

**RESPONSE COMMENTS OF  
NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC  
TO STAKEHOLDER COMMENTS ON  
NIPSCO'S 2021 INTEGRATED RESOURCE PLAN**

**SUBMITTED: May 24, 2022**

## **Introduction**

On November 15, 2021, Northern Indiana Public Service Company LLC (“NIPSCO”) submitted its 2021 Integrated Resource Plan (“IRP”). Comments to NIPSCO’s 2021 IRP were submitted by the Indiana Office of Utility Consumer Counselor (“OUCC”); Citizens Action Coalition of Indiana, Inc., Earthjustice, and Vote Solar (collectively “CAC”); Wärtsilä North America, Inc. (“Wärtsilä”); Indiana Advanced Energy Economy (“Indiana AEE”); and Reliable Energy. NIPSCO appreciates the constructive feedback and observations that its customers and stakeholders provided in their comments to the Indiana Utility Regulatory Commission (“Commission”). Recognizing that the IRP process is a point-in-time forecast of the next 20 years, which is always evolving, NIPSCO is continuously looking for ways to improve the development, analysis, writing, organization and transparency of its IRP. NIPSCO will take all of the stakeholders’ comments and suggestions into account when preparing the next IRP and refining the stakeholder process.

There are also items included in the stakeholders’ comments with which NIPSCO respectfully disagrees and/or would like to provide clarification. Specifically, NIPSCO would like to address comments or concerns raised regarding the IRP modeling, including access to modeling inputs/outputs, the modeling approach and assumptions, and environmental assumptions; the request for proposal (“RFP”) process; energy efficiency; reliability considerations, including the quantitative Reliability Analysis, the energy storage operations (“ESOP”) analysis, and future energy market exposure; the preferred portfolio definition and selection; and compliance with the IRP rule.<sup>1</sup>

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<sup>1</sup> In these response comments, NIPSCO focuses on providing clarifying input to the Commission’s staff on the various stakeholder comments on NIPSCO’s 2021 IRP. NIPSCO requests that its silence on any comment submitted by a stakeholder not be interpreted as NIPSCO’s agreement with the stakeholder’s position.

## IRP Modeling

Stakeholders made several comments regarding the methods and assumptions used in NIPSCO's IRP modeling. To the extent that additional explanations around modeling are desired, NIPSCO is willing, as demonstrated during the 2021 IRP process, to provide modeling inputs and outputs to all stakeholders, with appropriate confidentiality agreements in place, as well as to have additional conversations to build understanding with its stakeholders. NIPSCO commits to continue to improve the clarity and transparency of all modeling efforts and input assumptions in future IRP submissions.

### Access to Modeling Inputs/Outputs

Consistent with the 2018 IRP, NIPSCO and Charles River Associates, Inc. ("CRA") utilized the Aurora tool for the Midcontinent Independent System Operator, Inc. ("MISO") market modeling and NIPSCO portfolio modeling in the 2021 IRP. The CAC commented that its preference is to have access to the full set of input and output files used in the modeling to ensure full transparency. It noted difficulty in gaining access when Aurora is the tool used because of the inability to batch export input and output files. In the 2021 IRP, NIPSCO increased the amount of input and output data that it submitted in Appendix D to allow for more comprehensive review of key inputs and outputs. In addition, in response to the CAC's comments, NIPSCO held several one-on-one conversations to walk through specific modeling input and output questions and provided stakeholders with two supplemental detailed workbooks containing primary input tables and output files directly from Aurora. NIPSCO does not recall being asked for a license for CAC to access Aurora as part of the 2021 IRP process and apologizes if it was requested and not provided. To the extent Aurora is utilized in the future, NIPSCO will gladly facilitate CAC obtaining a license.

### Modeling Approach and Assumptions

Reliable Energy expressed concerns about the IRP's modeling approach and suggested that NIPSCO ignored risks associated with MISO energy market changes, fuel price uncertainty, and new technologies. The OUCC also suggested that NIPSCO's scenario approach did not reasonably assess carbon policy and environmental restrictions on natural gas production. NIPSCO respectfully disagrees with these characterizations of its modeling approach, particularly since

NIPSCO made significant efforts to develop broader ranges of scenario and stochastic-based risks in the 2021 IRP relative to prior IRPs in response to similar stakeholder comments. Section 8 of the 2021 IRP summarizes NIPSCO's treatment of risk and uncertainty. As outlined in this section, the 2021 IRP scenarios included a wide range of carbon policy outcomes (with and without carbon prices), a scenario with high natural gas prices based specifically on assumed environmental restrictions on natural gas production, and a wide range of regional MISO generation mixes. The section also describes NIPSCO's treatment of stochastic risk associated with commodity prices and renewable generator output, broadening the risk assessment relative to the 2018 IRP. Furthermore, Section 4 of the 2021 IRP includes detailed descriptions of emerging technologies such as green hydrogen; small modular nuclear reactors; carbon capture, utilization, and storage; and long-duration storage. Although not all of those technologies offered actionable projects in the RFP, NIPSCO will continue to monitor the landscape of resource options in future planning processes as suggested by stakeholders. Since the submission of the IRP, NIPSCO has had multiple discussions with the leading developers of long duration storage and small modular reactor technology to broaden the Company's understanding of the timeline for these technologies becoming commercially available.

As part of the IRP assumptions development process, Indiana AEE suggested that NIPSCO should adjust its predictions for distributed energy resource ("DER") growth and adoption upwards as it prepares the grid for impacts. NIPSCO agrees with this comment, and this topic was one of NIPSCO's focus areas of improvement in response to stakeholder comments to the 2018 IRP. In the 2021 IRP, NIPSCO evaluated four different customer-owned DER penetration scenarios as part of its load forecasting assessment. This was discussed in the first Stakeholder Meeting and described in detail in Section 3.5 of NIPSCO's 2021 IRP. NIPSCO will continue to track customer-owned DER and assess opportunities for other distributed resources (as described in Section 4.6.6 of the 2021 IRP) as it plans for the future.

Reliable Energy expressed concerns about the reliance on a 30-year net present value ("NPV") as a measure of affordability. In response to Reliable Energy's comments received during the public advisory process, NIPSCO provided 20-year NPV and annual revenue requirement projections (based on full rate base accounting, not levelized cost analysis) in the fifth Stakeholder Meeting. Slides 55-57 from that meeting, which are included in Appendix A of the IRP,

summarize NIPSCO's response to this comment, confirming that the use of various affordability metrics did not change major conclusions associated with the IRP's preferred portfolio.

The CAC expressed reservations regarding the use of stochastic modeling in the IRP, commenting that there is "no analytical information e.g. no historical data upon which to base probabilities, no testing for convergence, and stochastics are inappropriately applied to variables that are uncertain rather volatile like capital costs." NIPSCO respectfully disagrees with this comment. NIPSCO outlined its stochastic analysis process in Section 8.5 of the IRP. This process specifically included historical data analysis for *all* stochastic variables that were used, which included commodity price and renewable output uncertainty. NIPSCO *did not* apply stochastic analysis to variables such as capital costs or other variables that do not have sufficient historical data to rely upon. Targeted stochastic analysis on a selection of variables that can be reasonably parameterized is consistent with the recommendations made by the Director of the Commission's Research and Policy Division on this topic and supportive of a robust IRP process that evaluates risk from multiple perspectives.

## Environmental Assumptions

The OUCC noted that carbon dioxide should not be the only consideration in future environmental compliance assumptions, and NIPSCO agrees. NIPSCO's preferred portfolio, which retires all coal-fired generation by 2026-2028, complies with all current and projected environmental requirements, and leads to environmental improvements and sustainability measures beyond the reduction of greenhouse gas reductions, including emission reductions of nitrogen oxides, sulfur dioxide, and mercury, as well as reductions in water usage and the production of coal ash. The preferred portfolio does not rely on the regulation of greenhouse gas emissions. While the 2021 IRP scorecard reflected carbon emissions as the key indicator of environmental sustainability, it is not the only indicator that was considered. Indeed, the preferred portfolio has several other environmental compliance and sustainability benefits as well. NIPSCO agrees that there is uncertainty in the timing and form of potential federal policy to reduce greenhouse gas emissions, and thus modeled a range of carbon price scenarios – both in timing and magnitude.

## Request For Proposals

Both Reliable Energy and the CAC expressed concerns with how NIPSCO's RFP was used to inform the IRP modeling. Reliable Energy indicated RFPs may result in the exclusion of certain generation options, such as self-built projects and retrofitting existing plants. NIPSCO's 2021 RFP was designed to address *all* solutions, regardless of technology. To that end, the RFP had three bid events. Event 1: wind and wind paired with storage; Event 2: solar and solar paired with storage; and Event 3: thermal, stand-alone storage, emerging technologies, and other capacity resources. NIPSCO's RFP was used to solicit actionable projects to meet near-term capacity needs and did not preclude future evaluation of any technology or alternative.

The CAC similarly noted concerns with the near-term focus of the RFP options and the consequent modeling of generic solar, battery storage, and wind resources, although it recognized that "it is good practice to use an RFP to characterize the cost of available resources when a capacity deficit is anticipated." NIPSCO acknowledges that certain timing restrictions were enforced for generic resources, but this was done to allow for a fair evaluation of the RFP bids to meet projected capacity needs. This approach allowed for near-term requirements to be assessed with actionable bids as opposed to generic resources. As NIPSCO implements its preferred portfolio, it will continue to assess the resource landscape and refresh its analysis as needed.

The CAC also expressed concern "that NIPSCO is overestimating generic solar costs, stemming from inflationary concerns that occurred with projects due to supply chain issues." It argued that NIPSCO's cost assumptions "single out solar projects exclusively" and expressed concern that this inflationary pressure is being applied in a discriminatory fashion. NIPSCO appreciates this perspective, but believes that its approach of holding RFP bid costs flat for several years prior to implementing a decline curve continues to be reasonable, as further illustrated by current events in the solar market.<sup>2</sup> Given that long-term generic resource additions (beyond 2028) in the 2021 IRP were exclusively solar and storage, NIPSCO's approach was not discriminatory in favor of other resource types and calibrates between long-term technology cost declines and ongoing market dynamics. However, as noted earlier, NIPSCO will continue to assess the landscape of resource options as it implements its preferred portfolio and will remain flexible around future resource decisions.

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<sup>2</sup> Utility Dive, "Supply-chain squeeze: Solar, storage industries grapple with delays, price spikes as demand continues to grow," March 31, 2022, <https://www.utilitydive.com/news/solar-storage-delays-price-supplychain/620537/>.

## Energy Efficiency

The CAC offered several comments on energy efficiency and demand side management (“DSM”) modeling. In particular, it suggested that (i) the Company model the two levels of potential identified by the Market Potential Study (“MPS”), by customer sector, to see which level is selected by the capacity expansion model; that (ii) evaluating different levels of energy efficiency such as realistic achievable potential (“RAP”) versus maximum achievable potential (“MAP”) requires re-optimizing the capacity expansion plan to see how the resource mix changes with the different level of energy efficiency; and that (iii) NIPSCO evaluate the residential MAP, the commercial and industrial (“C&I”) MAP savings, and then mixed combinations.

NIPSCO appreciates the ongoing engagement related to energy efficiency and DSM modeling and believes that its 2021 IRP has largely met the recommendations and suggestions offered by the CAC. The two levels of DSM potential identified by the MPS are not mutually exclusive sets of programs, and the RAP bundles were lower cost on a levelized dollar-per-MWh basis according to NIPSCO’s screening of the available DSM options. Thus, the RAP bundles were evaluated as options in the core capacity expansion modeling, and many of them were selected as low-cost resource options. NIPSCO then tested the impact of replacing the RAP bundles with MAP levels of savings. As noted on Page 236 of the 2021 IRP, the inclusion of the MAP programs in the DSM analysis resulted in 100 fewer MW of storage capacity additions, confirming that NIPSCO’s resource mix does in fact change with more DSM savings. NIPSCO then re-ran full portfolio dispatch and revenue requirement accounting to calculate the economic impacts of moving from RAP to MAP. Given the cost increases associated with the shift to MAP, NIPSCO did not proceed to individually evaluate residential MAP and C&I MAP savings, but will consider additional granular analysis of DSM options in future IRPs.

## Reliability

### Reliability Analysis

NIPSCO’s Reliability Analysis for the 2021 IRP sought stakeholder input at various phases, and the CAC reiterated comments previously provided to NIPSCO and Quanta Technology, LLC on the Reliability Analysis along with additional commentary on multiple topics, including blackstart.<sup>3</sup>

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<sup>3</sup> “Comments of CAC on NIPSCO’s 2021 IRP October 12 Technical Meeting” document submitted to NIPSCO on October 20, 2021.

The CAC does “credit NIPSCO's blackstart analysis,” but expresses some concern over the assumption that the storage (i.e. the battery energy storage portion) of the solar plus storage resources would not have grid forming inverters and therefore could not be used for blackstart. NIPSCO confirms that the Reliability Analysis did assume that stand-alone storage systems would be fitted with grid-forming inverters, while the storage component of solar plus storage resources would be fitted with grid-following inverters. Since solar plus storage resources may be configured with the storage system operating behind the solar inverter, it is unlikely for the combined inverter to be grid-forming.

The CAC also commented on the measures of dispatchability, particularly the one-minute and 10-minute ramping results. Prudent assumptions were made in the study, and NIPSCO developed a set of reliability criteria that are important to the continued reliable operation of the grid and enable NIPSCO to fulfill its obligations under North American Electric Reliability Corporation and MISO standards. One of those criteria is the ability for a resource to respond to directives from system operators regarding its status, output, and timing, particularly to be placed on Automatic Generation Control allowing its output to be ramped up or down automatically to respond immediately to changes on the system. NIPSCO quantified that capability into one-minute and 10-minute ramping capability.

The CAC also provided commentary on scoring for Ramping and Short Circuit Strength that resulted from the analysis. For NIPSCO to quantifiably score each defined reliability measure, acceptable performance thresholds were defined and a rationale for those thresholds were provided.<sup>4</sup> Scores were then assigned based on those pre-defined thresholds, and these scores were aggregated for each metric and eventually for each portfolio. As NIPSCO has stated, all reliability assessments in this study applied screening-level indicative analyses for the purpose of assessing reliability in the IRP context. NIPSCO recognizes the nuance of operation and understands that detailed system analyses are essential. NIPSCO appreciates CAC's engagement on the topic and will look for additional opportunities to enhance the treatment of complex reliability topics in the future.

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<sup>4</sup> See Section 9.2.7.5 Scoring Methodology and Performance Thresholds within the 2021 NIPSCO IRP.

## ESOP Analysis

Wärtsilä commented that additional modeling of reciprocating internal combustion engines (RICE) should be performed to quantify the additional reliability and flexibility benefits of this technology. As NIPSCO continues to assess its resource options, it will perform such analysis on any candidate resources that are viable. This technology was not offered into the RFP, so NIPSCO did not assess operational details. If such technologies participate in future RFPs, NIPSCO will evaluate them in the same fashion as other options.

CAC indicated that the value of ancillary services from the ESOP analysis should be credited as a reduction in costs. NIPSCO agrees, and this is exactly how the results were integrated into the 2021 IRP (see the scorecard in Figure 9-42, which includes the ESOP analysis results as a reduction in costs under the Reliability objective). NIPSCO also looks forward to continuing to work with the CAC regarding the best approaches for modeling and capturing the value of ancillary services.

## Energy Market Exposure

The OUCC expressed concern about NIPSCO's projected hourly energy balance particularly after the retirement of Michigan City Generating Station ("Michigan City"). NIPSCO's 2021 IRP was highly focused on this issue, and after a one-on-one discussion, NIPSCO provided the OUCC with significant hourly-level detail to show NIPSCO's projected net energy market position over time *and* the expected available resources in NIPSCO's portfolio above and beyond what might be dispatched economically in the MISO market. NIPSCO respectfully disagrees with OUCC's representation of NIPSCO's interaction with the market as an "imbalance" and notes that the 2021 IRP quantified stochastic risk associated with market exposure and reliability risk associated with a number of additional, but related, metrics. The incorporation of new storage and gas-fired peaking capacity in NIPSCO's preferred portfolio is directly responsive to this concern, and NIPSCO will continue to evaluate this topic in more detail as market rules and conditions evolve.



## Preferred Portfolio

Reliable Energy expressed concerns that NIPSCO's preferred portfolio "does not have firm enough details to act." NIPSCO respectfully disagrees with this characterization and notes that its preferred portfolio was detailed in Section 9.3 of the IRP and was extensively reviewed during the fifth Stakeholder Meeting (see slides 59-69 from that meeting, which are included in Appendix A of the IRP). The preferred portfolio provides detailed actions for the retirement timing of Michigan City Unit 12 and R.M. Schahfer Generating Station ("Schahfer") Units 16A and 16B, as well as a range of preferred replacement resource additions. Maintaining flexibility and optionality is central to NIPSCO's preferred portfolio; therefore, allowing for flexibility to refine specific retirement years and specific megawatt quantities of resource replacements is important and should not be interpreted as a lack of detail.

Indiana AEE commented against the specific inclusion of new natural gas peaking resources in the near-term. NIPSCO has identified a significant capacity need (which could expand in the winter as MISO develops its seasonal reserve margin rules) over the next several years, particularly after the planned retirement of the remaining coal plants in its fleet and the vintage peakers at Schahfer. NIPSCO is committed to flexibility and diversity in its preferred portfolio and will continue to assess all candidate resource options that were part of the IRP's portfolio analysis. NIPSCO's risk analysis (see Section 9 of the IRP) assessed uncertainty across scenarios and stochastic commodity price iterations and concluded that the preferred plan provided a reasonable balance of cost and risk mitigation for customers. The Reliability Analysis also pointed to the need for longer-duration, flexible resource additions.

The CAC commented that NIPSCO should continue to evaluate the optimal retirement dates for Michigan City Unit 12 and Schahfer Units 16A and 16B, given the close net present value revenue requirement and scorecard results for retirement portfolios 3 and 6. NIPSCO agrees and stated in the 2021 IRP that "NIPSCO will initiate the planning process for the retirement of the Michigan City 12 and Schahfer 16A and B, leaving flexibility in ultimate timing."<sup>5</sup> The CAC also expressed a desire to consider replacement Portfolio E as a preferred replacement portfolio. As NIPSCO proceeds with analyzing the replacement mix of the preferred portfolio, NIPSCO continues to assess the relative costs and benefits of storage resources relative to thermal peaking resources. Trends in storage costs, hydrogen technology development, federal policy, and MISO

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<sup>5</sup> 2021 IRP p. 265.

market rules changes are highly dynamic and will require continued review and study as the preferred portfolio is implemented.

## Compliance with the IRP Rule

The CAC reviewed whether NIPSCO met, partially met, or did not meet the requirements of each part of the IRP Rule. Prior to submitting the document, NIPSCO reviewed the IRP Rule to ensure compliance and provided supplemental material to CAC on model inputs and outputs and load forecast details in areas where more information was requested. Given that there are more than 90 individual items, NIPSCO will not address each of the areas where the CAC indicated the IRP only partially or did not meet the requirements in the Rule but confirms it met all requirements of the IRP Rule. Regardless of the difference in opinion between NIPSCO and the CAC about meeting the requirements of the Rule, NIPSCO acknowledges that future editions of the IRP should provide more information on how the various requirements were met.

## Conclusion

NIPSCO hopes that the clarifications and response comments provided above help alleviate any concerns or confusion that the Commission and the stakeholders may have about NIPSCO's 2021 IRP. NIPSCO incorporated continuous improvement efforts and stakeholder feedback into the 2021 IRP analysis and will continue this practice into future IRPs. NIPSCO is always available to meet with the Commission and the other stakeholders for further discussions of its IRP. NIPSCO appreciates the participation of its stakeholders, including the Commission, in its ongoing IRP public advisory process.