STATE of INDIANA

INDIANA UTILITY REGULATORY COMMISSION
101 WEST WASHINGTON STREET, SUITE 1500 EAST
INDIANAPOLIS, INDIANA 46204-3419

www.in.gov/iurc
Office: (317) 232-2701
Facsimile: (317) 232-6758

IURC Request to Indiana Electric Utilities
regarding Advanced Transmission Technologies

As you may be aware, Senate Enrolled Act (SEA) 422 from the 2025 legislative session requires the Indiana Utility Regulatory Commission ("Commission" or "IURC") to conduct a study on advanced transmission technologies ("ATTs"). The Commission is requesting your input, comments, ideas, research, and any relevant information you would like to provide regarding ATTs, including responses to the questions below developed by Electric Power Engineer, LLC ("EPE") who will be drafting the study report.

Please provide your responses no later than June 3, 2026. Thank you!

Transmission Planning SME

1. What are the key challenges the utility faces in its transmission system, such as transfer limits, transmission constraints, load center areas, etc.?
   NIPSCO response:
   A consistent theme in the industry is that key challenges facing utilities include retirement of synchronous generation, large increases of renewable energy, and increased demand on transmission lines with these generation changes. Recently, large load requests with new or unknown load profiles are also a challenge.

2. How does the utility coordinate transmission system upgrades with neighboring utilities in case of affected system?
   NIPSCO response:
   NIPSCO participates and coordinates transmission system upgrades through our RTO, MISO. MISO studies such as MTEP, generation interconnection, and market efficiency studies coordinate with other MISO TOs and non-MISO neighboring utilities. When system upgrades are identified, internal engineering departments further coordinate directly with impacted TOs.

3. How does the utility coordinate transmission system upgrades that are derived from diverse assessments, (e.g., reliability-driven projects based on transmission reliability assessments) and policy-driven projects informed by economic or generation deliverability evaluations?
   NIPSCO response:
   NIPSCO participates and coordinates transmission system upgrades through our RTO, MISO. MISO studies such as MTEP, generation interconnection, and market efficiency studies coordinate with other MISO TOs and non-MISO neighboring utilities. When system upgrades are identified, internal engineering departments further coordinate directly with impacted TOs.

4. When multiple facilities are overloaded, does the utility assess whether the facilities belong to the same corridor before choosing mitigation strategies? If so, how does corridor grouping influence the utility's solutions?
   NIPSCO response:
   Yes, NIPSCO explores several options, starting with smallest upgrades (i.e., could be substation equipment causing limitation) required to alleviate overloads to larger upgrades to the same transmission corridor if needed. Feasibility, cost, and timing influence solutions.

5. How does the utility coordinate and integrate mitigation plans initiated by steady-state, short-circuit, and stability assessments?
   NIPSCO response:
   NIPSCO submits mitigation plans to MISO for inclusion in MTEP studies, and modeling of projects in the interregional NERC MMWG models.

6. What is the utility's timeline for conducting transmission assessments to comply with NERC TPL-001-5.1?
   NIPSCO response:
   NIPSCO starts its TPL-001-5.1 assessment with the most recent NERC MMWG model releases beginning at the previous years end through the late spring of the present year. Annual studies are completed by December. This follows approximately the same timeline as MISO MTEP.

7. What unique assumptions underpin the reliability assessment base cases, including factors such as load projections, transfer limits to neighboring systems, and transmission constraints?
   NIPSCO response:
   Base case powerflow assumptions for transmission performance assessments include peak load forecasts, planned generation retirements/additions, forecasted interchange, existing and planned transmission facilities, and existing/planned interconnection(s) with neighboring utilities. Generation is dispatched by merit order and expected renewable capacity value(s).

8. For which potential future violations does the utility propose mitigation plans? For example, are plans developed for violations forecasted to occur in 2, 5, or 10 years?
   NIPSCO response:
   Per TPL-001, mitigation plans are developed for violations forecasted to occur up to 10 years.

9. What methodologies and criteria are used to identify transmission system violations and develop mitigation plans? (e.g., emergency ratings compared to continuous ratings)?
   NIPSCO response:
   NIPSCO publishes its Transmission Planning methodology and criteria which can be found on NIPSCO and MISO websites. NERC and Industry standards guide these methodologies and criteria.

10. Are there any documented records of limiting factors for line ratings and transformer ratings, such as jumpers and disconnect switches? If yes, are the limiting factors taken into consideration while developing mitigation plans?
    NIPSCO response:
    Yes, limiting factors are taken into consideration while developing mitigation plans. These limiting factors are documented as part of our Facility Ratings methodology, per NERC Reliability Standard FAC-008.

11. What is the regulatory process for proposing and approving of the proposed mitigation plan?
    NIPSCO response:
    NIPSCO follows MISO's annual MTEP process.

12. What is the utility's approach to prioritizing transmission projects?
    NIPSCO response:
    Priority is based on (1) NERC TPL-001 driven reliability projects, (2) Generator Interconnection driven projects, (3) Load driven projects,

13. What planning restrictions exist within the utility's system, such as proximity to sensitive facilities and specific areas with or challenging land acquisition?
    NIPSCO response:
    Planning restrictions may include proximity to sensitive facilities, clearance / constructability constraints, environmental or permitting considerations, existing land use, and areas where acquisition of new or expanded land rights may be challenging. NIPSCO considers these factors during routing and project development to evaluate whether alternative alignments, structure locations, or design approaches can reasonably reduce impacts while still meeting reliability, safety, cost, and schedule requirements.

14. Has the utility implemented alternative transmission technologies in the past? If so, what were the outcomes?
    NIPSCO response:
    NIPSCO has implemented the use of high-performance conductors, as well as installed synchronous condensers in its service area.

15. What initial screening criteria or engineering judgment do you use to decide whether an advanced transmission technology ("ATT") is worth evaluating?
    NIPSCO response:
    In general, NIPSCO evaluates cost, complexity, and current use (technology maturity) in the industry.

16. Do you have preferred or commonly used mitigation technologies (e.g., advanced conductors, tower lifting), or are all options evaluated equally?
    NIPSCO response:
    NIPSCO does not have a preferred or common mitigation technology. Each ATT has a specific application where it can provide value, and NIPSCO takes them all into consideration.

17. What are the common practices the utility uses to mitigate transient (dynamic) stability issues?
    NIPSCO response:
    Common solutions to mitigate transient stability issues include protection upgrades to reduce clearing time, generator control upgrades for improved dynamic response, or strengthening the grid by transmission system upgrades.

18. What are the common practices the utility uses to mitigate voltage stability issues, including post contingency voltage recovery, reactive margin, etc.?
    NIPSCO response:
    Common solutions to voltage stability may include more dynamic reactive resources, strengthening the grid by transmission system upgrades, or a combination of both.

19. When voltage issues are identified, are they typically addressed with local reactive support, or do they trigger broader system-level planning studies?
    NIPSCO response:
    Most voltage issues are addressed with local reactive support, though coupled with thermal issues in the area can be part of a broader system-level planning study and solution.

20. How does the utility determine the need for additional reactive power support?
    NIPSCO response:
    Reactive power support adequacy needs are evaluated through required NERC Reliability Standard TPL-001 studies, Generation Retirement studies, and Generator Interconnection Studies.

21. What challenges exist in estimating the costs of ATTs?
    NIPSCO response:
    While some costs of ATT's do not present as challenging to estimate such as Advanced line conductor, where the ATT has been implemented throughout the industry and has a clear cost associated with it, others with unknown integration, O&M costs, and long term benefits would have to be more thoroughly researched. Data may be lacking in newer or scarcely utilized technologies.

22. What are the utility's environmental permitting requirements for transmission upgrades?

23. What is the typical timeline for permitting a new transmission project?

24. How does the utility handle land acquisition challenges for new transmission corridors?
    NIPSCO response:
    NIPSCO identifies required easement or right-of-way width early in project development based on construction, operation, maintenance, access, and reliability needs. Where feasible, routing and design alternatives are evaluated to avoid or reduce impacts to landowners, agricultural use, crops, development potential, and overall land marketability. If voluntary acquisition is not achieved, eminent domain may be considered as a last resort when rerouting would create greater project cost, schedule, reliability, constructability, or landowner impacts than the selected route.

25. Under what conditions does the utility consider RAS as a mitigation strategy?
    NIPSCO response:
    NIPSCO does not typically consider Remedial Action Schemes (RAS) as a planning mitigation strategy due to the complexity and compliance risks associated with RAS solutions. However, generator owners in its service area have decided to implement RAS solutions to mitigate operating constraints.

26. What types of facilities or system conditions are considered critical, where topology changes or flow control solutions are restricted?

27. How does the utility evaluate the complexity of RAS solutions compared to conventional upgrades?
    NIPSCO response:
    NIPSCO does not currently have Remedial Action Schemes. Conventional upgrades continue to be the preferred solution.

28. Is there flexibility to modify mitigation plans, such as substituting transmission line upgrades with new substations?
    NIPSCO response:
    Yes, timing permitting, modification of mitigation plans is evaluated as part of the annual transmission performance assessment.

29. What is the procedure of cost allocation to the interconnection requests in a cluster study?
    NIPSCO response:
    Cost allocation is determined by the MISO.

30. What is the procedure of cost allocation for load interconnection requests?
    NIPSCO response:
    To the extent electric system upgrades are identified as part of a load interconnection request, MISO assigns such cost responsibility to the local TO, which is NIPSCO for NIPSCO electric customers. In the case of large load (e.g., megaload) interconnection requests, NIPSCO assigns full cost responsibility for any MISO-identified system upgrades to that large load customer.

System Protection SME

31. How does the utility evaluate the impact of new generation and transmission upgrades on system protection settings?
    NIPSCO response:
    NIPSCO evaluates the protection impacts of new generation interconnections and transmission upgrades through the project scoping and engineering review process. When a project changes transmission system configuration, fault current levels, or relay coordination requirements, an area coordination study is performed to assess potential impacts to protection settings and scheme performance.

32. What are the protection constraints that should be taken into consideration when implementing alternative transmission technologies?
    NIPSCO response:
    NIPSCO's position is that any alternative transmission technology that changes system topology, line impedance, and fault current levels must be evaluated for potential impacts to protection schemes and relay settings. An area coordination study should be performed whenever transmission system changes may affect relay coordination or fault current.

Future Outlook and ATTs Constraints

33. What regulatory or environmental barriers could impact the adoption of ATTs?

34. What lessons has the utility learned from past transmission projects that could inform future decisions?
    NIPSCO response:
    NIPSCO has evaluated some ATTs for past transmission needs. Advanced conductors and synchronous condensers have been chosen and implemented over other solutions to those needs and will most likely continue to be part of future solutions due to positive experience with them. Other technologies will need more thorough vetting.

35. Please list any initial concern that limits the implementation of the ATTs listed below in the utility's territory. For instance: (1) transmission switching might not be allowed near certain facilities; (2) tower lifting is not feasible in some areas or voltage levels due to environmental, regulatory, or pole structure constraints.
    NIPSCO response:
    - Advanced Conductors – No initial concerns
    - Advanced Power Flow Control Devices (APFC) – lack of operational experience, unknown integration hurdles, unknown compliance risks.
    - Static Synchronous Compensators (STATCOMs) – high cost
    - Static VAR Compensators (SVCs) – output drops linearly with low system voltage which may lead to voltage collapse.
    - Synchronous Condensers – no concerns
    - Transmission Switching Technologies – inherently decreases reliability of the system or local loads by putting system in abnormal state.
    - Tower Lifting Techniques – no initial concerns.
    - Voltage Source Converters (VSCs) - no initial concerns
    - Dynamic Line Ratings (DLRs) – unknown integration hurdles and O&M cost