Exhibit No. 29

Ameren Missouri – Exhibit 29
John J. Spanos
Surrebuttal Testimony
File Nos. ER-2021-0240 & GR-2021-0241

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Issue: Depreciation
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Witness: John J. Spanos
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Case No.: ER-2021-0240
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2021-0240

SURREBUTTAL TESTIMONY OF

JOHN J. SPANOS

ON BEHALF OF

AMEREN MISSOURI

Camp Hill, Pennsylvania

November 5, 2021

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I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is John J. Spanos. My business address is 207 Senate Avenue, Camp Hill, Pennsylvania.

Q. ARE YOU THE SAME JOHN J. SPANOS WHO FILED DIRECT AND REBUTTAL TESTIMONY IN THIS MATTER?

A. Yes. I filed direct testimony in March 2021 and rebuttal testimony in October 2021.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my testimony is to address the Staff rebuttal testimony filed by the Missouri Public Service Commission Staff ("Staff") and the rebuttal testimony of John A. Robinett on behalf of the Missouri Office of the Public Counsel ("OPC") related to depreciation.

Q. WHAT IS THE SUBJECT OF YOUR SURREBUTTAL TESTIMONY?

A. The subject of my testimony is depreciation. Specifically, I will address Staff's proposed service life and survivor curve for some accounts, errors in Staff's depreciation calculations, which create inconsistent depreciation rates and depreciation expense in Staff's proposed revenue requirement, and OPC's proposal related to general plant amortization accounting.

II. SURREBUTTAL TO STAFF'S DEPRECIATION PROPOSALS

Q. WHAT DOES STAFF RECOMMEND?

A. Staff recommends different service lives and survivor curves for multiple accounts from those recommended by the Company. For almost all of the accounts that Staff proposes a different life and curve combination, Staff's proposal is to use a longer

average service life or type curve with a longer life cycle than what was supported by my depreciation study for the Company. Additionally, Staff's depreciation proposal includes numerous accounts for which Staff made an error in the calculation of the depreciation rate.

A. Errors in Staff's Deprecation Calculation

Q. WHAT ADJUSTMENTS TO THE COMPANY'S DEPRECIATION PROPOSAL IS STAFF PROPOSING?

A. Staff is proposing to change the service lives and/or the survivor curve for a handful of accounts. Staff made no proposals to change any of the net salvage percentages proposed by the Company. Based on Staff's testimony, the same method and procedure was utilized by both the Staff and the Company when calculating depreciation rates.[1] Therefore, the only differences in depreciation expense that should exist would be for accounts where Staff is proposing a different service life estimate than what the Company proposed.

Q. ARE THERE DIFFERENCES IN DEPRECIATION EXPENSE FOR ACCOUNTS OTHER THAN THOSE WHERE STAFF IS PROPOSING A DIFFERENT SERVICE LIFE ESTIMATE THAN THE COMPANY?

A. Yes. According to the corrected depreciation schedules prepared by the Staff ("Staff's "Accounting schedule corrections",[2]) Staff is proposing depreciation expense based on incorrect parameters or resulting depreciation rates for Account 311.00 Structures and Improvements - Sioux Steam Production Plant; Account 335.00 Miscellaneous

[1] Cunigan Rebuttal, pg. 4, 2:6

[2] Although not filed with Staff's rebuttal testimony, Staff provided the Company with updated Accounting Schedules after Staff filed its rebuttal showing what Staff claimed the proper depreciation expense by account would be using the updated depreciation rates reflected in Staff witness Cunigan's rebuttal testimony.

Power Plant Equipment - Osage Hydraulic Production Plant; Account 341.40 Structures and Improvements – Wind; and Account 396.00 Power Operated Equipment.

Q. WHAT IS THE CAUSE OF STAFF'S PROPOSED DIFFERENCE IN DEPRECIATION EXPENSE RELATED TO ACCOUNT 311.00?

A. The Staff schedules for Account 311.00 at the Sioux Production Plant have a depreciation rate based on a life span date of September 2033 rather than the life span date of December 2028, which was proposed by the Company and is consistent with the life span used by Staff for all other accounts for the Sioux location. The life span date for a location should be consistent across all property accounts as the life span date represents the concurrent date of retirement of the entire location. Therefore, Staff's use of the September 2033 date for only one account was an oversight. This oversight led to an erroneous depreciation expense amount for this account producing $1.4 million less than the appropriate expense if the correct life span date of December 2028 had been utilized in the calculation.

Q. WHAT IS THE CAUSE OF STAFF'S PROPOSED DIFFERENCE IN DEPRECIATION EXPENSE RELATED TO ACCOUNT 335.00?

A. Staff's error in the depreciation rate and expense for Account 335.00 relates to the Osage Production Plant assets. In this instance, Staff utilized an incorrect book reserve amount for the calculation of depreciation expense for the account. The book reserve per the Company's books and per the depreciation study is positive $36,288. The book reserve that Staff used in its calculation is negative $36,288. This results in a book reserve error of $72,576 and leads to Staff proposing a depreciation expense for

this account that is approximately $3,600 higher than if it had used the correct amount of reserve.

Q. WHAT IS THE CAUSE OF STAFF'S PROPOSED DIFFERENCE IN DEPRECIATION EXPENSE RELATED TO ACCOUNT 341.40?

A. Account 341.40 relates to Structures and Improvements at the High Prairie Wind Farm Facility. Staff's errors related to this account are numerous. First, Staff did not utilize the consistent life span date of 2050 for the High Prairie Wind Farm. Staff workpapers clearly show the wind assets in accounts 344.40 and 345.40 for High Prairie using a life span of 2050, consistent with my depreciation study for the Company. However, Staff erroneously excluded the life span date component when calculating the depreciation expense for the High Prairie Wind Farm assets in Account 341.40. As explained previously, the life span date represents the date the entire facility is expected to be retired from service, thus the estimate for each account should be the same for each individual facility. The second issue with Staff's position for this account is that the calculation of depreciation is based on the 35-S2.5 survivor curve, however nowhere in Staff's testimony does it say that Staff is proposing a different survivor curve for this account than what was proposed by the Company. The Company proposed survivor curve was the 70-R2.5, which is very different from the survivor curve Staff used to calculate their depreciation expense for this account. The statistical results only has a few years of exposures, however, the 70-R2.5 interim curve is a much more appropriate estimate for assets in this account which relate to structures. The third and final issue related to the depreciation calculation done by Staff for this account is the continued use of the incorrect book reserve. The book

reserve amount from the Company's records and the amount used by the Company in the depreciation study for this account is $58,375. However, Staff is using an inaccurate book reserve of $34 for their calculation. Nowhere in Staff testimonies or workpapers does it explain why Staff would be using a different amount of book reserve for this account. The multiple oversights made by Staff on this account leads to Staff proposing a depreciation expense that is approximately $222,700 lower than what Staff would be proposing had it calculated depreciation expense correctly.

Q. WHAT IS THE CAUSE OF STAFF'S PROPOSED DEPRECIATION EXPENSE DIFFERENCE RELATED TO ACCOUNT 396.00?

A. The proposed depreciation rate by Staff for this account, as set forth in Staff's "Accounting schedule corrections" as referenced above, is 6.15%. However, the workpapers submitted by Staff, which include the detailed calculation of each account, indicates a depreciation rate of 6.66% for the account, which is consistent with what the Company proposed. Given that Staff did not indicate in either their direct or rebuttal testimony that it is proposing a different service life or net salvage estimate than the Company for this account, and all its detailed documentation supports a 6.66% rate, the Accounting schedule Staff provided appears to contain another error. The error made by Staff for this account leads to Staff proposing a depreciation expense that is approximately $85,100 less than what Staff would propose had it used the correct depreciation rate.

Q. WERE THE ERRORS DESCRIBED ABOVE THE ONLY ERRORS MADE BY STAFF IN THIS CASE?

A. No. In Staff's rebuttal testimony, Staff corrected an error made in its initial filing of depreciation rates related to Account 364.00.[3] The initial error was related to the incorrect book reserve being used for this account and led to a $30 million difference between the Company's proposed depreciation expense and the deprecation expense proposed by Staff for that account, which as noted has now been corrected. Staff also changed the rates it had proposed in its direct case related to production plant accounts and general plant accounts subject to amortization accounting.[4]

Q. DO THE ERRORS PRESENTED ABOVE CLEARLY SHOW THAT STAFF'S PROPOSED DEPRECIATION RATES FOR THESE ACCOUNTS SHOULD NOT BE ACCEPTED?

A. Yes. Staff's depreciation proposals throughout its prior rounds of testimony has been, at best, inconsistent. As evidenced both by the need for Staff to correct errors in its direct case, the errors I have pointed out in my rebuttal testimony, and here, it is clear Staff's proposed depreciation rates are suspect and contain substantial depreciation expense differences from the expense supported by the Company's depreciation study that are not supported or justified. The recommendations in the Company's depreciation studies are consistent with proper depreciation practices and supported by authoritative texts. Therefore, the proposals by Staff for the above accounts should be rejected.

B. <u>Service Life Estimates</u>

Q. WHAT IS STAFF PROPOSING RELATED TO THE SURVIVOR CURVE ESTIMATES FOR AMEREN MISSOURI?

[3] Cunigan Rebuttal, pg. 2, 1:6
[4] Cunigan Rebuttal, pg. 2, 7:11

A. Staff is proposing a different survivor curve than what the Company proposed for 11 plant accounts.[5] A table comparing the different survivor curves estimated by Staff can be found in Staff's rebuttal testimony as well as in my rebuttal testimony.[6] The table for all accounts with different life estimates is set forth below:

ACCOUNT	COMPANY PROPOSED	STAFF PROPOSED	CHANGE IN AVERAGE SERVICE LIFE
312.03, Boiler Plant Equipment – Aluminum Coal Cars	35-R2	30-R2	(5)
325, Miscellaneous Power Plan Equipment	40-L0	35-O1	(5)
333, Water Wheels, Turbines and Generators	95-S0	105-L0	10
352, Structures and Improvements	65-R2.5	70-R2.5	5
353, Station Equipment	60-S0	65-S0	5
355, Poles and Fixtures	58-R3	64-L2.5	6
356, Overhead Conductors and Devices	65-R3	75-R3	10
364, Poles and Fixtures	52-R2.5	58-L2.5	6
365, Overhead Conductors and Devices	52-R1	65-O1	13
373, Street Lighting and Signal Systems	38-S0	40-O1	2
390, Structures and Improvements-Miscellaneous Structures-Old	45-S0	55-R1	10

Q. DOES STAFF PROVIDE ANY FURTHER EVIDENCE IN ITS REBUTTAL TESTIMONY TO SUPPORT STAFF'S ESTIMATED SURVIVOR CURVES?

A. No. Similar to Staff's direct testimony, Staff does not provide any substantive arguments or evidence as to why the Commission should adopt its survivor curves instead of those recommended by the Company and supported by my depreciation

[5] Cunigan Rebuttal, pg. 5
[6] Spanos Rebuttal, pg. 2

study. Staff does make the conclusory and unsupported claim that its survivor curve estimates are "more accurate" than those proposed by the Company.[7] However, this very ambiguous statement is not supported by any concrete arguments made by Staff or by any supportive evidence whatsoever. Staff also makes the statement that one aspect of choosing curves for life analysis is the best visual fit.[8] I agree that a visual component is one aspect of life estimation that should be considered when selecting the best survivor curve estimate for an account. However, that is not the only factor to determining the appropriate survivor curve. As discussed in the Depreciation Study, my rebuttal testimony, and by authoritative depreciation texts, there are numerous factors that must be considered when choosing a survivor curve estimate for an account. Schedule JJS-SR1 sets forth the standard practices that should be followed in determining life analysis.

Q. DO STAFF'S CHOSEN CURVES HAVE A BETTER VISUAL FIT TO THE DATA THAN THE CURVES YOU RELIED UPON?

A. No. Even when one isolates just the visual fitting of survivor curves, many of the curves proposed by Staff do not represent a better visual fit than those proposed by the Company. Please see Schedule JJS-SR2 that illustrates some of the accounts that the Company's proposed survivor curve was far superior visually to the survivor curve proposed by Staff. As shown in the graph of each account, the Staff proposed survivor curve barely represents the original data curve until the least significant portion of the historical data. The Company proposed survivor curve is a much better fit of the *overall* data, with more emphasis given to fitting the earlier, more representative

[7] Cunigan Rebuttal, pg.6, 2
[8] Cunigan Rebuttal, pg. 6, 4:5

portions of the original data. Again, it should be emphasized visual fit is only one aspect of life estimation. Regardless, even that one factor – visual fit -- does not support Staff's position.

Q. ARE THERE ANY OTHER REASONS WHY THE COMPANY PROPOSED SURVIVOR CURVES ARE MORE APPROPRIATE THAN THOSE PROPOSED BY STAFF?

A. There are numerous reasons why the Company proposed survivor curves are more appropriate than the survivor curves proposed by Staff. Many of these reasons were discussed at length in my rebuttal testimony, so I will not discuss them in detail again, but will highlight the key concepts:

- Staff's curves do not fit the most representative portions of the original data as well as the Company proposed survivor curves.[9]
- Staff provides no support or explanation on why the Commission should adopt its curves instead of the curves proposed by the Company, whereas the Company proposed curves are based on the methods and standard practices supported by trusted depreciation texts such as the NARUC manual.[10]
- Service life estimates proposed by Staff are inconsistent with what Staff proposed in the most recent prior case for Ameren Missouri, especially considering the fact that only 2 additional years of service life data were added in this case. Staff has provided no basis for changing those estimates now.[11]

[9] Spanos Rebuttal, pg. 4
[10] Spanos Rebuttal, pg. 4-6
[11] Spanos Rebuttal, pg. 9

- For many accounts, Staff's service life estimates result in life cycles and maximum lives that are not realistic for the asset classes.

Q. PLEASE EXPLAIN WHAT YOU MEAN BY LIFE CYCLE AND MAXIMUM LIVES.

A. Survivor curves represent the (estimated) entire life cycle of a group of assets from 100% surviving all the way to 0% surviving. Many of the average service life and survivor curve estimate combinations made by Staff present the unrealistically long maximum service lives (i.e., the point where the survivor curve reaches 0% surviving) as well as large percentages surviving at very old ages. Refer to page 3 of Schedule JJS-SR2 included with this testimony. Staff's proposed survivor curve for this account (poles) is the 64-L2.5 and results in a maximum life of around 145 years and approximately 10% of plant surviving until age 100. The assets in this account are not expected to have life characteristics where the rate of retirement will decrease after the average age is experienced. Poles generally have life characteristics that produce higher levels of retirement as the assets age, which is not reflected in a L2.5 type curve.

For another example, refer to page 4 of Schedule JJS-SR2. For Account 364.00, Staff proposed a survivor curve of 58-L2.5 which has an average life of 58 years but a maximum life of 128 years. Again, this curve does not represent a very good visual fit of the overall survivor curve and anticipates that after the assets reach the average life there will be a reduction in the rate of retirement.

Q. ARE THE SURVIVOR CURVES AND RESULTING DEPRECIATION EXPENSE PROPOSED BY STAFF REASONABLE FOR THE ACCOUNTS IN THE ABOVE TABLE?

A. No. The Company proposed survivor curves clearly represent better life characteristics for each account when considering all the key components of life estimation as recommended by authoritative texts. This is also true for a visual fit where Staff attempts to emphasize as the only factor in determining a life estimate.

Q. PLEASE SUMMARIZE THE ERRORS AND OTHER INACCURATE DEPRECIATION RATES STAFF HAS THUS FAR MADE OR PROPOSED.

A. The table below summarizes the accounts and the reason that Staff's proposed rate is not appropriate. The table sets forth the account, company proposed rate, staff proposed rate and the reason Staff's rate is inappropriate. The table does not include amortized accounts which will be addressed in the next section.

ACCT	LOCATION	COMPANY PROPOSED RATE	STAFF PROPOSED RATE	REASON FOR DIFFERENCE
311.00	SIOUX	6.30	3.98	Incorrect life span date
312.03	*LABADIE*	0.18	0.31	service life estimate
325.00	*CALLAWAY*	4.09	4.19	service life estimate
333.00	*OSAGE*	2.83	2.88	service life estimate
333.00	*TAUM SAUK*	1.98	2.02	service life estimate
333.00	*KEOKUK*	2.62	2.68	service life estimate
335.00	*OSAGE*	4.39	4.51	incorrect reserve
341.00	*OTHER*	2.43	2.40	survivor curve type
341.40	*HIGH PRAIRIE*	3.46	2.90	survivor curve type, no life span and incorrect reserve
344.00	*OTHER CTS*	1.64	1.65	survivor curve type
352.00		1.83	1.61	service life estimate
353.00		1.67	1.52	service life estimate
355.00		3.55	3.12	service life estimate
356.00		1.99	1.63	service life estimate
362.00		1.83	1.87	survivor curve type
364.00		4.30	3.76	service life estimate
365.00		2.82	1.97	service life estimate
373.00		2.87	2.42	service life estimate
390.00	LARGE STRUCTURES	1.97	1.93	service life estimate
396.00		6.66	6.15	Staff used unsupported rate

III. SURREBUTTAL TO OPC'S PROPOSALS

Q. WHAT ARE OPC'S CLAIMS REGARDING GENERAL PLANT AMORTIZATION?

A. OPC Witness Robinett makes two claims, each of which is incorrect. First, he claims that my position in criticizing certain components of Staff's depreciation rates for general plant accounts in Spire Missouri's recent general rate case is inconsistent with my position in this case. Second, he claims that once general plant amortization has been implemented, the depreciation rate for each account should always be 1/average service life, e.g., for an account with a life of 20 years he claims the depreciation rate should always be 5% (1/20).

Q. PLEASE ADDRESS MR. ROBINETT'S FIRST CLAIM.

A. The situation for Spire Missouri was quite different than Ameren Missouri's circumstance, which is why in the Spire Missouri case I pointed out that the depreciation rate should not be applied to fully accrued plant (those assets should be zeroed-out, as I discuss below), as Staff had done in the Spire Missouri case. The reason that was an issue for Spire Missouri is because Spire Missouri was in the *initial* step of general plant amortization implementation, which requires segregation of the assets to be retired and proper segregation of the reserve. That process had not been completed for Spire Missouri, and there were assets that needed to be zeroed-out. This led to Staff's error which I clarified. In contrast, Ameren Missouri has already segregated the assets by vintage and made the required retirements for the assets that were older than the amortization period, which means there currently are no fully

accrued assets on Ameren Missouri's books that need to be zeroed-out.[12] To be clear, there were a few entries that were not completely cleared off the books at the end of December 31, 2020 but were closed shortly after the end of the year. Put another way, all of the assets in the accounts should have the applicable depreciation rate applied to them.

Q. ARE YOU SAYING THAT TO THE EXTENT MR. ROBINETT CLAIMS THERE ARE ASSETS IN THESE ACCOUNTS THAT WERE FULLY ACCRUED (I.E., OLDER THAN THE ACCOUNT'S LIFE) THOSE ASSETS HAVE IN FACT BEEN RETIRED ON THE COMPANY'S BOOKS?

A. Yes, all investment in these accounts to which the account depreciation rate should not be applied have been retired off the books. The Company zeroed-out any such assets at the initial implementation and has since retired such assets as they reached the applicable age. The issue for which I criticized Staff in the Spire Missouri case simply does not exist here.

Q. WHAT ABOUT MR. ROBINETT'S CLAIM THAT THE DEPRECIATION RATE, ONCE GENERAL PLANT AMORTIZATION HAS BEEN IMPLEMENTED, SHOULD ALWAYS BE 1/AVERAGE SERVICE LIFE?

A. This would be correct if the segregation of the book reserve was able to be completely implemented so that the reserve to plant ratio was aligned with the age of the existing assets. However, the full implementation of the reserve amortization was not completed prior to the settlement in the last case so the reserve for each account is not fully corrected by account. Therefore, the remaining life amortization rate adjusts for

[12] Ameren Missouri implemented general plant amortization several years ago, in File No. ER-2014-0258.

any reserve that was not fully corrected due to the settlement reached in the last rate case. This gives customers credit for over-accruals or allows the Company to recover under-accruals, which means that the depreciation rate will necessarily be more or less than 1/average service life for a short time after these rates are approved.

Q. SO, A DEPRECIATION RATE THAT IS HIGHER OR LOWER THAN 1/AVERAGE SERVICE LIFE IS NOT, AS MR. ROBINETT IMPLIES, BECAUSE AMEREN MISSOURI HAD NOT PROPERLY RETIRED ASSETS ON ITS BOOKS?

A. No. To the extent Mr. Robinett implies that the Company has failed to properly complete retirements and that causes the depreciation rate to be in excess of a simple 1/average service life rate he is incorrect. Instead, as noted the difference is because of the manner in which the last case was settled and how the assets are accounted for on the books, and the timing of depreciation studies (here, as of December 31, 2020) versus when utility rates are implemented (presumably on February 28 or next year), resulting in some misalignment of the actual and theoretical reserve manifesting itself as under- or over-recoveries that must be accounted for in the depreciation rates.

Q. MR. ROBINETT ALSO SUGGESTS THAT UPON INITIAL IMPLEMENTATION THESE OVER- OR UNDER-RECOVERIES SHOULD HAVE BEEN DEALT WITH VIA A SEPARATE AMORTIZATION APART FROM THE DEPRECIATION RATES. DO YOU AGREE?

A. The over- or under-recoveries (difference between the theoretical and actual reserve as of December 31, 2014) were covered by a separate amortization apart from the depreciation rates set in the case when general plant amortization for these accounts

was first implemented (File No. ER-2014-0258). However, due to the timing mismatch I discussed earlier and additional timing mismatches that arise in each rate case (this is the third such case since 2014) there continues to be some difference that needs to be reflected in the depreciation rates to ensure full (no more and no less) recovery of the investment in these assets. Again, this is why the depreciation rates will not always equal 1/average service life.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.

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Selecting the Projection Life Curve

The projection life is a projection, or forecast, of the future of the property. Historical indications may be useful in estimating a projection life curve. Certainly the observations based on the property's history are a starting point. Trends in life or retirement dispersion can often be expected to continue. Likewise, unless there is some reason to expect otherwise, stability in life or retirement dispersion can be expected to continue, at least in the near term.

Depreciation analysts should avoid becoming ensnared in the mechanics of the historical life study and relying solely on mathematical solutions. The reason for making an historical life analysis is to develop a sufficient understanding of history in order to evaluate whether it is a reasonable predictor of the future. The importance of being aware of circumstances having direct bearing on the reason for making an historical life analysis cannot be understated. These circumstances, when factored into the analysis, determine the application and limitations of an historical life analysis.

Past Indications as a Measure of Future Activity

How well does an historical life analysis reflect what may happen in the future? Will history repeat itself? These questions must be answered in order to use the results of an historical life analysis. The analyst should become familiar with the physical plant under study and its operating environment, including talking with the field people who use the equipment being studied. For example, such discussions could reveal unique circumstances that brought about premature retirement of certain property. If these circumstances are not likely to happen again, the analyst should modify the study to reflect what would likely happen based on present operating conditions. For example, if the analyst discovers that corrosive material used in equipment was used in a certain past period and noncorrosive improved material which lasts much longer is predominantly used now, the analyst should discount the period in which corrosive material was used as not being representative of future activity. For further discussion, see Chapter II.

Other Factors to be Considered

Company Plans

In addition to talking with field people, the analyst should talk with management. Understanding past and present company policies concerning maintenance practices and retirements will determine how well historical retirement patterns will be repeated in the future. A company might retire automobiles every three years and trucks every five years. This pattern would be present in the historical data; however, if management changes its policy, this retirement pattern would also change. Management might also reveal planned future retirements that follow no historical pattern. In such a case, the analyst could modify the historical retirement pattern to reflect management's plans for retirement of certain facilities. If

management has chosen a specific date for the retirement of certain facilities, then these facilities would comprise a life span group.

Technical and Economic Obsolescence

Technical and economic obsolescence are ongoing and an historical life analysis will reflect these factors to the extent that they were present in the past. Knowing the types of property susceptible to obsolescence will help determine the applicability of the historical retirement patterns to depict future plant life. For example, computer equipment is susceptible to technical obsolescence. Its historical, present, and future usage should be considered. When a utility has a continuing discernable pattern of updating its computer equipment, the historical life analysis will reflect technical obsolescence. However, when this pattern is broken, historical retirement patterns should be altered to reflect future use.

An example of economic obsolescence in the gas industry is products extraction equipment. This type of equipment is used to extract marketable byproducts sometimes present in natural gas production. The life of this equipment will partly depend on the market for the byproducts. With no available market this equipment will not follow the historical retirement pattern.

Regulatory and Customer Requirements

The effects of regulation and customer requirements, the costs of which may be hard to quantify, should also be considered. Regulatory requirements can cause both inadequacy and obsolescence, e.g., specifying that gas mains must be made from specific material or that telecommunications cables and electric distribution lines must be placed underground.

The two requirements can sometimes combine to cause change. An example of this may be a zoning conversion from an industrial to a residential area, which would result in changes in customer service requirements. The old electric power distribution system, e.g., lines, poles, and transformers, might be subject to premature retirement as the system is replaced with perhaps an underground residential distribution system. Public authorities can require plant to be relocated because of its interference with planned public uses, such as highway or other public transportation projects. Plant may also be replaced because its design fails to meet public standards of safety or appearance (aesthetics).

Most utilities use public rights-of-way. Consequently, municipalities or other owners of these rights-of-way may require the utility to move its facilities. Again, this usually results in premature retirement of utility plant. Therefore, if a utility is conducting a depreciation study, and there are known or anticipated public improvements involving loss of rights-of-way (for which the utility will not be reimbursed), consideration of this fact should be given by the analyst in developing service lives.

Obsolescence may cause retirements of plant items by rendering them uneconomical, inefficient, or otherwise unfit for service because of improvement in the art and technology, or because of changes in function. Retirements of this sort are especially relevant in the telecommunications industry, as competition forces change to more efficient and technologically

superior equipment. For example, the replacement of copper cable with fiber optic cable not only enhances the operational efficiency but also provides the potential for future applications mandated by the changing requirements of customers and market forces.

Growth

Growth in demand for utility service may cause present facilities to become inadequate. The service life of longer life property may be shortened because of the need for capacity to carry a greater load. Growth in demand should be examined for the impact on past retirements and the analyst should consider whether future growth will alter the historical trend of retirements. If growth was present in the past and is expected to be slow in the future, then the analyst might expect service lives in the future to be greater than in the past. The historical period might be filled with replacements that were improvements over the property being retired. On the other hand, if future growth is expected to be greater than past growth, service lives may decrease because present property might not be adequate to handle future demand.

Informed Judgment

A depreciation study is commonly described as having three periods of analysis: the past, present, and future. The past and present can usually be analyzed with great accuracy using many currently available analytical tools. The future still must be predicted and must largely include some subjective analysis. *Informed judgment* is a term used to define the subjective portion of the depreciation study process. It is based on a combination of general experience, knowledge of the properties and a physical inspection, information gathered throughout the industry, and other factors which assist the analyst in making a knowledgeable estimate.

The use of informed judgment can be a major factor in forecasting. A logical process of examining and prioritizing the usefulness of information must be employed, since there are many sources of data that must be considered and weighed by importance. For example, the following forces of retirement need to be considered: Do the past and current service life dispersions represent the future? Will scrap prices rise or fall? What will be the impact of future technological obsolescence? Will the company be in existence in the future? The analyst must rank the factors and decide the relative weight to apply to each. The final estimate might not resemble any one of the specific factors; however, the result would be a decision based upon a combination of the components.

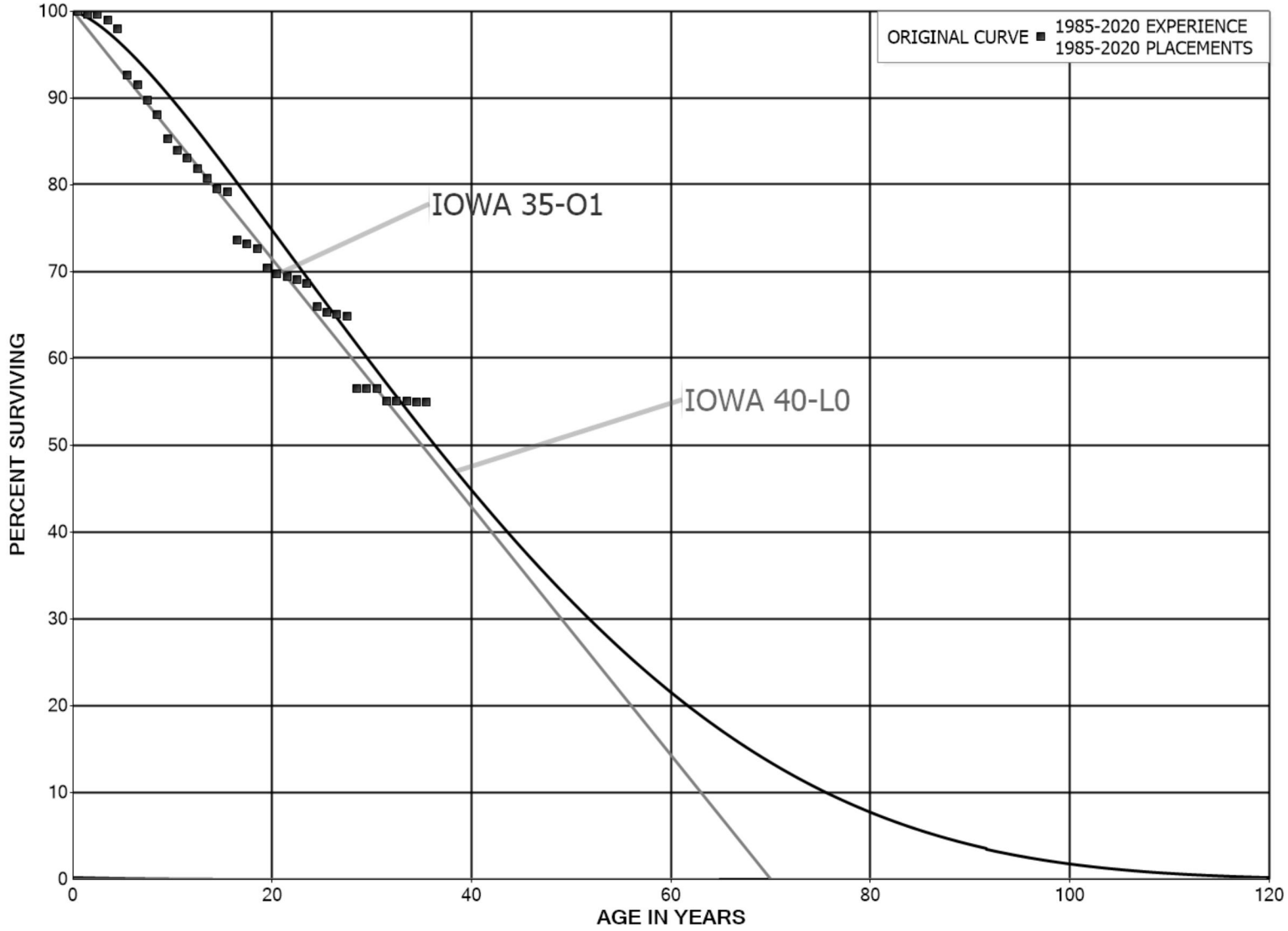
Judgment is not necessarily limited to forecasting and is used in situations where little current data are available. The analyst gathers what is known about a particular situation and modifies and refines the data to reflect the actual circumstances. The analyst's role in performing the study is to review the results and determine if they represent the mortality characteristics of the property. Using judgment, the analyst considers such things as personal experience, maintenance policies, past company studies, and other company owned equipment to determine if the stub curve represents this class of property.

The use of informed judgment sometimes becomes a point of controversy in the regulatory setting because some of the analyst's opinions cannot be quantified or easily supported. It is sometimes impossible to pinpoint the reasons for making a decision that diverges from a company's historical data or standard reference material. For instance, limited retirement data show that a new transformer design appears to have a significantly shorter service life; this would result in a significantly higher depreciation rate. Since this is a new design, there is no field experience to apply to the estimate, other than the scant data. Should the rate be based solely on the data? In the other extreme, should this preliminary data be given little weight and should the rate be based upon other types of transformers as reasonable indicators of the life of this new design? It is the analyst's responsibility to apply any additional known factors that would produce the best estimate of the service life. The analyst's judgment, comprised of a combination of experience and knowledge, will determine the most reasonable estimate.

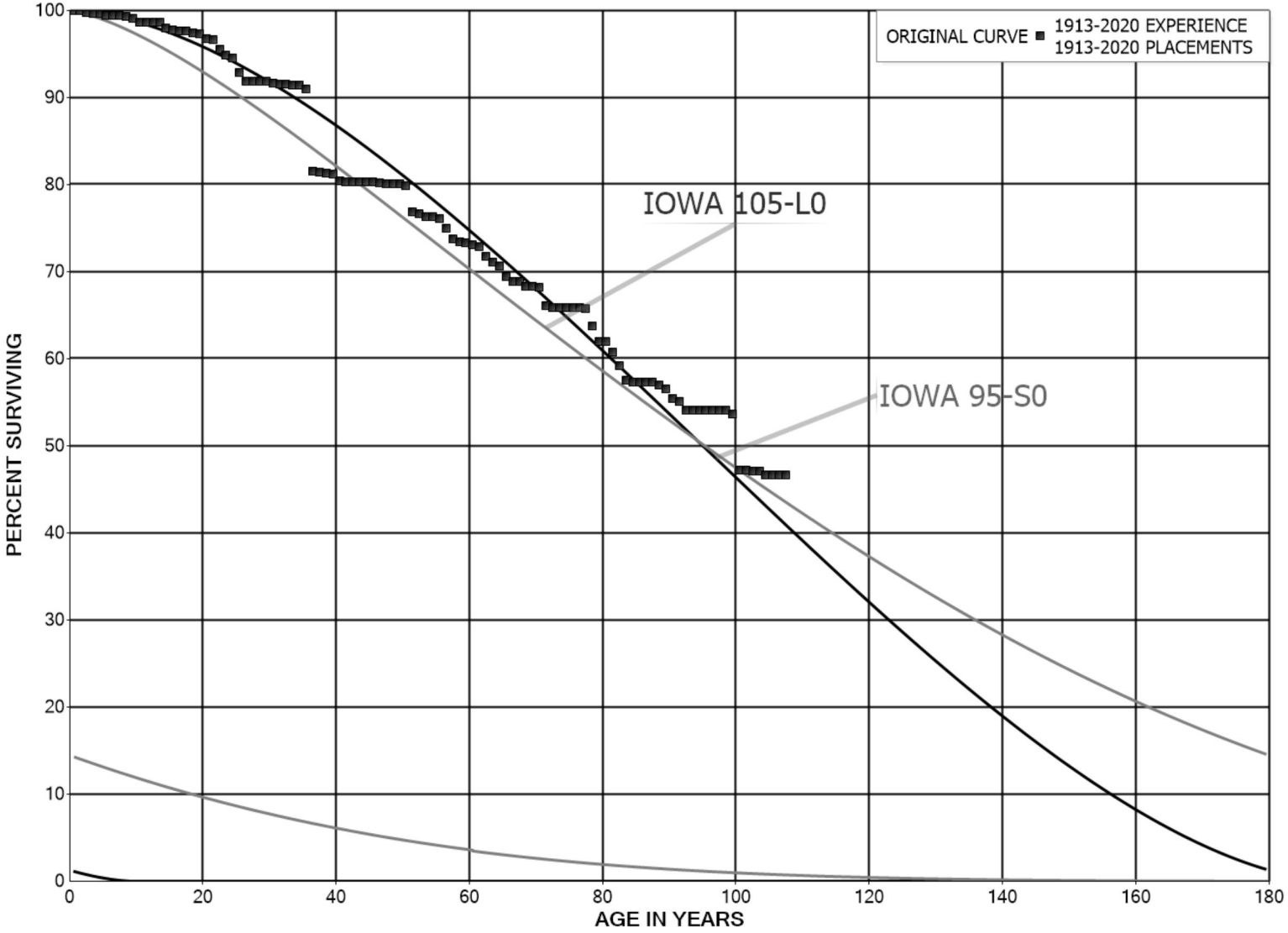
In summary, several factors should be considered in estimating property life. Some of these factors are:

1. Observable trends reflected in historical data,
2. Potential changes in the type of property installed,
3. Changes in the physical environment,
4. Changes in management requirements,
5. Changes in government requirements, and
6. Obsolescence due to the introduction of new technologies.

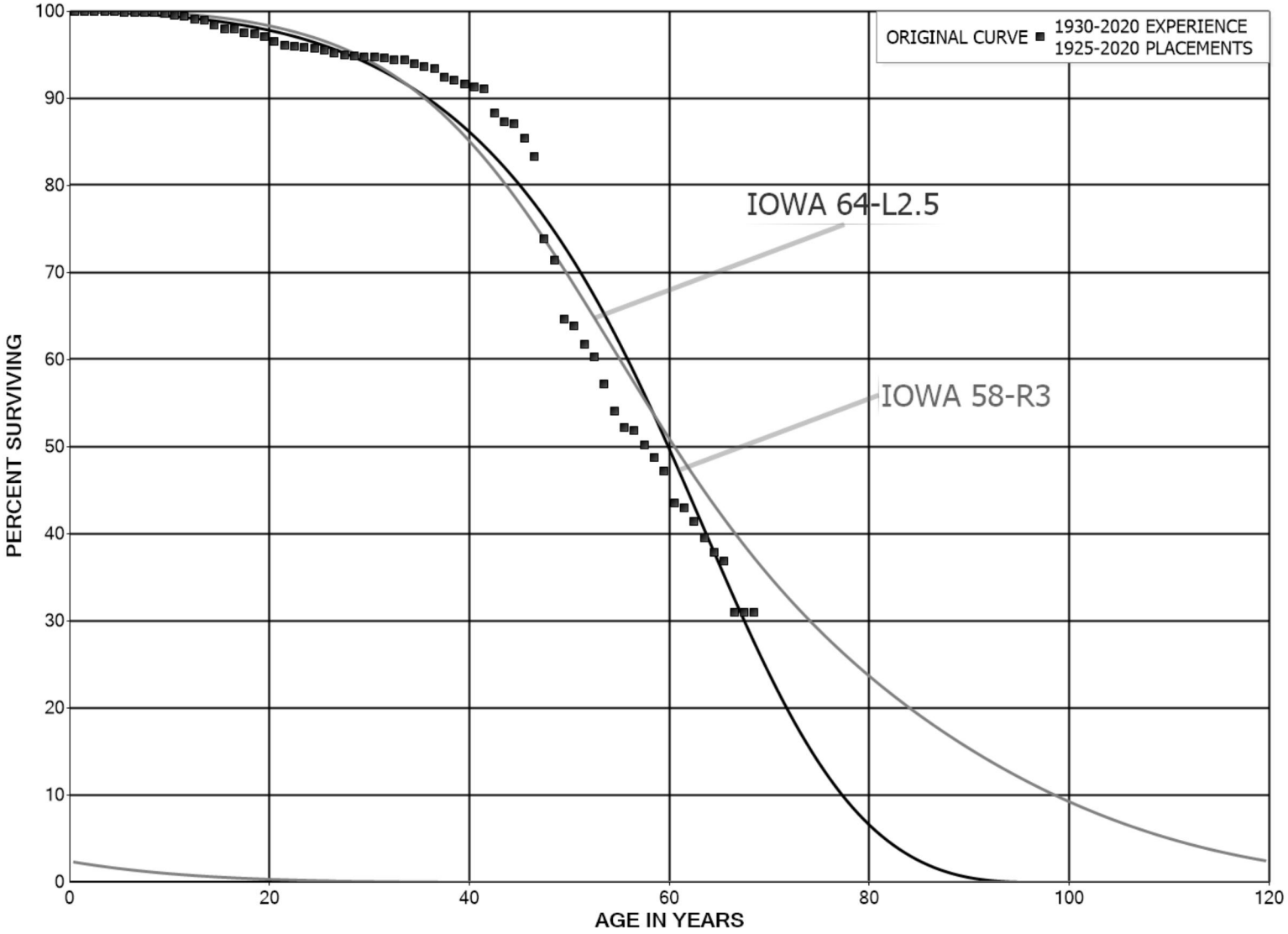
AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 325.00 MISCELLANEOUS POWER PLANT EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES



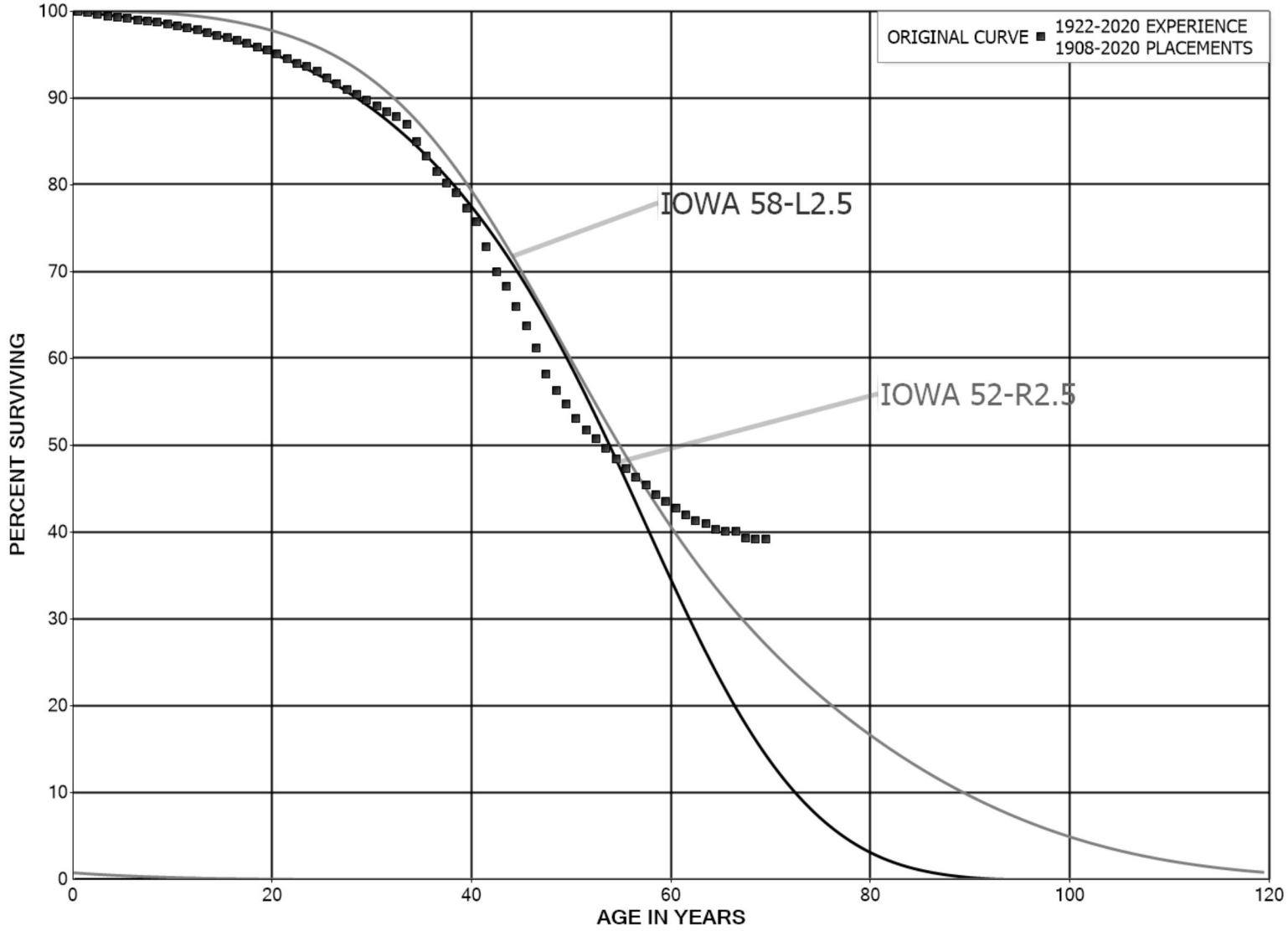
AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 333.00 WATER WHEELS, TURBINES AND GENERATORS
ORIGINAL AND SMOOTH SURVIVOR CURVES



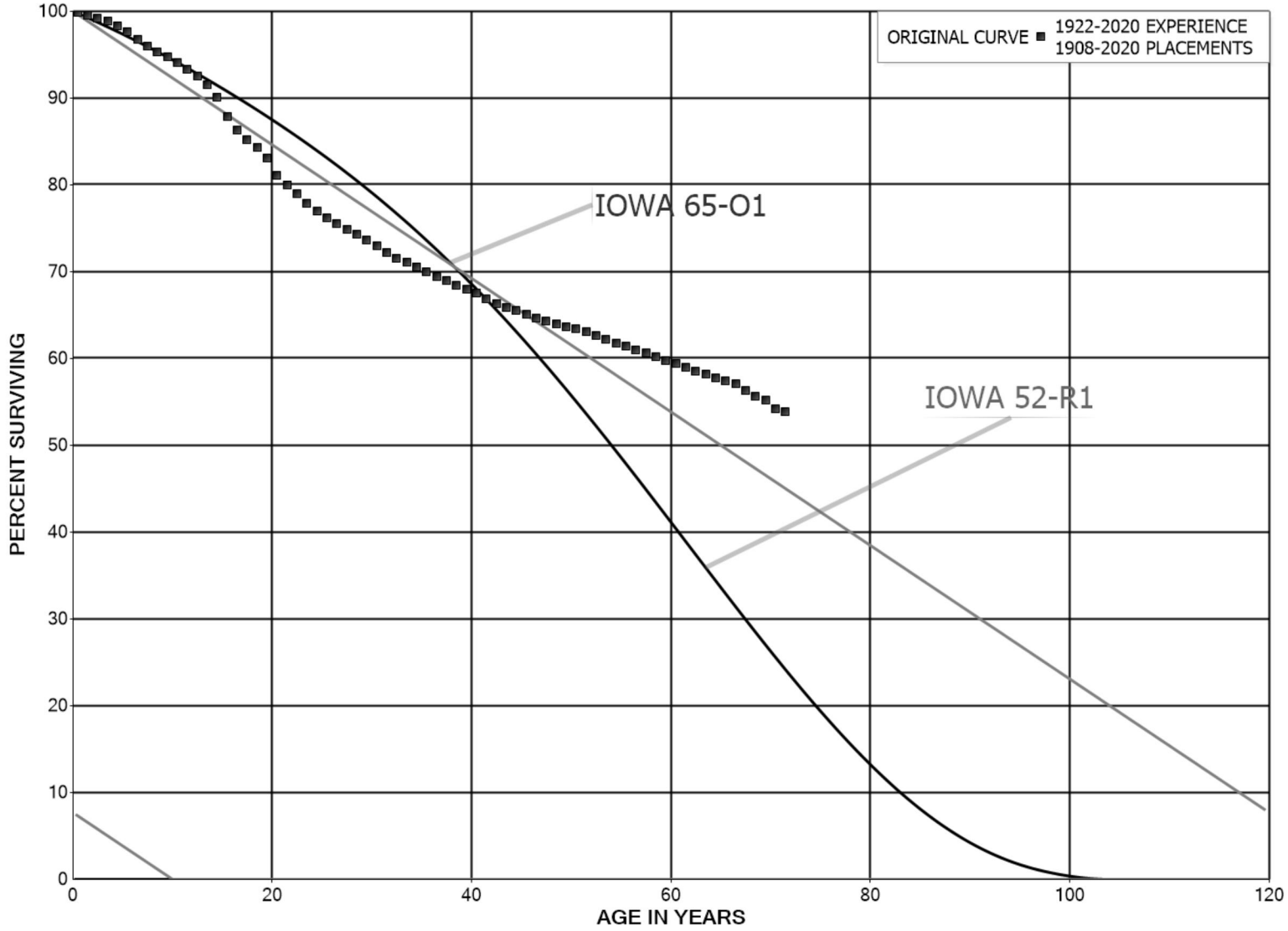
AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 355.00 POLES AND FIXTURES
ORIGINAL AND SMOOTH SURVIVOR CURVES



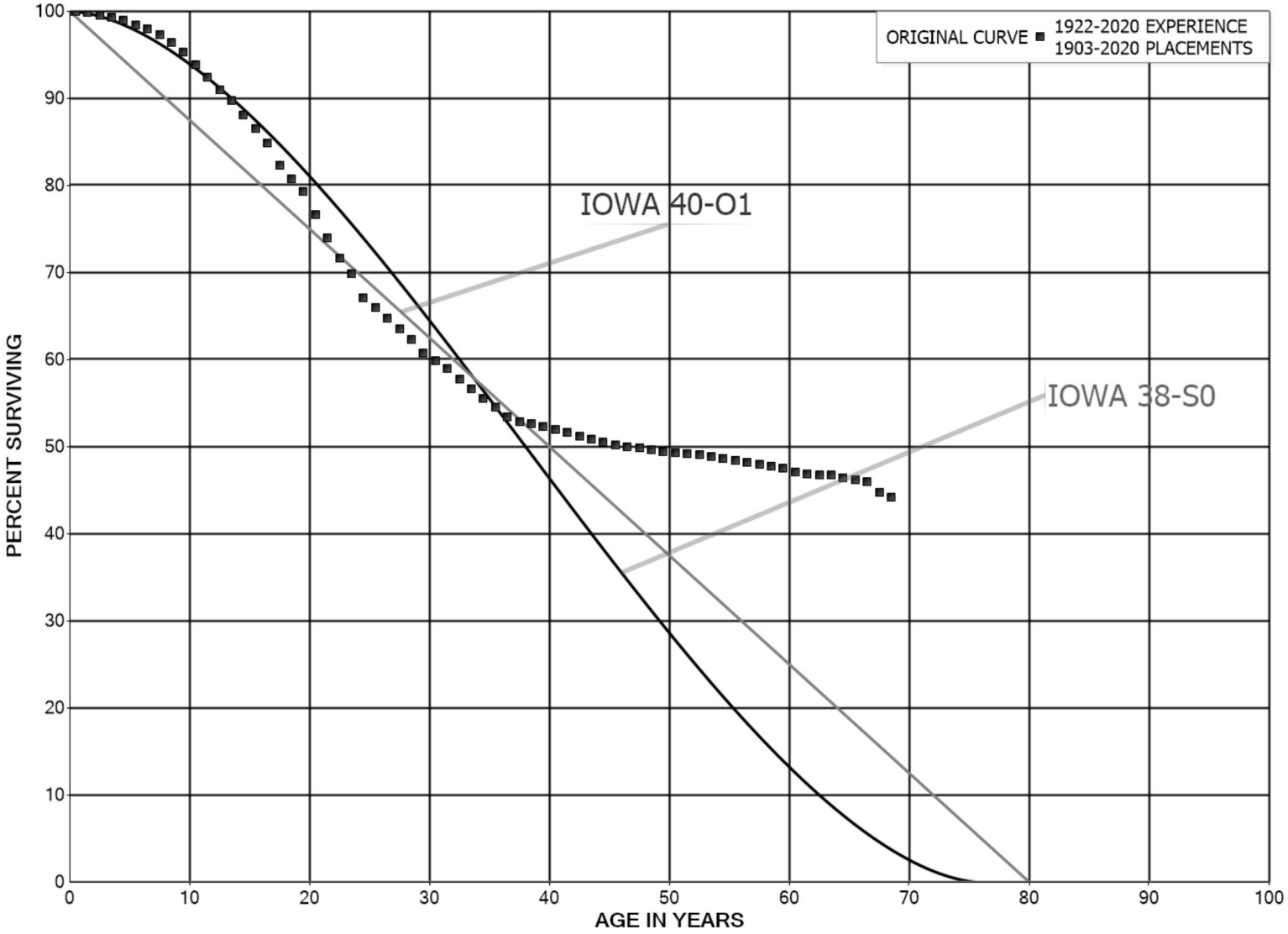
AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 364.00 POLES AND FIXTURES
ORIGINAL AND SMOOTH SURVIVOR CURVES



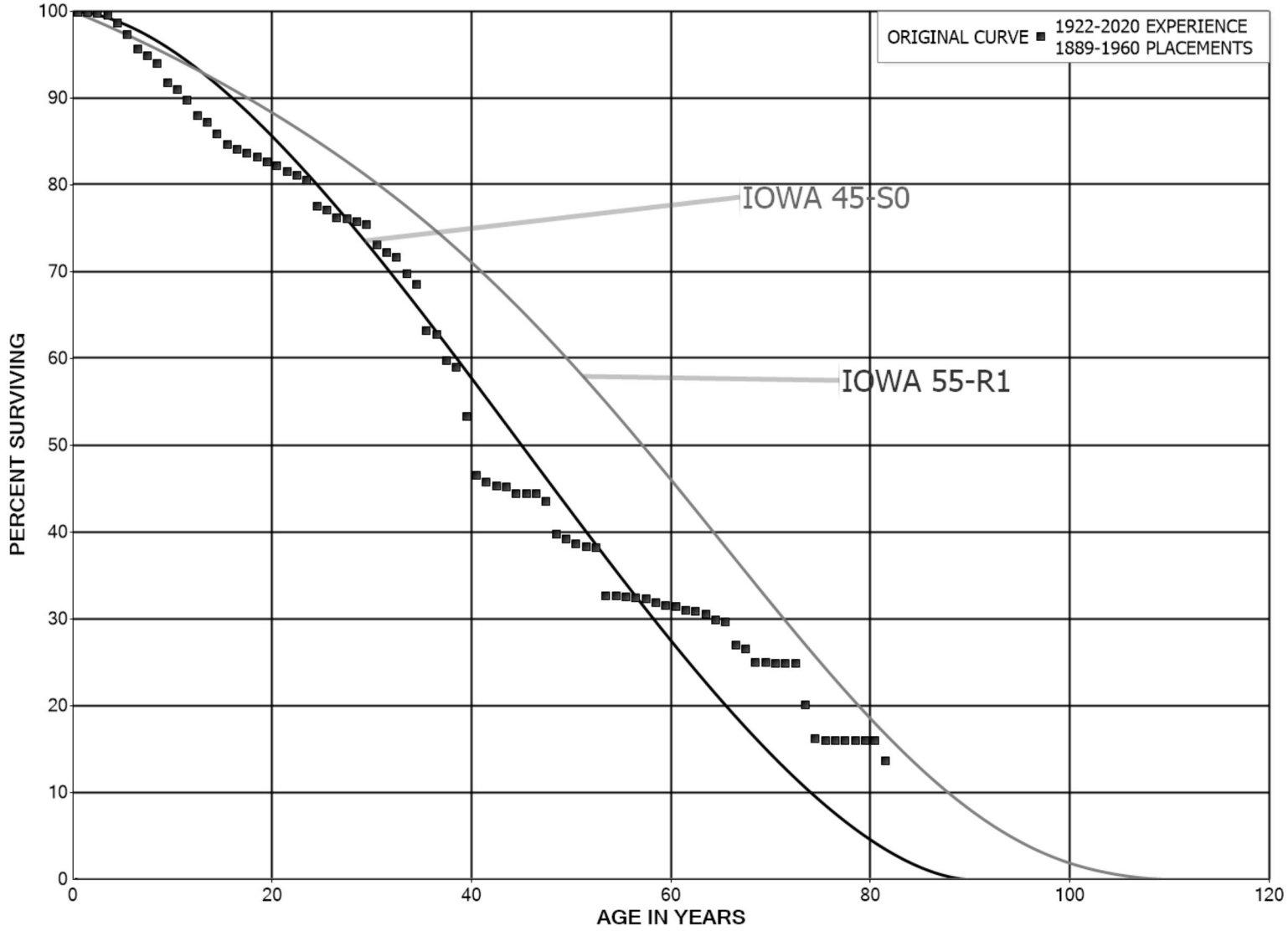
AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES
ORIGINAL AND SMOOTH SURVIVOR CURVES



AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS
ORIGINAL AND SMOOTH SURVIVOR CURVES



AMEREN MISSOURI
ELECTRIC DIVISION
ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS STRUCTURES - OLD
ORIGINAL AND SMOOTH SURVIVOR CURVES



BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company	)	
d/b/a Ameren Missouri's Tariffs to Adjust	)	Case No. ER-2021-0240
Its Revenues for Electric Service.	)	

AFFIDAVIT OF JOHN J. SPANOS

COMMMONWEALTH OF PENNSYLVANIA	**)**
	) ss
COUNTY OF CUMBERLAND	**)**

John J. Spanos, being first duly sworn on his oath, states:

My name is John J. Spanos, and on his oath declare that he is of sound mind and lawful age; that he has prepared the foregoing *Surrebuttal Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.

/s/ John J. Spanos
John J. Spanos

Sworn to me this 8th day of November, 2021.