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STATE OF NORTH DAKOTA
BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF
NORTHERN STATES POWER COMPANY FOR
AUTHORITY TO INCREASE RATES FOR
ELECTRIC SERVICE IN NORTH DAKOTA

Case No. PU-20-441

**DIRECT TESTIMONY OF
KARL R. PAVLOVIC**

**Submitted on Behalf of
the Advocacy Staff of the
North Dakota Public Service Commission**

April 23, 2021

DIRECT TESTIMONY OF
KARL R. PAVLOVIC

1

2

3 QUALIFICATIONS

4 **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

5 A. My name is Karl Richard Pavlovic. My business address is 22 Brookes Avenue,
6 Gaithersburg, MD 20877. I am a Senior Consultant with and the Managing Director of
7 PCMG and Associates LLC.

8 **Q. PLEASE DESCRIBE PCMG.**

9 A. PCMG and Associates LLC (PCMG) is an association of experts in economics, accounting,
10 finance, and utility regulation and policy, with over 75 years collective experience
11 providing assistance to counsel and expert testimony regarding the regulation of electric,
12 gas, water, and wastewater utilities. PCMG began operation on January 1, 2015. During
13 its most recent year of operation, PCMG has provided assistance to counsel and/or
14 testimony in regulatory proceedings before Federal Energy Regulatory Commission, the
15 Pennsylvania Public Service Commission, the Maine Public Utilities Commission, the
16 Massachusetts Department of Public Utilities, the New Jersey Board of Public Utilities,
17 and the Hawaii Public Utilities Commission. PCMG is currently providing assistance to
18 the Hawaii Division of Consumer Advocate, the Maine Office of the Public Advocate, the
19 Massachusetts Office of the Attorney General, the New Jersey Division of Rate Counsel,
20 and the Pennsylvania Office of Consumer Advocate.

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1 **Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND**
2 **EXPERIENCE?**

3 A. Yes. Attachment A to my testimony summarizes my qualifications and experience.

4 **Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN REGULATORY**
5 **PROCEEDINGS?**

6 A. Yes. Attachment A contains a complete list of my engagements as an expert and/or expert
7 witness in matters before state and federal regulatory agencies. I have submitted testimony
8 to the Federal Communications Commission, the Federal Energy Regulatory Commission,
9 the Alaska Public Utilities Commission, the Alberta Utilities Commission, the Corporation
10 Commission of the State of Kansas, the Delaware Public Service Commission, the Hawaii
11 Public Utilities Commission, the Pennsylvania Public Service Commission, the Illinois
12 Commerce Commission, the Maryland Public Service Commission, the Massachusetts
13 Department of Public Utilities, the North Dakota Public Service Commission, the Maine
14 Public Utilities Commission, and the Public Service Commission of the District of
15 Columbia.

16 **Q. IN WHICH PROCEEDINGS HAVE YOU PREVIOUSLY APPEARED BEFORE**
17 **THIS COMMISSION?**

18 A. I appeared on behalf of the North Dakota Public Service Commission Advocacy Staff in
19 Case No. PU-12-813 Application of Northern States Power Company for Authority to
20 Increase Rates for Electric Service in North Dakota regarding cost allocation and rate
21 design and in Case No. PU-17-295 Montana-Dakota Utilities Co., for Authority to

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1 Establish Increased Rates for Natural Gas Service regarding cost allocation and rate
2 design.

3 **Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS?**

4 A. I received undergraduate and graduate degrees in Philosophy from Yale College and
5 Purdue University. By education and professional experience I have expertise in formal
6 and mathematical logic, statistics, economics, financial analysis, econometrics, and
7 computer modeling. I have knowledge and experience in the areas of commercial and
8 industrial operations in the energy, transportation, and telecommunications industries and
9 am familiar with a wide range of experimental and investigative methods in science and
10 engineering.

11 **Q. PLEASE SUMMARIZE YOUR ELECTRIC AND GAS REGULATORY
12 EXPERIENCE.**

13 For most of my career I have performed analyses and submitted testimony regarding
14 electric and gas utility least-cost planning, reliability, cost of service, rate design, and
15 weather-emergency response. Specifically regarding electric utilities, I have testified on:
16 (a) integrated resource planning, (b) class cost of service and rate design, (c) FERC
17 jurisdictional stated and formula transmission rates, (d) mergers and acquisitions and (e)
18 electric restructuring within the PJM RTO.

19

20 **I. PURPOSE AND ORGANIZATION**

21 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

22 A. I have been asked by the Commission's Advocacy Staff to address Northern States Power
23 (NSP) assertions and proposals in this proceeding regarding (1) the prudence of NSP's

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1 acquisition and retirement of certain generation resources, (2) NSP's North Dakota class
2 cost of service study, (3) NSP's North Dakota class revenue responsibility distribution, and
3 (4) NSP's North Dakota rate design.

4 **Q. HAVE YOU PREPARED ANY EXHIBITS IN SUPPORT OF YOUR**
5 **RECOMMENDATIONS?**

6 A. Yes. I have included the following five exhibits:

7 Exhibit KRP-1: Statement of Qualifications

8 Exhibit KRP-2: Case No. PU-15-19, Advocacy Staff Letter of June 3, 2016

9 Exhibit KRP-3: Case No. PU-15-98, March 23, 2016 Order

10 Exhibit KRP-4: Case No. PU-14-810, June 17, 2015 Order

11 Exhibit KRP-5 Demand Only CCOSS TRADE SECRET

12

13 **II. SUMMARY OF TESTIMONY AND CONCLUSIONS**

14 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

15 A. As detailed below, my testimony finds the following.

- 16
- NSP's decision to retire Sherco Units 1 and 2 in 2026 and 2023 was not prudent.
 - 17
 - NSP's decision to acquire the MEC II Purchased Power Agreement (PPA) was
18 not prudent.
 - 19
 - NSP's decision to acquire the 187 MW Solar Portfolio was not prudent.
 - 20
 - NSP's Minimum System CCOSS is not consistent with the principle of cost
21 causation regarding minimum system classification of FERC Accounts 364-367.

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- 1 • NSP’s proposed class revenue responsibility distribution based on the Minimum
2 System CCOSS results over allocates the revenue increase to the Residential class
3 and under allocates the revenue increase to the C&I Demand class.
- 4 • NSP’s proposed tariff customer charges are well above the customer component
5 costs as calculated by the Demand Only CCOSS.

6 I recommend that the Commission:

- 7 • Find the Sherco Units 1 and 2 early retirements and the acquisition of the MEC II
8 and 187 MW Solar Portfolio PPAs not prudent;
- 9 • Direct NSP to adopt the Demand Only CCOSS;
- 10 • Direct NSP to use the Demand Only CCOSS as a guide in determining class
11 revenue responsibility;
- 12 • Direct NSP to maintain the current tariff customer charges.

13

14 **III. DISCUSSION**

15 **A. ACQUISITION AND RETIREMENT OF GENERATION RESOURCES**

16 **Q. WHAT KINDS OF ECONOMIC ANALYSES DOES NSP USE TO EVALUATE**
17 **THE IMPACTS OF RESOURCE ADDITIONS AND RETIREMENTS?**

18 A. NSP uses three economic analysis tools: pro forma analysis and two system simulation
19 modeling tools (Strategist and EnCompass).¹ Pro forma analysis evaluates the costs and
20 benefits attributable to specific resources in isolation from NSP’s integrated system, the
21 system simulation modeling tools evaluate the costs and benefits of resource additions and
22 retirements in the context of the operation of NSP’s integrated electric system. The

¹ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), pages 4-6.

1 principal difference between Strategist and EnCompass is that EnCompass models the
2 operation of NSP's system on an hourly basis.

3 **Q. WHAT METRICS DOES NSP USE IN EVALUATING THE COSTS AND**
4 **BENEFITS OF RESOURCE ADDITIONS AND RETIREMENTS IN THE**
5 **OPERATION OF ITS INTEGRATED SYSTEM?**

6 A. NSP uses two metrics: the present value of the revenue requirement (PVRR) and the present
7 value of societal costs (PVSC). The PVSC metric is the PVRR metric plus externality costs
8 of carbon dioxide and criteria pollutants. The PVSC metric is required by Minnesota
9 Commission regulation.² In contrast, the North Dakota Commission "is prohibited from
10 considering quantitative environmental values."³ That is to say that the Commission does
11 not rely on the PVSC metric in evaluating the costs and benefits of resource additions and
12 retirements.

13
14 **Sherco Units 1 and 2**

15 **Q. WHAT IS NSP REQUESTING OF THE NORTH DAKOTA COMMISSION**
16 **REGARDING SHERCO UNITS 1 AND 2?**

17 A. In 2007 the North Dakota Commission approved a 2034 retirement date for both units,
18 which date has since been the basis of the North Dakota depreciation rates for both units.
19 NSP now requests that the Commission find that NSP's 2015 decision to retire Sherco Unit
20 1 in 2026 and Sherco Unit 2 in 2023 was prudent at that time and adjust the North Dakota
21 depreciation rates accordingly in this proceeding.

² Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 18, lines 12-17.

³ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 19, lines 6-12.

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1 **Q. ON WHAT BASIS DID NSP MAKE THE DECISION TO RETIRE SHERCO UNITS**
2 **1 AND 2 IN 2026 AND 2023, RESPECTIVELY?**

3 A. NSP relied on its 2015 Updated Plan which showed considerable cost savings on a PVSC
4 basis and the input of Minnesota stakeholders and customers who expressed a need for a
5 quick transition to a cleaner generation fleet.⁴

6 **Q. AT THAT TIME DID NSP MAKE AN APPLICATION TO THE COMMISSION TO**
7 **CHANGE THE RETIREMENT DATES FOR SHERCO UNITS 1 AND 2 AND**
8 **CHANGE THE NORTH DAKOTA DEPRECIATIONS RATES FOR THE UNITS?**

9 A. No.⁵ Consequently, for North Dakota ratemaking purposes, Sherco Units 1 and 2 have
10 continued to accrue depreciation expense on the basis of the 2034 retirement date.

11 **Q. BASED ON NSP'S 2015 UPDATED PLAN, WAS NSP'S 2015 EARLY**
12 **RETIREMENT DECISION PRUDENT?**

13 A. No. On a PVRR basis, the early retirement of the Sherco units resulted in \$109-133 million
14 in additional costs.⁶ Additionally, as Advocacy Staff noted at the time, future regulatory
15 requirements to reduce carbon emissions were uncertain and early retirement of the Sherco
16 units could well lead to NSP incurring higher costs for replacement generation.⁷ Thus, in
17 2015 when NSP made the Sherco early retirement decision, that decision was not the
18 prudent.⁸

19 **Q. HAS NSP MADE SUBSEQUENT ANALYSES OF THE EARLY RETIREMENT OF**
20 **SHERCO UNITS 1 AND 2?**

⁴ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 22, lines 20 to page 21, line 4.

⁵ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 21, line 17 to page 22, line 4; see also Exhibit KRP-2, page 2.

⁶ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 15, line 25 to page 17, line 8 and Table 1.

⁷ Exhibit KRP-2, page 2

⁸ Exhibit KRP-2, page 2

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1 A. Yes. In a 2017 analysis the early retirement of the Sherco units resulted in \$323-577 million
2 PVRR additional costs. In a 2019 analysis the early retirement of the Sherco units resulted
3 in \$17 million PVRR additional costs. In a 2020 analysis the early retirement of the Sherco
4 units resulted in \$13 million PVRR cost savings.⁹

5 **Q. HAS NSP PROVIDED ANY CONTEMPORANEOUS INFORMATION AND DATA**
6 **THAT WERE NOT BEFORE THE COMMISSION IN 2015?**

7 A. No.

8 **Q. WHAT IS YOUR CONCLUSION REGARDING NSP'S EARLY RETIREMENT**
9 **DECISION IN 2015?**

10 A. NSP's decision to retire Sherco Units 1 and 2 in 2026 and 2023 was not prudent.

11

12 **Mankato Energy Center II PPA**

13 **Q. WHAT IS NSP REQUESTING OF THE NORTH DAKOTA COMMISSION**
14 **REGARDING THE MANKATO ENERGY CENTER II PPA (MEC II PPA)?**

15 A. NSP is requesting that the Commission find that NSP's 2015 decision to enter into the MEC
16 II PPA was prudent and to allow recovery of the capacity costs in base rates and the energy
17 costs through the FCR.¹⁰ In the event that the Commission denies prudence, NSP requests
18 that the costs of the MEC II PPA be dealt with via the Resource Treatment Framework.¹¹

19 **Q. DID NSP SUBMIT TO THE COMMISSION AN APPLICATION FOR**
20 **ADVANCED DETERMINATION OF PRUDENCE (ADP) AT THE TIME IT**
21 **ENTERED INTO THE MEC II PPA?**

⁹ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 23, lines 7-22.

¹⁰ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 35, lines 12-14.

¹¹ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 61, line 23 to page 62, line 8.

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1 A. Yes. In 2015 in Case No. PU-15-96, NSP submitted the MEC II PPA to meet an expected
2 need in the 2023-2024 timeframe based on the 2015 Updated Plan,¹² In the PU-15-96
3 proceeding it was shown that the expected need in 2023-2024 timeframe was largely driven
4 by NSP's plan to retire Sherco Units 1 and 2 in 2026 and 2023, which early retirement the
5 Commission had not found to be prudent.¹³

6 **Q. DID THE COMMISSION FIND THAT THE MEC II PPA WAS A PRUDENT**
7 **ACQUISITION?**

8 A. No. The Commission found that NSP had not shown the acquisition of the MEC II PPA to
9 be prudent, as it would require North Dakota customers to pay for unneeded capacity for a
10 significant portion of the contract and that the load forecasts and other assumptions upon
11 which NSP relied were continually subject to change and might or might not occur.¹⁴

12 **Q. HAS NSP UPDATED THE FORECAST AND OTHER FACTORS IT USED IN ITS**
13 **2015 ANALYSIS OF THE MEC II PPA IN ITS PU-15-96 APPLICATION?**

14 A. No. NSP states that it would not be appropriate to update the forecast and other factors in
15 evaluating whether the MEC II PPA was prudent in 2015 and, in any event, more recent
16 forecasts shift the need out only slightly.¹⁵

17 **Q. THAT POINT NOTWITHSTANDING, HAS NSP PROVIDED ANY ADDITIONAL**
18 **ANALYSES THAT IT PURPORTS BEAR ON THE PRUDENCE OF THE MEC II**
19 **PPA?**

20 A. Yes. NSP conducted a comparative analysis of the annual cost of a greenfield Combined
21 Cycle (CC) over the 2025-2039 timeframe versus (1) the annual cost of the MEC II PPA

¹² Exhibit KRP-3, page 2, Finding of Fact 6.

¹³ Exhibit KRP-3, page 3-4, Findings of Fact 13 and 14.

¹⁴ Exhibit KRP-3, page 4, Finding of Fact 15 and Conclusion of Law 2.

¹⁵ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 56, lines 4-26.

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1 over the 2019-2039 timeframe, (3) the annual cost of the MEC II PPA with first six years
2 amortized over the balance of the contract (i.e., the 2019- 2025 cost amortized over the
3 2026-2039 cost), and (4) the MISO 2020-2021 cost of new entry escalated at 1.5%
4 annually.¹⁶

5 **Q. WHAT DOES NSP'S COMPARATIVE ANALYSIS SHOW?**

6 A. NSP's comparative analysis shows that (1) the MEC II PPA cost is slightly less than MISO
7 new entry cost over the period 2019-2039, (2) that the amortized MEC II PPA cost is
8 significantly greater than the new entry cost over the period 2025-2039, and (3) the
9 greenfield CT cost is significantly greater than the amortized MEC II PPA cost over the
10 2025-2039 period.¹⁷

11 **Q. HAS NSP PROVIDED ANY CONTEMPORANEOUS INFORMATION AND DATA
12 THAT WERE NOT BEFORE THE COMMISSION IN 2015?**

13 A. No.

14 **Q. WHAT IS YOUR CONCLUSION REGARDING THE MEC II PPA?**

15 A. NSP's decision to enter into the MEC II PPA was not prudent.

16
17 **187 MW Solar Portfolio PPAs**

18 **Q. WHAT IS NSP REQUESTING OF THE NORTH DAKOTA COMMISSION
19 REGARDING THE 187 MW SOLAR PORTFOLIO?**

20 A. NSP is requesting that the Commission find that NSP's 2014 decision to enter into the Solar
21 Portfolio PPAs was prudent and allow recovery of the PPAs through the FCR.¹⁸

¹⁶ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 57, line 1 to page 61, line 9 and Figure 3.

¹⁷ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 59, Figure 3.

¹⁸ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 78, lines 4-6 and page 82, lines 3-5.

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1 **Q. DID NSP SUBMIT TO THE COMMISSION AN APPLICATION FOR**
2 **ADVANCED DETERMINATION OF PRUDENCE (ADP) AT THE TIME IT**
3 **ENTERED INTO THE SOLAR PORTFOLIO PPAS?**

4 A. Yes. In Case No. PU-14-810 NSP submitted Strategist modeling that showed \$14 million
5 system-wide PVRR additional costs for the Solar Portfolio and asserted that this was a
6 reasonable cost for the benefits of (1) compliance with future environmental laws and
7 regulations, (2) a hedge against future natural gas prices, and (3) displacement of future
8 energy purchases.¹⁹ The Commission found that the acquisition of the Solar Portfolio was
9 (1) inconsistent with least-cost planning, (2) capacity that would not be needed and in excess
10 of that needed to meet its reserve margin and ensure reliable operation, and (3) lead to
11 increased costs to North Dakota customers without corresponding benefits.²⁰

12 **Q. DID THE COMMISSION FIND THAT THE SOLAR PORTFOLIO WAS A**
13 **PRUDENT ACQUISITION?**

14 A. No. The Commission found that NSP had not shown the acquisition of the Solar Portfolio
15 to be prudent and disallowed recovery of the costs through the FCR.²¹

16 **Q. HAS NSP PROVIDED ANY CONTEMPORANEOUS INFORMATION AND DATA**
17 **THAT WERE NOT BEFORE THE COMMISSION IN 2015?**

18 A. No. NSP simply (1) restates the 2015 Strategist modeling PVRR results and benefits,²² (2)
19 estimates the impact on North Dakota customers of the Solar Portfolio costs versus cost of
20 fossil fuel and other energy,²³ and (3) restates the asserted qualitative benefits. That is to say

¹⁹ Exhibit KRP-4, page 3, Findings of Fact 8 and 10.

²⁰ Exhibit KRP-4, page 3, Findings of Fact 11-15.

²¹ Exhibit KRP-4, page 4; Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), page 80, line 23 to page 81, line 4.

²² Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), pages 86, line 20 to page 89, line 16 and Table 11.

²³ Direct Testimony of Christopher J. Shaw (Exhibit CJS-1), pages 89, line 18 to page 91, line 5 and Table 12.

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1 NSP simply reiterates the basis upon which the Commission found in 2015 that the
2 acquisition of the Solar Portfolio was not prudent and the costs not recoverable from North
3 Dakota customers through the FCR.

4 **Q. WHAT IS YOUR CONCLUSION REGARDING SOLAR PORTFOLIO PPAS?**

5 A. NSP's decision to enter into the Solar Portfolio PPAs was not prudent.

6

7 **B. NORTH DAKOTA CLASS COST OF SERVICE STUDY**

8 **Q. HAVE YOU EXAMINED NSP'S NORTH DAKOTA CLASS COST OF SERVICE**
9 **STUDY (CCOSS)?**

10 A. Yes. NSP's CCOSS is a multi-tabbed Excel spreadsheet file²⁴ that follows the standard
11 class cost of service procedure of first functionalizing costs, second classifying the
12 functionalized costs as directly assignable to certain classes or as demand-related,
13 customer-related or energy-related, and third allocating to customer classes those
14 functionalized costs that are classified as demand-, customer-, or energy-related.²⁵

15 **Q. HAVE YOU FOUND ANY ERRORS IN THE CCOSS' FUNCTIONALIZATION**
16 **OF NSP'S ELECTRIC COSTS?**

17 A. No. The CCOSS properly functionalizes NSP's electric costs using the FERC Electric
18 Uniform System of Accounts (USoA). Capital costs are functionalized in FERC Plant
19 Accounts 310-346 (production), 350-359 (transmission) and 360-373 (distribution);
20 operating expenses are functionalized in FERC Accounts 580-917; administrative and
21 general expenses are functionalized in FERC Accounts 920-935; intangible and general
22 capital costs are functionalized in FERC Accounts 301-303 and 389-399.

²⁴ Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1), Exhibit MAP-1 Revised Schedules 3 and 4.
²⁵ See NARUC Electric Utility Cost Allocation Manual (NARUC Electric Manual), 1992, pages 18-23.

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1 **Q. HAVE YOU FOUND ANY ERRORS IN THE CCOSS' CLASSIFICATION OF**
2 **NSP'S FUNCTIONALIZED ELECTRIC COSTS?**

3 A. Yes. The CCOSS relies on a minimum system hybridization of the minimum-size and
4 minimum-intercept methods to classify NSP's electric distribution costs in FERC
5 Accounts 364 (poles, towers & fixtures), 365 (overhead conductors & devices), 366
6 (underground conduit), 367 (underground conductors & devices) and 368 (line
7 transformers) as both demand-related and customer-related.²⁶ The minimum-size method
8 assumes that a minimum size distribution system can be built to serve a minimum loading
9 requirement of the customers on the system;²⁷ the minimum-intercept method assumes a
10 portion of plant related to a hypothetical no-load situation can be identified.²⁸ Note that
11 both methods simply assume that some portion of the plant costs recorded in Accounts
12 364-368 is customer-related. While these methods of distribution plant classification
13 were once, but no longer are, widespread among electric distribution utilities, there is,
14 from the perspective of cost causation, no theoretical or practical justification for either
15 method.

16 **Q. WHAT IS THE COST CAUSATION THAT DEFINES THE CLASSIFICATION**
17 **OF ELECTRIC DISTRIBUTION ACCOUNTS AS CUSTOMER-RELATED?**

18 A. As clearly articulated in Bonbright's Principles of Public Utility Rates,²⁹ under the
19 principle of cost causation, customer-related costs are "those operating and capital costs
20 found to vary with number of customers."³⁰ Operationally defined, customer-related

²⁶ Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1), pages 16-22; see also NARUC Electric Utility Cost Allocation Manual, 1992, pages 90-94,

²⁷ NARUC Cost Manual, page 90.

²⁸ NARUC Cost Manual, page 92.

²⁹ Bonbright et al, Principles of Public Utility Rates, 1988.

³⁰ Bonbright, page 490; also see NARUC Manual Electric Utility Cost Allocation Manual, 1992, page 90, "The customer component of distribution facilities is the portion of costs which varies with the number of customers."

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1 costs are the “costs of connecting another customer or the savings in costs of not
2 connecting the customer.”³¹ Per the NARUC Electric Manual, the capital costs incurred
3 in connecting a customer to those parts of the electric distribution system that serve more
4 than a single customer (i.e., FERC Accounts 360-368 - land, structures and station
5 equipment, poles, conduit, conductors and transformers) are the capital costs of services
6 (FERC Account 369), meters (FERC Account 370), installations on customer premises
7 (FERC Account 371) and street lighting and signal systems (FERC Account 373) and are
8 properly classified as customer-related.³² NSP’s CCOSS properly classifies the costs in
9 FERC Accounts 369-373 as customer-related. The CCOSS errs only in classifying a
10 portion of the costs in FERC Accounts 364-368 as customer-related, rather than properly
11 as demand-related.

12 **Q. WHAT IS THE COST CAUSATION THAT DEFINES THE CLASSIFICATION**
13 **OF ELECTRIC DISTRIBUTION ACCOUNTS AS DEMAND-RELATED?**

14 A. As Bonbright also explains, it is theoretically impossible for the capital costs in FERC
15 Accounts 360-368 to vary with the number of customers connected to those facilities
16 because the connection of a new customer (or disconnection of an existing customer) has
17 no measurable impact on the costs in FERC Accounts 360-368.³³ Since the cost of the
18 distribution system in accounts 360-368 do not and cannot vary with the number of
19 customers connected to the distribution system, for the purposes of embedded cost
20 analysis, the costs in FERC Accounts 360-368 are properly classified as demand-related,

³¹ Bonbright, page 490.

³² NARUC, page 96.

³³ Bonbright, page 491.

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1 because those costs “var[y] continuously (and, perhaps, even more or less directly) with
2 the maximum demand imposed on this system as measured by peak load.”³⁴

3 **Q. WHAT IS YOUR RECOMMENDATION REGARDING THE CLASSIFICATION**
4 **OF ACCOUNTS 364-368 IN NSP’S CCOSS?**

5 A. For reasons given above I recommend that NSP’s FERC Accounts 364-368 be classified
6 as wholly demand-related with no customer-related component, consistent with CCOSS’
7 classification of FERC Accounts 360-363 as only demand-related.

8 **Q. HAVE YOU FOUND ANY ERRORS IN THE CCOSS’ ALLOCATION OF NSP’S**
9 **CLASSIFIED AND FUNCTIONALIZED ELECTRIC COSTS?**

10 A. The only allocation error is the CCOSS’ use of class customer allocation of the FERC
11 Account 364-368 costs erroneously classified as customer-related and the allocation of those
12 erroneously classified costs on the basis of class number of customers.

13 **Q. WHAT IS THE IMPACT OF YOUR RECOMMENDATION REGARDING THE**
14 **CLASSIFICATION OF FERC ACCOUNTS 364-368 AS ONLY DEMAND-**
15 **RELATED?**

16 A. NSP’s residential rate class have proportionately more customers than its commercial rate
17 classes and significantly less aggregate demand than the commercial classes.
18 Consequently, the CCOSS’ class customer allocation of the FERC Accounts 364-368
19 costs that the CCOSS erroneously classifies as customer-related results in an unsupported
20 and unjustified over allocation of distribution costs to NSP’s residential rate class.

³⁴ Bonbright, page 492; see also NARUC Electric Manual, page 90, “Classifying distribution plant as a demand cost assigns investment ... based upon its contribution to some total peak load ,, [because] costs are incurred to serve area load, rather than a specific number of customers.”

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1 Classifying the entirety of NSP's FERC Accounts 364-368 costs as demand-related
2 corrects the over allocation.

3 **Q. HAVE YOU QUANTIFIED THE IMPACT OF YOUR RECOMMENDATION?**

4 A. Yes. In response to NDPSC 10-8, NSP executed a Demand Only CCOSS with FERC
5 Accounts 364-368 classified as demand-related only and allocated accordingly.³⁵ Table 1
6 below compares the class rate of return and indexed rate of return results of NSP's
7 Minimum System CCOSS and the NDPSC 10-8 Demand Only CCOSS.

³⁵ NSP March 26, 2021 response to NDPSC 10-8, "PU-20-441 NDPSC-10-008 Attachment A TY2021 Live CCOSS File TRADE SECRET IN ENTIRETY.xlsx."

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1 **Table 1 Comparison of Class Rates of Return and Indexed Rates of Return**

Rate Class	Minimum System CCOSS ³⁶		Demand Only CCOSS ³⁷	
Residential	7.57%	1.03	[TRADE SECRET DATA BEGINS] [REDACTED]	1.19
Non-Demand	7.69%	1.05	[REDACTED]	1.17
Demand Secondary	8.22%	1.12	[REDACTED]	0.99
Demand Primary	0.98%	0.13	[REDACTED]	0.06
Lighting	2.24%	0.30	[REDACTED]	0.26
Total	7.35%	1.00	[REDACTED] [TRADE SECRET DATA ENDS]	1.00

2
3 As can be readily seen in Table 1, the Residential and Non-Demand classes are significantly
4 above full cost recovery, the Demand Secondary class is slightly below full cost recovery,
5 and the Demand Primary and Lighting classes are significantly below full cost recovery.

³⁶ Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1 Revised), Schedule 4 Revised, page 1, line 30B.
³⁷ Exhibit KRP-5, page 1, line 30B **TRADE SECRET**.

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1 Q. WHAT ARE THE CLASS CUSTOMER COMPONENT COST RESULTS OF THE
2 DEMAND ONLY CCOSS COMPARED TO THE MINIMUM SYSTEM CCOSS?

3 A. Table 2 below shows the class customer component costs as calculated by the Minimum
4 System CCOSS and the Demand Only CCOSS.

5 **Table 2 Comparison of Customer Component Costs**

Rate Class	Minimum System CCOSS ³⁸	Demand Only CCOSS ³⁹
Residential	\$15.42	[TRADE SECRET DATA BEGINS] [REDACTED]
Non-Demand	\$16.49	[REDACTED]
Demand Secondary	\$24.56	[REDACTED]
Demand Primary	\$46.76	[REDACTED]
Lighting	\$58.28	[REDACTED]
Total	\$16.82	[REDACTED] [TRADE SECRET DATA ENDS]

6
7 As can be seen in Table 2, the removal of customer-related classification of a portion of the
8 FERC Account 364-368 costs significantly reduces the customer component costs for the
9 Residential, Non-Demand and Demand Secondary classes. I discuss the rate design
10 implications of these reductions below.

11

³⁸ Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1 Revised), Schedule 4 Revised, page 3, line 18.
³⁹ Exhibit KRP-5, page 3, line 18.

C. NORTH DAKOTA CLASS REVENUE RESPONSIBILITY

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Q. WHAT IS NSP'S PROPOSAL REGARDING CLASS REVENUE RESPONSIBILITY?

A. NSP Witness Paluck explains that NSP proposes to base class revenue responsibility on its Minimum System CCOSS and distribute the proposed revenue to classes by moderately moving the Lighting class towards full cost and distributing the Lighting class shortfall to the Residential, Non-Demand and C&I Demand classes, as shown in Exhibit NNP-1 Table 2.⁴⁰

Q. DO YOU FIND ANY ERRORS IN NSP'S PROPOSED CLASS REVENUE RESPONSIBILITY?

A. Based on the Minimum System CCOSS results, the proposed class revenue responsibility, as Witness Paluck testifies, "balances the pricing objective of moving customer classes to cost with the pricing objective of rate continuity."⁴¹ However, as I explained above, the Minimum System CCOSS does not accurately allocate costs to classes, over allocating costs to the residential and Non-Demand classes and under allocating costs to the C&I Demand classes.

Q. HAVE YOU DEVELOPED CLASS REVENUE RESPONSIBILITY BASED ON THE DEMAND ONLY CCOSS?

A. Yes. Table 3 below shows the results of applying NSP's balanced pricing objectives to the results of the Demand Only CCOSS.

⁴⁰ Revised Direct Testimony of Nicholas N. Paluck (Exhibit NNP-1), pages 4-5 and Table 2.
⁴¹ Revised Direct Testimony of Nicholas N. Paluck (Exhibit NNP-1), page 6.

1 **Table 3 Demand Only Class Revenue Responsibility**

Class	Present Revenue (000) ⁴²	Cost of Service (000) ⁴³	Cost Increase %	Proposed Revenue (000)	Proposed Increase %
Residential	\$83,739	[TRADE SECRET DATA BEGINS]	[REDACTED]	87,379	4.35%
Non-Demand	11,379	[REDACTED]	[REDACTED]	11,326	-0.47%
C&I Demand	109,232	[REDACTED]	[REDACTED]	124,380	13.87%
Lighting	2,066	[REDACTED]	[REDACTED]	2,486	20.30%
Total Retail	\$206,416	[REDACTED]	[REDACTED]	\$225,570	9.28%
Total /4	\$206,416	\$225,613	9.30%	\$225,613	9.30%

2

3 As one can see from Table 3, the total revenue increase is the same as with the Minimum
 4 System CCOSS and consistent with the NSP's proposed balancing of the pricing objectives,
 5 the Lighting class receives a moderate, but below cost increase, while the Residential, Non-
 6 Demand and C&I Demand classes receive a de minimus increase over cost.

7 **Q. HAVE YOU DEVELOPED A CLASS REVENUE RESPONSIBILITY BASED ON**
 8 **THE DEMAND ONLY CCOSS AND ADVOCACY STAFF WITNESS**
 9 **MUGRACE'S PROPOSED REVENUE REQUIREMENT?**

⁴² Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1 Revised), Schedule 4 Revised, page 2, line 2.

⁴³ Exhibit KRP-5, page 2, line 8 **TRADE SECRET.**

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TRADE SECRET INFORMATION REDACTED

1 A. Yes. Table 4 below shows the results of applying NSP's balanced pricing objectives to the
2 results of the Demand Only CCOSS and Advocacy Staff Witness Mgrace's proposed
3 revenue requirement.

4 **Table 4 Demand Only Class Revenue Responsibility based on Advocacy Staff**
5 **Recommended Revenue Requirement**

Class	Present Revenue (000) ⁴⁴	Cost of Service (000) ⁴⁵	Cost Increase %	Proposed Revenue (000)	Proposed Increase (Decrease) %
Residential	\$83,739	\$81,284	-2.93%	81,407	-2.78%
Non-Demand	11,379	\$10,545	-7.33%	10,565	-7.15%
C&I Demand	109,232	\$115,474	5.71%	115,651	5.88%
Lighting	2,066	\$2,705	30.91%	2,383	15.33%
Total Retail	\$206,416	\$210,007	1.74%	\$210,007	1.74%
Total	\$206,416	\$210,050	1.76%	\$210,050	1.76%

6
7 In Table 4 under Proposed Revenue, I have made a moderate movement toward cost for the
8 Lighting class, approximately 50% of the increase in cost, and for the other classes full
9 movement to cost moderated by distribution of the Lighting class shortfall.

10
11 **D. NORTH DAKOTA RATE DESIGN**

12 **Q. WHAT ARE NSP'S RATE DESIGN PROPOSALS?**

13 A. NSP is proposing no structural changes to its base rate structure.⁴⁶ Generally customer
14 charges are increased in movement towards full recovery of customer component costs as

⁴⁴ Revised Direct Testimony of Michael A. Peppin (Exhibit MAP-1 Revised), Schedule 4 Revised, page 2, line 2.

⁴⁵ Direct Testimony of Dante Mgrace, Schedule DM-1, line 10 Advocacy Staff Revenue Deficiency \$3,590,775.

⁴⁶ Revised Direct Testimony of Nicholas N Paluck (Exhibit NNP-1), page 8.

**PUBLIC DOCUMENT
TRADE SECRET INFORMATION REDACTED**

1 calculated by NSP's Minimum System CCOSS and the remainder of the revenue increase is
2 distributed the energy and demand charges consistent with the current summer/winter,
3 on/off peak, voltage level relationships.⁴⁷

4 **Q. DO YOU HAVE ANY CRITICISMS OF THE PROPOSED RATE DESIGNS?**

5 A. I disagree with the proposal to increase customer charges. The customer component costs
6 calculated by the Demand Only CCOSS are significantly reduced for all classes but
7 Lighting as shown in Table 2 above and significantly less than most of the current tariff
8 customer charges.⁴⁸ Therefore, I recommend that the current customer charges not be
9 increased in the proposed base rates.

10

11 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

12 A. Yes.

13

⁴⁷ Revised Direct Testimony of Nicholas N Paluck (Exhibit NNP-1), pages 6-14 and Exhibit Schedule 5 Revised.
⁴⁸

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Northern States Power Company
2021 Electric Rate Increase
Application

Case No. PU-20-441
OAH No. 20200422

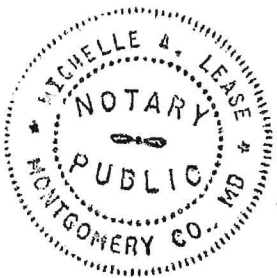
VERIFICATION

STATE OF Maryland)
COUNTY OF Montgomery) ss.

Karl Pavlovic, being first duly sworn on oath, deposes and states that he has read the testimony and exhibits submitted in the above captioned matters under his name, that they were prepared by him or under his direction, that he knows the contents thereof, and that the same are true and correct to the best of his knowledge and belief.

Karl Pavlovic
Karl Pavlovic

Subscribed and sworn to before me this 21st day of April, 2021.



Michelle Lease
Notary Public
My Commission Expires: 3/10/2025

MICHELLE A. LEASE
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 10, 2025

KARL RICHARD PAVLOVIC, Ph.D.

Education

Purdue University – MA and Ph.D. in Philosophy

Karl-Ruprecht Universität, Heidelberg, Germany – graduate study

Yale University – BA in Philosophy

Positions

Senior Consultant – PCMG and Associates	2015-Present
Senior Consultant – Snavely King Majoros and Associates	2010-2014
Director – FTI Consulting	2008-2010
President – DOXA, Inc	1994-2008
Partner – Snavely King and Associates	1983-1994
Assistant Professor – University of Florida-Gainesville	1978-1983

Professional Experience

Dr. Pavlovic provides clients with economic and policy analyses of commercial operations and expert testimony in support of litigation, negotiation and strategic planning. His analyses and testimony are distinguished by systematic articulation and testing of assumptions, thorough evaluation of data, innovative application of statistical tools and economic principles, and clarity and precision of presentation. Dr. Pavlovic has provided expert testimony on the operations, costs and revenues of gas and electric utilities, the impacts of restructuring wholesale and retail electric markets, effects of mergers, the operation and competitiveness of petroleum and electric markets, the market valuation of crude oil, electric and gas reliability, and the performance of energy efficiency, renewable energy, and peak reduction programs.

Major projects directed by Dr. Pavlovic have included: analytical assistance to counsel and testimony on all aspects of the restructuring of wholesale and retail electric markets in the Eastern Interconnection; technical representation of the District of Columbia People's Counsel on the DC PSC's Pepco Productivity Improvement Working Group and various PJM working groups; impact evaluation study of pilot energy efficiency and renewable energy programs in the District of Columbia; analysis of petroleum markets, expert testimony, and coordination of technical testimony in the Trans-Alaska Pipeline quality bank litigation; Independent Technical Review of the economic models used by the US Army Corps of Engineers for the Ohio River System Investment Plan; assistance to a major independent telephone company in the formulation and implementation of corporate strategic plans, applications for long-distance authority, and settlement negotiations with major domestic and foreign carriers.

By education and professional experience Dr. Pavlovic has expertise in formal and mathematical logic, statistics, economics, financial analysis, econometrics, and computer modeling. With 33 years' experience as a consultant and expert witness, Dr. Pavlovic has in-depth knowledge of

commercial and industrial operations in the energy, transportation, and telecommunications industries and is familiar with a wide range of experimental and investigative methods in science and engineering.

Regulatory Projects and Appearances

1. In re: the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in North Dakota (2021) - (Appearance: cost of service and rate design on behalf of the North Dakota Public Service Commission Advocacy Staff)
ND PSC Case No. PU-20-441
2. In re: Pike County Light & Power Company 2020 General Base Rate Increase Filing – (Appearance: gas and electric cost of service and rate design on behalf of the Pennsylvania Office of Consumer Advocate)
PA Public Utility Commission Docket Nos. R-2020-3022134 and R-2020-3022135
3. In re: Young Brothers LLC’s Application for Approval of a New Cost of Service Model (2020) – (Assistance to Counsel: cost of service on behalf of the Hawaii Division of Consumer Advocacy)
HI Public Utilities Commission Docket No. 2020-0135
4. In re: Petition of NSTAR Gas Company d/b/a Eversource Energy for Approval of its 2019 Gas System Enhancement Plan Reconciliation Filing (2020) - (Assistance to Counsel: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 20-GREC-06
5. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of its 2019 Gas System Enhancement Plan Reconciliation Filing (2020) - (Assistance to Counsel: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 20-GREC-05
6. In re: Petition of Berkshire Gas Company for Approval of its 2019 Gas System Enhancement Plan Reconciliation Filing (2020) - (Assistance to Counsel: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 20-GREC-02
7. In re: Pittsburgh Water and Sewer Authority 2020 General Base Rate Increases 2020 – (Appearance: multi-year rate plan and performance based ratemaking on behalf of the Pennsylvania Office of Consumer Advocate)
PA Public Utility Commission Docket Nos. R-2020-3017970 and R-2020-3017951

8. In re: Commonwealth Edison Company Petition for approval of a Revision to Integrated Distribution Company Implementation Plan Creation of Rate Residential Time of Use Pricing Pilot (“Rate RTOUP”) – On Rehearing (2020) – (Appearance: price signal and customer response on behalf of the Illinois Attorney General)
IL Commerce Commission Docket Nos. 18-1725/18-1824
9. In re: Hawaii Electric Company, Inc. Application for Approval of a General Rate Increase and Revised Rate Schedules and Rules (2019) - (Appearance: cost of service and rate design on behalf of the Hawaii Division of Consumer Advocacy)
HI Public Utilities Commission Docket No. 2019-0085
10. In re: Application of San Diego Gas & Electric Company for Authority to: (i) Adjust its Authorized Return on Common Equity, (ii) Adjust its Authorized Embedded Costs of Debt and Preferred Stock, (iii) Adjust its Authorized Capital Structure; (iv) Increase its Overall Rate of Return, (v) Modify its Adopted Cost of Capital Mechanism Structure, and (vi) Revise its Electric Distribution and Gas Rates Accordingly, and for Related Substantive and Procedural Relief (2019) – (Appearance: wildfire risk accounting and ratemaking on behalf of Utility Consumers’ Action Network)
CA Public Utilities Commission Application 19-04-017
11. In re: Proposed Amendments to N.J.A.C. 14:9 Adoption of Water and Sewer Uniform System of Accounts (2019) – (Assistance to counsel: water and sewer accounting on behalf of the Division of Rate Counsel)
NJ Board of Public Utilities Docket Nos. WX19050612 and WX19050613
12. In re: Petition of Public Service Electric and Gas Company for Approval of Gas Base Rate Adjustments Pursuant to its Gas System Modernization Program (2019) – (Assistance to Counsel: infrastructure replacement accounting)
NJ Board of Public Utilities Docket No. GE19040522
13. In re: Petition of NSTAR Gas Company d/b/a Eversource Energy for Approval of its 2018 Gas System Enhancement Plan Reconciliation Filing (2019) - (Assistance to Counsel: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 19-GREC-06
14. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of its 2018 Gas System Enhancement Plan Reconciliation Filing (2019) - (Assistance to Counsel: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 19-GREC-05

15. In re: The Application of Potomac Electric Power Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2019) – (Appearance: cost of service and rate design on behalf of the Maryland Office of People’s Counsel)
MD Public Service Commission Case No. 9602
16. In re: PECO Energy Company Non-Bypassable Transmission Service Charge (NBT) Semiannual Adjustment (2019) - (Appearance: accounting, cost of service and rate design on behalf of the Pennsylvania Office of Consumer Advocate)
PA Public Utility Commission Docket No. M-2018-3005860
17. In re: PECO Energy Company Transmission Formula Rate Application (2018) - (Appearance: accounting, cost of service and rate design on behalf of the Pennsylvania Office of Consumer Advocate)
Federal Energy Regulatory Commission Docket ER17-1519-000
18. In re: Petition of NSTAR Gas Company d/b/a Eversource Energy for Approval of its 2017 Gas System Enhancement Plan Reconciliation Filing (2018) - (Appearance: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 18-GREC-06
19. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of its 2017 Gas System Enhancement Plan Reconciliation Filing (2018) - (Appearance: prudence/used and useful, accounting, cost of service and rate design on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 18-GREC-05
20. In re: The Application of the Potomac Edison Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2018) – (Appearance: cost of service and rate design on behalf of the Maryland Office of People’s Counsel)
MD Public Service Commission Case No. 9490
21. In re: Rate Applications of Kansas City Power & Light – Missouri and Kansas City Power & Light – Greater Missouri Operations (2018) – (Appearance: consolidated operations, cost of service and rate design on behalf of the Missouri Office of Public Counsel)
MO Public Service Commission Case Nos. ER-2018-0145 and ER-2018-0146
22. In re: The Application of Potomac Electric Power Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2018) – (Appearance: cost of service and rate design on behalf of the Maryland Office of People’s Counsel)
MD Public Service Commission Case No. 9472
23. In re: Mid-Atlantic Interstate Transmission, L.L.C. 2018 Transmission Formula Rate Protocol Filings (2018) - (Analysis and Advice to Counsel: accounting)
Federal Energy Regulatory Commission Docket ER17-211-000

24. In re: The Gas Company d/b/a Hawaii Gas Application for Approval of Rate Increases and Revised Rate Schedules and Rules (2017) - (Appearance: cost of service and rate design on behalf of the Hawaii Division of Consumer Advocacy)
HI Public Utilities Commission Docket No. 2017-0105
25. In re: Montana-Dakota Utilities Co., Application to Increase Natural Gas Rates (2017) - (Appearance: cost of service and rate design on behalf of the North Dakota Public Service Commission Staff)
ND Public Service Commission Case No. PU-12-813
26. In re: The Application of Delmarva Power and Light Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2017) – (Appearance: cost of service and rate design on behalf of the Maryland Office of People’s Counsel)
MD Public Service Commission Case No. 9455
27. In re: Petition of NSTAR Gas Company d/b/a Eversource Energy for Approval of its 2016 Gas System Enhancement Plan Reconciliation Filing (2017) - (Appearance: prudence/used and useful and plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 17-GREC-06
28. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of its 2016 Gas System Enhancement Plan Reconciliation Filing (2017) - (Appearance: prudence/used and useful and plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 17-GREC-05
29. In re: In the matter of the application of Columbia Gas of Maryland, Inc. for Authority to Increase Rates and Charges (2017) - (Appearance: cost of service and rate design on behalf of the Maryland Office of People’s Counsel)
MD Public Service Commission Case No. 9447
30. In re: PJM Interconnection, L.L.C. - PECO Energy Company Transmission Formula Rate Application (2017) - (Analysis and Advice to Counsel: accounting, cost of service and rate design)
Federal Energy Regulatory Commission Docket ER17-1519-000
31. In re: Northern Illinois Gas Company d/b/a Nicor Gas Company Proposed General Increase in Gas Rates (2017) - (Appearance: prudence/used and useful and plant accounting re. accelerated asset replacement program on behalf of the Illinois Citizens Utility Board)
IL Commerce Commission Docket No. 17-0124

32. In re: The Application of Potomac Electric Power Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2017) - (Appearance: cost of service and rate design on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9443
33. In re: PJM Interconnection, L.L.C. - Rockland Electric Company Transmission Rate Application (2017) (Analysis and Advice to Counsel: accounting, cost of service and rate design on behalf of the New Jersey Division of Rate Counsel)
Federal Energy Regulatory Commission Docket ER17-856-000
34. In re: PJM Interconnection, L.L.C. - Mid-Atlantic Interstate Transmission, L.L.C. Transmission Formula Rate Application (2016) - (Analysis and Advice to Counsel: accounting, cost of service and rate design on behalf of the Pennsylvania Office of Consumer Advocate)
Federal Energy Regulatory Commission Docket ER17-211-000
35. In re: The Application of Delmarva Power and Light Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2016) - (Appearance: cost of service and rate design on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9424
36. In re: The Application of Potomac Electric Power Company for Adjustments to Its Retail Rates for the Distribution of Electric Energy (2016) - (Appearance: cost of service and rate design on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9418
37. In re: Petition of Fitchburg Gas and Electric Light Company d/b/a Unitil for Approval of its 2015 Gas System Enhancement Plan Reconciliation Filing (2016) - (Analysis and Advice to Counsel: prudence/used and useful and plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 16-GREC-01
38. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of its 2015 Gas System Enhancement Plan Reconciliation Filing (2016) - (Appearance: prudence/used and useful and plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 16-GREC-05
39. In re: Petition for Approval of Gas Infrastructure Contract Between Public Service Company of New Hampshire d/b/a Eversource Energy and Algonquin Gas Transmission, LLC (2016) - (Appearance: compliance with statutes and regulations, prudence, cost/benefit, and ratemaking on behalf of the New Hampshire Office of Consumer Advocate)
NH Public Utilities Commission Docket No. DE 16-241

40. In re: Central Maine Power Company, Annual Compliance Filing and Price Change (2016) - (Analysis and Advice to Counsel: tax normalization regulatory asset on behalf of the Maine Office of the Public Advocate)
ME Public Service Commission Docket No. 2016-00035
41. In re: Bulletin 2015-10 Generic Proceeding to Establish Parameters for the Next Generation PBR Plans (2016) - (Appearance: productivity adjustments/performance based ratemaking on behalf of the Alberta Utilities Consumer Advocate)
Alberta Utilities Commission Proceeding 20414
42. In re: Emera Maine, Proposed Rate Increase in Rates (2016) - (Analysis and Advice to Counsel: evaluation of management audit of implementation of Customer Information System on behalf of the Maine Office of the Public Advocate)
ME Public Service Commission Docket No. 2015-00360
43. In re: The Merger of the Southern Company and AGL Resources Inc.- Joint Application of the Southern Company, AGL Resources Inc., and Pivotal Utility Holdings, Inc., d/b/a Elkton Gas (2015-2016) - (Appearance: earnings, synergy savings, rates, operations, supply procurement, safety, and reliability on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9404
44. In re: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of Firm Transportation Agreements with Millennium Pipeline Company, LLC (2015-2016) - (Analysis, Advice to Counsel, and Assistance on Brief: compliance with gas supply plan, rates, and reliability on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 15-142
45. In re: Petition of Boston Gas Company and Colonial Gas Company d/b/a National Grid for Approval of Precedent Agreements with Millennium Pipeline Company, LLC (2015-2016)
- (Analysis, Advice to Counsel, and Assistance on Brief: compliance with gas supply plan, rates, and reliability on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 15-130
46. In re: Petition of Boston Gas Company and Colonial Gas Company d/b/a National Grid for Approval of Agreements for LNG or Liquefaction Services with GDF Suez Gas NA, LLC; Northeast Energy Center, LLC; Gaz Metro LNG, L.P.; and National Grid LNG (2015- 2016) - (Analysis and Advice to Counsel: compliance with gas supply plan, rates, and reliability on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 15-129

47. In re: Columbia Gas of Massachusetts CY2014 Targeted Infrastructure Reinvestment Factor Compliance Filing (2015) - (Appearance: PBR tracker design/rates, prudence/used and useful, plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 15-55
48. ENMAX Energy Corporation (EEC) 2015-2016 Regulated Rate Option Non-Energy Tariff Application (2015-2016) - (Appearance: cost allocation, rate design, non-energy risk on behalf of the Alberta Utilities Consumer Advocate)
Alberta Utilities Commission Proceeding 20480
49. In the Matter of the Merger of Exelon Corporation and Pepco Holdings, Inc. (2014) - (Advice to Counsel: impact on customers on behalf of the New Jersey Division of Rate Counsel)
NJ Board of Public Utilities BPU Docket No. EM1406
50. In re: Application of Baltimore Gas and Electric Company For Adjustments To Its Electric and Gas Base Rates (2014) (Analysis and Advice to Counsel in Settlement: earnings, investment tracker, cost allocation and rate design on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9355
51. In re: Columbia Gas of Massachusetts CY2013 Targeted Infrastructure Reinvestment Factor Compliance Filing (2014) - (Appearance: PBR tracker design/rates, prudence/used and useful, plant accounting on behalf of the Massachusetts Attorney General Office of Ratepayer Advocacy)
MA Department of Public Utilities Docket No. D.P.U. 14-83
52. In re: Potential Business Combination of Entergy Louisiana, LLC and Entergy Gulf States Louisiana, L.L.C. (2014-2015) - (Analysis and Advice to Counsel: impact on rates and consolidation of rates on behalf of the Louisiana Public Service Commission Staff)
LA Public Service Commission Docket No.U-33244
53. In the Matter of the Application of Ohio Power Company to Adopt a Final Implementation Plan for the Retail Stability Rider (2014) - (Analysis and Advice to Counsel: rate design)
OH Public Utilities Commission Case No. 14-1186-EL-RDR
54. In re: Examination of Long-Term Natural Gas Hedging Proposals (2014-2015) - (Analysis and Advice to Counsel: natural gas procurement on behalf of the Louisiana Public Service Commission Staff)
LA Public Service Commission Docket No.R-32975-LPSC, ex parte

55. In re: 2013 Integrated Resource Planning Process for Southwestern Electric Power Company Pursuant to General Order Dated April, 20, 2012 (2014-2015 - (Analysis and Advice to Counsel: IRP design and evaluation on behalf of the Louisiana Public Service Commission Staff)
LA Public Service Commission Docket No. I-33013 SWEPCO, ex parte
56. In the Matter of the Application of Columbia Gas of Maryland, Inc. for Authority to Adopt an Infrastructure Replacement Surcharge Mechanism (2013-2014) - (Appearance: PBR tracker design/rates, prudence/used and useful, plant accounting on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9332
57. In the Matter of the Application of Baltimore Gas and Electric Company for Approval of a Gas System Strategic Infrastructure Development and Enhancement Plan and Accompanying Cost Recovery Mechanism (2013-2014) - (Appearance: PBR tracker design/rates, prudence/used and useful, plant accounting on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9331
58. In the Matter of the Application of Delmarva Power & Light Company for an Increase in Electric Base Rates and Miscellaneous Tariff Changes (2013-2014) - (Appearance: earnings, investment tracker design/rates, cost allocation and rate design on behalf of the Delaware Public Service Commission Staff)
DE Public Service Commission Docket No. 13-115
59. In the Matter of the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in North Dakota (2013) - (Appearance: cost allocation and rate design on behalf of the North Dakota Public Service Commission Staff)
ND Public Service Commission Case No. PU-12-813
60. In the Matter of the Application of Columbia Gas of Maryland, Inc. for Authority to Increase Rates and Charges (2013) - (Appearance: expense tracker design/rates and evaluation on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9316
61. In the Matter of the Application of Baltimore Gas and Electric Company for Adjustment in its Electric and Gas Base Rates (2012) - (Appearance: earnings, investment tracker design/rates, cost allocation and rate design on behalf of the Maryland Office of People's Counsel)
MD Public Service Commission Case No. 9299

62. In the Matter of the Application of Delmarva Power & Light Company for an Increase in Electric Base Rates and Miscellaneous Tariff Changes (2012) - (Appearance: earnings, investment tracker design/rates, cost allocation and rate design on behalf of the Delaware Public Service Commission Staff)
DE Public Service Commission Docket No. 11-528
63. ENMAX Energy Corporation (EEC) 2012-2014 Regulated Rate Option Non-Energy Tariff Application (2012-2013) - (Analysis and Advice to Counsel: rate design and non-energy risk on behalf of the Alberta Utilities Consumer Advocate)
Alberta Utilities Commission Application #1608745 Proceeding 2069
64. In the Matter of the Petition of Atlantic City Electric Company for Approval of Amendments to Its Tariff to Provide for an Increase in Rates and Charges for Electric Service Pursuant to *N.J.S.A. 48:2-21* and *N.J.S.A. 48:2-21.1* and for Other Appropriate Relief (2011) - (Analysis and Advice to Counsel: depreciation on behalf of the New Jersey Division of Rate Counsel)
NJ Board of Public Utilities Docket No. ER11080469
65. In the Matter of the Application of the Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service (2011) - (Appearance: investment tracker design/rates, cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1087
66. Electric Transmission Formula Rate Annual Informational Filing of Central Maine Power Company (2011) - (Advice to Counsel: formula transmission rates, cost allocation and rate design on behalf of the Maine Attorney General)
Federal Energy Regulatory Commission Docket No. ER09-934-000 (2011)
67. Electric Transmission Formula Rate Annual Informational Filing of Bangor Hydro Electric Company (2011) - (Analysis, Report and Advice to Counsel: formula rate on behalf of the Massachusetts Attorney General)
Federal Energy Regulatory Commission Docket No. ER09-938-000
68. Pennsylvania Public Utility Commission Office of Consumer Advocate Office of Small Business Advocate v. City of Bethlehem – Bureau of Water (2011) - (Appearance: cost allocation and rate design on behalf of the Pennsylvania Office of Consumer Advocate)
Pennsylvania PUC Docket Nos. R-2011-2244756, C-2011-2246910, and C-2011-2248241
69. Southern California Edison Company Transmission Owners Tariff (2011) - (Analysis and Advice to Counsel: depreciation on behalf of M-S-R Public Power Agency)
Federal Energy Regulatory Commission Docket No. ER11-2061-000

70. In the Matter of the Petition of Kansas City Power & Light Company for Determination of the Ratemaking Principles and Treatment that Will Apply to the Recovery in Rates of the Cost to be Incurred by KCP&L for Certain Electric Generation Facilities under K.S.A. 66- 1239 (2011) - (Appearance: advance determination of prudence on behalf of the Kansas Citizens' Utility Ratepayer Board)
Kansas Corporation Commission Docket No. 11-KCPE-581-PRE
71. Midwest Independent Transmission System Operator, Inc., and Ameren Illinois Company (2011) - (Analysis and Advice to Counsel: depreciation on behalf of the Wholesale Distribution Service Customer Group)
Federal Energy Regulatory Commission Docket No. ER11-2788-000
72. Electric Generation Plant Valuation Study (2010-2012) - (Analysis: generation plant valuation)
California Department of Water Resources
73. Tampa Electric Company Wholesale Power Tariff (2010-2011) - (Analysis and Advice to Counsel: depreciation on behalf of the Orlando Utilities Commission)
Federal Energy Regulatory Commission Docket No. ER10-2061-000
74. Pacific Gas & Electric Company, Transmission Owner Tariff (2010-2011) - (Analysis and Advice to Counsel: depreciation on behalf of the Transmission Agency of Northern California)
Federal Energy Regulatory Commission Docket No. ER10-2026-000
75. Natural Gas Price Forecast Model Consulting (2008-2010) - (line of business development) FTI Consulting
76. Impact Evaluation Study of the District of Columbia Department of the Environment's Two-Year Pilot Reliable Energy Trust Fund Programs (2007-2008) - (Appearance: evaluation of implementation and cost effectiveness of energy efficiency, renewable energy, and demand response pilot programs on behalf of the District of Columbia Department of the Environment)
D.C. Public Service Commission Formal Case No. 945
77. In the Matter of the Application of the Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service (2007-2008)- Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1053
78. In the Matter of the Investigation of Interconnection Standards in the District of Columbia (2006) - (Analysis and Advice to Counsel: interconnection standards and tariff design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1050

79. In the Matter of the Investigation into the Omnibus Utility Emergency Amendment Act of 2005, Specifically Regarding the Establishment of the Natural Gas Trust Fund Programs (2006) - (Analysis and Advice to Counsel: program design on behalf of the District of Columbia Department of the Environment)
D.C. Public Service Commission Formal Case No. 1037
80. Emergency Application of the Potomac Electric Power Company For A Certificate of Public Convenience and Necessity To Construct Two 69kV Overhead Transmission Lines and Notice of The Proposed Construction of Two Underground 230kV Transmission Lines (2005-2006) - (Appearance: facilities need on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1044
81. Investigation Into Potomac Electric Power Company's Distribution Service Rates (2003- 2005) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1032
82. Investigation of the Feasibility of Removing Pre-Existing Aboveground Utility Lines and Cables and Relocating Them Underground in the District of Columbia (2003) - (Analysis and Advice to Counsel: cost/benefit analysis on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1026
83. Guadalupe L. Garcia v. Ann Veneman, Secretary, US Department of Agriculture (2003- 2006) - (Appearance: statistical analysis on behalf of the Plaintiff)
U.S. District Court for the District of Columbia
84. Mirant Corporation, et al., Debtors (2003-2005) - (Analysis and Advice to Counsel: cost of service on behalf of the People's Counsel for the District of Columbia)
U.S. District Court for the Northern District of Texas
85. Complaint: Office of the People's Counsel of the District of Columbia v. Mirant Americas Energy Marketing, L.P. (2003) - (Analysis and Advice to Counsel: cost of service on behalf of the People's Counsel for the District of Columbia)
Federal Energy Regulatory Commission
86. Investigation into the Effect of the Bankruptcy of Mirant Corporation on Retail Electric Service in the District of Columbia (2003-2005) - (Appearance: customer and rate impact on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1023
87. Development and Designation of Standard Offer Service in the District of Columbia (2003- 2007) - (Appearance: cost of service allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1017

88. Independent Review Panel, Project Management Plan, Ohio River Main Stem Study (2003- 2005) - (50 year economic simulation model evaluation)
U.S. Army Corps of Engineers
89. Investigation into Affiliated Activities, Promotional Practices, and Codes of Conduct of Regulated Gas and Electric Companies (2002-2004) - (Analysis and Advice to Counsel: cost allocation on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1009
90. Independent Review Panel, Ohio River Main Stem Study, System Investment Plan (2001) - (50 year economic simulation model evaluation)
U.S. Army Corps of Engineers
91. Joint Application of PEPCO and New RC, Inc. for Authorization and Approval of Merger Transaction (2001-2002) - (Appearance: cost allocation and affiliate transactions on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 1002
92. Investigation into Explosions Occurring in Underground Distribution Systems of PEPCO (2001-2006) - (Analysis and Advice to Counsel: electric systems operation and planning on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 991
93. Pennsylvania-New Jersey-Maryland Power Pool/PJM LLC (ISO/RTO) (2000-2005) - (Member Working Group technical representation on behalf of The People's Counsel for the District of Columbia)
94. Trans Alaska Pipeline System 1996 Quality Bank Complaint Remand (2000-2008) - (Appearance: crude oil valuation and tariff rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission
95. Ohio River Main Stem Study, Independent Technical Review (1999) - (50 year economic simulation model evaluation)
U.S. Army Corps of Engineers
96. Investigation of January 1999 Electric Service Interruption (1999-2004) - (Appearance: emergency response evaluation on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 982
97. Trans Alaska Pipeline System 1996 Quality Bank Complaint Appeal (1998-2000) - (Analysis and Advice to Counsel: technical record below on behalf of ExxonMobil)
U.S. Court of Appeals for the District of Columbia

98. Electric Retail Competition Investigation (1997-2006) - (Appearance: electric utility restructuring, electric energy procurement, cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 945
99. Trans Alaska Pipeline System 1996 Quality Bank Complaint (1996-1998) - (Appearance: crude oil valuation and tariff rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission
100. Trans Alaska Pipeline System 1989 Quality Bank Complaint Remand (1995-1998) - (Appearance: crude oil valuation and tariff rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission
101. Prudhoe Bay Unit Operating Agreement Hearings (1995) - (Analysis and Advice to Counsel: cost of service on behalf of ExxonMobil)
Alaska Oil and Gas Conservation Commission
102. Prudhoe Bay Unit Natural Gas Liquids Hearings (1995) - (Analysis and Advice to Counsel: liquids valuation on behalf of ExxonMobil)
Alaska Department of Natural Resources/Department of Revenue (1995)
103. Potomac Electric Power Co. 3rd Integrated Least-Cost Plan (1995) - (Appearance: forecast operations and costs on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 917, Phase II
104. All American Pipeline Quality Bank Complaint (1994-1995) - (Appearance: crude oil valuation and tariff rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission
105. Trans Alaska Pipeline System 1989 Quality Bank Complaint Appeal (1994-1995) - (Analysis and Advice to Counsel: technical record below on behalf of ExxonMobil)
U.S. Court of Appeals for the District of Columbia
106. Investigation of the January 1994 Energy Crisis (1994) - (Appearance: emergency response evaluation on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 936
107. Washington Gas Light Co. Gas Rate Case (1994) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 934

108. Washington Gas Light Co. 3rd Integrated Least-Cost Plan (1994) - (Appearance: forecast operations and costs on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 921
109. Potomac Electric Power Co. Electric Rate Case (1993) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 929
110. Washington Gas Light Co. Gas Rate Case (1993) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 922
111. Trans Alaska Pipeline System Pumpability Complaint (1992) - (Analysis and Advice to Counsel: cost of service and rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission
112. Potomac Electric Power Co. 2nd Integrated Least-Cost Plan (1992) - (Appearance: forecast operations and costs on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 917
113. Potomac Electric Power Co. Electric Rate Case (1992) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 912
114. Potomac Electric Power Co. Fuel Clause Audit and Productivity Improvement Plan (1991- 2005) (Analysis, Participation in Technical Sessions, and Advice to Counsel; electric utility plant investment and operating costs productivity and benefit/cost analysis on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 766
115. Potomac Electric Power Co. Electric Rate Case (1991) - (Appearance: cost allocation and rate design on behalf of the People's Counsel for the District of Columbia)
D.C. Public Service Commission Formal Case No. 905
116. Anchorage Telephone Utility (1991-1995) - (Analysis and Advice to Counsel: cost of service)
Federal Communications Commission
117. Trans Alaska Pipeline System 1989 Quality Bank Complaint (1990-1993) - (Appearance: crude oil valuation and tariff rate design on behalf of ExxonMobil)
Federal Energy Regulatory Commission

118. Telefonica Larga Distancia de Puerto Rico International Service Tariffs (1990-1992) - (Appearance: cost of service and rate design)
Federal Communications Commission
119. Southern Bell Intrastate Depreciation Study (1989-1990) - (Analysis and Advice to Counsel: telecommunications operation)
Florida Public Service Commission
120. Lake Erie Iron Ore Antitrust Litigation: Erie-Western Pennsylvania Port Authority v. Penn Central et al. (1988-1989) - (Analysis and Advice to Counsel: truck operations and damages on behalf of the Norfolk and Western Railroad)
U.S. District Court for the Eastern District of Pennsylvania
121. Unimar International Chapter 11 Reorganization (1988) - (Analysis and Advice to Counsel: cost of service on behalf of Unsecured Creditors)
U.S. Bankruptcy Court for the Western District of Washington at Seattle
122. National Forest Road Cost Analysis System (1986) - (Analysis: cost allocation system design)
U.S. Department of Agriculture, Forest Service
123. Puerto Rico Telephone Company Long Distance Facilities and Service Applications (1985- 1990) - (Appearance: cost of service and rate design on behalf of the Puerto Rico Telephone Company)
Federal Communications Commission
124. All American Cable and Radio/AT&T de Puerto Rico International Rate Complaint (1985- 1990) - (Appearance: cost of service and rate design on behalf of the Puerto Rico Telephone Company)
Federal Communications Commission
125. Caribbean Telecommunications Facilities Planning Docket (1984-1990) - (Appearance: operations forecast and planning on behalf of the Puerto Rico Telephone Company)
Federal Communications Commission

June 3, 2016

Northern States Power Company
Attn: David Sederquist
2302 Great Northern Drive
P. O. Box 2747
Fargo, ND 58108-2747

RE: Comments – MN Docket No. E002/RP-15-21
ND Case No. PU-15-19
Northern States Power Company
Integrated Resource Plan
Information

Dave,

I am writing to indicate what staff would likely argue and conclude concerning NSP's latest environmental plan for securing necessary generation resources for its integrated electric system. Whatever I write here is premature and could change. Still a general impression from staff may be useful to you as you try to develop the Regulatory Treatment Framework for operating in various states where laws and policies are not congruent.

Fargo CT

We agree that locating a simple cycle combustion turbine in ND by the end of 2025 is just and reasonable. The Company has already committed to building this resource¹. The Company has operated for over 100 years in ND without installing any local generation to provide voltage support and enhance reliability.

Nuclear

We agree that operating the Company's nuclear units through their respective plant operating licenses is just and reasonable. We have been supportive of NSP's nuclear fleet from the beginning but our support is beginning to wain as regulatory and compliance costs in recent years have diminished the units' value and there is still no long-term solution for disposing of radioactive waste. The value of these plants is further eroded by low cost natural gas, CT's and tax subsidized wind generation. Still, we agree with NSP that a diverse portfolio is valuable in minimizing risk to consumers and that the net benefit of operating the nuclear plants remain.

¹ See Page 3, First Revised Negotiated Agreement Relating to North Dakota Generation Resource Policy signed on February 22, 2016 in ND Case No. PU-12-813.

Sherco 1 & 2

We do not agree with closing Sherco Unit 1 in 2026 and Unit 2 in 2023. In the Company's last rate case in ND, the Company identified the end of life for these two units as 2035². The Sherco Units are highly cost effective and provide effective and reliable baseload power. The implementation of the Clean Power Plan (CPP) is not certain or even needed to reduce the carbon output of generation facilities. Highly subsidized wind and low natural gas costs have already significantly reduced carbon dioxide emissions across the country and will continue to do so. The timing of requiring Selective Catalytic Reduction (SCT) equipment is also not clear. Until we have more answers, it is premature to begin planning for the early retirement of these units. Please see the Conclusion found on pages 29 and 30 of Attachment G1 ("Economic Impacts of Sherco Plant Alternatives") to the Supplement for a number of reasons why closing the Sherco units early is not beneficial.

Please note that on page 44 of the Supplement, the Company states that the Plan may generate surplus carbon dioxide reductions under the CPP. If the CPP is implemented as proposed, Staff would rather see a less restrictive plan than over-compliance in the event additional compliance is necessary in the future. Early compliance may not be useful – or cost-beneficial - in satisfying future regulatory compliance.

We are concerned that ND customers will incur significant and unnecessary costs if the Company retires the Sherco Units early. Because these units are located in MN, we acknowledge that, unfortunately, ND will have little say in whether these units remain open and operational. As part of any request for recovery of either the stranded Sherco costs or its replacement generation, the staff will do a comprehensive review of the costs of continuing to operate the coal units as compared to a new natural gas unit. We do not believe that there will be much support for paying for both Sherco stranded costs and a new combined-cycle generating unit. Therefore, staff will likely argue, at a minimum, that the equipment is no longer used and useful and therefore any remaining stranded investment is not recoverable from customers.

Wind and CT's

Generally speaking, staff supports PTC-subsidized wind development combined with combustion turbines given the current price of both wind and natural gas. Of course wind prices will change as PTC's are phased out by 2020 and any plans should consider the loss of these tax subsidies. Whether or not wind generated energy can remain competitive without PTC's remains to be seen. Like any resource addition, the Commission will expect that any proposed wind energy will be shown to be the least cost resource available, all things considered. As long as fracking is allowed and natural gas prices stay below \$4 a Dekatherm, it would be hard to argue for other capacity resources besides CT's. The MISO practice

² See Exhibit _____ (LHP-1) Schedule 4, Page 2 of 4, Direct Testimony and Schedules of Lisa H. Perkett, filed on December 18, 2012 in ND Case No. PU-12-813.

of awarding capacity to wind and not distinguishing between baseload capacity and CT capacity adds to staff's support of wind and gas. Given the existing infrastructure at Sherco, we would likely not oppose placing a combined-cycle natural gas plant at Sherco so long as capacity is needed to meet MISO's reserve requirements.

Big Solar

Based on recent ADP filings, it is doubtful that solar resources in the near future will be acceptable to ND regulators. MN is the only state with a solar RPS and direct assigning any incremental or "premium" costs (and the related environmental attributes) to MN will hasten NSP's ability to meet the MN standard and hold other states' customers harmless to its high costs.

The costs for large solar projects are identified on page 5 of Attachment B to the Supplement as 9.5 cents per kWh. NSP's average cost of fuel in ND from January 2010 through May of 2016 was 2.7 cents per kWh and the average market price of energy is not much more. Wind energy is currently being secured for less than 3 cents a kWh. To the extent that the value of solar capacity does not offset the high cost of its energy; staff will oppose full cost recovery.

Staff is not opposed to solar energy per se; in general, we remain ambivalent to the type of energy and capacity used to meet resource requirements so long as it is cost effective.

Dinky Solar

Staff would object to the inclusion of very small distributed solar systems adding up to 675 megawatts on the same basis as it would object to large solar. While the Company does not discuss this in its Supplement, it appears that in reading Attachment B to the Plan, the Company is adding a significant amount of small solar onto its system during the planning period. On Page 2 of Attachment B, the Company states that small solar systems increase the PVRR of the Plan by \$760 million with an average cost of 12 cents per kWh. It is not clear why the Company would ask its ratepayers to pay more for the same type of resource than can be achieved on a larger scale for less. If this expensive foray into Solar Gardens is required by MN, NSP should assign all of the incremental costs to its MN jurisdiction.

EE and DSM Programs

Staff is not opposed to MN's energy efficiency programs as they are already directly assigned to MN. For ND programs, we largely require that such programs pass the ratepayer impact model test and few energy efficiency programs pass the test. We believe energy efficiency programs take money from all customers and redistribute it to a smaller subset of customers without providing much benefit to the whole. Instead, it has been the practice of this commission to encourage demand side management programs since peak reduction efforts provide value to all customers.

As a side note, we do not believe that ND is free-riding on MN's EE efforts. EE efforts are primarily about saving money through less electricity use and therefore participating Minnesotans enjoy the benefits of those programs. Further, any resulting demand reductions will correspondingly diminish MN's share of jurisdictional demand cost and thereby increase ND's share. We do not see any cross-subsidies occurring between jurisdictions because of the different EE / DSM approaches by the various states.

PPA vs Build

The commission has consistently expressed a preference for ownership over purchased power agreements (PPA) for reasons of security, reliability and a more certain long-term cost structure. If NSP proposes future PPAs, it will have to clearly demonstrate to staff and the commission how those PPAs will be more economic compared to owned assets over the long-run (30-40 years) given our preference for least cost planning.

Cost of Electricity Delivered to End Users

While the Company portrays its IRP as causing minimal adverse effects on customer bills, NSP should move ever so cautiously in this regard. NSP is getting beat at the meter by the other two IOU's operating in ND as well as a good share of ND coops, even while it serves three of our four largest urban areas. The farther NSP's costs diverge from that of other utilities in the state, the more difficult it will be for NSP to secure rate recovery in ND.

Wind, Solar, Gas if You Have To and Nothing Else

There is an old proverb that says don't put all your eggs in one basket. Over the years, NSP has long crowed about its resource diversity as it extolled its virtues. However, the future direction of NSP appears to fly in the face of this long held view as it proposes to retire efficient and useful coal (and ultimately, nuclear) plants and rely primarily on natural gas, wind, and solar in the future.

We hope these comments are helpful to the Company in its decision making process as it proposes a Resource Treatment Framework for going forward. We believe that in those areas where we have substantial disagreement with the Company's Current Preferred Plan, resources should be evaluated as "non-system" resources and assigned directly to the cost-causing state and any other jurisdiction that approves it.

A special thanks to Sara Cardwell who crafted the bulk of this letter. Please let us know if you have any questions.

Sincerely,



Mike Diller
Director of Economic Regulation

**STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

**Northern States Power Company
Advance Prudence – 345 MW Mankato Energy Center
Application**

Case No. PU-15-96

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

March 23, 2016

Appearances

Commissioners Julie Fedorchak, Randy Christmann, and Brian P. Kalk

Zeviel T. Simpser, Briggs and Morgan, P.A., 2200 IDS Center, 80 South Eighth Street, Minneapolis, MN 55402-2157, and Alison C. Archer, Xcel Energy, 414 Nicollet Mall, 5th Floor, Minneapolis, MN 55401-1993, on behalf of Northern States Power Company.

Blaine T. Johnson, Crowley Fleck PLLP, 100 W. Broadway, Suite 250, Bismarck, ND 58502-2798, on behalf of Calpine Corporation, Intervenor.

Mitchell D. Armstrong, Special Assistant Attorney General, 122 East Broadway Avenue, Bismarck, ND 58501, on behalf of the Public Service Commission, Advocacy Staff.

Illona Jeffcoat-Sacco, General Counsel, Public Service Commission, State Capitol, 600 E. Boulevard Ave., Bismarck, ND 58505, on behalf of the Public Service Commission.

Janet Demarais Seaworth, Administrative Law Judge, P.O. Box 7127, Bismarck, ND 58502-7127.

Preliminary Statement

On February 13, 2015, Northern States Power Company (NSP), dba Xcel Energy, filed an application with the North Dakota Public Service Commission (Commission) seeking an advance determination of prudence (ADP) under North Dakota Century Code section 49-05-16 for 345 MW of capacity and associated energy to be added to the NSP System through a 20-year power purchase agreement with Mankato Energy Center, LLC, an affiliate of Calpine Corporation. (Calpine PPA)

On July 8, 2015, the Commission issued a Notice of Hearing, scheduling a public hearing to begin at 8:00 a.m. on October 15, 2015 in the Commission Hearing Room, 12th floor, State Capitol, Bismarck, North Dakota. The notice

identified the issue to be considered as whether NSP's power purchase agreement should receive an advance determination of prudence from the Commission.

On October 13, 2015, The Administrative Law Judge granted Calpine Corporation's request to intervene.

On October 15, 2015 the public hearing was held as scheduled.

Having allowed all interested persons an opportunity to be heard, and having heard, reviewed and considered all testimony and evidence presented, the Commission makes its:

Findings of Fact

1. NSP is an investor-owned electric utility headquartered in Minneapolis, Minnesota authorized to provide public utility service in North Dakota.
2. In a previous NSP general electric rate increase proceeding, Case No. PU-07-776, NSP agreed to file an application for an advance determination of prudence for any proposed resource addition larger than 50 MW. In NSP's application for an advance determination of prudence for the Geronimo wind project, Case No. PU-12-59, NSP agreed to file all advance determination of prudence applications in a timely manner. In NSP's most recent general electric rate proceeding, Case No. PU-12-813, NSP agreed to obtain an advance determination of prudence for power purchase agreements greater than 50 MW before recovering the costs of associated energy through its Fuel Cost Rider (FCR).
3. NSP selected the proposed Calpine PPA through the Minnesota Competitive Acquisition Process (CAP).
4. The proposed Calpine PPA is comprised of up to 345 MW of capacity and associated energy from the construction of a new combined cycle natural gas unit to be added to Calpine's existing 375 MW Mankato Energy Center located in Mankato, MN.
5. NSP's application states that the Calpine PPA will help meet a potential need of 150-500 MW on its system in the 2017-2019 time period that was identified in its 2010 Resource Plan.
6. NSP testified that newer projections show the timeframe of potential need is now not expected until at least 2023 or 2024. NSP testified that the Calpine PPA remains prudent because of advantageous pricing and enhanced optionality

that allows NSP to accelerate retirement of some of its oldest and least-efficient peaking generation, and allows flexibility to react to evolving circumstances.

7. NSP testified that, when viewed under the totality of the circumstances, the Calpine PPA is a prudent resource addition.

8. Based on review of NSP's application and assumptions, inputs, and analysis, Advocacy Staff testified that the Calpine PPA is not prudent.

9. Advocacy Staff testified that the Calpine PPA is not prudent because it is not designed to meet an identified need in the near future. Advocacy Staff testified it is not prudent to invest in this resource when the anticipated need is not until 2023 or 2024. Advocacy Staff testified that waiting is more prudent given the various uncertainties relied upon by NSP as justification for approval of the Calpine PPA.

10. Advocacy Staff compared NSP's most recent load and generating capacity forecasts, and testified that NSP expects to have sufficient generating capability to meet its reserve margin obligations through 2023 without the proposed Calpine PPA. This conclusion is supported by NSP's testimony.

11. Advocacy Staff testified that the capacity to be provided by the proposed resource addition is in excess of what is necessary to ensure reliability and meet customer load, and that the Calpine PPA will cause increased costs to North Dakota customers without corresponding benefits.

12. Testimony regarding relevant underlying facts such as the need, timing, and price did not materially differ between Advocacy Staff, NSP, and the Intervenor Calpine. However, the dispute is whether the underlying facts support a conclusion that the Calpine PPA is prudent at this time. NSP and Calpine asserts the facts do support such a conclusion, Advocacy Staff asserts they do not. NSP does agree the timing of the Calpine PPA is not ideal and there is not an expected need for the project until 2023 or 2024.

13. NSP's identified potential need in 2023 originates with its October 2, 2015, Resource Plan Update. In the Supplemental Rebuttal Testimony of Kurtis Haeger, he describes "significant changes" to NSP's long-term resource planning activities intended to achieve a 60 percent reduction in carbon emissions by 2030. NSP proposes to cease coal operations at Sherco Unit 2 in 2023 and Sherco Unit 1 in 2026, construct a gas combined cycle facility at Sherco by 2026, construct a gas combustion turbine in eastern North Dakota in the 2023 to 2025 timeframe, and accelerate the addition of renewable energy to the 2018 to 2020 timeframe. The 2015 Resource Plan Update is not final and remains subject to change.

14. NSP's generation resource needs from 2023 and beyond are largely driven by its plan to accelerate retirement of the 1,500 MW Sherco coal units. NSP has not shown prudence of early Sherco retirements.

15. After considering all of the testimony and other evidence, the Commission finds NSP has not established the Calpine PPA is prudent. There is little or no dispute that there is not a need for this project until at least 2023 and the potential need at that time is largely based on NSP ceasing coal operations at Sherco. Approval of this project now would require customers to pay for unneeded capacity for a significant portion of the 20-year contract term. However, load forecasts and other assumptions underlying NSP's integrated resource plan are continually subject to change. The conclusions about prudence on which NSP relies to support this application may or may not occur. It is premature for the Commission to base an advance determination of prudence on such evidence.

From the foregoing Findings of Fact, the Commission makes its:

Conclusions of Law

1. The Commission has jurisdiction in this matter.
2. NSP has not shown that the Calpine PPA merits an advance determination of prudence at this time under N.D.C.C. § 49-05-16.

From the foregoing Findings of Fact and Conclusions of Law, the Commission now makes its:

Order

The Commission orders NSP's application for an advance determination of prudence for the Calpine PPA DISMISSED without prejudice.

PUBLIC SERVICE COMMISSION


Randy Christmann
Commissioner


Julie Fedorchak
Chairman


Brian P. Kalk
Commissioner

**STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

**Northern States Power Company
Advance Prudence - 187 MW Solar Energy Portfolio
Application**

Case No. PU-14-810

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

JUNE 17, 2015

Appearances

Commissioners Julie Fedorchak, Randy Christmann, and Brian P. Kalk

Zeviel T. Simpson, Briggs and Morgan, P.A., 2200 IDS Center, 80 South Eighth Street, Minneapolis, MN 55402-2157, and Alison C. Archer, Xcel Energy, 414 Nicollet Mall, 5th Floor, Minneapolis, MN 55401-1993, on behalf of Northern States Power Company.

John M. Schuh, Public Service Commission, State Capitol, 600 E. Boulevard Ave., Bismarck, North Dakota 58505, on behalf of the Public Service Commission Advocacy Staff.

Illona Jeffcoat-Sacco, General Counsel, Public Service Commission, State Capitol, 600 E. Boulevard Ave., Bismarck, North Dakota 58505, on behalf of the Public Service Commission.

Wade C. Mann, Administrative Law Judge, Office of Administrative Hearings, 2911 North 14th Street, Suite 303, Bismarck, North Dakota 58503,

Preliminary Statement

On November 7, 2014, Northern States Power Company (NSP) filed an application with the North Dakota Public Service Commission (Commission) seeking an advance determination of prudence (ADP) under North Dakota Century Code (N.D.C.C.) section 49-05-16 for a 187 MW solar energy portfolio (Solar Portfolio). The Solar Portfolio consists of power purchase agreements to purchase the output of the 62.25 MW Marshall Solar project, located near Marshall, Minnesota; the 24.75 MW MN Solar I project, located near Tracy, Minnesota; and the 100 MW North Star Solar project, located near North Branch, Minnesota.

On March 11, 2015, the Commission issued a Notice of Hearing, scheduling a public hearing to begin at 8:30 a.m. on May 6, 2015 in the Commission Hearing Room, 12th floor, State Capitol, Bismarck, North Dakota. The Notice identified the issue to be considered as whether NSP's solar power purchase agreements should receive an advanced determination of prudence from the Commission.

On May 6, 2015 the public hearing was held as scheduled.

Having allowed all interested persons an opportunity to be heard and having heard and considered all testimony and evidence presented, the Commission makes the following:

Findings of Fact

1. NSP is an investor-owned electric utility headquartered in Minneapolis, Minnesota authorized to provide public utility service in North Dakota under the regulatory jurisdiction of the Commission.
2. On April 22, 2014, NSP issued a request for proposal (RFP), seeking eligible utility-scale solar resources to fulfill NSP's obligation under the Minnesota Solar Energy Standard (SES) requirements, Minn. Stat. section 216B.1691, subd. 2f(a)-(c).
3. NSP's RFP sought bids for solar photovoltaic resources of 5 MW or larger, which offered to sell to NSP all energy, associated capacity, ancillary services, and renewable energy certificates generated by the resource.
4. After reviewing proposals for ability to interconnect with the transmission system, curtailment risk, and the ability to complete the proposed project by the end of 2016, the deadline for qualifying for a 30% federal investment tax credit, NSP selected three bids totaling an additional 187 MW of solar generation to the NSP system. The projects represented by these three bids are collectively known as NSP's Solar Portfolio.
5. The three Solar Portfolio projects selected are:
 - a) Marshall Solar – a 62.25 MW project located near Marshall, Minnesota to be developed by NextEra Energy Resources;
 - b) MN Solar I – a 24.75 MW project located near Tracy, Minnesota to be developed by juwi solar, Inc.; and
 - c) North Star Solar – a 100 MW project located near North Branch, Minnesota to be developed by Community Energy Resources.
6. In NSP Electric Rate Increase Application, Case No PU-07-776, NSP agreed to file an application for an advance determination of prudence for any proposed resource addition larger than 50 MW. In NSP Advance Prudence – Geronimo Wind Application, Case No. PU-12-59, NSP agreed to file all advance determination of prudence applications in a timely manner. In NSP's most recent general electric rate application, Case No. PU-12-813, NSP agreed to obtain an advance determination of prudence for power purchase agreements greater than 50 MW before recovering the costs of associated energy through its Fuel Cost Rider (FCR).
7. NSP uses the Strategist modeling tool for its quantitative modeling efforts. The tool is widely used by utilities and utility regulatory commissions in the United States.

8. NSP's modeling indicates that the Solar Portfolio will increase NSP's overall system-wide cost of energy by \$14 million present value over the lives of the projects. NSP testified that this is a reasonable cost when weighed against qualitative benefits.
9. NSP testified that the federal 30 percent income tax credit is a significant incentive to developers, resulting in attractive pricing for solar at this time.
10. NSP states that a number of qualitative benefits of the Solar Project demonstrate the project's prudence, including the provision of emission free energy that can position the company for compliance with future environmental laws and regulations, the provision of a hedge against future natural gas prices, and the displacement of future energy purchases.
11. Based on review of NSP's application and assumptions, inputs, and analysis, Advocacy Staff testified that the Solar Project is inconsistent with least-cost planning.
12. Advocacy Staff testified that the Solar Portfolio resource additions were undertaken by NSP in response to the Minnesota SES and are not cost-effective resource additions.
13. Advocacy Staff testified that if NSP needed additional energy resources then lower cost energy resource additions are available to NSP, including alternatives that provide a hedge against future environmental regulations and natural gas prices.
14. Advocacy Staff compared NSP's most recent load and generating capacity forecasts, and testified that NSP expects to have sufficient generating capability to meet its reserve margin obligations through 2023 without the proposed Solar Portfolio addition. This conclusion is supported by NSP's testimony.
15. Advocacy Staff testified that the capacity to be provided by the resource additions is in excess of what is necessary to ensure reliability and meet customer load, and therefore the Solar Portfolio would cause increased costs to North Dakota customers without corresponding benefits.
16. Given that NSP entertained the Solar Project to meet Minnesota requirements, and not because it is a least-cost project, Advocacy staff recommended the costs and benefits of the Solar Project should not be allocated to the North Dakota jurisdiction.
17. Advocacy Staff testified that the 187 MW Solar Portfolio is not a prudent resource addition.
18. The Commission finds that NSP has not shown its proposed Solar Portfolio to be prudent. Therefore the Commission declines to grant an advanced determination that NSP's Solar Portfolio is prudent.

From the foregoing Findings of Fact, the Commission makes the following:

Conclusions of Law

1. The Commission has jurisdiction in this matter.

2. NSP has not shown that its Solar Portfolio merits an advance determination of prudence under N.D.C.C. section 49-05-16.

From the foregoing Findings of Fact and Conclusions of Law, the Commission makes its:

Order

The Commission orders:

1. NSP's application for an advance determination of prudence for its 187 MW Solar Portfolio is denied.
2. NSP shall not recover costs associated with its 187 MW Solar Portfolio through its North Dakota Fuel Cost Rider without specific approval from the Commission.

PUBLIC SERVICE COMMISSION


Randy Christmann **Julie Fedorchak** **Brian P. Kalk**
Commissioner **Chairman** **Commissioner**

Exhibit _____ (KRP-5)

PU-20-441

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IN ITS ENTIRETY**