

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF NORTHERN INDIANA)
PUBLIC SERVICE COMPANY LLC)
PURSUANT TO IND. CODE §§ 8-1-2-42.7, 8-1-)
2-61 AND IND. CODE § 8-1-2.5-6 FOR (1))
AUTHORITY TO MODIFY ITS RATES AND)
CHARGES FOR ELECTRIC UTILITY)
SERVICE THROUGH A PHASE IN OF)
RATES; (2) APPROVAL OF NEW) CAUSE NO. 45159
SCHEDULES OF RATES AND CHARGES,)
GENERAL RULES AND REGULATIONS,)
AND RIDERS; (3) APPROVAL OF REVISED)
COMMON AND ELECTRIC DEPRECIATION)
RATES APPLICABLE TO ITS ELECTRIC)
PLANT IN SERVICE; (4) APPROVAL OF)
NECESSARY AND APPROPRIATE)
ACCOUNTING RELIEF; AND (5) APPROVAL)
OF A NEW SERVICE STRUCTURE FOR)
INDUSTRIAL RATES.)

PETITIONER'S NOTICE OF SUBSTITUTION OF WITNESS

Northern Indiana Public Service Company LLC, by counsel, hereby gives notice that Petitioner's witness Michael Hooper is being substituted for and is adopting the direct and rebuttal testimonies previously prefled by Benjamin Felton. Mr. Felton has accepted employment outside of NIPSCO and will not be available to sponsor or defend his testimony at the evidentiary hearing in this Cause.

For purposes of administrative efficiency and the convenience of the Commission and the Parties, Petitioner proposes to continue to treat Mr. Felton's prefiled direct and rebuttal testimony (Petitioner's Exhibit Nos. 7 and 7-R) separately from Mr. Hooper's prefiled direct and rebuttal testimony (Petitioner's Exhibit Nos. 2 and 2-R) and offer each into the record individually. Rather than parsing out Mr. Felton's testimony among several new witnesses, this approach will promote efficiency and convenience by retaining subject matter integrity between exhibits and the overall structure of Petitioner's evidence that has existed since this Cause was initiated. Petitioner notes that as of the date of filing this Notice, no Party to this proceeding has indicated a need for cross-examination concerning the subject matter of Petitioner's Exhibits 7 and 7-R, and Mr. Hooper is qualified to sponsor those exhibits in their entirety based on his experience in previous positions within NIPSCO, and will be prepared to answer questions about them in the event they arise.

For purposes of convenience, attached hereto are (1) a redline version of the Introduction section of Mr. Hooper's direct testimony showing the changes from the previously prefiled version of Mr. Felton's direct testimony, (2) a clean copy of Mr. Hooper's direct testimony; (3) a redline version of the Introduction section of Mr. Hooper's rebuttal testimony showing the changes from the previously prefiled version of Mr. Felton's rebuttal testimony, (4) a clean copy of Mr. Hooper's rebuttal

testimony. At the evidentiary hearing in this Cause, the clean version of Mr. Hooper's direct and rebuttal testimonies will be offered into evidence.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Claudia J. Earls", is positioned above a horizontal line.

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CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing was served upon the following via electronic transmission this 26th day of June, 2019 to:

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Claudia J. Earls

Petitioner's Exhibit No. 7
Northern Indiana Public Service Company LLC
Page 1

VERIFIED DIRECT TESTIMONY OF MICHAEL HOOPER

Deleted: BENJAMIN FELTON

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

A1. My name is Michael Hooper and my business address is 801 East 86th Avenue, Merrillville, Indiana 46410. I am Senior Vice President of Regulatory, Legislative Affairs and Strategy for Northern Indiana Public Service Company LLC ("NIPSCO" or "Company").

Deleted: Benjamin Felton

Deleted: employed by

Deleted: as Senior Vice President, NIPSCO Electric

Q2. Please describe your educational background.

A2. I received a Bachelor of Science in Mechanical Engineering with Honors in 1995 from the West Virginia Institute of Technology. I am a licensed Project Management Professional (PMP), a graduate of the Strategic Leadership program from The Ohio State University Fisher College of Business.

Deleted: I hold a Bachelor of Science in Business Management from University of Phoenix and a Masters of Business Administration from Gainey School of Business - Spring Arbor University. I am a graduate of the University of Wisconsin-Madison CE Utility Institute program and have completed several other executive leadership programs.

Q3. Please provide a summary of your professional experience.

A3. I began my career at American Electric Power ("AEP") in 1995 as a Project Engineer. I served at AEP for 16 years, where I held multiple positions, including Manager of Major Projects Commissioning and Acceptance, Manager of Project Scheduling, Estimating and Controls, Manager of Outage Planning and Scheduling, and Supervisor of Outage and Planning

Deleted: <#>What are your responsibilities as Senior Vice President, NIPSCO Electric?¶
I am responsible for all aspects of Electric Operations for NIPSCO. In my current role, I have responsibility for the NIPSCO generating fleet as well as the transmission and distribution operations. This not only includes the operating functions but a number of the support organizations as well. I am responsible for ensuring the safe and reliable production and delivery of electric energy to NIPSCO's customers.¶

Petitioner's Exhibit No. 7
Northern Indiana Public Service Company
Page 2

1 for Northeast Generation and Technical Support. During my tenure at AEP
2 I was part of a team that managed budgets to within two percent for at least
3 three (3) consecutive years which could primarily be attributed to the
4 organization's strong foundation in Earned Value Management and
5 integration of schedule and cost. Upon my departure in 2011, I was serving
6 as Director of Project Controls for Generation Major Projects. I joined
7 NIPSCO in February 2011 as Vice President of Major Projects. In that role, I
8 was responsible for oversight for strategic planning, project planning, and
9 execution of all major generation, distribution and transmission projects
10 (generally projects in excess of \$2 million) at NIPSCO. In 2014, I was named
11 Senior Vice President of Major Projects and Electric Field Operations for
12 NIPSCO. In this role, I was responsible for the successful planning,
13 management and execution of the Company's key construction projects in
14 Gas & Electric Generation, Transmission, and Distribution areas, as well as
15 oversight of the Company's Electric Field Operations. I was promoted to
16 Senior Vice President, Electric Operations on July 1, 2015. I accepted my
17 current position of Senior Vice President of Regulatory, Legislative Affairs
18 and Strategy on October 16, 2018.

Deleted: Prior to joining Northern Indiana Public Service Company, I spent nearly 25 years at Consumers Energy Company (CE) in Jackson, Michigan. Over the course of my service to CE and its 1.8 million electric customers, I held multiple leadership roles during my tenure and concluded my affiliation as Executive Director of Electric System Operations and Maintenance. I also held roles as Executive Manager of Network Services, Substation Maintenance Manager, Substation Operations Manager and Senior Field Leader. During my career at CE I was able to bring a strong emphasis to employee and public safety, achieving reductions in recordable incidents of twenty-six percent for at three (3) consecutive years, which can be attributed to strong organizational commitment to positive safety culture and personal ownership. In addition, I also lead my teams to achieve Customer Average Interruption Duration Index (CAIDI) reductions of 26% since 2010.

Petitioner's Exhibit No. 7
Northern Indiana Public Service Company LLC
Page 3

1 **Q4. Have you previously testified before this or any other regulatory**
2 **commission?**

3 **A4. Yes. I previously provided testimony before the Indiana Utility Regulatory**
4 **Commission ("Commission") on behalf of NIPSCO in Cause Nos. 44688,**
5 **44012 and 44311.**

Deleted: I joined NIPSCO in December of 2015 as Vice President of Power Delivery. In that role, I was responsible for leadership of 600 NIPSCO electric employees engaged in delivering safe and affordable power to our customers. I was also responsible for oversight of all areas of Transmission and Distribution (T&D) including; strategic planning, budget planning, resource and workforce scheduling, outage restoration, system reliability and collaborative completion of the electric Transmission, Distribution, and Storage System Improvement Charge (TDSIC). I was promoted to my current position of Senior Vice President, NIPSCO Electric on October 16, 2018.¶

Deleted: No.

6 **Q5. Are you sponsoring any attachments to your testimony in this Cause?**

7 **A5. No.**

8 **Q6. What is the purpose of your testimony?**

9 **A6. The purpose of my testimony is to (1) describe steps NIPSCO has taken to**
10 **control costs, (2) describe NIPSCO's generation fleet, (3) describe NIPSCO's**
11 **electric transmission and distribution systems; (4) discuss the Company's**
12 **customer service and electric reliability programs; (5) describe the**
13 **significant investments NIPSCO has made to its generation and**
14 **transmission and distribution systems in recent years; and (6) explain**
15 **various pro-forma expense adjustments.**

16 **Q7. Has NIPSCO made significant investments in its electric facilities that is**
17 **driving the relief sought in this case?**

VERIFICATION

I, Michael Hooper, Senior Vice President, Regulatory, Legislative Affairs
and Strategy of Northern Indiana Public Service Company LLC, affirm under
penalties of perjury that the foregoing representations are true and correct to the
best of my knowledge, information and belief.

Michael Hooper

Date: June 26, 2019

Deleted: Benjamin Felton,

Deleted: NIPSCO Electric

Deleted: Benjamin Felton

Deleted: October 31, 2018

VERIFIED DIRECT TESTIMONY OF MICHAEL HOOPER

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

2 A1. My name is Michael Hooper and my business address is 801 East 86th
3 Avenue, Merrillville, Indiana 46410. I am Senior Vice President of
4 Regulatory, Legislative Affairs and Strategy for Northern Indiana Public
5 Service Company LLC ("NIPSCO" or "Company").

6 **Q2. Please describe your educational background.**

7 A2. I received a Bachelor of Science in Mechanical Engineering with Honors in
8 1995 from the West Virginia Institute of Technology. I am a licensed Project
9 Management Professional (PMP), a graduate of the Strategic Leadership
10 program from The Ohio State University Fisher College of Business.

11 **Q3. Please provide a summary of your professional experience.**

12 A3. I began my career at American Electric Power ("AEP") in 1995 as a Project
13 Engineer. I served at AEP for 16 years, where I held multiple positions,
14 including Manager of Major Projects Commissioning and Acceptance,
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16 Senior Vice President, Electric Operations on July 1, 2015. I accepted my
17 current position of Senior Vice President of Regulatory, Legislative Affairs
18 and Strategy on October 16, 2018.

1 **Q4. Have you previously testified before this or any other regulatory**
2 **commission?**

3 A4. Yes. I previously provided testimony before the Indiana Utility Regulatory
4 Commission ("Commission") on behalf of NIPSCO in Cause Nos. 44688,
5 44012 and 44311.

6 **Q5. Are you sponsoring any attachments to your testimony in this Cause?**

7 A5. No.

8 **Q6. What is the purpose of your testimony?**

9 A6. The purpose of my testimony is to (1) describe steps NIPSCO has taken to
10 control costs, (2) describe NIPSCO's generation fleet, (3) describe NIPSCO's
11 electric transmission and distribution systems; (4) discuss the Company's
12 customer service and electric reliability programs; (5) describe the
13 significant investments NIPSCO has made to its generation and
14 transmission and distribution systems in recent years; and (6) explain
15 various pro-forma expense adjustments.

16 **Q7. Has NIPSCO made significant investments in its electric facilities that is**
17 **driving the relief sought in this case?**

1 A7. Yes. Approximately three years have passed since the test year used to
2 establish NIPSCO's current rates. During that time period, NIPSCO has
3 invested significantly in its infrastructure related to its jurisdictional electric
4 operations. NIPSCO's Net Utility Plant has grown by approximately \$360
5 million or 12% over the last 3 years and is projected to grow by another \$520
6 million by the end of the 2019 future test year.

7 As discussed below, NIPSCO has taken steps to control costs resulting in
8 decreases to its operation and maintenance ("O&M") expenses, but in spite
9 of these efforts, increases in depreciation and amortization expense
10 associated with the investment in new plant are projected to counter those
11 savings.

12 **Q8. How has NIPSCO taken steps to control its costs?**

13 A8. NIPSCO closely monitors its capital expenditures and operating expenses.
14 On an annual basis, the manager in charge of each department or cost center
15 is required to prepare and submit a proposed operating budget which
16 includes a proposed level of capital expenditures and operating expenses.
17 Each operating budget is reviewed by management in order to ensure the
18 submitted expenditures are reasonable and necessary. Once approved by

1 management, each manager is responsible for monitoring their budget and
2 ensuring the costs are spent within approved limits. The budgets and
3 actual expenditure variances are reviewed throughout the year to ensure
4 that funds are being spent appropriately and in accordance with approved
5 levels. This process ensures that controls are in place to identify, monitor
6 and control costs.

7 **NIPSCO's Generation Fleet**

8 **Q9. Are you generally familiar with NIPSCO's generating facilities?**

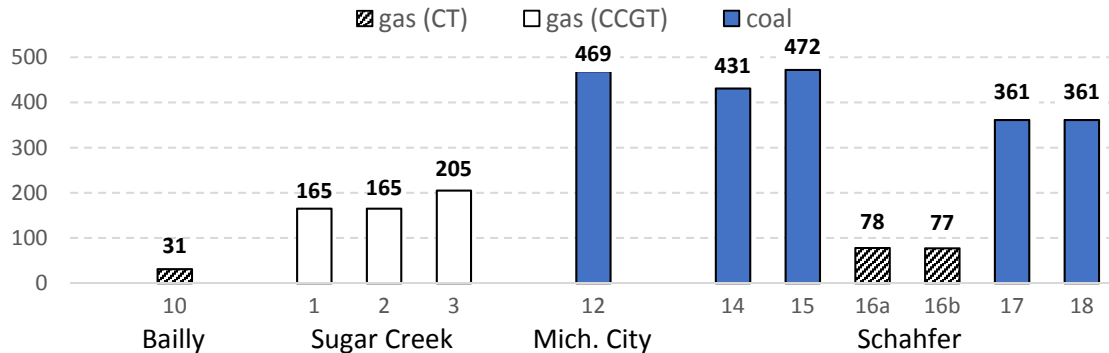
9 A9. Yes.

10 **Q10. Please generally describe NIPSCO's generation fleet.**

11 A10. The NIPSCO generating facilities have a total installed capacity of 2,825
12 megawatts ("MW") and consist of six (6) separate generation sites,
13 including the R.M. Schahfer Generating Station ("Schahfer") (Units 14, 15,
14 16A, 16B, 17 and 18), Michigan City Generating Station ("Michigan City")
15 (Unit 12), Bailly Generating Station ("Bailly") (Unit 10), Sugar Creek
16 Generating Station ("Sugar Creek") (SC1, SC2, and SS1) and two (2)
17 hydroelectric generating sites near Monticello, Indiana. Of the total
18 capacity, 73.3% is from coal-fired units, 26.3% is from natural gas-fired units
19 and 0.4% is from hydroelectric units. Figure 1 illustrates the installed

1 capacity and plant locations of NIPSCO's coal and gas-fired generation
2 units.

3 **Figure 1. Installed capacity of non-hydro generating units (MW)**



4 **Q11. What changes has NIPSCO made to its generation fleet since its last**
5 **electric rate case in Cause No. 44688 ("44688 Electric Rate Case")?**

6 A11. In its 44688 Electric Rate Case, NIPSCO advised the Commission of its plan
7 to retire Bailly Units 7 and 8, with the Unit 10 combustion turbine remaining
8 in operation. Bailly Units 7 and 8 were retired on May 31, 2018.

9 **Q12. What investments has NIPSCO made to its generation fleet since the**
10 **44688 Electric Rate Case?**

11 A12. NIPSCO has made significant investments to its generation fleet to comply
12 with federal environmental regulations since the 44688 Electric Rate Case.
13 By its December 13, 2017 Order in Cause No. 44872, the Commission

1 granted NIPSCO a Certificate of Public Convenience and Necessity
2 ("CPCN") for its Environmental Compliance Project on December 13, 2017
3 in Cause No. 44872. The Environmental Compliance Plan consists of the
4 following capital projects currently being recovered through the Federally
5 Mandated Cost Adjustment ("FMCA") tracker filings in Cause No. 44340-
6 FMCA-XX ("FMCA Tracker"):

7

Environmental Compliance Project ¹		
Project	In-Service Date (* Actual)	Direct Capital
Bailly Generating Station		
Ground Water Monitoring	10/19/2017*	\$350,000
Michigan City Generating Station		
Ground Water Monitoring	10/19/2017*	\$350,000
Remote Ash Conveying	11/19/2018	\$60,671,378
Material Management Area	11/19/2018	\$1,500,000
R. M. Schahfer Generating Station		
Ground Water Monitoring	10/19/2017*	\$750,000
Remote Ash Conveying (U14 & U15)	12/16/2018	\$85,815,727
Material Management Area	11/30/2018	\$3,500,000
Process and Storm Water Pond	6/30/2022	\$5,400,000
Landfill-Pond Closure	12/30/2018	\$3,704,855

1

2 At the end of the Forward Test Year, with the exception of the Process and
3 Storm Water Pond project at Schahfer, all of the Environmental Compliance
4 Projects will have been placed in-service as shown in the table above.

5 By its October 10, 2013 Order in Cause No. 44311, the Commission granted
6 NIPSCO a CPCN for its Mercury and Air Toxics Standards ("MATS")
7 Compliance Plan. The MATS Compliance Plan includes the following
8 capital projects currently being recovered through the Environmental Cost
9 Recovery Mechanism ("ECR") tracker filing in Cause No. 42150-ECR-XX

¹ Pursuant to First Progress Report (Attachment CCR-PR-1) approved in the Commission's July 25, 2018 Order in Cause No. 44340-FMCA-9.

1 ("ECR Tracker");²

MATS Capital Projects			
Unit	Project	Actual In service Date	Direct Capital ³
7	Fuel additives	12/8/2015	\$483,240
8	Fuel additives	12/8/2015	\$797,760
12	ACI	4/8/2016	\$4,301,155
12	Fuel additives	12/20/2015	\$734,850
14	ACI	7/31/2015	\$4,192,019
14	Fuel additives	12/10/2015	\$672,068
15	Fuel additives	12/10/2015	\$621,567
7/8	Permeation Source	7/30/2015	\$13,333
12	Permeation Source	7/31/2015	\$13,333
14	Permeation Source	7/30/2015	\$13,333
15	Permeation Source	7/30/2015	\$13,333
18	Permeation Source	8/13/2015	\$13,333

2

3 All of the MATS Compliance Projects have been placed in-service as shown
4 in the table above.

5 By its January 4, 2002 Order in Cause No. 42150, the Commission granted
6 NIPSCO a CPCN for its NO_x Compliance Plan. The NO_x Compliance Plan
7 includes the following capital projects currently being recovered through
8 the ECR Tracker:⁴

² The Permeation Source projects were approved in Cause No. 42150-ECR-26.

³ Approved capital costs in Cause No. 42150-ECR-31.

⁴ The Unit 7 3rd SCR Catalyst Layer, Unit 12 SCR Catalyst 1st Layer, and Unit 14 SCR

NOx Compliance Plan			
Unit	Project	In service Date (* Actual)	Direct Capital ⁵
7	SCR Catalyst 3 rd Layer	4/30/2016*	\$591,188
12	SCR Catalyst 1 st Layer	8/23/2017*	\$2,635,000
14	SCR Catalyst 1 st Layer	9/12/2016*	\$1,431,360
12	SCR Catalyst 2 nd Layer	8/23/2017*	\$2,300,000
12	SCR Catalyst 3 rd Layer	5/27/2019	\$2,300,000
14	SCR Catalyst 2 nd Layer	11/19/2018	\$2,700,000

1

2 At the end of the Forward Test Year, all of the NOx Compliance Projects
3 will have been placed in-service as shown in the table above.

4 By its September 5, 2012 Phase III Order in Cause No. 44012, the
5 Commission granted NIPSCO a CPCN for its Multi-Pollutant Compliance
6 Plan ("MPCP Compliance Plan"). The MPCP Compliance Plan includes the
7 following capital project currently being recovered through the ECR
8 Tracker:⁶

9

Catalyst 1st Layer were approved in Cause No. 42150-ECR-24. The Unit 12 SCR Catalyst 2nd Layer was approved in Cause No. 42150-ECR-28. Unit 12 SCR Catalyst 3rd layer and Unit 14 SCR Catalyst 2nd Layer were approved in Cause No. 42150-ECR-29.

⁵ Approved capital costs in Cause No. 42150-ECR-31.

⁶ The Unit 7 3rd SCR Catalyst Layer, Unit 12 SCR Catalyst 1st Layer, and Unit 14 SCR Catalyst 1st Layer were approved in Cause No. 42150-ECR-24. The Unit 12 SCR Catalyst 2nd Layer was approved in Cause No. 42150-ECR-28. Unit 12 SCR Catalyst 3rd layer and Unit 14 SCR Catalyst 2nd Layer were approved in Cause No. 42150-ECR-29.

MPCP Compliance Plan			
Unit	Project	In service Date (* Actual)	Direct Capital ⁷
12	FGD Facility Addition	12/15/2015*	\$255,000,000

1

2 All of the MPCP Compliance Projects have been placed in-service as shown
3 in the table above.

4 In addition to the environmental investments made to its generation fleet,
5 NIPSCO made the following significant investments since the 44688 Electric
6 Rate Case:

2016 In Service		
		Capital
Schahfer	Unit 18 Turbine, Valves, Generator and Auxiliaries	\$7.2M
2017 In Service		
		Capital
Schahfer	Unit 15 Turbine, Valves, and Auxiliaries Overhaul	\$21.7M
Schahfer	Unit 15 Finishing Super Heat Superheat Replacement	\$9.2M
Schahfer	Unit 15 Economizer Header Replacement	\$1.1M
Schahfer	Unit 17 Turbine Valve and Auxiliaries Overhaul	\$2.8M
2018 In Service / Forecast		
		Capital
Bailly	Unit 8 Conversion to Synchronous Condenser	\$16.6M
Schahfer	Unit 18 Turbine Overhaul	\$3.8M
2019 Forecast		
		Capital
Schahfer	Unit 14 West TDBFP Overhaul	\$2.79M
Schahfer	Unit 14 Reheat Lower Loop Replacement	\$3.05M

⁷ Approved capital costs in Cause No. 42150-ECR-31.

	2019 Forecast (Continued)	
Mich. City	Unit 12 Turbine, Valves and Auxiliaries	\$15.3M
Mich. City	Unit 12 #3, #4, and #6 Heater Replacements	\$1.98M
Mich. City	Unit 12 Convection Pass Front Walls and Intermediate Headers	\$1.79M
Mich. City	Unit 12 Convection Pass Side Walls	\$1.28M
Mich. City	Unit 12 Secondary Superheat Outlet Header Replacement	\$4.42M
Mich. City	Unit 12 Economizer Hoppers Replacement	\$4.88M

1

2 **Q13. In your opinion, is all of NIPSCO's environmental compliance**
3 **equipment used and useful in the generation of electricity to NIPSCO's**
4 **retail electric customers?**

5 A13. Yes. All of NIPSCO's generating units were operated during 2017. The
6 environmental equipment added as discussed above (all of which have
7 been preapproved by the Commission) has or will assist NIPSCO in
8 meeting increasingly stringent air emissions requirements.

9 **Q14. Please describe the improvements that have been made at the Sugar**
10 **Creek Generating facility and the subsequent impact to the customer.**

11 A14. In the fourth quarter of 2018, Sugar Creek will complete the Dry Low-NOx
12 2.6+ upgrade to the two gas turbines (SC1 and SC2), as well as the upgrade
13 to the control system that includes optiflex and auto-tune controls. These
14 upgrades will complete the upgrades to the entire plant control system.

1 These modifications will allow for a longer period of time between outages
2 (from a two year outage cycle to a four year outage cycle) on the gas
3 turbines. These upgrades will also eliminate the need for seasonal tuning
4 on the gas turbines, resulting in reduced O&M expenses. These upgrades,
5 as well as the replacement of the steam turbine rotor, will result in a higher
6 availability for the station. These modifications directly address a large
7 portion of the Equivalent Forced Outage Rate ("EFOR") events that have
8 recently occurred, as discussed below.

9 **Q15. Please discuss the retirement of Bailly Units 7 and 8 on May 31, 2018.**

10 A15. Both Units 7 and 8 at Bailly were successfully retired from service on May
11 31, 2018. Leading up to the retirement date, Bailly operated for 1,200
12 consecutive days with no safety incidents. Upon retirement, the final phase
13 of conversion of Unit 8 to a synchronous condenser was completed. This
14 conversion was necessary to support voltage due to a lack of rotating
15 generation in the lower Lake Michigan area. The synchronous condenser
16 is currently in-service and operating.

17 **Q16. What is the purpose of a synchronous condenser?**

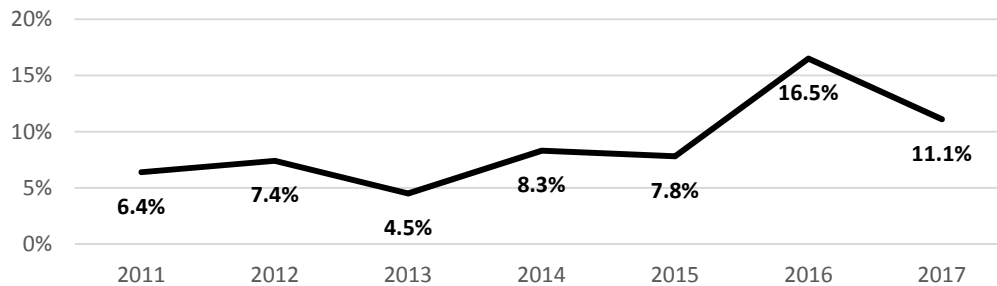
1 A16. The purpose of a synchronous condenser is to provide continuous Volt-
2 Ampere Reactive ("VAR") support to an electric transmission grid. The
3 total transmission system capacity is made up of active power, megawatts,
4 and reactive power, megavars ("MVARs"). The MVARs are required to
5 maintain system voltage when atypical operations are present (such as
6 starting large motors or arc furnaces), and to improve the system power
7 factor. Unlike other forms of VAR support, the amount of reactive power
8 from a synchronous condenser can be continuously adjusted. A
9 synchronous condenser does not convert electric power to mechanical
10 power or vice versa, but adjusts VARs according to conditions on the
11 electric power transmission grid (i.e., riding out short circuit events,
12 starting of electric arc furnaces, etc.). The installation and operation of a
13 synchronous condenser is identical to that for large electric motors and
14 generators. The magnetic field surrounding the rotating element is
15 controlled by a voltage regulator to either generate or absorb reactive
16 power as needed to adjust the electric transmission grid voltage, or to
17 improve power factor. Most synchronous condensers connected to
18 electrical grids are rated between 20 MVAR and 200 MVAR and many are

1 hydrogen cooled. The synchronous condenser at Bailly is rated at up to 300
2 MVAR and is hydrogen cooled.

3 **Q17. Please summarize the reliability metrics associated with the NIPSCO**
4 **generating units over the past three years.**

5 A17. Figure 2 illustrates that the reliability of NIPSCO's generating units,
6 exclusive of Units 7 and 8, as measured by the Equivalent Forced Outage
7 Rate ("EFOR"), has increased relative to the 44688 Electric Rate Case. The
8 Company's average EFOR for the three year period ending December 31,
9 2017 is 10.6%, an increase from the preceding three year period. This
10 increase in EFOR had contributing factors rooted in the limited run time for
11 the coal units during this period due to economic dispatch into MISO.

12 **Figure 2. NIPSCO's EFOR (for coal-fired generating units)**



13

14

15 **Q18. Please summarize the reliability metrics associated with Sugar Creek.**

1 A18. The EFOR for Sugar Creek has been below 2.5% for each of the past three
2 years and below 1% in 2016. In fact, Sugar Creek has won awards for its
3 superior performance. Sugar Creek received national recognition in 2012,
4 receiving the Pacesetter of the Year from Combined Cycle Journal. The
5 award was for “delivering on operational excellence.” As of June 2018, the
6 plant has achieved an 84% net capacity factor (“NCF”) and has exceeded
7 45% NCF every year since 2011, which is higher than NIPSCO expected
8 when it purchased the facility in May 2008. The operating profile for Sugar
9 Creek has changed dramatically since 2010. When NIPSCO bought Sugar
10 Creek, the plant had not had a NCF greater than 10% for any previous year,
11 and the NCF for 2008 was only 3.4% on 45 operating days. The NCF
12 increased to 14.8% in 2009, and in 2010, the Midcontinent Independent
13 System Operator, Inc. (“MISO”) cycled Sugar Creek regularly with 167
14 starts and a 31.6% NCF. MISO continues to operate Sugar Creek at an
15 elevated NCF, and Sugar Creek had net capacity factors of 68%, 78%, and
16 74% from 2015 through 2017, respectively, due largely to lower natural gas
17 prices and the facility’s operational flexibility with Sugar Creek regularly
18 dispatched by MISO even during off-peak periods. Sugar Creek’s safety

1 record is also excellent, and there has never been a lost time incident at
2 Sugar Creek.

3 **Q19. Please explain how EFOR measures unit reliability.**

4 A19. A generating unit's EFOR is equal to the hours of unit failure (unplanned
5 outage hours and equivalent unplanned derated hours) given as a
6 percentage of the total hours of the availability of that unit (unplanned
7 outage, unplanned derate, and service hours). For example, if MISO
8 anticipated a unit to be available to run 3,000 hours in a certain year but the
9 unit was unable to run 300 of those hours due to unexpected problems, the
10 unit's EFOR for the year would be 10%. Therefore, a low EFOR number is
11 desirable.

12 **Q20. Are these reliability metrics in line with industry metrics?**

13 A20. Yes. The EFOR of NIPSCO's coal units was 9.79% in 2017, below the 2017
14 U.S. average of 10.92% for similarly sized units, 300 - 599MW. During the
15 three year period 2015 – 2017, NIPSCO's average EFOR was 10.63%, still
16 slightly lower than the 2017 national average.

17 **Q21. Does NIPSCO expect reliability metrics to remain in-line with industry**
18 **standards?**

1 A21. With recently announced coal plant retirements, there is the potential for
2 EFOR to move upward over the near to medium term. NIPSCO will
3 continue to operate its facilities in a safe, environmentally compliant
4 manner and with a reasonable level of reliability, while making sound
5 decisions with regard to significant capital investments into facilities with
6 limited operating lives. The cost impact to our customers is always a key
7 component to any prudent investment decisions we make and will continue
8 to be through this transition period. Our performance initiatives are
9 directly tied to reliability metrics (EFOR and EAF), safety metrics (OSHA
10 recordables, DART, and Preventable Auto collisions), customer economics,
11 and staying within our operation budget, and targets for these metrics are
12 part of my performance expectations, and those of my leadership team.

13 **Q22. Do reductions in the dispatch of NIPSCO's coal units impact the cost to**
14 **operate those units?**

15 A22. Yes. NIPSCO's coal units were engineered to be used as base load units
16 that run consistently over long periods of time, and they were not designed
17 to ramp up and down in response to short term market signals. As those
18 units become less economical, the cost to operate them increases because in
19 addition to the increased maintenance required of older units, the added

1 expenses to ramp the units up and down are incurred more frequently.
2 NIPSCO must remain mindful of how that added expense to customers
3 balances against the impact on reliability. In spite of the cost control efforts
4 NIPSCO has undertaken as I have referenced above, the operational
5 characteristics of these plants dictate that some increases in costs cannot be
6 avoided when the plants are operated outside of the parameters for which
7 they were designed.

8 **Base Cost of Fuel and Coal Inventory Levels**

9 **Q23. What was the level of fuel expense in the Historic Base Period?**

10 A23. The adjusted retail jurisdictional cost of fuel in the Historic Base Period
11 reported in Petitioner's Exhibit No. 4, Attachment 4-B-S2, FP Module was
12 \$494,884,095 (Line 1, Column A).

13 **Q24. Were NIPSCO's retail jurisdictional fuel costs during the Historic Base**
14 **Period reasonable?**

15 A24. Yes. NIPSCO made (and continues to make) every reasonable effort to
16 acquire fuel so as to provide electricity to its retail customers at the lowest
17 fuel cost reasonably possible. As NIPSCO regularly explains in its quarterly
18 fuel adjustment charge proceedings, NIPSCO purchases fuel (coal)
19 pursuant to long-term contracts entered into using competitive bidding and

on the spot markets. For gas-fired generators (combustion turbines and Sugar Creek) NIPSCO purchases natural gas pursuant to supply contracts that are entered into using a competitive bidding process. Historically, the natural gas supply contracts have been seasonal or annual in duration, ensure firm delivery of natural gas to the generator, and have competitive pricing options based upon prevailing market conditions. NIPSCO considers a number of factors in making fuel procurement decisions, including price, quality, suitability, environmental attributes, supplier availability, reliability, and diversity. Market factors also affect fuel purchases.

Q25. What was the coal inventory level in the Historic Base Period?

A25. The retail jurisdictional coal inventory level reported in Petitioner's Exhibit No. 4, Attachment 4-B-S2, RB Module for the Historic Base Period was \$80,046,953 (Line 16, Column A)

Q26. Is this coal inventory level reasonable?

A26. Yes, this coal inventory level is consistent with our fuel inventory strategy, which was provided as part of the Minimum Standard Filing Requirements. NIPSCO's fuel inventory strategy is designed to balance the costs

1 associated with maintaining coal inventory with the need to provide a level
2 of assurance that when needed, during periods of high demand, extreme
3 weather, or fuel transportation or mine production problems, NIPSCO will
4 be able to call on its generating units and have adequate fuel supplies on
5 hand.

6 **NIPSCO's Safety Culture**

7 **Q27. Please describe NIPSCO's safety culture.**

8 A27. NIPSCO's safety culture has steadily improved over the past decade. In
9 2010, NIPSCO hired an outside consultant to review not only the
10 Company's policies and historical safety performance, but also the safety
11 culture. This consultant spent time reviewing all documents, historical
12 safety metrics, and made numerous visits across our service territory to
13 gain a holistic view of the Company's state of employee safety. The
14 consultant then delivered a "state of the business" report for individual
15 operational areas within the Company and packaged together a plan for
16 how to deliver human performance based error reduction into the fabric of
17 the Company. This journey has been ongoing for almost nine full years
18 now and we are continuing to see the benefits of improved safety culture
19 and safety performance metrics. In the past year, NIPSCO has engaged

1 other consultants who are utility industry experts in safety regulations to
2 work with our internal teams to review and refine our internal work
3 practices, safety manuals, and safety policies/procedures while ensuring
4 alignment with industry standards and best practices.

5 To continue building a stronger safety culture, in the past three years,
6 NIPSCO has participated in the National Safety Council's "Journey to
7 Safety Excellence" program. Our work within the realms of human
8 performance, just culture and performance management as part of our
9 aforementioned approach aligned well with the program and allowed us to
10 continue to grow our culture across the NIPSCO footprint. As part of the
11 program, NIPSCO undertakes an annual employee survey that is focused
12 only on safety culture and is benchmarked against over 800 other survey
13 participants from across the globe. Following the survey period, local
14 safety team's work together to build action plans focused on improving
15 safety performance and ultimately safety culture in low scoring areas. This
16 has resulted in a significant improvement in how our employees perceive
17 our safety efforts.

18 In addition, NIPSCO continues to collaboratively work with our front line

1 employees to develop rules and policies for stronger work practices. We
2 have developed a number of in-house safety training programs to improve
3 our driving performance and we continually monitor regulatory changes
4 and requirements to manage our safety training on a continual
5 improvement basis.

6 NIPSCO's safety culture also reaches into our contractors and construction
7 execution teams as well, and NIPSCO has provided strong support to all of
8 our contractor teams with an example being our cooperative contractor
9 safety committees (CCSCs) for both our generation and field operations
10 teams. These committees are run by our contractors - with NIPSCO support
11 - and involve leaders from each of NIPSCO's major contractor teams. We
12 view our relationship with our contracted business partners the same way
13 we view our relationships with our own employees. This focus on
14 cooperation and safety has resulted in very strong safety performance from
15 our contracted teams as well.

16 **Q28. Have NIPSCO's safety metrics improved in recent years?**

17 A28. Yes. Overall, NIPSCO has made an 80% improvement in recordable injury
18 rate, an 83% improvement in DART (days away, restriction or transfer)

1 injury rate, and a 71% improvement in vehicle crash rate from year end 2008
2 to year end 2017. On the electric operations side of the business, NIPSCO
3 has seen a 66% improvement in recordable injury rate, a 72% improvement
4 in DART (days away, restriction or transfer) injury rate, and a 71%
5 improvement in vehicle crashes from year end 2008 to year end 2017.

NIPSCO Overall Performance ^^			
Year	OSHA Rate	DART Rate	Crash Rate
2008	3.72	1.92	6.35
2009	4.04	2.40	4.18
2010	3.84	2.39	5.83
2011	2.61	1.10	5.10
2012	1.83	1.04	3.26
2013	1.50	0.93	2.32
2014	1.26	0.84	2.14
2015	1.23	0.65	2.43
2016	1.20	0.61	1.76
2017	0.75	0.33	1.84
^^ Includes all NIPSCO operations			

6
7
8

NIPSCO Electric Stats- Combined Electric Ops and Generation			
Year	OSHA Rate	DART Rate	Preventable Crashes
2008	3.84	2.18	38
2009	3.75	2.89	23
2010	2.75	1.86	36
2011	2.61	0.99	34
2012	2.46	1.54	26
2013	1.44	0.99	15
2014	1.41	0.96	19
2015	2.20	1.18	21
2016	2.23	1.37	13
2017	1.30	0.61	11

1
2 **Q29. Does NIPSCO's focus on safety benefit customers?**

3 A29. Yes. NIPSCO's focus on safety helps customers in a variety of ways, namely
4 in ensuring a healthier, more productive workforce, while keeping our
5 public as safe as possible. By keeping employees safer, we are lowering
6 costs for overtime or contracted work to replace an injured work force. We
7 are reducing hidden costs by preventing tired or less experienced
8 employees from having to replace more experienced employees when they
9 are injured. All other factors remaining constant, this reduces our operating
10 costs.

11 From a public safety standpoint, our continued focus on driving safety
12 makes our employee-drivers a much safer member of the on-road

1 community while traveling throughout our service territory. On the safety
2 side, our focus on safety procedures and rules results in our front line teams
3 working with as little risk as possible, which is a boon when working with
4 dangerous energy, such as electric distribution/transmission circuits. We
5 continue to focus not only on appropriate training for employees, but also
6 on giving them the right tools and protective equipment to do their job.

7 **NIPSCO's Electric Transmission and Distribution Systems**

8 **Q30. Please describe NIPSCO's electric transmission system.**

9 A30. The NIPSCO electric transmission system consists of approximately 353
10 circuit miles of 345 kV, 756 circuit miles of 138 kV and 1,693 circuit miles of
11 69 kV transmission lines. In addition, NIPSCO has 63 transmission
12 substations. NIPSCO is interconnected with six neighboring utilities. The
13 Company has transmission interconnects with American Electric Power or
14 its affiliates, at the 345 kV, 138 kV, and 69 kV operating voltages. NIPSCO
15 also interconnects with Commonwealth Edison at 345 kV and 138 kV and
16 with Duke Energy Indiana at 345 kV, 138 kV and 69 kV. NIPSCO has a
17 single 138 kV interconnection with both Ameren and International
18 Transmission Company ("ITC") and a single 765kV interconnection with
19 Pioneer Transmission.

1 **Q31. Please provide an overview of the NIPSCO electric distribution system.**

2 A31. NIPSCO serves more than 468,000 customers in Northern Indiana,
3 primarily through more than 900 distribution circuits. These circuits
4 operate at a nominal voltage of 34.5 kV, 12.5 kV, and 4 kV, and radiate from
5 approximately 240 distribution substations. There are approximately 8,209
6 miles of overhead line, with about 2,532 miles of underground cable.

7 **Transmission and Distribution Investment**

8 **Q32. Please identify the significant investments NIPSCO has made in its**
9 **transmission and distribution system since the 44688 Electric Rate Case.**

10 A32. Since the 44688 Electric Rate Case, NIPSCO has made numerous
11 investments in its transmission and distribution system, including:

12 (a) Investment in an Enhanced Outage Management System ("EOMS")
13 to improve NIPSCO customers' experience by providing for faster
14 restoration and more accurate communication of estimated time of
15 restoration during planned and unplanned outages. Overall, the
16 EOMS will serve as the foundational platform to drive dependable,
17 predictable, timely service and emergency response. This solution is
18 targeted to go live at the end of the first quarter in 2019.

1 (b) Ind. Code Ch. 8-1-39 allowed for the implementation of an electric
2 "TDSIC" (transmission, distribution, and storage system
3 improvement charge) plan in January 2016. Since the successful
4 implementation, NIPSCO has made significant investments in
5 infrastructure upgrades. Through May 31, 2018, NIPSCO
6 investments total more than \$283 Million in direct costs.

7 (c) Close to completion of major multi value projects

8 (d) In addition to the projects above, NIPSCO continues to strategically
9 invest maintenance capital in projects that expand or increase system
10 capacity. Investments also include enhancing Cyber Security to
11 protect the Electric system from attack, reducing systemic risk.

12 **Q33. What is the status of the MVP projects?**

13 A33. Under the MISO Transmission Owners Agreement ("TOA"), NIPSCO is
14 responsible for (or partially responsible for) constructing two MVP projects
15 that connect to NIPSCO's system: (1) Reynolds to Topeka 345kV, and (2)
16 Reynolds to Greentown 765kV. These projects will be 100% complete as of
17 the end of the December 31, 2019 Forward Test Year. A summary of the
18 current status of these two MVP projects is as follows:

1 **345kV Reynolds to Topeka**

- 2 • Overall approximately 98% complete - Circuits 34528 and 34529 are
3 both in service
- 4 • 45% of Customer ROW sign off complete
- 5 • Hiple Substation reactors have been installed and going through
6 testing and commissioning.
- 7 • Hiple NIPSCO/ AEP/ ITC tie-ins are slated for a November 1 start
8 and tentatively scheduled to be completed by November 21.

9 **765kV Reynolds to Greenstown**

- 10 • Overall, approximately 97% complete- 75% of Customer ROW
11 sign off completed
- 12 • Contractor is completing minor ROW work
- 13 • The 765kV line is in service from Reynolds to Greenstown

14 **Q34. Are the MVP facilities included in NIPSCO's jurisdictional rate base in**
15 **this case?**

16 A34. No. NIPSCO Witness Shikany explains why the MVP facilities are not
17 included in NIPSCO's jurisdictional rate base.

18 **Q35. In your opinion, are all of NIPSCO's transmission and distribution plant**
19 **and equipment used and useful in the provision of electricity to**
20 **NIPSCO's retail electric customers?**

21 A35. Yes. NIPSCO's transmission and distribution plant and equipment are
22 essential to the reliable transport and delivery of electricity from NIPSCO's

1 generation fleet (or from other generators) to its retail customers, in order
2 to meet customers' needs for electric power.

3 **Customer Service and Reliability**

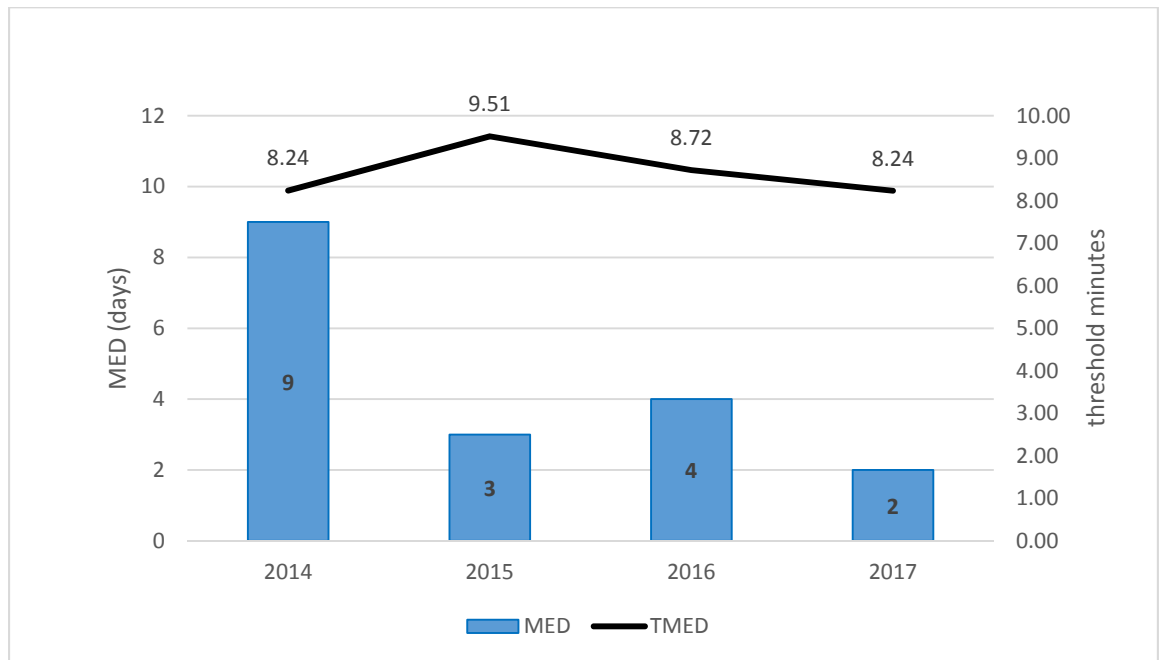
4 **Q36. Please summarize the reliability metrics associated with NIPSCO's**
5 **transmission and distribution system since the 44688 Electric Rate Case.**

6 A36. NIPSCO monitors three main metrics to evaluate the reliability of the
7 transmission and distribution system: SAIFI, SAIDI and CAIDI. SAIFI is
8 the System Average Interruption Frequency Index and represents the
9 average number of times that a system customer experiences an outage
10 during the year. SAIDI is the System Average Interruption Duration Index
11 and represents the number of minutes a utility's average customer did not
12 have power during the year. CAIDI is the Customer Average Interruption
13 Duration Index and represents the average time of an outage during the
14 year.

15 NIPSCO's reliability indices, CAIDI, SAIDI, and SAIFI have improved since
16 the 44688 Electric Rate Case. Specifically considering the metrics from an
17 all-inclusive perspective, NIPSCO has demonstrated consistent
18 improvement from 2014 to 2017. By industry standard, reliability indices
19 are reported without including Major Event Days ("MED"), which are

1 primarily storms or severe weather events more destructive than typical
2 storm events. Figure 3 illustrates the number of MED in NIPSCO's service
3 territory and the threshold that was used to identify major event days each
4 year. NIPSCO believes that the decrease in MED in recent years is due to
5 its vegetation management program. Additionally, NIPSCO implemented
6 a comprehensive emergency restoration plan in 2017 that positively
7 contributed to the downward trend in major event days.

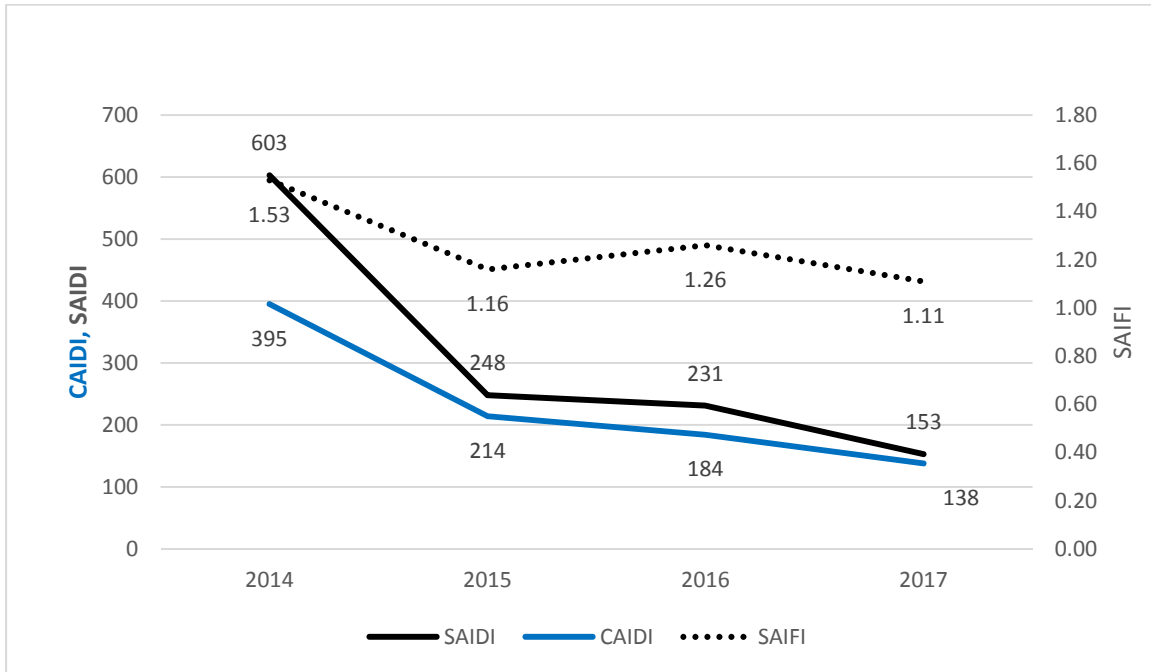
8 **Figure 3. NIPSCO's Major Event Days Metrics**



9
10 However, including MEDs in the reliability metrics provides a
11 comprehensive view of the overall customer experience during outage

1 events. As depicted in Figure 4, NIPSCO achieved a 27% reduction in
2 SAIFI, a 75% reduction in SAIDI, and a 65% reduction in CAIDI.

3 **Figure 4: NIPSCO Reliability Metrics (Including MED)**

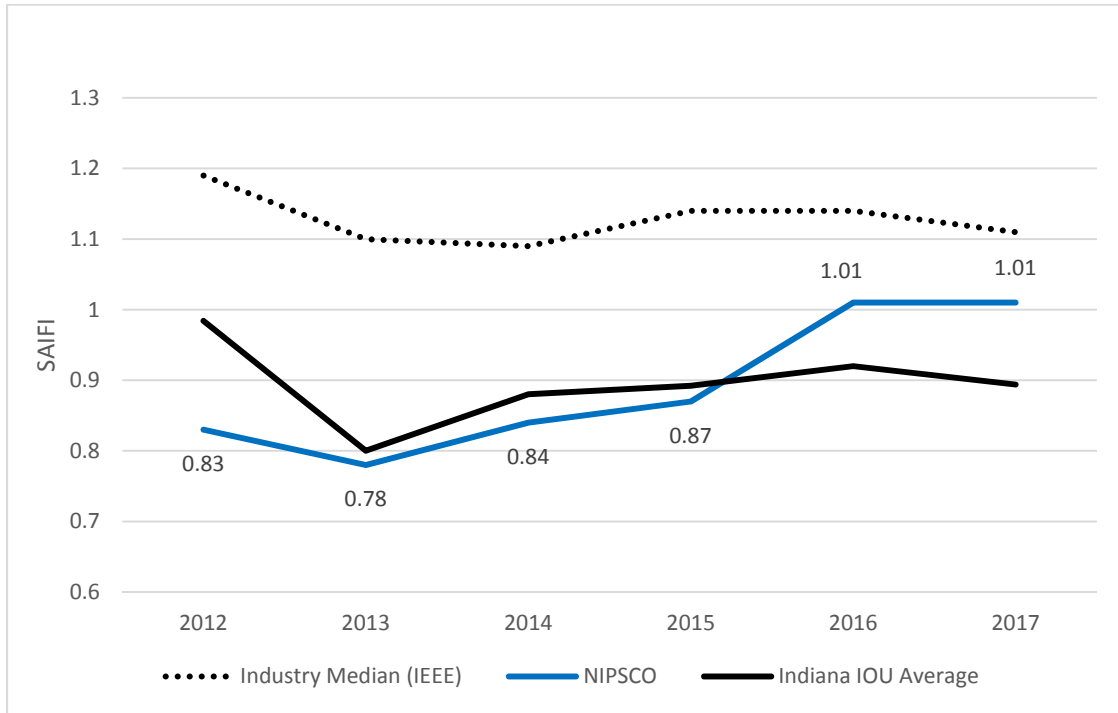


4
5 **Q37. Are NIPSCO's transmission and distribution reliability metrics in-line**
6 **with industry standards?**

7 A37. Yes. Figure 5 shows that NIPSCO's SAIFI has been lower (better) than the
8 Institute of Electrical and Electronics Engineers ("IEEE") industry median
9 for medium-sized utilities over the past 5 years. Figure 6 shows that
10 NIPSCO's SAIDI has been below or slightly above the IEEE industry
11 median for medium-sized utilities over the past 5 years. Finally, Figure 7

1 shows that NIPSCO's CAIDI has been above the IEEE industry median for
2 medium-sized utilities over the past 5 years.

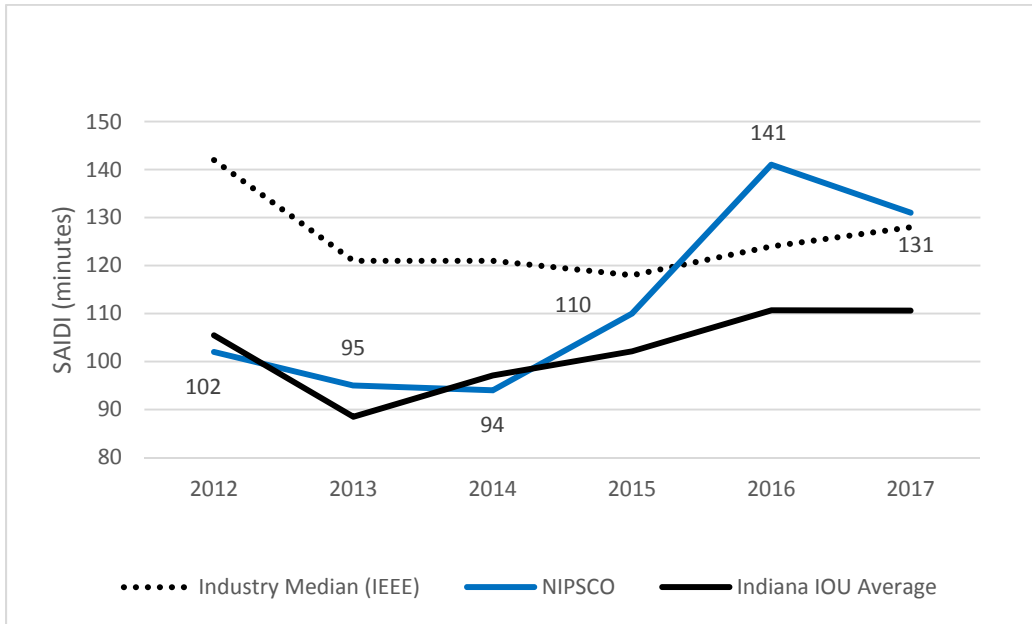
3 **Figure 5. SAIFI (excluding Major Events)**



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5

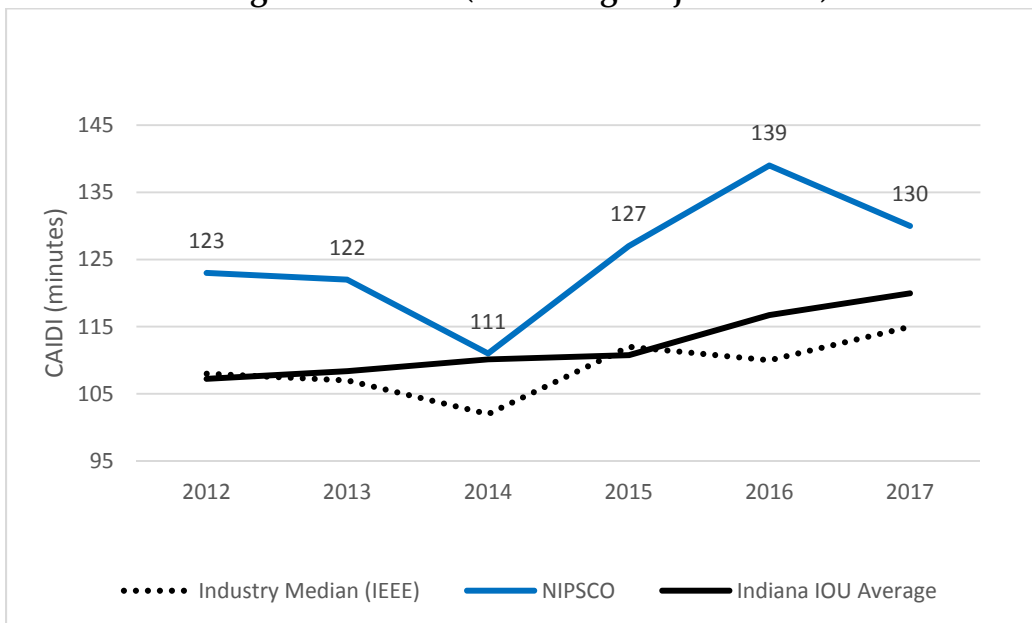
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Figure 6. SAIDI (excluding Major Events)



2

Figure 7. CAIDI (excluding Major Events)



3

4

1 **Q38. What types of maintenance programs are in place at NIPSCO to ensure**
2 **electric system reliability?**

3 A38. NIPSCO has put in place a comprehensive set of proactive substation,
4 transmission, and distribution maintenance programs targeted at
5 reliability. These include an active vegetation management program and
6 capital investments aimed at enhancing system capabilities, improving
7 reliability, and replacing aging infrastructure where needed. NIPSCO has
8 also enhanced its transmission system maintenance program procedures
9 and record systems to improve reliability, reduce mis-operations, and
10 ensure compliance with North American Electric Reliability Corporation
11 ("NERC") standards.

12 NIPSCO is currently operating its wooden structure inspection program on
13 a 10-year cycle. This program includes the treatment/life extension of poles
14 meeting minimum strength requirements and replacement of those that do
15 not meet those requirements. The pole program inspects approximately
16 30,000 wooden transmission and distribution poles per year, and replaces a
17 minimum of 1,200 poles on an annual basis.

18 Other programs include the periodic inspections and maintenance of

1 transmission lines and structures, substation equipment, protective relay
2 systems, and distribution pad-mount transformers, pole-mounted
3 reclosers, voltage regulators, switched capacitors, and other underground
4 equipment. These programs also include the remedial work necessary to
5 repair or replace minor plant items found to be deficient from inspection
6 criteria.

7 **Q39. In addition to the maintenance programs described above, what other**
8 **actions has NIPSCO undertaken to maintain customer service and**
9 **reliability?**

10 A39. In 2017, NIPSCO developed and implemented a robust emergency
11 response plan providing for coordinated and comprehensive response for
12 rapid restoration of electric service in the event of severe weather, or other
13 system emergencies, by ensuring that all required corporate resources are
14 utilized in the most effective manner.

15 In addition, NIPSCO began a formal Outage Investigation Program that
16 reviews any outages that impact more than 1,000 customers, result in a pole
17 fire or similar safety-related event, or have an outage cause code of
18 "unknown." The findings are reported out through the organization.

1 Lineman, Substation Electricians, Supervisors, Dispatchers, and Engineers
2 all benefit from these report findings by applying these lessons learned to
3 their designs, materials, and construction methods to improve reliability.
4 Part of this program was the review and update of the outage cause codes
5 that identify the true outage root cause. This allows NIPSCO to more
6 accurately perform analytics on its outage causes and make improved
7 decisions on materials, designs, construction methods, and maintenance
8 techniques.

9 NIPSCO maintains a Line & Sub voltage regulator maintenance
10 replacement program to reduce in service failures leading to enhanced
11 customer reliability. Newer design regulators incorporate enhanced tap
12 changers that reduce contact wear and thus premature failure.
13 Microprocessor based controls have been more reliable than analog
14 controls, with the added benefit of enhanced customer voltage profile.

15 NIPSCO continues to perform its "Worst Circuits" and "Worst Taps"
16 Programs to better improve electric system reliability. The "Worst Circuits"
17 Program includes calculating the CAIDI, SAIDI, SAIFI, and Customer
18 Duration Hours annually for each circuit and determining an overall

1 performance value for each Circuit. The circuits with the worst
2 performance values are then assessed and recommendations for
3 improvement are developed. The "Worst Taps" Program includes
4 identifying all taps that have experienced multiple outages in the previous
5 year and developing recommendations for improvement.
6 Recommendations for improvement for both the "Worst Circuits" and
7 "Worst Taps" Programs include targeted tree trimming, replacement of
8 equipment prone to failure, replacement of equipment that is in poor
9 condition, an analysis of fuse coordination and loading, and installing
10 additional sectionalizing devices (Cut-Outs, Triple-Shots, Reclosers,
11 Switches, etc.) where appropriate to minimize the impacts of outages and
12 the number of customers affected per outage.

13 Another action NIPSCO has undertaken to maintain customer service is its
14 recent deployment of Green Roads. The Green Roads initiative (1) reduces
15 the number of accidents and total claims cost by enabling both in-vehicle
16 driver feedback and ongoing trending analysis, and (2) reduces emergency
17 and outage response through closest vehicle to trouble identification by
18 providing usage and diagnostic data and improving preventative
19 maintenance. NIPSCO has a large investment in its fleet of vehicles. Green

1 Roads allows NIPSCO to monitor gas consumption and maintenance
2 needs. Keeping vehicles in a 'ready to roll' status enables both our Driver
3 Safety and Emergency /Outage Response goals.

4 NIPSCO has also invested in an Enhanced Outage Management System
5 ("EOMS") to improve customer experience by providing for faster
6 restoration and more accurate communication of estimated time of
7 restoration during planned and unplanned outages. Overall, the EOMS
8 will serve as the foundational platform to drive dependable, predictable,
9 timely service and emergency response. This solution is targeted to go live
10 at the end of the first quarter in 2019.

11 Finally, NIPSCO's Mobile user application was enhanced to include the
12 outage cause when the estimated time of restoration is updated to enhance
13 customer experience. All electric customers that have supplied NIPSCO
14 with an email address were auto-enrolled to receive power outage email
15 alerts. This information allows NIPSCO to inform customers on the
16 duration of the outage so customers can plan their day accordingly.

17 **Q40. How are customer service and reliability goals incorporated into**
18 **NIPSCO's planning process?**

1 A40. NIPSCO prepares an annual operating plan to outline long term and near
2 term operational goals, plans and performance targets. Key elements of this
3 plan include a focus on service and reliability improvements. Performance
4 targets are established that represent stretch levels of continuous
5 improvement and initiatives are then outlined to achieve the performance
6 targets. These performance targets and initiatives are then cascaded
7 throughout our organization in an aligned and increasingly more specific
8 manner, becoming a core part of our annual performance management
9 process. Our performance initiatives are directly tied to reliability metrics
10 (CAIDI, SAIFI, SAIDI), safety metrics (OSHA recordables, DART, and
11 Preventable Auto Crashes), and staying within our operation budget, and
12 targets for these metrics are part of my performance expectations, and those
13 of my leadership team.

14 **Pro-Forma Expense Adjustments**

15 **Q41. Please describe Adjustments OM 2A-17, and 2A-18 non-labor Storm**
16 **normalization shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2,**
17 **OM 2A.**

18 A41. Storm expenses vary with weather conditions, so NIPSCO analyzed storm
19 expense history looking back both 5 years and 7 years. Both periods

1 produced similar results of approximately \$3,000,000 of non-labor storm
2 expense, therefore a 5 year average of \$3,056,037 was deemed to be an
3 appropriate reflection of the ongoing, normalized value of non-labor Storm
4 expense. Adjustment OM 2A-17 increases non-labor Storm expense for the
5 Historic Base Period by \$1,336,602 to approximate a 5 year average of storm
6 expense. The Historic Base Period was a mild storm year, incurring only
7 \$1,644,457 of storm expense. Adjustment OM 2A-18 increases the 2017
8 normalized expense by \$74,979 to reach the 5 year average of \$3,056,037
9 included in the 2018 Budget Period. Details of this adjustment can be found
10 in Petitioner's Confidential Exhibit No. 20-S2, Workpaper OM 2A.

11 **Q42. Please describe Adjustment OM 2B-18 and OM 2B-19 for Pure Air**
12 **expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2B.**

13 A42. Adjustments OM 2B-18 and OM 2B-19 eliminate Pure Air expenses in the
14 amount of \$10,702,282 and \$8,568,689, respectively, because with the
15 retirement of Bailly Units 7 and 8 the Pure Air FGD facility will no longer
16 be required to operate so the associated expenses will no longer be incurred.
17 Details of this adjustment can be found in Petitioner's Confidential Exhibit
18 No. 20-S2, Workpaper OM 2B.

1 **Q43. Please describe Adjustments OM 2C-18 and OM 2C-19 for Generation**
2 **Maintenance Activity expenses shown on Petitioner's Exhibit No. 4,**
3 **Attachment 4-C-S2, OM 2C.**

4 A43. Adjustment OM 2C-18 reduces forecasted Generation Base Maintenance
5 expense by \$6,785,009 as a reflection of (a) a \$1.9 million budget
6 reprioritization decision, (b) a \$2.4 million pull forward of 2018 budgeted
7 dollars into 2017 to pre-purchase materials, and (c) a \$1.1 million reduction
8 in planned outages. While operationally advantageous, they were isolated
9 opportunities and should therefore not be reflected in the ongoing level of
10 operating expenses. Adjustment OM 2C-19 is an increase of \$1,590,485 to
11 reflect 2019 planned increases in cooling water chemical expenses. Details
12 of this adjustment can be found in Petitioner's Confidential Exhibit No. 20-
13 S2, Workpaper OM 2C.

14 **Q44. Please describe Adjustments OM 2D-18 and OM 2D-19 for non labor**
15 **Bailly Base Maintenance Activity expenses shown on Petitioner's Exhibit**
16 **No. 4, Attachment 4-C-S2, OM 2D.**

17 A44. Adjustments OM 2D-18 and OM 2D-19 reduce Bailly Base Maintenance
18 Expense by \$3,600,000 and \$3,800,000, respectively, due to the retirement of
19 Bailly Units 7 and 8. The retirements were completed in May 2018,

1 therefore, the \$3,600,000 reduction to the 2017 actuals represents seven
2 months of savings. An additional \$3,800,000 of savings in 2019 will bring
3 the total Bailly Base Maintenance Expense savings to \$7,400,000. The
4 remaining Bailly base maintenance budget of \$848,092 will be used to
5 maintain the synchronous condenser unit and the Unit 10 combustion
6 turbine that will remain in service at that location. Details of this
7 adjustment can be found in Petitioner's Confidential Exhibit No. 20-S2,
8 Workpaper OM 2D.

9 **Q45. Please describe Adjustment OM 2E-17 for Planned Outages**
10 **normalization shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2,**
11 **OM 2E.**

12 A45. Adjustment OM 2E-17 for Planned Outages normalization reduces the
13 Historic Base Period by \$25,455 for non-recurring Planned Outages at Bailly
14 due to the retirement of Units 7 and 8. Details of this adjustment can be
15 found in Petitioner's Confidential Exhibit No. 20-S2, Workpaper OM 2E.

16 **Q46. Please describe Adjustments OM 2E-18, 2E-19, and 2E-19R for Planned**
17 **Outages expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-**
18 **S2, OM 2E.**

1 A46. Adjustment OM 2E-18 reflects a decrease of \$9,771,420 in normalized
2 outage expenditures in 2017 to budgeted expenditures in 2018, and
3 Adjustment OM 2E-19 reflects a budgeted increase in planned outages
4 expense of \$13,800,000 from the 2018 to 2019 budget. The planned outage
5 schedule varies by year, and the workplan for each generating station
6 details the projected expenditure amount by station, unit, and major
7 component. Adjustment 2E-19R reflects a decrease of \$5,962,260 to
8 normalize non-Bailly planned outage expense to a three year average of
9 \$30,437,740. Details of these adjustments can be found in Petitioner's
10 Confidential Exhibit No. 20-S2, Workpaper OM 2E.

11 **Q47. Please describe Adjustment OM 2F-17 for Forced Outage normalization**
12 **shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2F.**

13 A47. Adjustment OM 2F-17 Forced Outage Expense normalization reduces the
14 Historic Base Period by \$7,668,139 to reflect removal of expenses associated
15 with forced outages at Bailly Units 7 and 8 as those units have been retired.
16 Details of this adjustment can be found in Petitioner's Confidential Exhibit
17 No. 20-S2, Workpaper OM 2F.

1 **Q48. Please describe Adjustments OM 2F-18 and OM 2F-19R for Forced**
2 **Outages expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-**
3 **S2, OM 2F.**

4 A48. Adjustment OM 2F-18 reflects an increase to the normalized Historic Base
5 Period of \$119,959 to reflect the 2018 budget level of expenditures.
6 Adjustment OM 2F-19R then increases the ongoing level by \$215,132 to
7 reflect the average value of \$5,261,129 per year actually experienced in 2015
8 through 2017. Details of this adjustment can be found in Petitioner's
9 Confidential Exhibit No. 20-S2, Workpaper OM 2F.

10 **Q49. Please describe Adjustments OM 2G-18, OM 2G-19, and OM 2G-19R for**
11 **Vegetation Management expenses shown on Petitioner's Exhibit No. 4,**
12 **Attachment 4-C-S2, OM 2G.**

13 A49. Since the 44688 Electric Rate Case, NIPSCO has increased the budget
14 portion of its 69 kV, 34 kV, and 12 kV vegetation management programs to
15 include more circuit line miles. The program includes analyzing circuits on
16 a yearly basis to determine which circuits, regardless of when the circuit
17 was last trimmed, have had a higher experience of interruptions. Those
18 circuits are surveyed, sources of tree interruptions identified, and remedial
19 work performed.

1 Compared to the same time frame (January through June) as last year,
2 NIPSCO has experienced an overall reduction in tree related outages (329)
3 and the number of customers impacted (13,472).

4 The 2018 Annual Financial Plan for budget year 2019 includes the
5 performance of line clearing on approximately 1,500 miles. However, in
6 2017 NIPSCO began to experience higher external labor and equipment
7 costs to perform clearance work due to market conditions which is reflected
8 in Adjustments OM 2G-18 (\$1,391,272) and OM 2G-19 (\$1,717,287) that
9 increase Historic Base Period non-labor vegetation management expenses
10 for 2018 and 2019 to budgeted increases in cost. According to NIPSCO
11 contractors, the market constraints are due to the low unemployment rate,
12 and other utilities increasing their demand for vegetation contractors. To
13 control costs, NIPSCO has implemented a distribution spray program in
14 the areas it recently performed work. This will help control brush and re-
15 growth, resulting in better reliability and less vegetation clearing at the next
16 scheduled maintenance interval. NIPSCO has also worked with its
17 contractors to streamline its work planning process and allowed the use of
18 specialized equipment to reduce the time and expense in managing some
19 of its vegetation right of ways. Finally, NIPSCO has recently negotiated a

1 long term contract with its contractors to lock in labor and equipment rates
2 for the next three years. Although NIPSCO has been prudent in managing
3 vegetation costs, the overall impact of the market constraints will lead to
4 NIPSCO falling approximately 500 miles short of its 2019 goal at current
5 funding levels. Therefore, as shown in Adjustment OM 2G-19R, NIPSCO
6 has made a 53%, or \$5,720,500, market adjustment increase to vegetation
7 management expense to permit it to retain the 1,500 mile goal for 2019
8 thereby permitting NIPSCO to continue to take the steps necessary to
9 reduce vegetation related outages. Details of this adjustment can be found
10 in Petitioner's Confidential Exhibit No. 20-S2, Workpaper OM 2G.

11 **Q50. Please describe Adjustments OM 2H-17, OM 2H-18 and OM 2H-19R for**
12 **Line Locate expenses shown on Petitioner's Exhibit No. 4, Attachment 4-**
13 **C-S2, OM 2H.**

14 A50. Adjustment OM 2H-17 decreases the Historic Base Period operating
15 expense by \$128,042 to reflect a full year of pricing and efficiencies gained
16 under the terms of two new locate contracts that became effective on March
17 8, 2017. The average ticket cost under NIPSCO's new locate contracts is
18 \$29.38 per ticket for combination gas and electric locates and \$12.93 per
19 ticket for electric only locates in comparison to the cost under the previous

1 contract of \$19.90 per ticket. The incremental cost per ticket was then
2 multiplied by the number of locates in the twelve month period between
3 May of 2017 and April of 2018 to capture a full 12 month period of actual
4 data to develop the normalized value.

5 Adjustment OM 2H-18 decreases the normalized Historic Base Period line
6 locate expense by \$522,189 to reflect the amount budgeted for line locating
7 in 2018. Adjustment OM 2H-19R increases future test year locate expenses
8 by \$1,489,294 based on (1) an anticipated increase of \$20,951 to reflect an
9 increase in the projected number of 811 tickets in 2019, and (2) an increase
10 of \$1,468,343 to reflect the increase in the cost per ticket of those line locates.
11 The increase in 811 ticket volume and line locates was calculated based on
12 a projected increase in volume of 10.3% per year over the Historic Base
13 Period volumes. These incremental 811 volumes were multiplied by the
14 95¢ per ticket and the incremental line locates volumes were multiplied by
15 2019 average screened prices to calculate the adjustments. Details of this
16 adjustment can be found in Petitioner's Confidential Exhibit No. 20-S2,
17 Workpaper OM 2H.

1 **Q51. Please describe Adjustment OM 2I-18 for Variable Chemicals expenses**
2 **shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2I.**

3 A51. Adjustment OM 2I-18 reflects a decrease in Variable Chemical expenses of
4 \$1,164,262 from the Historic Base Period to reflect an on-going budgeted
5 change in mix of the types and quantities of variable chemicals utilized
6 subsequent to the retirement of Bailly Units 7 and 8. Note, Units 12, 14, and
7 15 require Urea and Limestone for use in the emissions control systems at
8 those facilities. Details of this adjustment can be found in Petitioner's
9 Confidential Exhibit No. 20-S2, Workpaper OM-2I.

10 **Q52. Please describe Adjustments OM 2I-19R and OM 2I-19SS for Variable**
11 **Chemicals expenses shown on Petitioner's Exhibit No. 4, Attachment 4-**
12 **C-S2, OM 2I.**

13 A52. Adjustment OM 2I-19R decreases Variable Chemical expense by \$551,509
14 to levelize Variable Chemical expense to reflect (a) reduced generation of
15 6.1 Million MWh for 2019 based on the updated PROMOD inputs, and (b)
16 to reflect the redistribution of the MWhs produced by those units to other
17 NIPSCO stations. Adjustment OM 2I-19SS decreases Variable Chemical
18 expenses by \$4,745,525 to reflect the implementation of that proposed

1 service structure and the loss of load associated with NIPSCO's largest
2 industrial customers.

3 **Q53. Please describe Adjustment OM 2J-18 for Activated Carbon Injection**
4 **("ACI") expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-**
5 **S2, OM 2J.**

6 A53. NIPSCO makes use of ACI technology on Units 7, 8, 12, 14, and 15, and ACI
7 expense is calculated by multiplying the cost of injecting a pound of
8 activated carbon by the usage of each unit per hour in relation to the output
9 of each unit. Adjustment OM 2J-18 increases the Historic Base Period by
10 \$568,011 to reflect the budgeted elimination of ACI expenses for the retired
11 Units 7 and 8 and an increase in ACI expenses primarily based on a
12 projected increase in output from Unit 15. Details of this adjustment can be
13 found in Petitioner's Confidential Exhibit No. 20-S2, Workpaper OM 2J.

14 **Q54. Please describe Adjustments OM 2J-19R and OM 2J-19SS for ACI**
15 **expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2J.**

16 A54. Adjustment OM 2J-19R reflects a decrease of \$193,163 in projected 2019 ACI
17 expense to reflect a decrease in output from Unit 15 and Adjustment OM
18 2J-19SS increases ACI expense by \$48,158 to reflect the implementation of

1 the proposed service structure and the loss of load associated with
2 NIPSCO's largest industrial customers.

3 **Q55. Please describe Adjustment OM 2K-18 and OM 2K-19R for the Sugar**
4 **Creek Long Term Service Agreement ("LTSA") expenses shown on**
5 **Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2K.**

6 A55. LTSA expenses are incurred at Sugar Creek based on fired hours of the unit
7 (Run Time). Adjustment OM 2K-18 reflects an increase to the Historic Base
8 Period of \$115,416 in LTSA expenses for the 2018 budget based upon the
9 increased Run Time of the Sugar Creek units. Adjustment OM 2K-19R is a
10 ratemaking adjustment decreasing annual LTSA expenses by \$3,774,547 to
11 reflect changes in the LTSA contract executed after the preparation of the
12 2019 budget. Details of this adjustment can be found in Petitioner's
13 Confidential Exhibit No. 20-S2, Workpaper OM 2K.

14 **Q56. Please describe Adjustment OM 2L-17 for miscellaneous operating**
15 **expenses normalization shown on Petitioner's Exhibit No. 4, Attachment**
16 **4-C-S2, OM 2L.**

17 A56. Adjustment OM 2L-17 decreases the Historic Base Period miscellaneous
18 operating expenses by \$1,379,154 as these amounts were not budgeted as

1 ongoing expense in 2018 or 2019. As such, NIPSCO reduced its base year
2 expense level to represent a normal test year for these miscellaneous
3 operating expenses. Details of this adjustment can be found in Petitioner's
4 Confidential Exhibit No. 20-S2, Workpaper OM 2L.

5 **Q57. Please describe Adjustment OM 2M-19R for MVP expenses shown on**
6 **Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 2M.**

7 A57. Adjustment OM 2M-19R is a ratemaking adjustment to decrease O&M
8 expenses associated with the Reynolds to Topeka and Reynolds to
9 Greentown MVP projects from the revenue requirement beginning in 2019
10 in the amount of \$219,821. As I discuss above, those projects are non-
11 jurisdictional and not appropriate for recovery from NIPSCO retail
12 customers. Details of this adjustment can be found in Petitioner's
13 Confidential Exhibit No. 20-S2, Workpaper OM 2M.

14 **Q58. Please describe Adjustment OM 2N-19R for Cost Savings Initiatives**
15 **expenses shown on Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM**
16 **2N.**

17 A58. Adjustment OM 2N-19R decreases 2019 O&M expenses by \$3,890,900 to
18 reflect the projected impact of several cost saving initiatives beginning in

1 2019. These initiatives include the use of a number of contracting options
2 with vendors as well as in-sourcing some activities to increase efficiency
3 and are based on the annualization of projected savings. Details of this
4 adjustment can be found in Petitioner's Confidential Exhibit No. 20-S2,
5 Workpaper OM 2N.

6 **Q59. Please describe Adjustment OM 4B-19R and OM 4-19SS shown on**
7 **Petitioner's Exhibit No. 4, Attachment 4-C-S2, OM 4.**

8 A59. Adjustment OM 4B-19R increases Forward Test Year operating expenses by
9 \$8,228,823 to reflect the ongoing level of O&M expenses associated with
10 NIPSCO's MATS Compliance Project and MPCP Project currently being
11 recovered through NIPSCO's ECRM. Upon implementation of new base
12 rates, these costs will no longer be recovered through the ECR Tracker. All
13 costs for compliance with MATS associated with Bailly have been removed.
14 Adjustment OM 4-19SS increases the on-going level of O&M expenses
15 associated with NIPSCO's MATS Compliance Project and MPCP Project by
16 \$24,124 to reflect the implementation of the proposed service structure and
17 the loss of load associated with NIPSCO's largest industrial customers.
18 Details of this adjustment can be found in Petitioner's Confidential Exhibit
19 No. 20-S2, Workpaper OM 4-ECRM (including respective calculations).

1 **Q60. Please describe Adjustment OM 5-18, OM 5-19 and OM 5B-19R shown on**
2 **Petitioner's Exhibit No. 4, Attachment 4-C, OM 5.**

3 A60. Adjustment OM 5-18 and 5-19 increase the Historic Base Period by
4 \$4,039,088 and 2,384,304, respectively, for budgeted increases in FMCA
5 tracker expense. OM 5B-19R increases Forward Test Year operating
6 expenses by \$8,344,575 to reflect the ongoing level of O&M expenses
7 associated with NIPSCO's NERC Compliance Project currently being
8 recovered through NIPSCO's FMCA. Upon implementation of new base
9 rates, these costs will no longer be recovered through the FMCA Tracker.
10 Details of this adjustment can be found in Petitioner's Confidential Exhibit
11 No. 20-S2, Workpaper OM 5-FMCA.

12 **Q61. Does this conclude your prefiled direct testimony?**

13 A61. Yes.

VERIFICATION

I, Michael Hooper, Senior Vice President, Regulatory, Legislative Affairs, and Strategy of Northern Indiana Public Service Company LLC, 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 black ink, appearing to read 'M. Hooper', is written over a horizontal line.

Michael Hooper

Date: June 26, 2019

Petitioner's Exhibit No. 7-R
Cause No. 45159
Northern Indiana Public Service Company LLC
Page 1

VERIFIED REBUTTAL TESTIMONY OF MICHAEL HOOPER

Deleted: BENJAMIN FELTON

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

2 A1. My name is Michael Hooper and my business address is 801 East 86th
3 Avenue, Merrillville, Indiana 46410. I am employed by Northern Indiana
4 Public Service Company LLC ("NIPSCO" or "Company") as Senior Vice
5 President, Regulatory, Legislative Affairs, and Strategy.

Deleted: Benjamin Felton

Deleted: NIPSCO Electric Operations

6 Q2. Are you the same Michael Hooper who prefiled direct testimony in this
7 Cause?

Deleted: Benjamin Felton

8 A2. Yes.

9 Q3. What is the purpose of your rebuttal testimony?

10 A3. The purpose of my rebuttal testimony is to address the reduction in
11 vegetation management expense proposed by Indiana Office of Utility
12 Consumer Counselor ("OUCC") Witness Eckert.

13 Q4. Do you agree with Mr. Eckert's proposal to reduce NIPSCO's annual
14 vegetation management expense by approximately \$1.3 Million?

VERIFICATION

I, Michael Hooper, Senior Vice President, Regulatory, Legislative Affairs,
and Strategy of Northern Indiana Public Service Company LLC, affirm under
penalties of perjury that the foregoing representations are true and correct to the
best of my knowledge, information and belief.

Michael Hooper

Date: June 26, 2019

Deleted: Benjamin Felton,

Deleted: NIPSCO Electric

Deleted: Benjamin Felton

Deleted: March 15, 2019

VERIFIED REBUTTAL TESTIMONY OF MICHAEL HOOPER

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

2 A1. My name is Michael Hooper and my business address is 801 East 86th
3 Avenue, Merrillville, Indiana 46410. I am employed by Northern Indiana
4 Public Service Company LLC ("NIPSCO" or "Company") as Senior Vice
5 President, Regulatory, Legislative Affairs, and Strategy.

6 **Q2. Are you the same Michael Hooper who prefiled direct testimony in this**
7 **Cause?**

8 A2. Yes.

9 **Q3. What is the purpose of your rebuttal testimony?**

10 A3. The purpose of my rebuttal testimony is to address the reduction in
11 vegetation management expense proposed by Indiana Office of Utility
12 Consumer Counselor ("OUCC") Witness Eckert.

13 **Q4. Do you agree with Mr. Eckert's proposal to reduce NIPSCO's annual**
14 **vegetation management expense by approximately \$1.3 Million?**

1 A4. No. While Mr. Eckert identifies that NIPSCO's proposed vegetation
2 management expense is driven by retaining a 1,500 mile annual clearance
3 rate and increases in contractor labor and equipment costs (*See Public's*
4 Exhibit 1 at pp. 13-14), he does not challenge either of those drivers. Instead,
5 Mr. Eckert relies on a comparison of NIPSCO's proposed expense level to
6 historical base year and budgeted expenses and concludes that NIPSCO's
7 proposal is too high compared to a five-year average of vegetation
8 management expenses.

9 **Q5. Do you agree with the rationale for the OUCC's proposed reduction in**
10 **vegetation management expenses?**

11 A5. No. While Mr. Eckert's analysis is mathematically correct in terms of the
12 five-year average cost and the comparison of NIPSCO's proposal to
13 historical and budgeted expenses, it fails to consider the benefits of
14 maintaining a 1,500 mile clearance goal and fails to account for the fact that
15 the costs of vegetation management continue to climb.

16 **Q6. Why is it desirable to maintain a 1,500 mile annual clearance goal?**

17 A6. Well designed and implemented trim cycles are effective in minimizing
18 vegetation related outages. NIPSCO clearance distances are designed to

1 provide adequate clearance at time of trimming to allow for vegetation to
2 grow with minimal impact to system reliability until the next trim cycle.
3 1,500 miles per year is the average number of miles that must be trimmed
4 in order to maintain the cycle based on clearance distances at time of
5 trimming.

6 **Q7. Please provide additional detail concerning the rise in the cost of contract**
7 **labor and equipment for vegetation management.**

8 A7. In my direct testimony, I referred to Petitioner's Confidential Exhibit No.
9 20-S2, Workpaper OM 2G as showing the details of the market adjustment
10 increase to vegetation management expense. See Petitioner's Exhibit No. 7,
11 at p. 47. That work paper was developed using pricing information
12 received by NIPSCO from its vegetation management contractors during
13 the course of RFPs undertaken in late 2017 and early 2018 for vegetation
14 management work to be performed in 2018 through 2021, and as such
15 reflects the actual cost per mile for work to be performed during that period
16 including the 2019 forward test year. Documentation concerning that RFP
17 and the resulting contracts were provided to the OUCC on a confidential
18 basis as part of the Audit Package supporting this case.

1 **Q8. What would be the consequence of reducing vegetation management**
2 **expense by \$1.3 Million as the OUCC proposes?**

3 A8. The result would be the inclusion of vegetation management expense in
4 NIPSCO's rates that is not representative of the ongoing cost of those
5 activities. As I discussed in my direct testimony, an aggressive vegetation
6 management program is intended to reduce the number of outages
7 associated with vegetative encroachment on NIPSCO's lines to increase
8 system reliability for the benefit of NIPSCO's customers. The reduction
9 proposed by the OUCC would ensure that NIPSCO could clear fewer miles
10 of right-of-way annually and would likely result in an increase in outages
11 and a decrease in reliability.

12 **Q9. Does this conclude your prefiled rebuttal testimony?**

13 A9. Yes.

VERIFICATION

I, Michael Hooper, Senior Vice President, Regulatory, Legislative Affairs and Strategy of Northern Indiana Public Service Company LLC, 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 black ink, appearing to read 'M. Hooper', is written over a horizontal line.

Michael Hooper

Date: June 26, 2019