

Rebuttal Testimony
Mark P. Moeller

Before the North Dakota Public Service Commission
State of North Dakota

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
Exhibit___(MPM-2)

Capital Investments, Depreciation, and Nuclear Decommissioning

June 1, 2021

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1 **I. INTRODUCTION**

2

3 Q. PLEASE STATE YOUR NAME AND TITLE.

4 A. My name is Mark P. Moeller. I am Director of Capital Asset Accounting for
5 Xcel Energy Services Inc. (XES), which provides services to Northern States
6 Power Company (NSPM or the Company).

7

8 Q. ARE YOU THE SAME MARK. P. MOELLER WHO SUBMITTED DIRECT TESTIMONY
9 IN THIS CASE?

10 A. Yes.

11

12 Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

13 A. As a Director of Capital Asset Accounting, I am responsible for various aspects
14 of asset accounting, primarily dealing with policy, book depreciation, tax
15 depreciation, and deferred taxes for capital assets, as well as the related reporting
16 and regulatory requirements for Xcel Energy and its subsidiaries. A description
17 of my qualifications, duties, and responsibilities was included as Exhibit
18 ____ (MPM-1), Schedule 1 to my Direct Testimony.

19

20 Q. DID ANY WITNESSES PROVIDE DIRECT TESTIMONY REGARDING DEPRECIATION
21 OR PLANT IN SERVICE?

22 A. Yes. Mr. James S. Garren, from Snavely King Majoros & Associates, Inc. and
23 Mr. Dante Mugrace, from PCMG and Associates both did so. Both of these
24 witnesses are consultants who were hired by and are testifying on behalf of the
25 Advocacy Staff of the North Dakota Public Service Commission (NDPSC or
26 the Commission).

27

1 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

2 A. I respond to depreciation issues raised in the Direct Testimony of Mr. Garren
3 and Mr. Mugrace.

4

5 Q. HOW IS YOUR REBUTTAL TESTIMONY ORGANIZED?

6 A. I present my testimony in the sections as outlined below.

7 • *Depreciation Expense*

8 • *AGIS In Service*

9 • *Conclusion*

10 **II. DEPRECIATION EXPENSE**

11

12 Q. PLEASE SUMMARIZE THE COMPANY'S REQUEST REGARDING DEPRECIATION
13 EXPENSE.

14 A. In my Direct Testimony, I propose several changes that impact depreciation
15 expense, specifically: updates to the remaining lives and net salvage on
16 production facilities; and new service lives, retirement curves, net salvage rates,
17 and depreciation rates for Transmission, Distribution, General and Intangible
18 (TD&G) assets. My recommendations are based on the 2017 Depreciation
19 Study performed by Alliance Consulting Group (Alliance), the 2020
20 Dismantling Study performed by TLG Services, and current operating plans.

21

22 Q. WHAT TOPIC ARE YOU ADDRESSING IN THIS PART OF YOUR TESTIMONY?

23 A. I am addressing comments made in the Direct Testimony of Mr. Garren
24 regarding his proposed adjustments to depreciation expense calculations.

25

1 Q. WHAT RECOMMENDATIONS DID MR. GARREN MAKE REGARDING
2 DEPRECIATION?

3 A. Mr. Garren proposes adjustments to the depreciation lives and retirement
4 curves of four accounts from those recommended by the Company: FERC
5 Accounts 352 Transmission Structures and Improvements; 353 Transmission
6 Station Equipment; 364 Distribution Poles, Towers, and Fixtures; and 369.10
7 Distribution Services, Overhead.

8

9 **A. Service Lives**

10 Q. ARE THE RECOMMENDATIONS MADE BY MR. GARREN APPROPRIATE?

11 A. No. While Mr. Garren's description of a depreciation study is consistent with
12 the approach described and used by Alliance on behalf of the Company, he
13 strays from the generally accepted principles of rate design to suggest irrational
14 changes that result in lower depreciation expense.

15

16 Q. PLEASE EXPLAIN.

17 A. Mr. Garren's recommendation to extend the life of Account 352 – Transmission
18 Structures and Improvements by 10 years violates the gradualism principle, and
19 is one-sided, as he does not address the net salvage component.¹ This account
20 currently has an approved average life of 68 years and zero percent net salvage.
21 In my Direct Testimony, I recommended extending the life to 70 years and
22 implementing a net salvage rate of negative five percent based on the study
23 Alliance performed on behalf of the Company.

24

¹ The cost to remove an asset has a direct correlation with how long the asset is in service. If nothing else, simply the increased cost due to inflation and the longer passage of time would increase the removal cost (i.e. negative net salvage). Mr. Garren's life movement without also increasing the negative net salvage is inappropriate.

1 For Account 353 – Transmission Station Equipment, the current life is 56 years.
2 While the data does indicate a possibility for a longer life from a historical
3 standpoint, interviews with the engineers revealed that these assets will
4 experience some technological change over the next several years by updating
5 the types of technology used in these assets (with a corresponding shorter life),
6 along with a more proactive replacement program for this infrastructure than
7 in the past. Given these operational realities, lengthening the life of these assets
8 is not rational.

9
10 Account 364 – Distribution Poles, Towers, and Fixtures is currently approved
11 with a 44-year life. I proposed extending the life to 47 years and increasing the
12 net salvage rate based on the Alliance study work. Mr. Garren’s suggestion to
13 increase the life of this Account by 16 years to a 60-year life, while again not
14 addressing the net salvage rate, is not aligned with the rate design principles of
15 gradualism and continuity.

16
17 Similarly, his last recommended change, to Account 369.10 – Distribution
18 Services, Overhead, is a 12-year extension to the currently approved average life
19 of these assets without increasing the negative net salvage. This is misguided
20 since, operationally, the life for overhead and underground services will be
21 similar. Mr. Garren gives no explanation as to why he ignores this reality and
22 sets a dramatically different life for overhead services than for underground
23 services.

24
25 Q. IS THERE OTHER EVIDENCE MR. GARREN’S FOUR PROPOSED LIFE EXTENSIONS
26 ARE UNREASONABLE?

1 A. Yes. While the lives of assets in the same account can vary by the facts and
2 circumstances for each company, the table below demonstrates how far Mr.
3 Garren's recommendations are from the normal expectations for the four
4 accounts.

5 **Table 1**

6 **Asset Life Comparisons in North Dakota**

7

8 Account	ND	ND	Montana-	
	Current	Proposed	Dakota	Garren
9 352	68	70	45	80
10 353	56	56	60	60
11 364	44	47	50	60
12 369.10	40	42	37	52

13 Montana-Dakota Utilities asset lives were proposed based on the
14 2014 depreciation study used in Case No. PU-16-666

15 Q. WHAT DO YOU CONCLUDE FROM THE TABLE ABOVE?

16 A. I conclude that, except for Account 353, Mr. Garren's recommendations are
17 well outside a range of reasonableness when compared to currently approved
18 remaining lives for these assets for both the Company and other regulated
19 utilities in North Dakota. With respect to Account 353, Mr. Garren's
20 recommendation is generally in line with currently approved remaining lives for
21 those assets. However, the technology shifts I describe for transmission station
22 equipment which will require software upgrades with relatively short
23 depreciable lives. Accordingly, Mr. Garren's recommendation ignores the
24 impact of newer technologies on this asset class.

25 Q. WHY ARE GRADUALISM AND CONTINUITY IMPORTANT PRINCIPLES FOR
26 DEPRECIATION?

1 A. Because there is subjectivity and judgement involved in setting depreciation
2 rates, along with historical data, from which trends are interpreted, it is
3 important to set rates that ensure the asset values are distributed over the
4 appropriate period of time – the useful life of the asset. This needs to be as
5 precise as possible, while also preventing spikes in rates.

6

7 Q. WHAT IS THE RISK OF MAKING THE CHANGES MR. GARREN PROPOSES?

8 A. The goal of depreciating an asset over its useful life is two-fold: (1) to ensure
9 that customers who benefit from the asset pay for the investment; and (2) to
10 ensure that the Company can make capital replacements of these assets without
11 increasing rate base. Preventing the Company from accruing a reasonable level
12 of depreciation reserve on a consistent basis over the useful life of the plant
13 asset creates intergenerational inequity as customers may be paying for these
14 assets after they are no longer in service through recovery of stranded costs.
15 Further, if the depreciation expense is too low, there is a mismatch between the
16 assets in rate base and the ability to replenish no longer useful assets.

17

18 **B. Survivor Curves**

19 Q. WHAT IS A SURVIVOR CURVE?

20 A. A survivor curve represents the percentage of property remaining in service at
21 various age intervals. Individual property units within a group of assets do not
22 normally have identical lives or investment amounts. The average life of a group
23 can be determined by first constructing a survivor curve, which is plotted as a
24 percentage of the units surviving at each age.

25

26 The most common generalized survivor curves use for life estimation for utility
27 property are the Iowa survivor curves. The Iowa survivor curves were

1 developed at the College Engineering Experiment Station of Iowa State College
2 (now Iowa State University), from extensive studies of many types of industrial
3 property, including some kinds of plant of both electric and gas utilities. Each
4 of these curves are represent typical patterns of retirement dispersion.
5

6 Q. WHAT RECOMMENDATIONS DID MR. GARREN MAKE REGARDING SURVIVOR
7 CURVES?

8 A. Mr. Garren has recommended different survivor curves be used than those
9 presented by the Company for the same four FERC accounts described above.
10 From an overall perspective, the Company objects to the manner in which Mr.
11 Garren selected survivor curves for being too heavily based on the
12 mathematically calculated best fit method as opposed to the visual fitting
13 method.
14

15 Q. YOU CHARACTERIZE MR. GARREN'S APPROACH TO LIFE ANALYSIS AS
16 MATHEMATICAL. IS THIS A STANDARD APPROACH USED IN PERFORMING MASS
17 ASSET ACTUARIAL LIFE ANALYSIS?

18 A. Not to the extent Mr. Garren has relied upon it. The curve fitting process the
19 Company uses, referred to as a "visual fit", is the most common approach
20 followed to select a curve when actuarial data is available. The "mathematical
21 best fit" methodology used by Mr. Garren is not a standard approach typically
22 used to make the final choice of a curve when performing mass asset actuarial
23 life analysis.
24

25 Q. PLEASE DESCRIBE THE VISUAL FIT METHOD.

26 A. In the "visual fit" curve fitting process, the Company's detailed property records
27 information is used to develop observed life tables for life analysis. These tables

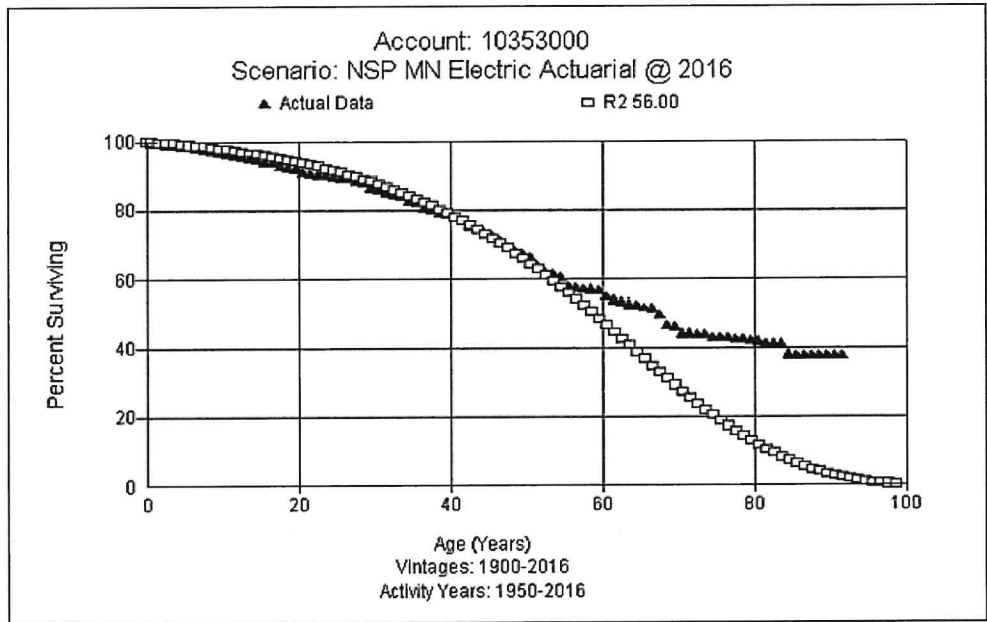
1 are visually compared to industry standard tables to determine historical life
2 characteristics. These initial fits are then evaluated using data collected during
3 analyses, interviews, and operational characteristics into a final selection of asset
4 lives and net salvage parameters. The historical analysis is further enhanced by
5 the incorporation of recent or future changes in the characteristics or operations
6 of assets that were revealed in company interviews.

7
8 Frequently, visual matching confirms one specific dispersion pattern as an
9 obviously better match than others. The next step is to determine the most
10 appropriate life using that dispersion pattern. After looking at the overall
11 experience band, different experience bands are then plotted and analyzed as
12 follows: in increments from the overall band to a middle-range band, then the
13 most recent bands with increments of approximately 20 years. Next, placement
14 bands of varying width are plotted within each experience band discussed
15 above. Repeated matching usually points to a focus on one dispersion family
16 and small range of service lives. The goal of visual matching is to minimize the
17 differential between the observed life table and Iowa Curve in the top- and mid-
18 range of the plots. These results are used in conjunction with all other factors
19 that may influence asset lives.

20
21 Most property groups can be closely fitted to one Iowa Curve with a unique
22 average service life. The blending of judgment concerning current conditions
23 and future trends along with the matching of historical data permits the
24 depreciation analyst to make an informed selection of an account's average life
25 and retirement dispersion pattern. Below is an example of the data dispersion
26 and curve for Account 353. Again, the Company recommends a 56-year life
27 with a R2 dispersion curve.

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Figure 1
Data Dispersion Example



Q. PLEASE DESCRIBE THE MATHEMATICAL BEST FIT METHOD.

A. When properly used, the mathematical best fit method is a tool to narrow the population of curves to consider and then a final selection is made based on reasoned judgment, often using the visual fit method. As stated in the Public Utility Depreciation Practices manual promulgated by the National Association of Regulatory Utility Commissioners (NARUC), “the curves with the least sum of squared deviations are considered the best fits. The intent is not to select the one *best* curve but to consider the indicated patterns.”²

The mathematical best fit method as used by Mr. Garren involved him selecting curves for each asset category based purely on the mathematical fit, which is

² Public Utility Depreciation Practices at 125.

1 contrary to the NARUC guidance and does not result in an accurate or complete
2 life analysis. Alliance reviewed mathematical fitting results but, as compared to
3 Mr. Garren, many other factors such as placement bands/experience bands,
4 interviews with engineers, and visual matching were incorporated before
5 making the final mortality selection.

6
7 Q. IS THERE A DISADVANTAGE TO A MATHEMATICAL APPROACH?

8 A. Yes. There are times the mathematical approach will produce results that are
9 not reasonable. Depreciation Systems, a well-regarded depreciation manual,
10 warns against strictly using methodical fitting stating:

11
12 “On the surface, the removal of judgment from the fitting process
13 may appear to be an advantage, but blind acceptance of mechanical
14 fitting process will occasionally but consistently result in poor results.
15 A better procedure is to use the least squares method to select
16 candidates for the best fit. Comparison of the sum of squares will
17 reveal situations where the difference between the best choices is
18 small. The analyst should then visually examine the observed data and
19 compare them to the theoretical curves.”³

20
21 Additionally, the NARUC manual provides the following guidance:
22 “Depreciation analysts should avoid becoming ensnared in the mechanics of
23 the historical life study and relying solely on mathematical solutions.”⁴ Mr.
24 Garren does acknowledge other information and judgment should be

³ Dr. F. K. Wolf and W. C. Fitch, Depreciation Systems, Iowa State University Press, (1994) at 47 (emphasis added).

⁴ NARUC Public Utility Depreciation Practices, Page 126.

1 considered;⁵ however, despite that acknowledgment he arbitrarily gives
2 disproportionate weight to the mechanics or mathematical best fit.

3
4 Selection of the appropriate curve to use is an important matter, and as with any
5 aspect of life analysis, one should keep in mind that the purpose is to forecast
6 *future* mortality characteristics. Accordingly, the curve should be selected which
7 is “most representative of future mortality characteristics,” and it is “not
8 necessarily appropriate” to select the curve that is the best mathematical (or
9 even visual) fit if such a curve will be “a poor representation of the future.”⁶

10
11 Q. DO YOU BELIEVE THE LIVES, CURVES, AND RESULTING DEPRECIATION RATES
12 PROPOSED BY MR. GARREN RESULT IN A MORE ACCURATE CALCULATION OF
13 DEPRECIATION EXPENSE?

14 A. No. A life recommendation should be reflective of all relevant factors, not just
15 mathematical or even visual fits.

16
17 My recommendation reflects not only the analytics but relies on a depreciation
18 study that included visual fitting, discussions with Company personnel, and the
19 concepts of gradualism.

20
21 Statistical analysis of historical data is useful as a tool only to the degree that the
22 past will be representative of the future. In any depreciation study, the intended
23 result is an estimate of future life characteristics for a group of property. Thus,
24 it is critical that those conduction deprecation studies incorporate the

⁵ Direct Testimony of James S. Garren Page 20, Lines 10-22

⁶ Introduction to Depreciation for Public Utilities and Other Industries, *Edison Electric Institute and the American Gas Association*. April 2013 Page 95

1 appropriate judgment and information from subject matter experts in order to
2 assess whether the results of analyses of historical data will be representative of
3 the future. In contrast, a purely mathematical approach assumes a future that
4 perfectly fits with the historical data.

5
6 The procedures the Company has used to select life curves are not capricious
7 choices, but reasoned judgments reached using an approach recommended by
8 treatises on the subject and the Commission's own guidelines. Both the
9 information provided by the Company and the actuarial analysis support the
10 Company's proposed lives and curves. Based on these facts, Mr. Garren's
11 recommendation is without merit and should be rejected by this Commission.

12 13 **III. AGIS IN SERVICE**

14
15 Q. WHAT TOPIC ARE YOU ADDRESSING IN THIS PART OF YOUR TESTIMONY?

16 A. I am addressing comments made in the Direct Testimony of Mr. Dante
17 Mugrace regarding his proposal to disallow costs associated with the company's
18 Advanced Grid Intelligence and Security (AGIS) program.

19
20 Q. WHAT SPECIFIC COMMENT DO YOU ADDRESS?

21 A. Mr. Mugrace states the \$4.4 million of AGIS assets placed in service during the
22 test year are not used and useful. Specifically, his Testimony states, "These costs
23 will not provide benefit to the North Dakota jurisdictional customers until these
24 costs and investments are fully placed in service, become used and useful and
25 are prudent in nature."

1 Q. IS THIS STATEMENT IS ACCURATE?

2 A. No. When the Company initiates a project such as AGIS, a review is performed
3 to identify each stand-alone asset that will be placed in service and what will
4 constitute used and useful. Whenever a component of the project can be
5 independently completed, deployed, and deliver full functionality to customers
6 it is deemed used and useful. If these criteria cannot be met, the asset will either
7 remain in construction work-in-process (CWIP), or if it is completed ahead of
8 when it would normally be required, it is moved to plant held for future use.

9

10 Q. HOW WILL YOU ADDRESS THE USED AND USEFUL CRITERIA FOR THE AGIS
11 ASSETS WITHIN THE RECOMMENDATION?

12 A. I will address each asset in question individually. Within each asset, I will explain
13 the functionality being deployed, how the asset benefits customers, and how it
14 meets the criteria for in service including how the criteria for being used and
15 useful are met.

16

17 Q. WHAT IS THE DEFINITION OF USED AND USEFUL?

18 A. In the case of software, used and useful means the software is fully operational
19 for its intended purpose. Additionally, the Company further clarifies it must be
20 operating “at scale,” meaning it must operate at a high enough percentage of
21 final intended capacity to leverage the scale at which the software was built.

22

23 Q. WHAT SOFTWARE WILL YOU BE ADDRESSING FIRST?

24 A. I will begin by addressing the Advanced Distribution Management System
25 (ADMS) software. This is the most significant portion of the total AGIS costs
26 in the test year. As of April 30, 2021, approximately \$3.6 million (North Dakota
27 allocated) has been placed in service. As described in the Direct Testimony of

1 Company witness Ms. Kelly Bloch, ADMS implements new functionality that
2 allows the company to better identify, troubleshoot and resolve outages.
3 Although part of AGIS, the functionality itself is not reliant on new Advanced
4 Metering Infrastructure (AMI) meters to provide benefit. This functionality
5 becomes beneficial to the company and customers as soon as individual
6 substations are implemented with new technology and it is integrated into the
7 overall system software model. In the case of ADMS, both conditions have
8 been met and the technology becomes used and useful and is then placed in
9 service.

10
11 Q. ARE THERE ADDITIONAL ASSETS THAT HAVE BEEN PLACED IN SERVICE?

12 A. Yes. There are \$0.4 million of small support and testing infrastructure that has
13 been placed in service as of April 30, 2021. It is serving the function of
14 validating reliability for the future AMI model.

15
16 Q. WHAT OTHER ASSETS ARE INCLUDED IN THE TEST YEAR FOR AGIS?

17 A. The other assets are primarily other software and infrastructure that will support
18 AGIS. This investment is still forecasted, and we are not at this time saying it
19 is used and useful, only that we expect it to be within the test year.

20
21 Q. DOES THE FACT THAT THESE ASSETS HAVE NOT BEEN PLACED IN SERVICE
22 JUSTIFY EXCLUDING THEM FROM RATE BASE IN THIS CASE?

23 A. No. This case was filed using a calendar 2021 future test year. Because of
24 timing, any measurement point within the test year will have assets that are yet
25 to be placed in service at later points in the year.

26

1 Q. ARE THERE REGULATORY MECHANISMS AVAILABLE THAT COULD BE UTILIZED
2 BY THE COMMISSION IF THERE IS A DESIRE TO DELAY INCLUDING THESE COSTS
3 IN RATES TO A LATER DATE?

4 A. Yes. Although the Company cannot do this on its own, the Commission has
5 the ability to provide a regulatory order deferring recovery of these assets to a
6 future date that would have the effect of treating them as if they were still CWIP.

7

8 **IV. CONCLUSION**

9

10 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

11 A. The Commission should accept the depreciation recommendation I presented
12 in my Direct Testimony, which was based on detailed studies and the
13 Company's actual operating plans. Mr. Garren's service life recommendations
14 for assets in four FERC accounts should be rejected as they are not consistent
15 with the information regarding those asset categories, do not address the net
16 salvage component, and violate principles of consistency and gradualism.
17 Likewise, Mr. Garren's proposed survivor curves should not be used because
18 his recommendations are based on an approach the leading authorities warn
19 against. With regard to AGIS, portions of the Project are currently used and
20 useful (and others will become so before the conclusion of the 2021 test year);
21 however, the Commission could order that recovery of those assets be deferred
22 to a future date.

23

24 Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

25 A. Yes, it does.

1 STATE OF NORTH DAKOTA
2 BEFORE THE
3 PUBLIC SERVICE COMMISSION
4
5

6 In the Matter of the Application of Northern)
7 States Power Company, a Minnesota Corporation)
8 For Authority to Increase Rates for Electric Service) Case No. PU-20-441
9 in North Dakota)


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11
12
13 AFFIDAVIT OF
14 Mark P. Moeller
15
16

17 I, the undersigned, being duly sworn, depose and say that the foregoing is the
18 Rebuttal Testimony of the undersigned, and that such Rebuttal Testimony and the
19 exhibits or schedules sponsored by me to the best of my knowledge, information
20 and belief, are true, correct, accurate and complete, and I hereby adopt said testimony
21 as if given by me in formal hearing, under oath.
22

23
24 

25 Mark P. Moeller
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29

30 Subscribed and sworn to before me, this 25 day of May, 2021.
31

32
33 
34 Notary Public

35 My Commission Expires: 1/31/2025
36

