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July 15, 2024

Ms. Lisa Felice
Executive Secretary
Michigan Public Service Commission
PO Box 30221
Lansing, MI 48909-7721

Re: Case No. U-21472

Dear Ms. Felice:

Enclosed for electronic filing in the above-referenced matter is Michigan Electric Transmission Company, LLC's Application, Testimony, Dykema Appearances, and Proof of Service. Please note Exhibits will be filed in separate volumes.

If you have any questions, please contact me.

Sincerely,

Dykema Gossett PLLC

Richard Aaron

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Richard J. Aaron

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	)))))))))	**Case No. U-21472**

APPLICATION

Pursuant to 1995 PA 30, MCL 460.561 *et seq*., the Electric Transmission Line Certification Act ("Act 30" or the "Act"), Michigan Electric Transmission Company, LLC ("METC") respectfully submits this application to the Michigan Public Service Commission (the "Commission" or the "MPSC") for a certificate of public convenience and necessity (a "Certificate") for the construction of an approximately 55-mile 345 kilovolt ("kV") double circuit transmission line that will run from a new Helix Substation in Clarence Township in Calhoun County to the Michigan/Indiana state border in Gilead Township in Branch County and for the construction of the new Helix Substation. The new 345 kV transmission line and the new substation are referred to herein as the "Proposed Major Transmission Line." In support of its application, METC states as follows:

SUMMARY OF FILING

The Michigan Legislature enacted Act 30 "to regulate the location and construction of certain electric transmission lines." Act 30 declares that "[t]ransmission of electricity is an essential service," and that its provisions "shall control in any conflict between this act

and any other law of this state." MCL 460.563. Act 30 grants the Commission authority to issue a Certificate for the construction of transmission lines. Issuance of a Certificate by the Commission "take[s] precedence over a [municipality's] conflicting local ordinance, law, rule, regulation, policy, or practice that prohibits or regulates the location or construction of a transmission line for which the commission has issued a certificate." MCL 460.570(1).

The Act distinguishes between two types of transmission lines: (i) a "transmission line" and (ii) a "major transmission line." In simple terms, a "transmission line" is a line of 100 kV or more and a "major transmission line" is a line over 5 miles in length of 345 kV or more. MCL 460.562(g), (k). The Act defines "transmission line" to include "all structures, equipment, and real property necessary to transfer electricity at system bulk supply voltage of 100 kilovolts or more." MCL 460.562(k). Act 30 requires that a certificate be obtained before beginning construction of a major transmission line (MCL 460.565); and the Act allows a certificate to be obtained before beginning construction of "a transmission line other than a major transmission line". MCL 460.569(1). The Proposed Major Transmission Line includes a new 345 kV double circuit transmission line requiring a 200-foot right-of-way and the new substation. The Proposed Major Transmission Line, then, fits within the Act's definition of a major transmission line.

As an independent transmission company, METC is regulated at the federal wholesale level, and transmission planning is coordinated by METC's regional transmission operator, the Midcontinent Independent System Operator, Inc. ("MISO"). The Proposed Major Transmission Line is part of a portfolio of projects that received unanimous approval from MISO's Board of Directors in July of 2022. The portfolio of

projects were approved under MISO's Long Range Transmission Planning ("LRTP") initiative to meet the region's shifting energy needs and changing energy mix. The LRTP portfolio of projects includes 18 transmission projects, including the Proposed Major Transmission Line. Now, Commission approval is needed before METC may construct the Proposed Major Transmission Line. MCL 460.565. Absent a Certificate, METC would not be able to begin construction on the Proposed Major Transmission Line.

Attached in support of this application for a Certificate is the testimony and exhibits of Charles L. Marshall, B. Ashley DuPree, Carlo Capra, M. Cynthia Stump, Kathryn A. Samuelson, Dr. Mark Israel, Dr. Gary Johnson, and Daniel Belin, all of which are incorporated as if fully reproduced herein.

DESCRIPTION OF METC

1. METC is a Michigan limited liability company engaged in the Federal Energy Regulatory Commission ("FERC") jurisdictional transmission of electricity. On January 10, 2001, FERC, by order, approved the transfer of Consumer Energy Company's transmission assets, to METC. On April 1, 2001, pursuant to authorizations and approvals granted by FERC, Consumers conveyed its transmission assets to METC.

2. METC operates and maintains approximately 5,600 circuit miles of transmission lines in the western and northern portions of Michigan's Lower Peninsula, covering approximately 28,850 square miles. The MPSC does not have jurisdiction over METC's rates or terms and conditions of service, but it has jurisdiction over the siting of the Proposed Major Transmission Line under Act 30. METC provides open, non-discriminatory access to its transmission facilities. METC is fully independent from any

electric utility as defined by Act 30—it is independent from any entity that generates or distributes electricity.

PURPOSE OF APPLICATION

3. METC intends to construct a major transmission line. Specifically, METC intends to construct a new substation and 345 kV double circuit transmission line with a 200-foot right-of-way passing through Clarence, Lee, Marengo, Eckford, Clarendon, Tekonsha Townships in Calhoun County, and Girard, Union, Batavia, Bethel, and Gilead Townships in Branch County, Michigan.

4. This application is respectfully submitted pursuant to MCL 460.565, which requires METC to obtain a certificate from the Commission prior to beginning construction of a major transmission line, and MCL 460.567(1), which provides that "an independent transmission company shall apply to the commission for a certificate for a proposed major transmission line."

AUTHORITY TO OBTAIN A CERTIFICATE

5. Act 30 defines an "independent transmission company" as follows:

> "Independent transmission company" means a person, partnership, corporation, association, or other legal entity, or its successors or assigns, engaged in this state in the transmission of electricity using facilities it owns that have been divested to the entity by an electric utility that was engaged in the generation, transmission, and distribution of electricity in this state on December 31, 2000, and is independent of an electric utility or an affiliate of the utility, generating or distributing electricity to retail customers in this state.

MCL 460.562(f). METC is an "independent transmission company" as defined by the Act.

6. Act 30 defines a "major transmission line" as follows:

> "Major transmission line" means a transmission line of 5 miles or more in length wholly or partially owned by an electric utility, affiliated transmission company, or independent transmission company through which electricity is transferred at system bulk supply voltage of 345 kilovolts or more.

MCL 460.562(g). The Proposed Major Transmission Line is a "major transmission line" as defined by the Act because it is proposed as a 345 kV double circuit transmission line that is greater than five miles in length and a new substation.

EFFECT OF THE CERTIFICATE

7. An issuance of a Certificate by this Commission would take precedence over all conflicting ordinances, laws, rules, regulations, policies or practices that would prohibit or regulate the construction of a transmission line:

> (1) If the commission grants a certificate under this act, that certificate shall take precedence over a conflicting local ordinance, law, rule, regulation, policy, or practice that prohibits or regulates the location or construction of a transmission line for which the commission has issued a certificate.

After filing the application, any zoning ordinance imposed thereafter cannot limit or impair the construction, operation, or maintenance of the major transmission line.

> (2) A zoning ordinance or limitation imposed after an electric utility, affiliated transmission company, or independent transmission company files for a certificate shall not limit or impair the transmission line's construction, operating, or maintenance.

The issuance of a Certificate is also conclusive and binding in certain subsequent legal proceedings with regard to the public convenience and necessity of the major transmission line.

> (3) In an eminent domain or other related proceeding arising out of or related to a transmission line for which a certificate is issued, a certificate issued under this act is conclusive and binding as to the public convenience and necessity for that transmission line and its compatibility with the public health and safety or any zoning or land use requirements in effect when the application was filed.

MCL 460.570.

8. Act 30 defines a "municipality" as a "city, township, or village." MCL 460.562(h). Clarence, Lee, Marengo, Eckford, Clarendon, Tekonsha, Girard, Union, Batavia, Bethel, and Gilead Townships are "municipalities" under the Act.[1]

9. In addition, Act 30 "shall control in any conflict between [Act 30] and any other law of this state." MCL 460.563(2).

COMPLIANCE WITH ACT 30 REQUIREMENTS

10. Pursuant to Section 4(1) of the Act, prior to a certificate being issued, an independent transmission company is required to submit a construction plan to the Commission. MCL 460.564(1). METC submitted its construction plan on August 14, 2023.

11. Pursuant to Section 4(2) of the Act, when the construction plan is submitted to the Commission, a copy must be provided to each municipality in which construction of the planned major transmission line is intended. MCL 460.564(2). METC provided copies to these municipalities on August 14, 2023.

[1] The alternate route to the Proposed Major Transmission Line would also pass through the townships of Sheridan and Butler, which are considered "municipalities" under Act 30. MCL 460.562(h).

12. Section 6 of the Act requires an independent transmission company to offer in writing to meet with the chief elected official of each affected municipality and to schedule and to hold a public meeting in each affected municipality. MCL 460.566. On August 28, 2023, pursuant to Section 6(2), METC offered in writing to meet with the chief elected official of each affected municipality or his or her designee. Pursuant to Section 6(1) of the Act, the requisite public meetings were held in each affected municipality as follows: on October 12, 2023, public meetings were held in Coldwater and Lee Townships; on October 24, 2023, public meetings were held in Eckford, Butler, Girard, and Clarence Townships; on October 25, 2023, public meetings were held in Marengo, Sheridan, Clarendon, and Tekonsha Townships; and on October 26, 2023, public meetings were held in Gilead, Bethel, Batavia, and Union Townships.

13. Act 30 sets forth the requirements for an application for a Certificate as follows:

> (2) An application for a certificate shall contain all of the following:
>
> (a) The planned date for beginning construction.
>
> (b) A detailed description of the proposed major transmission line, its route, and its expected configuration and use.
>
> (c) A description and evaluation of 1 or more alternate major transmission line routes and a statement of why the proposed route was selected.
>
> (d) If a zoning ordinance prohibits or regulates the location or development of any portion of a proposed route, a description of the location and manner in which that zoning ordinance prohibits or regulates the location or construction of the proposed route.
>
> (e) The estimated overall cost of the proposed major transmission line.

(f) Information supporting the need for the proposed major transmission line, including identification of known future wholesale users of the proposed transmission line.

(g) Estimated quantifiable and nonquantifiable public benefits of the proposed major transmission line.

(h) Estimated private benefits of the proposed major transmission line to the applicant or any legal entity that is affiliated with the applicant.

(i) Information addressing potential effects of the proposed major transmission line on public health and safety.

(j) A summary of all comments received at each public meeting and the applicant's response to those comments.

(k) Information indicating that the proposed major transmission line will comply with all applicable state and federal environmental standards, laws, and rules.

(l) Other information reasonably required by the commission pursuant to rule.

MCL 460.567(2). This Application and the testimony and exhibits submitted herewith provide the above-required information in the following locations:

Act 30 Requirement	**Location in Application/Exhibits**
The planned date for beginning construction	Capra Direct p. 5
A detailed description of the proposed major transmission line, its route, and its expected configuration and use	Marshall Direct pp. 9-10 (describing the line); DuPree Direct pp. 9-19 and EXHIBIT METC-15B (BAD-2B) (describing the route); DuPree Direct pp. 7-18 and EXHIBIT METC-14B (BAD-1B) (describing the line and its expected configuration); Marshall Direct p. 12-13 (describing the expected use)
A description and evaluation of 1 or more alternate major transmission line routes and a statement of why the proposed route was selected	Samuelson Direct pp. 3-9, EXHIBIT METC-23B (KAS-2B) (discussing route identification); DuPree Direct pp. 5-7 (discussing route development and selection)

If a zoning ordinance prohibits or regulates the location or development of any portion of a proposed route, a description of the location and manner in which that zoning ordinance prohibits or regulates the location or construction of the proposed route	DuPree Direct pp. 26-27; EXHIBIT METC-18B (BAD-5B)
The estimated overall cost of the proposed major transmission line	Marshall Direct p. 54
Information supporting the need for the proposed major transmission line, including identification of known future wholesale users of the proposed transmission line	Marshall Direct pp. 37-50 (information supporting need); Marshall Direct p. 13 (identifying known future wholesale users)
Estimated quantifiable and nonquantifiable public benefits of the proposed major transmission line	Marshall Direct pp. 50-55
Estimated private benefits of the proposed major transmission line to the applicant or any legal entity that is affiliated with the applicant	Marshall Direct pp. 54
Information addressing potential effects of the proposed major transmission line on public health and safety	Capra Direct pp. 5-7 (discussing safety measures related to construction process); DuPree Direct pp. 19-26, EXHIBIT METC-16B (BAD-3B), and EXHIBIT METC-17B (BAD-4B) (discussing safety measures related to line design); Dr. Israel Direct pp. 8-14 (discussing human health and safety); Dr. Johnson Direct pp. 9-23 (discussing the electrical characteristics of the Project)
A summary of all comments received at each public meeting and the applicant's response to those comments	Stump Direct p. 6, EXHIBIT METC-21B (MCS-3B)
Information indicating that the proposed major transmission line will comply with all applicable state and federal environmental standards, laws, and rules	Capra Direct pp. 7-12 (discussing applicable laws and compliance measures); Samuelson Direct pp. 9-28, EXHIBIT METC-24B (KAS-3B) (discussing required permits

	and certain environmental compliance measures); Belin Direct p. 10 (discussing typically applicable regulatory requirements)
Other information reasonably required by the commission pursuant to rule	None

14. Act 30 also requires publication of a notice of an opportunity to comment on the application:

> Upon applying for a certificate, the electric utility, affiliated transmission company, or independent transmission company shall give public notice in the manner and form the commission prescribes of an opportunity to comment on the application. Notice shall be published in a newspaper of general circulation in the area to be affected within a reasonable time period after an application is provided to the commission and shall be sent to each affected municipality and each affected landowner on whose property a portion of the proposed major transmission line will be constructed. The notice shall be written in plain, nontechnical, and easily understood terms and shall contain a title that includes the name of the electric utility, affiliated transmission company, or independent transmission company and the words "NOTICE OF INTENT TO CONSTRUCT A MAJOR TRANSMISSION LINE."

MCL 460.568(1). METC is in the process of complying with the above-excerpted notice requirement and has provided the Commission's Executive Secretary with the proposed format for the requisite notice. A draft is attached immediately following this Application.

REPRESENTATIONS AND REQUEST FOR RELIEF

15. METC submits that the Commission should expeditiously grant the requested Certificate.

16. METC submits that the quantifiable and nonquantifiable public benefits of the Proposed Major Transmission line justify its construction.

17. METC submits that its Proposed Major Transmission Line is feasible and reasonable.

18. METC submits that the Proposed Major Transmission Line does not present an unreasonable threat to public health or safety.

19. METC submits that the Proposed Major Transmission Line will comply with all applicable state and federal environmental standards, laws, and rules.

20. METC submits that any minor route modifications to the Proposed Major Transmission Line will be limited to parcels where METC has provided the landowner notice for this proceeding under the Act and where the minor route modification remains within the area studied[2] in the Environmental Report for the Proposed Major Transmission Line.

21. The Commission has jurisdiction over this matter pursuant to the Act.

WHEREFORE, METC respectfully requests that the Commission expeditiously take the following actions:

A. Accept this filing as complying the laws of the State of Michigan and in specific compliance with the Act.

B. Schedule and conclude the requisite contested case hearings required by Section 8 of the Act.

C. Read the evidentiary record to avoid the need for a proposal for decision, exceptions, and replies to exceptions otherwise required by Section 81 of the Administrative Procedures Act of 1969, 1969 PA 306, MCL 24.281.

[2] The study area referenced herein and studied in the Environmental Report is an area that encompasses the Proposed Major Transmission Line, including 250-feet on either side of the centerline and the parcel on which the new substation will be located.

D. Expeditiously issue the requested Certificate authorizing the construction of the Proposed Major Transmission Line, as described in this application and supporting testimony and exhibits, with approval to make minor route modifications, as described herein.

E. Find that Proposed Major Transmission Line does not, and is not likely to, pollute, impair, or destroy the air, water or other natural resources or the public trust in these resources.

F. Grant such further and additional relief as the Commission may deem appropriate.

Respectfully submitted,

Attorneys for
Michigan Electric Transmission Company, LLC

Dated: July 15, 2024

By Richard Aaron

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STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

CHARLES L. MARSHALL

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Charles L. Marshall. My business address is 27175 Energy Way, Novi, Michigan 48377.

Q. By whom are you employed and in what capacity?

A. I am employed by ITC Holdings Corp. ("ITC Holdings") as Vice President of Transmission Planning. ITC Holdings is the parent company of the applicant, Michigan Electric Transmission Company, LLC ("METC").

Q. Please describe METC.

A. Based in Novi, Michigan, METC is a Michigan limited liability company engaged in the Federal Energy Regulatory Commission ("FERC") jurisdictional transmission of electricity throughout the western and northern portions of Michigan's Lower Peninsula. METC constructs, owns, operates, maintains, and controls approximately 5,600 circuit miles of transmission line, covering approximately 28,850 square miles. On January 10, 2001, FERC approved the transfer of Consumers Energy Company's ("Consumers Energy") transmission assets to METC. On September 22, 2006, FERC approved ITC Holdings' acquisition of METC as a wholly owned subsidiary. METC is independent from all electric utilities generating or distributing electricity to retail customers.

Q. Please briefly describe your educational background.

A. I hold a Bachelor of Science degree in Electrical Engineering from Michigan Technological University and a Master's Degree in Business Administration from the University of Michigan, Flint.

Q. Please briefly describe your professional background.

A. I began my employment with ITC Holdings in May 2004 as a Project Engineer responsible for the construction of capital transmission projects. In 2006, I moved to the substation design group as an Associate Substation Design Engineer. In January 2009, I started as a Regulatory Analyst working on FERC regulatory affairs, Midcontinent Independent System Operator, Inc. ("MISO") Regional Transmission Organization ("RTO") affairs, and ratemaking.

In February 2013, on an interim basis, I served as Manager of state regulatory affairs for ITC Great Plains, LLC ("ITC Great Plains"), a subsidiary of ITC Holdings, for the states of Kansas and Oklahoma. Later that year, I became Manager of stakeholder relations for ITC Great Plains with responsibility for the states of Kansas and Oklahoma. As Manager of stakeholder relations, I engaged local transmission stakeholders in Kansas and Oklahoma and maintained active involvement in the regulatory affairs of Southwest Power Pool ("SPP") RTO, SPP committees, SPP stakeholders and SPP staff. In February 2015, I moved into the position of Manager of business unit planning and then Director of strategic initiatives, in support of ITC Holdings' Chief Business Officer and President of ITC Michigan. In November 2016, I became Chief of Staff to the President and Chief Executive Officer of ITC Holdings. In this capacity, I supported business operations across ITC Holdings' four business units: International Transmission Company d/b/a ITC*Transmission* ("ITCT"), METC, ITC Midwest, and ITC Great Plains; engaged in the development of annual business plans; and represented

the interests of ITC Holdings externally concerning transmission policy and regulatory requirements.

In September 2017, I became the Director of Transmission Planning for ITC Holdings' MISO-operating companies, including METC. As Director of Planning, I was responsible for system planning, load and generator interconnections, and North American Electric Reliability Corporation ("NERC") compliance activities for the ITC Holdings companies within the MISO region. In this role, I actively engaged with MISO and industry stakeholders throughout the MISO Transmission Expansion Plan ("MTEP") process to articulate system needs and associated corrective action plans. In May 2020, I assumed my current role, Vice President of Transmission Planning.

Q. What are your current duties and responsibilities with ITC Holdings?

A. As Vice President of Transmission Planning, my responsibilities include engaging customers (both load and generation) to provide open access to the transmission system, identifying transmission system needs—both those driven by compliance with NERC reliability standards and economic opportunities—and developing system solutions to ensure the reliable and economic delivery of electricity to customers across ITC Holdings' MISO-operating companies.

Q. Have you previously testified before the Michigan Public Service Commission ("Commission" or "MPSC")?

A. Yes. I previously provided testimony before the MPSC in Case Nos. U-20165, U-20471, U-20497, U-21089, and U-21090.

Q. What is the purpose of your testimony?

A. My testimony's purpose is three-fold. First, I introduce the witnesses testifying in support of METC's application for a certificate of public convenience and necessity for the construction of a major transmission line ("Certificate") in this docket. METC is seeking a Certificate for the new Helix Substation and an approximately 55-mile 345 kilovolt ("kV") double circuit transmission line that will run from the new Helix Substation in Clarence Township in Calhoun County to the Michigan/Indiana state border in Gilead Township in Branch County, Michigan. The new 345 kV double circuit transmission line and the Helix Substation are referred to in my testimony as the "Project".

Second, I provide a Project overview and describe the history of its development.

Third, I reviewed the requirements of 1995 PA 30, as amended, MCL 460.561 *et seq.* ("Act 30"), and provide testimony in support of METC's request for approval for the Project. I address the need for the proposed major transmission line, including identification of known future wholesale users of the proposed major transmission line, estimated quantifiable and nonquantifiable public and private benefits of the proposed major transmission line, and how those benefits justify its construction.

Q. Do you sponsor any exhibits?

A. Yes. I am sponsoring the following exhibits, all of which were either prepared by me or under my direction and supervision, are public agency documents, or are METC business records kept in the regular course of business:

- **EXHIBIT METC-1B (CLM-1B)**: MISO's Response to the Reliability Imperative (December 2020).
- **EXHIBIT METC-2B (CLM-2B):** MISO's Response to the Reliability Imperative (February 2024).
- **EXHIBIT METC-3B (CLM-3B):** MISO MTEP21 Report Addendum: Long Range Transmission Planning Tranche 1 Executive Summary (2022).
- **EXHIBIT METC-4B (CLM-4B):** MISO Transmission Planning Business Practices Manual, BPM-020-r30 (effective December 2023).
- **EXHIBIT METC-5B (CLM-5B):** Michigan Healthy Climate Plan (Michigan Department of Environment, Great Lakes, and Energy, April 2022).
- **EXHIBIT METC-6B (CLM-6B):** Status of Renewable Energy, Distributed Generation, and Legacy Net Metering in Michigan (MPSC, Sept. 29, 2023).
- **EXHIBIT METC-7B (CLM-7B):** MISO 2024-2025 PY Seasonal CIL/CEL Final Results (October 17, 2023).
- **EXHIBIT METC-8B (CLM-8B):** MISO Futures Report (December 2021).
- **EXHIBIT METC-9B (CLM-9B):** MISO Futures Report Series 1A (November 2023).
- **EXHIBIT METC-10B (CLM-10B):** 2023 OMS-MISO Survey Results (July 14, 2023).
- **EXHIBIT METC-11B (CLM-11B):** MISO Central-East Corridor Project Reliability Analysis (March 25, 2022).
- **EXHIBIT METC-12B (CLM-12B):** Governor Whitmer and MPSC Letter to MISO (September 2019).

- **EXHIBIT METC-13B (CLM-13B):** MISO Michigan Capacity Import/Export Limit Expansion Study (June 2021).

WITNESSES SUPPORTING THE APPLICATION

Q. Please identify the witnesses and describe the areas they will address on behalf of METC to support this Application.

A. The following witnesses are providing testimony in support of METC's Application:

- Carlo P. Capra, Director of Capital Projects, ITC Holdings. Witness Capra will oversee Project construction. He testifies regarding construction methods and oversight, the health and safety precautions that METC employs during construction, and compliance with all applicable state and federal environmental standards, laws, and rules. Witness Capra also testifies regarding the construction timeline and co-sponsors the Environmental Report that describes the avoidance, minimization, and mitigation measures that will be implemented for the Project.
- B. Ashley DuPree, Director of Design Engineering, ITC Holdings. Witness DuPree is responsible for the Project's proposed route ("Proposed Route") and Project line design. He describes the Proposed Route and the Alternate Route and summarizes the reasons METC selected the Proposed Route for the Project. Witness DuPree also describes the Project right-of-way requirements, relevant zoning ordinances, and how the Project design minimizes impacts on public health and safety.
- M. Cynthia Stump, Director, Local Government and Community Affairs, ITC Holdings. Witness Stump testifies about the public meetings held by METC

for the Project and invitations to meet with public officials. Witness Stump also provides a summary of the comments received as part of the public meetings and responses thereto.

- Kate A. Samuelson, Senior Environmental Scientist, Burns & McDonnell Michigan, Inc. ("BMcD"). Witness Samuelson presents the route study ("Route Study") that BMcD prepared, EXHIBIT METC-23B (KAS-2B), and METC relied upon for the Construction Plan that was filed on August 14, 2023. Witness Samuelson also presents the Environmental Report for the Project. EXHIBIT METC-23B (KAS-3B).
- Dr. Mark Israel, Director Emeritus of the Norris Cotton Cancer Center at Dartmouth Medical School; Preston T. and Virginia R. Kelsey Distinguished Chair in Cancer Emeritus at Dartmouth Medical School. Dr. Israel addresses electric and magnetic fields ("EMF") and landowner inquiries regarding EMF and health effects. Dr. Israel addresses that there is no reliable scientific basis to conclude that EMF related to the Project will cause or contribute to the development of cancer in children or adults.
- Dr. Gary Johnson, Senior Managing Scientist, Exponent. Dr. Johnson prepared EMF calculations and testifies regarding corona, audible sound and radio noise. Dr. Johnson concludes that the Project has electric characteristics similar to other double circuit 345 kV transmission lines presently in use throughout the United States and that the calculated values of electric fields, magnetic fields, audible noise, and radio noise are below

levels recommended by government and scientific bodies to avoid adverse effects.

- Dan Belin, Principal Project Manager and Team Lead – Environmental Permitting Services, DNV. Witness Belin reviewed BMcD's Route Study as well as witness Capra's testimony and the Environmental Report, which include the avoidance, minimization, and mitigation measures that METC will use for the Project. Witness Belin concludes that the Route Study complies with industry best practices, that the Environmental Report complies with commonly used resources and data (and, for wetland resources in particular, "above and beyond" derived data), and that METC will be able to avoid, minimize, and/or mitigate potential Project impacts to the extent practicable. Witness Belin also testifies that the Project would be able to comply with permit requirements and conditions that would typically apply to similar projects.

PROJECT OVERVIEW

Q. Generally describe the Project.

A. As described above, the Project includes the new Helix Substation and an approximately 55-mile 345 kV double circuit transmission line that will run from the new Helix Substation in Clarence Township in Calhoun County to the Michigan/Indiana state border in Gilead Township in Branch County. More details regarding the Project's Proposed Route are provided in the direct testimonies of witness DuPree and witness Samuelson. The Project is part of MISO's Long Range Transmission Planning Tranche 1 portfolio ("LRTP1 Portfolio"), which

consists of 18 projects approved in 2022 resulting from MISO's development of regional transmission solutions that are urgently needed to address reliable and economic delivery of energy as the transmission system undergoes significant and extensive changes in the face of a dramatically shifting resource mix. The Midwest subregion faces the most urgent needs of any subregion in MISO due to imminent generation retirements and resource portfolio changes. MISO recognized these pressing needs when crafting its LRTP1 Portfolio, and, as one of the largest independent transmission owners within MISO, METC has also experienced these emerging and urgent needs. The Project, after much study and analysis, has been identified and approved by MISO to address these impending issues for the system. The Certificate is required under Act 30 to construct the Project.

Q. How was the Project developed?

A. As I will discuss in more detail in my testimony below, the MISO Board of Directors approved the Project as part of the LRTP1 Portfolio in July 2022. The LRTP1 Portfolio is part of MISO's Response to the Reliability Imperative (as described in more detail below) and the transmission needs within the MISO region. See **EXHIBIT METC-1B (CLM-1B)**, pp. 13-14; **EXHIBIT METC-2B (CLM-2B)**, p. 18; **EXHIBIT METC-3B (CLM-3B)**, p. 1. The LRTP1 Portfolio was developed through MISO's Regional Transmission Planning Process, which includes years of futures study and development, model building, analyses, stakeholder engagement, including participation by Commission staff, and benefit evaluation.

The LRTP1 Portfolio planning process included evaluating additional alternative proposals submitted by stakeholders and holding over 200 internal and

external meetings, including over 10 Planning Advisory Committee meetings and over 10 workshops. The LRTP1 Portfolio is MISO's second portfolio of Multi-Value Projects ("MVPs") under MISO's Open Access Transmission, Energy and Operating Reserve Markets Tariff ("Tariff"). The first of which was approved in 2011. METC was intimately involved throughout the entire planning process for the LRTP1 Portfolio. Described as the "largest and most complex transmission study effort in MISO's history," MISO indicated the LRTP1 Portfolio is intended to address the fact that "the anticipated landscape changes [i.e., variable renewable generation] are much more significant and require transformational changes at a faster rate than the previous 2011 portfolio of projects were built to accommodate." EXHIBIT METC-3B (CLM-3B), p. 1.

As part of the MISO-approved LRTP1 Portfolio, there were two new regionally cost-shared transmission lines and an associated new substation (the "Helix Substation") to be located, in total or in part, in Michigan. The first such line is the Project. The Project is included in what is referred to as LRTP 17 in MISO's LRTP1 Portfolio. Because the Project meets the definition of a major transmission line under Act 30, METC is seeking a Certificate to construct the Project. LRTP 17 also includes additional upgrades, modifications, replacements, enhancements, and/or the like to existing infrastructure or facilities in Michigan that do not require an Act 30 Certificate.[1]

[1] The Project will connect to a line segment from the Michigan/Indiana border to the NIPSCO Hiple substation LaGrange County, Indiana. The Indiana line segment will be constructed by Republic Transmission, LLC ("Republic"), a subsidiary of LS Power, LLC. In recognition of the fact that Michigan and Indiana have separate transmission siting

The second new transmission line in the LRTP1 Portfolio that is located in Michigan is a new 345 kV double circuit transmission line that will begin at the existing Oneida Substation in Oneida Charter Township, Eaton County and will end at the Nelson Road Substation in New Haven Township, Gratiot County, Michigan. That transmission line is referred to as the "Nelson Road-Oneida Project". The Nelson Road-Oneida Project is included in what is referred to as LRTP 18 in MISO's LRTP1 Portfolio. METC has applied for a Certificate for the Nelson Road-Oneida Project in U-21471.

Q. What are the Project's primary benefits and expected uses?

A. The Project is electrically significant in Michigan because it is backbone transmission essential to achieving our state's clean energy goals and requirements by expanding access to cost effective regional generation resources. The Project, as part of the broader LRTP1 Portfolio, will create the first new interstate 345 kV connection to Michigan's transmission system in 50 years that will increase the import capabilities in the state. The last 345kV tie line built between Michigan and a neighboring state was in 1973. Specifically, Michigan will receive the following primary benefits from the Project:

1. Facilitation of 1,292 MW increase in the capacity import limit ("CIL") to Michigan's lower peninsula, Local Resource Zone 7 ("LRZ 7");

processes and that two companies would be involved in developing, planning, and building the projects, MISO authorized METC to identify a point of interconnection ("POI"). MISO then required those participating in the competitive bidding for the Indiana line segment to propose routes that cross the border within 10 miles east or west of the POI identified by METC. METC subsequently notified Republic of the proposed state line crossing as proposed in this proceeding.

2. Enhanced grid resilience by expanding the grid with new segments/paths often referred to as “new steel in the air” that hardens the grid, provides geographic diversity, supports climate adaptation, and reduces the overall risk profile of the grid; and
3. Support of the State of Michigan’s energy policy goals by developing needed transmission infrastructure in a cost effective, forward-looking, and right-sized manner.

Q. Are there any known future wholesale users of the proposed major transmission line? If so, please identify those users.

A. Yes. MISO market wholesale users will use the Project through energy purchases on the MISO market, including DTE Energy Company (“DTE”), Consumers Energy, and Wolverine Power Supply Cooperative.

REGIONAL TRANSMISSION PLANNING PROCESS

Q. Please describe MISO’s role as the planning coordinator.

A. MISO is a FERC-approved RTO, which has functional control over METC’s transmission assets. MISO is the Planning Coordinator, and both METC and MISO are Transmission Planners. MISO is an independent, non-profit regional transmission organization responsible for maintaining reliable transmission of power in all or portions of 15 states, including Michigan, and the Canadian province of Manitoba. MISO is the NERC planning authority for this region and performs regional planning of the transmission systems of its member transmission owners in accordance with FERC planning principles delineated in FERC Order 890—

among others. Those principles require an open and transparent planning process.

Q. What is MISO's planning process?

A. MISO performs planning functions on an annual basis collaboratively with its transmission owners, stakeholders, and regulators providing input throughout, while also providing an independent assessment and birds-eye-view perspective of the overall needs of the transmission system.

Each year, MISO and its members report the outcome of its annual planning cycles to the MISO Board of Directors, resulting in the annual MTEP. The MTEP is a regional plan to ensure the reliability of the regional transmission system and identify necessary transmission expansion to support the competitive supply of electric power. The MTEP process incorporates the views of many stakeholders and regulators and ensures that the transmission projects developed by transmission owners (such as METC) will be properly integrated and subjected to scrutiny by and through the MISO stakeholder processes. Through open forums, such as the East Subregional Planning Meetings, the MTEP process involves considering other transmission alternatives to meet the end objective of determining the most effective long-term solution that provides transmission reliability.

Q. How important is it for your responsibilities at METC to understand and review the MISO planning processes generally and the LRTP1 Portfolio specifically?

A. As previously detailed, as Vice President of Transmission Planning at ITC, securing project approval is among my chief responsibilities. Identifying system needs, developing system solutions, and securing project approval is critical to operating a transmission system that is efficient, responsive to customers' needs, and, above all else, compliant with NERC standards. To successfully navigate this space, a deep understanding of the MISO planning process is required. This includes all project types including, MVPs (like the LRTP1 Portfolio), Baseline Reliability Projects, Market Efficiency Projects, and Other Projects. Coincidentally, more than a decade ago, I was actively engaged in the creation of the MISO MVP project category via the MISO Regional Expansion Criteria and Benefits Task Force.

Q. What role did METC have in the MTEP process that developed the LRTP1 Portfolio?

A. MISO introduced the conceptual roadmap for the LRTP1 Portfolio to stakeholders, including METC, in March 2021 and began discussions on the scope of the transmission study and the appropriate approach. METC then participated in monthly technical workshops on study methods and assumptions. METC also participated in regular Regional Expansion Cost and Benefits Working Group meetings to develop the appropriate cost allocation methodology for the LRTP1 Portfolio. METC provided contemporaneous joint stakeholder feedback, feedback

specific to its transmission systems, and state-specific feedback throughout the process.

Q. How does MISO staff determine which transmission projects to recommend to the MISO Board for approval?

A. MISO staff presents projects to the MISO Board for its approval based on certain standards and practices codified by the MISO Board in its Business Practices Manuals. Specifically, the MISO Board has approved its Transmission Planning Business Practices Manual ("Transmission Planning BPM"), BPM-020-r30, which describes MISO's transmission planning process. **EXHIBIT METC-4B (CLM-4B)**. The Transmission Planning BPM provides the following Guiding Principles listed below for MISO staff to weigh while determining what projects to move forward in the MTEP process and to MISO staff as it fulfills MISO's RTO system expansion planning obligations. I have reviewed these Guiding Principles and agree with MISO that they are the appropriate principles for building out the transmission system to serve current and future needs. In particular, I support the Guiding Principles excerpted below:

> Develop transmission plans that will ensure a reliable and resilient transmission system that can respond to the operational needs of the MISO region.

> Make the benefits of an economically efficient electricity market available to customers by identifying solutions to transmission issues that are informed by near-term and long-range needs and provide reliable access to electricity at the lowest total electric system cost.

> Support federal, state, and local energy policy and member goals by planning for access to a changing resource mix.

> Provide an appropriate cost allocation mechanism that ensures that costs of transmission projects are allocated in a manner roughly commensurate with the projected benefits of those projects.
>
> Analyze system scenarios and make the results available to federal, state, and local energy policy makers and other stakeholders to provide context and to inform choices.
>
> Coordinate planning processes with neighbors and work to eliminate barriers to reliable and efficient operations.

EXHIBIT METC-4B (CLM-4B), p. 19.

Q. What is the MISO "Reliability Imperative"?

A. The "Reliability Imperative" is described as "the critical and shared responsibility that MISO, [its] members and states have to address the urgent and complex challenges to electric reliability in our region." EXHIBIT METC-2B (CLM-2B), p. 1. In 2020, MISO published its first response to the Reliability Imperative ("2020 MISO Reliability Imperative Report") and defined four Reliability Imperative work streams: "(1) Market Redefinition, (2) Long Range Transmission Planning, (3) Operations of the Future, and (4) Market System Enhancements." EXHIBIT METC-1B (CLM-1B), p. 3. The 2020 MISO Reliability Imperative Report, which is a "living document" that is updated as conditions evolve, noted in 2020 that there is a strong need for long range transmission planning[2] to address the changing energy mix facing the MISO region:

> This effort is designed to identify what transmission the region will need going forward as the electric industry continues to evolve. For example, building additional transmission is especially crucial to support the continued growth of large-scale wind and solar, since those resources are often located far from load centers. A robust transmission plan can also reduce the cost of electricity for

[2] MISO now refers to the Long Range Transmission Planning Process as the Transmission Evolution. EXHIBIT METC-2B (CLM-2B), p. 18.

> consumers by signaling better locations for resource siting that deliver fuel cost savings, decarbonization, and flexibility.

EXHIBIT METC-1B (CLM-1B), p. 3.

MISO found that it was urgently necessary to address reliability challenges that are becoming more significant. In 2020, MISO concluded that:

> Real-time conditions in the last few years have been significantly different than the first 10 years of MISO operations. Power plant retirements, lower overall reserve margins, and increasing outage levels of conventional generation have required MISO to operate with less available capacity than in the past. A growing fleet of renewables that operate differently and, as the graphic below illustrates, can fluctuate on a day-to-day and even an hour-by-hour basis. At times of high wind output, transmission congestion is leading to increased levels of curtailment * * * * And as the climate changes, *history becomes a less reliable predictor of future conditions*.

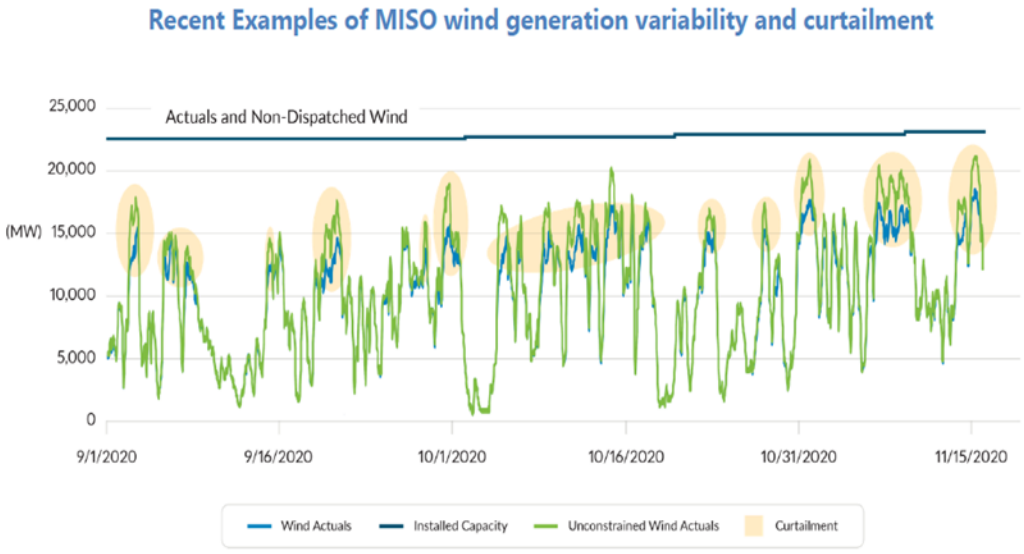

EXHIBIT METC-1B (CLM-1B), p. 8 (emphasis added).

Q. Do you generally agree with MISO's analysis in its 2020 MISO Reliability Imperative Report?

A. Yes. MISO appropriately captured the risks and challenges we face to ensure the transmission system can operate reliably as the resource mix evolves.

Q. Have the concerns MISO identified in its 2020 MISO Reliability Imperative Report become more urgent since the report was published?

A. Yes. I agree with MISO's two updates to the 2020 Reliability Imperative Report, the first in January 2023 and, the second, in February 2024 ("2024 Report"). The 2024 Report reiterated the critical role of transmission, stating: "The ongoing shift in the resource fleet and the substantial projected increase in load pose significant challenges to the design of the transmission system in the MISO region." EXHIBIT METC-2B (CLM-2B), p. 18. Indeed, in its call to action, MISO stated, "[i]n light of the urgent and complex risks to electric reliability in the MISO region, utilities, states and MISO must all act with more urgency and more coordination to avoid a looming mismatch between the pace of adding new resources and the retirement of older resources in the MISO region." EXHIBIT METC-2B (CLM-2B), p. 5. The 2024 Report has confirmed that resource fleet "is changing even faster and more profoundly than we anticipated, so we all must act with more urgency and resolve." EXHIBIT METC-2B (CLM-2B), p. 1.

Q. Has the regional planning process attempted to address any system reliability risks?

A. Yes. MISO, in the 2024 Reliability Imperative, has recognized the urgent and complex challenges to electric system reliability identified by NERC as "a hyper-complex risk environment." The LRTP planning process addresses these risks through its futures development, which included the following factors:

> *Fleet change*: The new weather-dependent resources that are being built, such as wind and solar, do not provide the same critical reliability attributes as the conventional dispatchable coal and natural gas resources that are being retired. While emerging technologies

such as long-duration battery storage, small modular reactors and hydrogen systems may someday offer solutions to this issue, they are not yet viable at grid scale.

Regulations, policies and investment criteria: Many dispatchable resources that provide critical reliability attributes are retiring prematurely due to environmental regulations and clean-energy policies. This regulatory environment, along with prevailing investment criteria for financing new energy projects, increases the challenges to build new dispatchable generation — even if it is critically needed for reliability purposes.

*Fuel assurance***:** Gas resources can face challenging economics to procure fuel because they share the pipeline system with residential and commercial heating and manufacturing uses. Coal plants typically keep large stockpiles of fuel onsite, but coal supplies have tightened due to changing economics, import/export dynamics, supply chain issues and other factors. Aging resources can also be more prone to outages. While renewable resources such as wind turbines do not use “fuel” per se, they are sometimes unavailable due to adverse weather conditions.

*Extreme weather events***:** While extreme weather has always been commonplace in the MISO region, severe weather events that impact electric reliability have been increasing. The Electric Power Research Institute found that hurricanes are increasing in intensity and duration, heat events are increasing in frequency and intensity and cold events are increasing in frequency. Examples include Winter Storm Elliott in 2022, Winter Storm Uri in 2021, Hurricane Ida in 2021, and Hurricanes Laura, Delta and Zeta in 2020.

*Load additions***:** Some parts of the MISO region are enjoying a resurgence in manufacturing and/or other types of economic growth, with companies planning and building new factories, data centers and other energy-intensive facilities. While such development is welcome from an economic perspective, it can also pose significant reliability risks if the load additions it spurs cannot be reliably served with existing or planned resources.

Incremental load growth: While electricity demand has been flat for many years, it is expected to increase due to the electrification of other sectors of the economy. Electric vehicles are growing in popularity, and the residential and commercial sectors are increasingly using electricity for heating and cooling. These trends will accelerate more due to the electrification tax credits in the 2022 Inflation Reduction Act.

> *Supply chain and permitting issues*: Many projects that have been fully approved through MISO's Generator Interconnection Queue process are not going into service on schedule due to supply chain issues and permitting delays that are beyond MISO's control. As of late 2023, about 25 gigawatts (GW) of approved resources are signaling delays that average 650 days to commercial operation.

EXHIBIT METC-2B (CLM-2B), pp. 2-3.

Q. In your opinion and experience, are MISO's predictions and concerns well founded?

A. Yes. As an industry we continue to retire conventional and dispatchable generation resources. These retirements require replacement generation and the associated transmission to support the interconnection and regional power transfer of this new generation. In April 2024, MISO released the results of their 2024 – 2025 Planning Resource Auction, and the results affirmed we desperately need more generation capacity online. For the MISO summer season, surplus capacity fell 29 percent from the 2023 – 2024 auction. Additionally, MISO LRZ 5 cleared at $718.81/MW-Day. For this auction, this clearing price represented a term called CONE or cost of new entry. CONE is the market signal communicating we urgently need more generation capacity. As a separate but related data point, in April 2024, MISO's 2023 generator interconnection queue window closed, and initial indications suggest 94 generator interconnection projects requesting study in Michigan METC and/or ITCT's systems. These 94 projects are in addition to the 87 and 54 projects under study in the 2022 and 2021 study groups, respectively. We continue to have generation waiting for the system to support its interconnection.

Q. Do you agree with how is MISO proposing to address the needs identified in its Reliability Imperative reports?

A. Yes. MISO's response to the Reliability Imperative is multi-pronged and includes the launch of a long-range transmission planning process that considers different future scenarios that will be studied to develop forward-looking transmission solutions in a phased approach. The LRTP portfolios are phased in tranches, in part, because the urgent needs identified by the Reliability Imperative are appearing in the near-term for the Midwest subregion, including retirements and resource portfolio changes. This more urgent need puts the focus for Tranches 1 and 2 in the Midwest Subregion which includes Michigan, LRZ 7.

The LRTP1 Portfolio is "a set of *least-regrets* transmission projects that will help to ensure a reliable, resilient and cost-effective transmission system as the resource mix continues to change and represents the largest and most complex transmission study effort in MISO's history." EXHIBIT METC-3B (CLM-3B), p. 1 (emphasis added).

Q. How does resource planning influence regional transmission planning?

A. As we continue to pursue a clean energy future, the resource planning mindset must shift for both economic and reliability reasons. Energy assurance needs—the ability to reliably serve customers every hour of the year—can no longer be achieved by exclusively siting new generation within a local utility's service area. Economic drivers indicate that geographic diversity in resource planning provides access to regions that have better wind or solar production, generating savings for customers. System reliability drivers indicate that weather-dependent resources

can have a high degree of variability, particularly during extreme weather events; thus, regions must be better connected to share resources in the name of system reliability. These economic and reliability drivers require transmission planners to explore transmission solutions to strengthen our ties between states and enable greater regional flows.

Q. How does the timeline for developing transmission and generation impact resource timing?

A. Transmission development requires more than double the time to develop than generation. While certain generation resources can be developed in 2 to 3 years, transmission infrastructure, particularly regional infrastructure such as the LRTP1 Portfolio, can require 7 to 10 years to develop. In our current environment, it is imperative transmission planning considers a planning horizon that allows regional transmission needs to be identified and long-term solutions to be developed to avoid compromising the reliability of the grid.

MICHIGAN'S ENERGY LANDSCAPE

Q. Does the changing energy mix in Michigan reflect the trends MISO observed region-wide in its Reliability Imperative?

A. Yes. Michigan is no exception to the generation shift observed region-wide by MISO. Driven by a combination of state and federal policy (including Executive Order 2020-182, Executive Directive 2020-10, and the resulting Michigan Healthy Climate Plan, **EXHIBIT METC-5B (CLM-5B)**, customer preferences, economics, and utility goals, the retirement of legacy fossil fuel generators and replacement with geographically dispersed wind and solar units, Michigan's energy landscape

is rapidly changing. The change is best illustrated by the Commission report, *Status of Renewable Energy, Distributed Generation, and Legacy Net Metering in Michigan* (Sept. 29, 2023), **EXHIBIT METC-6B (CLM-6B)**, which summarized the recent Integrated Resource Plans ("IRPs") and planned renewable energy additions included in utilities' preferred course of action, see Table 1 from the report below.

Table 1: Integrated Resource Plans – Preferred Course of Action
Renewable Energy Additions

Utility	MPSC Case Number	Renewable Energy Approved for the Initial 3-Years	3-Year Post IRP Filing Period	Renewable Energy in Current Preferred Course of Action throughout IRP Planning Horizon
Alpena Power	U-20300		07/2022 – 07/2025	Provided through future REC contracts*
Consumers Energy	U-21090	250 MW	06/2022 – 06/2025	4,500 MW of solar by 2030 and 6,000 MW by 2040
DTE Electric	U-21193	400 MW solar	04/2023 – 04/2026	6,500 MW solar and 8,900 MW wind
Indiana Michigan**	U-21189	800 MW wind, 500 MW solar	09/2023 – 09/2026	2,200 MW solar and 1,600 MW wind
Northern States Power Wisconsin Xcel*	U-20599		02/2020 – 02/2023	5,200 MW (4,000 MW solar, 1,200 MW wind)
Upper Michigan Energy Resource Corporation	U-21081		10/2022 – 10/2025	100 MW solar
Upper Peninsula Power Company	U-20350	20 MW solar	02/2020 – 02/2023	UPPCO is currently pursuing a 22.5 MW PPA and 62.5 MW of company-owned solar through competitive solicitation.

*Explained in Renewable Energy Reconciliation Case No. U-21351
**Data provided for Indiana Michigan Power Company and Northern States Power Wisconsin (Xcel) is representative of the Company's multi-state service territory.

Renewable energy quantities are subject to change according to actual contracting results and adjustments to the preferred course of action in future IRP cases.

EXHIBIT METC-6B (CLM-6B), p. 6.

This table does not include the additional renewable energy projects being added by unregulated electric providers, such as municipal utilities, electric cooperatives and alternative energy suppliers, many of which are also adding renewable generation to their portfolios and retiring legacy fossil fuel assets.

Q. What actions have Michigan load serving entities taken to retire fossil fuel generation?

A. Michigan load serving entities are moving rapidly to retire fossil-fuel generation resources and acquire more renewable energy resources. For example, based on IRPs approved by the Commission for Consumers Energy and DTE, more than 5,000 megawatts of fossil-fueled firm dispatchable generation in Michigan is planned to be retired by 2035.[3]

Q. Are the state's largest load serving entities, DTE and Consumers Energy, adding more renewable resources?

A. Yes. As shown above in Table 1, Michigan's largest two utilities, DTE and Consumers Energy, have represented in their IRPs plans to deploy substantial renewable additions over the next twenty years.[4] The Commission approved

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[3] See *In the matter of the application of DTE Electric Company for approval of its Integrated Resource Plan pursuant to MCL 460.6t, and for other relief*, Case No. U-21193, Order Approving Settlement Agreement (July 26, 2023) ("DTE Approval Order"), at ordering ¶ 3; *In the matter of the application of Consumers Energy Company for approval of its integrated resource plan pursuant to MCL 460.6t and for other relief*, Case No. U-21090, Order Approving Settlement Agreement (June 23, 2022) ("Consumers Approval Order"), at ordering ¶ 16.

[4] *In the matter of the Application of DTE Electric Company for approval of its Integrated Resource Plan pursuant to MCL 460.6t, and for other relief* (Case No. U-21193), Testimony of Joyce Leslie, p. 11 ("The 2022 IRP analysis covers a 20-year period (2023-

Consumers Energy's proposal to add about 8,000 MW of solar generation by 2040, and DTE's proposal to add 6,800 MW in renewable capacity through 2030.[5] In approving Consumers Energy's IRP, the Commission noted, "[t]he state should continue to recognize and support the value of a multitude of resources such as Solar, Wind, DR, and Distributed Energy Resources which assist in an 'all of the above' approach."[6]

Q. Are there any other developments in Michigan regarding future energy planning?

A. Public Act 235 of 2023 amended portions of the Clean, Renewable and Efficient Energy Act, Public Act 295 of 2008, MCL 460.1001 *et seq.,* whose purpose is "to promote the development and use of clean and renewable energy resources and the reduction of energy waste through programs[.]" The Act also adds clean energy mandates, requiring that an electric provider achieve a clean energy portfolio of 80% in 2035-2039, and 100% by 2040. This law demonstrates

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2042) and results in a proposed PCA that includes the adoption of 15,400 MW of renewable energy and 1,810 MW of battery storage, the retirement of over 4,100 MW of coalfired generation…"); *In the Matter of the Application of Consumers Energy Company for Approval of an Integrated Resource Plan under MCL 460.6t, certain accounting approvals, and for other relief* (Case No. U-21090), Testimony of Sara Walz, p. 6 (discussing plans to "to exit coal within the next five years, invest in existing baseload generation resources to ensure electric supply reliability, invest in the growth of demand-side resources, and continue on the Company's clean energy plan of increasing levels of renewable energy resources over the next twenty years.").

[5] See DTE Approval Order, at ordering ¶ 12 (indicating that DTE Electric will target 6,800 MW of capacity allocation for renewable energy projects through 2030); Consumers Approval Order, at ordering ¶ 16.

[6] Consumers Approval Order, at ordering ¶ 16.

Michigan's policy of increased reliance on and growth of renewables as fossil fuel generation is retired.

Q. Is transmission investment critical to maintaining system reliability in Michigan?

A. Yes. Transmission planning and transmission infrastructure development are imperative to preserve reliability, to ensure grid reliance, and to address the rapidly emerging needs of the electric system, such as backbone transmission projects approved in MISO's LRTP1 Portfolio. Michigan needs both additional in-state generation and increased access to generation resources beyond our state boundaries. This need is driven by the retirement of conventional dispatchable resources that are being replaced by new intermittent renewable resources with different operating characteristics. Our clean energy future requires a greater dependence on Michigan's transmission system to expand access to resources beyond our state line for economics (including both the real time energy market but also the avoided capital cost of generation development), for grid resilience, and for energy assurance when internal renewable and demand-side resources experience variability that results in local generation shortfalls. The Project supports all of these needs.

Q. How do you assess Michigan's ability to import power from neighboring regions?

A. Michigan's ability to import power from neighboring regions is quantifiable, calculated annually, and called the Michigan CIL. Michigan's CIL is determined by the simultaneous transfer limit of energy into Michigan on a seasonal basis (4

seasons). CIL is also calculated for specific regions within MISO's larger footprint. The Project here is located within the local resource zone that encompasses Michigan's lower peninsula, LRZ 7. LRZ 7 currently has a CIL that ranges from 4,400 MW (Fall) to 4,893 MW (Spring). See MISO 2024-2025 PY Seasonal CIL/CEL Final Results, **EXHIBIT METC-7B (CLM-7B)**. Michigan relies on energy from neighboring states to serve load when local production cannot or when market conditions provide for a more economical solution through imports. Indeed, increasing LRZ 7's CIL will be critical for Michigan to maintain NERC reliability standards in light of the current and evolving landscape in Michigan.

Q. Does MISO have a role in ensuring the region has sufficient resource capacity?

A. Yes. MISO facilitates an annual capacity auction for load and generation resources. This Planning Resource Auction ("PRA") is intended to provide visibility into capacity demand and ideally send a market price signal. The objective of a load serving entity is to secure enough capacity to meet its anticipated peak demand requirements plus an appropriate reserve margin. MISO assesses resource adequacy requirements for each zone within MISO. If there is insufficient resource capacity within a zone, the price will be set at the upper limit—the CONE, i.e., the cost of developing and constructing a new generator.

Q. How can the CIL influence the Michigan generation mix?

A. As the CIL increases, it decreases the total quantity of resources that need to be located within the local resource zone. Simply put, if a region has greater access to regional resources—outside of the local resource zone—it reduces the need to

satisfy all the capacity requirement from within a single zone and provides a greater buffer to clearing CONE at the PRA.

Q. Does insufficient CIL have an economic impact?

A. Yes. Reaching CONE has a significant economic impact. It is estimated the cost to LRZ 7 during the 2020/2021 PRA, due to insufficient access to resources resulting in CONE pricing, was $911 million. At the time of the 2020 annual PRA, the cost of capacity at CONE was about $258/MW per day, a cost burden that is ultimately paid by customers.

Q. How does clearing at CONE send a signal regarding system reliability?

A. Clearing at CONE sends a signal that LRZ 7 has a compromised ability to reliably serve customers.

Q. How has LRZ 7 performed in the capacity auction in recent years?

A. At the 2020/2021 PRA, LRZ 7 was the first and only MISO Zone with insufficient resources to meet NERC required planning reserve margins. As a result, the cost of capacity established at auction was at CONE. LRZ 7 cleared again at CONE during the 2022/2023 PRA. While LRZ 7 did not clear CONE at the most recent 2024/2025 auction, the 2024-2025 capacity auction prices for the summer and spring seasons roughly tripled to $30/MW-day from the prior auction as tighter capacity conditions continue. MISO summer capacity fell 29% as utilities attempt to balance reliability and clean energy plans. The increase in auction prices illustrates the tighter capacity options for LRZ 7 and the premium being paid for such conditions. In short, the risk of a capacity shortfall in the near future continues and LRZ 7 is being impacted economically by higher prices in the interim.

Q. How can Michigan improve its energy and capacity outlook?

A. Michigan has two means by which it can improve its energy and capacity outlook. First, new dispatchable generation could be constructed within the state. This option is inconsistent with state policy and resource acquisition plans for Michigan load serving entities. Traditional dispatchable resources are fossil-fueled resources such as gas turbines. Adding these types of new generators would run counter to the state's decarbonization goals. Moreover, planned resource additions are primarily renewable (i.e., non-dispatchable and intermittent). MISO's PRA accredits their capacity as such. Specifically, capacity accreditations must account for the fact that solar and wind resources are not dispatchable and therefore may not be available in a time of need (i.e., if the sun is setting, more solar adds no value). While batteries are dispatchable, they are not cost-effective. Second, transmission solutions such as the Project can be developed to strengthen our overall transmission network. Based on my experience, this is by far the better option for Michigan and includes adding new connections with neighboring states, reinforcing the current grid to disperse imported capacity and reduce system congestion, and providing additional flexibility for future for system expansions.

Q. How will Michigan benefit from increased access to regional generation resources as a result of greater import capability?

A. Michigan in-state renewable resources have geographical limitations which can be alleviated through increased access to regional generation resources. Prudent resource planning in a renewable future must consider local and regional

resources to deliver the most reliable and cost-effective solution to customers in all seasons, at all hours. Geographic diversity offers access to generation resources from neighboring regions/states that are experiencing different weather conditions (this requires great import capability). The need to do exactly this has been recognized recently by both FERC and the United States Congress. FERC recently introduced a new Notice of Proposed Rulemaking (RM22-10) that that will require transmission planners to assess the readiness of their system to withstand extreme weather and implement solutions, as needed, to develop a more resilient system. As part of the Fiscal Responsibility Act of 2023, the United States Congress mandated regions assess the bulk electric power transfer capability among regions (interregional transfer capability) and develop prudent transmission solutions to improve transfer capability. To preserve the reliability and resilience of the Bulk Electric System, we need to have greater access to generation resources beyond our state's borders.

Q. Did MISO take the CIL into account when planning the LRTP1 Portfolio?

A. Yes, as noted, increasing Michigan's access to neighboring generation resources provides many benefits. MISO independently studied solutions to increase the CIL, and METC confirmed MISO's analysis to ensure that the LRTP1 Portfolio substantially increased the LRZ 7 CIL (e.g., increases for summer peak day: 39%; winter peak day: 59%).

LRTP1 PORTFOLIO AND THE PROJECT

Q. Which of the LRTP1 Portfolio projects include projects located within the State of Michigan?

A. As noted above in my testimony, the LRTP1 Portfolio includes 18 regionally beneficial projects, including two projects located in whole, or in part in, Michigan. EXHIBIT METC-3B (CLM-3B), p. 2. The first of these projects, LRTP 17, includes the Project proposed in this case. The second, LRTP 18, includes the Nelson Road-Oneida Project, which, as described above, is a 345 kV double circuit transmission line that will begin at the existing Oneida Substation in Oneida Charter Township, Eaton County and will end at the Nelson Road Substation in New Haven Township, Gratiot County, Michigan.

Q. In your opinion, does LRTP1 Portfolio reflect the Guiding Principles of MISO's Transmission Planning BPM?

A. Yes. The LRTP1 Portfolio reflects the Guiding Principles of MISO's Transmission Planning BPM, which are outlined previously in my testimony. The LRTP1 Portfolio was developed after much analysis and stakeholder input to ensure a reliable and resilient transmission system that responds to the MISO region's needs; identifies solutions to transmission issues that address short-term and long-range needs; supports state and local energy policy and MISO member goals; and is a result of coordinated planning processes in the MISO region. METC was very involved in the development and analysis of the LRTP1 Portfolio, and my opinion is that the LRTP1 Portfolio reflects the BPM's Guiding Principles.

Q. How did MISO develop specific models for the LRTP1 Portfolio to study what transmission needs to be constructed to support the integration of renewables and to maintain reliable energy delivery under different load and dispatch patterns associated with the changing energy mix?

A. Future scenarios were developed through an 18-month collaboration between MISO and stakeholders, including METC. See **EXHIBIT METC-8B (CLM-8B)**, p. 2 (hereinafter, the "MISO Futures Report"). The MISO Futures Report acknowledged the transformational changes to MISO's generation fleet that were already underway at the time of development and acknowledged the impact of economics, state and utility goals, and load serving utility integrated resource plans. Once the futures narratives were developed through the stakeholder engagement process, MISO staff incorporated the assumptions into powerflow and economic models. The powerflow models represent various snapshots of system conditions in the 10- and 20- year timeframe to identify issues. These scenarios capture a range of seasons, times of day, load levels, and coincident availability of renewables. The hourly economic models capture all 8,760 hours of a year to calculate the optimal dispatch and adjusted production costs. Both sets of models were shared with stakeholders through multiple rounds of feedback. See EXHIBIT METC-8B (CLM-8B), pp. 2-3.

Q. Do you agree with the futures MISO selected to study?

A. Yes. MISO developed three future scenarios for LRTP and relied on Future 1 for the development of the LRTP1 Portfolio. See EXHIBIT METC-8B (CLM-8B), p. 3.

- Future 1, the most conservative, assumed 77 GW of retirements and 121 GW of additions including 69 GW of added renewable generation.
- Future 2 assumed 80 GW of retirements and 170 GW of additions including 96 GW of added renewable generation.
- Future 3, the most aggressive, assumed 112 GW of retirements and 306 GW of additions including 169 GW of added renewable generation.

The LRTP1 Portfolio was the first step in addressing foundational system needs to enhance the reliable energy delivery. Future 1 serves as a low bookend to identify a least regrets transmission plan. Additional tranches of transmission projects are necessary to address subsequent needs from Futures 1, 2 and 3. MISO President Clair Moeller summarized the need for additional LRTP portfolios: "We see very little risk of over-building the transmission system; the real risk is in a scenario where we have underbuilt the system. Similarly, across markets and operations, our job is to be prepared." EXHIBIT METC-1B (CLM-1B), p. 8. While the LRTP1 Portfolio moves towards meeting certain needs in Future 1, there is still a long way to go.

Q. Has the transmission system changed since MISO developed Future 1?

A. Yes. The resource transition is occurring faster than MISO had anticipated when building the initial futures used for the LRTP1 Portfolio. As MISO recognized, short-term risk of capacity deficits has been averted, but "more work is urgently needed to mitigate reliability concerns in the coming years. In fact, the region only averted a capacity shortfall in 2023 because some planned generation retirements

were postponed and some additional capacity was made available to MISO." EXHIBIT METC-2B (CLM-2B), p. 6.

Q. What actions did MISO take with regard to its futures modeling to respond to these changes?

A. MISO, along with stakeholder feedback, has updated (or "refreshed") the futures used for the LRTP analyses starting in the summer of 2022 to account for changing conditions and energy goals, with the following:

- Future 1A, the most conservative, assumed 88 GW of retirements (14% increase over Future 1) and 214 GW of additions (77% increase over Future 1) including 153 GW of added renewable generation (122% increase over Future 1).
- Future 2A assumed 103 GW of retirements (29% increase over Future 2) and 369 GW of additions (117% increase over Future 2) including 257 GW of added renewable generation (168% increase over Future 2).
- Future 3A, the most aggressive, assumed 130 GW of retirements (16% increase over Future 2) and 448 GW of additions (46% increase over Future 2) including 340 GW of added renewable generation (101% increase over Future 2).

See **EXHIBIT METC-9B (CLM-9B)**, p. 4.

The differences between these refreshed futures and their predecessors reflect the more aggressive pace of retirements and generation additions that MISO and transmission planners are observing region-wide and in Michigan.

Q. Has MISO conducted any surveys to determine future capacity additions or system reliability needs?

A. Yes. MISO and the Organization of MISO States ("OMS") conducted the 2023 OMS – MISO Survey. See 2023 OMS-MISO Survey Results, **EXHIBIT METC-10B (CLM-10B)**. This was done to further the joint commitment to regional resource adequacy. The results of the 2023 survey reinforce the need for continued reforms to MISO's resource adequacy construct to reliably manage portfolio transition. Specifically, the survey found that without a continuation of actions such as delayed retirements and capacity additions, there will be a capacity deficit of 2.1 GW in summer 2025/2026, which will grow in subsequent years. The LRTP1 Portfolio, including the Project, will support the capacity additions the survey found necessary to address the predicted deficit. It will do this by enabling new generation and regional delivery of that generation as contemplated by Future 1.

The capacity shortfalls in the coming years can be partially addressed by a more flexible transmission system to provide access to fuel diversity, weather diversity, and load diversity.

Q. What primary goals does the LRTP1 Portfolio serve?

A. As described in MTEP21 Report Addendum, MISO sought to achieve the following goals with the LRTP1 Portfolio:

> Reliable System: maintain robust and reliable performance in future conditions with greater uncertainty and variability in supply;
>
> Cost Efficient: enable access to lower-cost energy production;
>
> Accessible Resources: provide cost-effective solutions allowing the future resource fleet to serve load across the footprint; and

Flexible Resources: allow more flexibility in the fuel mix for customer choice. EXHIBIT METC-3B (CLM-3B), p. 13.

Q. How is the Project classified under MISO's Tariff?

A. MISO approved the LRTP1 Portfolio as MVPs based on these three criteria:

- Reliability – Address transmission issues associated with a projected violation of a reliability standards;
- Economic – Provide multiple types of economic value across multiple pricing zones with a benefit-to-cost ratio of 1.0 or higher, or
- Policy – Support the reliable and economic delivery of energy in support of documented energy policy mandates or laws.

EXHIBIT METC-3B (CLM-3B), p. 7.

Q. For MVPs, such as the Project, will costs be allocated across MISO?

A. Yes. As an MVP with regional benefits, the Project qualifies for regional cost allocation. The Project's annual revenue requirement is determined pursuant to the formula rate in Attachment MM, the Multi-Value Project Charge of MISO's Tariff. METC will recover these costs through Schedule 26-A, the Multi-Value Project Usage Rate, in MISO's Tariff, which is a rate charged for Monthly Net Actual Energy Withdrawals, Export Schedules, and Through Schedules. Michigan ratepayers' share of the annual revenue requirement is determined by the percent of total MISO energy used in Michigan, which has been estimated at 18 to 22 percent based on 2021 energy withdrawal data contained in MISO's Indicative Annual Charge file posted in 2023.

Q. What needs do the LRTP1 Portfolio meet?

A. Overall, the LRTP1 Portfolio is needed to:

- Address n-1 thermal reliability violations as defined by NERC on 185 facilities across the MISO Midwest subregion. Address n-1-1 thermal reliability violations on 344 facilities across the Midwest. Address numerous voltage issues across the Midwest. In addition, increase transfer capability across the MISO Midwest subregion to allow reliability to be maintained under varying dispatch patterns driven by differences in weather and/or load conditions.
- Provide $23.2 billion in net economic savings over the first 20 years of the LRTP1 Portfolio's service, which results in a benefit-to-cost ratio of at least 2.6. This amount increases to $52.2 billion in net economic savings over 40 years with a present value with a 6.9% discount rate, resulting in a benefit to cost ratio of 4.1.[7]
- Support the reliable connection of approximately 20.1 GW in new, primarily renewable generation across MISO Midwest subregion, 1.4 GW in LRZ 7.
- Support avoided capital costs of local resource investments.
- Support avoided transmission investments.
- Reduce resource adequacy requirements.
- Support reduced risk of load shedding.
- Support decarbonization.
- Improve resiliency and flexibility, leveraging geographic and fuel diversity.

EXHIBIT METC-3B (CLM-3B), pp. 3; 21-44.

[7] Values as of July 2022. While market forces, have driven project costs to increase since 2022, the same forces will also cause benefits to increase.

Q. Why is the Project needed?

A. The Project, as part of the broader LRTP1 Portfolio, is needed to maintain transmission system reliability across the Midwest region as well as in the state and to support access within Michigan to geographically diverse resources and will avoid the need for building other reliability projects to address the changing landscape and resource mix discussed at length above in my testimony.

As mentioned above, the new transmission line that will be built as part of the Project is the first interstate tie line in nearly 50 years, which will facilitate increasing the import and export capabilities in the state. As such, it will hold strategic significance and importance as our reliance on intermittent renewable energy increases, and it becomes necessary to import power from other states to ensure a reliable source of electricity. Similarly, the Helix Substation is crucial to these efforts. The Helix Substation will act as an electrical hub that will loop in existing 345 kV transmission line segments as well as the Project's 345 kV transmission line. Given the geographic location of the new interstate line, a new substation is needed to act as that critical hub.

The Project and LRTP1 Portfolio will collectively provide Michigan with the benefit of increasing the CIL. Transmission planning and infrastructure development are imperative to preserve reliability, to ensure grid reliance, and to address the rapidly emerging needs of the electric system, such as backbone transmission projects contemplated in MISO's LRTP1 Portfolio. The Project will provide necessary additional redundancies and grid capabilities to increase reliability, help reduce system congestion, and provide a more efficient

transmission of energy as well as serve as backbone for potential future interconnection of new generation resources by adding a higher voltage transmission line to Michigan's system to access. In addition, the Project will add another outlet path that can disperse the increased capacity that will enter Michigan with the LRTP1 Portfolio. In short, the Project will facilitate the increase to the CIL by enhancing the grid's resiliency and ability to address congestion.

The Project, along with the rest of the LRTP1 Portfolio, is urgently needed to integrate new renewable resources into the system to meet utility and state renewable goals in Michigan and the region. The Project and the LRTP1 Portfolio will also improve energy assurance, reduce wholesale energy prices, and reduce the capital cost of generation expansion.

Q. What transmission reliability needs will the LRTP1 Portfolio projects address?

A. As noted above, MISO developed models with assumed futures. Based on that analysis, MISO determined that the proposed Project, in connection with other LRTP1 Portfolio projects 12-18 ("East-Central Corridor Projects") spanning Michigan, Indiana, Illinois, Missouri, and Iowa, will mitigate 600 transmission thermal violations on 77 monitored facilities, including 28 in Michigan. EXHIBIT METC-3B (CLM-3B), pp. 40-41.

Q. Is local energy demand driving part of the need for the Project?

A. While the primary driver of the LRTP1 Portfolio is the regional transfer of electric power across the MISO north region, the design of the Portfolio also aids local system flows derived from the modest load growth in Future 1 and the changing

power flows. The Project, as part of the LRTP1 Portfolio, is needed to maintain the interstate transmission system reliability as the energy mix transitions away from fossil-fuel generation and will reduce the need for building other local reliability projects. While there will be local load serving benefits, there is no specific local customer demand driving the need for the Project.

Q. Did MISO evaluate any alternatives for the East-Central Corridor Projects?

A. MISO, along with numerous stakeholders (including METC), identified and studied a variety of models and alternatives to address the transmission infrastructure needs at issue. The projects within the LRTP1 Portfolio MISO approved were selected to ensure a reliable and resilient transmission system in the changing resource mix facing the region. MISO found that East-Central Corridor Projects resulted in fewer unsolved contingencies than any alternatives considered. MISO studied five alternatives to the East-Central Corridor Projects. Some alternatives performed similarly on the reliability metrics but added cost or offered less flexibility in the future; others showed a reduction in performance.

Q. What alternatives did MISO evaluate?

A. MISO evaluated five 345 kV alternatives to the East-Central Corridor Projects. Those included:

- Helix[8] to Weeds Lake

[8] Before the new Helix substation was named in accordance with transmission substation naming conventions, it was generically referred to as the “Duck Lake” substation in the MISO MTEP documents. The MISO MTEP21 Report Addendum references “Duck Lake” with respect to the alternatives analyzed; I use Helix in my testimony now that the new substation has been named.

- i.e., Hiple – Weeds Lake – Helix (single circuit) + Oneida – Nelson Road + Upgrades.

- Argenta – Hiple and Argenta – Helix
  - i.e., Hiple – Helix (tie one circuit into Argenta) + Oneida – Nelson Road + Upgrades.
- A double circuit Oneida – Madrid line
  - i.e., Hiple – Helix + Oneida – Madrid.
- Iowa to Indiana with Helix configuration.
  - i.e., Helix switching station + Upgrades.
- Helix switching station + Oneida – Nelson Road + Upgrades.

These alternatives addressed many thermal issues in Michigan. However, they did not resolve as many contingencies across the MISO region that the East-Central Corridor Projects resolved. EXHIBIT METC-3B (CLM-3B), p. 43. MISO performed further steady state analysis of the proposed East-Central Corridor Projects on the end of transfer models to evaluate robustness, and they performed well. **EXHIBIT METC-11B (CLM-11B)**, p. 19.

Q. Do you agree with MISO's analysis of alternatives to the meet the identified needs?

A. Yes, I agree with MISO's analysis and believe the East-Central Corridor Projects, including the Project, results in the best alternative of those studied to meet the identified needs.

Q. Did METC analyze alternatives?

A. Yes. METC analyzed several transmission alternatives through a First Contingency Incremental Transfer Capability ("FCITC") analysis and reliability screening. The primary goal of this analysis was to independently identify alternatives and/or improvements to the initial concepts proposed by MISO. Through these analyses, it was evident that a new interstate transmission line (such as part of LRTP 17) into Michigan was critical to providing the increased import potential. It was also evident that additional components, such as LRTP 18, were necessary to support increased transfer capability.

Specifically, the Project creates an additional double circuit 345 kV connection with LRZ 7, thus enhancing the grid connectivity and redundancy to support the transfer of energy into and through LRZ 7 with a geographically strategic new substation that will aid in those efforts. Without this increased flexibility provided by the Project and the supporting East-Central Corridor Projects to the west, LRZ 7 would not see the material gains in the CIL nor realize the benefits represented in Figure CLM-1.

Our analysis confirmed that in the absence of the Project and the other East-Central Corridor Projects, there would be an increased risk that LRZ 7 will clear at CONE in the annual (now seasonal) Planning Resource Auction, market congestion, and reduced reliability.

METC performed its analysis using the PowerGem Transmission Adequacy & Reliability Assessment software. METC evaluated FCITC for multiple additional scenarios and alternatives and confirmed MISO's results. The FCITC analysis is

similar to MISO's CIL analysis, but transmission owners are typically unable to fully replicate MISO's CIL analysis due to some generation redispatch that MISO may apply. This additional scrutiny was completed to have maximum confidence in the selection of the Project and its value creation across multiple system conditions. The conclusion of METC's FCITC analysis showed the Project as part of the LRTP1 Portfolio was necessary to achieve a full benefit to the state.

METC also performed a reliability screening for a subset of the alternatives and scenarios evaluated in the FCITC analysis. This analysis focused on the number of overloads reduced below 100%, 95%, and 90% thresholds to compare the performance of alternatives.

METC reviewed the FCITC analysis results along with the reliability screening and applied qualitative considerations, including future flexibility as the LRTP1 Portfolio is considered a least-regrets portfolio to address the conservative, low book-end future, Future 1. Knowing the LRTP1 Portfolio is an opportunity to position Michigan for long-term success, a high value was placed on this future expansion and flexibility opportunity. With this goal in mind, METC's independent conclusion was that LRTP 17, including the Project, along with LRTP 18, were the best option for Michigan.

METC independently concluded that LRTP 17 and 18 are needed to support Michigan's long-term reliability and create value to Michigan under this multi-value assessment. No other option was a prudent replacement component for the East-Central Corridor Projects.

The alternatives considered included:

Short Name | Transfer Analysis	Description
Base Case	Reference Case (No LRTP Transmission)
IA-IN + Onda-NlsnR	East-Central Corridor concept without [Helix] 345 kV, or [Helix] 345 kV Station
IA-MI	East-Central Corridor concept
IA-MI Less NlsnRd-Oneida	East-Central Corridor concept without Nelson Road – Oneida 345 kV 345 kV
IA-MI +Onda-Madrd	East-Central Corridor concept with Oneida-Madrid 345 kV replacing Nelson Road – Oneida 345 kV
NelsnRd-Oneida	Nelson Road – Oneida 345 kV Only
Core-IND	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station
Core-IND+Monr	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station, Add Monroe-Wayne & Monroe-Brownstown 345 kV Rebuilds
Core-IND+HIPL-MAJ	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station, Add Hiple-Majestic 345 kV
Core-IND+HIPL-MAJ-BLCK	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station, Add Hiple-Majestic-Blackfoot 345 kV
Core-IND+RebArgMaj	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station, Add Argenta→Majestic 345 kV Rebuilds
Core-IND+RebArgMaj-Monr	Core plus East-Central Corridor concept without Hiple-[Helix] 345 kV or [Helix] 345 kV Station, Add Argenta-->Majestic 345 kV Rebuilds, Add Monroe-Wayne & Monroe-Brownstown 345 kV Rebuilds
CORE-MI	Core plus East-Central Corridor concept
CORE-MI+ArgT	Core plus East-Central Corridor concept, loop one Hiple-[Helix] circuit into Argenta
CORE-MI+ArgT+Reb[Helix]TomMaj	Core plus East-Central Corridor concept, loop one Hiple-[Helix] circuit into Argenta, Add [Helix]-->Majestic 345 kV Rebuilds
CORE-MI+OND-MAD	Core plus East-Central Corridor concept with Oneida-Madrid 345 kV replacing Nelson Road - Oneida 345 kV
CORE-MI+OndMad+SagRArgHelix	Core plus East-Central Corridor concept with Oneida-Madrid 345 kV replacing Nelson Road - Oneida 345 kV, Add Argenta – [Helix] 345 kV Sag Remediation
CORE-MI+OndMad+SagRArg[Helix]+Monr	Core plus East-Central Corridor concept with Oneida-Madrid 345 kV replacing Nelson Road - Oneida 345 kV, Add Argenta-[Helix] 345 kV Sag Remediation, Add Monroe-Wayne & Monroe-Brownstown 345 kV Rebuilds
CORE-MI+Reb[Helix]TomMaj	Core plus East-Central Corridor concept, Add [Helix]-->Majestic 345 kV Rebuilds
Short Name | Reliability Analysis	**Description**
Base Case	Reference Case (No LRTP Transmission)
IA-IN + Onda-NlsnR	East-Central Corridor concept without [Helix] 345 kV, or [Helix] 345 kV Station
IA-MI	East-Central Corridor concept
IA-MI Less [Helix]-Hiple	East-Central Corridor concept without Hiple-[Helix] 345 kV
IA-MI Less NlsnRd-Oneida	East-Central Corridor concept without Nelson Road - Oneida 345 kV 345 kV

NelsnRd-Oneida	Nelson Road - Oneida 345 kV Only
IA-MI +Onda-Madrd	East-Central Corridor concept with Oneida-Madrid 345 kV replacing Nelson Road - Oneida 345 kV

Q. Would a higher voltage or lower voltage transmission line meet the needs the Project addresses?

A. No, not as cost effectively. The LRTP1 Portfolio was designed to support an emerging future that is manifesting at a rate transmission is not currently supporting. The system is demanding rightsized transmission solutions that are readily compatible with our existing system to support current and future system needs. LRTP1 system improvements will support our future system needs by reinforcing our current system and better preparing our transmission system to support future expansion as we endeavor to develop solutions to Planning Futures 2 or 3. As the predominant high voltage transmission in MISO today, 345 kV infrastructure is the logical and appropriate voltage class for the LRTP1 Portfolio. A differing voltage would not as cost effectively provide the targeted objectives of the LRTP1 Portfolio.

Q. Could renewable generation meet the needs served by the Project?

A. No. Renewable resources are inherently intermittent, and MISO's PRA accredits their capacity as such. Specifically, capacity accreditations must account for the fact that solar and wind resources are not dispatchable and therefore may not be available in a time of need. This new interstate Project, in conjunction with the broader grid, will provide access to regional generation at all times, including when local renewable generation resources are providing less output due to geographic, seasonal, or weather-related factors. Adding more local renewable generation is neither an economic nor effective alternative to the Project because the Project

and other LRTPs are needed to reliably integrate geographically diverse generation as local dispatchable generation retires. Local renewable generation itself cannot provide transmission capacity that is urgently needed to support our generation fleet change.

Q. Could the identified needs be satisfied by increased conservation or demand side management?

A. No. Energy conservation and demand side management would not meet the needs served by the Project. While the Project will support moderate increasing load in the State of Michigan that could be partially offset by reduced load, the primary need addressed by the new interstate Project is to facilitate the increase to the CIL for LRZ 7 and to reliably integrate additional renewable resources and enhance grid resilience. Increased conservation or demand side management do not offer the geographic diversity necessary for an increasing reliance on weather dependent generation.

Q. In your opinion, is there is a feasible and prudent alternative to the Project?

A. Based on my experience and knowledge of the Michigan transmission system, there is no feasible and prudent alternative to the LRTP1 Portfolio and associated Michigan projects as proposed. The Project contributes to the necessary expansion of the 345 kV transmission system to handle the needed increase in importing power into Michigan and is a critical piece of the LRTP1 Portfolio.

Q. Has the MPSC recognized the need for increasing the CIL?

A. Yes. For example, in *In the matter of the application of Consumers Energy for approval of its integrated resource plan pursuant to MCL 460.6t and for other relief*,

Case No. U-20165, the MPSC approved a settlement agreement on June 7, 2019. The MPSC's approval included a paragraph which provided:

> The Company acknowledges that capacity imports can lend support to the Company's PCA and that opportunities to increase the CIL should be evaluated. In addition, the Company acknowledges that the CIL supports the reliability of the transmission system and that an adequate CIL needs to be maintained. The Company shall continue to collaborate with METC and MISO on the implementation of the PCA to minimize negative impacts on the Zone 7 CIL and investigate opportunities to increase the CIL. (Settlement ¶ 10).

Likewise, in *In the matter of the application of DTE Electric Company for approval of its integrated resource plan pursuant to MCL 460.6t and for other relief*, Case No. U-20471, the MPSC recognized that "in the very near future, an examination of potential ways to increase the CIL will become a necessary component of any IRP, and the Commission directs DTE Electric to include such an examination in its next IRP filing." (Order, Feb. 20, 2020, p. 83).

Moreover, in 2019, Governor Whitmer and the MPSC wrote a joint letter to MISO requesting a study to evaluate the need to increase the CIL:

> We recommend MISO work with Commission staff and stakeholders on solutions to increase Michigan's import capability in the near term and develop an appropriate cost recovery approach for these types of projects. **EXHIBIT METC-12B (CLM-12B)**, p. 2.

MISO conducted that study and concluded that "MISO expects that longer term development of the regional resources and grid will require both local strengthening of the grid within lower Michigan, as identified in this study, as well as strengthening of interstate ties to manage energy flows into and out of Michigan." **EXHIBIT METC-13B (CLM-13B)**, p. 16.

Q. How will the 1,292 MW increase in CIL provided by the LRTP1 Portfolio projects benefit Michigan?

A. I would point to three cost benefits of the CIL increase:

- Improved market access, which will provide more options for load serving entities and, all other things equal, would be expected to put downward pressure on energy prices.
- Reduced zonal capacity requirements, which is expected to reduce the cost of capacity in Michigan (avoid CONE).
- Stabilized prices during extreme weather due to greater access to generation resources.

Q. Could the present system meet the identified current and future needs?

A. No. There is inadequate transmission to reliably transfer generation across the region resulting in significant system congestion. There are substantial barriers to entry for interconnecting generators (high network upgrade costs to support delivery of generation). There are also inadequate energy resources available to meet customer preference.

Q. If this Project is not constructed, what would happen next?

A. If the Project (along with the other identified projects in LRTP1 Portfolio) were not constructed, the identified benefits delivered by the projects will not be realized. From a system planning perspective, reliability issues will persist and will be addressed in a near-term and shortsighted outlook. This will result in piecemeal system solutions. Piecemeal solutions, like all capital infrastructure, have costs generally higher in the aggregate than a holistic solution, the types of benefits are more limited, and the magnitude of the benefits are greatly diminished. Absent the LRTP1 Portfolio, LRZ 7 customers would likely experience the following:

1. Rising energy costs--with a bias to increase more rapidly;
    a. The entire cost of local solutions would be fully cost allocated to LRZ 7 (i.e., no cost sharing);
    b. Michigan would have more limited access to MISO's regional markets (i.e., more limited CIL);
    c. Low-cost generation would be more frequently curtailed due to system congestion.
2. Exponential capacity cost increases (i.e., the zone reaching CONE pricing);
3. Increasing risk profile of energy assurance increases (i.e., ability to reliably serve customers);
4. Higher generator interconnection costs;
5. Additional right-of-way and other real property to support lower voltage solutions; and
6. Protracted lead times for interconnecting new customers (i.e., series delays and waiting on infrastructure to be constructed vis-à-vis building forward looking infrastructure).

The LRTP1 Portfolio projects are forward-looking solutions that reduce the risk profile of realizing these undesirable system impacts.

ESTIMATED QUANTIFIABLE AND NONQUANTIFIABLE PUBLIC AND PRIVATE BENEFITS OF THE MAJOR TRANSMISSION LINE.

Q. Please address the non-quantifiable public benefits of the proposed major transmission line.

A. The non-quantifiable public benefits of the Project are:

- The Project supports reliable energy delivery under a variety of conditions through an increasingly interdependent system which adds operational flexibility and geographic diversity.
- The Project will support increasing the CIL. Increasing the CIL for LRZ 7 will provide Michigan electric utilities access to additional resources, including renewable resources across the region to meet their IRP goals.
- The Project is a "backbone" transmission line that once built will provide more flexibility in the state for bringing new power on the grid and servicing new load.
- The Project will provide the first 345 kV connection with a neighboring state in 50 years.

Q. Please address the quantifiable public benefits of the proposed major transmission line.

A. The quantifiable public benefits of the Project individually are:

- The Project will result in approximately $442 million in capital expenditures, $195 million of which will be local expenditures. Based on a Regional Input-Output Modeling System (RIMS II) analysis, METC estimates this will result in demand for $416 million of goods and services associated with the capital investment. This demand accounts for the "multiplier effect" comprised of the direct (initial inputs purchased by the final-demand industry), indirect (subsequent inputs purchased by supporting industries), and induced effects (the spending of workers whose earnings are affected by the final-demand change). These effects categorize the overall effect that

expenditures will have on other industries within a region. These effects occur due to the purchase of land, labor, and capital as well as the local consumption spending of individuals in a particular area.

- Project construction will generate an estimated 2,793 jobs within the State of Michigan with an associated $146 million in earnings.
- The Project and the rest of the LRTP1 Portfolio will benefit all electric customers in the State of Michigan because they will increase the CIL by 1,292 MW. While this benefit is difficult to quantify, we know the risk of outages caused by several weather events have been increasing and that the CIL will be an essential tool for ensuring that service is not interrupted. MISO estimated a 20-year benefit of $624 million to LRZ 7.
- Additional supply creates greater competition and greater competition (all else equal) results in lower costs for ratepayers.
- The increase in CIL will provide additional protection from LRZ 7 reaching CONE. It is estimated the cost to LRZ 7 during the 2020/2021 PRA, due to insufficient access to resources resulting in CONE pricing, was $911M.
- The Project will help facilitate the state's decarbonization goal of achieving net carbon neutrality by 2050. Specifically, the Project supports the modest load growth in Future 1 (energy growth: 0.48 percent per year and demand growth: 0.60 percent per year); however, more importantly the infrastructure supports the evolving system flows as we transition away from conventional centralized generation units towards dispersed renewable generation units. The Project is part of a portfolio that will reduce CO_2 emissions by nearly 20

million metric tons per year, over the first 20 years. MISO estimated a 20-year benefit related to decarbonization of the LRTP1 Portfolio of between $687 million and $3,638 million to LRZ 7.

Q. Are there other benefits of the LRTP1 Portfolio of projects that will accrue to the State of Michigan?

A. Yes.

Q. What are those benefits?

A. MISO's analysis shows that Michigan (LRZ 7) will receive a total of $6.1 to $9.4 billion dollars in benefits over 20 years. These benefits are estimated by calculating the value of six benefit metrics designed to capture unique benefit streams including: (1) Congestion and Fuel Savings, (2) Avoided Capital Cost of Local Resource Investment, (3) Avoided Transmission Investment, (4) Resource Adequacy Savings, (5) Avoided Risk of Load Loss, and (6) Decarbonization. These benefits far exceed the costs to Michigan energy consumers—the portfolio has a benefit/cost ratio of 2.2 to 3.4 in LRZ 7. Figure CLM-1 below shows the range of MISO's B/C analysis by zone:

Figure CLM-1: Range of MISO's B/C Analysis by Zone

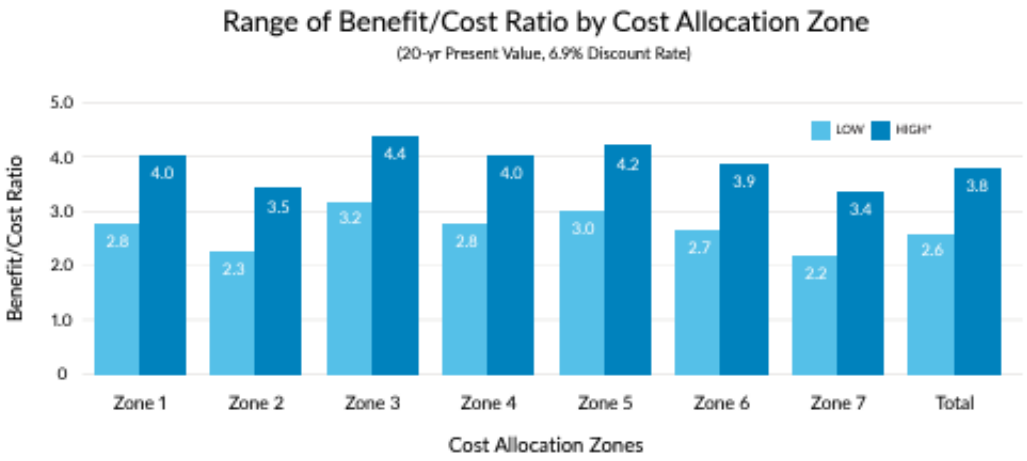

EXHIBIT METC-3B (CLM-3B), p. 4.

Q. Please address the private benefits of the proposed major transmission line to METC or any legal entity that is affiliated with METC.

A. The Project, when placed in service will be added to METC's rate base investment base. Such investment is subject to FERC jurisdictional transmission rates. In addition, by improving the reliability of METC's transmission system, the Project could enhance customer satisfaction.

It is important to note, however, that the primary reason for the Project is not to provide private benefits to METC or any legal entity affiliated with METC. The driving force behind the Project is to meet the service and reliability needs of the state and region.

COST-BENEFIT ANALYSIS

Q. What is the estimated overall cost of the Project?

A. The estimated overall capital cost of the Project is $442 million.

Q. Do the quantifiable and nonquantifiable public benefits of the proposed major transmission line justify its construction?

A. Yes. As I have explained in my testimony, the Project is needed to help solve the Reliability Imperative identified by MISO. The Project meets the present and future needs of the state of Michigan and the quantifiable and nonquantifiable benefits justify its construction. The new transmission line will provide a critical high voltage connection to Indiana, the first 345 kV connection with a neighboring state in more than 50 years, which will enhance reliability and resiliency to the transmission system serving Michigan. Furthermore, this Project, along with other transmission additions, are critically needed so that Michigan can achieve its carbon-free goals.

Q. Do these benefits of the Project exceed the costs?

A. Yes. The benefits of the Project exceed its cost. As I stated above, the benefits of the LRTP1 Portfolio are estimated to be 2.2 to 3.4 times its costs in LRZ 7/Michigan. The Project and the rest of the LRTP1 Portfolio will also increase the LRZ 7 CIL by an estimated 1,292 MW, which will provide access to resources outside of the state and improve regional reliability.

Q. Do you have an opinion whether the Project meets the requirements of Act 30?

A. Yes.

Q. Upon what information is that opinion based?

A. My opinion is based on my education, training and experience, the information and data that I reference in my testimony and exhibits, and the data, exhibits, and testimony of the other witnesses in this case.

Q. What is your opinion?

A. My opinion is that the Project meets the requirements of Act 30 and that the Project completed as described in this case will serve the public convenience and necessity in Michigan.

Q. What facts support this conclusion?

A. Act 30 requires the Commission to make several findings that are fully supported by METC's Application and pre-filed testimony:

- The quantifiable and nonquantifiable public benefits of the Project justify its construction.
- The Proposed Route is feasible and reasonable.
- The Project does not present an unreasonable threat to public health or safety.

Therefore, I recommend the Commission approve METC's application for the Project.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

B. ASHLEY DUPREE

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is B. Ashley DuPree. My business address is 27175 Energy Way, Novi, Michigan 48377.

Q. By whom are you employed and in what capacity?

A. I am the Director of Design Engineering for ITC Holdings Corp. ("ITC Holdings"), the parent company of the applicant Michigan Electric Transmission Company, LLC ("METC").

Q. Please briefly describe your educational background.

A. I have a Bachelor of Science degree in electrical engineering from the University of Missouri – Rolla, now known as Missouri University of Science and Technology.

Q. Please briefly describe your professional background.

A. From 2002 to 2006, I worked as an engineer at Consumers Energy Company ("Consumers"). In late summer of 2006, I worked for METC, which was then acquired by ITC Holdings in fall of 2006, as a Substation Maintenance Engineer. From late fall 2006 to summer 2013, I worked as a Transmission Line Design Engineer. My responsibilities included, but were not limited to, preparing detailed designs and transmission line routing for infrastructure improvement, interconnection, and maintenance projects, overseeing and coordinating with consultants and contractors, provisioning detailed scope information and cost estimates for proposed projects, preparing material requisitions and coordination with material vendors, developing and maintaining engineering standards and specifications, reviewing third party requests for use of ITC*Transmission* (another

subsidiary of ITC Holdings) and METC property, easements, and joint-use facilities, serving as the subject matter expert on ratings methodologies for overhead conductors, and providing support to field personnel for construction and maintenance-related activities.

I held this position until 2013, when I was promoted to Supervisor of Line Design. My responsibilities included the same responsibilities as my prior position, along with providing oversight, work direction, and professional development to a team of Transmission Line Design Engineers and Designers performing similar functions. In addition, my responsibilities included supporting scope development, assignment, and oversight of design functions related to capital projects and execution of corporate initiatives and process improvement initiatives, etc. I also assigned work to and oversaw a number of external resources (consultants), approved material & services requisitions and invoices, supported development of project proposals in multiple Regional Transmission Organizations and geographic regions (e.g., supported ITC Holdings' participation in the transmission planning and cost allocation regulations revised by FERC Order 1000), oversaw system asset records maintenance, and provided asset reporting to outside departments and agencies.

I held the position of Supervisor of Line Design until June 2019, when I was promoted to Manager of Project Controls. My responsibilities included development of enterprise-wide cashflows for capital projects, management of enterprise-wide capital projects management systems to facilitate various business processes, and support of enterprise-wide capital projects cost and

schedule reporting to multiple departments and outside agencies. I held this position until October 2022, when I was promoted to my current position, Director of Design Engineering.

Q. What are your current duties and responsibilities with ITC Holdings?

A. As the Director of Design Engineering, my responsibilities include leading various teams in the designing of electrical transmission lines and substations for all four operating companies of ITC Holdings. This includes, but is not limited to, providing work direction and overseeing the work product of Design Engineers performing detailed designs, routing and siting, design-related standards and specifications, material specification and procurement. My duties also include overseeing design-related documents and records management, managing consultants providing design services, and executing corporate and strategic initiatives and objectives.

Q. Please describe any professional affiliations or certifications you hold.

A. I am licensed as a Professional Engineer in the state of Michigan.

Q. Have you previously testified before the Michigan Public Service Commission ("Commission" or "MPSC")?

A. No, I have not previously provided testimony before the MPSC.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity ("Certificate") for a new Helix Substation and a new 345 kV double circuit transmission line between the Helix Substation and the Michigan/Indiana state border in Branch County. The new 345 kV double circuit

transmission line described in detail below and the Helix Substation are referred to in my testimony as the "Project". I have reviewed the requirements of 1995 PA 30, as amended, MCL 460.561 *et seq* ("Act 30"). The purpose of my testimony is to: (1) describe the development of the Project's Proposed Route; (2) provide a detailed description of the Project and its expected configuration, as well a description of the Proposed Route and the Alternate Route, including the new Helix Substation; (3) discuss the codes and standards related to design of the Project; (4) discuss safety and maintenance of the Project; and, (5) identify zoning ordinances that may otherwise prohibit or regulate the location or development of the Proposed Route and describe the location and manner in which those zoning ordinances may prohibit or regulate the location or construction of the Proposed Route.

Q. Do you sponsor any exhibits?

A. Yes, I am sponsoring the following exhibits, all of which were either prepared by me or under my direction and supervision, are public agency documents, or are METC business records kept in the regular course of business:

- **EXHIBIT METC-14B (BAD-1B):** Typical Structure Configuration and Substation Configuration Diagram
- **EXHIBIT METC-15B (BAD-2B):** Proposed and Alternate Route Maps
- **EXHIBIT METC-16B (BAD-3B):** North American Electric Reliability Corporation Transmission Vegetation Management Program Standard
- **EXHIBIT METC-17B (BAD-4B):** Right-of-Way Calculation
- **EXHIBIT METC-18B (BAD-5B):** Table of Zoning Ordinances

DEVELOPMENT OF THE PROPOSED ROUTE

Q. Please generally describe the routing process for the Project.

A. Because the Project need was identified and studied as part of the MISO Long Range Transmission Planning Tranche 1 portfolio ("LRTP1 Portfolio"), the Project's general location was already known at the routing process's outset. Further detail on the Project's need and the MISO process is included in witness Marshall's testimony. With the general location known to METC, METC then sought to analyze potential route options through a Project route study.

METC selected and retained the consulting services of Burns & McDonnell Michigan, Inc ("BMcD") to assist in identifying a study area, developing a network of route options, and recommending a Proposed and Alternate Route to be included in the Project Construction Plan. Further detail concerning BMcD's Route Study preparation and recommendations is included witness Samuelson's testimony.

After METC filed the Project Construction Plan with the Commission, METC proceeded to hold the required public meetings and receive public comments. Details regarding these meetings and comments are provided in witness Stump's testimony. Based on agency and public input received as well as further engineering and design considerations, METC then refined the Application's Proposed and Alternate Routes.

Q. Please describe examples of the route refinements incorporated by METC.

A. As an example, METC received comments regarding property along H Drive N in Marengo Township. While METC received a wide range of comments about

these properties, the comments generally noted concerns about the Project's proximity to two existing residences (going between these residences), as well as the property's historic value to the community. In response, METC analyzed the Proposed Route in this area, particularly with respect to residential proximity. Shifting the Proposed Route was reasonable and feasible given the balancing of human, environmental, engineering, cost, and design considerations, and METC has incorporated this refinement into the Proposed Route presented in the Application.

Another example would be the shift along Hodunk Road between Union and Girard Townships to account for a parallel pipeline. While the Route Study sought to take advantage of existing infrastructure where possible, after further examination by METC, it was determined that due to potential electrical interference complications, crossing the existing pipeline rather than paralleling it was needed to ensure the safe, reliable, and cost-effective construction, operation, and maintenance of the Project.

Similarly, METC has been engaged in ongoing analysis and coordination regarding the Project and the Branch County Airport Layout Plan which demonstrated that the Proposed Route would cross the airport approach area. As a result, and relative to the filed the Project Construction Plan, the Proposed Route was shifted farther away from the airport runway areas and into primarily agricultural land.

Q. Please provide further detail on the Proposed Route's selection.

A. As I mentioned, METC retained BMcD to conduct the Route Study, which resulted in a recommended Proposed and Alternate Route for the Project. Witness Samuelson provides further discussion regarding the identification of the Proposed Route and how it avoids and minimizes impacts as compared to other routes analyzed, including the Alternate Route. As I discussed previously, METC then refined the Proposed Route and Alternate Route identified in the Route Study. These refinements incorporated public input and further engineering review to balance human, environmental, engineering, cost, and design considerations, with no one category being dispositive. The Proposed and Alternate Routes discussed in my testimony (and in the Environmental Report sponsored by witness Samuelson) reflect the refinements incorporated by METC.

DETAILED DESCRIPTION OF THE PROJECT AND ITS CONFIGURATION, PROPOSED ROUTE, AND ALTERNATE ROUTE

Q. Please provide a detailed description of the Project and its expected configuration.

A. As described in witness Marshall's testimony, the Project includes the construction of the new Helix substation and an approximately 55-mile, 345 kilovolt ("kV") double-circuit transmission line that will begin at the new Helix Substation in Clarence Township, Calhoun County and will end at the Michigan/Indiana border in Gilead Township, Branch County, Michigan. METC plans to construct the Project generally using tubular steel monopoles, typically supported by concrete drilled pier foundations. Specialty structures may also be

utilized based on site-specific circumstances. For a depiction of typical structures and specifications, please see **EXHIBIT METC-14B (BAD-1B)**.

Q. Is METC providing maps of its Proposed Route?

A. Yes, for the route maps please see **Exhibit METC-15B (BAD-2B)**. Note the route maps included with my testimony show the centerlines of the Proposed Route and Alternate Route. For a depiction of the rights-of-way and environmental study area associated with the Proposed Route and Alternate Route, see the maps included with the Environmental Report. EXHIBIT METC-24B (KAS-3B), Appendix B.

Q. Please describe the proposed Helix Substation.

A. The Helix Substation will be a new station located in Clarence Township, Calhoun County. The Helix Substation will be located on an approximately 67-acre parcel that will be owned by METC and is proposed to occupy approximately six of these acres. The property where the Helix Substation will sit is located at V Drive N in Clarence Township. The legal description of the parcels on which the Helix Substation will sit are:

> Calhoun County Tax Parcel #13-06-108-012-00. Part of the Northwest 1/4 of Section 8, Town 1 South, Range 4 West, Clarence Township, Calhoun County, Michigan, described as: Commencing at the Northwest corner of Section 8, Town 1 South, Range 4 West; thence South 89°38'40" East, along the North line of Section 8 and the centerline of V Drive North (66 feet wide), 468.27 feet to the Point of Beginning; thence continuing South 89°38'40" East 708.57 feet; thence South 00°21'55" West 387.02 feet; thence N89°38'36" West 230.70 feet; thence South 00°18'18" East 2266.04 feet; thence North 88°57'27" West, along the East-West 1/4 line of Section 8, 960.42 feet; thence North 00°05'55" East, along the West line of Section 8, 1964.26 feet; thence South 89°38'40" East 468.27 feet; thence North 00°05'55" East 677.16 feet to the Point of Beginning.

> Calhoun County Tax Parcel # 13-06-108-013-00. Part of the Northwest 1/4 of Section 8, Town 1 South, Range 4 West, Clarence Township, Calhoun County, Michigan, described as: Commencing at the Northwest corner of Section 8, Town 1 South, Range 4 West; thence South 89°38'40" East, along the North line of Section 8 and the centerline of V Drive North (66 feet wide), 1176.84 feet to the Point of Beginning; thence continuing South 89°38'40" East 817.00 feet; thence South 00°22'40" West, along the East line of the West 1/2 of the East 1/2 of the Northwest 1/4 of Section 8, 2665.14 feet; thence North 88°57'27" West, along the East-West 1/4 line of Section 8, 1020.67 feet; thence North 00°18'18" West 2266.04 feet; thence South 89°38'36" East 230.70 feet; thence North 00°21'55" East 387.02 feet to the Point of Beginning.

The Helix Substation will contain high-voltage electrical equipment and a control enclosure and will be configured as a four (4) row breaker-and-half-bus with eight (8) breaker positions and will consist of equipment energized at a voltage level of 345 kV. The station will have approximately six (6) acres completely fenced in and have a motorized slide security gate as well as a small pedestrian gate which will allow access to METC personnel. A diagram of this configuration is included in **EXHIBIT METC-14B (BAD-1B):** Typical Structure Configuration and Substation Configuration Diagram.

Q. Please describe the Proposed Route.

A. The Proposed Route is approximately 54.8 miles in length. It would originate at the new Helix Substation, located in Clarence Township, Section 8, in Calhoun County, south of V Drive North. The Proposed Route exits south out of the new Helix Substation for approximately 0.02 miles before turning due west for approximately 0.3 miles and crossing the Hogle and Miller Branch Drain. The Proposed Route then turns due south for approximately 0.9 miles, crossing T Drive North. Just south of T Drive North, the Proposed Route turns south-

southwest for approximately 0.8 miles crossing 24 Mile Road and entering Lee Township. It then turns south for approximately 1.0 miles, crossing the Finch and Miller Drain, then R Drive North, and crossing the Finch and Miller Drain a second time. See Exhibit METC-15B (BAD-2B) at pp. 1-2. The Proposed Route then turns south-southwest for approximately 4.4 miles, crossing the Finch and Miller Drain, the State and Indian Creek Drain, Wilson Drain, 23 Mile Road, Pool Bryant Eaton and Baker Drain, M Drive North, and the Church and Hookway Drain, entering Marengo Township and then crossing J Drive North. See Exhibit METC-15B (BAD-2B) at pp. 2-4. Approximately 0.5 miles south of J Drive North, the Proposed Route turns south for approximately 1.0 miles, crossing H Drive North and the Pool Bryant Eaton and Baker Drain. See Exhibit METC-15B (BAD-2B) at p. 4. The Proposed Route then extends west-southwest for approximately 0.6 miles crossing Rice Creek. Approximately 0.2 miles north of F Drive North, the Proposed Route extends southwest for approximately 1.2 miles crossing F Drive North, Interstate 94, and 21 Mile Road, before turning southwest for approximately 0.9 miles and crossing East Michigan Avenue. See Exhibit METC-15B (BAD-2B) at pp. 4-5. The Proposed Route then extends due south for approximately 0.7 miles, crossing B Drive North and a railroad. See Exhibit METC-15B (BAD-2B) at p. 5. The Proposed Route then turns southeast for approximately 0.5 miles, crossing the Kalamazoo River. See Exhibit METC-15B (BAD-2B) at pp. 5-6. Approximately 0.3 miles north of Division Drive, the Proposed Route turns due south for approximately 0.8 miles crossing Division Drive and entering Eckford Township. The Proposed Route then extends west

for approximately 1.3 miles, crossing Wilder Creek before turning west-southwest for approximately 0.5 miles and crossing Homer Road. See Exhibit METC-15B (BAD-2B) at pp. 6-7. Just west of Homer Road the Proposed Route continues due south for approximately 0.3 miles, crossing B Drive South before turning southwest for approximately 0.2 miles. The Proposed Route then extends due south for approximately 0.3 miles then west-southwest for approximately 0.8 miles crossing Brace Lake Drain. See Exhibit METC-15B (BAD-2B) at p. 7. Just north of D Drive South, the Proposed Route turns due south for approximately 1.9 miles, crossing D Drive South, F Drive South, and G Drive South. See Exhibit METC-15B (BAD-2B) at p. 7-8. The Proposed Route then extends south-southwest for approximately 0.3 miles. See Exhibit METC-15B (BAD-2B) at p. 8. Just north of H Drive South the Proposed Route extends south for approximately 1.5 miles, crossing H Drive South and Nottawassepee Creek/Nottawa Drain. See Exhibit METC-15B (BAD-2B) at pp. 8-9. The Proposed Route then turns south-southeast for approximately 0.5 miles. See Exhibit METC-15B (BAD-2B) at p. 9. Just north of L Drive South the Proposed Route continues due south for approximately 2.7 miles, crossing L Drive South and entering Clarendon Township, crossing N Drive South, crossing back over the Nottawa Drain, crossing P Drive South and Michigan Highway 60. The Proposed Route then turns south-southwest for approximately 0.1 miles north of the St. Joseph River before turning due south for approximately 1.2 miles and crossing the St. Joseph River. See Exhibit METC-15B (BAD-2B) at pp. 10-11. Just north of T Drive South the Proposed Route extends southwest for approximately 0.8 miles,

crossing T Drive South, 18 Mile Road, and entering Tekonsha Township. See Exhibit METC-15B (BAD-2B) at p.11. Approximately 0.3 miles east of East Shedd Lake the Proposed Route turns south for approximately 0.3 miles before turning southwest for approximately 1.8 miles, crossing Tamarack Creek Drain, South County Line Road entering Girard Township in Branch County, and crossing Tekonsha Creek. See Exhibit METC-15B (BAD-2B) at pp. 11-12.

Just west of Tekonsha Creek the Proposed Route continues west-southwest for approximately 0.6 miles crossing Interstate 69. See Exhibit METC-15B (BAD-2B) at p. 12. Approximately 0.1 miles west of Interstate 69 the Proposed Route turns south-southwest for approximately 0.1 miles before turning west for approximately 0.7 miles then west-northwest for approximately 0.3 miles, crossing Marshall Road (US-27) and Hadlock Road. See Exhibit METC-15B (BAD-2B) at p. 13. Approximately 0.1 miles north of Hyannis Hills Drive the Proposed Route extends west for approximately 0.4 miles, then turns southwest for approximately 1.1 miles. See Exhibit METC-15B (BAD-2B) at p. 13. Just east of Bell Road, the Proposed Route continues southwest for approximately 0.8 miles, crossing Bell Road. See Exhibit METC-15B (BAD-2B) at p. 14. West of Olney Lake the Proposed Route turns south-southwest for approximately 1.5 miles crossing Girard #5 Drain, River Road, Girard Drain, and East Girard Road. See Exhibit METC-15B (BAD-2B) at pp. 14-15. Just south of East Girard Road the Proposed Route turns due south for approximately 1.1 miles crossing Hog Creek and East Union City Road before extending south-southwest for approximately 1.3 miles crossing Cold Water River and Hodunk Pond, a drain,

Hodunk Road, and entering Union Township. See Exhibit METC-15B (BAD-2B) at pp. 15-16. Approximately 0.2 miles west of Hodunk Road, the Proposed Route turns due south for approximately 2.0 miles, crossing Mauer Road, West Barnhart Road entering Batavia Township, and crossing Joint No. 3 Drain twice. See Exhibit METC-15B (BAD-2B) at pp. 15-16. The Proposed Route then extends south-southwest for approximately 0.4 miles crossing West Miller Lake Road. See Exhibit METC-15B (BAD-2B) at p. 16. Just south of West Miller Lake Road, the Proposed Route turns southwest for approximately 2.7 miles crossing Graf Road, Wheeler Road, West Colon Road (Michigan Highway 86), and North Batavia Road. See Exhibit METC-15B (BAD-2B) at pp. 17-18. The Proposed Route then extends due west for approximately 0.6 miles before turning south just east of Cooks Lake for approximately 1.6 miles, crossing Lindley Road and Batavia Drain #11. See Exhibit METC-15B (BAD-2B) at pp. 18-19. The Proposed Route then turns southeast for approximately 1.4 miles, crossing an Indiana Northeastern Railroad, West Chicago Road (US Route 12), Batavia Drain #17, and North Batavia Road. See Exhibit METC-15B (BAD-2B) at pp. 19. Just west of Austin Road the Proposed Route turns south for approximately 2.6 miles crossing Bethel No. 18 Drain, entering Bethel Township, and crossing Albright Road, West Lockwood Road, Bethel No. 36 Drain, and West Central Road. See Exhibit METC-15B (BAD-2B) at pp. 19-20. The Proposed Route then turns southwest for approximately 0.7 miles crossing Bethel No. 13 Drain and West Rose Road. See Exhibit METC-15B (BAD-2B) at p. 20. Approximately 0.1 miles south of West Rose Road, the Proposed Route turns south for

approximately 4.7 miles, crossing Bethel No. 84 Drain, West Hatmaker Road, crossing Bethel No. 84 Drain again, Kosmerick Road, Bethel No. 28 Drain, Cranson Road, paralleling a branch of Bethel No. 24 Drain, crossing Slisher Road entering Gilead Township then crossing Weaver Branch 1 Drain, Rubley Road, Prairie River Drain, and Booth Road. See Exhibit METC-15B (BAD-2B) at pp. 20-23. Just south of Booth Road the Proposed Route extends west-southwest for approximately 0.9 miles crossing Langs Drain then turning southwest for approximately 0.4 miles, crossing West Southern Road, Gilead Drain #5, and Bowers Branch County Road. The Proposed Route then turns south-southwest for approximately 1.3 miles, crossing West Adams Road and ending at the Michigan and Indiana Border, Gilead Township Section 21, Branch County Michigan. See Exhibit METC-15B (BAD-2B) at p. 23.

Q. Please describe the Alternate Route.

A. The Alternate Route is approximately 56.3 miles. The Alternate Route would originate at the new Helix Substation, located in Clarence Township, Section 8, in Calhoun County, south of V Drive North. The Alternate Route exits south out of the new Helix Substation for approximately 0.02 miles before turning south-southeast for approximately 0.3 miles. See Exhibit METC-15B (BAD-2B) at p. 24. The Alternate Route continues due south for approximately 2.8 miles, crossing T Drive North, R Drive North, and a branch of the State and Indian Creek Drain. See Exhibit METC-15B (BAD-2B) at pp. 24-25. It then turns southeast for approximately 0.3 miles and crosses Hatch Road before extending south-southeast for approximately 0.2 miles then turning south for approximately

1.1 miles, crossing M Drive North. See Exhibit METC-15B (BAD-2B) at pp. 25-26. From this point, the Alternate Route turns south-southwest for approximately 1.3 miles, crossing L Drive North entering Sheridan Township and then crossing North Branch Rice Creek. See Exhibit METC-15B (BAD-2B) at p. 26. Just north of J Drive North, the Alternate Route turns further south-southwest for approximately 1.2 miles, crossing J Drive North, H Drive North, and passing west of Winnipeg Lake. See Exhibit METC-15B (BAD-2B) at pp. 26-27. The Alternate Route then turns south for about 1.9 miles, crossing South Branch Rice Creek, F Drive North, and Interstate 94. See Exhibit METC-15B (BAD-2B) at pp. 27-28. The Alternate Route then extends southwest for approximately 0.9 miles, crossing West Michigan Avenue, a railroad, and the Kalamazoo River before entering Marengo Township. See Exhibit METC-15B (BAD-2B) at p. 28. The Alternate Route then turns south-southwest for approximately 1.5 miles crossing B Drive North. See Exhibit METC-15B (BAD-2B) at pp. 28-29. Just north of Division Drive, the Alternate Route turns southwest for approximately 1.4 miles, crossing Division Drive entering Eckford Township and then crossing 23 Mile Road. See Exhibit METC-15B (BAD-2B) at p. 29. North of B Drive South, the Alternate Route turns south for approximately 2.4 miles crossing B Drive South, D Drive South, E Drive South, and Wilder Creek. See Exhibit METC-15B (BAD-2B) at pp. 29-30. The Alternate Route then extends south-southwest for approximately 1.7 miles, crossing H Drive South, 22 ½ Mile Road, and an unnamed drain. See Exhibit METC-15B (BAD-2B) at pp. 30-31. Just north of J Drive South, the Alternate Route turns due south for approximately 2.6 miles

crossing J Drive South, Eckford Drain #3, L Drive South entering Clarendon Township, then crossing N Drive South and Michigan Highway 60. See Exhibit METC-15B (BAD-2B) at pp. 31-32. Once across Michigan Highway 60, the Alternate Route extends southwest for approximately 0.4 miles before turning south for approximately 1.0 mile, crossing the St. Joseph River and P Drive South. See Exhibit METC-15B (BAD-2B) at pp. 32-33. Just north of R Drive South, Alternate Route extends southeast for approximately 0.6 miles, crossing R Drive South, before turning south for approximately 0.7 miles, crossing T Drive South. See Exhibit METC-15B (BAD-2B) at p. 33. Approximately 0.2 miles south of T Drive South, the Alternate Route turns southwest for approximately 1.6 miles crossing 22 Mile Road. See Exhibit METC-15B (BAD-2B) at pp. 33-34. Approximately 0.3 miles north of W Drive South, the Alternate Route turns due south for approximately 2.5 miles crossing a drain, W Drive South, entering Butler Township in Branch County, and then crossing Herricksville Road and County Drain #50. See Exhibit METC-15B (BAD-2B) at pp. 34-35.

The Alternate Route then turns southwest for approximately 0.9 miles, crossing Burbank Road and Curtis Road before extending southwest for approximately 1.5 miles, crossing North Branch Hog Creek, Holmes and Evans Drain, Quincy Grange Road, and East Girard Road. See Exhibit METC-15B (BAD-2B) at pp. 35-36. The Alternate Route then extends west-southwest for approximately 0.6 miles, crossing South Branch Hog Creek. See Exhibit METC-15B (BAD-2B) at pp. 36-37. Just east of Dean Road, the Alternate Route turns slightly west-northwest for approximately 0.5 miles crossing Dean Road. Just

east of Taylor Road, the Alternate Route then extends slightly west-southwest for approximately 0.5 miles, crossing Taylor Road, an unnamed drain, and entering Girard Township. See Exhibit METC-15B (BAD-2B) at p. 37. The Alternate Route then continues generally west for approximately 3.7 miles, crossing an unnamed drain, Gorbell Road, Lutes Road, Interstate 69, and Marshall Road (US 27). See Exhibit METC-15B (BAD-2B) at pp. 37-39. The Alternate Route then extends west-southwest for approximately 0.9 miles, crossing Bell Road. See Exhibit METC-15B (BAD-2B) at pp. 39-40. Just north of East Union City Road, the Alternate Route turns slightly southwest for approximately 1.5 miles, crossing East Union City Road, Doves Landing, River Road, and the Cold Water River. See Exhibit METC-15B (BAD-2B) at p. 40. The Alternate Route then turns south-southwest for approximately 0.3 miles, crossing Hodunk Road and entering Union Township. See Exhibit METC-15B (BAD-2B) at pp. 40-41.

Approximately 0.2 miles west of Hodunk Road the Alternate Route turns south for approximately 2.0 miles, crossing Mauer Road, West Barnhart Road and entering Batavia Township, and crossing Joint No. 3 Drain twice. See Exhibit METC-15B (BAD-2B) at p. 41. The Alternate Route then extends south-southwest for approximately 0.4 miles crossing West Miller Lake Road. See Exhibit METC-15B (BAD-2B) at p. 42. Just south of West Miller Lake Road, the Alternate Route turns southwest for approximately 2.7 miles crossing Graf Road, Wheeler Road, West Colon Road (Michigan Highway 86), and North Batavia Road. See Exhibit METC-15B (BAD-2B) at pp. 42-43. The Alternate Route then extends due west for approximately 0.6 miles before turning south just east of

Cooks Lake for approximately 1.6 miles, crossing Lindley Road and Batavia Drain #11. See Exhibit METC-15B (BAD-2B) at pp. 43-44. The Alternate Route then turns southeast for approximately 1.4 miles, crossing an Indiana Northeastern Railroad, West Chicago Road (US Route 12), Batavia Drain #17, and North Batavia Road. See Exhibit METC-15B (BAD-2B) at p. 44. Just west of Austin Road the Alternate Route turns south for approximately 2.6 miles crossing Bethel No. 18 Drain, entering Bethel Township, crossing Albright Road, West Lockwood Road, Bethel No. 36 Drain, and West Central Road. See Exhibit METC-15B (BAD-2B) at pp. 44-45. The Alternate Route then turns southwest for approximately 0.7 miles crossing Bethel No. 13 Drain and West Rose Road. See Exhibit METC-15B (BAD-2B) at p. 45. Approximately 0.1 miles south of West Rose Road, the Alternate Route turns south for approximately 4.7 miles, crossing Bethel No. 84 Drain, West Hatmaker Road, crossing Bethel No. 84 Drain again, Kosmerick Road, Bethel No. 28 Drain, Cranson Road, paralleling Bethel No 24 Drain, crossing Slisher Road entering Gilead Township and crossing Weaver Branch 1 Drain, Rubley Road, Prairie River Drain, and Booth Road. See Exhibit METC–15B (BAD-2B) at pp. 45-47. Just south of Booth Road the Alternate Route extends west-southwest for approximately 0.9 miles crossing Langs Drain then turns southwest for approximately 0.4 miles, crossing West Southern Road, Gilead Drain #5, and Bowers Branch County Road. See Exhibit METC–15B (BAD-2B) at pp. 47-48. The Alternate Route then turns south-southwest for approximately 1.3 miles, crossing West Adams Road and ending at the Michigan

and Indiana Border, Gilead Township Section 21, Branch County, Michigan. See Exhibit METC-15B (BAD-2B) at pp. 48.

DESIGN AND SAFETY CONSIDERATIONS DURING THE DESIGN PROCESS

Q. Did METC take into account applicable codes and standards when designing the Project?

A. Yes. Such codes and standards are discussed throughout my testimony and include, but are not limited to, the National Electrical Safety Code Standard C-2 ("NESC"); the North American Electric Reliability Corporation ("NERC") Transmission Vegetation Management standard, FAC-003, **Exhibit METC-16B (BAD-3B)**; and Structural Engineering Institute of the American Society of Civil Engineers ("ASCE") Manual of Practice No. 74, Guidelines for Electrical Transmission Line Structural Loading. METC adheres to each of these codes or standards and applied them in the Project design and the Proposed Route.

Q. Please provide a brief summary of the relevant NESC standards.

A. Published by the Institute of Electrical and Electronics Engineers' ("IEEE"), the NESC standards establish guidelines for the "practical safeguarding of persons during the installation, operation, and maintenance of electric supply and communication facilities, under specified conditions." (Purpose statement (Section 1,010.A)). The NESC provides entities performing these functions guidance pertaining to, but not limited to, consideration of environmental and weather factors such as wind speed and ice loading, minimum clearance requirements between facilities and other objects such as ground and structures,

structural loading and structure strength requirements, and electric current induction limits.

Q. Please provide a brief summary of the relevant NERC Transmission Vegetation Management standard.

A. NERC is a nonprofit entity whose mission includes ensuring reliability of bulk power in North America and who is certified by the Federal Energy Regulatory Commission ("FERC") as the "electric reliability organization" for the United States. NERC has established FAC-003, which specifically addresses transmission line vegetation management to, among other things, "maintain a reliable electric transmission system . . . to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages . . . ." Exhibit METC-16B (BAD-3B) at p. 1. FAC-003 sets forth layered performance, risk, and competency-based requirements for the Bulk Electric System for documentation of maintenance strategies, procedures, processes and specifications used to manage vegetation to promote the safe and reliable operation of transmission lines.

Q. Please provide a brief summary of the ASCE Manual of Practice No. 74.

A. These guidelines provide the most current and relevant structural loading concepts and applications specific to transmission line design. They include, but are not limited to, weather-related and other structural loading considerations such as seismic and construction loads, wire system calculations such as wire

tensions, movement, and conditions, and considerations for system components such as foundations and connection hardware.

Q. What is the importance of a right-of-way to transmission operation and safety, generally?

A. A right-of-way ("ROW") allows a transmission line's safe and reliable operation by allowing a clearance for operation and maintenance, preventing hazards (such as trees) from encroaching or falling on the transmission line, and is generally required by applicable codes and standards.

Q. Please describe the ROW necessary for the Project.

A. The Project requires a 200-foot ROW.

Q. Why will METC use a 200-foot ROW for the Project?

A. For a double-circuit 345 kV transmission line like the Project, METC seeks a 200-foot ROW to ensure the transmission line's safety and reliability and to afford METC access for construction, inspection, and maintenance activities. This width accounts for many factors including, but not limited to, conductor elevation and movement, NESC standards, relative tree locations and tree top elevations, and working clearances. A worksheet showing the ROW calculation for the Project is included as **Exhibit METC-17B (BAD-4B)**. The result of the calculation—a 200-foot ROW—is part of METC's adopted stringent vegetation management policies and will assist METC in ensuring that vegetation management supporting the safe and reliable operation of the Project can be performed around the proposed major transmission line.

Q. Please provide additional detail regarding METC's vegetation management policies as they relate to the Project ROW.

A. METC's standards and practices related to vegetation management are consistent with NERC requirements. Subject to FERC approval, NERC was charged with the responsibility to promulgate enforceable reliability standards for the bulk power system. FERC has since approved vegetation management standards that prohibit vegetation-related outages. NERC requires that companies adopt vegetation management policies to eliminate vegetation-related power outages. NERC has also promulgated a Transmission Vegetation Management Standard, FAC-003. FAC-003-5, the most recent version of this standard, is included as Exhibit METC-16B (BAD-3B). As mentioned above, among other things, the purpose of FAC-003 is to "maintain a reliable electric transmission system . . . to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages that could lead to Cascading." FAC-003-5(A)(3), Exhibit METC-16B (BAD-3B) at 1. This standard would apply to the Project. It is METC's goal to eliminate the risk of vegetation interference outages within the ROW, and the Project's ROW is designed to achieve that goal.

Q. Please provide additional detail regarding the need to control land uses within the Project ROW.

A. While many land uses are compatible with electric transmission, METC needs to be able to control and mitigate uses that create unnecessary health and safety

risks. The need for land use control is also required by national design standards. METC must adhere to NERC's FAC-003 standard, as well as to NESC standards, which as summarized previously, sets forth provisions for "practical safeguarding of persons during the installation, operation, and maintenance of electric supply and communication facilities, under specified conditions." Adherence to these standards requires METC to have sufficient ROW and associated land rights to be able to construct, operate, and maintain its assets and control vegetation and land uses within the ROW to ensure safe and reliable operation of its assets.

Q. Is it your opinion that the 200-foot ROW is reasonable and sufficient to allow METC to meet its reliability and safety standards?

A. Yes. A 200-foot ROW allows the Project to comply with NERC and NESC requirements, which are aimed at ensuring the safe and reliable operation of transmission lines.

Q. How does the 200-foot ROW avoid and minimize impacts to public health and safety?

A. For METC to ensure the safe and reliable operation of its assets, METC must maintain adequate separation of its assets from vegetation, as described more fully above. Likewise, the 200-foot ROW is necessary to allow METC to control land uses and activities near its assets to avoid any uses or activities that would impede METC's safe construction, operation, inspection, and maintenance of the Project.

Q. Please describe the footprint of the proposed Helix Substation.

A. The Helix Substation is proposed to have a permanent footprint of approximately six acres, sited within an approximately 67-acre parcel owned by METC.

Q. In your opinion, is the proposed Helix Substation footprint reasonable and sufficient to allow METC to meet its reliability and safety standards?

A. Yes. The proposed permanent footprint of the Helix Substation is sufficient to house the planned substation, space for adequate separation between and access to the planned equipment, as well as a fence and remote monitoring equipment used to ensure the safe and reliable operation of the substation.

Q. Has METC analyzed the potential electric and magnetic fields from the Project?

A. Yes. METC has performed preliminary analysis based on expected structure designs and transmission line loadings to confirm that the levels of electric and magnetic fields generated by the Project, or their effects, should not result in exceeding maximums prescribed by the NESC and other applicable standards. Additional discussion of the Project and electric and magnetic fields is included in the direct testimony of METC witness Dr. Johnson.

Q. Are there any design safety standards that apply to METC's Project design?

A. Yes. The IEEE and the NESC outline the safety standards for transmission line and substation design.

Q. Please describe how the Project's design would comply with these standards and guidelines.

A. METC's design specifications meet or exceed IEEE and NESC requirements. METC has many years of experience safely designing transmission lines and substations in Michigan and will continue to do so in compliance with the required standards discussed herein.

Q. Will Project design reflect avian considerations?

A. Yes. ITC Holdings has developed an Avian Protection Plan to mitigate risks associated with avian interactions with its transmission infrastructure, which METC adheres to as appropriate.[1]

LINE SAFETY AND MAINTENANCE

Q. Please describe METC's standard practices for monitoring and maintaining its transmission lines.

A. METC regularly performs visual and physical inspections of its assets, including ROW(s), to assess their condition for safe and reliable operation. Where METC determines that repair or replacement is needed, METC will conduct that repair or replacement. Additionally, METC remotely monitors its assets for disruptions to performance and will reactively inspect their condition and subsequently repair or replace those assets as needed. Finally, as I discussed previously, METC

[1] The ITC Holdings Avian Protection Plan is compliant with the standards set by the Avian Power Line Interaction Committee ("APLIC"). The Project also complies with NESC standards. At 345 kV, certain NESC standards exceed those of APLIC, and in those cases, the Project meets NESC standards.

monitors and manages vegetation within its ROW to ensure no physical or electrical conflict between METC's assets and vegetation.

Q. Please describe METC's standard practices for monitoring and maintaining its substations.

A. METC regularly performs visual and physical inspections of its assets to assess their condition for safe and reliable operation. Where METC determines that repair or replacement is needed, METC will conduct that repair or replacement. Additionally, METC remotely monitors its assets for disruptions to performance and will reactively inspect their condition and subsequently repair or replace those assets as needed, and remotely monitors stations for security purposes such as unauthorized access.

Q. Is it reasonable and feasible to provide maintenance and service to the Project as proposed?

A. Yes. The Project as proposed, including the required 200-foot ROW, provides sufficient access for METC personnel, contractors, and equipment to inspect and maintain the Project for safe and reliable operation.

ZONING ORDINANCES

Q. Is METC aware of any zoning ordinances that may prohibit or regulate the location or construction of the Proposed Route?

A. Yes. METC reviewed the zoning ordinances for each municipality crossed by the Project. **Exhibit METC-18B (BAD-5B)** includes a summary of the zoning ordinances in effect in each municipality crossed by the Proposed Route, including those ordinances that contain provisions that could be interpreted to

prohibit or regulate the location or construction of a 345 kV transmission line or substation similar to the Project.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	)))))))	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

CARLO P. CAPRA

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Carlo P. Capra. My business address is 27175 Energy Way, Novi, Michigan 48377.

Q. By whom are you employed and in what capacity?

A. I am the Director of Capital Projects for ITC Holdings Corp. ("ITC Holdings"), the parent company of the applicant Michigan Electric Transmission Company, LLC ("METC").

Q. Please briefly describe your educational and professional background.

A. I started my career in the electric transmission industry as a seasonal Groundman/Operator during the summer months from May of 1996 through August of 1999. During this period, I was working for an electrical contractor on both transmission substation and overhead transmission line projects. As a Groundman/Operator, I performed work on substations including pouring concrete, laying grounding grids and installing grounding equipment, and running cable between manholes. I also performed work on overhead lines such as laying mat roads, setting and pulling poles, grounding poles, and supporting wire pulls.

While working as a Groundman/Operator in the summer months, I pursued a degree in Electrical Engineering. I graduated from Michigan State University in 2000 with a Bachelor of Science degree in Electrical Engineering. From December 2000 until June of 2004, I worked as a transmission planning engineer for Baltimore Gas & Electric. In that position, I performed various planning studies, such as circuit breaker fault duty analyses, voltage and thermal contingency analyses and transient stability analyses. I participated in various working groups

for the applicable Regional Transmission Organization, PJM Interconnection, and helped to develop technical planning standards to define Baltimore Gas & Electric's reliability and design criteria.

In June of 2004, I joined ITC Holdings as a Planning Engineer and, over the course of the following years, was promoted to Senior Engineer and then Principal Engineer within the Planning Department. In those positions, I was the leader for the long-term planning section of the reliability planning group and was responsible for short circuit base case development, short circuit analysis, and development of the long-range plans for the transmission systems of two of ITC Holdings' operating companies, ITC*Transmission* ("ITCT") and METC. I also developed facility ratings and impedance sheets and performed various other system planning studies, including generator interconnection studies, transmission system voltage and thermal contingency analysis, and transient stability analysis.

In August of 2009, I was promoted to Manager of Regional Planning. As Manager of Regional Planning, I was responsible for the oversight of regional transmission planning studies, stability studies to support North American Electric Reliability Corporation ("NERC") compliance, and various other planning study support. I was also in charge of the groups responsible for load forecasting, economic planning studies, and production cost analysis.

In 2014, I was promoted to Director of Planning. As Director, my role expanded to include planning for the ITC Midwest system along with the ITCT and METC systems. My responsibilities included overseeing the groups tasked with annual planning assessments, load and generation interconnection studies,

various NERC compliance activities, development of projects for the 5-year capital plan, development and maintenance of various planning policies, and the performance of various technical studies.

In 2017, I transferred from the Planning team to the Operations team and assumed the role of Director of Operations Engineering. In this role I oversaw the Operational Planning and Operations Application teams. The Operational Planning team is responsible for performing transmission system studies to support outage coordination and system reliability, various NERC compliance activities, and development and maintenance of various operational policies. The Operations Applications team is responsible for supporting the Operations Control Room by maintaining the network applications utilized by the ITC Holdings System Operators including the Transmission Management System used to operate the ITC Holdings transmission systems. In 2022, I transferred from the Operations team to the Engineering team and assumed the role of Director of Capital Projects.

Q. What are your current duties and responsibilities with ITC Holdings?

A. As the Director of Capital Projects at ITC Holdings, my responsibilities include oversight of the Project Management, Field Supervision, and Project Controls teams for all four of ITC Holdings' operating companies. The Project Management team provides coordination and oversight of our capital projects. The Field Supervision team, in conjunction with the METC permitting team, provides coordination and oversight of our construction contractors, including their compliance with all permits and requirements. The Project Controls team tracks project schedules, actual costs, and forecasted costs.

Q. Have you previously testified before the Michigan Public Service Commission ("Commission" or "MPSC")?

A. Yes. I have previously provided testimony before the Commission in another Act 30 proceeding, Case No. U-17041.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity ("Certificate") for a new Helix Substation and a new 345 kV double circuit transmission line between the Helix Substation and the Michigan/Indiana state border in Branch County. The new 345 kV double circuit transmission line and the Helix Substation are referred to in my testimony as the "Project". My testimony addresses the general construction timeline for the Project, the health and safety precautions that METC employs when constructing its projects, and information outlining how METC will comply with all applicable state and federal environmental standards, laws, and rules applicable to the construction phase of the Project. I also co-sponsor the Environmental Report that describes the avoidance, minimization, and mitigation measures that will be implemented for the Project.

Q. What is your role with respect to completing the Project?

A. I will manage the team that will coordinate the Project's construction. My team is responsible for ensuring compliance with any permit requirements with the support of the entire Project team as explained below.

A Project Manager from my team will be assigned to the Project and will be responsible for managing the Project's scope, schedule, and budget. Field

Supervisors from my team will be assigned to the Project and will coordinate all construction activities with our Project Managers and construction contractors. The Project Controls team will support the Project Manager and Field Supervisors by providing reporting on actual and forecasted costs.

Q. Do you sponsor any exhibits?

A. Yes. As described below, I co-sponsor portions of the following exhibit:

- **EXHIBIT METC-24B (KAS-3B)**: Helix to Hiple Project Environmental Report

CONSTRUCTION SCHEDULE

Q. What is the planned date for beginning the Project's construction?

A. Assuming that METC timely obtains a Certificate from the Commission and other required permits and approvals, construction on the Project will begin with the construction of the Helix Substation in the fall of 2025.

Q. When do you anticipate construction completion?

A. Again, assuming that METC timely obtains a Certificate from the Commission and other required permits and approvals, construction of the new Helix Substation would likely be completed in the fall of 2026 and the construction of the transmission line would likely be completed by mid-2030.

HEALTH AND SAFETY

Q. Please briefly describe the construction process and what it entails.

A. Generally, the Project will be constructed by clearing the right-of-way, laying access matting along the right-of-way where necessary, drilling holes for each new

structure, pouring concrete for those structures, framing the steel poles, erecting the steel poles, pulling the conductor and shield wire, and sagging and clipping the conductor and shield wire. Cleanup and site restoration is typically performed after the work is complete and will be completed in accordance with applicable permits. Disturbed areas are generally restored to pre-existing conditions to the extent practicable.

The new Helix Substation will be constructed by removing topsoil and bringing the station elevation to grade, installing concrete foundations, setting steel support structures, setting high voltage equipment (breakers, disconnect switches, a control center, equipment transformers, and related equipment), installing underground conduit and a ground grid, installing relay panels along with control and relay cables, and installing all interconnecting high voltage conductor and bus-work. Cleanup and site restoration is typically performed after the substation is placed in-commission.

Q. Please describe how the construction process avoids and minimizes potential impacts to public health and safety.

A. METC's design and construction specifications meet or exceed the Institute of Electrical and Electronics Engineers ("IEEE") and National Electric Safety Code ("NESC") requirements. All METC contractors are required to meet all NESC, Occupational Safety and Health Administration ("OSHA") and Michigan Occupational Safety and Health Administration ("MIOSHA") standards. Compliance will be monitored by the direct review and oversight of METC Field

Supervisors with support from the Project Manager, Design Engineers, and other METC staff.

METC coordinates with municipalities, including road authorities, to minimize disruptions and will follow all applicable construction safety codes. No power outages are anticipated. As a result, the construction process does not present an unreasonable threat to public health or safety.

COMPLIANCE WITH LAWS

Q. Will the Project's construction phase comply with all applicable state and federal environmental standards, laws, and rules?

A. Yes.

Q. Based on your experience, what environmental regulations or standards or laws will apply to the Project's construction?

A. In my experience, the environmental regulations, standards, or laws that apply can vary depending on the specifics of a particular project. The following list, which is also reflected in Table 1-1 in the Project's Environmental Report (EXHIBIT METC-24B (KAS-3B) at p. 8), represents the permits and approvals that METC may be required to obtain for the Project. The final list of permits and approvals will depend on the final approved route:

- Michigan Department of Environment, Great Lakes, and Energy ("EGLE") / U.S. Army Corps of Engineers / U.S. Environmental Protection Agency permits for compliance with the Clean Water Act, including Section 404 Permits (Wetlands) and Land and Water Interface Joint Permit (submitted

jointly to EGLE for Michigan Natural Resources and Environmental Protection Act Parts 31, 301, and 303);

- U.S. Fish and Wildlife Service permits for federally protected species, including Endangered Species Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act Compliance;
- Federal Aviation Administration Obstruction Evaluation Airport Airspace Analysis;
- National Pollutant Discharge Elimination System ("NPDES") Storm Water Permit Coverage administered by EGLE;
- Michigan Department of Natural Resources ("DNR") permits for state endangered species compliance, Part 365;
- Michigan Department of Transportation ("MDOT") Office of Aeronautics Tall Structures Permits;
- MDOT Oversize/Overweight Permits;
- MDOT Right-of-Way Construction Permits;
- County Enforcing Agency or Municipal Enforcing Agency Soil Erosion and Sedimentation Control ("SESC") Stormwater Permits;
- County Drain Commissioners Drain Permits;
- County Road Commissions Right-of-Way Construction Permits;
- County Road Commissions Oversize/Overweight Permits.

Q. Have you reviewed the Environmental Report?

A. Yes. I co-sponsor the exhibit, EXHIBIT METC-24B (KAS-3B), with respect to the avoidance, minimization, and mitigation measures for the construction and

restoration related to the Project that are incorporated into witness Samuelson's analysis in the Environmental Report. These measures are generally referred to as best management practices ("BMPs") in my testimony.

Q. Does the Environmental Report contain a compilation of BMPs that METC follows when constructing and restoring transmission lines?

A. Yes, I coordinated with Burns & McDonnell to inform the BMPs included in the Environmental Report.

Q. Is the Environmental Report accurate in its listing of BMPs for the Project?

A. Yes. The Environmental Report conducted a desktop review of environmental conditions in the Project area and the BMPs included therein represent the typical construction practices, procedures, and permit conditions often implemented in those types of environmental conditions. Based on the typical project lifecycle, as the Project gets closer to construction, the full scope of the permits and approvals necessary for the Project will be finalized. As the list above demonstrates, there are a number of different permitting agencies that will be involved in the Project. It is not uncommon for permitting requirements and associated BMPs to be site-specific and vary from permit-to-permit or location-to-location.

Q. Will METC follow the BMPs reflected in the Environmental Report, as applicable, for the Project?

A. Yes. METC will implement the BMPs for this Project, as applicable, and meet required permit conditions.

Q. How will METC comply with all applicable state and federal environmental standards, laws, and rules for construction and restoration?

A. METC takes a coordinated and interdisciplinary approach to ensure compliance with all applicable state and federal requirements. The Field Supervisors will serve as METC's boots on the ground and directly monitor the Project; however, the responsibility for compliance lies with the entire Project team. These requirements are considered as part of the siting process, during the permitting process, and ultimately monitored during construction. As noted above, my team is responsible for constructing the Project in accordance with all applicable standards, laws, and rules. We are assisted by internal and external subject matter experts on specific issues where needed to ensure that the necessary environmental protections are provided during project planning and construction. Witness Samuelson also describes the likely permits that will be required.

It is likely that METC will need to acquire multiple environmental permits and approvals prior to construction, as discussed above, or meet certain environmental standards to be exempted from permitting depending on the approved route. Environmental field and desktop studies will be performed as necessary to confirm locations of environmental resources, and based on the results of these studies, site-specific measures will be planned to avoid or mitigate impacts to the extent practicable. Such measures could include, for example, minor shifts in the location of structures to avoid or reduce impacts to sensitive features, such as wetland or listed species locations; use of temporary erosion controls, such as silt fencing and erosion control blankets; and use of permanent

erosion controls, including vegetative cover. Many of these measures will be incorporated into plans and permit applications where permits are needed and will become mandated conditions during the permitting process.

Q. Are there additional measures that may be implemented for the Project?

A. Yes. Other measures may also be included by permitting agencies as additional conditions as part of the permits issued for the Project. METC will meet with regulatory agencies throughout the permitting process to develop plans and methods that will meet the requirements of those agencies.

Once construction is complete, METC will restore the impacted land, unless otherwise instructed by landowners. METC will re-grade, repair, and restore the land damaged by construction to a condition as nearly as practicable to its pre-construction condition.

METC will use on-site field observation to confirm compliance. This multi-tiered effort of project siting, permitting, and compliance monitoring will provide multiple means of minimizing environmental impact and ensuring compliance with applicable environmental standards and requirements.

Q. How will METC ensure its contractors comply with all applicable state and federal environmental standards, laws, and rules?

A. METC will do so in two key ways. First, METC has developed strong long-term relationships with all of our construction contractors. All of the construction contractors METC utilizes have all been vetted through an on-boarding process to ensure they have the requisite qualifications and certifications.

These contractors have vast experience and have proven over the course of multiple construction projects that they can perform the work in accordance with the types of requirements and environmental laws and standards that will likely apply to the Project. METC will leverage the experience, skill, and knowledge of its contractors for the Project.

The second way METC will ensure that contractors meet all compliance requirements is by providing oversight. Project Managers and Field Supervisors oversee each contractor's work to ensure the contractor meets or exceeds all METC safety, design, and construction specifications.

Monitoring of construction activities and methods will be performed on site to ensure permit conditions are satisfied. Field Supervisors will provide field supervision of the contractor's activities to ensure compliance with standards and specifications and permit conditions. We will use EGLE-Certified Storm Water Operators, who will inspect erosion controls and other mitigation measures periodically and after rainfall events to monitor compliance with NPDES and SESC permit requirements. When appropriate, the Field Supervisors will seek guidance from internal and external resources regarding permit and regulatory compliance. For example, outside environmental professionals are used in instances when actual mitigation is required (e.g., for wetlands or listed species) to perform the mitigation and conduct the required monitoring and reporting. In addition, regulatory agencies such as EGLE, DNR, County Road Commissioners, and County Drain Commissioners will often provide separate environmental inspection of the Project site to ensure compliance.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

M. CYNTHIA STUMP

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is M. Cynthia Stump. My business address is 27175 Energy Way, Novi, Michigan 48377.

Q. By whom are you employed and in what capacity?

A. I am the Director of Local Government and Community Affairs ("LGCA") for ITC Holdings Corp. ("ITC Holdings"). ITC Holdings is the parent company of the applicant, Michigan Electric Transmission Company, LLC ("METC"). In my role, I coordinate LGCA activities for METC.

Q. Please briefly describe your educational background.

A. I hold a Bachelor's degree in International Business and Management from Northwood University and a Master's Degree in Human Resources ("HR") and Organizational Development from Eastern Michigan University.

Q. Please briefly describe your professional background.

A. I have been with ITC Holdings for approximately 21 years. For 18 of those years, I have been involved in a role related to LGCA.

I began working for ITC Holdings in 2003 as an HR Generalist and moved into a role with LGCA in 2006. In LGCA, from 2006 to 2008, my role was focused on customer relations, permitting, and local government affairs. I began my first supervisory role in 2008 as Supervisor of Customer Relations. In 2011, I was promoted to Area Manager of the Detroit-Metro and South-Central Michigan regions, which included much of the area crossed by the Project. As an Area Manager, I was the primary contact for local governments and communities for all new capital projects, maintenance projects, and outreach efforts.

In 2014, I was promoted to Regional Manager for the entire service territory of ITC Holdings' Michigan subsidiaries. In March of 2024, I was promoted to Director of LGCA for ITC Holdings. This is the role I currently hold.

Q. What are your duties and responsibilities with ITC Holdings?

A. As Director, I lead a team of professionals responsible for building relationships with stakeholders and securing regulatory and governmental approvals with local, county, and state governments, commissions, authorities, and agencies related to electric transmission capital and maintenance projects for ITC Holdings' subsidiaries, including METC.

Q. Have you previously testified before the Michigan Public Service Commission ("MPSC")?

A. No. I have not previously provided testimony before the MPSC.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity ("Certificate") for a new Helix Substation and a new 345 kV double circuit transmission line between the Helix Substation and the Michigan/Indiana state border in Branch County. The new 345 kV double circuit transmission line and the Helix Substation are referred to in my testimony as the "Project". I have reviewed the requirements of 1995 PA 30, as amended, MCL 460.561 *et seq* ("Act 30"). My testimony summarizes the public outreach for the Project required under Act 30, describes the public meetings held for the Project, summarizes the public comments received at those meetings and METC's responses thereto, describes METC's communications with elected officials as

required under Act 30, and addresses METC's typical communications with the public throughout the construction process.

Q. Do you sponsor any Exhibits?

A. Yes, I am sponsoring the following exhibits, all of which were prepared under my direction or supervision:

- **EXHIBIT METC-19B (MCS-1B):** Form Letter and List of Recipients for Invitation to Elected Officials
- **EXHIBIT METC-20B (MCS-2B):** Public Meeting Notices
- **EXHIBIT METC-21B (MCS-3B):** Summary of Comments Received at Each Public Meeting.

SUMMARY OF PUBLIC OUTREACH

Q. Please summarize the public outreach you will describe in your testimony.

A. METC began public outreach regarding the Project in Fall 2022 by providing local municipal leaders information about the Project. As part of this outreach, METC informed local municipal leaders that it had retained Burns & McDonnell ("BMcD") to conduct a routing study ("Route Study"), and that BMcD would be seeking information from municipalities as part of the Route Study. That outreach is discussed further in the testimony of witness Samuelson.

On August 14, 2023, METC filed its Project Construction Plan and, at the same time, sent out copies of the Construction Plan to each municipality where construction of the Project is intended.

On August 28, 2023, METC offered in writing to meet with the chief elected official of each affected municipality or his or her designee to discuss the Project

and the routes to be considered. The form letter and list of recipients is attached as **EXHIBIT METC-19B (MCS-1B)**.

METC also held public meetings for the Project, as described in greater detail below.

PUBLIC MEETINGS

Q. Please identify the dates and locations of the public meetings METC held for the Project.

A. On October 12, 2023, public meetings were held in Coldwater and Lee Townships. On October 24, 2023, public meetings were held in Eckford, Butler, Girard, and Clarence Townships. On October 25, 2023, public meetings were held in Marengo, Sheridan, Clarendon, and Tekonsha Townships. On October 26, 2023, public meetings were held in Gilead, Bethel, Batavia, and Union Townships.

Q. Did METC provide notice of the public meetings for the Project?

A. Yes, METC made the public aware of the public meetings and undertook significant publicity efforts. METC's publicity efforts included newspaper postings, landowner postcards, information on METC's Project website, MIFuturegrid.com, and communications with public officials. The newspaper notices are included as **EXHIBIT METC-20B (MCS-2B)**.

Q. Please describe the format of METC's public meetings.

A. METC used an in-person, "open house" style format for the public meetings that included stations with subject matter experts at each station to answer questions from meeting attendees. These stations included the following:

- **Introduction:** The public meetings included a station that introduced METC and its parent company, ITC Holdings, as a corporate institution and its role as an independent transmission company.
- **Needs & Benefits:** The public meetings included a station outlining an overview of the Project, including why the Project is needed, the benefits of the Project, and METC's role in the planning, development, and construction of the Project.
- **Real Estate:** The public meetings included a station where members of the public could ask questions related to real estate.
- **Schedule:** The public meetings included a station with the tentative schedule of activities for the Project, from the beginning of route development to the completion of construction activities.
- **Environmental:** The public meetings included a station where members of the public could ask questions about environmental issues.
- **Construction:** The public meetings included a station that provided information on the construction process and how a transmission line and substation, such as those included in the Project, get built.
- **GIS/Mapping:** The public meetings included a station where meeting attendees could view their properties and other areas of interest with regard to the route of the Project.
- **Routing and Design:** The public meetings included a station where meeting attendees could ask questions and learn more about the routing design process and the factors considered when routing a transmission line.

- **Comments:** The public meetings included a public comment station, discussed in more detail, below.

METC also created an online open house on the Project website that included the information available at the public meetings, such as Project information and maps and frequently asked questions.

Q. Were meeting attendees provided the opportunity to comment on the Project?

A. Yes, METC provided comment cards at the public meetings for written comments. Members of the public could also submit comments via an online survey. Meeting attendees could also leave comments on specific geographic markers with subject matter experts at the mapping station. A summary of the comments from each meeting is attached as **EXHIBIT METC-21B (MCS-3B)**, along with METC's responses to those comments.

COMMUNICATIONS WITH ELECTED OFFICIALS

Q. Did METC offer to meet with the chief elected official of each affected municipality or his or her designee to discuss METC's desire to build the Project and to explore the routes to be considered?

A. Yes, on August 28, 2023, METC sent a written offer to meet regarding the Project and met with those that requested a meeting in response. Elected officials were also provided with copies of the Construction Plan.

COMMUNICATIONS BEFORE, DURING AND AFTER CONSTRUCTION

Q. Please describe METC's process for communicating with the public before, during and after the construction process, generally.

A. METC maintains a Project website, MIFuturegrid.com, where regular updates and contact information are provided. It also anticipates circulating community newsletters to those who opt to receive it. METC will continue to maintain open communications with local governments and all municipalities will have customer relations cards to share with residents. Local law enforcement agencies such as police, sheriff, and fire are also notified about the project and provided with the ITC Control Room and Security Command Centers 24-hour emergency number in the case of emergency. My team maintains communication with elected and appointed municipal leaders and the public throughout the life cycle of a project and beyond.

Q. Does this conclude your direct pre-filed testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	))))))))	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

KATHRYN (KATE) A. SAMUELSON

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Kathryn (Kate) A. Samuelson. My business address is 9400 Ward Parkway, Kansas City, Missouri, 64114.

Q. By whom are you employed and in what capacity?

A. I am employed by Burns & McDonnell Michigan, Inc. ("BMcD") as a Senior Environmental Scientist.

Q. Please briefly describe your educational background.

A. I graduated from St. Olaf College in 2010 with a Bachelor's degree in Biology and Environmental Science and obtained my Master's degree in Environmental Studies from Ohio University in 2012.

Q. Please briefly describe your professional background and qualifications.

A. I have 13 years' experience at BMcD on a variety of projects and in various environmental roles. I have spent my years at BMcD performing routing and environmental studies for new linear facility projects, primarily electric transmission lines. I have participated in electric transmission line routing studies throughout the country ranging from 69 kilovolts ("kV") to 765 kV. A copy of my statement of qualifications is included with this testimony, which provides a representative list of my previous routing and environmental studies experience.

Q. Have you previously testified before the Michigan Public Service Commission?

A. No.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity for the construction of a major transmission line consistent with 1995 PA 30, as amended, MCL 460.561 *et seq.* ("Act 30"). I am providing testimony regarding the route study prepared by BMcD for the 345 kV double circuit transmission line that is proposed from the new Helix Substation to the Michigan/Indiana border. Route development for the new transmission line is further detailed in the Route Study: Helix to Hiple 345 kV Transmission Line Project ("Route Study"). The new Helix Substation and 345 kV double circuit transmission line that will run from the new Helix Substation in Clarence Township in Calhoun County to the Michigan/Indiana state border in Gilead Township in Branch County are referred to in my testimony as the "Project" or the "Helix to Hiple Project".

In addition, I am providing testimony regarding the Environmental Report ("ER") prepared for the Project. The ER reflects analysis of the human and environmental features in the vicinity of the Project, as described further below.

Q. Do you sponsor any exhibits?

A. Yes, I am sponsoring the following exhibits, all of which were prepared under my direction or supervision:

- **EXHIBIT METC-22B (KAS-1B)**: Statement of Qualifications
- **EXHIBIT METC-23B (KAS-2B):** Helix to Hiple 345 kV Transmission Line Project Route Study
- **EXHIBIT METC-24B (KAS-3B):** Helix to Hiple Project Environmental Report

ROUTE DEVELOPMENT PROCESS

Q. Please describe BMcD's role with respect to the route development process for the Project.

A. At METC's direction, BMcD identified a study area, developed potential routes, and recommended a Proposed and Alternate route for the proposed Project's Construction Plan. The Route Study addresses the development of the study area and potential routes, evaluation of routes, and identification of the Proposed and Alternate Routes for the Project's Construction Plan, which is described in more detail in **EXHIBIT METC-23B (KAS-2B)**.

Q. What is your role with respect to the Project?

A. I participated in directing and coordinating efforts of BMcD staff and coordinating with the METC Project staff for the Route Study. I also participated in a field visit to the study area in April 2023 and assisted with public open houses in October 2023. I also lead the preparation of the ER for the Project.

Q. How was the Project study area, as reflected in the Route Study, identified?

A. The first step in the route study process was the establishment of a study area in which to locate potential routes. The north terminal point for the Project is the Helix Substation. The Project will then proceed south and end at the point of interconnection (POI) on the Michigan/Indiana border. As I understand, the Project will interconnect to the line segment to be built by Republic Transmission, LLC, which will extend south from the Michigan/Indiana border to the Hiple substation. To provide greater flexibility during routing, a plus/minus 10-mile area surrounding the POI (POI build zone) was used as the south terminal point for the Route Study.

The Project study area was developed to include the location of the Helix Substation and the POI build zone while providing sufficient area to consider the development of a reasonable variety of routes.

Q. Please describe the analysis conducted by BMcD in the study area as part of the Route Study.

A. After establishing the study area and mapping available and appropriate resources data, the next step was the identification of route options. A network of route segments was developed within the study area. The objective was to identify potential routes that avoid or minimize routing constraints, areas of natural and human resources, take advantage of routing opportunities, and provide a cost-effective and constructible alignment. Section 2.4 of the Route Study provides further detail regarding this process. EXHIBIT METC-23B (KAS-2B), pp. 2-14 – 2-15.

Q. Does the Route Study describe how potential routes were identified and evaluated?

A. Yes. Section 2.4 of the Route Study describes this process in detail. Generally, based on the analysis described above, BMcD developed potential route segments, combined these individual segments into different arrangements to form routes to connect the endpoints, and then compared the potential routes based on various evaluation factors. As described in Section 3.0 of the Route Study, a total of 511 different segment combinations were identified that connected the two endpoints for the Project. EXHIBIT METC-23B (KAS-2B), p. 3-1.

Q. Please describe the factors evaluated in the Route Study.

A. After identifying the segments and routes, BMcD then developed three categories of factors to analyze each potential route: engineering, environmental, and social factors. A list of these factors, by category, follows:

Engineering

- Total length (miles)
- Heavy angles (greater than 30 degrees; count)
- Road crossings (count)
- Transmission line crossings (count)
- Dairy barns within 500 feet (count)
- Solar farm within 500 feet (count)
- Center pivots in right-of-way (ROW) (count)

Environmental

- Wetlands within the ROW (acres)
- Hydric soils within ROW (acres)
- River/streams/waterways crossed (count)
- Woodlands within the ROW (acres)
- Grassland/pasture within ROW (acres)
- Cropland within ROW (acres)

Social

- Historic/NRHP districts or sites within 1000 feet of alignment (count)
- Archaeological sites within the ROW (count)

- New ROW required to be obtained (acres)
- Residences within 100 feet (number)
- Residences between 101 – 300 feet (number)
- Residences between 301 – 500 feet (number)
- Parcels crossed (count)
- Public facilities within 300 feet (count)
- Length of public land crossed (feet)

EXHIBIT METC-23B (KAS-2B), pp. 3-1 – 3-4.

Q. How was the evaluation process used to further refine the potential routes?

A. Following the preliminary determination that route options were likely constructible, 22 routing factors were quantified to characterize the engineering, social, and natural resource characteristics of the potential routes. Route data were compared to determine the potential extent the routes would conflict with land use, create engineering or construction challenges or considerations, and affect social and natural resources. This comparison enabled the BMcD routing team to identify a Proposed and Alternate Route for the Project's Construction Plan through minimizing land use conflicts and overall social and natural resources impacts while still providing an economical and feasibly constructible route.

In considering the routes and the data quantified, several trends were identified for grouping of routes with similar characteristics, primarily similar geography within the study area. While the exact quantities for each unique segment combination comprising each of the routes varied depending on all the

specific segments used to create the route, the trends in the route data generally identified two groupings of routes: Western Routes and Eastern Routes. See Section 3.2 of EXHIBIT METC-23B (KAS-2B), pp. 3-4 – 3-7, for a detailed description of the differences between the two groups. In focusing on the route group that best minimized the overall Project-related impacts to engineering, environmental, and social factors to the extent practicable, the Eastern Corridor Routes were retained for further analysis and a Proposed and Alternate Route were identified from these routes.

Q. How were the routes differentiated as the "Proposed" and "Alternate" routes for the Construction Plan?

A. In consideration of minimizing overall land use conflicts and the evaluation factors considered, it was determined that the route that best minimized the overall impacts to resources was Route 108 (Segments 1, 4, 7, 13, 19, 26, 36, 52) because, at a high level, Route 108 avoided protected lands (Federal, state or local protected and public areas), minimized the total number of residences within 0-500 feet of the centerline, had the shortest overall length, had minimal number of center pivots crossed, and avoided previously recorded eligible or potentially eligible National Register of Historic Places sites. For these reasons, Route 108 was identified as the Proposed Route for the Project's Construction Plan. Route 466 (Segments 2, 17, 19, 26, 36, 52) was identified as the Alternate Route for the Project's Construction Plan. Route 466 provided geographic variation from the identified Proposed Route alignment, while still minimizing overall impacts to engineering, environmental, and social factors. Similarly, but to a lesser extent

than the Proposed Route, Route 466 minimized proximity to residences, total length, center pivot irrigation systems crossed, would avoid known public lands, and would generally have less wetland/hydric soil impacts over other potential routes. See EXHIBIT METC-23B (KAS-2B), pp. 4-1 – 4-5.

Q. What are the primary differences between the Proposed Route and Alternate Route included in the Construction Plan?

A. The following list provides the primary differences between the Proposed and Alternate Routes in the Construction Plan:

- The Alternate Route is slightly longer than the Proposed Route (55.1 miles compared to 51.9 miles, respectively).
- The Alternate Route has below average impacts in all three residential proximity scores, although not to the extent of the Proposed Route.
- The Alternate Route would have more cropland within the ROW than the Proposed Route but is still below the average impact among all routes.

Q. Does the Construction Plan filed in this docket reflect the Proposed and Alternate Routes identified in the Route Study?

A. Yes.

Q. Have the Proposed and Alternate Routes been further refined since the filing of the Construction Plan?

A. Yes. The process of refining the Proposed and Alternate Routes since the filing of the Construction Plan is discussed in more detail in the testimony of witness B. Ashley DuPree. These refined routes are the routes included in the Application

and the routes that were studied in the ER, which is discussed in further detail below.

AGENCY COORDINATION AND PERMITS & APPROVALS

Q. What agency coordination was conducted as part of the Route Study with respect to the potential environmental impacts of the Project?

A. Once a study area was established, agency coordination letters were sent to applicable local, state, and Federal agencies within the study area. The letters introduced the Project and provided a brief overview of the Project's purpose and need. In addition to providing a study area map, the letters generally described the proposed Project. These letters were sent on December 13, 2022. The letters and responses received are included in Appendix B of the Route Study, EXHIBIT METC-23B (KAS-2B).

Q. Was additional agency coordination conducted after the Route Study?

A. Yes. On February 9, 2024, additional coordination letters were sent to applicable state and federal agencies for preparation of the ER for the Project. These letters included the Proposed and Alternate Routes reflected in the Construction Plan. The letters and responses received are included as Appendix A to the ER, **EXHIBIT METC-24B (KAS-3B)**.

Q. What permits and approvals may be required for the Project?

A. The permits and approvals that may be needed for the Project are identified in Table 1-1 of the ER, EXHIBIT METC-24B (KAS-3B), p. 8.

ENVIRONMENTAL REPORT

Q. What is your role with respect to the ER?

A. I directed and coordinated the efforts of BMcD staff and coordinated with METC Project staff on the preparation of the ER, EXHIBIT METC-24B (KAS-3B).

Q. What is the purpose of the ER?

A. The purpose of the ER is to provide analysis of natural and human resources in the vicinity of the Project as well as to describe measures proposed to be implemented by METC to avoid, minimize, and/or mitigate any potential Project impacts.

Q. Please describe the methodology employed by BMcD to prepare the ER.

A. As discussed in Section 3 of the ER and detailed in Table 3-1, the ER contains desktop analyses based on existing natural and human resources and GIS data, combined with additional observations and feedback from Route Study windshield surveys and public meetings to characterize, assess and quantify resources which may be impacted by the Project:

- Land Use
- Human Settlement
- Recreation
- Public Services & Transportation
- Water Resources
- Fish, Wildlife, and Vegetation
- Cultural Resources

- Geologic Resources
- Air Quality
- Noise

See EXHIBIT METC-24B (KAS-3B), pp. 11-12

As discussed in Section 3.0 of the ER, the area of analysis varied by resource. For example, land uses were assessed for the Study Corridor (Proposed Route) and Helix Substation Parcel, whereas air quality was assessed on a broader geographic scale. See Table 3-1 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 11-12.

Q. What is the scope of analysis in the ER?

A. The ER analyzes the 200-foot ROW for the Proposed and Alternate Routes (referred to in the ER as “Proposed Route ROW” or “Alternate Route ROW”, as applicable), as well as a Study Corridor, which extended to 250 feet on either side of the centerline of the Proposed Route and the Alternate Route. The ER specifies when distinguishing between the Study Corridor for the Proposed Route or the Alternate Route (i.e., “Study Corridor (Proposed Route)”), when the ER analysis applies specifically to the Proposed or Alternate Route. In addition, the ER includes an analysis of the Helix Substation Parcel.

Q. Based on your knowledge and experience, is the scope of the ER generally consistent with environmental reports you have prepared or supported in other jurisdictions?

A. Yes.

Q. Describe the existing land uses crossed by the Proposed Route.

A. Land use is discussed in Section 4.1 of the ER. Existing land cover types are provided for the Proposed Route ROW and Study Corridor (Proposed Route) in Table 4-1 of the ER. Land cover for the Helix Substation Parcel is provided in Table 4-2 of the ER. The predominant land cover type within the Proposed Route ROW and within the Helix Substation Parcel is cultivated crops based on data from the U.S. Geological Survey (USGS) National Land Cover Database (NLCD). See EXHIBIT METC-24B (KAS-3B), pp. 13-17.

Q. How will the Project avoid or minimize impacts to existing land uses?

A. As described in Section 4.1 of the ER, impacts to land use due to Project-related construction activities will be primarily temporary occurring during construction, and METC will reasonably restore any damage as a result of Project construction. Land uses consistent with the safe and reliable operation of the Project would generally be allowed to continue. In addition, to the extent practicable, construction access via existing roads and access routes throughout the area will be prioritized. Similarly, traffic in the ROW between transmission structure locations will be limited to a single access route to the extent practicable, and METC and its contractors will seek to locate laydown yards in areas with existing disturbance. METC will obtain any permits or approvals needed related to Michigan's Soil Erosion and Sedimentation Control Program and will comply with the conditions of those permits or approvals. METC will also remove construction-related debris and material which is not an integral part of the transmission line from the landowner's property.

With respect to agricultural land uses, METC will:

- Coordinate with landowners regarding the identification of drain tile;
- Repair tile that is damaged, cut, or removed as a result of Project construction, unless otherwise agreed to with the landowner;
- Repair damages due to compaction, ruts, erosion, and/or washing of soil caused by Project construction unless otherwise agreed to with the landowner;
- Coordinate with landowners regarding the placement of excess soil and/or rock due to the Project;
- Coordinate with landowners regarding Project construction impacts on spray irrigation systems. Irrigation systems will not be allowed to continue operation across land on which the transmission line is also being constructed if METC determines that such operation would be unsafe;
- Coordinate with landowners regarding impacts of Project construction on existing fencing and temporary gates and/or fencing, as needed. Following construction, any temporary gates and fences will be removed, unless otherwise agreed by the landowner. Permanent fences will be restored as closely as reasonably possible to their pre-construction condition.

EXHIBIT METC-24B (KAS-3B), p. 17.

Additional detail regarding measures to avoid, minimize, and/or mitigate land use impacts is provided in Section 4.1 of the ER. See EXHIBIT METC-24B (KAS-3B), pp. 13-17.

Q. Please describe any lighting associated with the Project.

A. Some construction lighting may be required depending on construction schedules. This light source would be temporary in nature and localized to the active construction area. Operation of the Project will not generally require lighting; except that the FAA may require lighting of certain structures due to overall height and/or proximity to a public use airport. Any lighting requirements would be

determined through further coordination with the FAA after final Project design is complete.

Q. Describe human settlement along the Proposed Route.

A. Human settlement is discussed in Section 4.2 of the ER. EXHIBIT METC-24B (KAS-3B), pp. 17-20. Residential development generally occurs along roadways and is concentrated in surrounding cities, towns, and villages such as areas surrounding the cities of Marshall and Coldwater and in lakeside communities. Density of homes generally decreases with distance from these developed centers. Mixed residential development within the surrounding Project vicinity consists of both rural residential development with homes on large parcels of land and dense residential communities as part of larger subdivisions or similar types of residential development. Large and small farmsteads, which may include one or more residences, can be found throughout the agricultural areas of the Project vicinity. There are 233 parcels crossed by the Proposed Route ROW and 308 parcels crossed by the Study Corridor (Proposed Route). There are no residences within the Proposed Route ROW, and 10 residences within the Study Corridor (Proposed Route). There is one existing residence on the Helix Substation Parcel, which will be METC-owned and will be removed prior to construction.

Q. How will impacts to human settlement be avoided, minimized, or mitigated?

A. No residences are located within the Proposed Route ROW, and no displacement of homes is anticipated within the ROW. As mentioned above, the existing residence on the Helix Substation Parcel will be METC-owned and removed prior to construction. Short-term impacts on residences associated with construction

related activities include temporary increases in traffic, noise, dust, and light produced by construction equipment and trucks.

When undertaking construction activities METC and their contractors will be cognizant of the residents and will limit work hours in that area as feasible and in compliance with applicable permits, especially during the early morning hours.

Access to residences would be maintained throughout construction. METC and their contractors will not block any residential driveways with equipment unless agreed upon with the landowner or resident. After construction is complete, METC will restore the ROW. See Section 4.2 of the ER, EXHIBIT METC-24B (KAS-3B), p. 20.

Q. Are there recreational resources within the vicinity of the Project?

A. There are several protected lands and conservation resources within the counties crossed by the Project, one of the most prominent being Coldwater State Park within Branch County. Many of the recreational parks are located near water resources and are avoided by the Proposed Route. According to the Michigan Department of Natural Resources' (MDNR) State-managed nonmotorized trails system web mapper, a proposed segment of the Iron Belle Trail is located within the northern portion of the Study Corridor (Proposed Route) near Marshall.

Q. How will the Project avoid or minimize impacts to recreational resources?

A. The Project will span a proposed segment of the Iron Belle Trail along the north side of B Drive N located to the north of the Kalamazoo River. The Project will not directly impact other public recreational areas. Indirect impacts associated with construction activities will primarily be associated with increased traffic on nearby

roads and noise caused by the increased activity of construction crews and trucks within the Project ROW and on surrounding local roads.

Impacts to recreation will primarily be short-term occurring during construction. Impacts associated with construction activities will be temporary and primarily be associated with increased traffic, dust, and noise caused by the increased activity of construction crews and trucks within the Project area. Woody vegetation will be permanently cleared in the ROW, but this is not anticipated to affect the quality or availability of recreation in the vicinity of the Project.

There are no recreational resources on the Helix Substation Parcel, and no direct impacts to recreation are anticipated as a result of the substation.

Where applicable, METC will coordinate with recreational trail authorities regarding any needed trail closures and safety restrictions and will repair or restore damage to recreational trails caused by the Project. See Section 4.3 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 20-22.

Q. Are there public services and transportation facilities in the vicinity of the Project?

A. Generally public service facilities are located in or near cities, towns, and villages in the region. However, the Study Corridor is primarily located in more rural areas.

Q. How can potential impacts to public services and transportation be avoided or minimized?

A. The Project is not anticipated to impact public facilities. Although the Project may result in minor traffic increases in the area, this increase is not anticipated to impact public services. There are also existing utilities in the Study Corridor, including

transmission lines, distribution lines, and natural gas pipelines. With respect to existing utility infrastructure, METC will identify existing infrastructure prior to construction and coordinate any crossings with the infrastructure owners, as needed.

Q. Are there wetlands crossed by the Proposed Route?

A. Based on a desktop analysis completed for the Project, it is anticipated that wetlands would be within the Study Corridor (Proposed Route) and Proposed Route ROW.

Q. What measures did METC undertake to identify wetlands crossed by the Proposed Route?

A. BMcD conducted analysis in two parts. First, with respect to the Study Corridor (Proposed Route), BMcD reviewed Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Part 303 State Wetland Inventory. Based on EGLE's inventory, the Study Corridor (Proposed Route) crosses 1,134.5 acres of EGLE potential wetlands. Next, with respect to the Proposed Route ROW, BMcD conducted a desktop wetland evaluation using available background information to determine the likely presence of wetland or other water resources within the Proposed Route ROW. The probability of a wetland occurring in the Proposed Route ROW was determined by overlaying digital data sources, reviewing the data sources, and creating an "Interpreted Wetlands" layer for the ROW. This process is described in Section 5.1.2 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 25-20. Interpreted Wetlands were classified utilizing the Palustrine classes from the Cowardin Classification System described in *Classification of Wetlands and*

Deepwater Habitats of the United States. Areas within the Proposed Route ROW identified as having a Medium, Medium/High, or High probability of wetland occurrence were further analyzed to categorize these potential features by wetland ecological group. Medium/Low and Low probability areas were not classified as there was not enough secondary data to determine wetland type. The acreage of potential wetland features by ecological group in the Proposed Route ROW is provided in Table 5-4 of the ER. EXHIBIT METC-24B (KAS-3B), p. 28.

Q. How will impacts to wetlands be avoided, minimized, or mitigated?

A. METC will coordinate with EGLE regarding required permits and approvals for the Project, including coordination regarding field surveys/delineations of wetlands in the final Project ROW prior to Project construction. METC will obtain any permits or approvals required for work in wetlands and will comply with the terms and conditions of those permits and approvals, which typically include measures related to: construction during dry or frozen periods or using construction matting; installation of erosion and sedimentation control measures; decontaminating equipment for noxious weeds and invasive species; and restoration requirements.

Wetlands will be spanned as practicable during final design of the Project to minimize potential impacts related to structures placed in wetlands. Loss of wetlands will be mitigated in accordance with EGLE requirements. METC will coordinate with EGLE regarding required permits and approvals for the Project, including coordination regarding field surveys/delineations of wetlands in the final Project ROW prior to Project construction. METC will obtain any permits or approvals required for work in wetlands and will comply with the terms and

conditions of those permits and approvals, as described above. Prior to construction initiation, sedimentation barriers will be installed and maintained along the regulated wetlands and waterbodies until permanent stabilization and re-vegetation have occurred. Temporary construction matting will be used where required by applicable permits and approvals and/or to accommodate right-of-way access. Construction will be undertaken and completed during the dry period of the wetland, or when frozen. However, if the area does not dry out or freeze, construction will be done on equipment mats to prevent compaction of the soil. Construction will not result in drainage of a wetland. All excavated spoils will be placed on upland (non-wetland, non-floodplain or non-bottomland) areas and stabilized to prevent erosion into waterbodies or wetlands. Excessive rutting and grubbing should be avoided in wetland areas. Trees should be cut at the base, leaving the stump intact to the extent practicable. Crews will carry spill kits on vehicles or have them available in the rare event of an oil or chemical release from construction equipment. For additional discussion of soil erosion and sedimentation control measures that may apply, see Section 4.1 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 15-17.

Upon Project completion, disturbed wetland areas will be restored to the original contour elevation to the extent feasible, re-vegetated and reseeded with wetland species appropriate to the region, and mulched to prevent erosion. Reseeding within wetland areas will only use a wetland seed mix and plants appropriate for the area. Restored wetlands should be free of oil, grease, debris,

and other contaminants. Sedimentation barriers will be removed after vegetation is established. See Section 5.1 of the ER, EXHIBIT METC-24B (KAS-3B), p. 29.

A wetland delineation was completed on the Helix Substation Parcel in September 2023. The delineation identified wetlands in the western and southern portions of the property, as shown on Figure 5-1 of the ER, EXHIBIT METC-24B (KAS-3B), p. 30. The Helix Substation will avoid wetlands to the extent practicable.

Q. Is there surface water within the Proposed Route?

A. Yes. Section 5.2 of the ER describes waterbodies crossed by the Study Corridor (Proposed Route) and Proposed Route ROW. EXHIBIT METC-24B (KAS-3B), pp. 31-33.

Q. How will impacts to surface water be avoided, minimized, or mitigated?

A. Direct impacts to waterbodies will be avoided to the extent practicable. METC will obtain any permits or approvals required for work in or near waterbodies when necessary and will comply with the terms and conditions of those permits or approvals, which typically include measures related to erosion and sedimentation control. The Helix Substation will avoid direct impacts to waterbodies. Additional information is provided in Section 5.2 of the ER. EXHIBIT METC-24B (KAS-3B), pp. 31-33.

Q. Does the Study Corridor cross floodplains?

A. Yes. Floodplain permitting will be determined once the final route has been selected and design is complete. All Project structures will be appropriately designed for their location, and METC will obtain and comply with any required

permits and approvals. See Section 5.3 of the ER, EXHIBIT METC-24B (KAS-3B), p. 33.

Q. How will impacts to groundwater be avoided, minimized, or mitigated?

A. Based on the final Project alignment and prior to Project construction, METC will review any structures in proximity to wellhead protection areas and household wells to avoid and minimize impacts. See Section 5.4 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 34-36.

Q. Please generally describe the wildlife that occurs along the Proposed Route.

A. The Project includes different land uses, vegetation communities, and habitat types that support a variety of wildlife species. Mammals likely to occur within the Study Corridor include white-tailed deer, coyote, red fox, gray fox, beaver, river otter, and mink. Common bird species include the Canada warbler, upland sandpiper, and sparrows among many others. Common fish species in the region include northern pike, walleye, steelhead, and trout. See Section 6.1 of the ER, EXHIBIT METC-24B (KAS-3B), p. 37.

Q. Are there any known protected species in the vicinity of the Proposed Route?

A. U.S. Fish & Wildlife Service (USFWS) offers an Information for Planning and Consultation (IPaC) report regarding the potential impacts of a project on federally protected species and habitats. Using the Study Corridor as an input, a report was generated in June 2024. See ER Tables 6-1 and 6-2 for the IPaC results for the Project, EXHIBIT METC-24B (KAS-3B), pp. 38-41. The Michigan Natural Features Inventory (MNFI) database was also used and contains information on all

protected species for which locations have been recorded. The MNFI State-listed species for the Project counties is provided in Table 6-3 of the ER. See Sections 6.2 and 6.3 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 37-44.

Q. How will impacts to protected species be avoided or minimized?

A. METC will coordinate with USFWS and the MDNR as necessary to identify potential effects the Project may have on federally and state listed species and to develop any required surveys, avoidance, conservation, or mitigation measures for potentially affected protected species. METC will comply with applicable guidance at the time of construction for federal and state listed species.

Q. Please describe the vegetation along the Proposed Route.

A. The Project is primarily situated in the Southern Michigan/Northern Indiana Drift Plains, which encompasses a variety of vegetation. Forests of the Southern Michigan/Northern Indiana Drift Plains typically form dense canopies mainly consisting of tall, broadleaf, deciduous trees and needle-leaf conifers. Oak-hickory forests, northern swamp forests, and beech forests are typical types of forest in the region, with northern white oak (*Quercus alba*), red oak (*Quercus rubra*), black oak (*Quercus velutina*), bitternut hickory (*Carya cordiformis*), shag-bark hickory (*Carya ovata*), sugar maple (*Acer saccharum*), and American beech (*Fagus grandiflora*) being the dominant tree species. Currently, approximately 57.9 percent of the Study Corridor (Proposed Route) and approximately 59.6 percent of the Helix Substation Parcel is cultivated with row crops such as corn, soybeans, and wheat, as well as grasslands for hay and livestock pasture. The MNFI provides a list of natural communities present by county. These natural

communities are distinct groups of plants, animals, and other organisms that represent the biodiversity present in Michigan (see Table 6-4 in the ER for a list of natural communities in the Project Counties). See Section 6.4 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 44-48.

Q. How will impacts to vegetation be avoided, minimized, or mitigated?

A. Maintenance of the selected route may require periodic use of herbicides and tree trimming throughout the transmission line's lifetime. The footprint of the Helix Substation will be permanently cleared. Apart from Project structure footprints and the Helix Substation, no other permanent impacts to cultivated crops are anticipated.

Where construction activities disturb the ground surface and existing vegetation, revegetation best management practices (BMPs) serve to minimize erosion, stabilize existing plant communities, and promote seed growth. METC will generally follow applicable MDNR guidance regarding Oak wilt prevention. Because the Helix Substation will generally be constructed in a non-forested area, impacts to vegetation from the Helix Substation have been avoided and minimized. Additional detail is provided in Section 6.4 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 44-48.

Q. What measures will the Project employ to avoid the spread of invasive species due to the Project?

A. Selective herbicides may be used for spot treatment of areas with invasive species. Herbicides approved for use in wetland and aquatic environments will be used in accordance with label requirements, as conditions warrant. All disturbed soils will

be seeded as soon as possible following construction activities (within the appropriate seasonal timeframes and when the ground is sufficiently prepped to receive seed). See Section 6.5 of the ER, EXHIBIT METC-24B (KAS-3B), pp. .48-49

Q. Did METC review previously-recorded cultural resources along the Proposed Route?

A. Yes. A record review of the Michigan State Historic Preservation Office (SHPO) historic and archaeological sites, including historical properties and historic districts, was conducted by BMcD. In addition, a review of the National Register of Historic Places (NRHP) database was conducted to identify cultural resources in the vicinity of the Study Corridor.

Q. Is the Project anticipated to impact cultural resources?

A. No. Three archaeological sites intersect the Study Corridor (Proposed Route), and two of those sites also overlap the Proposed Route ROW. One of these sites has been determined not eligible for NRHP listing; the NRHP status of the other two sites are unevaluated. No previously-recorded sites were identified within the Helix Substation Parcel. METC has developed an Unanticipated Discoveries Plan detailing the process for addressing the identification of previously unidentified potential historic properties during Project construction. METC will avoid direct impacts to the unevaluated site within the ROW if feasible. If direct avoidance is not feasible, additional field survey will be conducted prior to construction. See Section 7.0 of the ER, EXHIBIT METC-24B (KAS-3B), p. 50.

Q. Please describe soils along the Proposed Route.

A. Soil map units are identified by the Natural Resource Conservation Service Web Soil Survey for the Project. Locke fine sandy loam, 1 to 4 percent slopes (15B) is the most prevalent soil type, comprising approximately 10 percent of the Study Corridor (Proposed Route)—or 331.2 acres. Approximately 27 percent (901 acres) of the Study Corridor (Proposed Route) is classified as hydric soil. Morley loam, 2 to 6 percent slopes, is the most prevalent soil type in the Helix Substation Parcel specifically (52.3 percent of the parcel). See Section 8.2 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 51-57.

Q. How will the Project avoid or minimize impacts to soils?

A. Soil conservation practices such as terraces and grassed waterways which are altered by the Project's construction will be restored to their pre-construction condition as near as possible. Soil disturbance in steeply sloped areas will be minimized to the extent practicable and, where feasible and practicable, root systems will be left intact in these areas to provide additional soil support and erosion control. Within the ROW, METC will regrade areas to pre-construction topography, when necessary. See Section 8.2 of the ER, EXHIBIT METC-24B (KAS-3B), p. 57

Q. Is the Project anticipated to result in long-term impacts to air quality?

A. No. Generally, construction emissions are temporary in nature, fall off rapidly with distance from the construction, and would not result in long-term impacts. Road sweeping and/or a water truck may be used as needed to control dust. Once construction activities are complete, emissions from equipment would cease. Although construction emissions from the proposed Project are projected to occur

over the span of a year, the location of construction activities within the Project area would be changing often by multiple miles. See Section 9.0 of the ER, EXHIBIT METC-24B (KAS-3B), pp. 58-64.

Q. Will the Project result in greenhouse gas ("GHG") emissions?

A. Yes. However, the Project is not anticipated to have material impacts on GHG emissions. Construction GHGs emission would occur due to vehicular emissions from increased traffic from the construction work force, traffic from construction deliveries, and internal combustion engine emissions from construction equipment. The Helix Substation is expected to consist of ground switches. Ground switches utilize SF_6 as an insulation gas to prevent accidental arcing within the switch, and emissions primarily occur due to small leaks in the equipment over time. SF_6 is a potent greenhouse gas, with a global warming potential of 22,800. Currently, no practical alternative to SF_6 in electrical equipment is available for the Project. At the time of this report, the construction plan for the switchyard has not been finalized and the potential fugitive emissions from the ground switches have not been quantified. The use of SF_6 gas is only relevant to equipment associated with the Helix Substation. It is anticipated that METC will implement applicable and appropriate standards regarding SF_6 to avoid and minimize emissions.

According to data tracked by the EPA Greenhouse Gas Inventory, the average state-wide CO_2e emissions for the most recent 5 years of data available (2017-2021) was determined to be 203 million tons per year. The worst-case annual Project CO2e emissions are calculated to be 4,105 tons per year. This equates to 0.002 percent of the statewide CO_2e emissions. Accordingly, the

Project is not anticipated to have material impacts on GHG emissions and climate change. See Section 9.0 of the ER, EXHIBIT METC-24B (KAS-3B), p.58.

Project impacts on air quality are anticipated to be localized and temporary. Construction of the Project is not anticipated to cause nonattainment status in any county crossed by the Study Corridor or ROW. Road sweeping and/or a water truck may be used as needed to control dust. Once construction activities are complete, emissions from construction equipment would cease.

Q. Please describe noise associated with the Project.

A. Temporary noise sources associated with the Project will include construction activities, such as vegetation clearing, grading and excavation, construction equipment operation, and structure installation in the right-of-way. The noise level impacts near the construction workspace from typical construction activities would depend on the type of equipment used, the duration of use for each piece of equipment, the number of construction vehicles and equipment used simultaneously, and the distance between the source and receptor. Although residences in the immediate vicinity of the construction activities may experience an increase in noise, this effect would be temporary, intermittent and localized.

Noise from the operation of the Project would result from audible noise associated with the transmission line conductors. Operational noise from transmission lines is most commonly corona noise, which is heard as a crackling or hissing sound. This type of noise varies with both weather and voltage of the line, and most frequently occurs in conditions of rain or high humidity. Because the Helix Substation will be only a switching station, the highest noise levels near

the substation will be from the transmission line as they enter or leave the substation. Noise from operation of the Project is discussed more in the testimony of witness Dr. Johnson.

Q. Does the ER also analyze the Alternate Route?

A. Yes. The ER also analyzes environmental resources in the vicinity of the Alternate Route and any potential impacts to those resources. That analysis is included in Appendix C of the ER.

CONCLUSION

Q. Please summarize how METC has avoided, minimized, and/or mitigated potential impacts of the Project to the environment.

A. METC's strategy has been multi-pronged. First, METC retained BMcD to conduct a Route Study to assess the potential impacts of hundreds of different alignments for the Project. Through that analysis, BMcD identified two routes (the Proposed and Alternate Routes) that minimized the overall impacts to the human and natural environment while providing a reasonable and constructible alignment. Second, I understand that METC then engaged in further refinement of the Proposed and Alternate Routes based on engineering and design considerations, as well as additional public input. Third, METC plans to implement avoidance, minimization, and mitigation measures for the construction and restoration of the Project. These measures are described in more detail in the ER. In summary, METC identified a Proposed Route that minimizes impacts, considering a range of factors, and METC

will employ additional measures to avoid, minimize, and mitigate potential Project impacts.

Q. In your opinion, what is the most reasonable and feasible route for the Project?

A. The Proposed Route is the most reasonable and feasible route for the Project. The Route Study identified the Proposed Route due to its below average impacts considering a variety of routing factors. This route was then further refined to reflect additional information received during the public open houses for the Project as well as agency input and design considerations. This process has resulted in a route that minimizes potential environmental and human resource impacts.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	))))))))	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

MARK A. ISRAEL, MD

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Mark A. Israel. My business address is 310 Strand Street, Alexandria, VA 22314.

Q. What is your occupation and where are you employed?

A. I am a medical doctor and scientific researcher. I am the Preston T. and Virginia R. Kelsey Distinguished Chair in Cancer Emeritus at Dartmouth Medical School, where I also am Director Emeritus of the Norris Cotton Cancer Center. I am also an independent scientific consultant and medical advisor. During my 48-year medical career, I have been responsible for the diagnosis and treatment of patients, the conduct of medical and biological research, teaching medicine, and the direction and management of a major medical care center delivering care and treatment to thousands of patients each year.

Q. Please briefly describe your educational background.

A. I received my undergraduate degree from Hamilton College in 1968. I then earned my medical degree ("MD") from the Albert Einstein College of Medicine in 1973. After earning my MD, I completed my internship and residency at Children's Hospital Medical Center in Boston, which is the principal pediatric teaching hospital of Harvard Medical School. After completing my residency, I joined the National Institutes of Health ("NIH") as a researcher studying infectious diseases and the molecular genetics of cancer. At NIH, I completed post-graduate training in pediatric oncology, the area of medicine that involves the diagnosis, care, and treatment of cancer in children.

Q. What is the purpose of your testimony?

A. I am testifying on behalf of Michigan Electric Transmission Company, LLC ("METC"). I was asked to provide information about electromagnetic fields ("EMF") and health in my areas of scientific and medical expertise with respect to METC's application for a proposed 345 kilovolt ("kV") transmission line and new substation known as the "Helix to Hiple Project" or "Project."

Q. Please summarize your testimony.

A. After reviewing the large body of animal and cellular research on power frequency EMF and cancer and cancer biology, I find that this research does not provide a reliable scientific basis to conclude that EMF from the Project will cause or contribute to the development of cancer in children or adults.

Q. Are you sponsoring any exhibits?

A. Yes, I am sponsoring **EXHIBIT METC-25B (MAI-1B)** – Curriculum Vitae of Mark A. Israel, MD

Q. Have you previously testified before the Michigan Public Service Commission ("MPSC")?

A. Yes, I have previously provided testimony in two MPSC cases:

- I testified on behalf of International Transmission Company d/b/a ITC*Transmission* regarding EMF exposure in Case No. U-16200 (2010) (In the matter of the application of International Transmission Company d/b/a ITC*Transmission*, for an expedited siting certificate for a transmission line, pursuant to 2008 PA 295, Part 4, for Region No. 4 (Thumb

Region), as designated by the Michigan Wind Energy Resource Zone Board and the Commission's Order in Case No. U-15899);

- I testified on behalf of METC regard EMF exposure related to a transmission line in Case No. U-17041 (2012) (In the matter of the application of Michigan Electric Transmission Company, LLC for a certificate of public convenience and necessity for the construction of a transmission line in Almena Township, Van Buren County, and Oshtemo Township, Kalamazoo County Michigan.)

Q. Briefly describe your professional experience as a medical doctor.

A. I conducted research and treated patients at NIH, first in the National Institute of Allergy and Infectious Diseases and then at the National Cancer Institute ("NCI"). Throughout my 14 years at NIH, I also served as an officer in the Public Health Service, rising to the rank of Captain. I became the head of the Molecular Genetics Section of the Pediatrics Branch at NCI, where we conducted research on the molecular genetics of childhood cancer. Our research characterized specific genes responsible for the cause of certain cancers in children. Our work also contributed to improvements in the diagnosis and treatment of childhood cancer, as well as early developments in the field of cancer gene therapy.

In 1989, I joined the University of California at San Francisco (UCSF) School of Medicine, where I became the Director of the Preuss Laboratory of Molecular Neuro-Oncology and the Kathleen M. Plant Distinguished Professor. The Preuss Laboratory was a major brain cancer research laboratory. At UCSF, I

treated patients, taught medical students and directed a medical research laboratory.

In 2001, I became the Director of the Cancer Center at the Dartmouth Medical School and the Dartmouth Hitchcock Medical Center. The Cancer Center is a major health care facility that provides medical care to more than 5,000 new patients each year. As Director, I coordinated the multidisciplinary treatments provided by medical doctors, surgeons, radiation therapists, nurses and other staff, and managed numerous research programs, with a collective annual budget for the Cancer Center of more than $250 million. I also oversaw the development and implementation of the Center's public health and disease prevention programs in New England.

From 2018 to 2021, I served as the Executive Director of the Israel Cancer Research Fund in New York. The Fund is an international charitable fund that raises private donations for medical and scientific research programs. As Executive Director, I managed the Fund's activities in our offices in New York, Chicago, Los Angeles, Miami, Montreal, San Francisco, Tel Aviv and Toronto, including fund raising, program development, and scientific research grant award programs. Since 2021, I have been an independent scientific consultant and medical advisor.

Q. Are you a board certified physician?

A. Yes, I am a board certified pediatrician.

Q. Are you licensed to practice medicine?

A. Yes, I am licensed to practice medicine in California.

Q. How long have you been conducting medical research and in what areas?

A. I have conducted medical research for over 40 years. I have done medical research in a wide variety of areas, including systems biology, biochemistry, cell biology, cancer, molecular biology, and molecular genetics.

Q. How long have you been a teacher?

A. I was a teacher for more than 30 years.

Q. What types of students and subjects have you taught?

A. I have taught medical students, graduate students, interns, residents, and practicing physicians subjects in a number of fields, including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology.

Q. Has any of your research been published in scientific journals?

A. Yes, I have published 251 medical research studies in peer-reviewed scientific journals such as the *New England Journal of Medicine, The Proceedings of The National Academy of Sciences, Cancer Research,* and *Nature,* among others. I have also written chapters in medical textbooks, such as the section on brain cancer in the widely used *Harrison's Principles of Internal Medicine,* and I am a co-editor of the textbook *The Molecular Basis of Cancer.*

Q. Are you a member of any professional organizations?

A. Yes. I am a member of a number of professional organizations, including the American Association for Cancer Research and the American Society for Clinical

Oncology, among others. I have also served on many boards for professional organizations, such as the Board of Directors of the Association of American Cancer Institutes and the Executive committee of the Board of Directors of the Foundation for the Advancement of Education in Science.

Q. In the course of your professional work, do you review scientific literature on topics on which you do not personally conduct research?

A. Yes. Reviewing scientific publications on topics other than one's own research is an important part of scientific work, and I have done it throughout my medical career. For example, I have served as a reviewer of research proposals for major research organizations such as the NCI, Cancer Research UK, German Cancer Aid, the Israel Cancer Research Fund, and the Medical Research Council of New Zealand. I also for many years have served as an associate editor for various scientific and medical journals and have conducted peer-review of articles submitted for publication to leading journals such as *Clinical Cancer Research, Neuro-Oncology, Cancer Research,* and others.

Q. Have you been awarded any honors in your professional career?

A. I am an elected fellow of the American Association for the Advancement of Science, an elected member of the Association of American Physicians, and an elected member of the American Society for Clinical Investigation, each of which is recognition by my peers of the scientific merit of my work and my commitment to advancing medical science. I have been asked to provide scientific advice and direction to a number of organizations by serving on their advisory boards, such as the Science Advisory Board for the Yale Cancer Center, which I chaired for

almost a decade, and the external advisory boards for the Children's Cancer Research Institute at the University of Texas Health Science Center, the University of Nebraska Eppley Cancer Center, the Carbone Cancer Center at the University of Wisconsin, and the National Brain Tumor Foundation, among others. I have also served on the Board of Scientific Counselors for the NCI. During my work at the NCI, I was awarded two U.S. Public Health Service commendation medals, and I received an honorary degree from Dartmouth in 2004. In 1998, I received the Farber award, which is awarded annually by the American Association of Neurological Surgeons for excellence in cancer research. In 2014, I received the C. Everett Koop Courage Award for the pursuit of evidence-based medicine.

Q. In the course of your work, have you developed medical expertise in whether power frequency EMF cause, contribute to, or exacerbate diseases or other adverse health effects?

A. Yes.

Q. Please explain how you developed this expertise.

A. After I completed my pediatric training at the Boston Children's Hospital at Harvard Medical School, I pursued medical research at NIH where I became interested in cancer research, particularly molecular genetics and neuro-oncology. I continued that work in the pediatric branch of the NCI, where I later became head of the Molecular Genetics Section. During that time I also continued to see pediatric cancer patients as an officer in the U.S. Public Health Service. The parents of patients occasionally asked me whether exposure to power lines and electric appliances could be the cause of their child's cancer, so I examined the research,

informed them, and continued to evaluate the research. I have continued to systematically follow the research on this topic for more than 30 years.

Q. Are you testifying on behalf of any scientific or medical organization with which you are affiliated?

A. No, I am offering my testimony in my individual capacity as a medical doctor and a scientist.

Q. Please provide an overview of the EMF research you address in this case.

A. The very large body of scientific research on EMF includes thousands of studies. There are far too many studies to address each here and my testimony provides examples of the research that has been conducted. As a laboratory scientist and cancer researcher, I focused on the laboratory studies that examined whether power frequency EMF cause adverse effects in living animals, including cancer. There are also many hundreds of laboratory studies looking at whether there are biological effects on cells and tissues exposed in the laboratory to different levels of EMF. These studies can be useful in terms of trying to identify biological mechanisms, but they do not show what health effects – if any – would be seen in living beings. There are also epidemiology studies that have examined whether there are statistical associations between various measures or estimates of EMF exposures and adverse health effects. As a medical doctor and research scientist, I have reviewed many epidemiology studies, but I am not an epidemiologist, and while these studies can provide information about possible associations between exposures and disease, they do not themselves show the cause and effect relationships that can be demonstrated in carefully controlled laboratory research.

Q. Please describe some of the cellular level studies you reviewed.

A. Far too many of these studies have been published over the past several decades to describe each of them here. As with any large body of laboratory research, some studies have reported potential biological effects, but these effects have not been consistently reproduced by subsequent studies from other laboratories. Replication of results is a key concept in scientific research. Findings reported in any particular study are not considered reliable in the absence of robust results that can be reproduced by other laboratories. As a group, these studies do not show that EMF exposures cause any permanent damage to the fundamental genetic materials of cells, DNA or chromosomes. See e.g., Cohen (1986), Reese (1988), Frazier (1990); Fiorani (1992), Scarfi (1993), Zwingelberg (1993); Fairbairn (1994), Kikuchi (1998), Abramsson-Zetterberg (2001), Heredia-Rojas (2001), McNamee (2002), Heredia-Rojas (2004), Stronati (2004), Testa (2004), Luceri (2005), McNamee (2005), Scarfi (2005), Hone (2006), Williams (2006), Albert (2009), Jin (2014), Zhu (2016), Villarini (2017), Sun (2018), Wang (2019), and Lv (2021). For example, Hone (2006) exposed human blood cells to power frequency fields of up to 7,000 mG (mG = milligauss, a unit of measure for electromagnetic fields) and found no damage to chromosomes in the exposed cells. Scarfi (2005) exposed human cells to 10,000 mG intermittent magnetic fields and found no increased damage to DNA or chromosomes. Stronati (2004) found no increased DNA or chromosome damage in human blood cells exposed to 10,000 mG fields. Similarly, studies by McNamee (2002, 2005), Kikuchi (1998), and Lv (2021) found no significant damage to DNA and/or chromosomes after EMF exposures of up to

50,000 mG. There have also been many studies on the expression of genes and proteins in cells. Some of the older studies reported potential effects on gene expression, while other studies did not. More recent studies evaluating panels of genes (Luo 2014) or using advanced laboratory technologies to study many genes in a single study have failed to replicate earlier claimed effects. For example, a study by Henderson (2006) used an advanced technique to test the potential effects of EMF exposure on the expression of almost 10,000 different genes. Henderson exposed human cells to fields ranging from 100 mG to 7,000 mG and found no reproducible effects on any of the thousands of genes examined. Similarly, studies by Nakasono (2003), Luceri (2005) and Kirschenloh (2012) also used advanced methodologies to examine the expression of thousands of genes exposed to fields ranging from 10 mG up to 3,000,000 mG. They found no reproducible effects on gene expression. Other studies have focused specifically on genes whose structure or expression is commonly altered in cancer cells, *i.e.* "proto-oncogenes" (Balcer-Kubiczek 2000, Loberg 2000, Coulton 2004) or in the immune system (Bouwens 2012). These studies do not demonstrate that EMF exposures can affect the expression of proto-oncogenes. Recent studies of laboratory animals exposed to EMF up to 5,000 mG reported no effects on gene expression (Wang 2019; Zhang 2020).

Taken as a whole, this additional body of cellular-level studies does not show that EMF exposures cause biologically significant effects in cells that could cause or contribute to the development of cancer.

Q. What can the long-term animal studies tell us about cancer development?

A. In the cancer research community, long-term animal studies that investigate whether there is an increased incidence of cancer in exposed animals are considered a fundamental and standard aspect of any scientific assessment of whether an exposure can cause or contribute to the development of cancer. The long-term animal studies look for effects on the whole, complex living organism rather than isolated cells or cellular systems. In the long-term whole animal studies of EMF exposure, the laboratory animals typically have prolonged exposures to EMF, often throughout their lives and sometimes over multiple generations. If EMF could cause adverse effects leading to the development of cancer, we could anticipate this would be revealed in the long-term whole animal studies.

Q. Please describe the long-term animal studies on EMF.

A. In the late-1990s, the U.S. National Toxicology Program ("NTP") conducted large, well-designed long-term EMF studies on animals. In one of these studies (McCormick 1999), laboratory mice received continuous whole-body exposure to EMF of 20, 2,000 or 10,000 mG for up to two years (most of their lives). Another group of the animals was exposed to intermittent fields (1 hour on/1 hour off) of 10,000 mG. No increases in cancer, including leukemia, breast cancer and brain cancer, were found in any of the exposed animals. Boorman (1999, 2000) conducted a similar study of laboratory rats which found no consistent effects on cancer development in animals with lifetime exposures to EMF. Long-term animal studies from independent laboratories in other countries, including Australia, Canada, Europe and Japan similarly found no increased cancer development in

animals with prolonged exposures to high levels of EMF. See e.g. Mandeville (1997), Yasui (1997), Harris (1998), Otaka (2002), Sommer (2004), Soffritti (2016a, 2016b), and Bua (2018).

Q. Did you review any additional animal studies on EMF?

A. Yes, a number of studies have examined whether exposure to power frequency EMF can contribute to other aspects of cancer development in animals, such as cancer promotion or progression. Negishi (2008) found no cancer promotion effects in laboratory mice exposed to 3,500 mG fields for 30 weeks, 7 days a week, 22 hours a day. Sommer (2006) exposed laboratory mice to 1,000 mG fields for 32 weeks, 7 days a week, 24 hours a day. He found no cancer promotion in the exposed animals. Studies by Sasser (1996, 1998), Anderson (1999), Boorman (1999), DiGiovanni (1999), Devevey (2000), Galloni (2000), Mandeville (2000), Anderson (2001), McLean (2003), Bernard (2008), Chung (2008) and Chung (2010) found no promotion or progression of cancer, including leukemia, in animals exposed to power frequency EMF. In the McLean (2003) study, the laboratory animals were exposed to 20,000 mG fields for a year. No effects were seen on cancer development in the exposed animals.

Q. Has the U.S. National Cancer Institute ("NCI") evaluated the research on EMF?

A. Yes, the NCI, which is one of our National Institutes of Health, has evaluated the scientific research and reached conclusions about whether EMF has been shown to cause or contribute to cancer development. With regard to the cellular and animal research on EMF, the NCI has found that the laboratory studies have not

identified any biological mechanism for EMF to cause cancer and do not show cancer causation in animals exposed to EMF.

Q. Does the World Health Organization ("WHO") provide information about EMF?

A. Yes. In the information material for the public on its website, WHO currently reports that "that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields." WHO also concludes that "animal and laboratory studies fail to demonstrate any reproducible effects that are consistent with the hypothesis that fields cause or promote cancer" and that "[d]espite extensive research, to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health."

Q. Based on your education, training and experience as a medical doctor, pediatric oncologist, and cancer researcher, have you formed an opinion about whether exposure to power frequency EMF causes or contributes to the development of cancer?

A. Yes, I have formed an opinion.

Q. What is that opinion?

A. Based on my education, training and experience as a medical doctor, pediatric oncologist, and cancer researcher, and based on my evaluation of the scientific studies, the published, peer-reviewed laboratory research does not provide a reliable scientific basis to conclude that exposure to power frequency EMF causes or contributes to the development of cancer, including leukemia.

Q. Have you reviewed information regarding the Project?

A. Yes, I reviewed information about EMF levels for the Project in the testimony of witness Dr. Gary Johnson.

Q. In your expert opinion, will EMF from the Project cause or contribute to the development of cancer in children or adults along the Proposed Route?

A. No. Based on my education, training and experience as a medical doctor, pediatric oncologist, and cancer researcher, and on my evaluation of the scientific research and the information provided by METC, there is no reliable scientific basis to conclude that exposure to power frequency EMF from the Project will cause or contribute to the development of cancer in children or adults along the Proposed Route.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

STATE OF MICHIGAN
BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	)))))))	**Case No. U-21472**

PRE-FILED DIRECT TESTIMONY OF

GARY B. JOHNSON, PhD,

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Gary B. Johnson. My business address is Exponent, 4580 Weaver Parkway, Suite 100, Warrenville, IL 60555.

Q. By whom are you employed and in what capacity?

A. I am a Senior Managing Scientist in Exponent's Electrical Engineering and Computer Science Practice.

Q. Please describe your current responsibilities and professional experience.

A. Exponent is an engineering and scientific consulting firm engaged in a broad spectrum of activities in science and technology. My work in this practice relates to electrical issues particularly involving the electrical environment of power systems. I have extensive experience in modeling and measuring direct current ("DC") (static) and alternating current ("AC") power frequency (60 Hz) electric and magnetic fields ("EMF") from transmission and distribution systems as well as the audible noise ("AN"), radio noise ("RN"), and other phenomena associated with power systems. Among the projects that I have managed are those relating to the measurement and calculation of the electrical environment around AC and DC transmission lines.

Q. Please summarize your education and research experience.

A. I obtained my Ph.D. in Electrical Engineering from the University of Illinois in 1979. I have a M.S. degree in Physics and a B.S. degree in Engineering Physics, also from the University of Illinois. From 1979 to 1996, I was employed at the High Voltage Transmission Research Center in Lenox, Massachusetts, where I performed research, measurements, and studies related to high voltage power

lines and power systems. General Electric and the Electric Power Research Institute ("EPRI") primarily operated the Center which performed studies for a variety of clients, including utilities and state and federal agencies. Since 1996, I have been involved in power line studies performing and assessing measurements, modeling, and calculations of EMF, AN, RN, nuisance currents, ground currents, and stray voltage, initially as head of Power Research Engineering, and since 2001 as part of Exponent's Electrical Engineering and Computer Science Practice. **EXHIBIT METC-26B (GBJ-1B)** provides additional details of my educational and professional experience.

Q. Please describe your engineering and research experience concerning electric and magnetic fields and other electrical phenomena.

A. I have made measurements and performed investigations of the electrical and magnetic performance of power lines and power systems for over 44 years. My research has included measurements, modeling, and calculations of the electrical characteristics of AC and DC power lines, including electric and magnetic fields, AN, RN, and air ions.

Q. In the course of your investigations have you had the occasion to evaluate potential safety risks from transmission lines and other electrical sources?

A. Yes. I have evaluated power lines for their compliance with the National Electric Safety Code ("NESC"), calculated the levels of currents and voltages coupled onto vehicles, structures and objects near power lines, determined the probable cause and origin of injuries to persons and animals from contact with electrical facilities, and investigated electrical fires and their probable causes.

Q. Have you served as a technical advisor or researcher to government agencies?

A. Yes. I worked for the Vermont Department of Public Service performing tests and measurements on a proposed high voltage DC transmission line. I have worked for the U.S. Department of Energy performing research on DC transmission lines, and also assisted the U.S. EMF Research and Policy Information Dissemination ("RAPID") Program in the identification and evaluation of engineering issues related to EMF and AC power lines as part of its overall risk assessment program. The RAPID Program was a federally-sponsored project with the goal of determining whether exposure to power frequency EMF involves a potential risk to human health.

Q. Have you published any of the results of your research in engineering journals?

A. I have published or presented more than 35 papers on my research and related subjects.

Q. Are you a member of any professional organizations?

A. Yes. I am a member of the IEEE Power Engineering Society, the American Physical Society, the American Association for the Advancement of Science, the Bioelectromagnetics Society, and Tau Beta Pi, a national engineering honor society.

Q. Have you ever appeared as a witness before regulatory agencies?

A. Yes. I have testified in regulatory proceedings before public utility commissions and state and provincial siting boards both on behalf of public service commissions as well as project applicants.

Q. Have you previously testified before the Michigan Public Service Commission ("Commission" or "MPSC")?

A. No, I have not previously provided testimony before the MPSC.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity ("Certificate") for the construction of a transmission line between the new Helix Substation in Calhoun County and the Michigan/Indiana border in Branch County, Michigan ("Helix to Michigan/Indiana Border Project" or, "Project"). I was asked to provide information about the electrical characteristics of transmission lines, including EMF, audible noise, radio noise and stray voltage in my area of scientific expertise with respect to METC's proposed 345 kilovolt ("kV") double circuit transmission line.

Q. Please summarize your testimony.

A. I discuss the electrical environment associated with the operation of the Project. The results of my calculations for the electric fields, magnetic fields, audible noise and radio noise associated with the Project are provided below. The levels are all in the typical range of other 345 kV transmission lines. I also discuss "stray voltage" although it is not expected as a result of this Project.

Q. Do you sponsor any exhibits?

A. Yes, I am sponsoring the following exhibits, all of which were either prepared by me or under my direction and supervision:

- **EXHIBIT METC-26B (GBJ-1B)** – Curriculum Vitae of Gary B. Johnson
- **EXHIBIT METC-27B (GBJ-2B)** – AC Electric Fields, Magnetic Fields, Audible Noise and Radio Noise for Project double circuit 345 kV AC structures.

BACKGROUND

Q. What is the electrical environment of a power line?

A. A transmission line carrying power from one location to another has the conductors of the power line energized at some voltage and those conductors carry electric current. The voltage on the conductors produces electric fields. The voltage on conductors can also produce corona (a source of audible noise and radio noise). The current carried by the conductors produces magnetic fields.

Q. What characteristics of the electrical environment of the Project did you calculate?

A. I calculated the expected magnetic fields, electric fields, audible noise and radio noise of the Project.

Q. Did you receive data from METC for you to be able to prepare the calculations?

A. Yes. METC provided detailed data for the three types of 345 kV AC double circuit monopole structures planned for use along the proposed route of the Project including the structure types shown in EXHIBIT METC-14B (BAD-1B). The three

structure types are denoted in EXHIBIT METC-14B (BAD-1B) as “Typical Double Circuit Steel Structure Vertical Tangent” (“Typical Tangent”) structure, “Double Circuit Steel Structure Vertical Tangent Low-Profile” (“Low-Profile”) structure, and “Typical Double Circuit Steel Structure Vertical Deadend” (“Deadend”) structure. The Typical Tangent structure is used along the relatively straight sections of the line and is expected to be the predominant structure used along the majority of the proposed route. It has the narrowest width, and its arms extend over the least amount of right-of-way (“ROW”). The Low-Profile structure is also used along relatively straight sections of the line but it has the widest width and its arms extend over the most ROW. The Deadend structure is used mainly where there are corners or changes in the direction of the proposed route. METC also provided anticipated loading, overvoltage conditions, conductor size, right-of-way width, minimum ground clearance, and proposed route. This information was used to characterize two distinct modes of line operation for the proposed double circuit 345 kV AC line between the Helix Substation and the Michigan/Indiana border: Summer Normal Operation and Summer Peak/Emergency Operation. Based on the information received from METC staff, I considered these two modes of operating conditions to calculate the electric field, magnetic field, audible noise and radio noise for the three possible structures. The two operating modes considered have the following voltage and current levels:

- Summer Normal: +7% overvoltage, 80% summer peak current (960 A)
- Summer Peak/Emergency: +10% overvoltage, summer peak current (1200 A)

Q. How did you calculate these characteristics associated with the proposed operation of Project?

A. I used calculation algorithms developed by the Bonneville Power Administration that have been validated and used by engineers and scientists for many years. The inputs to these models are line voltage, load flow, line altitude, and the physical dimensions of the line (e.g., conductor diameter, spacing, clearances, height, etc.).

Q. What were the results of your calculations?

A. **EXHIBIT METC-27B (GBJ-2B)** provides a summary of the AC electric fields, AC magnetic fields, audible noise, and radio noise expected within the proposed 200-foot ROW of the line and at the edge of the ROW that were calculated for the three different tower structures and two different sets of operating conditions. Conservative assumptions such as minimum ground clearance and the highest altitude along proposed route (where noise would be highest) were chosen for both operating conditions considered to model inputs for voltages, currents, and ground clearances. These inputs were selected so that the calculated electric and magnetic fields, audible noise, and radio noise would likely be greater than actual levels normally found during the course of a year within the ROW under the lines or at the edge of the ROW and beyond.

Q. Please describe electric and magnetic fields.

A. Electric and magnetic fields are produced by many common sources. These fields describe properties of a location or point in space and its electrical environment, including the forces that would be experienced by a charged body at that space by virtue of its charge or the movement of charges. The voltage can be thought of as

the 'pressure,' that moves the electricity (or charge) through wires (or conductors). The voltage on a conductor produces an electric field in the space surrounding the conductor. The electric current, which is a measure of how much electricity (or charge) is flowing, produces a magnetic field. Thus, wherever electric current is flowing, there is both an electric field and a magnetic field.

The standard unit for measuring the strength of an electric field is volts per meter, ("V/m") or kilovolts per meter (1 kV/m = 1,000 V/m). The unit in which magnetic field levels are measured is milligauss ("mG"). Electric and magnetic fields are characterized by the frequency at which their direction and magnitude oscillate each second.

Q. What frequencies of electric and magnetic fields will be associated with the transport of power between substations for this Project?

A. The proposed transmission lines will have electric and magnetic fields, which have a frequency of 60 Hz, the predominant AC frequency of the power grid in North America. The new 345 kV double circuit overhead transmission line associated with this Project will carry electricity between the Helix Substation and the Michigan/Indiana border.

ELECTRIC AND MAGNETIC FIELD CALCULATIONS

Q. What are typical sources of 60-Hz EMF (AC electric and magnetic fields)?

A. Typical sources of these fields include building wiring, appliances in the home, office appliances, tools, electrical currents flowing on water pipes, as well as power lines (both distribution and transmission lines). The relative contribution of these sources to overall exposure varies considerably. For example, if a residence is

very close to a transmission line or a distribution line (distribution lines run near most residences), these sources could be the dominant, but not necessarily the only, source of magnetic fields in the home. Depending on the circumstances, other sources may have an equal or greater contribution. For example, a random survey of 1,000 residences in the United States reported that electric currents flowing on water pipes and on other components of house grounding systems are twice as likely as outside power lines to be the source of the highest magnetic fields measured in homes (Zaffanella, 1993).

Q. What factors affect the level of electric and magnetic fields associated with a transmission line?

A. AC electric-field levels depend primarily on the AC line's voltage; the higher the voltage on the line, the higher the electric-field levels associated with that line. Little variation is expected over time with AC electric-field levels from a power line because the AC line's voltage does not vary significantly. AC electric-field levels decrease rapidly with distance from the transmission line and in addition, grounded conducting objects including fences, shrubbery, and buildings, easily block AC electric fields.

AC magnetic-field levels depend primarily on the electric current, or load, flowing on the line; as electricity demand increases and the current on the line increases, the magnetic-field levels associated with the line also increase. Though not blocked by most everyday objects magnetic-field levels do decrease rapidly with distance from a distribution or transmission line.

Q. For what conditions did you calculate the electric fields from the Project?

A. Electric fields were calculated for the same conductor positions and heights as the magnetic fields at 1 meter (3.28 feet) above ground in accordance with IEEE Std. 644-2019. The electric fields were calculated for the two sets of operating conditions, Summer Normal and Summer Peak/Emergency, for each of the three types of structure (Typical Tangent, Low-Profile, and Deadend) and their associated line configurations using minimum conductor ground clearance and are listed in EXHIBIT METC-27B (GBJ-2B). The level of current flow does not directly affect electric field levels. However, under higher current flow levels or hotter ambient temperatures (e.g., Summer Peak) the conductors of the line operate at a greater temperature and therefore sag slightly closer to ground, thus slightly decreasing the conductor clearance to ground. This lower conductor clearance leads to slightly higher electric fields during the summer and for peak load currents. A minimum ground clearance has been used for both operating modes so that the voltage, and therefore the electric fields and also corona levels (AN and RN) due to the line voltage and reported for the AC lines in EXHIBIT METC-27B (GBJ-2B) are conservatively high and will actually be somewhat less during normal operating conditions with higher conductor ground clearances over the course of a year.

Q. What are the calculated electric-field values?

A. The electric field is highest within the ROW and decreases with distance. The calculated electric field during Summer Normal operating conditions for the majority of the proposed route will be 0.1 kV/m at the edge of the ROW. Within the ROW, the highest calculated electric field for the studied conditions reaching 4.9 kV/m at midspan and minimum conductor clearance. These levels will be

along the portions of the proposed route with the Typical Tangent structures during Summer Normal conditions. Similar but slightly lower or higher electric fields can occur along portions of the proposed route where either Low-Profile or Deadend structures are used. The highest electric-field levels found along the line occur for only short periods during Summer Peak/Emergency conditions. The highest calculated AC electric field at the edge of the ROW is 0.6 kV/m during Summer Peak/Emergency conditions and occurs on portions of the proposed AC transmission lines with Low-Profile structures. The highest calculated AC electric field for the studied conditions within the ROW is 5.6 kV/m and occurs near the center of the ROW for portions of the line with Deadend structures.

Q. For what conditions did you calculate the magnetic fields from the Project?

A. The magnetic fields were calculated to predict the typical and maximum values that could be measured near the proposed line, 1 meter (3.28 feet) above ground, in accordance with IEEE Std. 644-2019. Magnetic-field values are dependent on the position of current-carrying conductors and the amount of current they carry. The magnetic fields were calculated for the two sets of operating conditions Summer Normal and Summer Peak/Emergency for the three types of structure (Typical Tangent, Low-Profile, and Deadend) and their associated line configurations using minimum conductor ground clearance and are listed in EXHIBIT METC-27B (GBJ-2B).

Q. What are the calculated magnetic-field values?

A. The AC magnetic field expected at the edge of the ROW along most of the proposed route for typical day-to-day conditions is calculated to be 12 mG. The

highest calculated magnetic field within the ROW for the Typical Tangent structure during Summer Normal conditions is 135 mG (near the center of the ROW). Similar but slightly lower or higher magnetic fields can occur along portions of the proposed route where either Low-Profile or Deadend structures, respectively, are used. Optimal phasing was chosen for conductors on the double circuit line since this results in reduced magnetic fields at the edge of the ROW (±100' from line center) with higher fields under the lines. Actual magnetic fields will likely be less due to greater ground clearance for the conductors during normal operation of the lines. Higher levels of magnetic fields along the proposed route would be expected to only occur for short periods of time during Summer Peak/Emergency conditions. The highest calculated magnetic field levels for the studied conditions were 23 mG at the edge of the ROW and 187 mG within the ROW occurred during Summer Peak/Emergency conditions for sections of the lines with either Low-Profile or Deadend structures, respectively. Magnetic field levels for all other configurations and operating scenarios are lower. The magnetic fields reported for the AC lines in EXHIBIT METC-27B (GBJ-2B) are conservatively high and will actually be somewhat less due to higher conductor ground clearances during normal operating conditions over the course of a year.

Q. What are typical sources of magnetic field?

A. Sources of AC magnetic fields are typically all around us, wherever we use electricity in our present day work and home environment. Magnetic fields are caused by the flow of electricity, so appliances, electric motors, and lights are all sources of magnetic fields.

Q. How do the magnetic field levels of the Project at the edge of the ROW compare to typical AC magnetic field levels?

A. The highest magnetic field level at the edge of the ROW of 23 mG calculated for the Summer Peak/Emergency operating condition is less than common AC magnetic fields experienced in the everyday environment. Levels of magnetic field found in the home such as in the kitchen are 100 mG around mixers, 30 to 200 mG near electric ranges, 300 mG around vacuum cleaners, or 600 mG near electric can openers. Hair dryers can produce magnetic fields in the 300 to 700 mG range. Examples of magnetic field levels and sources found in the office or work environment are levels of 100 to 200 mG for drills, power saws with magnetic fields in the range of 200 to 1000 mG, or copy machines with magnetic fields of 90 to 200 mG.

Q. Are the field levels you calculated below the limits for human exposure set by national or international organizations?

A. Yes. The field levels I calculated for the proposed Project are below limits or guidelines set by national or international organizations for AC electric and magnetic fields such as the International Committee on Electromagnetic Safety ("ICES") as show in Table GBJ-1 below. The electric and magnetic field levels calculated for the Project during Summer Normal conditions for the Typical Tangent structures are shown for comparison in Table GBJ-1 and are listed as part of EXHIBIT METC-27B (GBJ-2B).

Table GBJ-1: Guidelines for AC Electric and Magnetic Fields

ICES Guidelines		
Location	Electric Field	Magnetic Field
General Public outside of ROW	5 kV/m	9,040 mG
General Public within ROW	10 kV/m	9,040 mG
Controlled Environment	20 kV/m	27,100 mG
345 kV AC Line Typical Tangent Structure (Summer Normal)		
Location	Electric Field	Magnetic Field
Edge ROW	0.1 kV/m	12 mG
Within ROW	4.9 kV/m	135 mG

AUDIBLE NOISE AND RADIO NOISE CALCULATIONS

Q. What causes AN and RN, generally?

A. AN and RN are produced by a small electrical discharge into the air, called corona, if the voltage on a conductor results in a voltage gradient at the surface of the conductor sufficient to cause a local breakdown of the air (ionize the air) adjacent to the conductor. The small electrical discharge into the air on the surface of the conductor, produces air ions, AN, and RN. These effects are most pronounced directly underneath the line conductors and decrease with distance from the transmission line. If there is sufficient corona activity AN, and RN may be noticeable near a transmission line. Power lines are designed so that their conductor surface gradients are below the level needed to produce corona for a

smooth, clean conductor. The surface gradient at sharp edges such as nicks or cuts or points on water droplets, such as from precipitation, or debris, such as insects, however, can be intensified such that it can ionize the nearby air producing corona.

Q. What causes AN, specifically?

A. AN (audible noise) results from corona, the partial electrical breakdown of the air around the conductors of a transmission line that is accompanied by a small audible snapping sound. If there is sufficient corona activity on a high voltage line, many small snaps from corona sources along a conductor may be sufficient, in combination, to produce discernable AN heard as a hissing, crackling sound. The AN from corona on a transmission line decreases with distance from the line.

Q. Where and when is corona activity more likely to occur?

A. Corona activity depends on multiple factors: altitude, line voltage, conductor size, conductor geometry, and weather conditions. The breakdown strength of air is approximately 30 kilovolts per centimeter ("kV/cm") at sea level and decreases with increasing altitude. For a particular altitude, conductor size and line voltage are taken into consideration when designing a transmission line so that the electric fields at the conductor surface do not exceed the breakdown potential of air. Any irregularities on the conductor surface (e.g., nicks, water droplets, or debris), however, may create points where the conductor voltage gradient is intensified sufficiently to produce corona. In foul weather, raindrops or snowflakes accumulating on the conductor surface will also act as points for corona inception. Corona activity is, therefore, most likely to occur on lines at higher altitudes, and

is most pronounced during foul weather or when there is surface contamination such as insects or other debris on the conductor.

Although higher levels of corona occur during foul weather, this is also when higher levels of background AN due to accompanying rain and wind occur that are similar to or higher than the levels of AN from the transmission line and mask noise from the transmission line corona (Miller, 1978).

Q. How is AN measured?

A. AN is often measured in decibels ("dB") referenced to 20 micropascals, which is approximately the threshold of human hearing at 1 kilohertz (kHz). The range of audible frequencies for the human ear is from approximately 20 Hz to 20 kHz, with peak sensitivity near 1 kHz. The change in sensitivity of the human ear with frequency is reflected in measurements by weighting the contribution of sound at different frequencies. The weighting of sound over the frequency spectrum to account for the sensitivity of the human ear is called the A-weighted sound level. When the A-weighting scale is applied to a sound-pressure measurement, the level is often reported as decibels on the A-weighted scale ("dBA"), referenced to the audible pressure threshold.

Q. What are typical sources of AN?

A. Sources of AN are all around us such as wind movement, distant traffic, appliances, and the activities of insects, birds, and other animals.

Q. What are typical AN levels?

A. The sound level of typical human speech is approximately 60 dBA, and common levels of noise in various environments range from 30 dBA to 110 dBA such as a

quiet library (30 dBA), quiet residential area (40 dBA), rainfall (50 dBA), traffic noise (70 dBA), noisy restaurant (85 dBA) or a music club or concert (110 dBA). Specific identifiable noises such as birdcalls, home appliances, or equipment use can produce AN levels of 50 to 130 dBA (birdcalls (65 to 100 dBA); refrigerator (50 dBA); blender (80 dBA); jackhammer (130 dBA)).

Q. Under what conditions was AN from the Project calculated?

A. The levels of AN for the proposed line were calculated at a height of 1.5 meters (5 feet) from the ground for the Summer Normal and Summer Peak/Emergency operating conditions in fair and foul weather conditions at the highest altitude expected along the transmission line's proposed route and using the minimum ground clearance for the three types of structure (Typical Tangent, Low-Profile, and Deadend) and their associated line configurations as listed in EXHIBIT METC-27B (GBJ-2B).

The highest levels of AN would be expected to occur for these conditions. Lower levels of AN would be expected during normal operating voltages on the lines, with greater ground clearances for the conductors and at lower altitudes along the proposed route.

Q. What AN levels did you calculate for the Project?

A. The calculated A-weighted AN level at the edge of the ROW expected during typical Summer Normal conditions along the majority of the Project's AC proposed route where Typical Tangent structures are used is approximately 21 dBA in fair weather and 46 dBA in foul weather. AN will decrease as distance from the ROW edge increases. Within the ROW, the AN expected for Summer Normal conditions

with Typical Tangent structures is calculated to be approximately 25 dBA in fair weather and 50 dBA under the lines in foul weather (rain). The AN levels may be slightly higher or lower at the edge of the ROW and within the ROW for sections of the line where either Low-Profile or Deadend structures are used. These levels are reported in EXHIBIT METC-27B (GBJ-2B). The highest calculated levels of AN along the edge of the ROW and within the ROW will occur for the Low-Profile structure during short periods during Summer Peak/Emergency conditions when there is Emergency 10% overvoltage. During these short periods the highest level of AN calculated at the edge of the ROW along the proposed route is 24 dBA during fair weather and 49 dBA during foul weather for sections of the line with Low-Profile structures.

Q. How do these levels compare to guidelines for AN exposure?

A. The calculated AN levels at the edge of the ROW in fair and foul weather along the entire proposed route meet the 55 dBA outdoor target value published by the Environmental Protection Agency (EPA, 1974). The fair weather AN levels are also below a 40 dBA fair weather night time target value at a residence published by the World Health Organization (WHO 1999, 2009). While the AN levels from corona on the line in foul weather along the proposed route are higher than during fair weather, noise from wind and rain during foul weather (~50 dBA; Miller, 1978) will help mask the corona AN.

Q. What is RN, specifically?

A. RN is the hiss or crackle you may hear on your radio. Corona activity produces impulsive currents along a transmission line. These currents cause wide-band

radio frequency noise fields that can affect some radio reception. RN from transmission line corona can produce interference to an amplitude-modulated ("AM") signal such as that from a commercial AM radio station (520-1720 kHz). Frequency-modulated ("FM") radio stations are generally not affected by RN from a transmission line. The RN from corona on a transmission line decreases with increasing frequency and with distance from the line. The advent and use of digitally encoded radio and television signals (often also transmitted at higher frequencies) make these signals less susceptible to interference effects from transmission line RN.

Q. How is RN measured?

A. RN is measured in units of dB based on its field strength referenced to a signal level of 1 microvolt/meter ("μV/m") (IEEE Standard 430-1976,2017).

Q. What are typical sources of RN?

A. A common source of RN is electrical activity (lightning) in storm clouds. Other common sources of RN can be electrical equipment such as motors, spark plugs in engines, or electric fences such as used for animal confinement.

Q. Under what conditions was RN calculated for this Project?

A. The levels of RN for the Project were calculated at 1,000 kHz (1 MHz) and a height of 1 meter (3.28 feet) from the ground for the two sets of operating conditions Summer Normal and Summer Peak/Emergency in fair and foul weather conditions at the highest altitude expected along the transmission line's proposed route and using the minimum ground clearance for the three types of structure (Typical Tangent, Low-Profile, and Deadend) and their associated line configurations as

listed in EXHIBIT METC-27B (GBJ-2B). The highest levels of RN would be expected to occur in these conditions. Lower levels of RN would be expected during normal operating conditions on the line with greater line clearances to ground and at lower altitudes along the proposed route.

Q. What are the calculated radio noise levels?

A. The typical RN along the majority of the proposed route at the edge of the ROW for normal operating conditions and Typical Tangent structures is approximately 36 dBμV/m in fair weather and 53 dBμV/m in foul weather. Within the ROW the RN can reach 51 dB dBμV/m in fair weather and 68 dBμV/m in foul weather. The RN levels will be similar but slightly lower or higher along portions of the proposed route where either Low-Profile or Deadend structures are used. The highest levels of RN expected at the edge of the ROW occur for short periods of time during Summer Peak/Emergency conditions for sections of the line with the Low-Profile structures and are 38 dBμV/m during fair weather and 55 dBμV/m during foul weather.

Q. Are there guidelines or limits for RN?

A. There are no specific state or national RN limits. METC's design complies with good design practices to minimize RN (IEEE, 1971) and also complies with the applicable Federal Communications Commission Rules and Regulations (47 CFR 15). Even though there are no specific state limits in Michigan on RN, the proposed line has been designed in a manner consistent with the IEEE Radio Noise Design Guide for High-Voltage Transmission Lines (IEEE, 1971) that conservatively suggests 40 dBμV/m in fair weather at a distance of 100 feet from an outside

conductor as a design guide. The location 100 feet from the outside conductor for the proposed line would be approximately 115 feet to 135 feet from line-center which is well beyond the edge of the +/- 100 foot ROW. The 345 kV AC transmission line as proposed has a fair-weather radio noise level of below 40 dBμV/m along the entire length of the line at the edge of the ROW for all three types of line structures and thus meets the IEEE design guideline. The RN levels of the line will be higher in foul weather but atmospheric RN levels will also be higher during foul weather and help mask RN from the line. Greater conductor ground clearance or lower elevations also reduce RN levels from the line.

Q. Did you model the electric fields, magnetic fields, AN or RN from the new Helix Substation that will be part of the Project?

A. No. I did not model the electric fields, magnetic fields, AN or RN from the proposed Helix Substation since the Helix Substation will be simply a switching substation without transformers or associated equipment thus reducing potential field or noise sources. Any sources of electric field, magnetic field, AN or RN from the substation will be within its fenced perimeter and attenuate with distance. The fenced perimeter of the substation will be set back from the edge of the property by over 100 feet, further reducing the levels of electric field, magnetic field, AN or RN at the property edge from sources within the substation. The highest levels of electric field, magnetic field, AN or RN at the boundary of the substation will likely be found underneath the transmission lines as they enter or leave the substation (IEEE 1227). The levels from the transmission lines have been reported in EXHIBIT METC-27B (GBJ-2B).

STRAY VOLTAGE

Q. What is stray voltage that is often referenced in agricultural contexts?

A. Stray voltage refers to a situation sometimes found in a barn or feedlot. It can arise when an animal makes contact with a metal object that is at a different potential from another contact point (i.e., the nearby ground or earth potential). At sufficient levels, it may be perceived and cause the animal to pull away or avoid that location. Stray voltage may occur when there is poor grounding or bonding of the metal objects to the earth and the electrical ground. Stray voltage typically arises due to issues with the end-user's electrical equipment and local electrical wiring, not because of the operation of nearby transmission lines. For example, faulty or improperly wired motorized appliances, portable electric heaters, heated waterers, fluorescent lights, or local problems with the distribution circuit bringing electricity into an end-user's facilities can lead to stray voltage issues.

Q. Do transmission lines cause stray voltage?

A. The conductors of a transmission line are only connected to substations that are at the two ends of the transmission line and thus do not connect to local residences or farms. The proposed transmission line is not expected to cause stray voltage.

CONCLUSION

Q. Is it your testimony that the Project would not create any unreasonable adverse effects?

A. Yes. This is based upon my finding that the design of the Project is similar to other double circuit 345 kV AC transmission lines presently in use throughout the United States and that the calculated values of electric fields, magnetic fields, audible

noise, and radio noise are below levels recommended by government and scientific bodies to avoid unreasonable adverse effects.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

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PRE-FILED DIRECT TESTIMONY OF

DANIEL L. BELIN

ON BEHALF OF MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC

Q. Please state your name and business address.

A. My name is Daniel Belin. My business address is 101 Station Landing, Suite 520, Medford, Massachusetts.

Q. By whom are you employed and in what capacity?

A. I am employed by DNV as Principal Project Manager and Team Lead – Environmental and Permitting Services.

Q. Please briefly describe your educational background.

A. I have a Bachelor of Arts degree from Yale University in Environmental Studies and a Master of Science degree in Forestry from the University of Massachusetts, Amherst.

Q. Please briefly describe your professional background.

A. In my professional career, I have served as a field biologist – first as a fisheries biologist for the U.S. Geological Survey and the U.S. Forest Service, then as a Forest Biologist for the U.S. Forest Service. Both positions involved field research on a variety of biological and ecological subjects, including endangered species habitat. After earning my master's degree, I entered the environmental consulting field in 2003. In over 20 years since, I have served as a GIS analyst, Project Manager, and Principal-in-Charge for projects, participated in field studies and agency consultations, and conducted a variety of state and federal environmental impact assessments for energy infrastructure and other projects. I joined DNV in my current role in October 2023. My Curriculum Vitae is included as **EXHIBIT METC-28B (DLB-1B)** to this testimony.

Q. Please describe your current role at DNV in further detail.

A. In my current role, I oversee a team of professionals from a variety of disciplines and manage environmental and permitting services that include siting and routing studies, environmental impact assessments, independent engineering evaluations, due diligence and site characterizations, and stakeholder and public engagement for energy infrastructure projects.

Q. Have you previously testified before the Michigan Public Service Commission?

A. No.

Q. What is the purpose of your testimony?

A. I am testifying in support of METC's application for a certificate of public convenience and necessity for the construction of a major transmission line consistent with 1995 PA 30, as amended, MCL 460.561 *et seq.* ("Act 30"), between the new Helix Substation in Calhoun County, Michigan, and the Michigan/Indiana state border in Branch County. The new 345 kV double circuit transmission line and the Helix Substation are referred to in my testimony as the "Project". More specifically, I am providing testimony regarding my review of (1) the Helix to Hiple 345 kV Transmission Line Project Route Study (EXHIBIT METC-23B (KAS-2B)) prepared for the Project (the "Route Study"); (2) the Helix to Hiple Project Environmental Report (EXHIBIT METC-24B (KAS-3B)) prepared for the Project (the "Environmental Report"); (3) the avoidance, minimization, and mitigation measures METC has adopted for the Project that are included in the

Environmental Report and witness Capra's direct testimony; and (4) the Project's anticipated compliance with laws and regulations typically applicable to similar projects.

Q. Do you sponsor any exhibits?

A. Yes, I am sponsoring the following exhibit(s):

- **Exhibit METC-28B (DLB-1B)**: Curriculum Vitae of Daniel Belin

ROUTE STUDY

Q. In your view, what is the purpose of a route study for a transmission line?

A. Routing studies for electric transmission lines serve to evaluate potential routes between two points to compare alternatives and to identify an optimal route. The purpose of such studies is to identify potential routing opportunities and potential constraints to be avoided or minimized where practicable.

Q. What types of factors and resources does a transmission line route study typically consider?

A. Routing studies typically consider factors and resources in a variety of groups from human factors such as distance to residences, population density, existing infrastructure, land use, visibility, recreation, tribal, cultural and historic resources, and socioeconomic variables. They also evaluate environmental factors such as sensitive habitat, wetlands, water resources, floodplains, wildlife, geology, soils, and others.

Q. Have you reviewed the Route Study prepared for the Project?

A. Yes.

Q. Based on your experience, does the Route Study consider the types of factors and resources typically considered when identifying a potential route for a transmission line?

A. Yes. The Route Study considered the typical suite of factors of a project this size and a wide variety of resources including environmental (natural resources, topography, water resources, vegetation, wildlife, threatened and endangered species) and human (land use, urban, agriculture, transportation and utilities, socio-economic, cultural, and visual) resources. This comprises the typical set of resources analyzed in route studies. The balancing of engineering, environmental, and social factors as seen in the Route Study is widely accepted in the industry as a best practice.

Specifically, all of the evaluation factors in Table 3-1 are industry standard and suffice to characterize the routing environment to determine the optimal Proposed Route and Alternate Route. EXHIBIT METC-23B (KAS-2B), pp. 3-1-3-2.

I would add that along with the standard suite of resources analyzed, the Route Study process also included an agency consultation phase where applicable federal, state and local agencies were consulted regarding potential resources to be evaluated due to their importance to that agency.

There are several sections of the Route Study that stood out to me as utilizing industry best practices including the following:

(1) In developing the Route Segment Network (Section 2.4 of EXHIBIT METC-23B (KAS-2B), pp. 2-14-2-15), the methodology included contacts with resource agencies, and the routing considerations as defined in Section 2.4 utilize best practices for avoidance and minimization of impacts including minimizing forest clearing, avoiding dense residential development, avoiding wetlands and streams, and maximizing lengths of line along field edges and property boundaries. All of these guidelines help establish a sound route segment network that can be properly evaluated.

(2) Similarly, in Section 3.2, the Route Study groups potential routes based on geographic trends to define two corridors – Western and Eastern Corridor Routes. This grouping of routes into corridors based on common trends demonstrates that a reasonable range of alternatives were considered in the evaluation process in determining which route group best minimized overall Project impacts relative to engineering, environmental, and social criteria. Including geographic diversity in a route study can be considered an industry best practice because it demonstrates that the entire geography of the study area was evaluated to determine which corridor merits additional consideration.

(3) Finally, in Section 3.3, a more detailed analysis of the routes within the Eastern Corridor determined which combination of segments within the route network best minimize project impacts. This is an exhaustive analysis that evaluates 60 route segments combined across hundreds of routes to best maximize the use of existing ROW and minimize overall engineering,

environmental, and social impacts. This exhaustive analysis can also be considered an industry best practice and provides defensible and reproducible conclusions.

Q. Is the Route Study prepared for the Project typical as compared to other route studies you have reviewed for projects of similar size and scope?

A. Yes, the Route Study complies with industry best practices in how it was conducted in a step-wise, iterative fashion, which is comparable to other studies I have reviewed or conducted and includes the following steps:

- The Route Study first identifies a relevant Study Area and characterizes the resources within it.
- It then creates a route segment network comprised of all possible routes and segments to connect the end points and evaluates those segments.

The Route Study next develops route alternatives within the segment network to analyze which combination of segments minimized overall impacts to natural and human environments and were economical and constructable from an initial engineering standpoint. It identifies the Proposed and Alternate Route based on this analysis.

ENVIRONMENTAL ANALYSIS

Q. Do you have experience conducting an analysis of the potential environmental impacts of high voltage transmission lines?

A. Yes, I have over 15 years of experience conducting environmental impact analyses specific to high voltage transmission lines and associated facilities.

Q. In your experience, what types of resources are commonly reviewed in analyzing the potential environmental impacts of a high voltage transmission line?

A. The types of resources commonly evaluated are similar to what is evaluated in a routing study and include environmental variables such as wetlands and waterbodies, floodplains, wildlife, rare or listed species, vegetation, land cover, geology and soils, and air quality. Human and cultural resources are also typically reviewed such as the presence of residences or population centers, archeological, historic and tribal resources, as well as noise.

Q. In your experience, what type of data are used to complete that analysis?

A. There is a fairly standard set of geospatial data that are used to complete environmental analyses for high voltage transmission lines. They tend to include the biological and cultural resources identified above. These data sets are used to characterize the affected environment prior to an impact analysis. It is typical for an applicant in a regulatory setting to characterize the affected environment and the potential for environmental impacts, and to provide that information to a regulating agency for its review.

Q. Have you reviewed the Environmental Report prepared by Burns & McDonnell for this Project?

A. Yes.

Q. In your opinion, does the Environmental Report analyze those resources and data that would commonly be reviewed to understand the potential environmental impacts of a high voltage transmission line?

A. Yes, the Environmental Report appropriately identifies resources and characterizes the affected environment. The Environmental Report establishes an area of analysis with a 500-foot buffer around the proposed centerline (250-feet on either side of the centerline) and the area around the future substation to fully integrate the resources located in the proposed study corridor. I note that this area of analysis is larger than the area of potential impact from the Project. The Environmental Report categorizes the resources within the area of analysis, but it should not be assumed that all of those resources will be impacted by the Project, which has a smaller 200-foot right-of-way.

Another topic worth highlighting is the high-quality analysis in the Environmental Report around wetlands, specifically the development of the Interpreted Wetlands layer in Section 5.1.2.2 of the Environmental Report. (EXHIBIT METC-24B (KAS-3B), pp. 26-27). The methodology to produce this Interpreted Wetlands layer can be considered advanced interpretation of desktop data ("LiDAR") to produce a much higher quality and much more accurate representation of the extent of potential wetland resources than is typically found in a regulatory filing of this type. The ability of the Environmental Report to use point cloud elevation data paired with oblique imagery provides a much higher level of detail and accuracy in determining the extent of wetland resources in the study

corridor. This derived data can be considered "above and beyond" and is unique in the industry for its advanced technique.

AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Q. Are you familiar with the avoidance, minimization, and mitigation measures that METC has adopted for the Project?

A. Yes, I am familiar with the measures as described in the Environmental Report. I have also reviewed testimony of witness Capra who co-sponsors the Environmental Report.

Q. In your opinion, are the avoidance, minimization, and mitigation measures adopted by METC consistent with industry standards?

A. Yes, the measures adopted by METC are consistent with industry standards and best practices as I have seen them in my experience. Specific measures such as temporary matting on wetlands, implementing standard soil erosion and sediment control ("SESC") plans, complying with an Avian Protection Plan ("APP") where applicable, the use of Unanticipated Discoveries Plans for cultural resources, and similar commitments are standard in the industry.

Q. In your opinion, will the measures adopted by METC avoid, minimize, and/or mitigate potential Project impacts to the natural and human environments to the extent practicable?

A. Yes, by adhering to the measures that METC has detailed in the Environmental Report and sponsored by witness Capra, METC will be able to avoid, minimize, and/or mitigate potential Project impacts to the extent practicable.

TYPICALLY APPLICABLE LAWS AND REGULATIONS

Q. Have you reviewed Table 1-1 in the Environmental Report, which identifies permits and approvals that may be required for the Project?

A. Yes.

Q. Based on your experience, does Table 1-1 identify permits and approvals you would typically expect to see for a high voltage transmission line project?

A. Yes.

Q. Are you familiar with permit requirements and conditions that would typically be a part of the permits and approvals in Table 1-1?

A. Yes.

Q. Based on your review of the Route Study, Environmental Report, and planned avoidance, minimization, and mitigation measures, do you anticipate that the Project will be able to comply with the permit requirements and conditions that would typically apply to a project similar to that proposed in this docket?

A. Yes. Based on the information I have reviewed, the Project would be able to comply with permit requirements and conditions that would typically apply to a high voltage transmission line and substation.

CONCLUSION

Q. In your opinion, does the Environmental Report reasonably identify and describe environmental resources in the Project area and does the Route Study demonstrate best practices for transmission line routing?

A. Yes, the Environmental Report does an excellent job characterizing the resources within the Project area using the data identified above. The Route Study demonstrates industry best practices to avoid and minimize impacts to these resources during the initial design phase, and the avoidance, minimization, and mitigation measures described in the Environmental Report further demonstrate that the METC will be able to avoid, minimize, and/or mitigate potential impacts from the Project to the extent practicable.

Q. In your opinion, has METC committed to using typical and practicable measures to avoid, minimize, and mitigate potential Project impacts?

A. Yes, the permit requirements and conditions to which METC will likely be subject, the avoidance, minimization and mitigation measures to which they have committed, the agency coordination they have conducted, the Route Study and Environmental Report analysis, as well as the public comment process all lead me to the conclusion that they would be able to avoid, minimize, and mitigate potential Project impacts.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
PUBLIC SERVICE COMMISSION

ENTRY OF APPEARANCE IN AN ADMINISTRATIVE HEARING

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Please Note: *The Commission will provide* ***electronic*** *service of documents to all parties in this proceeding.*

THIS APPEARANCE TO BE ENTERED IN ASSOCIATION WITH THE ADMINISTRATIVE HEARING:

Case / Company Name: Michigan Electric Transmission Company, LLC Docket No. U- 21472

Please enter my appearance in the above-entitled matter on behalf of:

1. (Name) Michigan Electric Transmission Company, LLC
2. (Name)
3. (Name)
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6. (Name)
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○ I am not an attorney

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3. (Name)
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1. (Name) Michigan Electric Transmission Company, LLC
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◉ I am an attorney whose:

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2. (Name)
3. (Name)
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2. (Name)
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(state)

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of MICHIGAN ELECTRIC TRANSMISSION COMPANY, LLC for an Act 30 certificate of public convenience and necessity for the construction of a major transmission line between the Indiana/Michigan state border at Gilead Township in Branch County and the new Helix Substation in Calhoun County, Michigan.	Case No. U-21472

PROOF OF SERVICE

Karlene K. Zale, an employee of Dykema Gossett PLLC, being first duly sworn, deposes and says that on the 15th day of July, 2024, she served a copy of Michigan Electric Transmission Company, LLC's Application with Testimony and Exhibits, and Dykema Appearances on the parties listed on the parties listed on the attached service list via electronic mail.

Karlene K. Zale

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Date: 2024.07.15 18:56:35 -04'00'

Karlene K. Zale

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SERVICE LIST
MPSC CASE NO: U-21472

ROBERT AND DEB WITHEE Michael J. Watza	mike.watza@kitch.com

4871-9911-3589.2