Northern Indiana Public Service Company LLC
2021 Integrated Resource Planning
Public Advisory Meeting #1
SUMMARY

March 19, 2021

Welcome and Introductions

Ms. Alison Becker, Manager, Regulatory Policy opened the virtual meeting by providing a safety moment on psychological safety, discussing the Webex meeting protocols, and walking through the agenda. She then introduced Mike Hooper, President and COO of NIPSCO to kick off the meeting.

Overview of Public Advisory Process
Mike Hooper, President and COO, NIPSCO

Mr. Hooper began by welcoming participants and provided an overview of NiSource and NIPSCO and a high-level discussion of NIPSCO's ongoing generation transition plan.

Participants had the following questions and comments, with answers provided after:

- What does "best cost" mean?
    - It is similar to how you might think about any type of investment in your own house or business. Sometimes absolute lowest cost meets the need, but that is not always the case, so you look in a comprehensive way. For example, the lowest cost faucet may not meet the need that you have for that faucet or level or reliability or functionality and you may choose another faucet. So this is why NIPSCO is careful to say best cost and why we rely on all these pillars.

2018 NIPSCO IRP Action Plan Update / 2021 Continuous Improvements
Fred Gomos, Director Strategy & Risk Integration, NiSource
Pat Augustine, Vice President, Charles River Associates ("CRA")

Mr. Fred Gomos introduced the section by reviewing NIPSCO's 2018 IRP short-term action plan and outlining the progress to date, including actions associated with the retirement of the RM Schahfer ("Schahfer") coal plant, replacement with new renewables, and monitoring of market developments. He provided an overview of NIPSCO's existing and future generation projects, including the set of new renewable projects currently under development and before the IURC.

Mr. Gomos then provided an overview of NIPSCO's overall planning approach and a detailed review of how feedback from the 2018 IRP Director's Report motivated the 2021 IRP's

improvement plan. He noted planned improvements around the load forecast, scenario and sensitivity modeling, risk analysis, and monitoring of MISO market rules changes.

Mr. Patrick Augustine expanded upon Mr. Gomos' commentary on MISO market rules changes by outlining key reliability considerations for the 2021 IRP in the context of MISO's recently released Renewable Integration Impact Assessment report.

Mr. Augustine closed the section by reviewing NIPSCO's five-step resource planning approach in more detail, including the market modeling tools that will be deployed, new enhancements associated with uncertainty modeling, and a preliminary integrated scorecard framework. He noted that enhancements to NIPSCO's IRP scorecard were likely to be made in the areas of broader accounting of costs, a broader uncertainty assessment, and expansion of the reliability metrics.

Participants had the following questions and comments, with answers provided after:

- Did last year's passage of Indiana House Bill 1414, which focused on coal plant closures, affect any NIPSCO plans to retire its plants?
    - No it did not affect our generation decisions.
- What percentage of contractors are black owned enterprises?
    - NIPSCO can follow-up with more detail on this. This has been an area we have focused on – supplier code of conduct focuses on diverse hiring. Would be happy to discuss in a 1:1.
- Do any of the requests for proposals ("RFPs") call for local hire or fair chance? Why cannot NIPSCO close Michigan City Generating Station ("Michigan City") sooner? And will the plant in fact close/retire and not convert?
    - Regarding Michigan City – that is why we step through this process. NIPSCO steps through this and allows the analysis and scorecard perspective to set the dates. Based on the 2018 IRP – the current retirement is in 2028 and the Company will test that question in this process. At the end of this process, there will be some decision with respect to Michigan City.
- When planning for the future how does NIPSCO account for community impact such as health concerns and job opportunities?
    - For health, the Company considers emissions and the ability to reduce emissions on the scorecard. NIPSCO also considers job opportunities on the scorecard, which records how many jobs are driven by the generation portfolio. The fact that the current renewable projects are home grown with local contractors is evidence of how the transition is impacting this metric. We have over 25,000 direct jobs as a result of the current plan.
- Will there be any intentionality to assure some portion of solar is built locally so vulnerable and people in need of jobs with transit challenges can be hired and work? Will you consider building solar in East Chicago, Indiana in Zone 1?
    - Certainly NIPSCO is considering local projects. Given that the Company is evaluating projects that come from developers, to some extent the Company has full control, since a project needs to be viable and cost-effective for customers. However, NIPSCO is working with developers locally, such as in La Porte County, and if there are developers or projects that are happening in East Chicago, NIPSCO is happy to hear about them. For example, a couple of years ago the Company did

collaborate on potential for community solar projects, and NIPSCO is open to discuss those with local municipalities.

- Will Michigan City retire or convert?
    - The plan is to retire Michigan City in 2028 – NIPSCO will test that question as part of this IRP.
- LaTonya: How are you working with Michigan City and Jasper County residents to ensure their needs/concerns are met during the retiring process?
    - Jasper County has been a constructive partner with respect to transition plans. The Dunn's Bridge solar and storage project will be located in Jasper County, and we are working with them and La Porte County on the transition plans.
- Does NIPSCO have a plan for utilization of the Schahfer 14 and 15 transmission rights?
    - This is to be decided. Those interconnections are tied to that facility, so NIPSCO will continue to use those interconnections and then adjust at the point of retirement. The recent news regarding earlier retirement of Units 14 and 15 does not change the approach.
- On Slide 19 under Environmental Sustainability, there is no mention of traditional pollution: soot, NOx, and SOx. These affect local communities. Should not this be explicitly acknowledged as a consideration in resource planning?
    - These pollutants are often highly correlated to CO2 emissions, which is part of NIPSCO's scorecard under the Environmental Sustainability objective. Although NOx, SO2, and particulate matter may not be included on the final scorecard, such reports can be produced as part of the portfolio analysis process and provided to stakeholders as requested.
- Are you planning to model more than one resource adequacy ("RA") construct?
    - Yes, most likely. The model may not be able to predict all the nuances associated with forthcoming changes to the capacity construct, but the Company will likely develop replacement portfolios based on different constructs. For example, there may be some portfolios that are based on the current summer-only RA construct and then look at others that also meet winter reserve margins. Although the Midcontinent Independent System Operator, Inc. ("MISO") may expand the construct to four seasons, the analysis will likely start with summer / winter. In the commodity price section that we will review later, we will show outlooks for summer and winter capacity prices.
- Can you explain a bit more what "MW weighted duration of generation commitments" means? Under Resource Optionality?
    - This was a metric introduced in 2018 as a way of proxying how flexible a portfolio is to respond to change. It is measured as the weighted average of remaining commitment years for resources within the portfolio, and the duration of commitment gives a sense of how much capacity is "locked up" over time. For example, shorter-term purchase power agreements ("PPAs") would have lower commitment durations. In general the lower the metric, the more flexible the portfolio is, but this is just one way to evaluate different strategies as part of the integrated scorecard.
- Which variables will NIPSCO sample to determine the 95th percentile conditional value of risk? Renewable output and market price?
    - That metric will be based on the 95th percentile of the net present value of portfolio revenue requirements. With regard to the stochastic variables that will feed into that analysis, NIPSCO is planning to assess commodity prices (natural gas and power)

and renewable (wind and solar) output. The idea is to have correlated stochastic inputs for those variables run through the models to calculate the corresponding portfolio costs across hundreds of iterations. This portfolio cost is what will ultimately go into the scorecard.

- How will you address inequitable harmful emission reductions, Green House Gases ("GHG")/CO2 and other emission reductions? As we look at equity how will you ensure equitable reduction so one demographic is not holding all of the CO2 versus another demographic?
    - The scorecard will take an aggregate view of CO2 (with potential separate reporting of other) emissions. Additional reports could be developed and reviewed if there is a desire to look at more granular impacts, although the IRP process tends to focus at a higher level. With NIPSCO's transition to renewables – moving us towards 90% reduction in GHG by 2030 – significant emission reductions will be happening over time. It should also be noted that CO2 is a little different than other pollutants, since it can be characterized as a global pollutant. Proximity to source is not as relevant for CO2 as it may be for other traditional pollutants, since it disperses globally.
- With regards to the economic impact metrics, would you consider including jobs at contractors, not just at NiSource? For example, I would guess a lot of the jobs related to your demand side management programs would not be counted under the current metric?
    - NIPSCO can consider that, and there may be ways to look at both NIPSCO employees and contractors. From a scorecard perspective, it is cleaner to focus on NIPSCO employees, but we can look to see if there is a way to look at a broader set of job numbers. This may be a good topic for a 1:1.
- Did NIPSCO say that CO2 is not a pollutant?
    - NIPSCO clarification[1]: That comment noted that CO2 is often characterized as a global pollutant, not a local pollutant. NIPSCO is happy to discuss this further in a 1:1.

Key Assumptions Update: Commodity Prices
Robert Kaineg and Pat Augustine, CRA

Mr. Augustine introduced the section by outlining CRA's fundamental market modeling structure, including the drivers of fundamental fuel forecasting and the overall architecture for fundamental power market modeling. He then introduced Mr. Robert Kaineg to review the fuel price fundamentals.

Mr. Kaineg provided a summary of CRA's fundamental natural gas forecasting approach, the Natural Gas Fundamentals ("NGF") model structure, and key drivers of natural gas pricing. He summarized key supply side drivers in detail, including natural gas resource size, well productivity, fixed and variable well costs, natural gas liquids and condensate value, and associated gas volumes. Mr. Kaineg then summarized key demand side drivers, including domestic demand from the power/residential/commercial/industrial sectors and international demand from LNG and pipeline exports. He then presented the reference case gas price

[1] Note that the person who asked the question indicated that she had to drop off before an answer to this question could be provided during the session, but that she would appreciate the one-on-one and the answer to the equitable CO2 reduction. NIPSCO is providing this clarification in writing as part of this meeting summary, although it was not noted verbally in the meeting.

forecast. Mr. Kaineg closed his presentation with an overview of CRA's coal forecasting process, including a coal demand outlook and the resulting coal price forecasts for major U.S. basins.

Mr. Augustine then presented CRA's reference case carbon policy expectations and the associated reference case carbon price to be used in the 2021 IRP. He then presented an overview of the MISO market and CRA's power market fundamental modeling approach. Mr. Augustine closed the section by presenting CRA's outlook for the MISO market for the reference case, including the expected evolution of the energy mix (including at an hourly level); annual, monthly, and hourly market price views; and market capacity price expectations.

Participants had the following questions and comments, with answers provided after:

- For any scenarios with either carbon emissions constraints or a carbon tax, how would that be reflected in your gas price forecasts (i.e. as a downstream impact increasing market prices and potentially decreasing gas prices (because of lower demand))? Or is there a scenario in which your model might return a concomitant, increasing price of gas and market energy?
    - There are multiple ways that CO2 constraints could impact prices. It is possible that a CO2 regulation at the wellhead could include a CO2 charge that directly increases price. However, we do not contemplate embedding such a possibility in our scenario analysis. Somewhat relatedly, a policy could regulate other parts of the natural gas production process – methane leaks for example. Carbon regulation could also restrict gas production or raise the environmental-related costs associated with gas production. Finally, carbon regulation could impact demand for gas, as you noted. To answer the final part of your question, yes, we are contemplating a scenario in which carbon prices/regulation are high and natural gas prices are high (due to increased regulatory pressure on production) even if demand for gas is lower than the reference case. This will be discussed further in the May stakeholder meeting.
- Is NIPSCO committed to a full retirement of the Michigan City, or is NIPSCO considering plans to convert the plant to fracked gas?
    - Right now, NIPSCO laid out its plan with respect to retirement of the facility in 2028. Part of this 2021 IRP process will be to evaluate that plan to either confirm or make a different decision. Right now the plan is to retire in 2028.
- How does your forecast compare to the Annual Energy Outlook ("AEO") price forecast?
    - The reference case is higher than the AEO reference case, driven largely by the "poor-heavy" view on the resource base. The price outlook is not significantly different over the long-term, but it is higher.
- Gas price forecasting – model is accounting level – not operational level. Is that correct, and how does the optimization work with Aurora?
    - Yes, there is an optimization component to meet aggregate demand into the future. For electric demand, there is an iterative process with Aurora and NGF. CRA exports the gas price forecast out of NGF and into Aurora and then re-dispatches to get gas demand that goes back into NGF to eventually arrive at convergence. Once prices stop moving significantly, CRA stops the iterations.
- How does the model treat whether there is enough capacity in the gas pipeline to transmit the gas that is demanded in Aurora optimization?

    - The NGF model does not take into account transportation constraints, so this is not considered. NGF is purely a price model.
- How do you know whether you can transport gas during a peak event – how do you gut check that?
    - We also use GPCM (Gas Pipeline Competition Model) to assess transportation and local gas basis. So NGF does not capture transportation constraints, but we check things through GPCM.
- How does your reference case power price forecast compare to NIPSCO's forecast in its 2018 IRP?
    - The 2021 IRP reference case forecast is quite similar overall to the reference case forecast from the 2018 IRP, although it is a little lower. The carbon price is the same as what was used in 2018, with some minor inflation adjustments. The natural gas price forecast has come down a little bit vs. 2018, and the amount of renewables has increased. These factors both tend to reduce the power price, and more renewable generation generally results in a convergence between peak and off-peak prices. So overall, the average prices have come down by a few dollars per MWh and price shapes have changed, but the forecasts are not too fundamentally different.

Key Assumptions Update: Load Forecast
Derya Eryilmaz and Pat Augustine, CRA

After Mr. Gomos introduced NIPSCO's load forecasting enhancements for the 2021 IRP, Ms. Derya Erylilmaz provided an overview of the load forecasting methodology and a description of how the team developed the core NIPSCO load forecast. Ms. Eryilmaz provided a detailed discussion of the econometric analysis that was performed, including a summary of the economic, weather, retail rate, and demographic variables used to develop forecasts for the residential, commercial, and industrial sectors. Ms. Eryilmaz then presented customer count forecasts, the impact of NIPSCO's new industrial service structure on industrial demand, the preliminary reference case sales forecast, and the preliminary summer and winter peak demand forecasts.

Mr. Augustine then presented an overview of NIPSCO's approach to assessing customer-owned distributed energy resource penetration through CRA's PenDER model. He outlined the methodology, key model inputs, and reference case projections for distributed energy resource ("DER") installations, DER energy, and DER contribution to peak demand. He then provided a review of key drivers of DER penetration uncertainty and a range of indicative DER penetration outcomes.

Mr. Augustine then presented an overview of NIPSCO's approach to assessing electric vehicle ("EV") penetration in the service territory. He provided a review of the methodology, key assumptions and data sources, and the base case outlook. Mr. Augustine closed the section by outlining scenario considerations and providing a range of low, medium, and high EV penetration cases for the light duty vehicle (residential), medium duty vehicle (commercial), heavy duty vehicle, and transit sectors.

Participants had the following questions and comments, with answers provided after:

- Were various demand scenarios forecasted (not just reference)? It seems that EV penetration or electrification in general can have huge impacts.

    - Right now, these slides describe the econometric baseline forecast; however the adjustments, including those associated with EVs and electrification, will be discussed shortly.
- For reference case what percentage of heat pump adoption by residential customers was used?
    - Again, the adjustments for electrification will be discussed later. The core forecast is based on an econometric analysis and not an end-use assessment.
- When the Citizens Action Coalition, Inc. (CAC) had a meeting with NIPSCO about this IRP, we discussed the load forecast and one concern was whether natural energy efficiency growth is accounted for in the forecast, and it sounds like it is not, unless it was embedded in in historical data. We talked about ways to try to capture that instead of as an adjustment – does CRA have a sense of what would be needed for that, and is this accurately describing your methodology?
    - CRA has explicitly removed the impact of historical energy efficiency programs from the econometric analysis and otherwise pick up trends in expected usage per customer in the regression analysis coefficients. CRA then works with DSM experts to identify future programs for evaluation.
    - Also note that we have included an appendix slide in this presentation with usage per customer forecasts. Any programmatic historical DSM has been taken out to cleanly evaluate usage per customer trends, and you will see they are generally expected to decline into the future even before new DSM programs are considered. This is shown in slide 103. However, CRA does want to evaluate whether these trajectories are reasonable and we are planning to follow up with GDS (the DSM consultant) to see if they have any further perspective or data on this topic. Note that this is a preliminary forecast and not final, so if there is reason to make small adjustments, those will be considered.
- Talking to GDS is a good idea – same data for energy consumption by NIPSCO customers would need to be accounted for in the Market Potential Study. EIA also provides energy efficiency forecasts as well.
    - Follow-up on this topic is good. CAC has been great partners as we work through the process, and to the extent another discussion is needed regarding refinements, we can. NIPSCO will work with CAC on a follow up discussion.
- NIPSCO's Order for its first Feed-in Tariff ("FIT") was July 13, 2011. Therefore, we will be approaching in the mid-term the expiration of those initial 15 year FIT contracts. How do you envision addressing those DERs?
    - Note that beyond these DER projections, the portfolio modeling will include separate FIT contract expectations. CRA does have an outlook for current customers in different categories, and those are carried through the modeling. Beyond the expiration of those tariffs, it is possible that FIT customers can fit into another tariff or otherwise deploy DER to serve their own load. Overall, the purpose of this DER analysis is to develop a range of potential outcomes based on policy, including FIT and net metering, and economic scenarios.
- On slide 70 why is solar so slow to lower net peak - roughly 4 MW of install for one MW lower peak?
    - This goes to the peak credit expectation changing over time. In the early years, the ratio is closer to 2 to 1, while in the later years, this evolves closer to 4 to 1. This is because there is an expectation that more and more solar in the broader market will result in the

MISO net peak shifting later in the day. Thus, solar resources have less value in meeting peak over time, and we expect this will be approximately 25% of nameplate capacity by 2040.

- If the compensation for net metering excess is based on time-of-day in the future, then it is possible that solar installations might be designed to face west more than south. Is that being considered?
    - No, that is not specifically being accounted for, since this framework is not intended to track specific customers by site, but is designed to capture an average perspective. Incentives could change behavior, which in turn could slightly change the net capacity credit, but probably not significantly enough to change the overall impact being assessed in the IRP scenarios.
- Regarding the PenDER tool, has CRA done any work to look at how solar-storage costs and benefits impact the system wide results? Penetration and capacity in particular.
    - To date CRA has not specifically looked at storage as part of a DER solution, but it is a real possibility that over the planning horizon, distributed storage may come into the market, and CRA is looking at evaluating how that can fit into one of the scenarios. If you assume customers are able to pair their solar with storage, they could optimize its energy and capacity value. This complexity has not been incorporated in the modeling to date, but we will consider how to fit it into the scenarios. The overall point regarding stronger capacity value over time is consistent with the last question, so CRA will look at taking this feedback into account
- Rather than fixing the shape of EV charging, would you not want to model it as a flexible load responsive to price (where possible) so that you are capturing the changing dynamics of price by hour and by season you discussed previously capturing the costs/benefits dynamics?
    - This is a valid consideration, although there are several uncertainties that make this difficult to assess. First, it is unclear how responsive how all customers would be to price signals. Second, granular price responsiveness requires smart metering infrastructure in place and rate structures to be implemented. So far, CRA has developed a few different charging shapes which are documented in the appendix of the presentation. Within these shapes, a lot of the load is already pushed to periods of time that are not likely to be highest priced. However, hourly price shapes could be different across scenarios as market prices evolve. Fully dynamic charging behavior may be difficult to deploy, but different ways of parameterizing shapes can be considered.
- The CAC committed to sending a report to CRA that touches on the price responsiveness of EV charging.
- On slide 78 it looks like the low scenario is mapped to the Base. Is that correct?
    - That is correct, and the Base is in line with MTEP Future 1. This projection is consistent with a moderate, but steady increase in EV penetration and CRA will be mapping it to the reference case. The analysis will also show medium and high cases on this slide, which will be mapped to our alternative scenarios that have stricter environmental policy pressure and a greater push towards electrification. The band covers the high end well and these ranges are best incorporated in alternative scenarios.
- For electric vehicles in general will the modeling take into account any efforts by NIPSCO to shift load to off-peak or any other type of incented behavior?

    - The pilot program referenced before was based on some time of use charging behavior, with most load shifted off-peak. Given the interest in this topic, CRA will review whether it would be appropriate to adjust charging shapes in the modeling without too much complexity.
- What is assumption for life of an EV? Is it assumed that all EVs purchased in 2021 are still around in 2040 or some fraction?
    - Light duty vehicles are deemed to have a 15-year lifespan in this analysis, while the assumed lifespan is shorter for commercial vehicles.

Treatment of Uncertainty – Introduction
Pat Augustine, CRA

Mr. Augustine opened the section with a review of NIPSCO's approach to modeling uncertainty through complementary scenario-based and stochastic analyses. He then introduced NIPSCO's four major planning scenarios for the 2021 IRP: (i) Reference Case; (ii) Status Quo Extended; (iii) Aggressive Environmental Regulation; and (iv) Economy-wide Decarbonization / Electrification. He explained the expected environmental policy drivers across scenarios and provided a broad overview of directional changes in gas prices, carbon prices, federal tax incentives, load growth, and solar capacity credit across scenarios. Mr. Augustine closed the section with a brief preview of NIPSCO's stochastic analysis approach, including the incorporation of commodity price (natural gas and power) and renewable output uncertainty.

Participants had the following questions and comments, with answers provided after:

- In the Aggressive Environmental Regulation Scenario, do you know yet what the net zero targets would be and will you model a less than zero final target or a zero target plus whatever "offsets" you think might be available?
    - The analysis is likely going to assume that some amount of offsets will be available, although it is an uncertainty about how many. In preliminary analysis, CRA is finding that between 90 and 95% of the MISO power generation will be zero emitting in the Aggressive Environmental Regulation scenario, implying that 5-10% of the generation may have to be offset, although CRA does not expect to perform a specific analysis of what offsets are available.
- How do you anticipate a net zero future affecting sales of renewable energy credits?
    - The ultimate policy construct for a net zero future could result in a carbon price, a clean energy standard, or other incentives. If a clean energy standard, this might result in new markets for renewable energy credits, including at the federal level, although CRA has not specifically analyzed prices or NIPSCO sales opportunities yet.
    - It is expected that renewable energy credit demand will go up in a scenario with a binding standard, but the availability of credits and policy design will have a huge impact on price.
- So CRA proposes to sample these variables based on historical correlations and not look at the direct drivers of price and output volatility?
    - That is partially correct. CRA is going to be developing distributions for fuel, power, and renewable output based on historical data, although this process does not necessarily attempt to assess detailed drivers such as specific weather events, plant outages, etc. However, there is limited information available regarding renewable output/power price correlation based on the relatively limited amount of renewable generation (particularly

solar) currently in the market, so the analysis will simulate correlations going forward based on fundamental market modeling. So to summarize, the analysis will combine historical statistical analysis with some forward correlation analysis to develop iterations for daily gas prices, hourly power prices, and hourly renewable output.

- That is not necessarily a bad thing because temperature for example, is not the only driver of renewable output.
    - It is difficult to identify specific drivers of renewable output or market price behavior, so the objective is to capture a range based on historical data and a forward market view. The approach aims to arrive at a happy medium between reliance on history and expectations for the future.
- The CAC indicated it might be interested in a further discussion, which NIPSCO said it was happy to facilitate.

2021 Stakeholder Advisory Process
Erin Whitehead, Vice President Regulatory & Major Accounts, NIPSCO

Ms. Erin Whitehead provided an overview of the 2021 IRP Stakeholder Advisory Meeting Roadmap by highlighting key questions, content, and meeting goals for the upcoming sessions. She then announced that NIPSCO will conduct an RFP as part of the IRP process to help inform long-term market planning and identify projects for transaction. She also thanked all of the participants for their good questions and involvement in the meeting.

Participants had the following questions and comments, with answers provided after:

- When are you issuing the 2021 RFP?
    - The target date is shortly after the second meeting, which is scheduled for May.