American Electric Power

UMWA Postretirement Health Care Plan

Actuarial Valuation Report
Postretirement Welfare Cost for Fiscal Year Beginning January 1, 2019 under US GAAP

May 2019

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Purposes of valuation

American Electric Power ("the Company") engaged Willis Towers Watson US LLC ("Willis Towers Watson") to perform an actuarial valuation of its postretirement welfare program.

As requested by the Company, this report documents the results of an actuarial valuation of the UMWA Postretirement Health Care Plan (the Plan) as of January 1, 2019.

The primary purpose of this valuation is to determine the Net Periodic Postretirement Benefit Cost/(Income) (Benefit Cost), in accordance with FASB Accounting Standards Codification Topic 715 (ASC 715) for the fiscal year beginning January 1, 2019. It is anticipated that a separate report will be prepared for year-end financial reporting and disclosure purposes.

Limitations

This valuation has been conducted for the purposes described above and may not be suitable for any other purpose. In particular, please note the following:

1. There may be certain events that have occurred since the valuation date that are not reflected in the current valuation.
2. This report does not provide information for plan reporting under ASC 965.

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Section 1: Summary of key results

Benefit cost, plan assets & obligations

All monetary amounts shown in US Dollars

Fiscal Year Beginning		01/01/2019	01/01/2018
Benefit Cost/ (Income)	Net Periodic Postretirement Benefit Cost/(Income)	2,840,606	3,544,717
	Immediate Recognition of Benefit Cost/(Income) due to Special Events	0	0
	Total Benefit Cost/(Income)	2,840,606	3,544,717
Measurement Date		**01/01/2019**	**01/01/2018**
Plan Assets	Fair Value of Plan Assets (FVA)	34,849,688	36,801,767
Benefit Obligations	Accumulated Postretirement Benefit Obligation (APBO)	(87,088,522)	(100,941,397)
Funded Ratio	Fair Value of Plan Assets to APBO	40.0%	36.5%
Accumulated Other Comprehensive (Income)/Loss	Net Prior Service Cost/(Credit)	0	0
	Net Loss/(Gain)	18,123,337	29,560,286
	Total Accumulated Other Comprehensive (Income)/Loss (pre-tax)	18,123,337	29,560,286
Assumptions	Discount rate	4.35%	3.70%
	Expected Long-Term Rate of Return on Plan Assets	7.00%	7.25%
	Current Health Care Cost Trend Rate	6.25%	6.50%
	Ultimate Health Care Cost Trend Rate	5.00%	5.00%
	Year of Ultimate Trend Rate	2024	2024
Participant Data	Census Date	01/01/2019	01/01/2018

Employer Contributions

Employer contributions are the amounts paid by the Company to provide for postretirement benefits, net of participant contributions and Medicare subsidy for non-Cook Coal locations plus the Net Periodic Benefit Cost for Cook Coal.

The Company's funding policy for non-Cook Coal locations is to pay claims costs for the year and administrative expenses, less participant contributions and any Medicare Part D subsidy (RDS) received. For Cook Coal, the funding policy is to contribute an amount equal to the postretirement welfare cost net of retiree drug subsidy payments received for Cook Coal retirees (the sum of which can be no less than zero). We understand the sponsor may deviate from this policy, as permitted by its terms, based on cash, tax or other considerations.

Comments on results

The cost of the postretirement welfare plan is determined in accordance with generally accepted accounting principles in the U.S. ("U.S. GAAP"). The fiscal 2019 postretirement welfare benefit cost for the plan is $2,840,606. Under U.S. GAAP, the funded position (fair value of plan assets less the projected benefit obligation, or "APBO") of each postretirement welfare plan at the plan sponsor's fiscal year-end (measurement date) is required to be reported as a liability. The APBO is the actuarial present value of benefits attributed to service rendered prior to the measurement date, taking into consideration expected future pay increases for pay-related plans. The plan's overfunded (underfunded) APBO as of January 1, 2019, was $(52,238,834), based on the fair value of plan assets of $34,849,688 and the APBO of $87,088,522.

Fiscal year-end financial reporting information and disclosures are prepared before detailed participant data and full valuation results are available. Therefore, the postretirement benefit asset (liability) at December 31, 2018, was derived from a roll forward of the January 1, 2018 valuation results, adjusted for the year-end discount rate and asset values, as well as significant changes in plan provisions and participant population. The current fiscal year-end financial reporting information will be developed based on the results of the January 1, 2019 valuation, projected to the end of the year and similarly adjusted for the year-end discount rate and asset values, as well as significant changes in plan provisions and participant population.

Change in net periodic cost

The postretirement welfare cost decreased from $3,544,717 in fiscal 2018 to $2,840,606 in fiscal 2019, as set forth below:

All monetary amounts shown in US Dollars

($ in millions)	Postretirement welfare cost
Prior year	3.5
Change due to:	
■ Expected based on prior valuation and contributions during prior year	(0.2)
■ Unexpected noninvestment experience	(0.2)
■ Unexpected investment experience	0.5
■ Assumption changes	(0.8)
■ Changes in substantive plan	0.0
Current year	2.8

Significant reasons for these changes include the following:

- The discount rate increased by 65 basis points compared to the prior year which decreased the postretirement welfare cost.
- Actual asset returns during 2018 were lower than the assumed rate of 7.25% which increased the postretirement welfare cost.
- Claims experience was lower than expected which resulted in lower per capita claims cost assumptions and a decrease in the postretirement welfare cost.
- The expected return on asset assumption was decreased from 7.25% to 7.00%, which increased the postretirement welfare cost.

Basis for valuation

Appendix A summarizes the assumptions and methods used in the valuation. Appendix B summarizes our understanding of the principal provisions of the plan being valued.

Changes in Assumptions

The following assumptions were revised for the 2019 valuation: mortality, discount rate, per capita claims costs and expected return on assets.

Changes in Methods

None.

Changes in Benefits Valued

None.

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Actuarial certification

This valuation has been conducted in accordance with generally accepted actuarial principles and practices. However, please note the information discussed below regarding this valuation.

Reliances

In preparing the results presented in this report, we have relied upon information regarding plan provisions, participants, assets, and sponsor accounting policies and methods provided by the Company and other persons or organizations designated by the Company. See the Sources of Data and Other Information section of Appendix A for further details. We have relied on all the data and information provided as complete and accurate. We have reviewed this information for overall reasonableness and consistency, but have neither audited nor independently verified this information. Based on discussions with and concurrence by the plan sponsor, assumptions or estimates may have been made if data were not available. We are not aware of any errors or omissions in the data that would have a significant effect on the results of our calculations. The results presented in this report are directly dependent upon the accuracy and completeness of the underlying data and information. Any material inaccuracy in the data, assets, plan provisions or other information provided to us may have produced results that are not suitable for the purposes of this report and such inaccuracies, as corrected by the Company, may produce materially different results that could require that a revised report be issued.

Measurement of benefit obligations, plan assets and balance sheet adjustments

Census date/measurement date

The measurement date is January 1, 2019. The benefit obligations were measured as of January 1, 2019 and are based on participant data as of the census date, January 1, 2019.

Plan assets and balance sheet adjustments

Information about the fair value of plan assets and the general ledger account balances for the other postretirement benefit plan cost at December 31, 2018, which reflect the expected funded status of the plans before adjustment to reflect the funded status based on the year-end measurements, and differences between the expected Medicare Part D subsidies and amounts received during the year was reviewed for reasonableness and consistency, but no audit was performed.

Accumulated other comprehensive (income)/loss amounts shown in the report are shown prior to adjustment for tax effects. Any tax effects in AOCI should be determined by the Company in consultation with its tax advisors and independent accountants.

Effects of Health Care Legislation

In March 2010, the Patient Protection and Affordable Care Act (PPACA) and Health Care and Education Reconciliation Act (HCERA) were enacted. The key aspects of the Acts affecting the Company's benefit obligation and cost of providing retiree medical benefits are:

- Mandatory coverage for adult children until age 26 beginning in 2011
- Loss of the tax free status of the Retiree Drug Subsidy (RDS) beginning in 2013
- Excise ("Cadillac Plan") tax on high-cost plans beginning in 2022

All subsequent measurements for tax purposes reflect current law.

This valuation reflects our understanding of the relevant provisions of PPACA and HCERA. The IRS and HHS have yet to issue final guidance with respect to many aspects of this law. It is possible that future guidance may conflict with our understanding of these laws based on currently available guidance and could therefore affect the results shown in this report.

Assumptions and methods under U.S. GAAP

As required by U.S. GAAP, the actuarial assumptions and methods employed in the development of the other postretirement benefit cost and other financial reporting have been selected by the Company. Willis Towers Watson has concurred with these assumptions and methods, except for the expected rate of return on plan assets selected as of January 1, 2019. Evaluation of the expected return assumption was outside the scope of Willis Towers Watson's assignment and would have required substantial additional work that we were not engaged to perform. U.S. GAAP requires that each significant assumption "individually represent the best estimate of a particular future event."

The results shown in this report have been developed based on actuarial assumptions that, to the extent evaluated by Willis Towers Watson, we consider to be reasonable. Other actuarial assumptions could also be considered to be reasonable. Thus, reasonable results differing from those presented in this report could have been developed by selecting different reasonable assumptions.

A summary of the assumptions, methods and sources of data and other information used is provided in Appendix A. Note that any subsequent changes in methods or assumptions for the January 1, 2019 measurement date will change the results shown in this report.

Nature of actuarial calculations

The results shown in this report are estimates based on data that may be imperfect and on assumptions about future events that cannot be predicted with any certainty. The effects of certain plan provisions may be approximated, or determined to be insignificant and therefore not valued. Reasonable efforts were made in preparing this valuation to confirm that items that are significant in the context of the actuarial liabilities or costs are treated appropriately, and are not excluded or included inappropriately. Any rounding (or lack thereof) used for displaying numbers in this report is not intended to imply a degree of precision, which is not a characteristic of actuarial calculations.

If overall future plan experience produces higher benefit payments or lower investment returns than assumed, the relative level of plan costs reported in this valuation will likely increase in future valuations (and vice versa). Future actuarial measurements may differ significantly from the current measurements presented in this report due to many factors, including: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for the measurements (such as the end of an amortization period), and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

See Basis for Valuation in Section 1 above for a discussion of any material events that have occurred after the valuation date that are not reflected in this valuation.

Limitations on use

This report is provided subject to the terms set out herein and in our Master Consulting Services Agreement dated July 29, 2004 and any accompanying or referenced terms and conditions.

The information contained in this report was prepared for the internal use of the Company and its independent accountants in connection with our actuarial valuation of the other postretirement benefit plan as described in Purposes of Valuation above. It is not intended for and may not be used for other purposes, and we accept no responsibility or liability in this regard. The Company may distribute this actuarial valuation report to the appropriate authorities who have the legal right to require the Company to provide them this report, in which case the Company will use best efforts to notify Willis Towers Watson in advance of this distribution. Further distribution to, or use by, other parties of all or part of this report is expressly prohibited without Willis Towers Watson’s prior written consent. Willis Towers Watson accepts no responsibility for any consequences arising from any other party relying on this report or any advice relating to its contents.

Professional qualifications

The undersigned are members of the Society of Actuaries and meet the “Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States” relating to other postretirement benefit plans. Our objectivity is not impaired by any relationship between the plan sponsor and our employer, Willis Towers Watson US LLC.

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The Pricing Specialist is responsible for developing and/or determining the reasonableness of retiree welfare plan trend and participation assumptions as well as assumed per capita claims costs (including the aging/morbidity assumption if applicable). The Valuation Actuary is responsible for other aspects of the valuation (e.g., developing and/or reviewing the reasonableness of other valuation assumptions and methods, ensuring that the valuation model reasonably reflects the substantive plan, preparing demographic data, performing the valuation, implementing the appropriate accounting or funding calculations, etc.).

Willis Towers Watson US LLC

May 2019

Section 2: Accounting exhibits

2.1 Balance sheet asset/(liability)

All monetary amounts shown in US Dollars

Measurement Date		01/01/2019	01/01/2018
A	**Development of Balance Sheet Asset/(Liability)[1]**		
1	Accumulated postretirement benefit obligation (APBO)	87,088,522	100,941,397
2	Fair value of plan assets (FVA)	34,849,688	36,801,767
3	Net balance sheet asset/(liability)	(52,238,834)	(64,139,630)
B	**Current and Noncurrent Classification**		
1	Noncurrent asset	0	0
2	Current liability	(2,781,432)	(2,951,249)
3	Noncurrent liability	(49,457,402)	(61,188,381)
4	Net balance sheet asset/(liability)	(52,238,834)	(64,139,630)
C	**Accumulated Other Comprehensive (Income)/Loss**		
1	Net prior service cost/(credit)	0	0
2	Net loss/(gain)	18,123,337	29,560,286
3	Accumulated other comprehensive (income)/loss[2]	18,123,337	29,560,286
D	**Assumptions and Dates[3]**		
1	Discount rate	4.35%	3.70%
2	Current health care cost trend rate	6.25%	6.50%
3	Ultimate health care cost trend rate	5.00%	5.00%
4	Year of ultimate trend rate	2024	2024
5	Census date	01/01/2019	01/01/2018

[1] Whether any amounts in this table that differ from those disclosed at year-end must be disclosed in subsequent interim financial statements should be determined.
[2] Amount shown is pre-tax and should be adjusted by plan sponsor for tax effects.
[3] Rates are expressed on an annual basis where applicable.

2.2 Summary and comparison of postretirement benefit cost and cash flows

All monetary amounts shown in US Dollars

Fiscal Year Ending			12/31/2019	12/31/2018
A	**Total Postretirement Benefit Cost**			
	1	Employer service cost	802,071	1,153,642
	2	Interest cost	3,738,314	3,702,013
	3	Expected return on assets	(2,425,432)	(2,668,787)
	4	Subtotal	2,114,953	2,186,868
	5	Transition obligation/(asset) amortization	0	0
	6	Net prior service cost/(credit) amortization	0	0
	7	Net loss/(gain) amortization	725,653	1,357,849
	8	Amortization subtotal	725,653	1,357,849
	9	Net periodic postretirement benefit cost/(income)	2,840,606	3,544,717
B	**Assumptions**[1]			
	1	Discount rate	4.35%	3.70%
	2	Expected long-term rate of return on plan assets	7.00%	7.25%
	3	Current health care cost trend rate	6.25%	6.50%
	4	Ultimate health care cost trend rate	5.00%	5.00%
	5	Year ultimate trend rate is expected	2024	2024
C	**Census Date**		01/01/2019	01/01/2018
D	**Assets at Beginning of Year**			
	1	Fair market value	34,849,688	36,801,767
E	**Cash Flow**		**Expected**	**Actual**
	1	Employer contributions[2]	3,538,447	4,320,233
	2	Plan participants' contributions	0	0
	3	Benefits paid by the Employer[3]	2,977,341	3,035,502
	4	Benefits paid from plan assets[3]	1,201,912	1,284,731
	5	Expected Medicare subsidy	(232,581)	(311,668)

1 These assumptions were used to calculate the Net Postretirement Benefit Cost/ (Income) as of the beginning of the year. Rates are expressed on an annual basis where applicable. For assumptions used for interim measurement periods, if any, refer to Appendix A.

2 Reflects benefit payments and expenses (non-Cook Coal), as well as contributions to plan trust (Cook Coal), net of RDS.

3 Amounts shown are prior to offset for Medicare subsidy.

2.3 Detailed results for postretirement welfare cost and funded position

All monetary amounts shown in US Dollars

Detailed results			01/01/2019	01/01/2018
A	**Service Cost**			
	1	Medical	802,071	1,153,642
B	**Accumulated Postretirement Benefit Obligation [APBO]**			
	1	Medical:		
		a Participants currently receiving benefits	62,632,979	71,536,357
		b Fully eligible active participants	14,221,354	10,811,551
		c Other participants	10,234,189	18,593,489
		d Total	87,088,522	100,941,397
C	**Assets**			
	1	Fair value [FV]	34,849,688	36,801,767
D	**Funded Position**			
	1	Overfunded (underfunded) APBO	(52,238,834)	(64,139,630)
E	**Amounts in Accumulated Other Comprehensive Income**			
	1	Transition obligation/(asset)	0	0
	2	Net prior service cost/(credit)	0	0
	3	Net loss/(gain)	18,123,337	29,560,286
	4	Total	18,123,337	29,560,286
F	**Effect of Change in Health Care Cost Trend Rate**			
	1	One-percentage-point increase:		
		a Sum of service cost and interest cost	957,161	1,178,948
		b APBO	14,657,548	18,605,676
	2	One-percentage-point decrease:		
		a Sum of service cost and interest cost	(726,775)	(871,407)
		b APBO	(11,555,233)	(14,427,708)

2.4 Expected benefit disbursements, administrative expenses and participant contributions

All monetary amounts shown in US Dollars

			01/01/2019	01/01/2018
A	**Medical**			
	1	Gross disbursements	4,179,253	4,359,416
	2	Participant contributions	0	0
	3	Net disbursements	4,179,253	4,359,416
B	**RDS**			
	1	Gross disbursements	(232,581)	(240,754)
	2	Participant contributions	0	0
	3	Net disbursements	(232,581)	(240,754)
C	**Total**			
	1	Gross disbursements	3,946,672	4,118,662
	2	Participant contributions	0	0
	3	Net disbursements	3,946,672	4,118,662

Section 3: Participant data

3.1 Summary of participant data

Census Date			01/01/2019	01/01/2018
A	**Participating Employees**			
	1	Number		
	a	Fully eligible	19	14
	b	Other	18	26
	c	Total participating employees	37	40
	2	Average age	48.7	47.3
	3	Average credited service	20.4	19.7
	4	Average future working life		
	a	to expected retirement age	13.0	14.3
	b	to full eligibility age	6.7	7.1
B	**Retirees, Dependents and Surviving Spouses**			
	1	Retirees		
	a	Number under 65	30	39
	b	Number 65 and older	181	181
	c	Total	211	220
	d	Number with married/family health care coverage	95	96
	e	Number with single health care coverage	116	124
	f	Average age	76.4	75.8
	g	Distribution at January 1, 2019		

Age	Number
Under 55	1
55-59	4
60-64	24
65-69	33
70-74	42
75-79	22
80-84	28
85 and over	57

			01/01/2019	01/01/2018
C	**Dependents**			
	1	Number	95	96
	2	Average age	68.8	68.2
	3	Distribution at January 1, 2019		

Age	Number
Under 55	3
55-59	9
60-64	22
65-69	22
70-74	16
75-79	13
80-84	6
85 and over	4

3.2 Age and service distribution of participating employees

	Attained Years of Credited Service and Number								
Attained Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
Under 25									
25-29									
30-34			3						3
35-39			5		1				6
40-44			3	1	2				6
45-49			3	1	2				6
50-54			1	1	1	1			4
55-59			1	2	1			1	5
60-64					1		1	3	5
65-69								2	2
70 & over									
Total	0	0	16	5	8	1	1	6	37 [1]

Average:	Age:	48.7	Number of Participants:	Fully eligible	19	Males	37
	Service	20.4		Other	18	Females	0

Census data as of January 1, 2019

[1] Ages and service totals for purposes of determining category are based on exact (not rounded) values.

Appendix A: Statement of actuarial assumptions, methods and data sources

Economic Assumptions

Discount rate	4.35%
Medical cost trend rate	▪ 2019 6.25% ▪ 2020 6.00 ▪ 2021 5.75 ▪ 2022 5.50 ▪ 2023 5.25 ▪ 2024+ 5.00
Expected long-term rate of return on plan assets	7.00%

Demographic Assumptions

Mortality

Base mortality rates are derived from the RP-2014 mortality table with improvements factored to 2006 with blue collar adjustment.

Mortality improvements are projected forward on a generational basis using Scale MP-2018 adjusted to reflect 75% of the long-term improvement rates.

Disability

Rates vary by age as indicated by the following sample values:

Age	Rate
20	0.120%
30	0.120
40	0.147
50	0.357
60	1.380

Termination

Annual rates vary by age as indicated by the following sample values

Age	Rate
20	10.7%
30	5.9
40	2.1
≥45	0.0

Retirement

Annual rates vary by age as indicated by the following values:

Age	Rate	Age	Rate
55	6.0%	61	10.0%
56	6.5	62	12.0
57	7.0	63	15.0
58	7.5	64	20.0
59	8.0	65	50.0
60	9.0	66 – 69	30.0
		70	100.0

Percent married 95%

Spouses ages Wives three years younger than husbands.

Participation rates

- Employees – 100%
- Dependent – 100%

2019 Per Capita Claims Costs				
Basis for Per Capita Claim Cost Assumptions	**Age**	**Post-1993 retirees**	**Pre-1994 retirees**	**Medicare Part D RDS Subsidy**
■ Overall average	< 65	19,451	19,868	N/A
	>=65	12,019	12,019	(968)
■ By age group	< 35	8,229	8,406	N/A
	35-49	8,907	9,098	N/A
	40-44	9,955	10,169	N/A
	45-49	11,618	11,868	N/A
	50-54	14,281	14,588	N/A
	55-59	17,217	17,586	N/A
	60-64	21,096	21,549	N/A
	65-69	10,678	10,678	(923)
	70-74	11,841	11,841	(1,003)
	75-79	12,692	12,692	(1,036)
	80-84	12,957	12,957	(1,026)
	85-89	12,651	12,651	(957)
	90-94	11,469	11,469	(827)
	>= 95	9,996	9,996	(664)

Administrative expenses	$448 per primary participant in 2019, increasing 3.5% per year.
Chained CPI (for indexation of Cadillac Plan tax thresholds)	3.0%

Methods – Postretirement Welfare Cost and Funded Position

Service cost and APBO	Projected unit credit actuarial cost method, allocated in equal amounts, from the valuation date on or after date of hire to full eligibility date.
Net loss (gain)	Net loss (gain) in excess of 10% of the APBO is amortized on a straight-line basis over the expected average expected remaining service of active participants expected to benefit under the plan.
Benefits Not Valued	All benefits described in the Plan Provisions section of this report were valued. Willis Towers Watson has reviewed the plan provisions with AEP and based on that review is not aware of any significant benefits required to be valued that were not included. Certain plan provision changes were negotiated, but AEP has been unable to implement. These changes have not been valued.
Timing of benefit payments	Benefit payments are assumed to be made uniformly throughout the year and on average at mid-year.
Change in Assumptions and Methods Since Prior Valuation	The discount rate was increased from 3.70% to 4.35%. Anticipated per capita claims costs were updated to reflect recent experience. Mortality assumption updated to base table RP-2014 with improvements from 2006 with blue collar adjustment projected forward using MP-2018 with of 75% of long-term improvement rates. The expected return on assets was decreased from 7.25% to 7.00%.

Sources of Data and Other Information

American Electric Power furnished the participant, benefit payments and assets information, as well as the accrued postretirement benefits cost as of December 31, 2018. Data were reviewed for reasonableness and consistency, but no audit was performed. We are aware of no errors or omissions in the data that would have a significant effect on the results of our calculation.

Assumptions Rationale - Significant Economic Assumptions

Discount rate	As required by U.S. GAAP, the discount rate was chosen by the plan sponsor based on market information on the measurement date.
Expected long-term return on plan assets	We understand that the expected return on assets assumption reflects the plan sponsor’s estimate of future experience for trust asset returns, reflecting the plan‘s current asset allocation and any expected changes during the current plan year, current market conditions and the plan sponsor’s expectations for future market conditions.
Inflation	Assumptions were selected by the plan sponsor and represent a best estimate of future experience, based on a combination of market conditions at the measurement date and future expectations consistent with other economic assumptions used. Differences between expectations of chained and unchained CPI were deemed immaterial.
Per capita claims costs	AEP supplied data on retiree medical and prescription drug claim payments for the 48 month period ending September 30, 2018.

Separate medical and prescription drug claim rates were calculated by dividing annual paid claims (from October through September for each 12-month period) by covered lives over these four periods. These rates were then age-graded over standard Willis Towers Watson morbidity curves to generate quinquennial age-banded medical and prescription drug claims rates. These claim rates were trended to 2019 and a weighted average was taken to calculate the average pre-65 and post-65 claim rates for medical and prescription drugs. Weighting factors of 30% were used for the two most recent years, while factors of 20% were used for the other two years.

Excise tax payments

To determine impact of the excise tax in 2022 and beyond on the UMWA postretirement plan, we projected future gross plan costs using the valuation trend assumption and compared these on a year-by-year basis to the excise tax thresholds beginning in 2019 and projected to future years using chained CPI (3.0%). The expected cost of each UMWA benefit combination, which were blended pre-65/post-65 based on headcounts, exceeded these thresholds immediately.

The amount of the excise tax valued was 40% times the portion of projected plan cost exceeding the thresholds.

Medicare Part D subsidy value

We calibrated our modeling tool to reflect the 2019 cost of the current prescription drug plans for AEP's UMWA post-65 retirees. The tool employs a continuance table of annual retiree drug utilization levels, developed from analyzing the experience of many large employers reflecting utilization of 1.8 million Medicare-eligible members during 2016.

After the plan-specific benefit provisions have been calibrated to current costs, the Modeler trends costs forward to 2019 at 7% per year. Actuarial equivalence was determined using the following two-prong approach outlined in the regulations for Medicare Part D:

- *Gross Value Test* – The Modeler calculates the value of standard Medicare Part D coverage (ignoring benefit enhancements from ACA) and compares it to AEP's plan costs. AEP's plan passed this test by being richer than the projected value of standard Medicare Part D coverage for these groups.

- *Net Value Test* –The net value prong of the test compared the value of Standard Part D (ignoring benefit enhancements from ACA) coverage in 2019 less the greater of $398.28 (the national average Part D premium) and 25.5% of the gross value of Part D coverage to the projected 2019 value of AEP coverage.

For plans deemed to be actuarially equivalent, the tool calculates the average expected value of the employer subsidy in 2019, using the continuance table calibrated to the prescription drug portion of AEP's plan cost. This produced an average 2019 per person annual employer subsidy of $968. This rate was converted to rates varying by quinquennial age bands using Willis Towers Watson's standard morbidity factors.

Claims cost trend rates	Assumed increases were chosen by the plan sponsor and, as required by U.S. GAAP, they represent an estimate of future experience, informed by an analysis of recent plan experience, leading to select and ultimate assumed trend rates and reflecting the expected near-term effect of recently enacted program changes. In setting near term trend rates, other pertinent statistics were considered, including surveys on general medical cost increases. In setting the ultimate trend rate, considerations included assumed GDP growth consistent with the assumed future economic conditions inherent in other economic assumptions chosen by the client at the measurement date. After examining historical variability in trend rates, we believe the selected assumptions do not significantly conflict with what would be reasonable based on a combination of market conditions at the measurement date and future expectations consistent with other economic assumptions used, other than the discount rate.
Medicare Part D subsidy trend rates	The rates of increase in per capita Medicare Part D subsidy payments are assumed to equal the plan's assumed trend rates for prescription drug claims.

Assumptions Rationale - Significant Demographic Assumptions

Healthy Mortality	Assumptions were selected by the plan sponsor and, as required by U.S. GAAP, represent a best estimate of future experience.
Disabled Mortality	Assumptions were selected by the plan sponsor and, as required by U.S. GAAP, represent a best estimate of future experience.
Termination	Termination rates are based on plan sponsor expectations for the future with periodic monitoring of observed gains and losses caused by termination patterns different than assumed.
Disability	Disability rates are based on plan sponsor expectations for the future with periodic monitoring of observed gains and losses caused by disability patterns different than assumed.
Retirement	Retirement rates are based on plan sponsor expectations for the future with periodic monitoring of observed gains and losses caused by retirement patterns different than assumed.
Participation	
▪ Participants	The assumed coverage rates for participants and spouses reflect historical experience as well as anticipated future experience based on a 100% employer paid benefit.
▪ Covered dependents	The assumed dependent coverage prevalence of future retirees is based on the dependent coverage observed among recent retirees.

- Covered Spouse age — The assumed age difference for spouses of future retirees is based on the age difference observed among recent retirees and general population statistics of the age difference for married individuals of retirement age.

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Appendix B: Summary of principal other postretirement benefit plan provisions

Medical Benefits

Eligibility	Participants are eligible upon retirement after age 55 with ten years of service or attaining age 55 with ten years of service after becoming permanently disabled or age 55 if retired with 20 years of service prior to age 50. Miners with less than ten years at retirement who are permanently and totally disabled as a result of a mine accident will retain a health services card for life.
Dependent eligibility	Eligible dependents are spouse and unmarried children who have not attained age 27.
Survivor eligibility	After the death of retiree or active employee eligible to retire, surviving spouses are eligible until death or remarriage subject to a $2,000 per month earnings limit.
Retiree contributions	None.
Benefits provisions	The UMWA medical plan covers substantially all medical services. Effective for retirements on or after January 1, 1994, a $750 annual per family deductible is in place for non-Medicare-eligible retirees. Copayments are required only for outpatient physician visits ($12 in-network and $20 out-of-network, maximum of $240 per family per 12 months) and for prescription drugs ($5 retail in PPL, $10 out of PPL, no copay mail order). A schedule of allowances for vision care is also provided. Benefits after age 65 are coordinated with Medicare. Expenses associated with the treatment of Black Lung Disease are not covered by this plan.

Future Plan Changes

No future plan changes were recognized in determining postretirement welfare cost.

Changes in Benefits Valued Since Prior Year

There have been no changes in benefits valued since the prior year.

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Appendix C: Results by business unit

American Electric Power
UMWA Postretirement Welfare Plan
Summary of Plan Participants for the 2019 Valuation

		Nonretired Participants	Retired Participants			
		Active Participants	Retirees	Dependent Spouses	Surviving Spouses	Total
225	Cedar Coal Co.	0	63	41	77	181
270	Cook Coal Terminal	37	41	32	1	74
290	Conesville Coal Preparation Company	0	28	22	1	51
	Total	37	132	95	79	306

AMERICAN ELECTRIC POWER
UMWA POSTRETIREMENT WELFARE PLAN
2019 NET PERIODIC POSTRETIREMENT BENEFIT COST

					"Other" Cost						
Location	*Accumulated Postretirement Benefit Obligation*	*Expected Net Benefit Payments*	*Fair Value of Assets*	*Service Cost*	*Interest Cost*	*Expected Return on Assets*	*Amortizations PSC*	*Amortizations (G)/L*	*Total "Other" Cost*	*Net Periodic Postretirement Benefit Cost*
225 Cedar Coal Co.	29,592,248	2,150,513	0	0	1,240,987	0	0	246,573	1,487,560	1,487,560
Appalachian Power Co. - SEC	**$29,592,248**	**$2,150,513**	**$0**	**$0**	**$1,240,987**	**$0**	**$0**	**$246,573**	**$1,487,560**	**$1,487,560**
270 Cook Coal Terminal	45,735,128	1,165,240	34,849,688	802,071	1,999,294	(2,425,432)	0	381,082	(45,056)	757,015
AEP Generating Company	**$45,735,128**	**$1,165,240**	**$34,849,688**	**$802,071**	**$1,999,294**	**($2,425,432)**	**$0**	**$381,082**	**($45,056)**	**$757,015**
290 Conesville Coal Preparation Company	11,761,146	630,919	0	0	498,033	0	0	97,998	596,031	596,031
AEP Generation Resources - SEC	**$11,761,146**	**$630,919**	**$0**	**$0**	**$498,033**	**$0**	**$0**	**$97,998**	**$596,031**	**$596,031**
Total	**$87,088,522**	**$3,946,672**	**$34,849,688**	**$802,071**	**$3,738,314**	**($2,425,432)**	**$0**	**$725,653**	**$2,038,535**	**$2,840,606**