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**VERIFIED DIRECT TESTIMONY OF KELLY R. CARMICHAEL**

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1 **Q1. Please state your name, business address, and title.**

2 A1. My name is Kelly R. Carmichael. My business address is 801 E. 86<sup>th</sup> Avenue,  
3 Merrillville, Indiana 46410. I am Vice President, Environmental Policy for  
4 NiSource Corporate Services Company ("NCSC"), a wholly-owned  
5 subsidiary of NiSource Inc. ("NiSource").

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

7 A2. I am submitting this testimony on behalf of Northern Indiana Public Service  
8 Company LLC ("NIPSCO").

9 **Q3. Please describe your educational and employment background.**

10 A3. I received a Bachelor of Science in Physics from Illinois State University in  
11 1994, a Bachelor of Science in General Engineering from the University of  
12 Illinois at Urbana-Champaign in 1995 and a Master of Science in  
13 Environmental Engineering from the University of Illinois at Urbana-  
14 Champaign in 1996. My professional experience includes various technical  
15 and management positions in the environmental field primarily for the steel

1 and utility industries. In 2001, I joined NCSC and have held several  
2 positions with increasing levels of responsibility, focusing primarily on  
3 environmental permitting, regulatory analysis and compliance plan  
4 development.

5 **Q4. What are your responsibilities as Vice President, Environmental Policy?**

6 A4. As Vice President, Environmental Policy, I have direct responsibility for  
7 tracking and analyzing the development of environmental regulations  
8 affecting the operating companies within the NiSource corporate  
9 organization, including NIPSCO. Additionally, I am responsible for  
10 sustainability and development of environmental policy and strategy for  
11 NiSource affiliates, including NIPSCO.

12 **Q5. Have you previously submitted testimony before this or any other**  
13 **regulatory commission?**

14 A5. Yes. I previously provided testimony before the Indiana Utility Regulatory  
15 Commission ("Commission") on behalf of NIPSCO in its electric rate cases  
16 in Cause Nos. 43526, 44688, and 45159 and in requests for a Certificate of  
17 Public Convenience and Necessity for environmental compliance projects  
18 in Cause Nos. 43913, 44012, 44311 and 44872. In addition, I have testified

1 on behalf of NiSource's former subsidiary, Columbia Gulf Transmission  
2 Company, in Federal Energy Regulatory Commission Docket No. RP11-  
3 1435-000.

4 **Q6. Are you sponsoring any attachments to your testimony in this Cause?**

5 A6. No.

6 **Q7. What is the purpose of your direct testimony?**

7 A7. The purpose of my direct testimony is to summarize current major  
8 environmental regulations with which NIPSCO must comply and  
9 proposed regulations that NIPSCO anticipates will be implemented in the  
10 near term. I also reference the estimated costs, provided and discussed by  
11 NIPSCO Witness Kopp, associated with NIPSCO's compliance efforts. I  
12 also address how NIPSCO has evaluated the cumulative impact of future  
13 environmental requirements on its resource planning. These requirements  
14 are complex and continue to place increased cost and operating pressure on  
15 coal-fired plants. Finally, I also describe the costs associated with the  
16 number of nitrogen oxides ("NOx") allowances NIPSCO anticipates will  
17 flow through NIPSCO's proposed Rider 594 – Adjustment of Charges for  
18 Variable Costs of Coal Fired Generation.

1 **Q8. What are the environmental drivers for the cost increases that NIPSCO**  
2 **has experienced since its last rate case was filed in 2018?**

3 A8. As with many electric utilities, NIPSCO has been faced with a number of  
4 major environmental mandates, which have and will continue to result in  
5 cost impacts to its customers. The most significant recent mandates are  
6 discussed below.

7 The United States Environmental Protection Agency's ("EPA") Coal  
8 Combustion Residuals ("CCRs") rule ("CCR Rule") is a federal rule first  
9 promulgated under the federal Resource Conservation and Recovery Act  
10 ("RCRA") on April 19, 2015, with an effective date of October 19, 2015. The  
11 CCR Rule regulates management and disposal of CCRs, which are the  
12 materials generated from the combustion of coal to produce steam to power  
13 a generator to produce electricity. CCRs consist of fly ash, bottom ash,  
14 boiler slag, and flue gas desulfurization ("FGD") materials. Under the CCR  
15 Rule, CCRs are regulated as solid waste under Subtitle D of RCRA. The  
16 CCR Rule sets out nationally-applicable minimum requirements for new  
17 and existing CCR landfills and surface impoundments.

18 In addition to EPA's regulation under the CCR Rule, NIPSCO has two

1 generating stations subject to state or federal RCRA Orders. The Michigan  
2 City Generating Station ("Michigan City") is a RCRA-regulated hazardous  
3 waste management facility. The RCRA Facility Assessment evaluates  
4 information on releases to the environment through assessment of solid  
5 waste management units ("SWMUs") and areas of concern (AOCs). The  
6 RCRA Facility Assessment includes an assessment on the need for  
7 corrective measures and whether further investigation is required. There  
8 are a number of SWMUs that will be addressed under the RCRA Order.  
9 Those costs are included in the Decommissioning Cost Study sponsored by  
10 NIPSCO Witness Kopp (Attachment 14-B). Also, the site which formerly  
11 housed the Bailly Generating Station ("Bailly"), and which is now used for  
12 electric transmission support functions, is subject to an EPA Federal RCRA  
13 Order. It too covers multiple SWMUs, some of which are included in the  
14 Decommissioning Cost Study.

15 The EPA's Cross-State Air Pollution Rule ("CSAPR") established a federal  
16 cap-and-trade program to reduce emissions of NO<sub>x</sub> and sulfur dioxide  
17 ("SO<sub>2</sub>") from certain power plants in eastern states, including those in  
18 Indiana. These reductions help downwind sources attain and maintain the

1 National Ambient Air Quality Standards (“NAAQS”). The rule was  
2 finalized in 2011 and implementation began in 2015. It consists of an annual  
3 program and, for NO<sub>x</sub>, an ‘ozone season’ (i.e., May – September) program  
4 that allocates a number of allowances to sources. Sources are generally  
5 required to retire allowances equivalent to their emissions. The EPA has  
6 updated the CSAPR ozone season program twice – first in 2017 and again  
7 in 2020. Each time, the EPA has significantly reduced the number of  
8 allowances it has allocated. Sources that do not have sufficient allowances  
9 for compliance may acquire additional allowances from other sources at a  
10 market price.<sup>1</sup>

11 In April 2022, the EPA proposed a third update to the CSAPR establishing  
12 a new ‘interstate transport rule,’ also known as the Good Neighbor Plan.  
13 The EPA is expected to finalize the interstate transport rule in 2023, with  
14 implementation expected to begin in 2023. Based on a dispatch model from  
15 May 2022, NIPSCO estimates that it could be short approximately 332  
16 allowances in 2023 at a price of \$30,000 per allowance (Adjustment OM 2H-

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<sup>1</sup> Although emission’s allowances can be procured at a market price, the “market” for these allowances is somewhat illiquid and non-transparent. It is not, for example, as developed, transparent, or liquid as the MISO energy market, or even the market for renewable energy credits.

1 23), 326 allowances in 2024, and 252 allowances in 2025. Market prices are  
2 volatile and the cost of emissions allowances have increased from less than  
3 [REDACTED] per allowance in late 2021 to [REDACTED] per allowance in August 2022.  
4 As of the August 30, 2022 quote NIPSCO received, at a market price of  
5 \$ [REDACTED] per allowance, compliance costs to acquire additional emission  
6 allowances could be approximately \$ [REDACTED] in 2023, \$ [REDACTED] in  
7 2024, and \$ [REDACTED] in 2025. These costs are proposed to be recovered  
8 through the newly-proposed Rider 590 – Adjustment of Charges for  
9 Variable Costs of Coal Fired Generation.

10 Beginning April 2015, EPA's Utility Mercury and Air Toxics Standards  
11 ("MATS") established new limits aimed at reducing the emissions of  
12 mercury and other air toxics. These requirements establish limits and  
13 monitoring for mercury, particulates, and acid gases for coal-fired units,  
14 including NIPSCO's units. NIPSCO added activated carbon injection  
15 ("ACI") to Schahfer Units 17 and 18 in 2022 to reduce mercury emissions  
16 and maintain compliance with the MATS rule. This emission control  
17 helped NIPSCO meet the facility-wide mercury limit at Schahfer after Units  
18 14 and 15 – which were equipped with ACI – until these units were retired

1 in 2021. The approximate cost of ACI on Units 17 and 18 is \$2.1 million per  
2 year for both units.

3 **Major Environmental Statutes and Regulations**

4 **Q9. What environmental statutes and regulations have the most significant**  
5 **impact on NIPSCO's operations?**

6 A9. NIPSCO is subject to extensive and evolving federal, state, and local  
7 environmental laws and regulations affecting operations that have an  
8 impact on air, water, and land. The federal environmental statutes with the  
9 most significant economic impact on NIPSCO's operations are the Clean  
10 Air Act ("CAA") and its amendments, the Clean Water Act ("CWA"), and  
11 RCRA.

12 **Q10. Please describe the CAA.**

13 A10. The CAA is divided into several sections, or Titles, which address airborne  
14 emissions with the ultimate goal of reducing impacts on public health and  
15 the environment from anthropogenic pollutants. The CAA is implemented  
16 and enforced by the EPA and the Indiana Department of Environmental  
17 Management ("IDEM").



1 Q11. What are the recent and anticipated CAA regulations that could impact  
2 NIPSCO?

3 A11. There are a few recent and anticipated air regulations that affect, or have  
4 the potential to affect, NIPSCO's Electric Generating Units ("EGUs"). Over  
5 the past few decades, the EPA has set increasingly more stringent NAAQS.  
6 These tighter federal requirements generally translate into federal and state  
7 requirements that impose additional environmental controls on emission  
8 sources. NIPSCO has incorporated the expected requirements resulting  
9 from the NAAQS into its planning process, including its 2018 and 2021  
10 Integrated Resource Plans ("IRP"); each NIPSCO generating unit is  
11 equipped with controls to reduce emissions and therefore ambient  
12 concentrations of criteria pollutants. As described above, the CSAPR is an  
13 emission allowance trading program that establishes SO<sub>2</sub> and NO<sub>x</sub>  
14 emission allowance allocations for each NIPSCO generating unit. In  
15 accordance with Section 112 of the CAA (National Emission Standards for  
16 Hazardous Air Pollutants or "NESHAP"), EPA issued MATS to reduce  
17 mercury, other non-mercury metals, and acid gas emissions from coal- and  
18 oil-fired EGUs. NIPSCO has complied with MATS since it was  
19 implemented in 2015.

1 **Q12. Is NIPSCO in compliance with CSAPR?**

2 A12. Yes. NIPSCO's remaining coal-fired generation fleet is equipped with FGD  
3 controls for SO<sub>2</sub> removal. Michigan City Unit 12 and Sugar Creek  
4 Generating Station ("Sugar Creek") are equipped with selective catalytic  
5 reduction ("SCR"). These SO<sub>2</sub> and NO<sub>x</sub> controls have resulted in  
6 compliance with CSAPR. However, existing emission controls are not  
7 expected to be sufficient for ongoing CSAPR ozone season compliance.  
8 Starting in 2021 and through retirement of Michigan City, pending the  
9 outcome of the proposed Good Neighbor Plan, NIPSCO had, and likely will  
10 have, a shortfall in the number of ozone season NO<sub>x</sub> allowances allocated  
11 to it by EPA, thereby requiring market purchases to maintain compliance.  
12 NIPSCO acquired 96 additional NO<sub>x</sub> allowances in 2021 to comply with the  
13 ozone season program. The "ozone season" runs from May to September  
14 of each year and is not yet complete for 2022; however, as of August 31,  
15 2022, NIPSCO has procured 10 emission allowances in the market and  
16 projects that additional allowances may be needed.

17 **Q13. Please explain the status of EPA's regulation of greenhouse gas emissions**  
18 **for existing power plants.**

1 A13. On October 23, 2015, the EPA issued a final Clean Power Plan rule ("CPP")  
2 to regulate carbon dioxide ("CO2") emissions from existing fossil-fueled  
3 EGUs under section 111(d) of the CAA. On February 9, 2016, the U.S.  
4 Supreme Court stayed implementation of the CPP. The EPA then repealed  
5 the CPP in 2019 and promulgated the Affordable Clean Energy ("ACE")  
6 rule. The U.S. Court of Appeals for the D.C. Circuit vacated and remanded  
7 the ACE rule on January 19, 2021. On June 30, 2022, the U.S. Supreme Court  
8 issued a decision in *West Virginia v. EPA*, which found that Congress did  
9 not grant EPA the authority under CAA section 111(d) to devise emissions  
10 caps based on generation shifting as the Agency had done under the CPP.  
11 In summary, the EPA has not yet implemented greenhouse gas regulation  
12 for existing power plants.

13 **Q14. Did NIPSCO consider the impacts of regulation of greenhouse gas in its**  
14 **2021 IRP?**

15 A14. Yes. Analysis conducted for NIPSCO's 2021 IRP included various carbon  
16 reduction outcomes and timing sensitivities. Paired with a range of carbon  
17 costs, NIPSCO considered various alternatives, such as (1) natural gas  
18 generators, including natural gas combined cycles, (2) renewable energy

1 options, (3) customer energy efficiency and demand side management, and  
2 (4) distributed generation. The feasibility of the technology or programs,  
3 the commercial availability, economic comparisons to other technologies,  
4 and compliance with environmental regulations were all considered.

5 **CWA and ELG Rule**

6 **Q15. Earlier, you mentioned the CWA as one of the federal environmental**  
7 **statutes with the most impact on NIPSCO's operations. Please describe**  
8 **the CWA.**

9 A15. The CWA establishes water quality standards for surface waters as well as  
10 the basic structure for regulating discharges into the waters of the United  
11 States. Under the CWA, the EPA implements pollution control programs  
12 such as setting wastewater standards for industry including for electric  
13 utilities. The CWA requirements are generally implemented by the  
14 National Pollutant Discharge Elimination System ("NPDES") permit  
15 program.

16 **Q16. Are there any regulations under the CWA that impact NIPSCO's**  
17 **operations?**

1 A16. Yes. EPA first promulgated the Steam Electric Power Generating Effluent  
2 Guidelines and Standards ("ELG Rule") in 1974, and has amended the  
3 regulation many times, with the latest revision finalized on August 31, 2020  
4 with an effective date of December, 14, 2020. The ELG Rule regulates  
5 wastewater discharges from power plants that use a fossil fuel to generate  
6 electricity. Implementation occurs through incorporation of the regulatory  
7 requirements into the NPDES permits. The ELG Rule imposes new  
8 wastewater treatment and discharge requirements on NIPSCO's EGUs to  
9 be applied by 2025. Effective April 1, 2016, when Michigan City's NPDES  
10 permit was renewed, ELG requirements were incorporated into that  
11 permit.

12 Michigan City Unit 12 utilizes dry FGD technology and thus will meet the  
13 requirements of the existing ELG Rule for both FGD wastewater as a result  
14 of a dry FGD system and bottom ash transport water as a result of the CCR  
15 compliance project.

16 Schahfer's NPDES permit was renewed effective October 1, 2020, which  
17 incorporated ELG requirements. At that time, NIPSCO's 2021 IRP  
18 anticipated that all four of Schahfer's boilers would retire prior to the end

1 of 2023, so the ELG requirements in the NPDES permit would essentially  
2 be met by retiring the boilers. Since that time, conditions outside of  
3 NIPSCO's control have changed resulting in NIPSCO adjusting the  
4 Schahfer boiler retirement schedule from 2023 to 2025. Specifically, for the  
5 reasons discussed by NIPSCO Witness Campbell, NIPSCO anticipates that  
6 several of the solar projects originally scheduled for completion in 2022 and  
7 2023 will experience delays of approximately 6 to 18 months. In connection  
8 with these delays, NIPSCO now expects to retire Schahfer's remaining two  
9 coal boilers by the end of 2025. This change in retirement schedule will  
10 require NIPSCO to amend Schahfer's current NPDES permit. NIPSCO has  
11 started discussions with IDEM regarding ELG compliance obligations that  
12 are proposed to be incorporated into the NPDES permit for continued  
13 operation through the end of 2025. NIPSCO continues to expect that  
14 Michigan City will retire on schedule between 2026 and 2028. Therefore, in  
15 total, NIPSCO remains in compliance with the ELG Rule.

16 **RCRA and CCR Rule**

17 **Q17. You also mentioned RCRA earlier. Please describe the RCRA.**

1 A17. RCRA sets forth a framework for the management of both hazardous and  
2 non-hazardous wastes. RCRA, Subtitle C, established cradle-to-grave  
3 requirements for the generation, treatment, disposal, or management of  
4 hazardous waste. RCRA, Subtitle D, deals with the management of solid,  
5 non-hazardous waste. Under Subtitle D, EPA is responsible for creating  
6 federal standards for the management and disposal of solid waste.

7 **Q18. Are any regulations under the RCRA impacting NIPSCO's operations?**

8 A18. Yes. The most significant EPA-imposed rule under the authority of RCRA  
9 is the CCR Rule. The CCR Rule is federally mandated, but, because it was  
10 promulgated under Subtitle D of the RCRA, it was a self-implementing rule  
11 when originally promulgated. However, in 2016 the Water Infrastructure  
12 Improvements for the Nation ("WIIN") Act was passed into law, which  
13 amended the CCR Rule and authorized states to submit, to the EPA for  
14 approval, a permit program for regulating CCR units in lieu of the CCR  
15 Rule. The amendment allows states to adopt different technical standards  
16 from the CCR Rule so long as the standards are at least as protective as the  
17 federal rule. In circumstances where a state does not seek approval of a  
18 permit program or where EPA denies a state application, the amendments

1       require EPA to adopt a permit program in lieu of the self-implementing  
2       rule, provided Congress provides funding for EPA to carry out a permit  
3       program. If no permit program is in effect in a state, the CCR Rule remains  
4       self-implementing.

5       On April 22, 2021, Indiana Governor Holcomb signed into law a  
6       requirement for IDEM to conduct rulemaking mandated by portions of  
7       Indiana Public Law 100-2021, codified at Ind. Code §§ 13-19-3-1 and 13-19-  
8       3-3. The goal of the rulemaking is to comply with amended statutes by  
9       establishing a state permit program under Section 2301 of the WIIN Act, 42  
10      U.S.C. 6945(d), for the implementation in Indiana of the federal CCR Rule.

11      The establishment of a comprehensive state-operated permit program for  
12      CCR units will replace the current partial incorporation of the federal rule  
13      at 329 IAC 10-9-1 and will be at least as protective as the federal standards  
14      at 40 CFR 257, Subpart D, for both CCR surface impoundments and CCR  
15      landfills. On October 13, 2021, IDEM issued a first notice of comment  
16      period concerning the establishment of a comprehensive state permitting  
17      CCR program. Based on Ind. Code § 13-19-3-3, the Indiana Environmental  
18      Rules Board must adopt a final rule for the establishment of the state permit



1 program not more than 16 months after initiation of the rulemaking.  
2 NIPSCO anticipates that IDEM will have a permit program in place that  
3 will act in lieu of a federal CCR permit program.

4 **Q19. Will NIPSCO incur permit fees from the anticipated state CCR permit**  
5 **program?**

6 A19. Yes, based on Ind. Code § 13-19-3-3(i), IDEM will charge fees under the state  
7 permit program. This includes an initial permit fee of \$20,500 per  
8 impoundment, as well as annual fees ranging between \$10,000 and \$20,500  
9 per impoundment, with the amount of the fee being tied to the  
10 impoundment's closure status. Because NIPSCO has ten (10) surface  
11 impoundments, these fees will be more than \$200,000 initially, as well as  
12 between \$100,000 and \$205,000 annually. NIPSCO has not included these  
13 costs in the revenue requirement upon which rates are based in this  
14 proceeding.

15 **Q20. Please explain the regulation of CCRs.**

16 A20. The CCR Rule became effective October 19, 2015, with multiple compliance  
17 dates phased in over time. EPA identified potential risks associated with  
18 coal ash and established federal regulations to provide a comprehensive set

1 of technical requirements for the beneficial use, management and disposal  
2 of CCRs, commonly known as coal ash, from coal-fired power plants.  
3 Compliance requirements include location restrictions, impoundment  
4 design criteria, operating criteria, groundwater monitoring and corrective  
5 action, closure and post-closure care and recordkeeping, notification and  
6 posting of information to the Internet.

7 **Q21. Where does NIPSCO stand on compliance with the CCR Rule?**

8 A21. NIPSCO continues to maintain compliance with the CCR Rule compliance  
9 obligations (e.g., groundwater sampling, weekly inspections, corrective  
10 measures assessment, remedy selection, structural stability assessment,  
11 safety factor assessment, etc.) at each of the NIPSCO CCR Rule regulated  
12 locations, Bailly, Michigan City, and Schahfer. NIPSCO maintains a  
13 publicly accessible recordkeeping and reporting internet site where  
14 documentation of CCR Rule compliance requirements may be viewed.<sup>2</sup>  
15 The Commission approved a set of projects related to CCR Rule compliance  
16 in Cause No. 44872, all of which are in-service and were reflected in  
17 NIPSCO's base rates in Cause No. 45159, including a remote ash conveying

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<sup>2</sup> <https://nipsco.com/our-company/about-us/our-environment/ccr-rule-compliance>.

1 system at Schahfer and Michigan City; ground water monitoring at Bailly,  
2 Michigan City, and Schahfer; and other projects to manage certain pond  
3 and surface impoundments at these same three stations.

4 **Q22. Are there additional compliance activities that NIPSCO is required to**  
5 **undertake to ensure compliance with the CCR Rule?**

6 A22. Yes. In addition to the activities discussed immediately above, NIPSCO  
7 must undertake certain asset retirement obligations ("AROs") that must be  
8 performed in compliance with the CCR Rule. NIPSCO is proposing to  
9 recover these costs in separate proceedings addressing federal mandates  
10 rather than through base rates, as described by NIPSCO Witness Blissmer.  
11 These compliance requirements are mandatory and NIPSCO must expend  
12 the necessary funds to ensure compliance.

13 Under the Federal CCR Rule, there are certain events which may cause a  
14 CCR surface impoundment to cease operation and close. One event is if an  
15 existing, unlined CCR surface impoundment cannot demonstrate achieving  
16 one of five location restrictions. All of NIPSCO's CCR surface  
17 impoundments are unlined as that term is defined in the CCR Rule. Most  
18 notably, the base of an unlined unit may be located no closer than five feet

1 from upper limit of the uppermost aquifer. None of NIPSCO's CCR surface  
2 impoundments satisfied this restriction standard, thus requiring initiation  
3 of closure of the CCR surface impoundments.

4 A second triggering event is the exceedance<sup>3</sup> of a groundwater protection  
5 standard ("GWPS"). NIPSCO has completed multiple years of  
6 groundwater sampling and analysis, and, based on data available, there  
7 was at least one exceedance of a GWPS at each of the CCR surface  
8 impoundments with the exception of the Waste Disposal Area ("WDA")  
9 located at Schahfer. When either of these triggers (Location Restriction or  
10 exceedance of a GWPS) occurs, the CCR Rule requires NIPSCO to cease  
11 placing CCRs into those CCR surface impoundments within six months and  
12 initiate closure within 30 days.

13 However, on July 17, 2018, EPA finalized a revision to the CCR Rule to  
14 extend the cease receipt date related to the Location Restriction and  
15 groundwater quality associated closure triggers to October 31, 2020. On  
16 August 28, 2020, EPA finalized another revision to the CCR Rule, requiring

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<sup>3</sup> Within the CCR Rule, this is referred to as a Statistically Significant Level over background levels.

1 unlined surface impoundments to cease accepting waste, as soon as  
2 technically feasible, but not later than April 11, 2021. All but one of the  
3 NIPSCO CCR surface impoundments ceased receipt of waste prior to  
4 October 31, 2020. However, as further described below, the WDA located  
5 at Schahfer continues to manage CCR as allowed in the CCR Rule.

6 Part A of the CCR Rule published on August 28, 2020 grants facilities the  
7 option to submit a demonstration to EPA for an extension to the April 11,  
8 2021 deadline for unlined CCR surface impoundments to stop receiving  
9 waste. Facilities had until November 30, 2020, to submit a demonstration  
10 to EPA for approval. NIPSCO submitted a Part A Demonstration to EPA  
11 on October 30, 2020, which was deemed complete by EPA on January 11,  
12 2022. NIPSCO submitted a Part A Demonstration Addendum to EPA on  
13 August 18, 2022 to reflect the revised date to cease operation of the Schahfer  
14 boilers by the end of 2025. The CCR Rule Part A provision allows a CCR  
15 surface impoundment to continue to operate if the owner certifies that the  
16 facility will permanently cease operation of the boiler(s) and complete  
17 closure by October 17, 2023 for a surface impoundment that is 40 acres or  
18 smaller, or by October 17, 2028 for a surface impoundment that is greater

1 than 40 acres. The WDA is approximately 80 acres and in accordance with  
2 the CCR Rule Part A, the Schahfer boilers will cease operation and the WDA  
3 will complete closure by October 17, 2028. To qualify for the Part A  
4 provisions, NIPSCO's Part A Demonstration must demonstrate the  
5 following criteria:

- 6 • No alternative disposal capacity is available on or off-site. An  
7 increase in costs or the inconvenience of existing capacity is not  
8 sufficient to support qualification;
- 9 • Potential risks to human health and the environment from the  
10 continued operation of the CCR surface impoundment have been  
11 adequately mitigated;
- 12 • The facility is in compliance with all other requirements of the CCR  
13 rule, including the requirement to conduct any necessary corrective  
14 action; and
- 15 • The coal-fired boilers must cease operation and closure of the  
16 impoundment must be completed within the following timeframes:
  - 17 (A) For a CCR surface impoundment that is 40 acres or smaller,  
18 the coal-fired boiler(s) must cease operation and the CCR  
19 surface impoundment must complete closure no later than  
20 October 17, 2023.
  - 21 (B) For a CCR surface impoundment that is larger than 40 acres,  
22 the coal-fired boiler(s) must cease operation, and the CCR  
23 surface impoundment must complete closure no later than  
24 October 17, 2028.

25 As of the date of this filing, NIPSCO has not received a Part A  
26 Demonstration decision from EPA.

1 **Q23. How many regulated units/areas does NIPSCO have that are currently**  
2 **subject to the CCR Rule and/or RCRA closure requirement?**

3 A23. NIPSCO has a total of 17 regulated units/areas subject to the CCR Rule  
4 and/or RCRA closure requirements: The Bailly location has four surface  
5 impoundments totaling approximately 13.5 acres and "Area C (SWMUs 14  
6 & 15); Michigan City has five surface impoundments totaling  
7 approximately 11.4 acres and SWMUs 3 and 12; and Schahfer has four  
8 surface impoundments totaling approximately 116.2 acres and a landfill.  
9 NIPSCO also has one surface impoundment not currently subject to  
10 CCR/RCRA closure requirements located at Schahfer. The Retired Waste  
11 Disposal Area (RWDA) is approximately 60 acres.

12 **Q24. Please explain the allowable closure methods under the CCR Rule.**

13 A24. There are two closure methods available to NIPSCO under the CCR Rule:  
14 (1) closure by removal and (2) closure in place. Closure by removal entails  
15 dewatering of the free liquids within/on top of the ash, followed by  
16 excavation of all ash within the pond limits, including the liner (if one is

1 present). The excavated ash must be properly managed, and the pond  
2 backfilled and graded.<sup>4</sup>

3 Closure in place entails the removal of the free liquids within and on top of  
4 the pond as well as free liquids in materials placed in the pond (to make a  
5 stable base for the engineered capping system). Once the pond is  
6 dewatered, the remaining CCRs must be graded, and, in most  
7 circumstances, have additional fill materials brought in to provide a  
8 suitable base for the cap. The CCRs are then capped with soil, clay, and/or  
9 an engineered barrier, then mulched and seeded with a vegetative cover.<sup>5</sup>

10 **Q25. At each location, please describe the closure method NIPSCO currently**  
11 **plans to implement for the CCR surface impoundments and if it is**  
12 **anticipated that groundwater corrective measures will be required.**

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<sup>4</sup> After the CCR materials are removed, the ponds must be "capped"—meaning the ponds must be backfilled with clean fill, a cover system and topsoil applied to allow vegetation to grow and future storm water to shed off the closed ponds. Under the CCR Rule, you must demonstrate that the underlying native materials are decontaminated (CCR Rule 257.100 (5)), which cannot be done if the underlying groundwater is impacted, as is the case at the Michigan City, Bailly and Schahfer. This is considered leaving "CCR in place," thus necessitating a cap (257.100 (1)).

<sup>5</sup> In addition to the cap, IDEM has indicated that a slurry wall or *in-situ* stabilization may be required, as well as hydraulic control, for surface impoundments that have ash in hydraulic connection to the groundwater and are closed in place.



1 A25. The closure method NIPSCO intends to implement for the CCR surface  
2 impoundments and if groundwater correction measures are anticipated to  
3 be required are as follows:

4 Bailly

5 At Bailly, there are four CCR surface impoundments that must be closed  
6 based on the CCR Rule requirements. These surface impoundments are  
7 lined, but not to the standards established in the CCR Rule. In a Closure  
8 Application submitted to IDEM on February 3, 2021, these four CCR surface  
9 impoundments are proposed to be closed by removal based on  
10 implementability, cost, and permanence.<sup>6</sup> As of the date of this filing, a  
11 permit has not been issued by IDEM. NIPSCO currently anticipates that  
12 groundwater corrective measures will be necessary to address  
13 groundwater quality.

14 Schahfer

15 At Schahfer, there are four CCR surface impoundments subject to the CCR

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<sup>6</sup> NIPSCO's expectations with regard to the necessity for active groundwater corrective measures at Bailly, Michigan City, and Schahfer are based on currently-available information and subject to change based on the effectiveness of its closure activities and collection of further groundwater data.

1 Rule, and one former ash surface impoundment, called the RWDA, that is  
2 subject to closure obligations under the Indiana State Solid Waste Program  
3 (329 IAC 10-9-1). Three of the four CCR units are co-located such that they  
4 will be closed as a single unit, called the Multi-Cell Unit ("MCU"), proposed  
5 to be closed by removal. The fourth CCR impoundment, the Waste  
6 Disposal Area ("WDA") is over 40 acres, and its method of closure has not  
7 yet been determined. It is anticipated that the fifth impoundment, the  
8 RWDA (not subject to CCR Rule), will be closed in place under the direction  
9 of IDEM via Solid Waste Program requirements, after the boilers cease  
10 operation in 2025. Four of the five surface impoundments must be closed  
11 based on the CCR Rule and associated RCRA requirements. The fifth  
12 surface impoundment will be closed in place in accordance with 329 IAC  
13 10-9-1. In a Closure Application submitted to IDEM on April 29, 2019, the  
14 MCU is proposed to be closed by removal based on implementability, cost,  
15 and permanence.<sup>7</sup> As of the date of this filing, a permit has not been issued  
16 by IDEM. NIPSCO currently anticipates that groundwater corrective

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<sup>7</sup> NIPSCO's expectations with regard to the necessity for active groundwater corrective measures at Bailly, Michigan City, and Schahfer are based on currently-available information and subject to change based on the effectiveness of its closure activities and collection of further groundwater data.

1 measures will be necessary to address groundwater quality.

2 Michigan City

3 At Michigan City, there are five surface impoundments subject to a State of  
4 Indiana RCRA Order, two of which are also subject to the CCR Rule. All  
5 five of these surface impoundments are located directly south of Lake  
6 Michigan. Each of the five surface impoundments is currently being closed  
7 by removal based on implementability, cost, and permanence and in  
8 conformance with a permit issued by IDEM on March 21, 2021. NIPSCO  
9 currently anticipates that groundwater corrective measures will be  
10 necessary to address groundwater quality.

11 **Other Environmental Remediation Obligations**

12 **Q26. Does NIPSCO have any other significant environmental remediation**  
13 **obligations at its facilities?**

14 A26. Yes. In particular, NIPSCO has coal ash-related remediation obligations  
15 that are not directly tied to the Federal CCR Rule at each of its generating  
16 stations. These include state requirements under Indiana's Solid Waste  
17 Management Program.

18 Additionally, Bailly has obligations under the Federal RCRA that is related

1 to SWMUs. The SWMU obligation is based on an order entered into  
2 between NIPSCO and the EPA in 2005 under RCRA, which required  
3 NIPSCO to investigate and, if needed, remediate areas at Bailly that were  
4 impacted by historic waste handling. NIPSCO has completed and updated  
5 a Corrective Measures Study which has identified some remedial actions,  
6 the most significant and costly of which is remediation of coal combustion  
7 by-products (primarily fly ash) that may impact groundwater and is not  
8 subject to the CCR Rule.<sup>8</sup>

9 Additional obligations exist for various regulated substances at each of the  
10 EGUs. One example is related to asbestos containing material ("ACM")  
11 located at Bailly, Schahfer, and Michigan City. With respect to ACM  
12 obligations, there are requirements in both federal and Indiana law that  
13 require NIPSCO to "remove all [Regulated Asbestos Containing Material  
14 ("RACM")] from a facility being demolished or renovated before any  
15 activity begins that would break up, dislodge, or similarly disturb the

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<sup>8</sup> EPA approved the proposed remedial approach presented in NIPSCO's Corrective Measures Study (for Solid Waste Management Unit #15 – ash removal and in-situ stabilization).

1 material or preclude access to the material for subsequent removal.”<sup>9</sup>  
2 NIPSCO has identified RACM at Bailly, Michigan City, and Schahfer and  
3 must, therefore, plan to remove it before undertaking any decommissioning  
4 activities to ensure asbestos fibers do not become airborne.<sup>10</sup>

5 **Q27. Are these additional environmental remediation obligations included in**  
6 **the Decommissioning Cost Study sponsored by NIPSCO Witness Kopp?**

7 A27. Yes. The costs included by NIPSCO Witness Kopp in the Decommissioning  
8 Cost Study are current cost estimates associated with these remediation  
9 obligations. However, costs for certain categories (such as asbestos) are  
10 trending higher. NIPSCO is in the process of reviewing environmental  
11 remediation costs and expects to provide updated estimates in its next case  
12 rate case.

13 **Resource Planning and NIPSCO's IRP**

14 **Q28. How does NIPSCO evaluate the cumulative impact of future**  
15 **environmental requirements on resource planning?**

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<sup>9</sup> This requirement is codified in National Emission Standard for a Hazardous Air Pollutant (“NESHAP”) regulations (40 CFR 61.145), as well as 326 Ind. Admin. Code 14-10-4 (1).

<sup>10</sup> Cost estimates related to these ACM obligations are provided and supported by NIPSCO Witness Kopp. As noted by Witness Kopp, his estimates are based on information and estimates provided by Atlantic Plant Services, a contractor specializing in this type of remediation.

1 A28. NIPSCO incorporates the cumulative impact of future environmental  
2 requirements in the IRP process. The IRP considers impacts of anticipated  
3 environmental rules and regulations.

4 **Q29. What environmental rules and regulations, including, but not limited to,**  
5 **those discussed above, were considered in NIPSCO's IRP?**

6 A29. Compliance with all applicable environmental regulations was considered  
7 in the 2021 IRP. Notably, the CCR and ELG rules would require significant  
8 capital expenditures on Schahfer Units 17 and 18 to operate beyond 2025.  
9 Future anticipated regulation of GHG emissions, as well as updated CSAPR  
10 regulation on Schahfer Units 17 and 18, were also specifically considered.

11 **Q30. Please explain the key assumptions that were made with respect to these**  
12 **environmental rules and regulations that impacted the 2021 IRP.**

13 A30. The 2021 IRP assumed that significant capital expenditure is not required  
14 for NIPSCO to comply with the ELG Rule given the expected retirement  
15 dates of the coal units at Schahfer,<sup>11</sup> and the dry FGD and CCR-related  
16 investments at Michigan City.

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<sup>11</sup> The preferred plan of the 2021 IRP included retirement of Schahfer Units 17 and 18 by the

1           The 2021 IRP assumed that SCR would be required on Units 17 and 18  
2           beginning in 2024. While the EPA is not expected to require SCR on these  
3           units as soon as 2024, the EPA has proposed to begin implementation of the  
4           Good Neighbor Plan in 2023, which would require significant NOx  
5           reductions during the ozone season from affected sources, including  
6           Schahfer Units 17 and 18. As set out above, NIPSCO estimates that as of  
7           August 2022, compliance costs to acquire additional emission allowances  
8           could be approximately \$ [REDACTED] in 2023, \$ [REDACTED] in 2024, and \$ [REDACTED]  
9           [REDACTED] in 2025. NIPSCO would likely need to install SCR controls or  
10          acquire NOx allowances in perpetuity to continue operation of Units 17 and  
11          18 beyond their expected retirement date of 2025. To this end, the Good  
12          Neighbor Plan proposes to establish emission allowance budgets at the  
13          level of reductions achievable through the installation of SCR controls,  
14          starting in 2026.

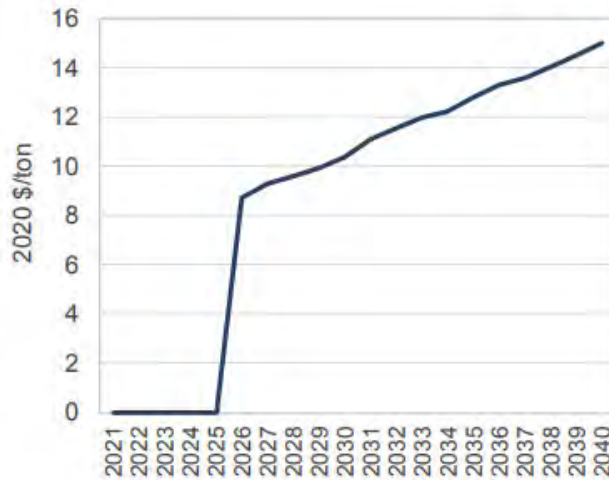
15          In the 2021 IRP modeling, NIPSCO assumed three carbon price scenarios:  
16          reference, none, and aggressive. NIPSCO's reference case incorporated a

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end of 2023. Due to unanticipated delays in replacement resources, NIPSCO now expects Units 17 and 18 to retire by the end of 2025.

1 price on carbon emissions starting in 2026, which is reflective of several  
2 different potential pathways for legislative action or executive regulation.  
3 Similar to NIPSCO's 2018 IRP, the 2021 IRP suggests that pricing between  
4 \$9-\$15/ton (in real 2020 dollars, see Figure 1 below) between 2026 and 2040  
5 would achieve a 30%-40% reduction in CO2 emissions from the U.S. power  
6 sector relative to a recent historical year baseline.

7 **Figure 1**

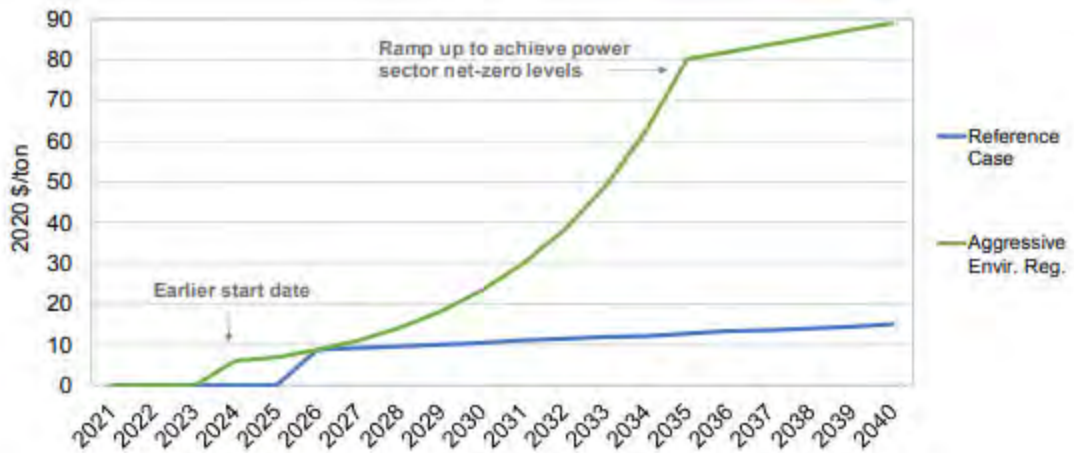


8  
9 The aggressive scenario assumed a significant price on carbon, based on the  
10 premise that the Biden Administration and Congress lay the groundwork  
11 for a carbon emission reduction program via a tax or cap-and-trade regime,  
12 with future governments implementing stricter CO2 policy to establish net



1 zero power sector targets by 2040. Under such assumptions, a price on  
2 carbon emissions would be instituted by 2024 (see Figure 2 below), with a  
3 ramp up in stringency over time to achieve net zero levels for the power  
4 sector.

5 **Figure 2**



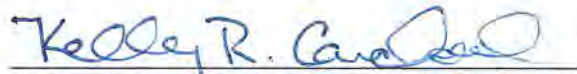
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7 **Q31. Does this conclude your prefiled direct testimony?**

8 **A31. Yes.**

**VERIFICATION**

I, Kelly R. Carmichael, Vice President, Environmental Policy for NiSource Corporate Services Company, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

A handwritten signature in blue ink that reads "Kelly R. Carmichael". The signature is written in a cursive style and is positioned above a horizontal line.

Kelly R. Carmichael

Date: September 15, 2022