VERIFIED DIRECT TESTIMONY OF ROBERT LEE

Q1. Please state your name, professional position, and business address.

A1. My name is Robert Lee. I am Vice President of CRA International d/b/a Charles River Associates, Inc. ("CRA"). My business address is 200 Clarendon Street, Boston, Massachusetts 02116.

Q2. On whose behalf are you submitting this direct testimony?

A2. I am submitting this testimony on behalf of Northern Indiana Public Service Company LLC ("NIPSCO") and Elliott Solar Generation LLC (the "Joint Venture").

Q3. Please briefly describe your educational and business experience.

A3. I received a Master of Science in Industrial Administration from Carnegie Mellon University in Pittsburgh, Pennsylvania and a BA in Mathematics from Boston College in Chestnut Hill, Massachusetts. After graduate school, I held senior staff positions with Putnam, Hayes and Bartlett and the PA Consulting Group. I joined CRA's energy practice in 2001 and became a Vice President with the firm in 2013. During my tenure in consulting, I have focused on power industry restructuring,

generating asset valuation and the economics of environmental policy. In 2008, I joined CRA's Auctions and Competitive Bidding Practice where I have focused primarily on default service procurements and related issues facing market participants in deregulated wholesale and retail electricity markets. In association with that work, CRA executes request of proposal processes ("RFPs") designed to help our utility clients meet their capacity needs.

Q4. Please describe CRA and the work you perform in more detail.

A4. CRA is an economics and management consulting firm, founded in 1964, and headquartered in Boston, Massachusetts. CRA has worked on behalf of a wide range of stakeholders in the design, management and execution of structured sales and procurement processes conducted both through formal auctions and RFPs. CRA clients in these engagements have included regulated utilities, government agencies, state and federal regulators, as well as cooperatives and private corporations. CRA has directly managed or monitored structured processes that have resulted in over $25 Billion worth of transactions in the United States and abroad. CRA has worked with a broad set of utilities on resource planning and capacity strategy decisions. In addition, CRA has extensive experience in managing default service procurement processes for utilities in the Midwest and

mid-Atlantic United States and currently manages the default service procurement processes for FirstEnergy's Ohio Utilities, FirstEnergy's Pennsylvania Utilities, Duke Energy Ohio, Duquesne Light Company and The Dayton Power & Light Company ("DP&L"). All such procurements have been reviewed and approved by the respective utility commissions or other regulatory bodies with oversight over the processes. CRA advises energy sector clients on asset valuation for the purposes of acquisition and divestiture, and senior members of CRA's team have testified as experts on sales and procurement process design before regulatory agencies and in civil litigation.

Q5. Have you previously testified before this or any other regulatory commission?

A5. Yes. Most relevant, I submitted testimony before the Indiana Utility Regulatory Commission ("Commission") in NIPSCO's requests for a certificate of public convenience and necessity ("CPCN") to purchase and acquire (indirectly through joint venture structures) in (1) Cause No. 45462 for a (a) 265 megawatt ("MW") solar joint venture (Bridge I Project), (b) 435 MW solar and 75 MW energy storage joint venture (Bridge II Project), and (c) 200 MW solar and 60 MW energy storage joint venture (Cavalry Project); (2) Cause No. 45511 for a 250 MW solar joint venture (Fairbanks Project); (3) Cause No. 45524 for a 200 MW solar joint venture

(Crossroads Solar Project), (4) Cause No. 45194 for a 102 MW wind joint venture (Rosewater Project); and (5) Cause No. 45310 for a 302 MW wind joint venture (Crossroads Wind Project). I also submitted testimony before the Commission in NIPSCO's request for approval and associated cost recovery of power purchase agreements in (1) Cause No. 45489 with Gibson Solar LLC (Gibson); (2) Cause No. 45472 with Green River Solar, LLC (Green River); (3) Cause No. 45403 with (a) Brickyard Solar, LLC (Brickyard), and (b) Greensboro Solar Center, LLC (Greensboro); (4) Cause No. 45195 with Jordan Creek Wind Farm LLC (Jordan Creek), and (5) Cause No. 45196 with Roaming Bison Wind Farm LLC (Roaming Bison). I have testified before the Public Utility Commission of Ohio on behalf of Duke Energy Ohio and DP&L related to the design and administration of procurement auctions to secure suppliers for their default service needs. In 2017, I testified before the Public Service Commission of West Virginia on behalf of FirstEnergy's Monongahela Power Company ("Mon Power"). That testimony related to an RFP conducted in support of their anticipated capacity needs. I have submitted testimony before the Federal Energy Regulatory Commission ("FERC") on affiliate transaction issues associated with RFPs conducted for NIPSCO (Rosewater), Mon Power and DTE Energy. I submitted testimony to FERC quantifying the reactive power tariff for generating assets owned by DP&L and

AES Ohio Generation. In addition, I have testified on competitive bidding in the insurance industry in civil litigation. My curriculum vitae is attached as Attachment 4-A.

Q6. What is the purpose of your direct testimony in this proceeding?

A6. The purpose of my direct testimony is to explain the analysis NIPSCO used to evaluate its various options for solar and solar plus storage energy and why NIPSCO's investment in the 200 MW solar joint venture (the "Elliott Project"), is an economic choice for helping meet NIPSCO's retail electric load.

Q7. Are you sponsoring any attachments to your direct testimony?

A7. Yes. In addition to my curriculum vitae attached as Attachment 4-A, I am sponsoring Attachment 4-B, which is an October 1, 2019 news release issued by NIPSCO announcing its intent to explore potential options to meet the future needs of its residential, commercial and industrial electric customers, Confidential Attachment 4-C, which is the opinion letter provided from CRA to NIPSCO following the RFPs, and Confidential Attachment 4-D, which is a detailed table of how each proposal was evaluated and scored. All of these attachments were prepared by me or under my direction and supervision.

Q8. What were the key findings outlined in Confidential Attachment 4-C?

A8. Through the Opinion Letter and its attachments, CRA recommended certain assets as potential projects to advance to a definitive agreement phase. The MW targets for each resource type (solar, wind, other) were derived from the preferred portfolio in NIPSCO's Integrated Resource Plan ("IRP") submitted October 31, 2018 (the "2018 IRP"). The specific assets recommended for advancement were selected based on the scoring criteria for the three separate requests for proposals, one for wind resources, one for solar resources and one for thermal/other capacity resources ("Phase II RFPs"). These scoring criteria were developed in advance of the RFP processes.

Q9. What does Confidential Attachment 4-D show?

A9. Confidential Attachment 4-D provides the detailed scoring results for each project bid into the RFP. Consistent with the Phase II RFPs process rules, each project was evaluated based on development risk, reliability, asset-specific risk, and the estimated levelized cost of electricity ("LCOE") per megawatt hour ("MWh").

Q10. Please provide an overview of NIPSCO's 2018 IRP and the 2018 RFP.

A10. In 2016, NIPSCO conducted an IRP process that identified a potential capacity shortfall at or around 2023. The 2016 IRP included tentative conclusions as to future resource options. In 2018, NIPSCO updated the 2016 IRP to ensure that

resource planning reflected the most current outlook for key market drivers. In 2018, NIPSCO conducted an all-source request for proposal ("All-Source RFP") and, through that 2018 All-Source RFP, secured a portion of the capacity required to meet the needs of the resource requirement identified in the 2018 IRP.

Q11. When did you first become involved in NIPSCO's IRP process?

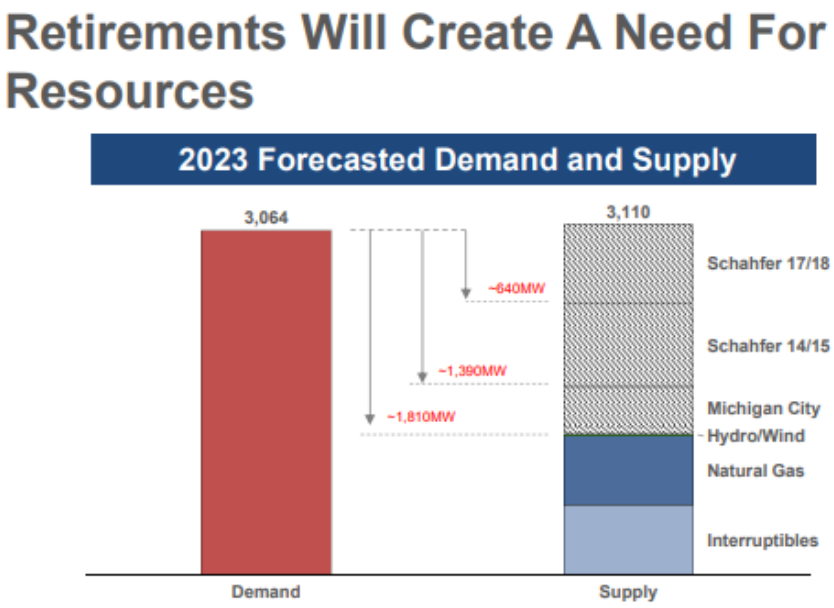
A11. My involvement with NIPSCO began in February 2018 after the 2018 IRP process had been initiated. While others at CRA became involved with NIPSCO to support the 2018 IRP update, during the first quarter of 2018, NIPSCO retained CRA to assist in the design, administration and bid evaluation of the All-Source RFP, and CRA continued this assistance for the Phase II RFPs. The Phase II RFPs were intended to secure the remainder of NIPSCO's capacity needs for 2023. My role with NIPSCO was to help design and administer both the All-Source RFP and Phase II RFPs processes.

Q12. Please discuss the IRP process conclusions and NIPSCO's Preferred Plan.

A12. The 2018 IRP considered a range of options around the potential retirement of existing NIPSCO fossil generation facilities. The 2018 IRP also developed an optimal portfolio of assets based on detailed scenario and risk analysis and was informed by comprehensive market modeling. The magnitude of the 2023

resource need was directly dependent on the conclusions derived from the 2018 IRP. Witness Augustine describes key assumptions and conclusions related to the 2018 IRP. Figure 1 illustrates the NIPSCO supply stack versus the resource requirements for 2023 under a range of potential retirement scenarios for NIPSCO's R.M. Schahfer Generating Station ("Schahfer") and Michigan City Generating Station ("Michigan City") based on that IRP analysis.

Figure 1:



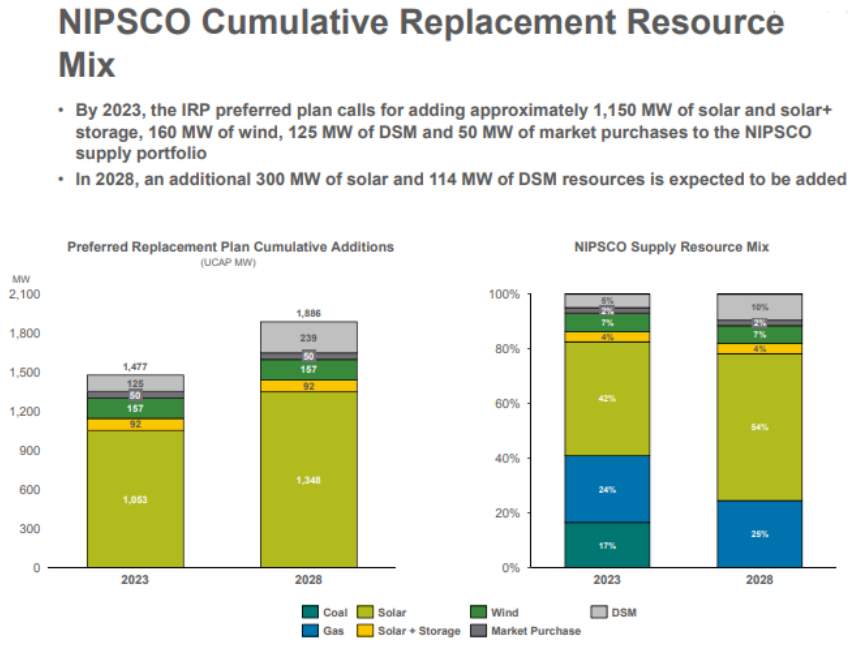
2023 Estimated Capacity Excess/(Need) in MWs

As-Is	50
Retire Schahfer Units 17/18	(640)
Retire Schahfer Units 14/15/17/18	(1,390)
Retire Schahfer and Michigan City	(1,810)

NIPSCO's 2018 IRP results indicated that the optimal path forward includes the retirement of Schahfer Units 14, 15, 17 and 18 by 2023 and the retirement of Michigan City Unit 12 by year-end 2028.[1]

Given the retirement analysis conclusions included in the 2018 IRP, NIPSCO's resource requirements were greater than the ~600 MW of unforced capacity (UCAP) initially identified in the 2016 IRP. Figure 2 identifies the composition of the optimal portfolio.

Figure 2:



[1] A public version of NIPSCO's 2018 IRP is attached to Witness Augustine's testimony as Attachment 3-A.

Q13. Describe NIPSCO's objectives for the Phase II RFPs.

A13. Through the Phase II RFPs, NIPSCO sought to identify the discrete capacity resources best positioned to satisfy the anticipated capacity shortfall consistent with both the 2018 IRP analysis and each RFP's bid selection criteria. NIPSCO considered a wide range of asset types, including physical generating assets and PPAs. Through the process, NIPSCO received bids supported by renewable facilities, fossil resources and energy storage options. Bids for both standalone assets and integrated facilities supported by energy storage were submitted. Bidders offered assets under PPA arrangements and offered assets for sale. In addition, while the 2018 IRP identified an anticipated capacity shortfall starting in 2023, NIPSCO considered bids with transfer dates or PPA start dates in advance of the identified need in 2023. CRA served as an independent third party managing the RFP process ("RFP Manager").

Q14. Please describe the timeline for the Phase II RFPs process.

A14. The Phase II RFPs were issued on October 1, 2019 as three separate but concurrent processes: one for solar, one for wind, and one for other resources. CRA conducted a bidder conference on October 1, 2019. Prospective bidders were required to provide a Notice of Intent, Bi-lateral Confidentiality Agreement and Pre-

Qualification Application due on October 16, 2019. Final proposals ("Proposals") were due on November 20, 2019.

Q15. Please provide an overview of the Phase II RFPs design and execution.

A15. Prior to issuing the Phase II RFPs, CRA worked with the NIPSCO team to define the process objectives and requirements. NIPSCO advised CRA that in order to ensure adequate, reliable capacity supplies to meet customer needs, they intended to acquire dispatchable, semi-dispatchable or renewable resources that, at a minimum, would meet established industry-wide reliability and performance criteria for electric generation facilities and that had physical deliverability into Midcontinent Independent System Operator, Inc. ("MISO") Local Resource Zone 6 ("LRZ6"). CRA worked with NIPSCO to prepare the RFP documentation, ensure the product requested was clearly defined, and ensure the evaluation criteria were clearly specified in the RFP documentation for each of the three RFPs.

Q16. How did CRA and NIPSCO inform interested parties about the Phase II RFPs?

A16. CRA managed the outreach to potential bidders interested in the processes and worked with NIPSCO to identify existing assets and projects in-development located within LRZ6. Representatives from potential bidders were contacted via electronic mail notices and phone calls, informing them of the RFPs and relevant

due dates. Both NIPSCO and CRA participated in a public information session to inform interested parties about the opportunity. In addition, CRA ran trade press advertising in Megawatt Daily on September 24, 2019, and NIPSCO published a press release related to the RFPs on its website on September 30, 2019. Other industry news sources carried stories on the processes and NIPSCO's capacity targets coincident with the announcement of the Phase II RFPs.[2]

Throughout the RFP processes, CRA maintained a public Information Website that warehoused all key documents related to the RFPs. Through that Information Website, interested parties could submit questions and comments related to the process, the documents or any RFP requirements, and, when appropriate, those questions and answers were posted to the RFP Information Website to ensure all bidders had equal access to information. All interested parties were allowed to submit Proposals in the RFPs. Ultimately, CRA approved all pre-qualification applications submitted and notified the applicants of their pre-qualification status.

Q17. Did the Phase II RFPs generate substantial interest from bidders?

A17. Yes. In 2018, NIPSCO received more bids in response to its All-Source RFP than

[2] https://www.utilitydive.com/news/nipsco-to-replace-coal-with-23-gw-of-solar-storage-in-latest-rfp/564427/.

any capacity RFP I had participated in to date. NIPSCO received a level of interest across the RFPs consistent with the level realized in NIPSCO's 2018 All-Source RFP. Across the Phase II RFPs, CRA received 96 proposals supported by 93 individual projects from more than 40 bidders across 6 states. I would characterize all of the Phase II RFPs as highly competitive. Many of the PPA proposals included fixed or variable pricing arrangements or had options on the start date and contract term. Several proposals included multiple options for facility configuration and resource sizes. Figure 3 illustrates the proposals received in response to the Phase II RFPs:

Figure 3[3]

Count of Proposals

Technology	Other	Solar	Solar + Storage	Storage	Thermal	Wind	Total
Asset Sale		1			4		5
PPA	1	23	8	3	7	3	45
Both		24	15		3	4	46
Total	1	48	23	3	14	7	96
Locations	IN	IN, IL, KY, MO	IN, KY	IN	IN, IL, MI	IN, IL, MN	

In total, over 18 gigawatts of installed capacity ("ICAP") was offered into the Phase II RFPs providing a wide range of capacity choices across technologies and deal

[3] The "Both" designation in Figure 3 indicates that the bidder offered a single asset as either an asset sale or a PPA at NIPSCO's discretion.

structures. Figure 4 shows the ICAP for proposals bid into the Phase II RFPs across technology options and deal structure.

Figure 4[4]

Proposal MW (ICAP)

Technology	Other	Solar	Solar + Storage	Storage	Thermal	Wind	Total
Asset Sale		99			2,725		2,824
PPA	100	1,619	1,593	388	1,389	415	5,504
Both		4,686	3,150		1,543	976	10,355
Total	100	6,404	4,743	388	5,657	1,391	18,683
Locations	IN	IN, IL, KY, MO	IN, KY	IN	IN, IL, MI	IN, IL, MN	

CRA evaluated the economics and other scoring considerations related to each Proposal independent of NIPSCO or any NIPSCO affiliates. CRA reserved the right, in its sole and exclusive discretion, to reject any and all proposals on the grounds that such Proposal did not conform to the terms and conditions of the RFP or on the grounds that the bidder did not comply with the provisions of the RFP.

Q18. Please describe the review and evaluation of the Proposals.

A18. After the Proposals were received, CRA, as the RFP Manager:

[4] The "Both" designation in Figure 4 indicates that the bidder offered a single asset as either an asset sale or a PPA at NIPSCO's discretion. ICAP MWs are estimated using MISO class averages by technology.

1. Reviewed all Proposals and screened the responses to ensure they conformed with all requirements;
2. As necessary, conducted follow-up conference calls and/or targeted email outreach to certain bidders' representatives to clarify asset-specific issues with the information provided;
3. Evaluated all conforming Proposals according to the pre-specified criteria as outlined in Appendix F of each RFP;
4. Managed bidder communication and outreach; and
5. Confirmed the winning Proposals and the short list of assets to consider for advancement to the definitive agreement phase.

CRA reviewed all proposals that met pre-determined qualifying criteria set forth in the RFP documentation and evaluated each based on certain pre-specified evaluation criteria. For physical generating assets and storage assets offered under either a PPA or an asset sales structure, the evaluation considered (1) the LCOE per MWh, (2) asset reliability and deliverability, (3) development risk, and (4) asset-specific benefits and risks.

Q19. Were the evaluation categories the same for all classes of bids (solar, wind, thermal, other)?

A19. Yes. However, the Phase II RFPs were each separate RFPs, so solar projects were evaluated versus other solar, wind versus other wind, etc. The IRP process identified the preferred portfolio based on a range of market scenarios and stochastics. The IRP included aggregated tranches of technologies that captured representative project costs and market depth. The IRP analysis did not include a

separate, detailed representation of each project bid into the RFP. These aggregated tranches were used to identify the best portfolio of resources to meet NIPSCO's needs. Because the preferred portfolio was identified in the 2018 IRP, the Phase II RFPs selected the individual projects consistent with that portfolio that best served the needs of NIPSCO's customers.

Q20. Did CRA evaluate the bids independent of NIPSCO?

A20. Yes. NIPSCO was not directly involved in the evaluation of proposals, nor was NIPSCO aware of bidder identities as part of the process, as explained in the Frequently Asked Questions for the RFPs. NIPSCO was provided general information about the level of interest in the RFPs, the MWs of capacity offered by asset type, and deal structure. CRA also provided NIPSCO indications of the general level and range of prices received for various asset categories in order to facilitate communication with stakeholders and others interested in the NIPSCO process. During the evaluation, NIPSCO was only made generally aware of CRA's progress and was only involved with bidder-specific issues if those issues required policy or technical guidance from NIPSCO subject matter experts.

Q21. Did the Phase II RFPs target the full required replacement capacity identified in the 2018 IRP?

A21. No. A portion of the resource needs were sourced through the All-Source RFP. Through that process, NIPSCO identified approximately 1,100 MW (ICAP) of wind resources in support of their capacity needs.

Q22. Witness Campbell discussed the Roaming Bison Project, which was a wind project that came out of the All-Source RFP but ultimately was cancelled. Were any adjustments made in the Phase II RFPs and project evaluations as a result of the Roaming Bison Project? If so, please explain those adjustments.

A22. Yes. CRA and NIPSCO have continuously looked to improve the RFP process. In the Phase II RFPs, the weightings for certain categories of evaluation were adjusted. The All-Source RFP awarded projects up to 200 points related to the Development Risk evaluation category. The points were equally split across the specific milestones met towards the Commercial-in-Service date and the experience of the developer in MISO. For Phase II RFPs, CRA increased the points available for that evaluation category to 250 points, with all of the incremental 50 points assigned to the development milestones element of the scoring. The effect of this change was to favor existing projects or projects further along the path towards their commercial operation date.

In addition, a greater number of points were awarded in the Phase II RFPs for the Asset Specific Benefits and Risks evaluation category. The intent of increasing the awarded points from 100 to 150 was to provide greater flexibility in selecting projects based on any unique issues related to a given project.

Q23. What was CRA's recommendation to NIPSCO as a result of the Phase II RFPs?

A23. CRA recommended that NIPSCO advance a set of assets to the definitive agreement phase of the process. In my opinion, all three RFPs were performed in a transparent, fair and nondiscriminatory manner, and the processes used to solicit and evaluate proposals were executed consistent with the processes as defined and envisioned by NIPSCO and CRA at the outset. Further, no bidder was given an undue advantage or preference in any of the Phase II RFPs, nor was any advantage or preference alleged by any participant in the RFPs.

Q24. What was the first step in the two-party negotiations with the developers?

A24. After identifying the assets recommended for advancement to the definitive agreement phase of the process for NIPSCO, CRA communicated with each bidder, notifying them of the process status and next steps. At that point, NIPSCO prioritized certain short-listed projects and initiated commercial negotiations with the highest priority counterparties.

Q25. Please discuss your recommendation for NIPSCO with regard to the acquisition of solar power?

A25. CRA identified a set of solar projects for advancement to the definitive agreement phase. The projects were selected consistent with the evaluation criteria that captured the project economics, project specific risks, and benefits associated with each option. These projects offer NIPSCO customers low cost, renewable energy and the associated renewable energy credits ("RECs"). They also provide capacity in support of NIPSCO's needs.

Q26. Please discuss your recommendation for NIPSCO with respect to the Elliott Project specifically.

A26. The Elliott Project resulted from the competitive Phase II RFPs. As part of the Phase II RFPs, CRA performed extensive review and diligence on all submissions and scored each proposal based on development risk, reliability, asset-specific risk, and the estimated LCOE per MWh.

With respect to the development risk and asset-specific risk, CRA evaluated projects related to their progress towards their commercial-in-service date, the experience the developer has in MISO, and any unique issues or benefits a given project may have had. The development risk category was very clearly defined.

The following five (5) milestones were considered, and points were awarded to projects that achieved one or more of them:

- Executed a pro-forma MISO Service Agreement and Interconnection Construction Services Agreement,
- Completed a MISO Facilities Study,
- Completed a MISO System Impact Study,
- Site control, zoning requirements, and permitting status, and
- Engineering, Procurement, and Construction Contract awarded

In addition, scoring recognized that some developers may have more experience with developing projects in MISO than others and that experience may mitigate some development risk even if all milestones have not yet been achieved. As a result, scoring considered the MWs of developer experience in the region. The Capital Dynamics/Tenaska team has extensive development experience in the United States and in MISO, with 1,364 MW (ICAP) in service in MISO. The Elliott Project had achieved two of the five development milestones, receiving credit for both achieving site control and the MISO system impact studies steps in the development process.

By design, the asset-specific risks and benefits category of scoring was less proscriptive since it was intended to provide flexibility on scoring. Given the wide

range of project and the various counterparty issues that can arise in a broad solicitation like NIPSCO's All-Source and Phase II RFPs, it is critical to include a mechanism to maintain flexibility. However, the RFP Appendix F identified certain issues that could be considered through the category, including minority business enterprise considerations or any material cost or regulatory uncertainty associated with a specific asset.

CRA evaluated the projects based on the project economics and the evaluation criteria outlined in Appendix F to the RFP. Project economics relied on an LCOE framework, and project risks were considered through each of the Evaluation Criteria categories. The RFP advanced projects to a final Definitive Agreement Phase, and during that phase a final determination was made on any optional project aspects like storage flexibility.

Q27. Were all Indiana solar (and solar plus storage projects) considered equal priority?

A27. No. Part of the value offered by solar resources relates to investment tax credits ("ITC"), which are a function of the date a facility begins construction and ultimately goes into service. Solar resources that have incurred a certain level of construction expense by 2019 and can meet a 2023 in service date qualify for the

maximum tax credits. Prioritizing and supporting projects to help them meet the deadlines for maximum ITC qualification would be a consideration. In addition, certain assets were prioritized by NIPSCO due to resource constraints NIPSCO faces for finalizing commercial negotiations. Assets with a common developer or counterparty were grouped together to facilitate an efficient Definitive Agreement process.

Q28. What are RECs?

A28. RECs are the property rights to the environmental benefits resulting from generating electricity using renewable energy sources (*e.g.*, wind, solar, biomass, and geothermal).

Q29. How did NIPSCO evaluate bids that included RECs versus those without RECs?

A29. CRA evaluated RECs qualitatively. Certain proposals included the provision that RECs would accrue to the project developer rather than NIPSCO. These proposals lost points in the evaluation versus projects where RECs were transferred to NIPSCO.

Q30. Why did CRA value the RECs qualitatively rather than quantitatively?

A30. The value of renewable energy was incorporated into the 2018 IRP process through evaluation of portfolio costs, risks, and carbon dioxide emissions. Given the

uncertainty associated with future regulation and the future costs of renewable resources, no explicit REC value was attributed to renewable projects in the 2018 IRP. The 2018 IRP's preferred portfolio was predominantly comprised of renewable resources, even without considering the economic value RECs might provide. The Phase II RFPs then selected individual projects consistent with the IRP preferred portfolio. As a result, the Phase II RFPs evaluated wind assets versus other wind assets and solar projects versus other solar projects. Assets within the same asset class, operating at a similar capacity factor, would generate a similar number of RECs per MW-year and therefore similar REC values. However, in cases where RECs accrue to the developer rather than to NIPSCO, there is a different but highly uncertain value offered by one project versus another. Because CRA wanted that difference in value reflected in the bid evaluation, but there was not a specific REC valuation consistent with IRP modeling, projects that did not include RECs lost points through the "Proposal Specific Risk" scoring category.

Q31. How did NIPSCO evaluate the relative economics of facilities offered for sale versus facilities offered under a PPA structure of different lengths?

A31. As part of the evaluation of the economics of each bid received, CRA calculated

the levelized cost per MWh of each bid received. The levelized cost was considered in two ways. First, the levelized cost was considered over the duration of the bid. This means that for a 15-year PPA, the 15-year LCOE was considered, while for a 20-year PPA, the 20-year LCOE was considered. Next, the LCOE was considered for all assets over 30 years. For shorter-term options, the balance of the 30 years was filled in with market purchases at market prices consistent with IRP modeling. The two-phased LCOE analysis allowed CRA to compare all assets over a consistent time horizon without missing short-term opportunities that may offer a good value to customers. This is further discussed by Witness Augustine.

Q32. How did NIPSCO evaluate the difference in value offered through asset ownership (build transfer agreement ("BTA")) versus a PPA?

A32. For all assets, including those offered under a BTA, the explicit LCOE period was 30 years from the anticipated commercial operation date of the facility or the commencement of any PPA. The 30-year period facilitated the analysis of the value of owning an asset versus entering into a finite power purchase agreement. Assets offered under a BTA arrangement, however, would provide economic value to NIPSCO customer beyond the typical term of a PPA. As a result, the LCOE for BTAs captured the residual value beyond the normal term of a PPA.

Q33. How was the LCOE calculated over 30 years for shorter duration assets?

A33. For shorter-term assets, the balance of the 30-year period would require market purchases to create a package of assets with a comparable term for analysis.

Q34. Did the 30-year analysis period provide an advantage to longer-term assets?

A34. No. The LCOE was evaluated in two ways. First, a full 30-year LCOE was quantified. Next, an LCOE was calculated over the term of the offer provided. For example, if a 15-year PPA was offered, CRA calculated the 15-year LCOE for the asset, as well as the full 30-year LCOE. Points were awarded based on the 30-year LCOE and the asset life LCOE as well. The intent of performing the asset life LCOE was to identify any short-term assets that may provide value to customers.

Q35. Is the proposed Elliott Project an economic option for meeting NIPSCO's retail electric load?

A35. Yes. The 2018 IRP identified that based on the current market economics and outlook, solar power represents an excellent resource option for NIPSCO and its customers over the expected useful life of the new facilities. As illustrated in Confidential Attachment 4-D, the Elliott Project was one of the highest scoring solar projects overall based on the evaluation criteria used for scoring the RFP bids.

Q36. What were the conclusions from the evaluation of the Elliott Project proposal, and how did the project score in the different RFP categories?

A36. The Elliott Project was tied as the seventh highest scoring project overall, with a total score of 736. It received the full score for the reliability metric, having performed the (N-1-1) transmission analysis requested under the Phase II RFPs. The Capital Dynamics/Tenaska team had completed two of the five development milestones for the project and had extensive experience in project development in the MISO region. As a result, the Elliott Project received 151 of a possible 250 points for the development risk category. The project also received 75 of a possible 150 points related to asset- or bid-specific benefits or risks. There was a 25 point deduction for some cost uncertainty related to interconnection costs, and the project did not qualify for any bonus points awarded for any asset-specific benefits.

Capital Dynamics/Tenaska offered Elliott under a fixed price 20- or 25-year PPA agreement, as well as tolling or shaped PPA structures.[5] Elliott received a strong

[5] Under a tolling structure, the buyer would pay a fixed fee per month for the control of the facility's capacity. Under a tolling arrangement, the payments are not tied to the output but to the capacity. Shaped products specify a targeted output level by period and offer that output at a price per MWh. The seller would replace any output deficit between the contractual shape and the actual output through market purchases delivered to the reference hub. These different contractual options provide different tradeoffs

LCOE score of 210 points. The range of flexibility in the contract structure and term represented an unscored benefit of the Capital Dynamics/Tenaska bids and provided optionality to NIPSCO is structuring its portfolio.

Q37. Witness Augustine references a thermal PPA bid that resulted in a portfolio with gas capacity being cost-competitive with portfolios made up of only renewables and storage. How did that bid score in the RFP?

A37. The bid in question was a middle-of-the-pack thermal resource based on the RFP scoring. The proposal lost points on both the development risk and reliability evaluation criteria. As noted above, the development risk scoring category considered two aspects of project risk: progress towards meeting its in-service date and the experience of the developer with projects in MISO. The milestones were selected to measure broadly the project's progress towards meeting its in-service date. Of the five, the thermal resource in question had only achieved a single milestone. In addition, the developer had fewer MWs in service than some other participating bidders. The proposal also lost points for not having completed an

between price and output risk but, when considered from a portfolio perspective, could allow NIPSCO flexibility in their overall portfolio composition.

(N-1-1) reliability study for the project.[6] Therefore, the bid associated with this thermal project may not be as attractive an option as other thermal resources or other non-thermal resources.

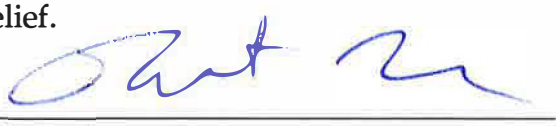
Q38. Does this conclude your prefiled direct testimony?

A38. Yes.

[6] An N-1-1 contingency analysis studies the impact of a sequence of events consisting of the initial loss of a single generator or transmission component followed by system adjustments, followed by another loss of a single generator or transmission component.

VERIFICATION

I, Robert Lee, Vice President of Charles River Associates, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.



Robert Lee

Dated: March 31, 2021

CRA Charles River Associates

ROBERT J. LEE

Vice President

M.S. Industrial Administration,
Carnegie Mellon University,

B.A. Mathematics,
Boston College

Mr. Lee is a Vice President in CRA's Auctions & Competitive Bidding Practice. During his consulting career, Mr. Lee has assisted numerous clients to develop structured sales and procurement channels in an array of industries and markets. He has managed structured transactions, acquisitions and divestitures in both traditional and competitive bidding environments. In addition, Mr. Lee has helped clients on a range of valuations and market analyses related to changes in market dynamics and market structure. Prior to joining CRA's Auctions and Competitive Bidding Practice, Mr. Lee was a member of CRA's Energy Practice and he still consults to clients in that area. Mr. Lee began his consulting career in senior staff positions at the PA Consulting Group and at Putnam, Hayes and Bartlett, Inc. At Putnam, Hayes and Bartlett, Mr. Lee was involved in quantifying the stranded costs for several utilities in Ohio, Pennsylvania and West Virginia resulting from proposed changes in market structure. Mr. Lee led modeling teams for clients at Allegheny Power Systems, Dayton Power and Light Company and Cinergy in support of their transition from vertically integrated utilities operating under cost of service regulation to utilities operating in markets with retail choice.

AUCTIONS AND COMPETITIVE BIDDING

Electricity

Northern Indiana Public Service Company.

- Designed and executed a series of competitive RFP for capacity in MISO LRZ6 on behalf of Northern Indiana Public Service Company. Managed a process designed to be compliance with FERC Edgar Allegheny requirements. Examined options for a structured tax-equity joint venture structure to monetize tax assets associated with renewable ownership. Let several working sessions with FERC staff related to tax-equity financing structures and the implications of renewable ownership for utilities.

Monongahela Power Company.

- Designed a competitive RFP process for Monongahela Power Company to evaluate options to meet anticipated capacity shortfalls for the West Virginia utility. Designed and managed the bidding process, modeled the anticipated operations of facilities bid into the RFP, selected the winning bidder and supported the acquisition through testimony at FERC and the West Virginia PSC.

Duke Energy Ohio, Inc.

- Designed a competitive bidding process (CBP) to procure wholesale generation for retail Standard Service Offer (SSO) load for Duke Energy Ohio, Inc. covering the period from January 1, 2012 through May 31, 2018. The CBP used a clock auction format. The auction process was subject to approval by the Public Utilities Commission of Ohio (PUCO).

- Designed and managed a request for proposal process (RFP) to identify a supplier for the Percentage of income Payment Plan (PIPP) customer load of Duke Energy Ohio.

The Dayton Power and Light Company

- Designed a competitive bidding process (CBP) to procure wholesale generation for retail Standard Service Offer (SSO) load for Dayton Power and Light. The procurements covered the period from January 1, 2014 through May 31, 2017. The CBP used a clock auction format. The auction process and outcome were subject to approval by the Public Utilities Commission of Ohio (PUCO).

Duquesne Light Company

- Designed a competitive bidding process (CBP) to procure wholesale generation for retail provider of last resort (POLR VIII) load for the Duquesne Light Company.

DTE Electric Company

- Managed DTE Electric Company (DTE)'s 2017 capacity RFP. The RFP was designed to analyze options for combined cycle generating capacity within MISO Zone 7 for the purposes of acquisition.

- Managed DTE Electric Company (DTE)'s 2015 capacity RFP. The RFP was designed to acquire a power plant to help DTE close an identified capacity shortfall. DTE acquired the East China combustion turbine from an affiliate under a process approved by FERC under affiliate transaction guidelines.

FirstEnergy Corporation

- Assisted in the design and ongoing execution of a competitive bidding processes to procure wholesale generation and capacity for retail Standard Service Offer (SSO) load of customers of FirstEnergy's Ohio Utilities — Cleveland Electric Illuminating Company, The Toledo Edison Company, and Ohio Edison Company. The auction process and outcome are subject to approval by the Public Utilities Commission of Ohio (PUCO).

- For FirstEnergy Service Company, assisted in designing and conducting a competitive bidding process using a hybrid clock auction and sealed-bid format to procure wholesale generation and capacity for retail Standard Service Offer (SSO) load to be delivered June 2009 through May 2011 to customers of FirstEnergy Ohio Utilities — Cleveland Electric Illuminating Company, The Toledo Edison Company, and Ohio Edison Company. Played a key role on the Auction Manager team including managing the mock auction and the live event. The successful auction procured more than $6 billion in supplies. The auction process and outcome were subject to approval by the Public Utilities Commission of Ohio (PUCO).

- Designed and managed a request for proposal process (RFP) to identify a supplier for the Percentage of income Payment Plan (PIPP) customer load of FirstEnergy's Ohio Utilities.

- Managed an RFP process for FirstEnergy's Monongahela Power (Mon Power) affiliate in West Virginia. The RFP was designed to acquire a power plant to help Mon Power close an identified capacity and energy shortfall.

- Managed an RFP process for Mon Power to divest a share of the Bath County pumped storage facility.

RWE

- Auction Manager for RWE's ongoing power supply auction serving major commercial and industrial customers in Europe. Currently working with RWE and the broader CRA auction team on the auction design framework, including all bidding rules, auction parameters, and bidder support documentation and tools. In addition, Mr. Lee helped to develop and test the customized auction software working with software engineering through the design and testing process. The auction process and outcome are subject to approval by the German cartel office (BKartA).

Trans Elect

- Part of CRA's Auction Manager team on an open season auction process for Trans Elect. The open season auction process used CRA's Auction Management System to successfully sell transmission capacity rights through an open and transparent bidding process. The auction process and outcome were subject to approval by the U.S. Federal Energy Regulatory Commission (FERC).

GE EFS

- Auction Manager for the Linden VFT open season auction process. With CRA's assistance, GE successfully auctioned incremental transmission capacity from PJM into New York's Zone J. Mr. Lee worked closely with GE and the broader CRA team to design and test the customized AMS auction software and to educate bidders on the auction design parameters as well as the VFT technology. The auction process and outcome were subject to approval by the U.S. Federal Energy Regulatory Commission (FERC).

Agriculture

Ocean Spray Cranberries

- Project Manager and Auction Manager for the development of an Internet-based trading platform for Ocean Spray Cranberries. The system, launched in the summer of 2009, represented a major innovation in an industry that lacked price transparency and adequate market signals for investment. Through the online system, Ocean Spray successfully is offering cranberry concentrate to major beverage producers worldwide.

Fonterra - GlobalDairyTrade

- Project Manager and Auction Manager for the development and administration of *global*DairyTrade, the Internet-based auction sales channel for a major international dairy cooperative. The auction-based system represents a major departure from the industry status quo and served as a mechanism for cost reduction, efficiency improvement, and increased market transparency for the supplier and its customers. Key responsibilities include contributions on the auction design, software development, customer training processes, and client communications.

ASSET VALUATION AND MARKET STRATEGY

Monongahela Power Company

- Managed the modeling and valuation of fossil power stations within the APS Zone of PJM. Modeling was conducted in support of Mon Power's 2017 RFP for capacity resources.

Confidential Client

- Advised the successful bidder in the acquisition of a gas-fired combined cycle power plant located in a remote region of Pakistan. As part of El Paso's divestiture of its Asian power generating assets, Mr. Lee worked closely with a the buyer to value the portfolio of power sales, fuel supply and O&M contracts supporting the facility. Critical considerations included fuel supply risk, FX risk and the proper assessment of the threat of terrorism associated with the facility.

Confidential Client

- Worked closely with the management of a processed coal producer to identify the product's value versus alternative coal options. Established the breakeven value for the fuel under a range of alternative environmental, coal price and transportation cost scenarios. Helped establish the relevant geographic range under which the fuel could potentially compete and identified attractive utilities for targeted marketing activities. Identified alternative distribution strategies that would help mitigate transportation cost concerns.

Hoosier Energy

- Reviewed the NO_X SIP Call compliance plan for Hoosier Energy, a Midwestern G&T Cooperative. Worked closely with management to develop a new framework for evaluating environmental compliance options at Hoosier's principal coal-fired power stations. Identified key risk factors impacting the value of the cooperative's planned environmental expenditures, including the risk of domestic CO2 restrictions. Identified potential cost saving and risk mitigation strategies in association with pending changes in environmental policies. Proposed alternative allowance banking strategies that would reduce financial exposure associated with SIP investments.

PSEG

- Worked with management to evaluate the impact of a range of environmental scenarios on PSEG asset values. Mr. Lee modeled an array of 3P and 4P proposals and evaluated the likely response of market participants. The modeling exercise examined the impact of incremental environmental restrictions on regional and national new capacity builds, PCE retrofits and fuel selection. In addition, the CRA team quantified the impact of proposed or pending regulations on regional power market prices and on the prices for tradable emissions credits.

Triton Coal

- Advised the management of Triton Coal on antitrust issues associated with their divestiture of the Buckskin and North Rochelle coal mines located in the Wyoming portion of the Powder River Basin. Identified substitute products including coal from alternative producing basins and power generation from alternative fuels. Identified the market for Powder River Basin coal based on transportation access and costs as well as coal quality considerations. Evaluated bidders based on the potential impact of the acquisition on market concentrations. Balanced the bid price for resources versus the likelihood that a potential sale would withstand DOJ scrutiny.

Foster Wheeler

- Performed a strategic assessment of the international coal boiler market for Foster Wheeler. Identified key markets for growth in coal-fired power generation over the near, mid and long-term. Considered key issues such as resource availability, environmental policy uncertainties and power demand growth. Worked closely with Foster Wheeler Oy to identify attractive markets for their CFB coal-boiler marketing activities.

British Petroleum

- Examined the potential strategic impacts of btu convergence on coal and oil markets. The analysis evaluated the economics of coal-to-liquids, coal-to-gas and underground coal gasification. Identified regional discontinuities on project economics and participated in workshops designed to assess opportunities in the coal space and their impact on markets for oil, coal and power.

The Dayton Power and Light Company – AES Ohio Generation

- Quantified the reactive power revenue requirements for the combined fossil fleet of Dayton Power and Light and AES Ohio Generation.

TESTIMONY AND ADMINISTRATIVE PROCEEDINGS

FERC, ER19-2775-000 and EC20-8-000, Testimony in support of Northern Indiana Public Service Company under Sections 205 and 203 of the Federal Power Act related to Affiliate Transactions.

IURC Case Nos.45194, 45195 and 45196. Testimony before the Indiana Utility Regulatory Commission on behalf of Norther Indian Public Service Company. At issue was NIPSCO's request for the issuance of a certificate of public convenience and necessity related to the development and acquisition or contractual control of three separate wind farms in Indiana.

PUCO Case No. 17-1263-EL-SSO. Testimony on behalf of the Duke Energy Ohio (Duke) related to Duke's application for authority to establish a Standard Service Offer pursuant to Section 4928.143, Revised Code, in the form of an Electric Security Plan.

Public Service Commission of West Virginia Case No. 17-0269-E-PC. Testimony on behalf of the Monongahela Power Company (Mon Power) in support of Mon Power's petition for approval of a generation resource transaction and related relief.

Monongahela Power Company, Allegheny Energy Supply Company, LLC (AE Supply). *FERC Docket EC17-88-000.* Submitted testimony in support of the proposed transfer of a generating asset from AE Supply to Mon Power.

PUCO Case No. 16-0395-EL-SSO. Testimony on behalf of the Dayton Power & Light Company (DP&L) related to DP&L's application for authority to establish a Standard Service Offer pursuant to Section 4928.143, Revised Code, in the form of an Electric Security Plan.

Dayton Power and Light Company, *et al*., *FERC Docket No. ER16-2569* Testimony in support of Dayton Power and Light Company's reactive power tariff.

AES Ohio Generation, LLC, *Docket No. FERC ER16-2570;* Testimony in support of AES Ohio Generation reactive power tariff.

DTE Electric Company, *et al*., *Docket No. FERC EC15-138*; in support of DTE's affiliate acquisition of the East China combustion turbine located in East China Township Michigan

PUCO Case No. 14-841-EL-SSO. Testimony on behalf of the Duke Energy Ohio, Inc. (Duke) related to Duke's application for authority to establish a Standard Service Offer pursuant to Section 4928.143, Revised Code, in the form of an Electric Security Plan.

Sixth Judicial Circuit in and for Pinellas County Florida; Case Number 2012-006187-SC. Testified on the structure and efficacy of a competitive bidding process designed to establish market values for settling automobile insurance claims

PUCO Case No. 12-426-EL-SSO. Testimony on behalf of the Dayton Power & Light Company (DP&L) related to DP&L's application for authority to establish a Standard Service Offer pursuant to Section 4928.143, Revised Code, in the form of an Electric Security Plan.

PUCO Case No. 11-3549-EL-SSO. Testimony on behalf of the Duke Energy Ohio, Inc. (Duke) related to Duke's application for authority to establish a Standard Service Offer pursuant to Section 4928.143, Revised Code, in the form of an Electric Security Plan.

PUCO Case No. 10-2586-EL-SSO. Testimony on behalf of the Duke Energy Ohio, Inc. (Duke) related to Duke's application for approval of a Market Rate Offer to conduct a competitive bidding process for Standard Service Offer electric generation supply.

Developed and presented PSEG and Exelon's joint claim for relief to the Oil Spill Liability Trust Fund, US Department of Homeland Security. Prepared the claim for damages associated with the temporary shut down of the Salem nuclear facility as a result of the November, 2004 Athos I oil spill.

PRESENTATIONS AND PUBLICATIONS

Brandeis University, Graduate School of International Business, lecturer on coal and environmental markets and energy market dynamics

National Public Radio (NPR), Marketplace, recurrent on air guest discussing coal, environmental markets and environmental policy

"Creating Markets and Structured Sales Channels", presented at the U.S. Apple Association Outlook 2010, Chicago, IL, August 19, 2010

"Not Your Father's Auction", Industry Week, April 2010

"A Better Way to Transact", Beverage Industry: Market Insights, May 2010

"NO_X Trading: Strategies for Electric Cooperatives"; with Anne Smith; Cooperative Research Network, National Rural Electric Cooperative Association; April 2003

EDUCATION

CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA
Graduate School of Industrial Administration
MSIA (MBA)

BOSTON COLLEGE Chestnut Hill, MA
College of Arts and Sciences
BA Mathematics

FOR IMMEDIATE RELEASE
Oct. 1, 2019

Attachment 4-B

FOR ADDITIONAL INFORMATION
Tara McElmurry, NIPSCO
Communications Lead
219-647-6342

NIPSCO TO EXPLORE RANGE OF OPTIONS TO MEET FUTURE ELECTRIC NEEDS

Request for proposals opened to consider all sources

MERRILLVILLE, Ind. – Northern Indiana Public Service Company (NIPSCO) has announced the opening of its next round of request for proposals (RFP) to consider a combination of potential resources to meet the future electric needs of its customers.

"As we continue to further our Your Energy, Your Future, customer-focused plan, it's important to consider all energy source options that balance the needs of our customers and communities," said Violet Sistovaris, NIPSCO president. "This effort is consistent with our goal to focus on providing affordable, reliable energy while maintaining flexibility for future technology and market changes."

This RFP will satisfy a 2023 capacity need following the release of NIPSCO's **2018 Integrated Resource Plan** where the company announced its plans to retire all of its remaining coal-fired generation by 2028, and replace it with lower-cost, cleaner options. NIPSCO is considering all sources in the RFP process. Dispatchable and semi-dispatchable generation, renewables, demand response resources and contractual arrangements will be considered, as well as emerging technologies such as storage.

Specifically, NIPSCO is requesting proposals in three target areas:

- Wind – Targeting 300 megawatt (MW)* of installed capacity (ICAP) of wind and wind paired with storage
- Solar – Targeting 2,300 MW* ICAP of solar and solar paired with storage
- Thermal and other – Targeting economic opportunities for thermal and other capacity resources

CRA International is the independent RFP manager.

NIPSCO's current energy mix includes generation from natural gas and coal, hydroelectric generation, purchased wind power, customer-owned renewable generation, demand response, energy efficiency and other purchased power.

The RFP will close Nov. 20, 2019 and more information can be found at **http://www.nipsco-rfp.com**.

**NIPSCO reserves the right to transact more or less than the referenced ICAP target.*

About NIPSCO: *Northern Indiana Public Service Company (NIPSCO), with headquarters in Merrillville, Indiana, has proudly served the energy needs of northern Indiana for more than 100 years. As Indiana's largest natural gas distribution company and the second-largest electric distribution company, NIPSCO serves approximately 820,000 natural gas and 460,000 electric customers across 32 counties. NIPSCO is part of NiSource's (NYSE: NI) seven regulated utility companies. NiSource is one of the largest fully regulated utility companies in the United States, serving approximately 4 million natural gas and electric customers through its local Columbia Gas and NIPSCO brands. More information about NIPSCO and NiSource is available at NIPSCO.com and NiSource.com.*

###

Confidential Attachment 4-C (Redacted)

Confidential Attachment 4-D (Redacted)