs in the Priority 1 hibernacula (USFWS 2015a). Even if the OCRU population of INBAs was reduced by 80% as a result of WNS, the loss of 4.1 INBAs per year represents less than 0.1% of the WNS-reduced population of 55,263. The loss to the range-wide population would be less than 0.001%, based on the 2019 estimated population size of 537,297 INBAs (USFWS 2019a).

These losses represent small fractions of the regional, OCRU, and range-wide INBA populations. Given the expected minimal impact of anticipated take on overall population levels, and because mitigation actions are expected to fully offset the impacts of take, the expected take from the Covered Activities will not have a significant impact on populations of INBA at the current population levels.

4.3.3 Impacts of Taking of Northern Long-eared Bat

Alliant is requesting take of up to 246 NLEBs over the 30-year life of the permit, based on an annual take of 8.2 NLEBs. The impacts of taking of NLEBs are qualitatively informed by the following:

- The Alliant fleet will be curtailed across a range of 3.0–5.0 m/s from July 15 – September 30 (see Section 5.2.2).
- Based on acoustic analysis, NLEB are likely absent from the Alliant Projects during the summer; with the exception of Kossuth, where one NLEB call was confirmed (see Sections 3.4 and 3.7), suggesting overall low summer risk across the Alliant Projects. Forested habitat at each of the Alliant Projects is scarce, and turbines were sited away from potential summer habitat (see Section 3.1 and Appendix A); therefore, risk to NLEB is likely limited to the fall migration season and summer risk is low.
- No NLEB fatalities were found during the PCM studies at the Alliant Projects conducted from 2019 to 2022.
- PCM studies at wind energy projects throughout the species' range generally show that the risk to the NLEB is low. Only 56 NLEB fatalities have been publicly reported, no NLEB fatalities have been reported since 2015, the total number of NLEB fatalities found in Iowa is low (only two have been reported to the USFWS; Chodachek et al. 2014), and no NLEB fatalities are known to have been found at any wind facilities in Minnesota (WEST 2021).

It is currently unclear based on available scientific information if there are sex-related factors that might influence risk of turbine collision for bats. Prior to the onset of WNS, information on the sex of NLEB carcasses was not collected in most cases. Therefore, patterns related to sex of carcasses cannot be inferred from PCM data. As explained in Section 4.3.1, if unsexed bat carcasses were divided equally among the two sexes and added to bat carcasses of known sex, the ratio of females to males would be skewed toward males (39% females and 61% males). This result is similar to that reported in Pennsylvania for 16 wind energy facilities monitored from 2007 – 2011, where 2,820 bat carcasses were collected, of which 23% were cave-dwelling species including *Myotis* species (Taucher et al. 2012). For bats of all species (sex was not reported by species or species group), male bats were found more often than female bats (59% male: 29% female; 12% were of unknown sex). Similarly, Arnett et al. (2008) reviewed data from 21 fatality studies conducted from 1996 – 2006 at 19 wind facilities in five US regions and one Canadian province and found fatalities included more males for the four most commonly killed species (hoary bats [*Lasiurus cinereus*], eastern red bats [*L. borealis*], silver-haired bats [*Lasionycteris noctivagans*], and TRBA). However, the authors did not report on sex ratios of *Myotis* bats specifically, or for cave-dwelling bats as a group.

Although the locations of most NLEB hibernacula remain undocumented, caves and mines that could be used as hibernacula occur across most of the Plan Area (see Sections 3.4 and 3.7). The nearest documented NLEB hibernacula are located about 28 mi to the northwest of the English Farms Project in north-central Jasper County (USFWS 2016d) and about 26 mi southwest of the English Farms Project in southwest Mahaska County (Hurt 2017). While male bats are generally thought to remain closer to hibernacula than female bats, due to the potential for undocumented NLEB hibernacula to occur throughout the Plan Area and based on the species' widespread distribution, Alliant believes it is reasonable to assume that male and female NLEBs are equally likely to occur throughout the Permit Area. If collision risk is generally equal for both sexes, NLEB take at the Projects is also likely to affect male and female bats equally.

Assuming that male and female adult NLEBs are equally likely to occur within the Permit Area and that juveniles occur at a 1:1 sex ratio, approximately 50% of the NLEBs that are taken at the Projects are assumed to be female bats. This ratio may be an overestimate, given the evidence that male bats may be at higher risk of collision with wind turbines, but it represents a conservative approach for assessing the impact of take on the population and is used in the following sections to quantify the impacts of the taking of NLEBs. Conservative means the actual ratio of females to males may be less than 1:1 and, consequently, the impact of take on the population may be less than assessed in this analysis.

4.3.3.1 Project-level Impacts

Given the permitted take level, up to 8.2 NLEBs may be taken each year during the 30-year ITP term. Approximately 50% of the incidental take is expected to be attributed to females, which would result in an average annual take of 4.1 female NLEBs. Using the USFWS' *Region 3 Northern Long-Eared Bat Resource Equivalency Analysis Model for Wind Energy Projects* (2016g; Appendix E) and assuming a declining population, the total estimated lost reproductive capacity resulting from the take is 196 female NLEB pups, resulting in a total estimated impact of 319 female NLEBs (take of 123 female NLEBs + lost reproduction of 196 female NLEB pups = 319 total lost female NLEBs) over the 30-year ITP term. Mitigation actions, therefore, will have a target increase of 319 NLEBs to account for this lost reproductive capacity.

4.3.3.2 Population-level Impacts

Based on current population estimates (USFWS 2023b), the annual loss of 8.2 NLEBs equates to 0.004% of the estimated range-wide NLEB population of 201,266 individuals (USFWS 2016d). The loss of 8.2 NLEBs per year represents 0.4% of the Plan Area population of 2,319 (see Section 3.4.1.3). This loss represents a small fraction of the estimated population of NLEBs in Iowa and southern Minnesota.

Given the expected minimal impact of Project take on overall population levels, and because mitigation actions are expected to fully offset the impacts of take, Alliant does not expect the take to have a significant impact on populations of NLEB at the current population levels.

4.3.4 Impacts of Taking of Little Brown Bats

Alliant is requesting take of up to 3,536 LBBAs over the 30-year life of the permit, based on an annual take of 117.9 LBBAs. The impacts of taking LBBAs are qualitatively informed by the following:

- The Alliant fleet will be curtailed across a range of 3.0–5.0 m/s from July 15 – September 30 (see Section 5.2.2).
- Forested habitat at each of the Alliant Projects is scarce and turbines were sited away from potential summer and migration habitat (see Section 3.1 and Appendix A); therefore, risk to LBBA is likely primarily during the fall migration season and summer risk is low.
- Three LBBA fatalities were found during the PCM studies at the Alliant Projects conducted from 2019 to 2022.
- Over 1,900 LBBA fatalities have been publicly reported at wind energy facilities, primarily during the late summer and fall seasons (WEST 2021).

As discussed above in Sections 4.3.1 and 4.3.3, it is currently unclear based on available scientific information if there are sex-related factors that might influence risk of turbine collision for bats. Because LBBAs were a common species prior to the onset of WNS, information on the sex of carcasses was not always collected and varying carcass condition made it difficult in many cases to determine sex. Patterns related to sex of LBBA carcasses are not available for current PCM data in the region.

Although little is known about the location of LBBA hibernacula in Iowa, caves and mines that could be used as hibernacula occur across most of the Plan Area (see Sections 3.5 and 3.6). The nearest known LBBA hibernacula are located approximately 38 mi to the northeast of the Franklin County, Whispering Willow East, and Whispering Willow North Projects in north-central Floyd County (Dixon 2010, 2011). While male bats are generally thought to remain closer to hibernacula than female bats, due to the potential for undocumented LBBA hibernacula to occur throughout Iowa, and based on the species' widespread distribution, it is reasonable to assume that male and female LBBAs are equally likely to occur within the Permit Area. Therefore, if collision risk is generally equal for both sexes, LBBA take at the Projects is likely to affect male and female bats roughly equally.

Assuming that male and female adult LBBAs are equally likely to occur within the Permit Area and assuming the fall migrating juveniles occur at a 1:1 sex ratio, approximately 50% of the LBBAs that are taken at the Projects are assumed to be female bats. As stated above in Section 4.3.3, this ratio may be an overestimate since male bats may be at higher risk of collision with wind turbines, but it represents a conservative approach for assessing the impact of take on the population and is used in the following sections to quantify the impacts of the taking of LBBAs.

4.3.4.1 Project-level Impacts

Given the permitted take level, up to 117.9 LBBAs may be taken each year during the 30-year ITP term. Approximately 50% of the incidental take is expected to be attributed to females, which

would result in an average annual take of 59.0 female LBBAs. Using the USFWS' *Region 3 Little Brown Bat Resource Equivalency Analysis Model for Wind Energy Projects* (2016f; Appendix E) and assuming a declining population, the total estimated lost reproductive capacity resulting from the take would be approximately 1,697 female LBBA pups, resulting in a total estimated impact of 3,466 female LBBAs (take of 1,769 female LBBAs + lost reproduction of 1,697 female LBBA pups = 3,466 total lost female LBBAs) over the ITP term. Mitigation actions, therefore, will have a target increase of 3,466 LBBAs to account for this lost reproductive capacity.

4.3.4.2 Population-level Impacts

Little is known about the overall population size of LBBAs. The annual loss of 117.9 LBBAs represents about 0.04% of the MidAmerican estimated pre-WNS population of 294,603 LBBAs in Iowa and 0.9% of the USFWS estimated pre-WNS population size of 127,000 (Section 3.5). This annual loss represents 0.09% of the post-WNS population size of 126,680 (assuming a 57% decline from the MidAmerican estimate; Schorg, USFWS, pers. comm. 2021) and 0.7% of the post-WNS estimate of 17,780 (Cheng et al. 2021, USFWS 2022c). Based on a pre-WNS range-wide population size of LBBAs of 6.5 million (Section 3.5.1), and assuming an average range-wide decline of 86% due to WNS (range-wide declines likely somewhere between the invasion and establishment phases of WNS; Cheng et al. 2021) the annual loss of 117.9 LBBAs represents 0.01% of the WNS-reduced range-wide population of 910,000.

Given the expected minimal impact of Project take on overall population levels and since mitigation actions are expected to fully offset the impacts of take, it is not expected the Projects would have a significant impact on populations of LBBAs at current population levels.

4.3.5 Impacts of Taking of Tricolored Bats

Alliant is requesting take of up to 2,520 TRBAs over the 30-year life of the permit, based on an annual take of 84.0 TRBAs. The impact of the taking of TRBAs are qualitatively informed by the following:

- The Alliant fleet will be curtailed across a range of 3.0–5.0 m/s from July 15 – September 30 (see Section 5.2.2).
- Forested habitat at each of the Alliant Projects is scarce and turbines were sited away from potential summer habitat (see Section 3.1 and Appendix A); therefore, risk to TRBA is likely limited to the fall migration season and summer risk is low.
- Four TRBA fatalities[10] were found during the PCM studies at the Alliant Projects conducted from 2019 to 2022, all at English Farms.
- Over 700 TRBA fatalities have been publicly reported at wind energy facilities, primarily during the late summer and fall seasons (WEST 2021).

[10] The four TRBA fatalities discovered at English Farms in 2020 and 2021 were not included in the IEoA take prediction analysis because the fatalities were all found at turbines where curtailment was taking place, and only data from the control turbines at English Farms in 2020 was included in the IEoA modeling.

As discussed above in Sections 4.3.1, 4.3.3, and 4.3.4, it is currently unclear based on available scientific information if there are sex-related factors that might influence risk of turbine collision for bats. Because TRBAs were a common species prior to the onset of WNS, information on the sex of carcasses was not always collected and varying carcass condition made it difficult in many cases to determine sex. Patterns related to sex of TRBA carcasses are not available for current PCM data.

Hibernacula location could conceivably influence the sex ratio, if sex ratios at hibernacula are skewed, as has been reported for TRBAs (see Section 3.6). Nonetheless, there are not enough data to say with any certainty that females are more or less likely to collide with wind turbines based on the location of particular hibernacula. Although little is known about the location of TRBA hibernacula in Iowa, caves and mines that could be used as hibernacula occur across most of the Plan Area (see Sections 3.6 and 3.7). The nearest known TRBA hibernacula are located approximately 38 mi to the northeast of the Franklin County, Whispering Willow East, and Whispering Willow North projects in north-central Floyd County (Dixon 2010, 2011). While male bats are generally thought to remain closer to hibernacula than female bats, due to the potential for undocumented TRBA hibernacula to occur throughout Iowa, and based on the species' widespread distribution, it is reasonable to assume that male and female TRBAs are equally likely to occur within the Permit Area. Therefore, if collision risk is generally equal for both sexes, TRBA take at the Projects is likely to affect male and female bats roughly equally.

Assuming male and female adult TRBAs are equally likely to occur within the Permit Area and assuming the fall migrating juveniles occur at a 1:1 sex ratio, approximately 50% of the TRBAs that are taken at the Projects are assumed to be female bats. As stated above, this ratio may be an overestimate since male bats may be at higher risk of collision with wind turbines, but it represents a conservative approach for assessing the impact of take on the population and is used in the following sections to quantify the impacts of the taking of TRBAs.

4.3.5.1 Project-level Impacts

Given the permitted take level, up to 84.0 TRBAs may be taken each year during the 30-year ITP term. Approximately 50% of the incidental take is expected to be attributed to females, which would result in an average annual take of 42.0 female TRBAs. Using the recently developed REA model for TRBA (USFWS 2022b), the total estimated lost reproductive capacity resulting from the take would be approximately 3,790 female TRBA pups, resulting in a total estimated impact of 5,050 female TRBAs (take of 1,260 female TRBAs + lost reproduction of 3,790 female TRBA pups = 5,050 total lost female TRBAs) over the ITP term. Mitigation actions, therefore, will have a target increase of 5,050 TRBAs to account for this lost reproductive capacity.

4.3.5.2 Population-level Impacts

The annual loss of 84.0 TRBAs represents about 0.17% of the current estimated rangewide population abundance of 50,000 TRBAs, 0.26% of the current estimated abundance of 33,000 TRBAs in the Northern RPU, and 1.9% of the worst-case current estimated abundance of 4,434 TRBAs in Iowa (Section 3.6; USFWS 2021b). Given the expected minimal impact of Project take on overall population levels and since mitigation actions are expected to fully offset the

impacts of take, it is not expected the Projects would have a significant impact on populations of TRBAs at current population levels.

5.0 CONSERVATION PROGRAM

As described in the HCP Handbook and USFWS regulations, conservation actions within an HCP usually take one or more of the following forms: (1) avoiding the impact (to the extent practicable), (2) minimizing the impact, (3) rectifying the impact, (4) reducing or eliminating the impact over time, or (5) compensating for the impact. Project effects can be avoided or minimized through timing restrictions and buffer zones; rectified by restoration and revegetation of disturbed Project areas; reduced or eliminated over time by proper management, monitoring, and adaptive management; and compensated for by habitat restoration or protection at on-site or off-site locations. In practice, conservation plans often use several of these strategies simultaneously or consecutively. Ultimately, the level of mitigation provided in an HCP must be reasonably capable of being undertaken, and both commensurate with and rationally related to the impact of take under the plan.[11]

Alliant's conservation plan focuses on avoiding and minimizing potential impacts to Covered Species on Covered Lands and on compensating for the impacts of the taking of Covered Species through implementation of habitat restoration or protection measures in the State, which contains the populations determined by Alliant to be most likely impacted by the Covered Activities. Monitoring will be used to verify the effectiveness of these measures in meeting the biological goals and objectives of this HCP, provide information necessary to assess ITP compliance, and determine if adaptive management actions may be necessary to maintain Permit compliance.

5.1 Biological Goals and Objectives

Biological goals and objectives are an inherent part of the HCP process and define the expected outcome of the conservation plan (USFWS and NMFS 2016). The goals are broad, representing the guiding principles for operation of the conservation program described in the HCP and forming the basis for the minimization and mitigation strategies employed. The biological objectives represent the steps through which the biological goals will be achieved, and provide a basis for measuring progress towards achieving the goals. The biological goals and objectives of this conservation plan are to:

1. Contribute to the long-term persistence of the Covered Species by developing mitigation projects that will support the survival and recovery of the Covered Species in the Plan Area.

[11] See *National Wildlife Federation v. Norton*, 306 F.Supp.2d 920 (E.D. CA, February 4, 2004).

   a. To achieve this goal, Alliant will provide up-front funding to Magnolia Land Partners, LLC (Magnolia) to protect and restore bat habitat at Alliant-owned properties that provide extant or potential habitat for the Covered Species. For any mitigation needs not met by the Alliant-owned properties, Alliant will work with a mitigation provider to acquire additional lands or fund other projects (as approved by USFWS) through a mitigation true-up process (see Section 5.3.4).

2. Contribute to maintaining the integrity of the populations of the Covered Species in Iowa and Minnesota by minimizing mortality of the Covered Species in the Permit Area.
   a. To achieve this goal, Alliant will implement a turbine curtailment operational strategy that will decrease all bat mortality between approximately 35% and 50% from baseline levels (i.e., freewheeling) for the Projects, thereby decreasing actual mortality of all bats, and specifically the Covered Species, to no more than the authorized take levels over the 30-year term of the ITP.
3. Contribute to the scientific understanding of bat mortality at wind energy facilities.
   a. The objectives to achieve this goal are to:
      i. invest in new technologies, such as smart curtailment at English Farms and Golden Plains, as a potential alternative to blanket curtailment minimization strategies;
      ii. monitor bat mortality at the Projects to assess the level of incidental take of the Covered Species and better understand bat-turbine interactions on the landscape at a fleet-wide scale; and
      iii. potentially collect bat acoustic data to inform bat activity patterns and population trends in the Permit Area.

5.2 Measures to Avoid and Minimize Take

5.2.1 Avoidance through Project Design, Planning, and Construction

Alliant implemented the following practices during Project design, planning, and construction and continues to implement these avoidance and minimization measures to avoid potential impacts to bats. Similar measures will be implemented during construction activities associated with refurbishing the Bent Tree, Franklin County, and Whispering Willow East turbines. The following measures are not a comprehensive list of all the avoidance and minimization measures Alliant has implemented, but rather is a summary of measures that are relevant to the avoidance of potential bat take.

Project Siting—Alliant's Projects are located in areas dominated by agriculture, which avoids the removal of forest vegetation that is typically used by the Covered Species and minimizes environmental impacts to sensitive species and habitats (see Section 3.1 and Appendix A). Alliant sited its turbines and associated facilities away from sensitive habitats (e.g., forests, wetlands, grasslands) and outside known key migratory bat corridors. Alliant minimized the amount of land impacted by the Projects.

O&M, and Substation Lighting—Alliant has kept lighting at O&M buildings and Project substations to a minimum to safely and securely operate its facilities, consistent with facility security requirements. Lights are hooded downward and directed to minimize horizontal and skyward illumination. All internal turbine nacelle and tower lighting is extinguished when unoccupied to avoid attracting prey for bats.

Wind Turbine Lighting—Aviation hazard lighting is minimized to that which is required by the Federal Aviation Administration (FAA). In the case of wind power developments, the FAA allows a strategic lighting plan that provides complete visibility to aviators, but does not require lighting every turbine. Alliant's approved FAA lighting plans use the minimal level of lighting acceptable to the FAA and employs medium-intensity red synchronously flashing lights for nighttime use and for daytime use, if needed, as recommended by the FAA and in the WEG.

Ongoing Erosion, Weed Control, and Restoration—Alliant implements steps to mitigate erosion and control noxious weeds at or immediately adjacent to its facilities, along roads built as part of the Projects, and at other areas disturbed during Project construction. All herbicide and pesticide mixing and applications are conducted in accordance with all federal, state, and local laws and regulations and the specific product's label.

5.2.2 Minimization Measures

Alliant has developed measures to minimize the impacts to Covered Species, including operational adjustments. Alliant's measures to minimize the impacts to Covered Species were developed based on information provided in the MidAmerican HCP, the 2019 PCM studies conducted at English Farms, the 2020 PCM studies conducted at seven of the nine Alliant Projects, and the 2021 PCM studies conducted at English Farms, Kossuth, and Richland. The results of these studies enabled Alliant to focus its operational strategies on Projects where impacts to Covered Species are most likely to occur. Alliant has divided each of the nine covered facilities into one of three categories (higher risk, moderate risk, and typical risk) based on the apparent risk level (Table 5.1).

Table 5.1. Summary of Alliant's Proposed Minimization Regime.

Facility	Apparent Risk Level	Proposed Minimization (nightly[1] when temperatures are above 10 C [50 F])
English Farms	Higher	Feather below 5.0 m/s[2] July 15 – September 30[3] Feather below manufacturer's cut-in speed (3.0 m/s) March 15 – July 14 and October 1 – November 15
Golden Plains		
Franklin County	Moderate	Feather below 4.0 m/s July 15 – September 30[2] Feather below manufacturer's cut-in speed (3.5 m/s [3.0 m/s for Richland]) March 15 – July 14 and October 1 – November 15
Whispering Willow East		
Richland		

Table 5.1. Summary of Alliant's Proposed Minimization Regime.

Facility	Apparent Risk Level	Proposed Minimization (nightly[1] when temperatures are above 10 C [50 F])
Bent Tree	Typical	Feather below manufacturer's cut-in speed (3.5 m/s) March 15 – November 15
Kossuth		Feather below manufacturer's cut-in speed (3.0 m/s) March 15 – November 15
Upland Prairie		
Whispering Willow North		

1. Nightly is defined as sunset until sunrise; this nightly curtailment window is supported by USFWS acoustic data from sites across Iowa showing the average proportion of bat calls recorded one hour before sunset and one hour after sunrise was less than 1% for all bat species, less than 0.01% for little brown bat and tricolored bat, and zero for northern long-eared bat and Indiana bat (Stantec 2023).
2. Either a smart curtailment strategy or blanket curtailment are the proposed minimization strategies for the English Farms and Golden Plains projects.
3. PCM data summarized in the MidAmerican HCP indicated that the highest risk period, for both the Covered Species as well as all bat species, was from July 15 through September 30 (MidAmerican 2019); this date range was confirmed by the data gathered both pre- and post-construction for the Alliant Projects.

= degree; C = Celsius; F = Fahrenheit; m/s = meters per second.

Alliant determined the apparent risk at each Alliant Project based on several factors, including Project-specific mortality monitoring data, specifically Covered Species fatality counts and all-bat fatality rates (Table 5.2). Alliant first evaluated Covered Species mortality counts and then looked at all-bat fatality rates to meet biological goal (2) objective (a). Alliant also considered proximity to higher risk MidAmerican projects (Charles City, Lundgren, Macksburg, and Wellsburg; MidAmerican 2019) as a risk factor; however, these higher risk projects were not located directly adjacent to any Alliant Projects and therefore this assessment had limited impact on the risk designations for the Alliant Projects. Presence of and distance to forested habitat was also taken into account for the Alliant Projects risk designations.

Of the nine Alliant Projects, English Farms and Golden Plains were identified as having a higher apparent risk to the Covered Species. English Farms was the only Project at which a listed bat carcass (INBA) was discovered. Four TRBA fatalities and one LBBA fatality have also been recorded at English Farms. Golden Plains was the only other Project at which Covered Species (two LBBA) carcasses were found, and this Project also had the second highest overall bat fatality rate (Table 5.2).

While no Covered Species were found at either Franklin County or Whispering Willow East during 2020 PCM surveys, both of these Projects are located in close proximity to suitable habitat for the Covered Species and the USFWS raised concerns about potential risks to NLEB during early HCP coordination due to the proximity to the Mallory Memorial County Park, which was found to be occupied by NLEB during surveys in 2016, 2017, and 2018 (Blanchong 2017, Matteson and Murray 2020). Therefore, these two projects were identified as having a moderate apparent risk to Covered Species. Additionally, Richland had the highest overall bat fatality rate of all of the Alliant Projects; however, no Covered Species were recorded as fatalities. Therefore, Richland was also identified as having a moderate apparent risk. The remaining four Alliant Projects (Bent Tree, Kossuth, Upland Prairie, and Whispering Willow North) were determined to have typical risk

(similar to that defined in the MidAmerican HCP [2019]), meaning no Covered Species were documented as fatalities, the all bat fatality rates were in the low to medium range of those documented, and no other risk factors (e.g., acoustic records, forested habitat present) indicate risk beyond what is typical for wind projects in Iowa and southern Minnesota.

Table 5.2. Summary of Bat Fatality Monitoring Data.

Facility	Estimated Average Bat Fatalities Per MW	Estimated Average Bat Fatalities Per Turbine	Total Covered *Myotis* & *Perimyotis* Fatalities
Bent Tree	9.92	16.37	none
English Farms[1]	10.26, 9.41, 9.23, 2.30	25.27, 23.18, 22.74, 5.67	1 INBA, 1 LBBA, 4 TRBA
Franklin County	15.30	25.24	none
Golden Plains	18.60	44.65	2 LBBA
Kossuth	13.86	36.95	None
Richland	22.12	53.80	none
Upland Prairie	8.19	20.15	none
Whispering Willow East	9.57	15.79	none
Whispering Willow North	13.85	34.07	none

MW = megawatt, INBA = Indiana bat, LBBA = little brown bat, TRBA = tricolored bat.

1. Four years of post-construction monitoring were conducted at English farms (2019, 2020, 2021, and 2022) so four estimates are reported for this project.

Feathering consists of turning turbine blades parallel to the prevailing wind direction to reduce rotation of the turbine rotors to less than two revolutions per minute at pre-defined wind speeds. Manufacturer's cut-in speed for most of the Projects is 3.0 m/s (462 turbines), except for Bent Tree, Franklin County, and Whispering Willow East, which have a manufacturer's cut-in speed of 3.5 m/s (303 total turbines; Table 5.1). Blade feathering is a scientifically accepted method to minimize bat fatalities at wind facilities.

Alliant will feather all turbines at all Projects below manufacturer's cut-in speeds at night (specifically, between sunset and sunrise[12]) from March 15 through November 15[13] each year (Table 5.1), extending the pre-HCP (i.e., time period prior to ITP issuance; May 1 through October 15) curtailment time period by several months. Additionally, Alliant will curtail turbines at the two higher-risk projects (English Farms and Golden Plains) below raised nighttime cut-in speeds of 5.0 m/s from July 15 through September 30[14] each year, and either employing a smart curtailment strategy (such as utilizing acoustic-triggered EchoSense technology from Natural Power; Table 5.1) or following a blanket curtailment strategy. Alliant will curtail turbines at the three moderate-risk projects (Franklin County, Whispering Willow East, and Richland) below nighttime cut-in speeds of 4.0 m/s from July 15 through September 30 each year (Table 5.1). Alliant's minimization regime will further reduce bat fatalities at the Projects compared to the pre-HCP curtailment regime (i.e., curtail below manufacturer's cut-in speeds from May 1 – October 15). As

[12] Based on USFWS acoustic data from sites across Iowa showing the average proportion of bat calls recorded one hour before sunset and one hour after sunrise was less than 1% for all bat species, less than 0.01% for little brown bat and tricolored bat, and zero for northern long-eared bat and Indiana bat (Stantec 2023).

[13] Based publicly available studies conducted at several wind facilities in Iowa (MidAmerican 2019), the bat active season is from March 15 through November 15, annually.

[14] Available monitoring data indicate the period of highest Covered Species risk at wind facilities in Iowa is from approximately July 15 through September 30 (MidAmerican 2019).

a 35% reduction in bat take rates was already assumed from the pre-HCP curtailment regime (see Section 4.2.1.1), the proposed minimization regime under the HCP is expected to further reduce overall fatality rates fleet-wide up to 50% from baseline take levels with no feathering or curtailment (Appendix C).

Turbines at each Project will be monitored and controlled based on wind speed on an individual basis or by small groups of turbines (i.e., the entire facility will not alter cut-in speed at the same time). In general, turbines will be released to run normally when the 10-minute rolling average wind speed, as monitored at individual turbines, is above the normal cut-in wind speed. Turbine blades will be curtailed when the 10-minute rolling average wind speed drops below the normal cut-in wind speed during the course of the night.

The only exception to curtailing turbines below a raised cut-in speed would occur on nights when temperatures are below 10 degrees Celsius (C; 50 Fahrenheit).[15] Turbines will be curtailed below the manufacturer's cut-in wind speed below these temperatures. Turbines will be monitored and controlled based on temperature on an individual basis (i.e., the entire facility will not alter cut-in speed at the same time, rather operational changes will be based on temperature conditions specific to each turbine). Turbines will begin operating under normal conditions (i.e., curtailing below manufacturer's cut-in speed) when the 10-minute rolling average temperature drops below 10°C; raised cut-in speeds will be resumed if the 10-minute rolling average temperature goes to 10°C or above during the course of the night.

As stated above, Alliant is considering the use of smart curtailment systems, such as the EchoSense, an acoustic-triggered smart curtailment system, as a potential alternative to blanket curtailment at the English Farms and Golden Plains Projects. Smart curtailment systems acoustically detect bats continuously and shut down turbine operations, typically for a specified minimum period of time such as 30 minutes, when any bat call is detected and wind speeds are below a designated cut-in speed. Curtailment persists in additional time increments, such as 10-minute increments if weather thresholds are met and bat calls are still being detected. Ideally, using a smart curtailment system will enable Alliant to maintain a 35–50% reduction in baseline bat fatalities while also minimizing energy production losses due to curtailment. Per the English Farms TAL, a smart curtailment study using EchoSense was conducted in 2020 and 2021 at English Farms in conjunction with the PCM, to determine the effectiveness of this technology for reducing bat fatalities. Overall, the results of the two years of smart curtailment research at English Farms suggest that the EchoSense system is equally as effective as blanket curtailment at the same cut-in speed (i.e., 5.0 m/s; Natural Power 2022a, 2022b, 2022c).

[15] Bat activity is significantly reduced once temperatures drop below 10 C (USFWS 2011b). Additionally, data three years of PCM conducted during the fall at the Fowler Ridge Wind Farm in Indiana showed that less than 2% of all fresh bat casualties occurred on nights when the average nightly temperature was below 10°C (Good et al. 2011, 2012, 2013). No *Myotis* carcasses were found when average nightly temperatures were below 10 C.

5.3 Measures to Mitigate the Impact of the Taking

The Covered Activities identified in this HCP, including mitigation actions, cover a broad geographic scale. Alliant partnered with Magnolia in 2021 to implement mitigation actions under this HCP. Alliant has been working with Magnolia, with input from USFWS, to set up a single-client conservation bank, the Two Rivers Conservation Bank, through which mitigation projects would be implemented to offset the impacts of the take of the Covered Species.

5.3.1 Alliant-Owned Mitigation Lands

As a large energy utility, Alliant acquires and owns lands throughout Iowa. Alliant contracted Burns & McDonnell to evaluate several Alliant-owned potential mitigation sites in 2018, including both a desktop analysis and field-based acoustic surveys to determine the potential presence of the Covered Species, and assess suitability of the sites as potential future bat mitigation areas (Burns & McDonnell 2018c).

In addition to the desktop and acoustic surveys conducted, Magnolia conducted a suitability review of the Alliant-owned mitigation sites, including coordination with the USFWS. Based on this review, Magnolia identified two of the Alliant-owned properties as being potentially suitable mitigation options for the Covered Species: the Des Moines County site and the Marshall County site (Table 5.3; Figure 5.1; Magnolia 2022). All Covered Species were recorded at the Des Moines County site during the 2018 acoustic surveys (Burns & McDonnell 2018c). While only LBBA and TRBA were recorded at the Marshall County site during the 2018 acoustic surveys (Burns & McDonnell 2018c), supplemental acoustic monitoring data from the USFWS Illinois-Iowa Field Office included records for both INBAs and NLEBs from 2016 within one of the two overlapping Hydrologic Unit Code (HUC; 12) watersheds. Additionally, while Alliant currently owns these sites and they have existing suitable habitat for the Covered Species, without a conservation easement both sites would likely be sold and the habitat disturbed or destroyed due to logging and other development (e.g., gravel operations, substations, transmission lines) interest. Therefore, both the Des Moines County and Marshall County site can provide mitigation for all Covered Species.

Magnolia, Alliant, and the USFWS conducted site visits to both of the mitigation properties in 2022; the Des Moines County site was visited on June 13, 2022, and the Marshall County Site was visited on July 27, 2022. Additional coordination with the USFWS based on the results of the site visits confirmed that both sites meet the criteria to be used as suitable mitigation for the Covered Species for the Alliant HCP.

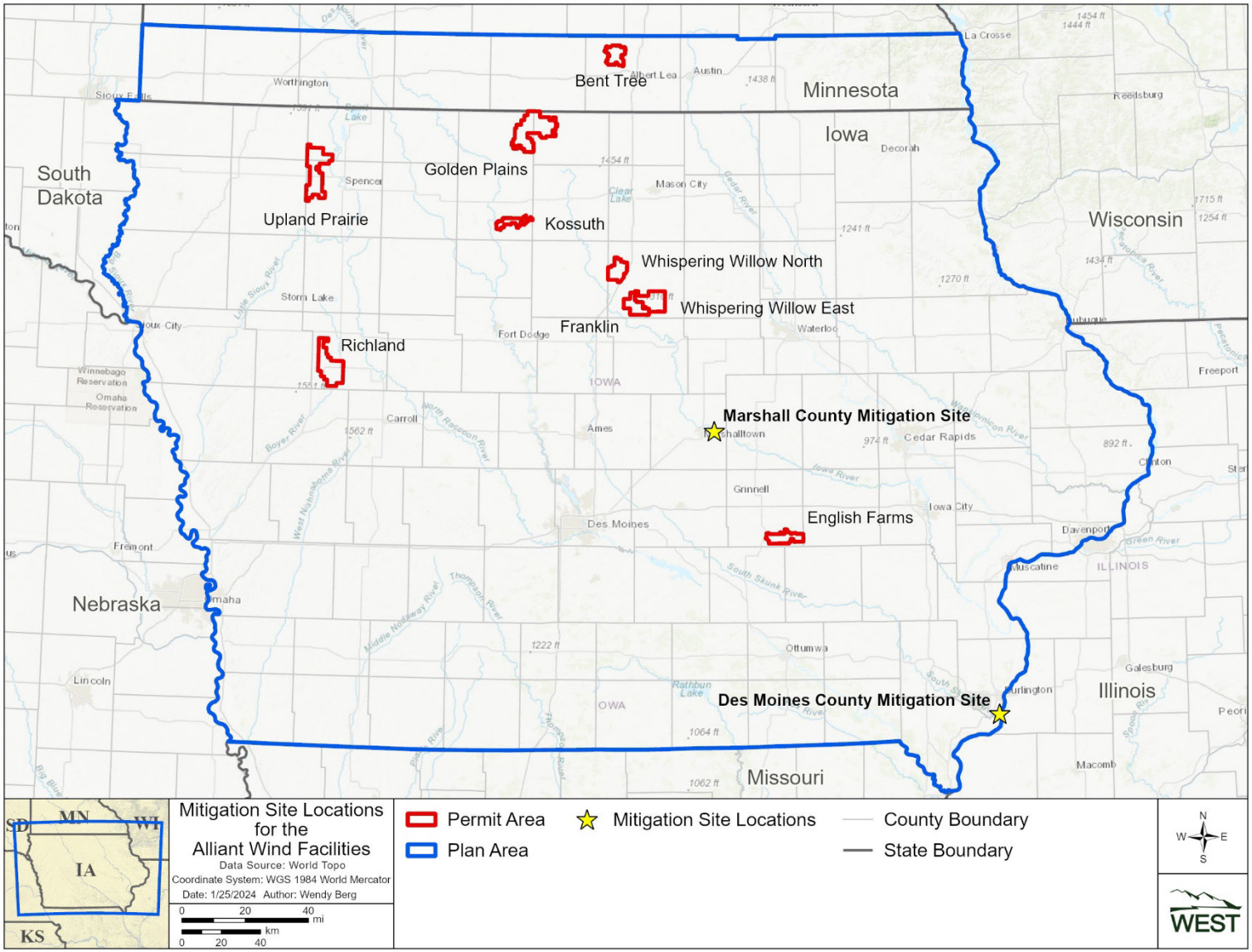

Figure 5.1. Location of the proposed mitigation sites to be included in the Two Rivers Conservation Bank for the Covered Species.

Table 5.3. Available mitigation acres from the two Alliant-owned properties included in the Two Rivers Conservation Bank.

Mitigation Site	Potential Forested Preservation Area[1] (acres)	Potential Forested Restoration Area[1] (acres)	Potential Open Foraging Area[2] (acres)	Total Potential Mitigation Area (acres)
Des Moines County	271.5	-	-	731.1
Marshall County	222.7	202.9	34.0	

1. Forested areas either preserved or restored for summer roosting habitat; applies to Indiana bat, northern long-eared bat, little brown bat, and tricolored bat.

2. Open areas preserved/restored as foraging habitat within the open transmission line right-of-way areas at the Marshall County Site; applies only to tricolored bat.

5.3.2 Proposed Mitigation Approach

Alliant and Magnolia used REA models developed by the USFWS (USFWS 2016e, 2016g, 2016f, 2022b) to determine the appropriate amount of mitigation to fully offset the impacts of the taking for the Covered Species. Based upon the impacts of the take analyses (see Section 4.3), use of the REA models provides a conservative estimate of mitigation needs due to the assumptions made regarding the number of females of each species potentially taken.

Through the protection and restoration of the two Alliant-owned properties through the Two Rivers Conservation Bank, Alliant will provide upfront mitigation to fully offset the authorized take of INBA and NLEB for the 30-year permit term. The Alliant-owned properties will also fully offset the authorized take of LBBA through the installation of artificial roost structures (e.g., BrandenBark structures) in addition to the protected habitat. The upfront mitigation will offset 28% of the authorized take of TRBA. For this species, Alliant is proposing a mitigation true-up assessment process during the 30-year permit term (see Section 5.3.4) and has established adaptive mitigation triggers that would implement a mitigation true-up in order to keep mitigation ahead of the take of TRBA (see Table 5.4, below).

Available biological information indicates that these species co-occur in the same habitats and while competition among them for resources may occur, niche partitioning allows them to co-exist and utilize the same habitats. Alliant and Magnolia used the USFWS guidance prescribed in the 2018 white paper: *Applying the Stacking Ratio to Forest Habitat Mitigation for Lethal Take of Multiple Bat Species under an HCP* (USFWS 2018). For example, for a mitigation project where the suitable habitat acreage would be applied to a single Covered Species, the habitat stacking multiplier would be 1.0, but if the mitigation acreage would be applied to two or more Covered Species, a 10% multiplier would be applied for each successive species.

In addition to habitat acres, available data indicates that anthropogenic structures and other artificial roosts can support maternity colonies and further provide mitigation benefits for LBBA. LBBA maternity colonies can range from tens to thousands of individuals, with up to 3,000 adult females and young having been recorded at a single emergence (Humphrey and Cope 1976, Kunz and Reichard 2010). However, most maternity colonies range from 300–1,200 bats (Humphrey and Cope 1976). The USFWS has documented up to 298 *Myotis* bats emerging from

a single artificial roost structure in one night and have recorded several emergence events from artificial roosts with counts above 100 bats per night (USFWS 2019b). Thus, artificial roosts are expected to support LBBA colonies with counts ranging from 100 – 300. Alliant plans to therefore install artificial roost structures at their sites, and elsewhere in the Permit Area if necessary, to provide additional mitigation credits for LBBA.

Alliant's up-front mitigation program through the Two Rivers Conservation Bank uses a combination of habitat protection and improvements and establishment of artificial roost structures. As stated above, Alliant will fully offset INBA and NLEB authorized take through preservation and restoration of forested habitat, with the proposed purchase of mitigation acres from the Two Rivers Conservation Bank. The remaining mitigation required to fully offset authorized LBBA take will be achieved though the erection of artificial roost structures and the purchase of associated credits (Table 5.4).

An additional 250 acres of forested habitat and 34 acres of open foraging habitat within the Two Rivers Conservation Bank is being applied as TRBA mitigation only, covering 28% of the total mitigation need for the authorized take of that species (Table 5.4). The remaining mitigation required for TRBA will be achieved through a mitigation true-up process, as described in Section 5.3.4.

The upfront mitigation totals 612.4 acres, leaving 118.6 acres reserved in the Two Rivers Conservation Bank to be purchased by Alliant as needed for future HCP mitigation needs (e.g., a TRBA mitigation true-up, or additional INBA, NLEB, or LBBA mitigation that could be used for a future Alliant project[16]).

Alliant's Covered Bat Species mitigation program, which fully offsets authorized take for INBA, NLEB, and LBBA and offsets 28% of the authorized take for TRBA, totals 612.4 acres of habitat and artificial roost clusters. Alliant and Magnolia estimate that the upfront mitigation will cost between $2,950 – $5,325 per acre, dependent on whether the habitat is being protected or restored, and the degree to which restoration management is required to achieve mitigation success criteria.

Table 5.4. Mitigation crediting and stacking results from the Two Rivers Conservation Bank – upfront mitigation implementation.

	Mitigation Acres
Total Available Mitigation Acres	**731.1**
INBA[1]	242.9
NLEB[1]	254.4
LBBA[2]	242.9
TRBA[3]	538.4

[16] The 118.6 acres remaining in the Two Rivers Conservation Bank could be used (through coordination with the USFWS) if either this current HCP is amended in the future with a higher take request for any of the Covered Species (including an amendment due to refurbish/repower or a new project, per Sections 8.2.7 or 8.2.8 in the Changed Circumstances section, below), or under a separate Alliant HCP for a different project or projects, as long as those 118.6 acres have not already been credited for a mitigation true-up for TRBA for this HCP (i.e., the USFWS will not allow credits to be stacked for multiple species across separate HCPs).

Table 5.4. Mitigation crediting and stacking results from the Two Rivers Conservation Bank – upfront mitigation implementation.

	Mitigation Acres
All Covered Species (Stacked)[4]	**612.4**
Mitigation Acres Remaining	**118.6**

NLEB = northern long-eared bat; INBA = Indiana bat; LBBA = little brown bat; TRBA = tricolored bat.

[1] Sufficient to offset 100% of the authorized take; includes a combination of summer habitat restoration and protection.

[2] Sufficient to offset 100% of the authorized take; includes a combination of summer habitat restoration and protection and artificial roost clusters (credited as mitigation for LBBA only).

[3] Sufficient to offset 28% of the authorized take; includes a combination of summer habitat restoration and protection and restoration of open foraging habitat.

[4] Stacking ratios only apply to acres providing mitigation credit for multiple Covered Species; stacking is calculated as: (242.85 acres + [242.85 * 0.3]) + (11.57 acres + [11.57 * 0.1]) + 284.00 acres = 612.44 stacked acres, where 242.85 acres receive a 30% stacking penalty for all four species and fully mitigate for INBA and LBBA (combined with artificial roost structures), 11.57 acres receive a 10% stacking penalty for NLEB and TRBA and fully mitigate for NLEB, and the remaining 284.00 acres receive no stacking penalty and only provide mitigation credit for TRBA.

5.3.3 Mitigation Implementation

The goal of Alliant's compensatory mitigation plan is to improve the viability of Covered Species in Iowa and southern Minnesota by improving habitat conditions and habitat availability, and, thus, Covered Species' survival. This goal may be achieved by protecting and/or actively managing key habitat to enhance habitat values for Covered Species. Collectively, these actions are intended to improve conditions relative to current conditions for these species.

Because the Projects are already operating, it has been a priority for Alliant to identify and quickly deliver mitigation projects, starting the first year of HCP implementation, and Alliant has been working on developing a viable mitigation approach since 2018. Once the Conservation Bank is approved and in place, Magnolia will provide all financial assurances to ensure the long-term viability of the mitigation properties, and Alliant anticipates the purchase and transfer of upfront mitigation credits within the first year following HCP approval.

Alliant and Magnolia have worked with the USFWS Illinois-Iowa Field Office to develop a Habitat Mitigation Management Plan for the Alliant-owned mitigation sites. The Habitat Mitigation Management Plan provides additional detail regarding the management actions that will be taken to protect and restore habitat and erect artificial roost structures at the Des Moines County and Marshall County sites. Additionally, ongoing evaluation of mitigation projects to gauge success based on a combination of habitat preservation and restoration is essential to an effective mitigation strategy. For restoration projects, the team will assess characteristics including, but not limited to, the percent of invasive species coverage before and after project implementation, tree density and height at given intervals after project implementation, and tree species composition before and after any tree-planting activities. For habitat preservation projects, the team will assess characteristics such as the percent of invasive species coverage after protection and the number of dead standing snag trees per ac with exfoliating bark. Results of the assessments may be used to employ adaptive management decisions over the term of the permit to ensure that mitigation success criteria continue to be met.

5.3.4 Mitigation True-ups

As stated above, Alliant has collaborated with the USFWS and Magnolia to design a mitigation program that provides protection of and restoration to high-quality habitat for the Covered Species. Alliant intends to purchase credits from the Two Rivers Conservation Bank to provide upfront mitigation to fully offset the take of INBA, NLEB, and LBBA up to the authorized level for the 30-year permit term. This mitigation will fully offset the impact of predicted take for the aforementioned species, including lost reproductive capacity, based on the USFWS REA models. It should be noted that Alliant is not proposing to mitigate upfront for the entire 30-year authorized take level for TRBA. For this species, Alliant is proposing to mitigate for the first five to eight years of authorized take (or as stated above, 28% of the total authorized take) and to implement a mitigation true-up assessment process during the 30-year permit term (Table 5.5). Accordingly, Alliant has established adaptive mitigation triggers that would implement a mitigation true-up in order to keep mitigation ahead of the take of TRBA.

Table 5.5. Tricolored Bat Adaptive Mitigation Triggers and True-Ups.

Adaptive Mitigation Response Level	TRBA Mitigation True-Up Trigger:	The Response is:
Level I	Cumulative Take (M*) ≤75% of Mitigated Take	No changes, continue implementing the HCP
Level II	Cumulative Take (M*) >75% of Mitigated Take	Assess additional mitigation needs and implement additional mitigation at a time period that keeps mitigation ahead of take

TRBA = tricolored bat; HCP = Habitat Conservation Plan.

Mitigation evaluations will occur after the first five years of bat fatality monitoring, and then every year thereafter with cumulative data at the annual evaluation meetings. The cumulative take (i.e., total estimated take to-date; see Sections 5.4.3 and 5.5 for additional details) will be compared to the overall level of mitigated take, and a mitigation true-up will be required if the cumulative take is greater than 75% of the mitigated take (Table 5.5). If a mitigation true-up is triggered, the amount of true-up mitigation required will be dependent on the median projected take (calculated using the projection tool in EoA). At a minimum, Alliant will mitigate up to the median projected take level at the end of the next five years of the permit term. However, Alliant may elect to mitigate up to the median projected take level at the end of the next 10 or 15 years of the permit term, or up to the entire remaining permitted take, to minimize the number of mitigation true-ups required. This mitigation true-up process is designed to protect against mitigation lagging behind the actual take.

The amount of funding assurances required for a mitigation true-up will depend on the estimated costs of the proposed mitigation, which will cover at a minimum five years of projected take, or up to the entire remaining permitted take, as stated above. The funding assurances mechanisms are discussed in detail in Section 6.3, below. Table 5.6 provides the acreages of forested habitat, or open foraging habitat that would be required to offset the remaining authorized take of TRBA, per the USFWS' REA model.

Table 5.6. Total potential true-up mitigation acreages for the remaining authorized take of Tricolored Bat, using the US Fish and Wildlife Service Resource Equivalency Analysis model.

	Summer Forested Habitat Protection or Restoration (Acres)	Open Foraging Habitat Protection or Restoration (Acres)
TRBA only (potential true-up amount)	1,416	1,176

TRBA = tricolored bat

While summer forested and foraging habitat could be used for some or all of any TRBA mitigation true-ups that may be implemented, Alliant has several options, including: use of some or all of the remaining available Two Rivers Conservation Bank credits (Table 5.4), purchase of credits through a different conservation bank or In Lieu Fee fund, development of Permittee-Responsible Mitigation projects, and other approaches as approved by USFWS for use as TRBA mitigation at the time of the true-up. To select projects for potential mitigation true-ups required over the Permit term, Alliant will coordinate with the USFWS. For habitat-based true-up projects beyond the remaining credits of the Two Rivers Conservation Bank, Alliant will use a similar mitigation screening framework as what was used for the Des Moines County and Marshall County sites in conjunction with the USFWS Bat Mitigation Parcel Selection Framework for Iowa and Illinois (USFWS 2020b) to evaluate and select lands that meet the mitigation true-up needs for TRBA. For mitigation options beyond summer roosting and foraging habitat or purchase of in lieu fee credits, such as research and/or implementation of WNS treatment, further coordination would occur with the USFWS to determine the associated offset of take that would occur under a given mitigation approach, in order to confirm that the mitigation true-up would offset the minimum 5-year level of projected take of TRBA.

Mitigation true-up options and criteria include the following:

1. Permittee-Responsible Mitigation Project involving enhancement, restoration, and/or protection of summer habitat; protection of winter habitat; or a combination of these project types.
    a. Enhancement, restoration, and protection projects will occur within the States of Iowa or Minnesota.
    b. Enhancement, restoration, and protection projects will be prioritized on any available Alliant-owned lands to continue to streamline the habitat management process.
    c. Enhancement and protection projects will occur at sites that are known to be used by TRBA (i.e., documented by following the applicable USFWS summer bat survey protocol) or are assumed to have a high likelihood of being used by TRBA based on proximity to known roosting and foraging sites.
        i. Mitigation areas of interest within Iowa will be identified at a watershed level, and will comprise 12-digit HUC watershed boundaries that have records documenting presence of one or more TRBA within the previous 10 years; and

ii. Such parcels must be currently unprotected and face potential threats of habitat loss in order to qualify as mitigation under this HCP.

d. Key priorities for action are to protect bat roosting or foraging habitat, to facilitate reforestation of corridors between known roosting habitat and foraging areas, and to facilitate reforestation of woodlots and other blocks of habitat.

e. The use of cave-gating or other measures to protect winter habitat/hibernacula for TRBA must be approved by the USFWS and must be conducted through a USFWS-approved mitigation entity (or entities). Winter habitat protection measures should be designed and funded to be maintained by the mitigation entity in perpetuity.

2. Purchase of credits from a conservation bank for TRBA.
    a. The conservation bank must be approved by the USFWS and have sufficient credits available to meet the mitigation need.
    b. A Credit Sale Agreement will be completed with the bank sponsor in the event an adaptive mitigation trigger is fired (see Section 5.3.4) and a copy provided to USFWS. The funds for the credit purchase will be transmitted to the bank sponsor within 90 calendar days of an adaptive mitigation trigger fire. Once funds have been transmitted, a copy of the Bill of Sale will be provided to USFWS.
3. Contribution to an in-lieu fee (ILF) mitigation fund for TRBA.
    a. The ILF must be approved by the USFWS.
    b. A Verification Letter will be completed with the fund sponsor in the event an adaptive mitigation trigger is fired and a copy provided to USFWS. The funds being contributed to the ILF will be transmitted to the fund sponsor within 90 calendar days of an adaptive mitigation trigger fire. Once funds have been transmitted, a copy of the receipt will be provided to USFWS.
4. Research related to Covered Species affected by WNS.
    a. The research must be approved by the USFWS. Any mitigation true up actions, including approaches involving research as mitigation, would follow any forthcoming USFWS guidance documents and would be approved by the USFWS in writing prior to implementation.
    b. Research may be related to the cause, effects, and remediation of WNS and affected bat species or to technology that can reduce the effects of wind power projects on WNS-affected bats.

Protection and enhancement of habitat for local TRBA populations would increase the likelihood that bats in the population survive over time and continue contributing to the recovery of the species, in addition to offsetting the impacts of the potential take of the bats during the operation of the Alliant Projects. If new accepted mitigation options or techniques that provide measurable benefits to TRBA are developed over the Permit term (e.g., WNS treatment program), Alliant will consider implementing mitigation true-ups according to the best available scientific information.

5.4 Compliance Monitoring Plan

Alliant will conduct compliance monitoring at the Projects to monitor bat mortality and to ensure the levels of estimated take of these Covered Species remain within the levels of take authorized by the ITP (see Section 4.2). The results of compliance monitoring will provide the basis for demonstrating ITP compliance and informing adaptive management decisions (Section 5.5). This monitoring plan will allow tracking of the cumulative take of Covered Species throughout the ITP term through the use of statistical estimators, even in the case that zero carcasses are detected during a given monitoring period (Section 5.4.3). If new information becomes available to suggest improved, more cost effective, or more logistically feasible methods for estimating bat mortality, Alliant will consult with the USFWS regarding changes to the protocol and implementation of such methods.

Take will be monitored incidentally throughout the year for all Covered Species, and more intensively through standardized monitoring for Covered Species from July 1 through October 15 each year. Incidental monitoring will be completed by O&M staff, and the standardized monitoring by a qualified contracted third-party.

5.4.1 Incidental Operations and Maintenance Staff Monitoring

O&M staff receive annual training on sensitive wildlife incident procedures, including proper procedures for recording, handling, and reporting of wildlife incidents that may occur at a Project. O&M staff are trained to search for and pick up incidental carcasses for identification as part of their daily activities and routine visits to turbines year round. During all visits to Project turbines made by O&M staff, a visual scan of the turbine pad, access road, and surrounding area will be conducted to look for bat carcasses. Data collected by O&M staff during regular maintenance activities will be treated as incidental finds consistent with standard monitoring protocols for finds made outside of the standard searches.

5.4.2 Standardized Monitoring

The compliance monitoring program was designed based on evaluation of the 2019 – 2021 PCM studies, publicly available information, USFWS HCP guidance, coordination with the USFWS Illinois-Iowa Field Office, and the ITP compliance needs with the following objectives in mind:

- A cost-effective strategy that would provide the metrics necessary to monitor take of the Covered Species
- A monitoring plan scaled to the geographic scope of the HCP
- A monitoring plan that would provide Alliant the ability to evaluate results annually
- A monitoring plan robust enough to monitor take of the Covered Species while minimizing costs so that more HCP funds can be put towards tangible conservation actions for the Covered Species
- A monitoring plan designed to facilitate evaluation of thresholds that would indicate whether and when an adaptive management or changed circumstance response may be needed to maintain Permit compliance.

The purpose of the ITP compliance monitoring is to demonstrate compliance with the Permit. ITP compliance monitoring will estimate bat mortality using the EoA approach (see Section 4.2, Section 5.4.3, and Appendix B), from which the total incidental take of Covered Species will be estimated. Of all currently available analytical methods for estimating take, the EoA framework provides the most precise estimates and, therefore, are considered the most reliable for assessing permit compliance and need for adaptive management response. The result will provide the information necessary to monitor and track compliance with the ITP. Prior to each annual evaluation meeting (see Section 5.5), annual Covered Species take will be evaluated with the EoA model to estimate annual take and cumulative take, and determine whether any adaptive management or changed circumstance triggers have occurred. Over the term of the ITP, newly available estimators other than EoA may be used if agreed to by both Alliant and the USFWS following the steps identified in Section 8.2.5.

Compliance monitoring for the HCP will be conducted annually for the duration of the Permit. Through coordination with the USFWS, Alliant has proposed to conduct compliance monitoring under a Scattered Staggered Monitoring (SSM) framework. The SSM framework involves conducting bi-weekly road and pad searches (out to 100 m [328 ft] and including permanent crane pads at applicable Projects[17]) at approximately 20% of the turbines at each Project (with the exception of English Farms where 40% of turbines would be searched) each year between July 1 and October 15. A subset (25–30%) of the search turbines at each Alliant Project would be surveyed using dog teams[18] in 100 m x 100 m square soy [*Glycine max*] plots (or using an alternative monitoring design that would result in the same level of search effort) every other year to increase detection probability (with the exception of English Farms where dog teams (or equivalent higher level of effort; see Appendix E) would be used on a subset of turbines every year; Table 5.7). For example, at Bent Tree, a rotating set of 25 turbines (20% of 122 turbines) would be searched every year, so that all 122 turbines would be searched at least once in a 5-year period. In an odd year, seven of those turbines (28% of the 25 search turbines) would be searched with dog teams. In an even year, all 25 search turbines would be searched as road and pad searches with no dog teams. The even/odd year framework would be applied to all Projects so that all turbines would be searched at every Project at least once in a 5-year period.

Due to English Farms being the only Project with INBA risk, approximately 40% of the turbines will be searched every year, with 25–30% of those turbines searched with dog teams every year, to increase detection probability (specifically for INBA; Table 5.7). The SSM framework is a novel way to conduct some level of monitoring at every Project every year to reduce both spatial and temporal uncertainty and overall costs while still maintaining a robust detection probability allowing for take threshold evaluation through adaptive management triggers (see Section 5.5).

[17] Seven of the nine Alliant Projects (Bent Tree, Franklin County, Golden Plains, Kossuth, Richland, Upland Prairie, and Whispering Willow North) have permanent crane pads at the base of the turbines, in addition to the standard road and pad, resulting in a larger pad search area of 15 m by 37 m (50 ft by 120 ft) exceeding most “average” turbine pads that do not have permanent crane pads.

[18] Due to uncertainty in dog team availability and the potential for improved monitoring methods and/or technologies over a 30-year permit term, alternative monitoring designs that would achieve the same higher level of search effort may be used instead of dog teams to achieve higher detection probability under the SSM approach if needed (see Section 8.2.5).

The July 1 through October 15 time-period coincides with the period of highest bat fatalities recorded during the 2015-2016 MidAmerican PCM studies (MidAmerican 2019). However, if no Covered Species carcasses are found between October 1 and October 15 in the first five years of the permit term, Alliant may choose to shorten the window for the annual compliance fatality monitoring to July 1 – September 30. Searcher efficiency and carcass removal trials will be conducted according to a pre-determined schedule to provide data for correcting the observed number of carcasses for these biases. Additional details related to the compliance monitoring are found in Appendix E. If the results of any annual monitoring confirm that an adaptive management threshold has been triggered, Alliant will respond via the adaptive management protocol (Section 5.5).

Table 5.7. Scattered Staggered Monitoring Framework for the Alliant Wind Energy Projects (example).

Facility	Number of Turbines	Number of Turbines Searched Annually (20% of Turbines)	Dog[1] Searched Soy Plots (25–30% of Search Turbines)	Even or Odd Year Project[2]
Bent Tree	122	25	7	Odd
English Farms[3]	69	28 (40%)	8	Even & Odd
Franklin County	60	12	4	Odd
Golden Plains	82	17	5	Odd
Kossuth	56	12	4	Odd
Richland	53	11	3	Even
Upland Prairie	121	25	7	Even
Whispering Willow East	121	25	7	Even
Whispering Willow North	81	17	5	Even

1. Alternative monitoring designs that would achieve the same higher level of search effort may be used instead of dog teams to achieve higher detection probability under the SSM approach if dog teams are unavailable or if improved monitoring methods arise.
2. Even and odd year designations indicate which year dog teams (or equivalent higher level of effort) would search a subset of search turbines in soy plots.
3. A higher search effort is proposed for English Farms (i.e., 40% of turbines searched every year) with dog teams utilized at a subset (25–30%) of search turbines every year to increase detection probability for Indiana bats or using an alternative monitoring design that would result in the same level of search effort.

5.4.3 Take Estimation Methods for Bats

Alliant will estimate cumulative bat take and annual take rates for all Covered Species. Adaptive management decisions will be made at annual evaluation meetings, as described in Section 5.5. The compliance monitoring data will provide the basis of these analyses. EoA will be used to calculate the annual and cumulative bat take and the variance of those estimates. EoA assumes the total number of Covered Species fatalities (M) follows a Poisson distribution,

$$M \sim Poisson(\lambda),$$

where λ is the rate at which bat fatalities occur at the covered facilities. M at the 50th credible interval will be used to estimate annual Covered Species take and cumulative take over the ITP term. Cumulative take and annual take rates will be estimated using methods consistent with the EoA Multiple Years module.

Any incidentally found carcasses of Covered Species will be used to inform the EoA analysis by left-truncating the prior distribution of fatality (i.e., for the cumulative take estimate; Dalthorp et al 2020) because it is not appropriate to include carcasses outside the scope of the estimated detection probability in the carcass count data for EoA.

5.4.4 Handling, Bat Identification, and Qualifications

Alliant will deliver, upon request, all Covered Species carcasses and any unknown bat carcasses to the USFWS or USFWS-designated entity. Bat carcasses not used for bias correction trials and all tissue and hair samples collected will be made available to the USFWS upon request, and as allowed for by any applicable state laws.

Bat species identifications and recommendations for positive genetic identification testing will be conducted by a qualified, USFWS-permitted biologist(s). All *Myotis* casualties and any bat casualty in a condition that does not allow positive identification (e.g., level of decay, absence of identifying characteristics, etc.) will be sent for genetic identification testing. Alliant will notify the Service within five business days[19] of a confirmed covered species identification.

All persons performing the collection or identification of bat specimens shall be properly qualified, as defined below.

- Properly qualified for collection of non-living Covered Species remains means that any surveyor must be properly trained by Alliant or authorized agent in carcass handling and collection protocols, including data collection, recording, and protection. The surveyor must have knowledge of and take all reasonable precautions to prevent harm to the self and others as a result of handling non-living remains. Also, the surveyor should follow all applicable federal, state, and local laws relating to the collection and disposition of wildlife remains.
- Properly qualified for handling of living, but injured or grounded Covered Species specimens means that any surveyor must be properly trained by a person holding a valid ESA section 10(a)(1)(A) recovery permit for bats from the USFWS. The surveyor must have knowledge of and take all reasonable precautions to prevent harm to the self, others, and the animal as a result of handling living Covered Species specimens. Also, the surveyor should follow all other applicable federal, state, and local laws and guidelines relations to the collection and disposition of wildlife specimens.
- Properly qualified for the identification of the non-living remains or living specimens of Covered Species means that the person must hold an ESA section 10(a)(1)(A) recovery permit for bats from the USFWS that is valid in the State of Iowa.

[19] The notification window for a Covered Species fatality is five business days to allow for added flexibility in notifying the USFWS due to the scale and complexity of a nine wind project HCP.

5.5 Adaptive Management for Take Compliance

Adaptive management is commonly used as a method to address uncertainty in natural resources management. Broadly defined, it is a method for examining alternative strategies for meeting biological goals and objectives, and then, if necessary, adjusting future conservation management actions as needed according to what is learned. The purpose of adaptive management is to ensure that take levels do not exceed the limits predicted in the HCP and authorized in the ITP. Therefore, the adaptive management framework is designed to trigger additional minimization or mitigation if cumulative annual take is on pace to exceed the ITP limits or to ensure that the impacts of the take have been fully offset. An appropriate adaptive management framework also allows for reduced minimization following adaptive management changes if the annual take is predicted to be less than the ITP limits, indicating that reduced minimization (e.g., back to baseline measures) would maintain take below the ITP limits (i.e., 95th quantile).

As described above in Section 5.4, Projects will be monitored under the SSM[20] framework for the duration of the Permit term to assess the level of take of Covered Species. Alliant will consult with the USFWS to interpret the results of the monitoring surveys, evaluate new available data from the monitoring and, if needed, adjust onsite minimization strategies to ensure the level of authorized take is not exceeded over the 30-year term of the ITP. Additionally, for TRBA, the monitoring data will be used to determine whether additional mitigation may be required to stay ahead of the take (as described above, Alliant is proposing to mitigate upfront for the entire amount of permitted take for INBA, NLEB, and LBBA).

Because annual variation is anticipated given the scope and scale of the HCP and Alliant's Projects, it is inappropriate to use monitoring data from any one year to trigger adaptive management. Therefore, Alliant will evaluate take over a 5-year rolling window to estimate the annual take rate and will use all years of data to estimate cumulative take. The first take evaluation to inform adaptive management decisions will occur after five years of bat fatality monitoring, followed by annual take evaluations using the previous five years of data, on a rolling basis.

Prior to June each year, Alliant and USFWS will meet to review and evaluate compliance monitoring results from the previous year. These "evaluation meetings" will be used to confirm assumptions concerning the impacts of Covered Species population changes and evaluate other circumstances associated with the monitoring data, such as potential geographic or Project-specific variability in monitoring results. Evaluation meetings will also review results of previous meetings and will determine whether changed circumstances may have occurred. If a changed circumstance has occurred, Alliant will follow the response actions identified (see Section 8.2).

The annual meeting that takes place after the fifth year of the Permit term (i.e., beginning in April of the sixth year) will be the first evaluation meeting used to determine whether adaptive management measures have been triggered, and, if so, the action(s) Alliant will take in response

[20] As described in the Section 5.4, SSM will entail searching approximately 20% of the turbines at each project (with the exception of English Farms) each year, with the subset of searched turbines rotated such that all turbines are searched once in a 5-year window. At English Farms, approximately 40% of the turbines will be searched every year.

to the trigger(s). As stated above, after the first five years of the Permit term, every annual evaluation meeting will assess adaptive management triggers on a rolling 5-year window. Adaptive management will involve use of these five options:

1. no change;
2. conduct higher intensity monitoring (double the search effort [e.g., search twice as many turbines, double the number of turbines searched with dogs, etc.]) for one year and reassess the triggers;
3. implement operational adjustments or technologies to influence the rate of take of Covered Species and conduct higher intensity monitoring;
4. for one or all Covered Species, seek a Permit amendment; and/or
5. conduct a mitigation true-up for the tricolored bat.

If any adaptive management decisions are made outside of the April meeting timeframe (for example, during the SSM period as an immediate reaction to PCM data), Alliant will notify the USFWS within five business days of any operational changes made to a facility (or facilities) as a result of adaptive management.

Alliant may decide to collect bat acoustic data, potentially beginning as a pilot study at one or two Projects, to further inform bat activity patterns and population trends in their fleet. This acoustic data collection would be in addition to the acoustic data that may be collected during the July 15 – September 30 timeframe at English Farms and Golden Plains if acoustic smart curtailment is used as a minimization strategy at those two projects (Table 5.1). Any acoustic data collected would not be used as a trigger for adaptive management, but rather may be reviewed as an additional resource when making adaptive management decisions (see Section 8.2 for further details).

5.5.1 Take Evaluation

The take evaluation for all Covered Species will be conducted using the EoA model and the fatality data collected at the Alliant Projects through the SSM program. As stated above, EoA is a statistical framework and software package developed by the USGS to estimate the occurrence of rare events (Huso et al. 2015, Dalthorp and Huso 2015, Dalthorp et al. 2017). The EoA model will provide an estimate of the annual take rate and the cumulative take based on data collected during monitoring, thus providing a framework for two types of adaptive management tests to be evaluated:

1) a short-term test/trigger (at alpha = 0.1 for INBA, LBBA, and TRBA and at alpha = 0.15 for NLEB; see below) of whether the estimated annual take rate exceeds the predicted annual take rate; and
2) a long-term test/trigger (at alpha = 0.5 for all Covered Species) of whether the estimated total cumulative take has exceeded the permitted level of take (Table 5.8).

For NLEB, a short-term test using EoA at alpha = 0.1 may not provide sufficient opportunities for early adaptive management intervention if take levels are higher than anticipated. This is due to several factors, including:

- the anticipated probability of detection under the SSM approach
- the low requested and expected take levels for NLEB (i.e., when the permitted level of take [246 NLEB over 30 years] is less than one NLEB per project [nine Alliant Projects] per year)
- the inherent behavior of EoA (i.e., lower detection probabilities result in high take estimates for small number of observed fatalities).

Therefore, a relatively low number of "NLEB in hand" over the course of the Permit could result in firing the long-term trigger before sufficient adaptive management action could be taken to reduce the take rate. Subsequently, a less sensitive/more conservative[21] short-term trigger of alpha = 0.15 will be used for this species. Although a less sensitive trigger will result in a higher probability of implementing adaptive management actions (i.e., the short-term trigger will be more likely to fire) when the true annual take rate is appropriate with respect to the permitted take, changing the alpha to 0.15 is not expected to cause excessive trigger firing. Therefore, Alliant proposes to use a somewhat more conservative short-term trigger for this species to provide greater potential for adaptive management intervention prior to a long-term trigger fire.

5.5.2 Short-term Trigger

The short-term test is used to determine if past monitoring data signal a potentially unsustainable mortality rate that would lead to exceedance of the long-term limit before the end of the Permit term. Short-term triggers are built into the EoA estimation framework to assess the annual rate of take within a short-term defined rolling window. The short-term trigger will be tested after the fifth year of standardized (in this case SSM) monitoring. After that, the short-term trigger will be tested every year using data from a 5-year rolling window (to capture all turbines being monitored under the SSM approach over a 5-year period), to obtain sufficient sampling of year-to-year variability. If, within any 5-year rolling window, the estimated annual take rate exceeds the permitted annual take rate, with 90% confidence (85% confidence for NLEB), the short-term trigger will be activated. The confidence level for NLEB was adjusted to 85% to allow for a less sensitive/more conservative short-term trigger for this species. Activation of the trigger is an indication the minimization plan may need to be adjusted to ensure the cumulative median take estimate remains within the permitted limit over the ITP term. The short-term trigger will be evaluated in each standardized monitoring report, and any required response will be implemented before the start of the next monitoring cycle. The USFWS will be notified prior to the implementation of any

[21] The alpha value equates to the probability of the trigger firing when the estimated annual take rate is equal to the permitted annual take rate. Therefore, smaller alpha values result in a more sensitive trigger because stronger evidence is required to conclude the permitted annual take rate is being exceeded. Conversely, larger alpha values are less sensitive (i.e., more conservative) in that they require less evidence to fire a trigger, and could fire unnecessarily when the permitted annual take rate is not actually being exceeded. However, a larger alpha value can be used to ensure that enough short-term triggers are being fired prior to triggering the long-term trigger, allowing for sufficient adaptive management intervention. (Dalthorp et al. 2017).

proposed adaptive management response. A flowchart showing the short-term trigger assessment process for this HCP is shown in Figure 5.2.

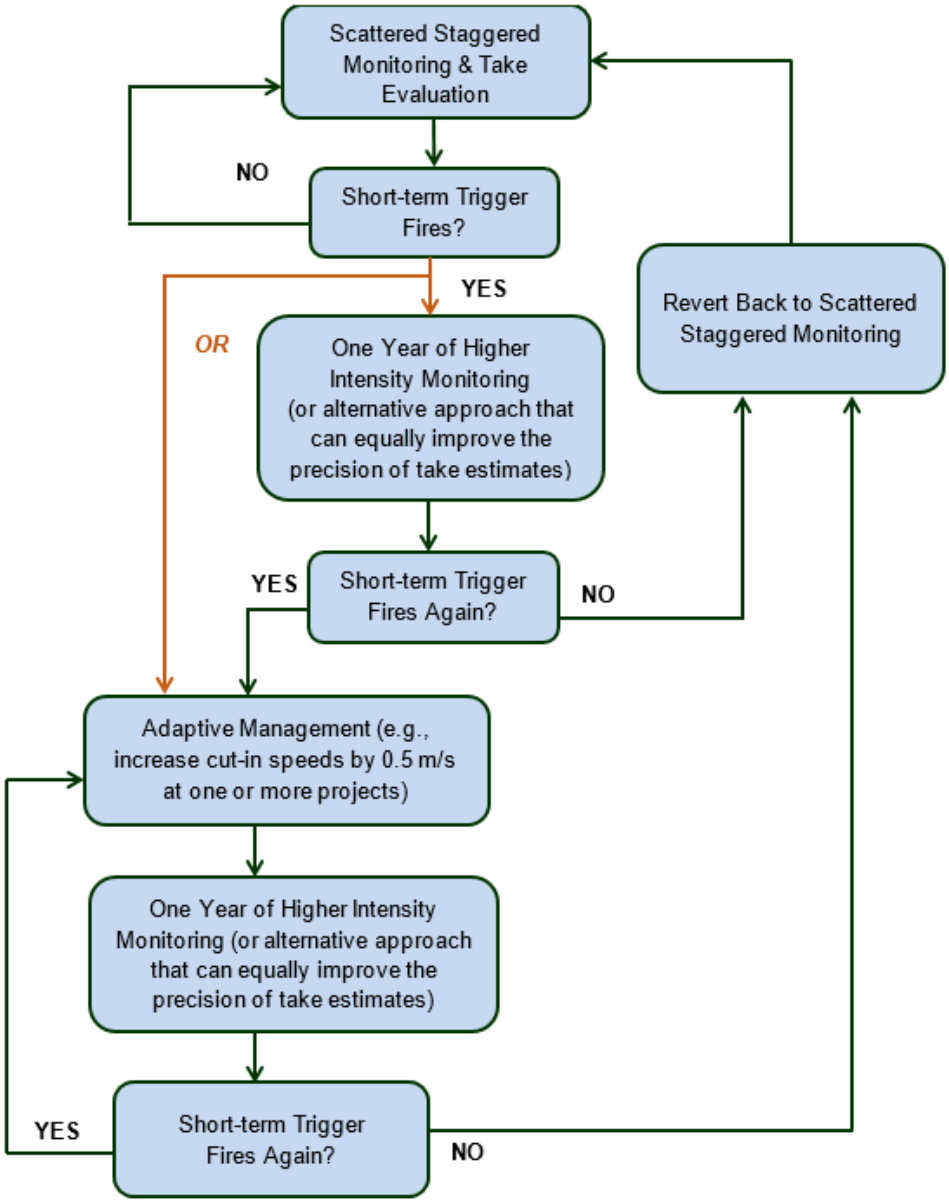

Figure 5.2. Alliant Habitat Conservation Plan short-term trigger assessment process.

If the short-term trigger is fired, as shown on Figure 5.2, Alliant may first exercise its discretion to conduct one year of higher intensity monitoring (double the search effort [e.g., search twice as many turbines, double the number of turbines searched with dogs, etc.]) to improve the precision of estimates by increasing the search effort and to confirm the previous monitoring results were not anomalous. If Alliant chooses this approach, this additional year of standardized monitoring would be conducted before applying methods to further minimize take. If alternative methods to

higher intensity monitoring are developed over the life of the permit that can equally improve the precision of estimates, Alliant may consider these alternatives in coordination with the USFWS.

If the short-term trigger is not fired after a year of higher intensity monitoring, Alliant would return to monitoring under the SSM framework. If a short-term trigger is confirmed by a year of higher intensity monitoring (or, if Alliant decides to forego the year of more intensive monitoring and instead go straight to operational adjustments), incremental adaptive management measures would be implemented to reduce take rates to be more in line with expectations. This could include operational adjustments to turbine cut-in speeds or temperature thresholds to reduce take (e.g., increase cut-in speeds by 0.5 m/s [1.6 ft/s] at select projects where additional curtailment would have the highest minimization impact). Alliant and the USFWS will review all data (PCM and acoustic, if any is available) gathered at the Alliant Projects to determine what the appropriate operational changes may be. Potential operational changes would be determined based on the specifics of what contributed to the trigger fire (such as timing and location of Covered Species carcasses that were detected) Changes may or may not be implemented across all Alliant Projects.

As an example, if a short-term trigger for LBBA is fired and all of the LBBA carcasses were found at two of the Alliant Projects, operational changes would likely be focused on those two projects, versus a situation where the LBBAs were found at all Projects with no particular pattern. If operational adjustments are implemented, an additional year of higher intensity monitoring across the fleet (regardless of whether the operational changes were implemented at a subset of projects) would occur to gather more robust data under the adjusted regime.

If the short-term trigger is fired after the operational adjustments are implemented and an additional year of higher intensity monitoring is completed, additional operational adjustments would be implemented (e.g., increase cut-in speeds at select projects by another 0.5 m/s) and an additional year of higher intensity monitoring would occur. If the short-term trigger is not fired after the first round of operational adjustments and higher intensity monitoring, Alliant would continue to implement the operational adjustments, but would go back to the lower intensity monitoring under the SSM approach (Table 5.8 and Figure 5.2).

5.5.3 Long-term Trigger

The EoA estimation framework includes a long-term trigger, which indicates whether the permitted level of take has been met (based on the median cumulative estimated take). The long-term trigger will be tested at the end of Year 5, then every year thereafter, using all data collected to date. If the long-term trigger is activated, Alliant will implement an operational plan, approved by the USFWS, under which take of the Covered Species is not likely to occur. Alliant will then coordinate with the USFWS to either continue to operate under the USFWS-approved operational plan for the remainder of the Permit term or to pursue a Permit amendment.

5.5.4 Reversion Trigger

A reversion trigger is used to determine if previously implemented adaptive management measures that were enacted after a short-term trigger fired have reduced the take to Covered Species to such an extent that the additional minimization measures are no longer necessary. If, at some point after an adaptive management measure (such as raised cut-in speeds) has been implemented, estimated Covered Species take is below authorized take limits and is not expected to exceed authorized limits for the remaining Permit term, Alliant may propose to reduce the minimization measures (Figure 5.3). In this circumstance, Alliant and the USFWS will evaluate whether to implement a reversion trigger if:

1. an adaptive management measure has previously been implemented at some or all of Alliant's Projects which resulted in raising the cut-in speed or otherwise changing the operational regime to reduce risk; and
2. the monitoring data collected to date since the adaptive management measure occurred indicate the estimated annual take rate of the one or more Covered Species that previously triggered the adaptive management measure is now below 80% of the average permitted annual take rate (0.8 * total permitted take ÷ permit term) with 95% confidence (1-tailed $\alpha = 0.05$); Alliant may also consider additional supporting data as part of the reversion trigger process (see Section 8.2).

In this case, Alliant may lower the turbines' cut-in speed by 0.5 m/s reductions or otherwise revert to previous minimization operational regimes (i.e., if temperature threshold was changed; Figure 5.3). As with the short-term trigger, the estimated take rate used to evaluate the reversion trigger is species-specific based on the detection probability and number of carcasses of the Covered Species that were found.

5.5.5 Low-Impact Trigger

In the event Alliant's proposed baseline minimization regime (Table 5.1) has reduced estimated Covered Species take to numbers significantly below authorized take limits, Alliant may propose to reduce the baseline minimization measures. In this circumstance, Alliant and the USFWS will evaluate whether to implement the low-impact trigger if, after the first 15 years of the permit term, the cumulative take estimate of all Covered Species is below 80% of the expected permitted take to date (0.8 * total permitted take ÷ 2) with 95% confidence (1-tailed $\alpha = 0.05$). For example, if the low-impact trigger is fired after the first 15 years of the permit term, Alliant may propose to move Projects from the higher risk category (i.e., English Farms and Golden Plains) to the moderate risk category and implement a reduced cut-in speed of 4.0 m/s, and/or Projects originally operated following moderate risk minimization regime may be operated as low risk (Table 5.1). Alliant would not implement changes to the minimization regime as a result of the low-impact trigger being fired without first coordinating and gaining approval from the USFWS.

Table 5.8. Adaptive management triggers, tests, and responses[1].

Trigger	Test	Response
Short-term Trigger: Is the estimated annual take rate (λ) larger than average permitted annual take rate (τ) for any Covered Species?	First tested at the end of Year 5 then every year thereafter using the estimated average annual take rate (λ) over the five most recent standardized monitoring years (i.e., a 5-year rolling window). The trigger is tested at a significance level (α) of 0.1 for INBA, LBBA, and TRBA and at a significance level (α) of 0.15 for NLEB. The trigger fires if $P(\lambda > \tau) > 1 - \alpha$.	When triggered, Alliant may, as a first response, conduct one year of higher intensity monitoring in the year following the trigger fire (to improve the precision of estimates by increasing the search effort and to confirm the previous monitoring results were not anomalous; if alternative methods to higher intensity monitoring are developed over the life of the permit that can equally improve the precision of estimates, Alliant may consider these alternatives to higher intensity monitoring) and reassess whether the trigger is fired again. Alternatively, Alliant may forego a year of more intensive monitoring and immediately implement operational changes. If trigger does not fire again after an additional year of higher intensity monitoring, Alliant will revert back to monitoring under the SSM framework. If trigger does fire again (or, if Alliant decides to forego a year of more intensive monitoring and go straight to operational changes), Alliant will: 1. Implement one of a number of possible responses (e.g., adjustments to turbine cut-in speed or temperature threshold, implementation of deterrents, adjustments to turbine operational algorithms) that reduces take rates to bring them more in line with expectations, and 2. The implementation of any response meant to reduce the take rate will occur concurrently with one year of higher intensity monitoring at all project(s) to gauge the response's effect. If the short-term trigger continues to fire, then additional operational adjustments will be implemented to reduce take rates.
Long-term Trigger: Does estimated cumulative take (M^*) exceed permitted take (T) for any Covered Species?	First tested at the end of Year 5, then every year thereafter with cumulative data. The test evaluates if the estimated cumulative number of fatalities (M^*) at a significance level (α) of 0.5 is greater than the total permitted take (T). The trigger fires if $P(M > T) > 1 - \alpha$.	When fired, the Alliant Projects begin operating under an approved operational plan approved by USFWS. Additionally, Alliant could coordinate with the USFWS regarding amending the Permit to increase permitted take levels to align with actual take and offset the increase in permitted take with additional mitigation.

Table 5.8. Adaptive management triggers, tests, and responses[1].

Trigger	Test	Response
Reversion Trigger: Is the estimated annual take rate (λ) smaller than expected for any Covered Species after adaptive management steps have been taken?	Tested after an adaptive management measure has been implemented at some or all of the Alliant Projects (i.e., raising the cut-in speed or otherwise changing the operational regime). The test evaluates if the estimated annual take rate (λ) is now below 80% of the average permitted annual take rate (0.8 * total permitted take ÷ permit term) with 95% confidence (1-tailed α = 0.05). The trigger fires if $P(\lambda < \tau * 0.8) > 1-\alpha$.	When triggered, Alliant may lower the turbines' cut-in speed by 0.5 meters per second reduction or otherwise revert to baseline minimization operational regimes (i.e., if temperature threshold was changed).
Low Impact Trigger: At Year 15, is estimated cumulative take (M) significantly less than expected for all Covered Species?	Tested at Year 15. The test is based on the estimated cumulative number of fatalities (M). The test evaluates if the estimated cumulative take (M) is now below 80% of the expected permitted take to date (0.8 * total permitted take ÷ 2) with 95% confidence (1-tailed α = 0.05). The trigger fires if $P(M < T / 2 * 0.8) > 1 - \alpha$ for all Covered Species.	When triggered, Alliant may lower the turbines' cut-in speed at Projects originally designated as moderate and/or high risk (i.e., Projects originally operated following high risk minimization regime may be operated at moderate risk, and/or Projects originally operated following moderate risk minimization regime may be operated as low risk).

INBA = Indiana bat, NLEB = northern long-eared bat, LBBA = little brown bat, TRBA = tricolored bat.

[1]. Based on Dalthorp, D., and M. Huso. 2015. A framework for decision points to trigger adaptive management actions in long-term incidental take permits: US Geological Survey (USGS) Open-File Report 2015-1227, 88 p. http://dx.doi.org/10.3133/ofr20151227 and Dalthorp et al. 2017. Evidence of Absence (v2.0) Software User Guide. USGS Data Series 1055, 109 p. https://doi.org/10.3133/ds1055.

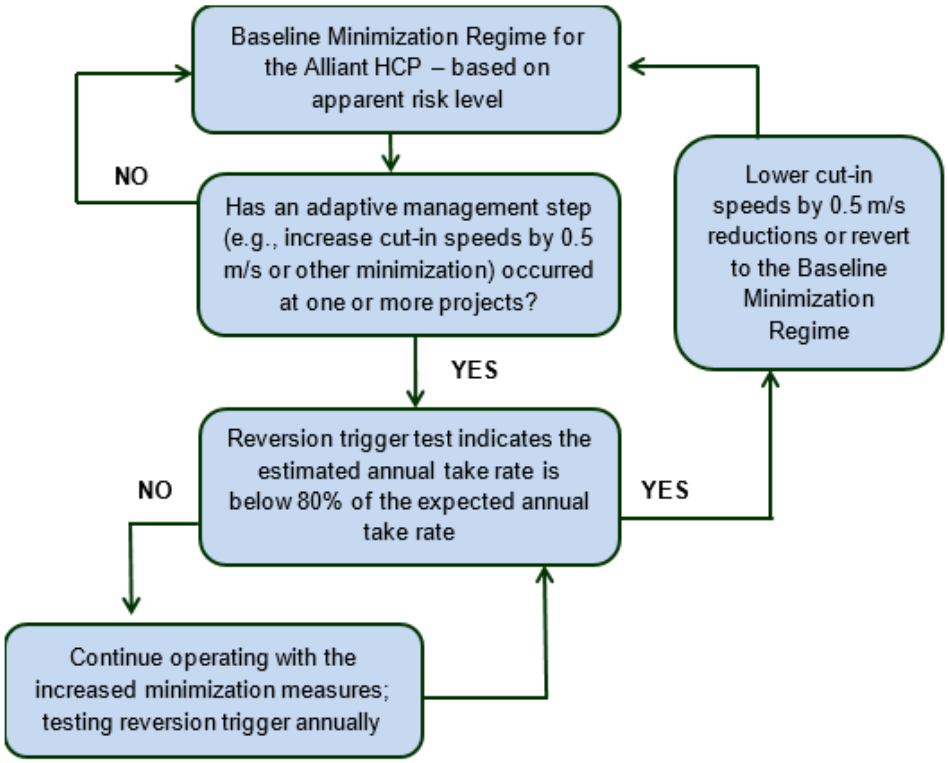

Figure 5.3. Alliant Habitat Conservation Plan reversion trigger assessment process.

5.5.6 Additional Actions

Reporting: If a fatality of a Covered Species is discovered at an Alliant Project, Alliant will notify USFWS within five business days of positive species identification and evaluate available data concerning the discovery, as stated above in Section 5.4.4. Positive identification will be obtained through typical species identification procedures and genetic testing, if necessary. Discovery of a Covered Species fatality does not necessarily indicate the take limit will be exceeded, and, therefore, does not necessarily trigger the need for adaptive management actions or operational changes. Rather, such a fatality will be evaluated in the context of the circumstances related to the fatality, when it occurs during the ITP term, and the likelihood such take signals the need for additional actions

5.6 Habitat Conservation Plan Reporting

Alliant will gauge compliance with and effectiveness of the HCP and provide an annual report to the USFWS by March 31 of the following year[22]. The report will be reviewed during the annual evaluation meetings set to occur in April each year. The annual report will include, but will not be limited to, the following:

[22] The annual report for the fifth year of the permit will be the first annual report that discusses adaptive management measures have been triggered, and, if so, the action(s) Alliant will take in response to the trigger(s) (see Section 5.5).

- Summary of monitoring conducted during the year
- Summary of effectiveness of minimization measures, where appropriate
- Summary of funding released and planned mitigation projects
- Mitigation true-up actions completed if triggered and applicable
- Status of conservation fund/funding assurances
- Annual and cumulative mortality estimates of the Covered Species and the methods used to calculate the estimates
- Annual fatality rate estimates and whether or not adaptive management triggers were met
- Responses to adaptive management triggers implemented
- Raw carcass data collected during post-construction monitoring will be included as an attachment to the annual report in a format that is mutually agreed upon by the USFWS and Alliant.
- If applicable, every five years from ITP issuance, a letter certifying that Alliant Energy Corporation meets the Financial Criteria as described in section 6.0 below.

Alliant will also develop a mitigation report detailing the status of mitigation projects and responses to mitigation adaptive management protocols. The mitigation report will be shared with the USFWS at an interval agreed upon by the USFWS and Alliant once the mitigation plan is further developed.

6.0 IMPLEMENTATION AND FUNDING

Costs to implement the HCP include the development and implementation of mitigation projects, compliance and effectiveness monitoring and reporting, general HCP administration and management costs, and potential implementation of adaptive management or changed circumstances, if triggered. The costs of implementing the HCP will be funded through Alliant Energy Corporation's available sources of liquidity, and will be included in its capital spend budgets and operations budgets, and assured through Alliant Energy Corporation's self-bonding approach (described below), or, as necessary, through either a surety bond or a letter of credit. Alliant Energy Corporation has available a variety of sources of liquidity and capital resources, both internal and external, including operating cash flows, available capacity under a single revolving credit facility, and available capacity under Interstate Power and Light Company's sales of accounts receivable program, supplemented by periodic issuances of long-term debt and Alliant Energy Corporation equity securities. These sources are expected to provide funds required for current operations, capital expenditures, debt retirements and other capital requirements associated with the HCP.

Alliant has coordinated with the USFWS to develop financial criteria (the "Financial Criteria") sufficient to show that Alliant Energy Corporation has the financial means to fulfill its obligations under the HCP through a self-bonding corporate guarantee approach. Namely, the Financial Criteria are, as of the most recently audited financial statement date, Alliant Energy Corporation has a tangible net worth of at least $10 million (30 CFR §§ 800.23), that Alliant Energy Corporation has a ratio of total liabilities to net worth of 2.5 times or less (30 CFR §§ 800.23), that Alliant

Energy Corporation's fixed assets total at least $20 million (30 CFR §§ 800.23), and that the combined value of Alliant Energy Corporation's cash and cash equivalents (as disclosed in Alliant Energy Corporation's Consolidated Balance Sheets in Alliant Energy Corporation's most recently filed Form 10-K filed with the SEC), available credit facility capacity (as disclosed in the Short-term Debt Note in the Combined Notes to Consolidated Financial Statements in Alliant Energy Corporation's most recently filed SEC Form 10-K) and available capacity under Interstate Power and Light Company's sales of accounts receivable program (as disclosed in the Sales of Accounts Receivable Note in the Combined Notes to Consolidated Financial Statements in Alliant Energy Corporation's most recently filed SEC Form 10-K) is at least ten times higher than the estimated combined amount of the upfront mitigation cost, true-up mitigation cost, and changed circumstances contingency fund (i.e., the amount to be assured). As mitigation is implemented and paid for, the amount to be assured will be revised to reflect the remaining estimated costs for HCP implementation, which will be assessed every five years and discussed with the USFWS.

6.1 Costs to Administer the Habitat Conservation Plan and Conduct Monitoring

The anticipated administrative costs for this HCP include program management and oversight, training, compliance monitoring, and other incidental costs (Table 6.1). Alliant intends to use existing staff to provide management and oversight for HCP and ITP compliance and most routine training activities. Alliant already provides management and oversight for natural resources, training, and environmental compliance program areas. Personnel costs associated with wind operations employees and contractors attending required HCP training programs are included in Alliant's existing staff overhead expenses. Annual compliance monitoring costs were estimated assuming that monitoring will be conducted per the approach described in Section 5.4.2. These administrative and monitoring costs are funded as annual operating expenditures.

Table 6.1. Alliant Energy's Habitat Estimated Conservation Plan Administrative and Monitoring Costs (in 2023 Dollars).

Description	One Time Costs	Annual Costs
Personnel and Training		
Environmental Services staff time	$ -	Covered by existing overhead
Operations staff trainee time	$ -	Covered by existing overhead
Training Materials	$5,000	$ -
Monitoring and Reporting		
Incidental Scans by Operations Staff	$ -	Covered by existing overhead
Annual Fatality Monitoring	$ -	$650,000
Bat Identification (genetic testing)	$ -	$5,000
Annual Report and Agency Meeting	$ -	$12,000
Total	**$5,000**	**$667,000 per year**

Note: All costs furnished are estimates based on completed contracts for comparable work with qualified biological consulting firms. Genetic testing estimates are based on past fees associated with genetic bat identification lab analysis. Actual costs may vary.

6.1.1 Funding Assurance for Administration and Monitoring

To provide assurance that the administrative, monitoring and reporting measures in the HCP will occur, Alliant will submit to the USFWS by March 31 of every year after permit issuance, documentation stating that Alliant has allocated budget for staff time to administer the HCP including meeting reporting requirements, and that Alliant has executed a contract(s) with a qualified party(s) to complete the year's required compliance monitoring activities.

6.2 Up-Front Mitigation Funding

Mitigation costs for this HCP include funding to execute a contribution to a USFWS-approved conservation bank, or a contract with a mitigation provider to execute an easement for a mitigation project and implement the Project Development Plan (i.e., Permittee Responsible Mitigation [PRM]). Funding assurances will be provided to cover the cost of making payment to a conservation bank that would mitigate for all the permitted take of INBA, NLEB, and LBBA, and 28% of the permitted take of TRBA. The mitigation costs were based on the cost to purchase credits from the Two Rivers Conservation Bank in Iowa; actual mitigation costs may be less.

6.2.1 Funding Assurance for Up-Front Mitigation

To provide financial assurance for these up-front mitigation costs, within 30 days of ITP issuance, Alliant will submit a corporate guarantee form and a self-bonding certification letter signed by Alliant Energy Corporation's chief accounting officer to the USFWS certifying that Alliant Energy Corporation meets the Financial Criteria, as defined in section 6.0 above. The mitigation credit purchase will occur within one year of permit issuance, as specified in Section 5.3.3. If the primary funding assurance criterion is not met, Alliant can provide the USFWS either a surety bond or a letter of credit as an interim financial assurance, in an amount to be determined based on the Applicant's mitigation plan. In future years, once the upfront mitigation is implemented and paid for by Alliant (anticipated to be paid for within one year of permit issuance), the upfront mitigation amount will be subtracted from the amount to be assured in future annual funding assurances letters / guarantees.

6.3 Mitigation True-up, Adaptive Management and Changed Circumstances Funding

While difficult to estimate because they are dependent on future events and information that will not be available until the HCP is implemented and performance is monitored, Alliant has estimated costs to implement mitigation true-ups described in Section 5.3.4, adaptive management measures described in Section 5.5 and changed circumstances described in Section 8.2 (Table 6.2). If triggered, these costs will be funded by Alliant's annual operating expenditure and standard liquidity practices and assured through Alliant's self-bonding corporate guarantee approach, or other form of assurance as described in Section 6.3.1.1.

Table 6.2. Alliant estimated costs to implement mitigation true-ups, adaptive management and changed circumstances (in 2023 dollars).

Implementation Measure	Description	Estimated Cost
Mitigation True-up		
Section 5.3.4	Implementation of additional mitigation for TRBA, at a time period that keeps mitigation ahead of the take	$1,600,000 to $7,600,000[4]
Adaptive Management		
Short-term Trigger	Higher intensity monitoring (either as a first step to confirm trigger fire or paired with an operational adjustment to reduce Covered Species fatalities)	Estimated at an additional $550,000 per year of higher intensity monitoring (i.e., per short-term trigger)
Long-term Trigger	Alliant Projects would beg0in operating under an operational avoidance plan approved by the USFWS	Production losses would not increase out-of-pocket costs and would be covered by existing operational budgets
Changed Circumstance		
Changed Circumstances Contingency Fund[2]	E.g., acoustic activity monitoring[1], changes in a mitigation project's ability to meet success criteria[3]	$400,000 (includes up to 10% of the upfront mitigation cost [$320,000] plus an additional $80,000 to cover other changed circumstances)

[1] Acoustic activity monitoring is currently being considered as a pilot study at one or two of the Alliant projects, but is not a permit requirement for HCP implementation, and may be discontinued at any time.

[2] If changed circumstances are triggered and funds are depleted from the Changed Circumstances Contingency Fund, Alliant will add additional funds up to $400,000 to ensure sufficient funds are set aside for the duration of the permit term.

[3] If conservation bank is used for mitigation, Alliant will not be liable for costs associated with mitigation failure.

[4] Mitigation true-up costs were estimated based on the cost for the initial conservation bank credits; however, the actual cost of mitigation true-ups may be less.

6.3.1 Funding Assurance for Mitigation True-up, Adaptive Management and Changed Circumstances

6.3.1.1 Initial Self-bonding and Indemnity Agreement Certification

As stated above, within 30 days of ITP issuance, Alliant will provide both the corporate guarantee form and an initial self-bonding certification letter to the USFWS, signed by Alliant Energy Corporation's chief accounting officer, certifying that Alliant Energy Corporation meets the Financial Criteria, as defined in section 6.0 above. If the self-bonding certification is not provided in this time-frame, or, if at any point in the 30-year permit term the Financial Criteria are no longer met, then Alliant will set up a secondary funding assurance (in the form of either a surety bond or a letter of credit) for the mitigation true-up and changed circumstances; as described below, adaptive management measures are anticipated to be covered by operational budgets and contracts with qualified contractors to conduct additional monitoring.

6.3.1.2 Mitigation True-up

After the initial self-bonding certification letter is provided within 30 days of ITP issuance, Alliant will submit to the USFWS by March 31 of every year after permit issuance documentation stating whether the mitigation true-up threshold has been met; and, if met, document what amount of mitigation will be implemented and by what method (purchase of credits with conservation bank,

contract with a mitigation provider for a PRM, contribution to a USFWS-approved research fund, etc.). The mitigation true-up portion of the amount to be assured will depend on the estimated costs of the proposed mitigation, which will cover at a minimum five years of projected take, or up to the entire remaining permitted take, as described in Section 5.3.4.

If the corporate guarantee form and self-bonding certification letter is not provided within 30 days of ITP issuance, or, if at any point in the 30-year permit term the self-certification criteria is no longer met, Alliant will instead implement either a surety bond or a letter of credit to cover a mitigation true-up contingency fund. This amount will be approximately $1,600,000, which is estimated to be the cost to mitigate for 5 years of TRBA take at the permitted level (i.e., approximately 300 acres of habitat protected or restored), based off the costs for the initial conservation bank credits; the actual cost to mitigation for a minimum of 5 years of TRBA take may be much less. The amount for implementing a surety bond or letter of credit would reflect the current expected cost when the surety bond or letter of credit is secured, and would be updated as needed to account for inflation. If this contingency fund is depleted during the ITP term through implementation of mitigation true-up, Alliant will provide either a surety bond or a letter of credit for this amount prior to the next year of monitoring.

6.3.1.3 Adaptive Management

Minimization measures through implementation of the operational regime and increased cut-in speeds at higher risk and moderate risk projects will reduce the annual energy production at the Alliant Projects, which affects economic viability. However, this minimization cost (that would be incurred over the 30-year ITP term) is not an out-of-pocket expenditure by Alliant, and the economic models for the Alliant Projects have been adjusted to account for these losses. All other minimization measures (i.e., project siting, turbine design) have already been implemented and will not increase out-of-pocket costs to Alliant.

To provide assurance that the adaptive management measures in the HCP will occur (either minimization measures as described above, or additional monitoring at additional cost as estimated in Table 6.2), Alliant will submit to the USFWS by March 31 of every year after permit issuance, documentation stating whether any adaptive management thresholds have been met; what the action to be taken will be, and, if additional monitoring occurs, document that Alliant has allocated and executed a contract(s) with a qualified party(s) to complete the compliance monitoring activities.

6.3.1.4 Changed Circumstances

For this HCP, the costs associated with the Changed Circumstance Contingency Fund address scenarios if acoustic monitoring studies are implemented to support potential changes to minimization measures, or when habitat mitigation projects have failed (if PRM or other non-conservation bank methods are used for the mitigation) and need to be replaced or rectified.

After the initial self-bonding certification is provided within 30 days of ITP issuance, Alliant will submit to the USFWS by March 31 of every year after permit issuance, documentation stating whether any changed circumstances have occurred; and, if so, document what the response will be and how it will be funded.

If the corporate guarantee form and self-bonding certification letter signed by Alliant Energy Corporation's chief accounting officer is not provided within 30 days of ITP issuance, or, if at any point in the 30-year permit term the self-certification criteria is no longer met, Alliant will instead implement either a surety bond or a letter of credit to cover a changed circumstances contingency fund. This amount will be $400,000, which is estimated to cover the cost to implement acoustic monitoring studies at two projects; this amount also covers 10% of the upfront mitigation cost, and would allow for changed circumstances if there are issues with mitigation projects meeting criteria (if PRM or non-conservation bank methods are used). If this contingency fund is depleted during the ITP term through implementation of changed circumstances, Alliant will provide either a surety bond or a letter of credit for this $400,000 amount prior to the next year of monitoring.

6.4 Financial Commitments

6.4.1 Expenditure of Funds

Alliant warrants that it has, and shall expend, such funds as may be necessary to fulfill its obligations under the ITP and the HCP. Alliant shall notify the USFWS within 60 days of any material change in Alliant Energy Corporation's financial ability to meet the Financial Criteria, as defined in section 6.0 above, and fulfill its obligations under the HCP and the ITP. The Financial Criteria will be assessed every five years and discussed with the USFWS.

The total estimated One Time costs and annual costs; applicable funding sources; and applicable funding assurance mechanisms are provided in Table 6.3.

Table 6.3. HCP Implementation and Funding Estimates (in 2023 dollars).

HCP Obligation	Estimated One Time Cost	Estimated Annual Cost	Funding Source	Funding Assurance Mechanism 1	Funding Assurance Mechanism 2	Funding Assurance Mechanism 3
Plan Administration, Monitoring, Reporting (§ 6.1)	N/A	$667,000	Sources of liquidity and/or credit facility	Self-bonding with Indemnity Agreement	N/A (operational budgets will cover)	N/A
Training Materials (§ 6.1)	$5,000	N/A	Sources of liquidity and/or credit facility	Self-bonding with Indemnity Agreement	N/A (operational budgets will cover)	N/A
Adaptive Management (§ 6.1)	N/A	$550,000 (per short-term trigger fire, if triggered)	Sources of liquidity and/or credit facility	Self-bonding with Indemnity agreement	N/A (operational budgets will cover)	N/A
Acoustic Activity Monitoring	N/A	$100,000 (per 5-year acoustic study at a single project)	Sources of liquidity and/or credit facility	Self-bonding with Indemnity agreement	N/A (operational budgets will cover)	N/A
Changed Circumstances Contingency Fund (§ 6.1)	$400,000 (if triggered)	N/A	Sources of liquidity and/or credit facility	Self-bonding with Indemnity agreement	Surety bond if self-bonding criteria are no longer met	Letter of credit if self-bonding criteria are no longer met
Upfront Mitigation (§ 6.3)	$3,200,000	N/A	Sources of liquidity and/or credit facility	Purchase of conservation bank credits or contract with Mitigation Provider for PRM	Surety bond	Letter of credit
Mitigation True-Ups (§ 6.3)	$1,600,000 to $7,600,000 (if triggered)	N/A	Sources of liquidity and/or credit facility	Self-bonding with Indemnity agreement	Surety bond if self-bonding criteria are no longer met	Letter of credit if self-bonding criteria are no longer met
Total One Time Costs*	**$5,805,000 to $11,205,000**					
Total Annual Costs x 30-year Permit Term		**$22,860,000**				
Grand Total Estimated HCP Implementation Costs*	**$28,665,000 to $34,065,000**					

7.0 ALTERNATIVES TO THE TAKING CONSIDERED

Section 10(a)(2)(A)(iii) of the ESA and its regulations (50 C.F.R. §§ 17.22(b)(1), 17.32(b)(1), and 22.2), require an HCP to provide a description of "what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized." The USFWS guidance for developing HCPs suggests to detail among other things, "alternative actions the applicant considered that would not result in take and the reasons why such alternatives are not being utilized," as well as actions that would reduce the take (USFWS and NMFS 2016).

To meet this HCP requirement, two alternatives that would avoid or reduce take were considered by Alliant. Those alternatives were 1) operational avoidance and 2) increased operational minimization.

7.1 Alternative 1: Operational Avoidance

Under the operational avoidance alternative, all Project turbines would be fully feathered at wind speeds below 6.9 m/s (22.6 ft/s) from a half hour before sunset to a half hour after sunrise during the bat active season (March 15 through November 15). This strategy could potentially be modified, depending on available data related to the temporal presence of the Covered Species in the vicinity of a Project, but would still involve feathering all turbines and thus forego energy production when the Covered Species are present or are likely present. With the Projects implementing these turbine operational adjustments, there is a reasonable expectation that take of INBAs, NLEBs, LBBAs, and TRBAs would be largely avoided and unlikely to occur. Under the avoidance alternative, because take of the Covered Species would be unlikely, incidental take authorization under the ESA would not be necessary and an HCP would not be implemented for the Alliant Projects.

This alternative was not selected because it does not meet the purpose of the Alliant Projects, which is to maximize energy production using wind, a clean renewable energy source. Because the power derived by a wind turbine increases by the cube of wind speed ($P = A * v3 * \rho * \eta$ where P = power, A = rotor swept area, v = wind velocity, ρ = air density, and η = efficiency factor), the loss of renewable energy generation above 3.0 m/s is 3 times greater between 6.9 (avoidance cut-in speed) and 5.0 (proposed cut-in speed for higher risk projects [i.e., English Farms and Golden Plains]) m/s and 8 times greater between 6.9 m/s and 4.0 m/s (proposed cut-in speed for moderate risk projects [i.e., Whispering Willow East, Franklin County, and Richland]). It would also result in financially unviable Projects. As a result, the renewable energy production of the Alliant Projects would be drastically reduced (potentially to the point of early decommissioning), the Alliant Projects would not reliably contribute to national renewable energy objectives, and contracts for purchase of energy from the Alliant Project's would not be fulfilled. Additionally, if the Projects could not continue economically and were decommissioned earlier than planned, the Alliant Projects would no longer provide economic benefits to local economies. Jobs associated with the operation and maintenance of the Alliant Projects would be lost and participating landowners would not receive income from lease agreements over the expected life of the Projects.

7.2 Alternative 2: Increased Operational Minimization

Alliant also considered implementation of an operational minimization plan more restrictive than the proposed plan. For example, using smart or blanket curtailment to feather below 6.0 m/s rather than 5.0 m/s during fall migration at the two higher risk Alliant Projects and/or increasing cut-in speeds from 4.0 m/s to 5.0 m/s during fall migration at the three moderate risk Alliant Projects, should theoretically provide greater protection for bats. However, there is substantial overlap in the mean percent reduction in bat mortality observed at projects where cut-in speeds were raised from the applicable manufacturer's rated cut-in speed (3.0 – 4.0 m/s) to a cut-in speed of 5.0 m/s - 6.0 m/s (Appendix C). Therefore, based on the observed effect of increased cut-in speeds, such an alternative would not reliably achieve significantly greater minimization than the proposed minimization plan (Table 5.1; Appendix C).

Additionally, because power derived from the wind by a wind turbine increases by the cube of wind speed (Section 7.1), the loss of renewable energy generation at higher wind speeds is disproportionately larger than the estimated reduction in bat fatality rates. In other words, the increased operational minimization alternative would substantially reduce the amount of renewable energy generated by the higher risk and moderate risk projects in return for an uncertain but likely marginal decrease in take. Further, because the level of take under such an alternative would likely be comparable to the proposed plan, costs of mitigation and monitoring would likely remain similar. For these reasons, Alliant determined that an increased cut-in speed alternative was not viable, and pursued development of this HCP based upon the proposed plan.

8.0 HABITAT CONSERVATION PLAN ADMINISTRATION

8.1 No Surprises Assurances

According to the HCP Handbook (USFWS and NMFWS 2016), Federal No Surprises Assurances (50 CFR 17.22(b)(5), 17.32(b)(5), 222.307(g)) provide that, as long as an ITP holder "is properly implementing the HCP and the ITP, no additional commitment of land, water, or financial compensation will be required with respect to covered species, and no restrictions on the use of land, water, or other natural resources will be imposed beyond those specified in the HCP without the consent of the permittee." The principal components of No Surprises Assurances are changed circumstances (Section 8.2), and unforeseen circumstances (Section 8.3). Conditions under which the ITP may be modified, amended, or renewed are described in Sections 8.4 and 8.5.

8.2 Changed Circumstances

Under USFWS regulations, "changed circumstances" are those "affecting a species or geographic area covered by a conservation plan or agreement that can reasonably be anticipated by plan or agreement developers and the USFWS and that can be planned for". Consequently, the HCP should discuss feasible measures developed by an applicant to address reasonably foreseeable changed circumstances that may occur during the ITP term, possibly by incorporating adaptive management measures as necessary for the Covered Species in the HCP (USFWS and NMFS 2016). To the extent practicable, an applicant should identify potential problems in advance and

identify specific strategies or responses in the HCP for addressing them, so that adjustments can be made as necessary without the need to amend the HCP (USFWS and NMFS 2016).

For purposes of this HCP, Alliant believes the following are "reasonably foreseeable changed circumstances" warranting consideration:

- Changes in the migration dates/risk periods of the HCP's Covered Species;
- WNS impacts to the populations of the Covered Species are different than anticipated;
- Listing of additional species;
- Delisting of a Covered Species;
- New technology or information that improves monitoring, estimating, and/or minimizing mortality;
- Project-specific acoustic monitoring data supports changes to monitoring or minimization regime;
- Refurbishing/Repowering projects;
- New projects; and
- Changes in a mitigation project's ability to meet success criteria.

8.2.1 Change in Migration Dates/Risk Periods of the Covered Species

Climate change has the potential to affect the timing of Covered Species migrations. For example, warmer temperatures may allow the Covered Species to leave hibernacula earlier and remain in summer habitat longer, pushing the dates of spring migration earlier and fall migration later. If that were to occur, the timing of Covered Species mortality risk at the Alliant Projects could change, warranting a response by Alliant.

8.2.1.1 Trigger

1. The USFWS announces through an official, public medium (such as in a revised recovery plan, 5-year status review, or the USFWS Region 3 website) of a change in the dispersal and migration dates of a Covered Species in Iowa or southern Minnesota; or
2. The carcass of a Covered Species is discovered incidentally at one of the Alliant Projects outside of the established active season dates (prior to April 1 or after October 15).

8.2.1.2 Response

1. Alliant will initiate an administrative change to adjust the timing of minimization measures and/or monitoring such that the measures encompass the earlier migration start date and/or later migration end date for the Covered Species at the affected Alliant Project(s). Changes to the operational protocol and the monitoring will take effect in the first relevant migration season after the USFWS notifies Alliant.

2. If a Covered Species fatality is discovered outside of the established season dates (as defined above), Alliant will follow established reporting requirements. Alliant will then work with the USFWS to evaluate whether the fatality represents a shift in Covered Species migration windows throughout their range (i.e. applying to all nine Alliant Projects), a smaller portion of their range in Iowa or southern Minnesota (i.e., applying to subset of Alliant Projects), or an anomaly (e.g., an unusually warm early spring, based on recent regional weather patterns). If the former has occurred, Alliant will work with USFWS to determine if a shift in the timing of the minimization and/or monitoring period (in either all of the Alliant Projects or the subset, depending on the applicable circumstances) to encompass the date of the estimated time of death of the carcass in response to the changed circumstance is appropriate. This shift could be a movement of the entire minimization period to earlier or later in the season. If the shift is during spring migration, no change to monitoring would be proposed; if the shift is in the fall migration period, corresponding changes to the minimization and monitoring dates would most likely be proposed.

8.2.2 White-Nose Syndrome Impacts Are Greater than Anticipated

The USFWS will inform Alliant if USFWS evaluations indicate that population reductions due to WNS threaten to have a significant effect--and in the worst-case scenario--jeopardize that species. Alliant will coordinate with the USFWS to evaluate if the likely level of take at the Alliant Projects has also been reduced because there are fewer bats of the Covered Species at risk of collision with Alliant turbines.

8.2.2.1 Trigger

The USFWS and Alliant collectively determine that WNS impacts are more severe than anticipated, to the point that the authorized take level threatens to have a significant population effect or is likely to lead to jeopardy of the Covered Species. This determination could be based on cave counts, hibernaculum emergence surveys, or any other relevant data, such as population viability analyses. Alliant will require that the relevant survey results be presented by the USFWS to justify any positive conclusion that the trigger has been met.

8.2.2.2 Response

Alliant will work with the USFWS to determine, using the Wiens et al. (2023) model or another population model that has been USFWS-endorsed at the time, what level of reduced take would cease to result in significant population impacts to the nearest hibernaculum under scenarios modeled with the observed WNS impacts. If deemed necessary by the USFWS, the ITP would be adjusted to this level of reduced take for the remainder of the permit term.

If the permitted take level has been adjusted downward, Alliant will, in coordination with the USFWS, determine an appropriate course of action. Alliant will evaluate whether the cumulative level of take reported for the Alliant Projects to date is on track with the adjusted permitted level of take, or whether the cumulative level of take lags behind the permitted level of take (as a decrease in take may be reasonably expected to occur with decreasing Covered Species populations). In addition to site-specific data, research regarding Covered Species risk at wind

energy facilities and existing mortality data for the species, as available, will be considered in the analysis. If the cumulative level of take is found to be in compliance with the adjusted ITP, Alliant will continue to implement the minimization measures and monitor mortality as described in the Conservation Program. If the cumulative level of take is found to be on track to exceed the adjusted permitted level of take, Alliant will determine, in coordination with the USFWS, how the HCP's minimization measures can be adjusted to maintain take of the Covered Species at or below the adjusted permitted level. Examples of adjustments to the HCP minimization measures include items such as:

- Changes in the turbine cut-in wind speed (using either blanket or smart curtailment);
- Changes in the Temperature for some or all of Alliant's Projects;
- Changes in timing of the seasonal turbine operational adjustment period;
- Deployment of bat deterrent technology, if suitable technology is available; and
- Other agreed upon solutions between Alliant and USFWS.

Future cave surveys may show that WNS impacts have returned to the level under which the impact of take was originally evaluated for the Alliant Projects. In that case, Alliant would again work with the USFWS to determine if the take level can be restored to the original permitted level without resulting in significant population effects or a risk of jeopardy under scenarios modeled with the newly observed WNS impacts.

Either a reduction in the permitted level of take or a reversion to the original permitted level of take outlined in this HCP are amendments that could be made without a public review of the change.

8.2.3 Additional Species Listings

As a result of current population declines due primarily to WNS, other bat species may become listed under the ESA as threatened or endangered, or may be up-listed from threatened to endangered, during the term of the ITP. Other wildlife species may also become listed as federally threatened or endangered during the term of the requested ITP due to the impacts of climate change, habitat loss, or other factors. Therefore, Alliant believes listing of a new bat species or other wildlife constitutes a foreseeable changed circumstance that warrants consideration in this HCP.

8.2.3.1 Trigger

USFWS notification of a proposed rule to list or uplist under the ESA any bat species or other species of wildlife that may occur in the Permit Area, but is not covered by the HCP, will trigger a response by Alliant.

8.2.3.2 Response

To determine if take of the species has occurred or is likely to occur in the future as a result of the Covered HCP Activities, Alliant will evaluate data from all monitoring years up to the time of the proposed rule, as well as additional scientific information related to the impacts of wind turbines

on the species proposed for listing. If take has not been documented or is considered unlikely to occur, no further action would be required. In the event that take has been documented or is considered likely to occur, Alliant will consult with the USFWS to determine what additional avoidance, minimization, or mitigation measures beyond those already specified in this HCP may be appropriate. If the USFWS issues a final rule listing the species, and it is determined that the HCP must be updated, Alliant will coordinate with the USFWS to determine next steps. Next steps could include:

- modification of Alliant Project operations to avoid take of the newly listed species; or
- preparation of a formal amendment to the HCP that predicts the level of take of the newly listed species that is expected to occur and sets forth additional conservation measures agreed upon with the USFWS to be added to the HCP to support inclusion of the species as a Covered Species under the ITP.

8.2.4 Delisting of a Covered Species

Over the course of the ITP term, species may be delisted if recovery goals are met, or currently unlisted species may be determined to not warrant listing or be warranted but precluded from take from wind facilities.

8.2.4.1 Trigger

The USFWS publishes a final rule to delist one of the Alliant HCP Covered Species.

8.2.4.2 Response

During the permit term, if one of the Alliant HCP Covered Species is delisted, Alliant may choose to consult with the USFWS to determine whether modification of this HCP and/or the terms of the ITP is appropriate. Coordination will include a determination of whether coverage for that species under the ITP is still warranted for the continued operation of the Alliant Projects.

If a covered species is removed from the Alliant HCP/ITP, Alliant will not be responsible for any additional mitigation beyond what has already been implemented for that species.

8.2.5 New Technology and Information

Over the ITP term, new information on the Covered Species and bat/wind-power interaction is likely to become available, as are new methods for monitoring or estimating mortality, new technology to minimize bat mortality at wind turbines, and new methods for mitigating impacts to bats. Alliant may wish to incorporate new information, methods, or technology into the operations and monitoring plans in this HCP, including the minimization regime, adaptive management, and reversion trigger processes. For example, over time, the results of PCM and research related to bat/wind-power interactions will likely be useful in determining improvements to minimization measures at Alliant's Projects. New methods, procedures, or analytical approaches for monitoring studies developed during the term of the ITP may provide more accurate data to inform the minimization approach (e.g., adjusting turbine operations). Additionally, Alliant may wish to

incorporate novel approaches to bat mitigation as new information becomes available (e.g., conducting research projects to determine mitigation feasibility).

Several current examples of these changes exist right now. For example, there are ongoing studies examining the influence of weather on bat fatalities as well as the effectiveness of acoustic-triggered or other smart curtailment regimes, which may inform improvements in the operation of turbines to meet the HCP goals and objectives and increase output of Alliant's Projects. In addition, research on the Covered Species is likely to provide useful information related to location, timing, and characteristics of migration or periods when risk is elevated; such information could inform mortality estimates and identify the most efficient curtailment strategies for minimizing the impact of take of the Covered Species at Alliant's Projects. Deterrent technologies (e.g., acoustic deterrents, visual deterrents) are also being actively investigated and new advances may make these technologies effective at avoiding or minimizing take while also improving wind energy production levels. Ideally, these types of technological advances and new information will be used to improve the ability to estimate mortality, determine if adaptive management is appropriate, and maximize the effectiveness of the minimization and monitoring measures associated with the Alliant Projects noted in this HCP.

8.2.5.1 Trigger

1. Alliant will notify the USFWS of its intent to utilize alternative monitoring, mortality estimation, or minimization measures that have been demonstrated, based on the best available science, to be at least as effective as the methods described in this HCP. New measures or technologies will only be considered if they have been verified as effective (i.e., scientifically tested) and will not require an increase in the take authorization for the Alliant Projects, are cost effective, and are deemed acceptable by the USFWS.
2. Alliant will notify the USFWS of its intent to conduct research on the effectiveness of alternative mitigation options if new information or guidance from the USFWS becomes available.

8.2.5.2 Response

1. Alliant will inform the USFWS about the new methods, how they would be implemented, and any special conditions that may be needed. Alliant will work with the USFWS to ensure that any new information or techniques are compatible with the biological goals and objectives of the HCP and that they will not result in a level of take that is higher than that predicted in the HCP. Any new method, information, or technology will be considered if it has been demonstrated in an acceptable scientific study or has been approved by the USFWS as the best available science, and will not require an increase in the take authorization for the Alliant Projects. Any changes to the minimization measures may result in additional higher intensity monitoring to confirm the effectiveness of the new measures. The monitoring study plan may be modified in consultation with, and approved by, the USFWS to best suit the new information or technologies implemented.
2. Alliant will develop a mitigation research study plan in consultation with, and approved by, the USFWS to best suit the new information and mitigation planning objectives.

8.2.6 Project-specific Acoustic Monitoring Data Supports Changes to Monitoring or Minimization Regime

As described above in the minimization measures noted in the Alliant HCP, Alliant has proposed as an optional measure to implement acoustic smart-curtailment at two potential projects (English Farms and Golden Plains). As part of this minimization regime, should it be implemented, acoustic information will be monitored at nacelle height at several turbines at both of these projects. During the permit term, Alliant may elect to gather additional acoustic data, either during an expanded season at English Farms or Golden Plains, or at additional projects. Due to the unknown variation in bat acoustic data, as well as an unknown direct relationship between acoustic activity and fatality estimates for the Covered Species, it is difficult to predict the exact trends that may be observed. Additionally, it is unknown whether any discernable trends could support changes to the SSM monitoring regime (i.e., shifting to a lower level of fatality monitoring over time through a modified reversion trigger process as part of adaptive management and using acoustic monitoring as a second source of data for adaptive management decisions) or minimization measures (i.e., changing the duration or level of raised curtailment speeds). Therefore, as a first step, Alliant and the USFWS would assess the acoustic information gathered at English Farms, Golden Plains, and any other Alliant Project(s) after the first five years of the permit term (if Alliant elects to collect acoustic information) to determine if a discernable trend can be observed. If this assessment deems the acoustic information is valuable and relevant to adaptive management decisions, acoustic information collection would continue and would be assessed every five years for the life of the permit.

8.2.6.1 Trigger

1. Discernable trends regarding *Myotis* populations or all bat populations can be gleaned from the acoustic information collected.
2. No discernable trends can be detected from acoustic information.

8.2.6.2 Response

Several responses are possible and would be determined by the acoustic information assessment in coordination with the USFWS. Responses 1 and 2 below would likely require a permit amendment due to the proposed changes to minimization or monitoring regimes.

1. Adjust minimization regime based on the trends observed through acoustic data analysis (e.g., shift the curtailment window and/or monitoring window based on a more informed seasonal dataset and understanding of the higher risk season).
2. If acoustic information indicates that acoustic trends are similar enough year to year to support a lower level of monitoring, Alliant may elect to continue minimization measures as planned, with a lower effort monitoring framework.
3. If no discernable trends can be detected, Alliant could elect to gather/assess no additional acoustic information for the remainder of the permit term.

8.2.7 Refurbishing/Repowering Projects

Over the permit term, it is reasonably foreseeable that refurbishing *or* repowering turbines at some or all of the Alliant Projects will occur as the Projects age and/or technology improves.

Refurbishing/Repowering can vary from replacing Project components, such as the blades or nacelles, to completely removing the Project turbines and replacing them with new turbines. Beyond the 3 noted projects, it is unknown what additional refurbishing/repowering of existing Projects will consist of (and when it will occur), but it is anticipated that in some cases existing foundations, supporting tower structures, and underground collection systems would remain in place and be re-used, while in other cases new infrastructure and turbines may be needed. The refurbishing/repowering process is expected to be similar to the construction process, though the scope could be limited to building crane stabilization pads and movement corridors, and equipment laydown areas in cases where existing towers and infrastructure will remain in place.

8.2.7.1 Trigger

Alliant notifies the USFWS of the intent to refurbish/repower one or more of the Alliant Projects other than the 3 refurbishing projects already addressed in the HCP.

8.2.7.2 Response

At least 90 days prior to beginning the refurbishing/repowering construction activities for any Project, Alliant will notify the USFWS of the intent to refurbish/repower a project and submit a refurbishment/repowering plan. The plan would include, but not be limited to, a description of the refurbishment/repowering process for that Project, the anticipated life of the refurbished/repowered Project, an evaluation of potential impacts to the Covered Species that could arise from refurbishment/repowering, and an associated take assessment for the Covered Species. The revised take assessment would be informed by the results of monitoring to date. The objective of the revised take assessment is to determine whether impacts from potential take at the refurbished/repowered Project would change from the existing assessment included in the HCP. Because the details of refurbished/repowering are unknown at this time, an evaluation will be made for each Project at the time of refurbishment/repowering to determine if impacts of take are less than, equal to, or greater than the impacts described in the HCP. Once the impact evaluation is complete, Alliant will coordinate with the USFWS to confirm the evaluation's conclusions and determine appropriate next steps and adjustments to the HCP's conservation plan, if needed.

In the event that the refurbishment/repowering evaluation determines that potential impacts are less than or equal to the take assessment in the HCP, no changes to the conservation plan will be made and the HCP will continue to be implemented as planned. In the event that impacts at a given project could be greater than what was contemplated in the HCP, the change in potential impacts to the Covered Species would incorporate the results of monitoring to date across all Alliant Projects and evaluated against the ITP take limit to determine if adjustments to minimization, monitoring, or mitigation are needed to maintain compliance with the ITP after refurbishment/repowering. Adjustments could include, but are not limited to, implementing

curtailment at the refurbished/repowered Project(s), deploying bat deterrent technology, and/or seeking a permit amendment. Alliant will also reevaluate the assumptions used in calculating mitigation (i.e., the REA model results) to determine whether a mitigation true-up is necessary. Any changes to the minimization measures will result in at least one year of monitoring and reporting to confirm the effectiveness of the new measures. The monitoring study plan will be developed in coordination with the USFWS.

8.2.8 New Projects

Over the permit term, it is reasonably foreseeable that Alliant may build new wind projects within the Plan Area (i.e., Iowa and southern Minnesota). In particular, Alliant anticipates that two projects will be proposed and built within the first five years of the permit term: the Bent Tree North Wind Energy Project in Freeborn County, Minnesota, and the Whispering Willow South Wind Energy Project in Franklin County, Iowa. Bent Tree North is currently anticipated to be up to 150 MW (approximately 30 turbines) located directly north of the Bent Tree Project, in similar landscape and is therefore expected to also be a typical risk project (see Table 5.1). Bent Tree North is currently scheduled to start construction in 2026, with operations anticipated to begin in late 2026. Whispering Willow South is currently anticipated to be up to 300 MW (approximately 68 turbines) located east of the Whispering Willow North Project, in similar landscape and is therefore expected to also be a typical risk project (see Table 5.1). Whispering Willow South is currently scheduled to start construction in 2027, with operations anticipated to begin in 2027. Although turbine siting has not been finalized for either project, Alliant intends to site no turbines within 1,000 ft of occupied/suitable forested summer bat habitat to the greatest extent feasible, per USFWS recommendations. Alliant does not expect that the addition of these two projects will increase the amount of take that has been authorized for the Covered Species under this HCP (see Table 4.1). Therefore, Bent Tree North and Whispering Willow South, once built, will be incorporated into the HCP conservation program, including the monitoring and adaptive management regimes. These two projects will be analyzed in the USFWS's upfront NEPA analysis for this HCP, and therefore additional NEPA analysis is not expected once these projects are constructed.

The following triggers and responses apply to new, currently unknown future projects other than the two addressed above in this HCP.

8.2.8.1 Trigger

Alliant notifies the USFWS of the intent to develop one or more additional new projects within the Plan Area other than those already addressed in the HCP.

8.2.8.2 Response

Alliant will notify the USFWS of the intent to pursue a new project (Bent Tree North, Whispering Willow South, or others within the Plan Area), and submit a development plan. The plan would include, but not be limited to, a description of the development timeline process for the new project, the anticipated life of the new project, an evaluation of potential impacts to the Covered Species that could arise from construction and operation of the new project, the proposed minimization regime to be implemented at the new project, and an associated take assessment

for the Covered Species. The take assessment would be informed by the results of site-specific studies at the proposed new Project, as well as monitoring at the nine Covered Alliant Projects to date. The objective of the take assessment is to determine whether impacts from potential take at the new project would exceed the authorized take for the fleet-wide HCP. Once the impact evaluation and take assessment are complete, Alliant will coordinate with the USFWS to confirm the evaluation's conclusions.

Regardless of whether a new project would increase the authorized take levels, adding a new project to the HCP would be beyond the scope of the original NEPA analysis (i.e., an expansion of the Permit Area, and increase in the number of turbines included in the Covered Activities) and would require a permit amendment and Federal Register notice (see Section 8.4.2, below). If the impact evaluation for a new project determines that potential impacts remain within the bounds of the authorized take in the HCP, Alliant would seek a permit amendment to expand the Permit Area to add the new project but would not need to request an increase in the authorized take levels, so no significant changes to the conservation plan would be made beyond including the proposed minimization regime and monitoring schedule for the new project, and the HCP will continue to be implemented as planned. In the event that new project impacts exceed authorized take limits for the HCP, Alliant will coordinate with the USFWS to determine next steps. Next steps could include, but are not limited to:

- implementing increased curtailment or deploying bat deterrent technology at new and existing projects as needed to maintain take at the existing authorized levels and seeking a permit amendment to expand the Permit Area;
- keeping avoidance and minimization measures consistent with those originally proposed in the HCP and seeking a permit amendment to increase authorized take levels and expand the Permit Area; or
- developing a project-specific HCP for the new project.

8.2.9 Changes in a Mitigation Project's Ability to Meet Success Criteria

If Alliant is able to purchase credits from an approved conservation bank to cover the upfront mitigation as proposed in Section 5.3, this changed circumstance liability would lie with the bank, not the applicant. However, if a PRM project is pursued instead for the upfront mitigation (or for a PRM used for any true-up mitigation pursued over the 30-year permit term), a mitigation plan would be developed and approved by the USFWS, in writing. The plan would include success criteria as well as actions and remediations to achieve those criteria.

A range of natural phenomena, such as tornadoes, drought, wildfire, floods, or newly invasive species, are reasonably expected to occur over the Permit term and may impact the PRM land's ability to meet success criteria. It is reasonable to expect some natural disasters affecting mitigation projects to occur during the 30-year Permit term, although based on the location of the mitigation projects in Iowa, these events are not expected to occur with regularity and the likelihood of catastrophic events, such as wildfire, that may completely destroy a mitigation site is low. Because mitigation lands will not be concentrated in one single area, the likelihood that any

single natural disaster event would significantly impact Alliant's mitigation program is reduced. Based on the infrequent occurrence of widespread natural disasters in Iowa, the low likelihood of catastrophic natural disasters, and the distribution of mitigation sites in several locations, Alliant anticipates that up to 10% of the upfront PRM mitigation may be adversely affected by natural disaster. Accordingly, Alliant has calculated that approximately $320,000 may be necessary to address impacts from natural disasters on upfront PRM lands. This amount would be revisited and revised as needed, based on whether additional PRM lands (beyond the upfront mitigation) are pursued as mitigation over the 30-year permit term.

8.2.9.1 Trigger

A natural disaster such as a tornado, drought, wildfire, flood, or newly invasive species causes negative impacts such that the mitigation lands can no longer meet the success criteria outlined in the mitigation plan.

8.2.9.2 Response

Within one year of the end of the natural disaster that triggered corrective action, restoration actions would be taken to correct the mitigation metrics affected by the natural disaster so that the success criteria are once again attainable. Specific actions would be identified on a case-by-case basis, dependent on the natural disaster.

8.3 No Surprises Rule

Pursuant to the "No Surprises" Rule, if the USFWS determines that additional conservation measures are necessary to respond to the changed circumstances described above, implementation of those measures is required. However, if Alliant is operating in good faith under the proposed ITP and HCP, the USFWS may not impose additional conservation measures or financial obligations beyond those discussed in this HCP without Alliant's consent, even if additional conservation and mitigation measures are warranted to address the changed or unforeseen circumstances. If the USFWS deems that additional measures are necessary to respond to an unforeseen circumstance, those measures are subject to the limits defined in 50 CFR § 17.22(b)(5)(iii), and may not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond those described in the HCP without the consent of Alliant.

8.4 Unforeseen Circumstances

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the USFWS at the time of the negotiation and development of the plan and that result in a substantial and adverse change in the status of the Covered Species (50 C.F.R. § 17.3). The USFWS bears the burden of demonstrating that unforeseen circumstances exist using the best available scientific and commercial data available while considering certain factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)) and 17.32(b)(5)(iii)(C)).

In deciding whether unforeseen circumstances exist, the USFWS will consider, but not be limited to, the following factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)):

1. The size of the current range of the affected species,
2. The percentage of the range adversely affected by the covered activities,
3. The percentage of the range that has been conserved by the HCP,
4. The ecological significance of that portion of the range affected by the HCP,
5. The level of knowledge about the affected species and the degree of specificity of the conservation program for that species under the HCP, and
6. Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the species in the wild.

When negotiating unforeseen circumstances, the USFWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of the permittee (50 C.F.R. §§ 17.22(b)(5)(iii)(A)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the USFWS may require additional measures of the permittee where the HCP is being properly implemented only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible (50 C.F.R. § 17.22(b)(5)(iii)(B)).

Notwithstanding these assurances, nothing in the No Surprises Rule will be construed to limit or constrain the USFWS, any federal agency, or a private entity, from taking additional actions, at its own expense, to protect or conserve a species included in a conservation plan.

8.5 Administrative Changes and Amendments

The HCP and/or ITP may be modified in accordance with the ESA, the USFWS' implementing regulations and this section of the HCP. HCP and permit modifications are not anticipated on a regular basis; however, modifications to the HCP and/or ITP may be requested by either Alliant or the USFWS. The USFWS also may amend the ITP at any time for just cause, and upon a written finding of necessity, during the Permit term in accordance with 50 C.F.R. § 13.23(b). The categories of modifications are administrative changes and amendments.

The HCP Handbook (USFWS and NMFS 2016) indicates that an ITP should be amended when the permittee significantly modifies the covered activities, the Projects, or the conservation plan as described in the original HCP. Such modifications may include changes in the Permit Area, changes in funding, addition of species to the ITP that were not addressed in the original HCP, or adjustments to the HCP due to changes in strategies developed to address changed or unforeseen circumstances.

8.5.1 Administrative Changes

Administrative changes are internal changes or corrections to the HCP. Alliant or the USFWS may propose administrative changes to the HCP by providing notice to the other party. Such notice must include a statement of the reason for the proposed changes, as well as any supporting documentation. Alliant and the USFWS will use reasonable efforts to respond to proposed administrative changes within 30 days of receipt of such notice. Proposed administrative changes will become effective upon written approval of the USFWS and Alliant. USFWS-approved changes will be documented in a note to the Project file. The USFWS will not propose or approve administrative changes to this HCP if the USFWS determines that such modifications would:

- result in effects to a covered species that are new or different than those analyzed in this HCP, NEPA review or the USFWS Biological Opinion (BO);
- result in take beyond that analyzed in this HCP;
- negatively alter the effectiveness of the HCP; or
- have consequences to aspects of the human environment that have not been evaluated.

Administrative changes to the HCP processed pursuant to this subsection may include, but are not limited to the following:

- correction of typographic, grammatical and similar editing errors that do not change the intended meaning;
- correction of any maps or exhibits to correct minor errors in mapping or to reflect previously approved changes in the ITP or HCP; or
- minor changes to survey, monitoring, or reporting protocols.

8.5.2 Amendments

For proposed modifications that are more substantial than what is described above in Section 8.4.1, an amendment process that includes Federal Register publication may be necessary. The USFWS will determine the extent of NEPA and ESA Section 7 analyses and public notice processes, driven by the scale and scope of the amendment. Amendments that do not increase the levels of incidental take and do not change the Covered Activities in ways that were not analyzed in the original NEPA or ESA Section 7 documents do not usually require public notice or additional analysis under NEPA or ESA Section 7. Amendments that require ITP amendment and publication in the Federal Register include, but are not limited to (USFWS and NMFS 2016):

- addition of new species, either listed or unlisted;
- increased level or different form of take for Covered Species;
- changes to funding that affect the ability of the permittee to implement the HCP;
- changes to Covered Activities not previously addressed;
- changes to Covered Lands; and
- significant changes to the conservation strategy, including changes to mitigation measures.

8.6 Permit Renewal

Alliant requests that the ITP associated with this HCP be available for renewal pursuant to 50 CFR § 13.22. In the event that Alliant plans to continue operating the Alliant Projects after the ITP term and the total take estimated for the Alliant Projects is less than the take level authorized by the ITP, Alliant will file in writing a renewal request at least 30 days prior to the permit expiration. Per the HCP Handbook, the USFWS will honor the No Surprises assurances as much as practicable, but a renewed permit must satisfy applicable statutory and regulatory requirements in force as of the date of the approval of the renewal request. Permit renewals must be published in the Federal Register before the USFWS issues a decision. Extension of the ITP term constitutes an extension of the HCP for the same amount of time, subject to any modifications that the USFWS may require at the time of renewal. In the event of a renewal, the USFWS and Alliant will make every effort to retain the terms of the original HCP for the ITP-renewal term.

8.7 Alliant Company's Property Rights

The Parties agree that Alliant has entered into the ITP and the HCP on a voluntary basis. Except as otherwise specifically provided herein, nothing in the HCP or ITP shall be deemed to restrict the rights of Alliant to operate the Projects, or use or develop the Permit Area, provided that nothing in the HCP or ITP shall absolve Alliant from such other limitations as may apply to such activities, lands, or interests in land, under the ESA or other laws, of the United States, and the laws of the State.

The Parties recognize that Covered Activities may provide multiple benefits beyond conservation of Covered Species, including, but not limited to, renewable energy benefits, pollution benefits, tax benefits, environmental benefits, carbon benefits, clean water benefits, and open space benefits ("Additional Benefits"). Nothing in the HCP or ITP is intended to limit Alliant's rights to participate in any program or enter into any agreement to recognize the full financial value of these Additional Benefits, provided that Alliant complies with the HCP and ITP.

The terms hereof are not intended to run with the land and will not bind the existing owners of Covered Lands or subsequent purchasers of the Alliant Projects or Permit Area unless such Parties agree in writing to become bound by the HCP and the ITP. Such Parties that are not bound by the ITP shall not benefit from the USFWS's authorization of incidental take coverage or assurances.

8.8 Remedies and Liability

Except as set forth below, each Party shall have all remedies otherwise available (including specific performance and injunctive relief) to enforce the terms of the ITP and the HCP. Nothing contained in the ITP is intended to limit the authority of the United States government to seek civil or criminal penalties or otherwise fulfill its enforcement responsibilities under the ESA or other applicable law.

No Party shall be liable in damages under the ESA to any other Party for any breach of the HCP or ITP, any performance or failure to perform a mandatory or discretionary obligation imposed by the HCP or ITP, or any other cause of action arising from the HCP or ITP.

8.9 Dispute Resolution

The Parties recognize that good faith disputes concerning implementation of, or compliance with, or suspension, revocation or termination of the HCP or the ITP may arise from time to time. The Parties agree to work together in good faith to resolve such disputes, using the dispute resolution procedures set forth in this Paragraph or such other procedures upon which the Parties may later agree. However, if at any time any Party determines that circumstances so warrant, it may seek any available remedy without waiting to complete dispute resolution.

If the USFWS has reason to believe that Alliant may have violated the ITP with respect to any Covered Species, it will notify Alliant in writing of the specific provisions which may have been violated, the reasons the USFWS believes Alliant may have violated them, and the remedy the USFWS proposes to impose to correct or compensate for the alleged violation. Alliant will then have sixty (60) days, or such longer time as may be mutually acceptable, to respond. If any issues cannot be resolved within thirty (30) days, or such longer time as may be mutually acceptable, after Alliant's response is due, the Parties will consider non-binding mediation and other alternative dispute resolution processes.

The Parties reserve the right, at any time without completing informal dispute resolution, to use whatever enforcement powers and remedies are available by law or regulation, including but not limited to, in the case of the USFWS, suspension or revocation of the ITP, and civil or criminal penalties.

8.10 Permit Assignment and Transfer

Assignment or other transfer of the ITP shall be governed by the federal regulations located at 50 C.F.R. Part 13. In accordance with 50 C.F.R. § 13.25, the Parties agree that the ITP may be transferred in whole or in part to a new party through a joint submission by Alliant and the new party to the USFWS field office responsible for administering the ITP describing: (1) each party's role and responsibility in implementing the HCP, (2) each party's role in funding the implementation of the HCP, and (3) any proposed changes to the HCP reasonably necessary to effectuate the transfer and implement the ITP.

The USFWS may approve a proposed transfer of the ITP in whole or in part to a new party, which approval shall not be unreasonably withheld or delayed, provided that the USFWS field office responsible for administering the ITP determines that the proposed transferee meets the certification requirements of 50 C.F.R. § 13.25 by: (1) meeting all of the qualifications to hold an ITP under 50 C.F.R. § 13.21; (2) providing adequate written assurances that it will provide sufficient funding for the HCP, and that the proposed transferee will implement the terms and conditions of the ITP, including any outstanding minimization or mitigation requirements; and (3) the proposed transferee has provided such other information that the USFWS determines is

relevant to the processing of the submission. No new conditions will be added to the HCP or the ITP by the USFWS if the proposed transferee meets these conditions for transfer.

8.11 Reporting and Inspections

8.11.1 Reporting and Annual Meeting

Alliant will provide the USFWS with the reports described in Sections 5.4 and 5.6 of the HCP at the notice address then in effect for the USFWS, and will provide any available information reasonably requested by the USFWS to verify the information contained in such reports. Alliant will provide the USFWS, within 30 calendar days, any additional information requested to determine whether Alliant is in compliance with the ITP and HCP.

Alliant and the USFWS shall conduct annual meetings during the month of April commencing the first April after the ITP is issued to discuss the results of HCP implementation and monitoring, and selection of mitigation projects under the HCP. Nothing in the ITP or HCP shall prevent the Parties from meeting more frequently.

8.11.2 Inspections

The USFWS may inspect the Permit Area in accordance with its applicable regulations and law. Except where the USFWS has reason to believe that Alliant may be acting in violation of applicable laws or regulations or in breach of the ITP, the USFWS will provide reasonable advance notice (which in no case shall be less than two business days) of its inspection. For any inspection, the USFWS will adhere to Alliant's security procedures, which require Alliant representatives to escort the USFWS's representatives making such inspection. The Parties agree that it would be an unreasonable time for inspection in the event that there are unsafe work conditions or if a cyber or physical security response plan has been implemented pursuant to requirements of a regulatory agency with jurisdiction over Alliant.

If an inspection is interrupted or refused by Alliant, the inspection will be rescheduled at the earliest possible date. The USFWS shall ensure that any individual conducting an inspection of any of the Alliant Projects on its behalf performs such inspection in compliance with all regulations and statutes applicable to USFWS and the requirement of this section for advance notice, where applicable. Any representative of the USFWS inspecting any of the Alliant Projects shall use reasonable efforts to promptly brief Alliant on the information learned during any such inspection. For the purpose of this paragraph, the USFWS is intended to mean agency employees, contractors and law enforcement agents.

8.12 Notices under the Habitat Conservation Plan and Incidental Take Permit

8.12.1 Required Notices by Alliant

Alliant shall notify the USFWS in writing within 10 business days of the occurrence of any of the following: (1) any change in the registered name of Alliant; (2) the dissolution of Alliant; (3) the sale or conveyance of Alliant or any of the Alliant Projects; (4) bankruptcy proceedings by Alliant as well as whether Alliant is in receivership; (5) when Alliant will no longer perform the Covered Activities in the Permit Area; (6) the revocation or suspension of Alliant's corporate authorization

to do business in the state or states in which it is registered to do business; and (7) Alliant is disqualified from performing Covered Activities under the ITP for either of the disqualifying factors circumstances listed in 50 C.F.R. § 13.21(c) and (d), as may be amended, or under any future USFWS regulation.

8.12.2 Required Notices by USFWS

The USFWS shall promptly notify Alliant if: (1) for any reason (court ruling or lack of appropriated funds), the USFWS is unable to fulfill any obligation associated with the HCP or ITP; or (2) any lawsuits filed against the USFWS pertaining to the ITP or HCP, requests for disclosures of documents received under the Freedom of Information Act pertaining to the ITP or HCP, or written notices or letters expressing an intent to file suit against the USFWS challenging the issuance of, or Alliant's compliance with, the ITP or any federal law relating to the ITP.

8.13 Revocation and Relinquishment

8.13.1 Permit Revocation and Suspension

The ITP may be revoked by the USFWS only in accordance with 50 C.F.R. §§ 13.28, 17.22(b)(8) and 17.32(b)(8). In accordance with 50 C.F.R. § 13.28, the USFWS may revoke the ITP in whole or in part if Alliant willfully violates any federal or state statute or regulation, Indian tribal law or regulation, or any law or regulation of a foreign country that involves a violation of the conditions of the ITP or of the laws or regulations governing the Covered Activities. The ITP also may be revoked if Alliant fails, within 60 days, to correct deficiencies that were the cause of suspension of the ITP; unless the USFWS determines and notifies Alliant in writing that a longer period of time is necessary to correct the deficiencies, or Alliant becomes disqualified under 50 C.F.R. § 13.21(c), or because a change occurs in the statute or regulation authorizing the ITP that prohibits continuation of the ITP. Pursuant to 50 C.F.R. §§17.22(b)(8) and 17.32(b)(8), the ITP also may be revoked if continuation of the Covered Activities would be inconsistent with the criterion set forth in 16 U.S.C. § 1539(a)(2)(B)(iv) and the inconsistency has not been remedied.

When the USFWS believes there are valid grounds for revoking the ITP, it will notify Alliant in writing of the proposed revocation by certified or registered mail. The notice, which may be amended by the USFWS at any time, will identify the ITP, whether the revocation is as to part or all of the ITP, the Covered Activities and Covered Species as to which the revocation applies, the reason(s) for the revocation, and the proposed disposition of the wildlife, if any. The notice also shall inform Alliant of its right to object to the proposed revocation. Upon receipt of the proposed notice, Alliant may file a written objection to the proposed action within 45 calendar days of the date of the notice providing its reasons for objecting to the proposed revocation as well as any supporting documentation.

The USFWS will issue a written decision on the revocation within 45 days after the end of the objection period. The written decision will include the USFWS's decision and its reasons for such, as well as information concerning Alliant's right to request reconsideration of the decision under 50 C.F.R. § 13.29 and the procedures for doing so. Upon notification that the ITP has been

revoked and after all appeal procedures have been exhausted, Alliant may be required to surrender the ITP to the USFWS.

The USFWS may suspend the ITP, in whole or in part, in accordance with its regulations located at 50 C.F.R. § 13.27. The procedures for requesting reconsideration of the USFWS's decision to suspend an ITP are located at 50 C.F.R. § 13.29.

8.13.2 Relinquishment

Alliant reserves the right to relinquish the ITP prior to expiration by providing thirty (30) days advance written notice to the USFWS as provided by 50 C.F.R. § 13.24. The ITP shall be deemed canceled only upon a determination by the USFWS that any outstanding monitoring, minimization and mitigation measures have been implemented.

8.14 Post-termination Obligations

The Parties acknowledge that Alliant's compliance with the HCP will result in Alliant having fully mitigated for any incidental take of any Covered Species, provided that Alliant (a) has provided funds to cover the mitigation requirements in accordance with the HCP and this money has been spent or obligated for monitoring and off-site mitigation; or (b) has provided funds to cover the mitigation requirements in accordance with the HCP, but money remains unspent or unobligated for monitoring and off-site mitigation, and take of Covered Species has not occurred as of the date of termination, relinquishment, or revocation.

In either case, if Alliant is in compliance with the terms of the HCP and ITP, including adequate mitigation for take up to the point of termination, relinquishment, or revocation of the ITP, then Alliant shall have no further obligations hereunder or under the ESA with regard to Covered Species or Permit Area upon termination, relinquishment or revocation. If Alliant has provided funds to cover the mitigation requirements in accordance with the HCP, and take of Covered Species has occurred as of the date of termination, relinquishment, or revocation, then Alliant and the USFWS will coordinate to refund any remaining mitigation funds in accordance with Section 6.4.2.

8.15 Land Transactions

If Alliant acquires any additional projects, Alliant may elect to include such Projects in the HCP and ITP in accordance with the Amendment Process. Upon such election, Alliant shall provide notice to the USFWS of its desire to include additional lands, along with a specific description of the location, legal description, and conditions of such additional property.

Alliant may not sell or dispose of any Alliant Projects included in Covered Lands, or exchange any portion thereof, to any new party during the term of the HCP unless: (a) the HCP or ITP is modified to delete such lands in accordance with Section 8.13.2 (Relinquishment); or (b) the lands are transferred to a third-party who has agreed to be bound by the terms of the HCP, in accordance with Section 8.10 (Permit Assignment and Transfer).

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9.3 List of Preparers

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