FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426
October 28, 2021

OFFICE OF ENERGY PROJECTS

Project No. 10661-051 – Michigan
Constantine Hydroelectric Project
Indiana Michigan Power Company

VIA FERC Service

Mr. Jonathan Magalski
Environmental Consultant Specialist
Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43215

Subject: Deficiency of License Application and Additional Information Request for the Constantine Hydroelectric Project

Dear Mr. Magalski:

Your license application filed on September 30, 2021, fails to conform to the requirements of the Commission's regulations. A list of deficiencies is attached in Appendix A. Under section 5.20(a)(2) of the Commission's regulations, you have 90 days from the date of this letter to correct the deficiencies in your application.

In addition, requests for additional information made pursuant to section 5.21 of the Commission's regulations are attached in Appendix B. Please provide this information within 90 days from the date of this letter.

If the correction of any deficiency or requested information causes any other part of the application to be inaccurate, that part must also be revised and refiled by the due date. Also, please be aware that further requests for additional information may be sent to you at any time before the Commission takes final action on your application.

The Commission strongly encourages electronic filing. Please file the requested information using the Commission's eFiling system at https://ferconline.ferc.gov/FERCOnline.aspx. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, you may submit a paper request. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins

Avenue, Rockville, Maryland 20852. The first page of any filing should include docket number P-10661-051.

If you have any questions, please contact Lee Emery at lee.emery@ferc.gov or at (202) 502-8379.

Sincerely,

Janet Hutzel, Chief
Midwest Branch
Division of Hydropower Licensing

Enclosures: Appendix A
Appendix B

Appendix A

DEFICIENCIES

General Content Requirements

1. Section 4.32(b)(6) of the Commission's regulation requires that an applicant must publish a notice twice of the filing of its application, no later than 14 days after the filing date, in a daily or weekly newspaper of general circulation in each county in which the project is located. Indiana Michigan Power Company (Indiana Michigan Power) has not provided the Commission with proof of the publications of this notice. Therefore, to comply with the Commission's regulations, please provide proof of the two publications of this notice.

Exhibit A

2. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61(c)(1)(vi) requires, in part, that an application include the net and gross storage capacity of the reservoir, if known. The application for the Constantine Project does not provide the net and gross storage capacity of the reservoir. Therefore, to comply with the Commission's regulations, please revise the application to include the net and gross storage capacity of the reservoir.

3. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61(c)(1)(vii) requires, in part, that an application include the estimated minimum and maximum hydraulic capacity of the turbines. Although the application for the Constantine Project does provide the maximum hydraulic capacity, the minimum hydraulic capacity is not provided. Therefore, please provide the minimum hydraulic capacity of the turbines. Please also provide the hydraulic capacity at normal operation.

4. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61(c)(1)(viii) requires, in part, that an application include the sizes, capacities, and construction materials, of project facilities. Section A.8.1, *Existing Project Facilities*, page A-7, states the abandoned fish chute has been converted to a sluice gate. However, the details and characteristics of the sluice gate, its purpose, and operation were not provided. Therefore, to comply with the Commission's regulations, please provide the details and characteristics of the sluice gate including:

    a. its intended function;
    b. its components including gate, stem, and gate guides;
    c. its dimensions, invert, and construction material;
    d. how the sluice gate is operated; and
    e. the conditions that require its use.

5. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61(c)(1)(ix) requires, in part, that an application include the estimated

capital costs and estimated annual operation and maintenance expense of each proposed environmental measure. Section A.9.2, table A.9-1, page A-12, includes costs for proposed environmental measures including a Historic Properties Management Plan and a Recreation Management Plan. However, the application does not include costs described in Exhibit E including addressing erosion issues at the existing portage trail, section E.3.6; the continuation of deployment of nesting structures along the project reservoir, section E.7.7; and enhancement of the existing canoe portage trail, section E.8.7. Therefore, please include the estimated capital costs and estimated annual operation and maintenance expense of each proposed environmental measure.

Exhibit E

6. Section 5.18(b)(5)(ii)(C) of the Commission's regulations require that an applicant provide, by resource area, any proposed new environmental measures. The Fish and Aquatic resource section, section E.5 of the application, does not include a section describing any protection, mitigation, or enhancement measures proposed by the applicant, resource agencies, and / or other consulting parties. Therefore, please include a discussion of whether environmental measures are proposed for the fish and aquatic resources and, if so, how each proposed measure would protect or enhance the existing environment, including, where possible, a non-monetary quantification of the anticipated environmental benefits of the measure. If a measure is proposed, please include the estimated capital costs and estimated annual operation and maintenance expense of each proposed environmental measure.

Exhibit F

7. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61 [*see* section 4.41(g) and section 4.39(a)] requires drawings show all major project features to provide a full understanding of the project including (i) plans, (ii) elevations, (iii) profiles and (iv) sections.

   a. Sheet 1 of 3, *General Plan*, shows a storage building west of the powerhouse that had been removed. Exhibit F must be revised to remove the storage building.

   b. Sheet 1 of 3, *General Plan*, does not show the project's interconnection with Indiana Michigan Power's electrical grid. Exhibit F must be revised to identify and label the project's interconnection with Indiana Michigan Power's electrical grid.

   c. Sheet 1 of 3, *Section A-A* and *Section F-F* of the race embankment do not include: (1) top elevation, (2) cross slope of the embankment crest; (3) top width; or (4) the slope of the right side of the embankment. Exhibit F must be revised to provide this relevant information.

d. Sheet 1 of 3, *General Plan*, shows two sections of the dam and spillway, sections C-C and D-D, but there are no sections labeled C-C or D-D on any of the three sheets in Exhibit F related to the spillway. Exhibit F must be revised to provide this relevant information.

e. Sheet 1 of 3, *Section F-F*, shows material placed along the east side of the race embankment that is denoted with a "B" but "B" is not provided in the legend. Exhibit F must be revised to describe the material placed along the east side of the race embankment that is denoted with a "B."

f. Exhibit F does not include the sheet piling protecting the headgate structure against piping. Exhibit F must be revised to include the sheet piling.

g. Sheet 1 of 3, *General Plan*, and Sheet 2 of 3, *Plan View of Dam & Spillway* and *Longitudinal Section of Spillway*, each show a fish chute. Exhibit A, section A.8.1, *Existing Project Facilities*, states that the fish chute has been abandoned and has been replaced with a sluice gate. Exhibit F must be revised to show current conditions at the spillway, which include replacement of the abandoned fish chute with the sluice gate. The drawings should provide sufficient detail of the sluice gate including size, invert, and material to allow complete understanding of the sluice gate and its operation.

h. Sheet 2 of 3, *Section E-E,* does not include the following information for the powerhouse: (1) length and height of the powerhouse; (2) generator floor elevation; (3) length and floor elevation of the forebay intake section; (4) angle of the trash racks; (5) turbine pit floor elevation; (6) and draft tube invert. Exhibit F must be revised to provide this relevant information.

i. Exhibit A, Section A.8.1.1, describes a steel sheet pile wall, with a top elevation of about 760 feet National Geodetic Vertical Datum of 1929 (NGVD29), extending across the upstream side of the spillway and upstream along the spillway's abutment wall. Exhibit F, sheet 2 of 3, *Typical Spillway Section*, shows steel sheet piling at the upstream side of the spillway having a top elevation of about 778 feet NGVD29. Exhibit F must be revised to show the location of both steel sheet pile walls.

j. Sheet 3 of 3 does not show the recent upgrades to the detached dike. Exhibit F must be revised to include the as-built information for the detached dike.

Exhibit G

8. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61 [*see* section 4.41(h)] requires, in part, that an application show the relative locations and physical interrelationships of the principal project works and other features described under paragraph (b) of this section (Exhibit A) that complies with section 4.41(h)(1). The project's interconnection with Indiana Michigan Power's electrical grid and portage route are not identified on Exhibit G. Therefore, please revise the Exhibit G drawings to clearly identify and label the

project's interconnection with Indiana Michigan Power's electrical grid and portage route.

9. Section 5.18(a)(5)(i) of the Commission's regulations, which references section 4.61 [*see* section 4.41(h)] requires, in part, that an application includes an Exhibit G with a map or series of maps that complies with section 4.41(h)(4) and identify by legal subdivision non-federal lands within the project boundary. The boundaries and ownership of non-federal lands that are located within the project boundary are not indicated on Exhibit G. Therefore, please revise the Exhibit G drawings to identify by legal subdivision non-federal lands within the project boundary.

Appendix B

REQUEST FOR ADDITIONAL INFORMATION

Exhibit A

1. In section A.2.1, table A.2-2, page A-3, Indiana Michigan Power Company (Indiana Michigan Power) states that each turbine has a rated horsepower of 426 and a rated capacity of 300 kilowatts (kW). However, a turbine with a rated horsepower of 426 corresponds to a rated capacity of 320 kW. Please provide a rated turbine horsepower and a rated generator capacity consistent with 18 CFR 11.1(i) of the Commission's regulations.

2. Section A.3.1, *Daily Operation*, page A-4, states that the project is operated in run-of-river mode by adjusting the water flow to the turbines to match available river flow. Indiana Michigan Power states that generation units are operated locally through a programmable logic controller (PLC) and float controller. However, the process to adjust water flow to the turbines is not described. To allow staff to understand project operation, please describe:

    a. the parameter or parameters used to determine when flow to the turbines needs to be adjusted;
    b. the value or values of each parameter that would trigger an adjustment;
    c. the range of water elevations in the reservoir under normal run-of-river operation;
    d. the lowest reservoir level allowed under run-of-river operation;
    e. the range of flow through the turbines under run-of-river operation; and
    f. the process of adding and removing turbine units to match inflow.

3. Throughout Exhibit A, normal reservoir elevation is provided as 782.90 feet National Geodetic Vertical Datum of 1929 (NGVD29). However, Exhibit F and Exhibit G provide the normal reservoir elevation as 782.94 feet NGVD29. Please describe why Exhibit A provides a normal reservoir elevation different from that provided in Exhibit F and Exhibit G, and explain those differences.

4. Section A.3.1, *Daily Operation*, page A-4, states that the flashboards on the spillway generally fail when the reservoir level is about 785.0 feet NGVD29. However, Exhibit A does not describe how the project is operated during high flow, low flow, and cold weather conditions. Therefore, please describe how the project is operated during, and how projection generation is affected by, high flow, low flow, and cold weather conditions. Furthermore, please describe the high flow, low flow, and cold weather conditions that result in a cessation or curtailment of project generation.

5. Section A.8.1, *Existing Project Facilities*, page A-7, states that the brick powerhouse has dimensions of 140 feet by 30 feet. However, section A.8.1.3,

Powerhouse, page A-11, states that the powerhouse is 140 feet by 58 feet. Please provide consistent dimensions of the powerhouse.

6. Section A.8.1, *Existing Project Facilities*, page A-7, states that average annual production for the project typically ranges between 4,574 and 5,438 megawatt hours (MWh). However, table A.4-1, page A-5, provides annual generation from 2016 through 2020 that range from 4,007 to 5,607 MWh. It is not clear where the range of average annual production provided in section A.8.1 was obtained and what they represent. Therefore, please describe the source of the average annual production provided in section A.8.1 and why the production values are different from those presented in table A.4-1.

7. Section A.8.1.1, *Dam*, page A-10, states that a steel sheet pile wall extends across the upstream side of the spillway and upstream along the spillway's abutment wall. The application states that the top elevation of the steel sheet pile wall is about 760 feet NGVD29, which is about 10.5 feet below the base of the structure. This would indicate that there is a 10.5-foot gap between the bottom of the base of the spillway structure and the top of the steel sheet pile wall. Please describe the purpose of the 10.5-foot gap between the bottom of the base of the spillway structure and the top of the steel sheet pile wall. Also, please include an estimate of the bottom of the steel sheet pile wall and the geologic conditions at the base of the steel sheet pile wall.

8. Section A.8.1.1, *Dam*, page A-10, states that a steel sheet pile wall, with a top elevation of about 760 feet NGVD29, extends across the upstream side of the spillway and upstream along the spillway's abutment wall. Exhibit F, sheet 2 of 3, *Typical Spillway Section*, shows steel sheet piling at the upstream side of the spillway having a top elevation of about 778 feet NGVD29. Please describe the function of these two steel sheet pile walls.

9. Section A.8.1.2, *Forebay and Intake*, page A-11, states the repair of the headgates included new gates. Please indicate the material composition of the new gates.

10. Section A.8.1.2, *Forebay and Intake*, page A-11, states that the headgate structure is protected against piping by steel sheet piling to an elevation of about 753.5 feet NGVD29. It is unclear whether the 753.5 foot NGVD29 elevation is the top of the bottom of the steel sheet piling. Therefore, please provide the top and bottom elevations of the steel sheet piling.

11. Section A.8.1.3, *Powerhouse*, page A-11, states the discharge at full gate and normal full reservoir level is about 400 cubic feet per second (cfs), for a total plant flow rate of 1,600 cfs when all four units are operating. However, section A.3.1, *Daily Operation*, page A-3, states that the hydraulic capacity is 382 cfs per unit for a total hydraulic capacity of 1,528 cfs at a 11.3-foot head and a capacity is 430 cfs per unit for a total hydraulic capacity of 1,720 cfs at a 12.5-foot head. Please

provide the head providing a 400 cfs unit flow rate and 1,600 cfs total hydraulic capacity.

12. Section A.8.1.5, *Transmission and Switchyard*, page A-11, states that the 2.4 kilovolt (kV) distribution line is about 50 feet long. Please indicate whether this line is above ground or below ground.

13. Section A.8.1.5, *Transmission and Switchyard*, page A-11, states there are three step-up transformers. Please provide both the incoming and stepped-up voltages.

14. Section A.9.8, *Annual Operation and Maintenance Costs*, page A-13, provides the project operation and maintenance cost, which include annualized capital and general costs. Please state whether the operation and maintenance cost includes federal tax, local tax, property tax, or insurance.

15. Please describe Indiana Michigan Power's electricity consumption improvement program, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. Also, please describe Indiana Michigan Power's compliance of the its energy conservation programs with any applicable regulatory requirements.

Exhibit E

16. Section E.2.5, *Reservoir Characteristics and Shoreline*, page E-11, states that in 2011, the west downstream riverbank was damaged due to erosion. The section goes on to state that the erosion has been repaired and is monitored. Please provide additional details of this erosion including: (1) the exact location of the erosion; (2) the cause of the erosion; (3) a description of the damage; (4) how the erosion was repaired; and (4) a description of the monitoring including frequency and evaluation methodology.

Geology and Soils

17. Section E.3.2, *Soils and Sediment*, page E-15, states that a shoreline stability assessment was conducted of the project's reservoir, bypassed reach, and tailrace area to identify sites of erosion or shoreline instability. The results of the assessment is described in the Shoreline Stability Assessment Report, which is included as appendix C of the application. The results of the assessed locations are presented in table 2 and table 3 of the Shoreline Stability Assessment Report. However, there is no figure showing the location of assessed locations, whose absence is described in section 2.3 of the Summary of Initial Study Report Meeting filed on May 8, 2020. Therefore, please provide a figure showing the location of assessed locations.

18. Section E.3.2, *Soils and Sediment*, page E-15, states that Indiana Michigan Power would address erosion issues located along the bypassed reach near the existing

portage trail. This section identifies the area as site BA16, which the Shoreline Stability Assessment Report gave a score of "NA" due to a high degree of armoring along the bank within the assessment site. However, the Shoreline Stability Assessment Report also stated that this isolated point has no vegetation and soil is actively falling into the bypass reach. Please describe the erosion issues at this location and describe how these erosion issues would be addressed.

Water Quantity and Quality

19. Section E.4.1.2, *River Flows*, page E-20, states the median flow for the project is about 1,398 cfs. The section also says the median flow for the St. Joseph River is 1,690 cfs. Please describe the location of the median flow for the St. Joseph River and how it relates to the project.

20. Section E.4.2.4 *Recent Water Quality Data*, page E-31, states that sediment contaminant sampling was conducted. This section describes the locations of sampling and the methods used, but does not present or discuss the results of the sampling. Please present the results of the sampling and discuss the results of the sampling.

Terrestrial Resources

21. Section E.7.7, *PM&E Measures Proposed by the Applicant, Resource Agencies, and/or Other Consulting Parties*, states that Indiana Michigan Power proposes to continue deploying nesting structures along the project reservoir. Please state if the nesting structures are for wood duck, eastern blue bird, or both species.

Project Boundary

22. Figure A.8-2 shows a map of project facilities including lands located adjacent to the access roads that are proposed to be removed from the project boundary. The portion of land appears to be forested; however, there is no discussion of why this forested parcel of land is proposed to be removed from the project boundary. Please provide a description of size and composition of the land, including an explanation for removing the lands from the project boundary. In addition, please describe if the land is needed for project purpose, including any measures for environmental resources (e.g., recreation or terrestrial resources).

Recreation Resources

23. Section E.8, *Recreation Resource*s, states that Indian Michigan Power would develop a Recreation Management Plan (RMP) for the project that details proposed recreation enhancements. So that we can assess proposed mitigation and enhancement measures in its environmental analysis, please describe any specific proposed enhancement measures that would be included in the RMP. Also, please clarify what operation and maintenance (O&M) measures are included in the $5,000 annual O&M cost presented in table A.9-1.

24. Section E.8, *Recreation Resource*s, states that the canoe portage and shoreline fishing sites do not have formal parking, but street-side parking is available for approximately five vehicles close to the intersection of Hull Street and Wells Street. Please state who owns and maintains the street-side parking and if there is any signage at the gate between the parking area and the access road indicating access to the canoe portage and shoreline fishing sites.

Cultural Resources

25. Appendix B does not contain a letter of concurrence from the Michigan State Historic Preservation Office (Michigan SHPO) regarding the cultural resources study completed for this project. Please again contact the Michigan SHPO to ask for concurrence for the study and provide correspondence from Michigan SHPO that shows concurrence for the cultural resources study.

Exhibit F

26. Elevations are shown on the Exhibit F drawings, but the elevations do not include a datum reference. Therefore, please revise the Exhibit F drawings to include a note on each of the three sheets that provides the datum reference.

27. Sheet 1 of 3, *Section B-B*, provides a deck elevation as 790.1 feet and a sill elevation of 770.1 feet. However, Exhibit A, section A.8.1.2, provides a deck elevation as 790.0 feet NGVD29 and a sill elevation of 770.0 feet NGVD29. Please describe why Exhibit A provides a deck elevation and a sill elevation different from that provided in Exhibit F, and explain those differences.

28. Sheet 2 of 3, *Longitudinal Section of Spillway*, provides a flashboard elevation of 782.94 feet and a spillway crest elevation of 782.0 feet. However, Exhibit A, section A.8.1.1, provides a flashboard elevation of 782.90 feet NGVD29 and a spillway crest elevation of 781.96 feet NGVD29. Please describe why Exhibit A provides a flashboard elevation and a spillway crest elevation different from that provided in Exhibit F, and explain those differences.

Exhibit G

29. Exhibit G shows the project boundary crossing a corner of the Constantine Project tailwater fishing access parking area, excluding most of the parking area from the project boundary. Please clarify if the tailwater fishing access parking area is within or outside of the project boundary and modify Exhibit G accordingly.

30. Exhibit G shows an area adjacent to Featherstone Road, which is identified by points 21, 22, 23 and 24. The project purpose of the area is unknown. Therefore, please describe the project purpose of the area adjacent to Featherstone Road and label the project purpose on Exhibit G.