COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

PREFILED STAFF TESTIMONY

APPALACHIAN POWER COMPANY

For approval of a rate adjustment clause, the E-RAC, for costs to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia

PUR-2020-00258

May 7, 2021

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PART A

Summary of Testimony

My testimony focuses on the Company's forecasts of commodity prices, emissions allowance prices, and wholesale power prices contained in Company witness Connie Trecazzi's testimony, and the Company's economic analysis contained in Company witness Martin's testimony.

Staff does not take a position on the preferred compliance option identified by the Company in its economic analysis.

The Commission may consider the following in evaluating the Company's economic analysis as evidence in support of the Company's preferred plan to upgrade and operate the Amos and Mountaineer plants through 2040:

> The Company's analysis contains information that could not be verified by other parties in this proceeding; and

> The Company's analysis suggests that the benefit to ratepayers of its preferred course of action, as compared to the other options considered by the Company, is minimal with the difference in the net present value of the revenue requirements for the alternative compliance scenarios ranging from just 0.5% to 1.8% above the Company-identified least cost compliance option.

PREFILED TESTIMONY

OF

EARNEST J. WHITE

PETITION OF APPALACHIAN POWER COMPANY FOR APPROVAL OF A RATE ADJUSTMENT CLAUSE, THE E-RAC, FOR COSTS TO COMPLY WITH STATE AND FEDERAL ENVIRONMENTAL REGULATIONS PURSUANT TO §56-585.1 A 5 E OF THE CODE OF VIRGINIA

CASE NO. PUR-2020-00258

Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE STATE CORPORATION COMMISSION ("COMMISSION").

A1. My name is Earnest J. White and I am a Principal Utilities Policy Specialist in the Commission's Division of Public Utility Regulation.

Q2. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A2. The purpose of my testimony is to evaluate the economic analysis submitted by Appalachian Power Company ("APCo" or the "Company") to support its petition for the approval of a rate adjustment clause, designated E-RAC ("Petition"). My testimony focuses on the Company's forecasts of commodity prices, emissions allowance prices, and wholesale power prices contained in Company witness Connie Trecazzi's testimony, and the Company's economic analysis contained in Company witness James Martin's testimony.

Commodity and Market Prices Forecasts

Q3. PLEASE SUMMARIZE THE COMPANY'S MARKET FUNDAMENTALS FORECASTS.

A3. American Electric Power Company ("AEP") provides a long-term, weather-normalized commodity forecast to its subsidiaries, including APCo ("Fundamentals Forecast"). The Company states that this Fundamentals Forecast is based on the Energy Information Agency's ("EIA") 2020 Annual Energy Outlook.[1]

Q4. WHAT IS INCLUDED IN THE FUNDAMENTALS FORECAST?

A4. The Fundamentals Forecast includes projections of future regional power prices, various fuel prices, environmental emission costs, heat rates, capacity values of generation resources, renewable energy subsidy prices, and other values. Additionally, the Company used the Aurora energy market simulation model ("Aurora") to derive forecasts that were not directly provided in the EIA's 2020 Annual Energy Outlook.[2] For example, Aurora was used to develop the energy and capacity prices unique to the PJM[3] AEP Zone, in which APCo operates. The 2020 Fundamentals Forecast is presented in Figure 2 on page 5 of Company witness Trecazzi's Direct Testimony.

Q5. DID THE COMPANY INCLUDE ANY ALTERNATIVE SCENARIOS IN THE FUNDAMENTALS FORECAST?

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[1] Direct Testimony of Connie Trecazzi ("Trecazzi Direct") at 2.
[2] Trecazzi Direct at 3.
[3] PJM Interconnect, L.L.C.

A5. Yes. The Company's Fundamentals Forecast included three scenarios, in addition to its Base Case. Those scenarios are the Lower Band, Higher Band, and the Base Case with Carbon.[4]

Q6. PLEASE BRIEFLY DESCRIBE THE SCENARIOS CONTAINED IN THE FUNDAMENTALS FORECAST.

A6. The Lower and Higher Band scenarios are designed to evaluate the effect of higher or lower demand for electric generation and, consequently, lower demand for fuels to generate electricity.[5] The Lower and Higher Band scenarios vary the price for fossil fuels by one standard deviation above and below the Base Case respectively.[6] The Base Case with Carbon maintains the price assumptions of the Base Case but assume that regulations limiting carbon dioxide emissions, at the federal level, will commence in 2028 and remain in place for the duration of the forecast period.[7]

Q7. DO YOU HAVE ANY COMMENTS ON THE COMPANY'S FUNDAMENTALS FORECAST?

A7. Yes. The Company's Fundamentals Forecast was developed using common industry-accepted sources and modeling software. The forecasts present lower projections than were used in the Company's most recent Integrated Resource Plan ("IRP"); however, since the Company's last IRP, many factors, including the on-going public health emergency related to COVID-19, provide a reasonable explanation for the forecasted decline in

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[4] Trecazzi Direct at 6.
[5] *Id.*
[6] *Id.*
[7] *Id.*

commodities prices.[8] The Fundamentals Forecast was used as an input to the Company's economic analysis conducted by Company witness James Martin.[9]

Economic Analysis

Q8. PLEASE DESCRIBE THE COMPANY'S ECONOMIC ANALYSIS CONSTRUCTED BY COMPANY WITNESS JAMES MARTIN.

A8. Company witness Martin's economic analysis evaluated the costs and benefits of compliance expenditures at APCo's Mountaineer and Amos coal-fired generating plants (together the "Plants") located in West Virginia and used to serve customers in APCo's service territory, including the Company's Virginia jurisdictional customers. The analysis considers three potential investments ranging from $125 million to $250 million. The investment options considered by the Company would upgrade either one or both Plants with either the Coal Combustion Residual ("CCR") improvement alone, or both the CCR and the Effluent Limitation Guideline ("ELG") improvement in lieu of retiring the Plants and purchasing or building replacement capacity.[10] The Company claims such investments will enable the Plants, which provide approximately 4,200 megawatts of nameplate capacity, to continue to operate until 2040. The Company's preferred plan to upgrade both Plants with both the CCR and ELG improvements would invest approximately $250 million. The Company's economic analysis, however, identifies this as the least cost

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[8] *See Commonwealth of Virginia, ex rel. State Corporation Commission In re: Appalachian Power Company's Integrated Resource Plan filing pursuant to Va. Code§ 56-597 et seq.*, Case No. PUR-2019-00058 ("2019 IRP"), Exhibit 12 at 20-24. For reference and comparison, in the Company's 2019 IRP, APCo forecasted on-peak energy market prices to average approximately $51/MWh. In the ERAC proceeding, APCo's forecast of on-peak energy market prices in 2032 is approximately $34/MWh. *See also* Company response to Sierra Club interrogatory No. 1-02 FF. EJW-1.

[9] Trecazzi Direct at 2.

[10] Direct testimony of Company witness James F. Martin ("Martin Direct") at 3.

option, because the plan will delay the need to invest in replacement capacity for 12 years beyond 2028.[11]

Q9. PLEASE DESCRIBE THE OPTIONS CONSIDERED IN THE COMPANY'S ECONOMIC ANALYSIS.

A9. Company witness Martin evaluated the costs and benefits of compliance under three scenarios. Those scenarios assumed the following:[12]

- Case 1 – Assumes the CCR and ELG improvements occur at both Plants, and that the Plants continue to operate through the end of 2040, when the capacity of the Plants is replaced.
- Case 2 – Assumes that expenditures are made for the CCR compliance at the Amos plant and that plant retires at the end of 2028. This case also assumes that both CCR and ELG expenditures are made at the Mountaineer plant and that it operates through the end of 2040.
- Case 3 – Assumes that both Plants receive only the CCR compliance upgrades and the Plants are then retired at the end of 2028, at which time the Company will be required to replace the capacity of both Plants.

Q10. DID THE COMPANY PROVIDE AN ECONOMIC ANALYSIS FOR ANY ADDITIONAL CASES IN THIS PROCEEDING?

A10. Yes. In response to the Hearing Examiner's March 19 ruling on a Motion to Compel submitted by the Office of the Attorney General, Division of Consumer Counsel ("Motion

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[11] Martin Direct at 3.
[12] *Id.*

to Compel"), APCo supplemented its economic analysis with an additional scenario ("Case 4"). Case 4 evaluates the costs and benefits of environmental compliance assuming the retirement dates for Amos 1-3 used in the Company's most recent general rate case, PUR-2020-00015 ("Triennial"). In the Company's most recent Triennial, the Company assumed the retirement dates of 2032 for Amos units 1 and 2 and 2033 for the Amos 3 unit.[13] The Company used the same modeling methodology for all cases presented in this proceeding.

Q11. HAVE YOU REVIEWED THE ECONOMIC ANALYSIS PRESENTED BY THE COMPANY IN THIS PROCEEDING?

A11. Yes.

Q12. CAN YOU SUMMARIZE THE METHODOLOGY USED BY COMPANY WITNESS MARTIN TO EVALUATE THE ECONOMICS OF THE VARIOUS COMPLIANCE SCENARIOS IN THE COMPANY'S PETITION?

A12. Yes. The Company's analysis is driven by three factors. First, the future capital expenditures and operating expenses that will be incurred by the Company, including the CRR and ELG costs, net of the energy revenues received from the extended operation of the Plants. Second, the costs of the replacement capacity if the Plants were retired. Last, the Fundamentals Forecast provided by Company witness Trecazzi.[14]

The Company's analysis consists of three steps. First, the Company prepared a forecast of its customers' peak demand requirements and the necessary reserve above that peak demand required to satisfy the Company's obligations as a member of PJM.

[13] Motion to Compel at 8.

[14] Martin Direct at 7.

Then a forecast was prepared for the future capital and the future fixed and variable operating costs required to upgrade and operate the Plants, as well as, the Company's current generation resources and potential replacement capacity. Third, the Company used the PLEXOS® model ("PLEXOS") to select the optimal resources needed to serve the Company's load with and without the Plants. PLEXOS simulates the energy value of the Plants' generation output over the planning period based on simulated economic dispatch, and the nets that value against the fixed costs of each resource option under the various commodity price scenarios contained in the Fundamentals Forecast.[15]

Q13. DID THE COMPANY PROVIDE THE RESULTS OF ITS ANALYSIS?

A13. Yes. The resulting Net Present Value of the Revenue Requirements ("NPVRR") for Case 1 – Case 4 are summarized and presented below:[16]

[15] Martin Direct at 8.

[16] Martin Schedule 46, Section 2, Statement 1. *See also* Company supplemental response to OAG Interrogatory No. 1-06, Attachment 1. EJW-2.

Scenario	NPVRR ($millions)
Case 1 Amos & Mountaineer CCR & ELG	
Base w/ Carbon	$20,578
Base No Carbon	$18,435
Low	$17,088
Case 2 Amos CCR & Mountaineer CCR & ELG	
Base w/ Carbon	$20,754
Base No Carbon	$18,730
Low	$17,333
Case 3 Amos & Mountaineer CCR Only	
Base w/ Carbon	$20,951
Base No Carbon	$19,057
Low	$17,569
Case 4 Amos 1/2 Retire in 2032 & Amos 3 Retires in 2033	
Base w/ Carbon	$20,696
Base No Carbon	$18,626
Low	$17,269

Figure 1: Economic Analysis Results

Q14. DO YOU HAVE ANY COMMENTS ON THE RESULTS OF THE COMPANY'S ECONOMIC ANALYSIS?

A14. Yes. The Company has presented an analysis of the options it considered to continue to operate the Amos and Mountaineer plants beyond 2028 and, potentially, through 2040 in lieu of retirement of the Plants and replacement of their capacity. The Company considered three scenarios, and a fourth at the direction of the Hearing Examiner in this proceeding. The Company's modeling suggests that the most beneficial course of action for ratepayers would be to invest in CCR and ELG at both Plants, under all the considered commodity assumptions, at an expense of $250 million. If, however, Amos Units 1 and 2 retire in 2032, and Amos Unit 3 retires in 2033, as the Company assumed in its most recent Triennial Proceeding, the projected NPVRR increases by approximately $120,000 under the Base Case with Carbon scenario, over the extended operating life of the Plants. This represents an increase in costs of approximately 0.5% above the Company-identified least cost compliance option. Comparing Case 1, the Company-identified least cost compliance option, to Case 2 – the next best option identified by the Company – the NPVRR increases by approximately 0.85%. The least beneficial compliance option that was identified by the Company, Case 3, increases the lifetime NPVRR by 1.8% above Case 1. This presents a narrow band of outcomes, which makes it difficult for Staff to agree with the Company that it has identified a best and least cost option, given that the ultimate costs will be determined by the realized prices of several inputs forecasted by the Company, as well as general uncertainty in the markets.

Q15. DID STAFF CONDUCT ITS OWN ECONOMIC ANALYSIS?

A15. No. However, Sierra Club witness Rachel Wilson did conduct an independent economic analysis, which she presented in her direct testimony.

Q16. DO YOU HAVE ANY COMMENTS ON THE ECONOMIC ANALYSIS PREPARED BY SIERRA CLUB WITNESS WILSON?

A16. Yes. While all economic analyses are somewhat speculative, Sierra Club witness Wilson's economic analysis presents an alternative analysis of the Company's options for environmental compliance at the Amos and Mountaineer plants.

Q17. DO YOU HAVE ANY COMMENTS ON SIERRA CLUB WITNESS WILSON'S FINDINGS?

A17. Yes. I believe that Sierra Club witness Wilson identifies two potential areas of concern in the Company's economic analysis that may be considered in determining the reasonableness of the economic analysis performed by the Company to comply with environmental regulations and continue to operate the Plants beyond 2028.

Q18. WHAT ARE THOSE ASSUMPTIONS?

A18. Sierra Club witness Wilson identified the energy prices and replacement capacity prices assumed by APCo in its economic analysis. For example, Company witness Trecazzi assumes that on-peak energy prices will average $43 per megawatt-hour ("MWh") through 2050, with prices rising to an annual average of approximately $62/MWh at that time.[17] Observed energy market prices have generally remained historically low or experienced declines in recent years due to relatively flat electric demand, low natural gas prices, plentiful energy in the PJM market, and other factors. Given recent trends in the PJM energy market, this assumption may be inflated. Additionally, Sierra Club witness Wilson identified some discrepancies in the installed costs of potential replacement resources assumed by the Company and what she was able to verify in the EIA database.[18]

Q19. WHAT DO THESE DIFFERENCES IN ASSUMPTIONS MEAN?

A19. The differences demonstrate a range of possible outcomes when conducting economic analyses out into the future. Given that coal-fired plants are marginal in PJM, the

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[17] *See* Attachment EJW-1.

[18] Sierra Club witness Rachel Wilson Direct at 22-24.

differences between these two thorough and detailed economic analyses may suggest that the benefit to ratepayers of upgrading and continuing to operate the Plants may also be marginal and it may be difficult to identify a clear best option for extending the operation of the Plants through 2040 as proposed by the Company.

Q20. DO YOU HAVE ANY FINAL COMMENTS ON THE ECONOMIC ANALYSES PREPARED FOR THIS PROCEEDING?

A20. Yes. Both Company witness Martin and Sierra Club witness Wilson present thorough analyses of the potential economic benefits of the compliance options necessary to continue to operate the Plants. Staff does not take a position on the preferred compliance option identified by the Company in its economic analysis. Nor does Staff take a position on the course of action recommended by Sierra Club witness Wilson. Staff had identified factors that the Commission may consider in evaluating the Company's economic analysis as evidence in support of the Company's preferred plan to upgrade and operate the Amos and Mountaineer plants through 2040. First, the Company's analysis contains information that cannot be verified by other parties in this proceeding. Second, the Company's own analysis suggests that the benefit to ratepayers of its preferred plan, as compared to the other options considered by the Company, is minimal with the difference in NPVRRs for the alternative compliance scenarios ranging from just 0.5% to 1.8% above the Company-identified least cost compliance option. Given that the capital costs of replacement resources identified by the Company could be not verified, the general uncertainty in commodity price forecasts, and the changing economics of the potential replacement generation capacity in the Company's economic analysis, this range may not provide confidence in the projected benefits to ratepayers.

Conclusion

Q21. DO YOU HAVE ANY FINAL COMMENTS ON THE COMPANY'S FINDING THAT THE LEAST COST OPTION IS TO OPERATE THE AMOS AND MOUNTAINEER PLANTS THROUGH 2040?

A21. Yes. Coal plants in general are marginal in the PJM footprint, given the relatively low energy and capacity prices available in the market.[19] It would appear to be inconsistent with market and industry trends to assume that the Amos and Mountaineer Plants will be able to operate economically in the market through 2040. This assumption is central to the Company's analysis and its selection of Case 1 as the least cost compliance option for ratepayers.

Q22. DOES THIS CONCLUDE YOUR TESTIMONY?

A22. Yes.

[19] For example, according to the PJM Independent Market Monitor's 2020 State of the Market report, "...of the 42,249.9 MW of generation that have been, or are planned to be, retired between 2011 and 2024, 32,095.2 MW, or 76 %, are coal-fired steam units."
https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020/2020q1-som-pjm-sec12.pdf

ATTACHMENT EJW-1

PETITION OF APPALACHIAN POWER COMPANY FOR APPROVAL OF A RATE ADJUSTMENT CLAUSE, THE E-RAC, FOR COSTS TO COMPLY WITH STATE AND FEDERAL ENVIRONMENTAL REGULATIONS PURSUANT TO §56-585.1 A 5 E OF THE CODE OF VIRIGNIA
CASE NO. PUR-2020-00258

RESPONSE TO QUESTION NO. 2

SIERRA CLUB'S FIRST SET OF INTERROGATORIES AND

REQUESTS FOR THE PRODUCTION OF DOCUMENTS

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production
of Documents by the SIERRA CLUB
Sierra Club Set 1
To Appalachian Power Company

Interrogatory Sierra Club 1-02:

Please provide all work papers in electronic spreadsheet format with formulas intact, supporting each of the figures, tables, and exhibits accompanying the Company's filing and supporting testimony.

Response Sierra Club 1-02:

Electronic copies of the Company's workpapers are available at https://www.imanageshare.com, and access has been provided to the Sierra Club's counsel. Please note that certain attachments are confidential and provided pursuant to the Hearing Examiner's January 15, 2021 Protective Ruling.

The foregoing response is made by Gary O. Spitznogle, VP Environmental, Tyler H. Ross, Dir Regulatory Acctg Svcs, Brian D. Sherrick, Mng Dir Projects, Jennifer B. Sebastian, Regulatory Analysis & Case Mgr, and James F. Martin, Regulatory Case Mgr, on behalf of Appalachian Power Company.

Power Prices ($/MWh) -Nominal $'s

Year	PJM_AEP On-Peak	PJM_AEP Off-Peak	SPP_Central On-Peak	SPP_Central Off-Peak	SPP_KSMO On-Peak	SPP_KSMO Off-Peak	ERCOT_NORTH On-Peak	ERCOT_NORTH Off-Peak	ERCOT_South On-Peak	ERCOT_South Off-Peak	ERCOT_West On-Peak	ERCOT_West Off-Peak
2021	25.96	19.95	23.20	17.17	23.25	17.17	19.99	15.63	20.05	15.67	19.23	14.91
2022	27.19	20.58	24.28	17.72	24.33	17.72	20.54	16.57	20.56	16.59	19.76	15.82
2023	28.69	21.49	25.91	18.68	25.94	18.68	24.18	18.00	24.20	18.02	23.38	17.23
2024	30.40	22.64	27.92	20.14	27.92	20.12	27.06	19.26	27.09	19.30	26.24	18.47
2025	30.95	24.24	27.44	21.29	27.71	21.29	26.80	20.95	26.88	21.01	25.99	20.14
2026	31.85	25.74	28.96	22.84	29.13	22.79	29.41	23.16	29.53	23.22	28.69	22.32
2027	33.37	27.19	30.77	24.29	30.88	24.20	31.95	24.84	32.08	24.90	31.13	23.98
2028	34.87	28.21	32.58	25.61	32.68	25.50	33.36	26.10	33.57	26.18	32.60	25.24
2029	34.94	28.61	32.52	26.02	32.65	25.93	34.00	26.69	34.21	26.76	33.21	25.80
2030	35.24	28.80	32.77	26.55	32.93	26.48	34.65	26.71	34.91	26.81	33.88	25.82
2031	34.20	28.58	32.28	26.75	32.46	26.68	36.90	27.53	37.22	27.69	36.18	26.67
2032	34.19	29.15	32.52	27.44	32.71	27.40	38.20	28.71	38.48	28.85	37.45	27.82
2033	35.15	30.29	33.55	28.51	33.72	28.45	39.09	29.23	39.48	29.39	38.39	28.32
2034	35.86	31.40	34.48	29.71	34.68	29.69	39.87	30.31	40.34	30.53	39.24	29.43
2035	36.67	32.17	35.20	30.44	35.44	30.45	41.43	30.76	41.92	30.99	40.81	29.89
2036	37.19	32.83	35.77	31.07	35.97	31.04	43.47	31.63	44.08	31.91	42.91	30.76
2037	38.64	34.18	37.31	32.45	37.58	32.53	42.39	32.99	42.89	33.23	41.81	32.09
2038	40.25	35.49	38.94	34.02	39.23	34.20	41.44	34.28	41.91	34.52	40.96	33.40
2039	40.69	36.12	39.53	34.85	39.87	35.08	42.82	35.60	43.30	35.86	42.41	34.73
2040	41.74	37.23	41.03	36.39	41.29	36.52	43.46	36.66	43.89	36.90	42.99	35.76
2041	42.64	38.13	42.23	37.64	42.46	37.76	44.69	37.68	45.24	38.01	44.37	36.86
2042	43.60	39.08	43.36	38.94	43.61	39.09	46.55	39.34	47.19	39.77	46.33	38.60
2043	44.51	40.21	44.04	39.77	44.42	40.08	48.42	40.76	49.17	41.25	48.32	40.08
2044	45.37	41.18	45.15	40.96	45.58	41.34	49.94	42.23	50.54	42.69	49.78	41.53
2045	47.02	42.56	47.17	42.74	47.57	43.11	53.01	44.20	53.58	44.68	52.90	43.55
2046	48.70	44.07	48.98	44.37	49.39	44.74	53.71	45.43	54.30	45.90	53.70	44.79
2047	50.14	45.55	50.42	45.83	50.82	46.22	55.76	47.24	56.35	47.72	55.84	46.64
2048	52.01	47.17	51.94	47.22	52.40	47.67	57.21	49.12	57.60	49.54	57.25	48.52
2049	53.66	48.70	53.90	49.05	54.35	49.48	58.04	50.66	58.45	51.24	58.19	50.25
2050	55.12	50.20	54.80	50.13	55.26	50.56	61.21	53.31	61.50	53.55	61.35	52.73

ATTACHMENT EJW-2

PETITION OF APPALACHIAN POWER COMPANY FOR APPROVAL OF A RATE ADJUSTMENT CLAUSE, THE E-RAC, FOR COSTS TO COMPLY WITH STATE AND FEDERAL ENVIRONMENTAL REGULATIONS PURSUANT TO §56-585.1 A 5 E OF THE CODE OF VIRIGNIA
CASE NO. PUR-2020-00258

MARTIN SCHEDULE 46, SECTION 2, STATEMENT 1

&

SUPPLEMENTAL RESPONSE TO QUESTION NO. 6

OAG'S FIRST SET OF INTERROGATORIES AND

REQUESTS FOR THE PRODUCTION OF DOCUMENTS

Appalachian Power Company

Amos and Mountaineer CCR& ELG Analysis - Summary of NPV Differences by Time Period

2020 EIA Base with Carbon Commodity Price Forecast

		APCO NPV Revenue Requirements ($ Millions)					NPV of 2028 Retirement Net Cost/(Savings) versus Continued Operation Through 2040				
		2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period	2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period
Case 1	Amos + Mountaineer CCR & ELG	5,233	7,251	4,210	3,884	20,578	-		-	-	-
Case 2	Amos CCR + Mountaineer CCR&ELG	5,175	7,681	4,038	3,859	20,754	(37)	430	[illegible]	[illegible]	176
Case 3	Amos + Mountaineer CCR Only	5,167	7,986	3,954	3,844	20,851	[illegible]	735	[illegible]	[illegible]	374

2020 EIA Base without Carbon Commodity Price Forecast

		APCO NPV Revenue Requirements ($ Millions)					NPV of 2028 Retirement Net Cost/(Savings) versus Continued Operation Through 2040				
		2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period	2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period
Case 1	Amos + Mountaineer CCR & ELG	5,215	5,883	3,783	3,554	18,435	-		-	-	-
Case 2	Amos CCR + Mountaineer CCR&ELG	5,167	6,438	3,611	3,514	18,730	[illegible]	555	(171)	[illegible]	295
Case 3	Amos + Mountaineer CCR Only	5,140	6,876	3,539	3,501	19,057	(74)	993	[illegible]	[illegible]	622

2020 EIA Low Band without Carbon Commodity Price Forecast

		APCO NPV Revenue Requirements ($ Millions)					NPV of 2028 Retirement Net Cost/(Savings) versus Continued Operation Through 2040				
		2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period	2021-2027 Period	2028-2039 Period	2040-2050 Period	End-Effects Period	Total Study Period
Case 1	Amos + Mountaineer CCR & ELG	4,918	5,450	3,463	3,357	17,088	-		-	-	-
Case 2	Amos CCR + Mountaineer CCR&ELG	4,867	5,974	3,298	3,154	17,333	(31)	524	[illegible]	(22)	245
Case 3	Amos + Mountaineer CCR Only	4,840	6,294	3,214	3,212	17,565	[illegible]	844	[illegible]	[illegible]	480

APCo Exhibit No. ___
Witness: JFM
Schedule 46, Section 2, Statement 1
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COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production of Documents by the OFFICE OF THE ATTORNEY GENERAL'S DIVISION OF CONSUMER COUNSEL
OAG Set 1
To Appalachian Power Company

Interrogatory OAG 1-006:

Refer to Company witness Martin's testimony at page 4, line 24-26. To determine if the compliance investment makes economic sense for APCo's Virginia customers, re-run the Amos Mountaineer CCR/ELG Economic Analysis using the actual service lives of Units 1-3 at the Amos Plant as is reflected in the Company's current approved depreciation study used for setting rates for APCo's Virginia customers.

Response OAG 1-006:

The Company objects to this request as it requires the creation of new work product, which is beyond the requirements of the Commission's Rules of Practice and Procedure. Without waiving this objection, the Company states as follows.
See the Company's response to OAG 1-005.

Supplemental Response OAG 1-006:

Per the Hearing Examiner's ruling dated March 19, 2021, the Company has prepared a case in which CCR and ELG investments are made at all 3 Amos units, and then Amos 1 and 2 run through the end of 2032 when they retire and Amos 3 runs through the end of 2033, and then it retires. Optimal replacement resources were then brought in through three new PLEXOS runs, one for each of the three fundamental forecast scenarios prepared in the Company's direct case filing. Mountaineer remains as a 2040 retirement in these scenarios, so its information was unchanged from prior scenarios. Note that these dates are not actual service lives of the Amos units. They are the retirement dates used for depreciation rate purposes in the Company's Virginia jurisdiction.
The workpapers comprising this analysis have been provided here. These workpaper files contain both the original workpapers where required to carryforward data from the original cases and new workpapers required for the new scenarios. OAG 1-6 Supplemental Attachment 1 contains the summary annual and cumulative nominal and NPV results for the new scenarios. OAG 1-6 Supplemental Attachment 2 is where the impacts of changing Amos's retirement dates on fixed O&M and capital carrying charges is calculated. New worksheets were created for this new case labeled "AM 2032 2033 MT 2040" with the tab color highlighted in yellow. The "AM 2032-33+MNTR 2040Fixed Costs" tab in Attachment 2 is hard coded into the three PLEXOS output files provided in Confidential Attachment 3 in order to flow those effects through the

Supplemental Response OAG 1-006 cont'd:

analysis into the Summary worksheets in those files. The Summary worksheets in those three files are where the summary costs of service of each case are presented. These Summary sheets are hard coded into OAG 1-6 Supplemental Attachment 1 in the same format as the summaries which were prepared for the nine scenarios in the originally filed Schedule 46, Section 2, Statement 1.

Confidential workpapers including the three PLEXOS output files and a new Capacity Load & Resources (CLR) file was prepared for this case and provided in OAG 1-6 Confidential Supplemental Attachment 3 . Non-Confidential workpapers including data on capacity positions and new resource additions are provided in OAG 1-6 Supplemental Attachment 4.

The foregoing response is made by James F. Martin, Dir Resource Planning Strategy, on behalf of Appalachian Power Company.

Appalachian Power Company
2020 APCo VA Amos 1/2 2032 Amos 3 2033 and Mountaineer 2040 CCR&ELG Expenditure Optimal Plan
EIA Base with Carbon Commodity Pricing

	Utility Costs (Nominal$000)									
	(1) Load Cost - 100% of Load Purchased at PJM Market Energy Price	(2) Fuel Costs - New and Existing Resources	(3) Emission Costs - New and Existing Resources	(4) Amos and MT Fixed O&M and Ongoing Capital Recovery	(5) Variable O&M (new and existing) + Fixed O&M and PPA Costs - New Resources	(6) Levelized Return, Taxes, and Depreciation - New Owned Resources	(7) Existing PPA Contract (Revenue)/Cost	(8) Less: Market Energy Revenue - 100% of Generation sold at PJM Market Energy Price	(9)=(1)thru(7)-(8) GRAND TOTAL Net Utility Costs	NPV (7.27%)
	$000	$000	$000	$000	$000	$000	$000	$000	$000	
2021	753,877	324,586	19,907	111,195	22,475	0	110,368	450,124	892,284	$831,811
2022	787,512	422,108	27,855	172,323	31,292	3,587	106,756	593,393	958,041	1,664,394
2023	827,764	506,140	37,544	181,179	40,837	3,885	104,087	745,398	956,038	2,438,928
2024	874,341	535,284	41,370	196,788	72,653	4,441	98,384	824,826	998,434	3,192,989
2025	907,926	580,705	44,925	200,805	89,542	18,249	98,772	892,081	1,048,842	3,931,434
2026	922,584	625,802	48,537	214,559	94,689	18,623	99,038	941,525	1,082,306	4,641,798
2027	942,920	654,529	50,808	221,946	96,658	13,784	95,753	977,502	1,098,897	5,314,169
2028	1,261,570	563,906	330,182	229,498	86,819	13,784	70,793	1,113,813	1,442,739	6,137,098
2029	1,242,682	489,790	272,214	234,520	79,199	13,784	57,689	944,821	1,445,057	6,905,484
2030	1,245,557	425,471	223,798	241,950	73,721	13,784	34,811	808,766	1,450,327	7,624,408
2031	1,230,486	328,874	160,278	230,499	85,739	13,784	17,050	634,533	1,432,176	8,286,222
2032	1,225,943	273,192	116,372	204,419	136,995	65,785	19,653	532,483	1,509,876	8,936,653
2033	1,258,741	197,253	66,718	172,482	160,704	183,581	19,631	419,343	1,639,767	9,595,167
2034	1,264,191	197,883	66,044	139,087	177,104	180,658	22,059	415,008	1,632,019	10,206,150
2035	1,276,279	187,554	59,883	133,641	194,456	181,296	23,195	409,716	1,646,587	10,780,809
2036	1,300,518	186,570	61,383	127,137	217,162	182,479	23,783	427,423	1,671,610	11,324,663
2037	1,350,165	195,687	66,455	122,501	235,841	188,023	10,880	465,991	1,703,563	11,841,350
2038	1,398,199	214,887	76,272	120,243	254,986	190,555	470	521,805	1,733,808	12,331,571
2039	1,424,207	207,956	77,366	117,543	272,462	191,058	(2,574)	533,022	1,754,995	12,794,153
2040	1,458,824	232,201	87,212	115,348	334,634	316,541	(17,329)	591,824	1,935,611	13,269,764
2041	1,485,055	164,727	38,193	75,682	351,895	361,383	(35,407)	491,801	1,949,647	13,716,358
2042	1,514,470	157,769	36,615	64,828	371,333	361,383	(36,196)	502,252	1,967,950	14,136,592
2043	1,551,162	161,302	37,557	62,007	397,895	375,180	(37,039)	547,006	2,001,027	14,534,931
2044	1,593,069	170,032	39,884	59,907	418,483	388,988	(38,067)	600,184	2,032,112	14,912,042
2045	1,637,934	160,885	37,720	57,395	436,282	388,988	(39,143)	616,391	2,063,666	15,269,053
2046	1,692,966	178,200	41,893	54,117	469,222	402,795	(40,438)	688,466	2,110,238	15,609,380
2047	1,742,520	178,823	41,787	51,186	545,794	416,603	(41,602)	737,271	2,197,762	15,939,801
2048	1,801,085	185,669	43,391	49,243	571,511	416,603	(43,116)	787,701	2,236,685	16,253,283
2049	1,851,482	183,887	43,072	46,559	575,883	416,603	(44,280)	799,311	2,273,884	16,550,380
2050	1,909,640	188,515	43,922	43,834	581,481	416,105	(45,693)	820,166	2,317,647	16,832,672
Net Present Value $000 (2021$)										
Utility NPV 2021-2027	4,539,820	2,703,809	199,000	966,823	320,432	43,125	547,426	4,006,267	5,314,169	
Utility NPV 2028-2039	6,122,060	1,517,027	722,713	881,591	711,613	481,996	139,385	3,096,402	7,479,984	
Utility NPV 2040-2050	3,171,753	348,609	89,498	127,659	858,368	742,993	(71,523)	1,228,839	4,038,519	
NPV of End Effects beyond 2050									3,863,144	
TOTAL Utility Cost, Net NPV (2021$)									20,695,816	

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PART B

Summary of Direct Testimony – Anna L. Clayton

My testimony includes the following findings and conclusions:

1. A total Projected Cost Recovery Factor of $30,791,313 and AFUDC Cost Recovery Factor of $823,000 for the rate year beginning October 1, 2021, and ending September 30, 2022, should be approved.

2. Staff recommends that the Commission direct the Company to incorporate a depreciation rate analysis of its E-RAC investment in its next depreciation study, including net salvage considerations.

PREFILED TESTIMONY
OF
ANNA L. CLAYTON

APPALACHIAN POWER COMPANY
CASE NO. PUR-2020-00258

MAY 7, 2021

Q. PLEASE STATE YOUR NAME AND THE POSITION YOU HOLD WITH THE STATE CORPORATION COMMISSION ("COMMISSION").

A. My name is Anna L. Clayton. I am a Principal Utility Accountant with the Commission's Division of Utility Accounting and Finance.

Q. PLEASE PROVIDE A SUMMARY OF THE CURRENT PETITION.

A. On December 23, 2020, Appalachian Power Company ("APCo" or the "Company") filed a petition ("Petition") with the Commission pursuant to § 56-585.1 A 5 (e) of the Code of Virginia ("Code") for approval of a rate adjustment clause regarding capital investments and operations and maintenance ("O&M") compliance expenses.

In this proceeding, APCo has requested that the Commission approve a rate adjustment clause ("RAC"), designated E-RAC, for the capital investments and O&M compliance expenses for the Amos and Mountaineer plants ("Plants") that are necessary to comply with certain state and federal environmental regulations for the rate year beginning October 1, 2021, and ending September 30, 2022 ("2021 Rate Year").[1] The Company is requesting a

[1] Petition at 5.

Projected Cost Recovery Factor ("Projected Factor") revenue requirement of $30,791,313 and an AFUDC Cost Recovery Factor of $823,000.[2]

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony in this proceeding addresses:

- Staff's review of the rate year revenue requirement and projected costs for the E-RAC.
- Staff's review of the lifetime revenue requirements for the E-RAC.

Revenue Requirement

Q. PLEASE EXPLAIN THE COSTS THE COMPANY IS SEEKING TO RECOVER IN THE E-RAC.

A. Pursuant to Code § 56-585.1 A 5 (e), the Company is eligible to recover projected and actual costs of projects that the Commission finds to be necessary to comply with state or federal environmental laws or regulations applicable to generation facilities used to serve the utility's native load obligations. In this proceeding, the Company has requested to recover the capital investment for the Amos and Mountaineer plants and O&M compliance expenses through the E-RAC. The capital investments included in the Projected Factor are to bring both of the Plants to compliance with the Environmental Protection Agency's newly revised Coal Combustion Residual ("CCR") and Steam Electric Effluent Limitations Guidelines ("ELG") rules. This investment includes projects such as the closure of bottom

[2] The AFUDC Cost Recovery Factor is calculated for the period July 2020 through September 30, 2021. *Id.* at 6.

ash ponds at the Plants, conversion of all steam generating units to dry bottom ash handling systems at the Plants, and installation of bioreactors at the Amos Plant. As shown in Table 1, below, the Company is requesting recovery of $3,122,915 and $2,341,984 for the Amos and Mountaineer projects, respectively.[3] In addition, the Company is requesting recovery of $26,149,415 of O&M compliance expenses.

Table 1

Amos and Mountaineer Projects Revenue Requirement Estimates

	Amos Project	**Mountaineer Project**	**O&M Compliance Expenses**	**Total**
Financing Cost	$2,663,915	$1,411,984	$693,761	$4,769,660
Depreciation Expense	$0	$566,000	$0	$566,000
Rate Year O&M Expense	$0	$0	$9,256,602	$9,256,602
Pre-RAC Deferred Expense	$0	$0	$16,199,052	$16,199,052
AFUDC	$459,000	$364,000	$0	$823,000
Total Revenue Requirement	$3,122,915	$2,341,984	$26,149,415	$31,614,313

Q. HAS STAFF REVIEWED THE COSTS UNDERLYING THE PROJECTED FACTOR?

A. Yes, Staff reviewed the Company's projections and will continue to review the actual costs of the E-RAC as they are incurred. While Staff does not take issue with the Company's

[3] The Company inadvertently included the $566,000 of depreciation expense in the Amos Project in its filing, rather than the Mountaineer Project. Staff's presentation correctly states the two projects' costs.

projections at this time, Staff notes that any difference between these projections and the actual costs incurred will be handled through a future E-RAC True-Up Factor.

Q. HAS STAFF AUDITED THE ACTUAL E-RAC CONSTRUCTION COSTS AND O&M COMPLIANCE COSTS INCURRED THROUGH OCTOBER 31, 2020?

A. Yes. Staff selected a sample from a listing of the Company's actual construction costs for the environmental projects and O&M compliance costs incurred through October 31, 2020 and conducted a detailed review of the sample to verify that the costs are recoverable through Code § 56-585.1 A 5 (e). Based on Staff's audit, the sampled transactions are appropriately recoverable through Code § 56-585.1 A 5 (e).

Q. PLEASE EXPLAIN HOW THE COMPANY PROPOSES TO DEPRECIATE THE CCR/ELG INVESTMENTS.

A. The Company used the estimated useful lives that formed the basis for the depreciation rates approved by the Commission in Case No. PUR-2020-00015 to develop the rates used in this proceeding. The Amos Plant retirement date for Unit 3 is 2033 and the Mountaineer Plant retirement date is 2040. Based on that information, the Company proposes using a 9.52% annual depreciation rate for Amos Plant CCR/ELG investments and a 5.71% annual depreciation rate for Mountaineer Plant CCR/ELG investments. These proposed depreciation rates do not include a component for net salvage.[4] See Table 2 for the Company's proposed rates.

[4] Direct Testimony of Company witness Ross, pages 9 and 10.

Table 2

Company's Proposed CCR/ELG Investment Depreciation Rates

Plant	End of Useful Life	Project	Proposed APCo VA Ratemaking Useful Life	Proposed APCo VA Depreciation Rate
Amos	2033	Dry Ash Handling System	10.5 Years	9.52%
Amos	2033	Wastewater Pond	10.5 Years	9.52%
Amos	2033	Water Treatment System/Ultrafiltration	10.5 Years	9.52%
Mountaineer	2040	Dry Ash Handling System	17.5 Years	5.71%
Mountaineer	2040	Wastewater Pond	17.5 Years	5.71%
Mountaineer	2040	Water Treatment System/Ultrafiltration	17.5 Years	5.71%

Q. DOES STAFF TAKE ISSUE WITH THE COMPANY'S PROPOSED DEPRECIATION RATES?

A. No, Staff does not take issue with the Company's proposed depreciation rates for the CCR/ELG investments to the Amos and Mountaineer Plants at this time. However, Staff does recommend that the Commission direct the Company to incorporate a depreciation rate analysis of its E-RAC investment in its next depreciation study, including net salvage considerations.

Q. PLEASE REVIEW THE CAPITAL STRUCTURE AND COST OF CAPITAL USED TO CALCULATE THE REVENUE REQUIREMENT.

A. As discussed in the testimony of Staff witness LaBrie, Staff is recommending a capital structure and overall weighted cost of capital that differs from what the Company proposed.[5] Staff's recommended overall weighted cost of capital is 7.074%. Incorporating this into Staff's calculation of the Projected Recovery Factor and AFUDC Cost Recovery Factor does not materially change the revenue requirement.

Q. WHAT IS STAFF'S PROPOSED PROJECTED FACTOR REVENUE REQUIREMENT?

A. Staff's total revenue requirement does not differ materially from the Company's as presented in Table 1. Staff calculated individual Amos and Mountaineer Plant revenue requirements as $3,123,704 and $2,341,394, respectively, and the O&M Compliance expense revenue requirement as $26,149,620.[6] As stated above, these do not materially differ from the Company's and for this reason, Staff's recommended revenue requirements do not differ from the Company's.

Lifetime Revenue Requirements

Q. DID THE COMPANY CALCULATE THE ESTIMATED LIFETIME REVENUE REQUIREMENT OF THE E-RAC?

A. Yes, it did. As shown in Table 3 below, the Company estimates the nominal lifetime revenue requirement of the E-RAC, on a Virginia-jurisdictional basis, to be $348,547,166.

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[5] Staff's recommended capital structure can be found in Schedule 1 of Staff witness LaBrie's testimony.

[6] While Staff's overall cost of capital does differ from the Company's slightly, this difference does not materially impact the revenue requirement. Staff's calculation includes capital investment dollars that have immaterial rounding differences from what was presented in the Company's application. In addition, Staff's calculation corrects the June 2022 Mountaineer in-service balance as shown in the Company's response to Staff interrogatory 02-014. See Appendix A to this testimony for that response. These capital investment differences do not materially impact the revenue requirement.

Q. HAS STAFF REVIEWED THE CALCULATIONS UNDERLYING THE LIFETIME REVENUE REQUIREMENT?

A. Yes. While Staff does not take issue with the methodology the Company used to calculate the lifetime revenue requirement of the E-RAC, Staff does have a couple of differences from the Company in its calculation. First, Staff applies the correct tax gross-up factor. The Company inadvertently excluded the Virginia minimum tax from its gross-up factor. Including Virginia minimum tax is correct and consistent with the gross-up factor used by the Company to calculate the rate year revenue requirement. Second, Staff uses its proposed cost of capital percentage of 7.074%. These adjustments to the calculation result in a lifetime revenue requirement of $349,074,452.

Table 3

Staff's Lifetime Revenue Requirement

	Amos Project	Mountaineer Project	Combined O&M Compliance Expenses
Financing Cost	$43,711,372	$26,156,738	$0
Depreciation Expense	$79,901,824	$32,685,698	$0
Total Revenue Requirement	$123,613,196	$58,842,436	$166,618,820

Environmental Justice

Q. HOW DOES THE COMPANY'S PETITION, AND THE PROJECTS, RATES, AND OTHER PROPOSALS CONTAINED THEREIN, ADDRESS ENVIRONMENTAL JUSTICE (AS DEFINED IN CODE § 2.2-234)?

A. In response to a Staff interrogatory, the Company states:

> [T]he projects at issue in this Petition are located in West Virginia, and, if approved, will ensure that all of APCo's customers, including those in Virginia, will have access to reasonably priced reliable sources of energy and capacity for years to come. Moreover, there are no negative environmental impacts as a result of the Projects – to the contrary, they will allow the plants to comply with more stringent environmental regulations.[7]

In addition, Company witness Beam states the following on page 6 of his pre-filed testimony:

> [I]t is the Company's long-standing practice to make decisions that minimize the impacts to the human environment, including environmental justice and fenceline communities as defined in Va. Code § 2.2-235. In deciding to make the compliance investments, the company considered the important role that the Plants play by providing reliable and affordable energy and capacity to its customers in Virginia and West Virginia, as well as the fact that making the compliance investments will protect the groundwater Plants, thus benefitting the surrounding communities.

Q. DOES THE COMPANY'S HAVE AN ENVIRONMENTAL JUSTICE POLICY?

A. No. In response to a Staff interrogatory, the Company states it has not adopted an environmental justice policy. In addition, the Company explained, in Case No. PUR-2020-

[7] The Company's response to Staff Interrogatory 02-011. See in Appendix A of this testimony.

00251, that they had not established a timeline for the development of an environmental justice policy.[8]

Conclusion

Q. PLEASE SUMMARIZE THE FINDINGS AND CONCLUSIONS INCLUDED IN YOUR TESTIMONY.

A. My testimony includes the following findings and conclusions:

1) A total Projected Cost Recovery Factor of $30,791,313 and AFUDC Cost Recovery Factor of $823,000 for the rate year beginning October 1, 2021, and ending September 30, 2022, should be approved.

2) Staff recommends that the Commission direct the Company to incorporate a depreciation rate analysis of its E-RAC investment in its next depreciation study, including net salvage considerations.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

[8] See Appendix A to this testimony for the Company's response to Staff Interrogatories 02-011 and 02-012. *See Petition of Appalachian Power Company, For approval to continue a rate adjustment clause, the EE-RAC, and for approval of new energy efficiency programs pursuant to §§ 56-585.1 A 5 c and 56-596.2 of the Code of Virginia,* Case No. PUR-2020-00251, Doc. Con. Cen. No. 210340041, Pre-filed Testimony of Staff witness Mangalam (March 31, 2021).

Clayton Schedules

Clayton
Schedule 1

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Revenue Requirement - Amounts in $000's
For the Year Beginning October 1, 2021

Line No.	Description	Amos Capital Project	Mountaineer Capital Project	O&M Compliance Expenses	Total
1	Projected Cost Recovery Factor	$ 2,665	$ 1,977	$ 26,150	$ 30,792
2	AFUDC Cost Recovery Factor	$ 459	$ 364	$ -	$ 823
3	Actual Cost True-Up Factor	$ -	$ -	$ -	$ -
4	Total Revenue Requirement	$ 3,124	$ 2,341	$ 26,150	$ 31,615

Clayton
Schedule 2

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Revenue Requirement - Amounts in $000's
For the Year Beginning October 1, 2021

Line No.	Description	Amos Capital Project	Mountaineer Capital Project	O&M Compliance Expenses
1	Average Rate Base	$ 31,101	$ 16,485	$ 8,100
2	Weighted Average Cost of Capital	7.074%	7.074%	7.074%
3	NOI	$ 2,200	$ 1,166	$ 573
	Less Interest Expense on Debt			
4	Total Weighted Average Cost of Debt	2.444%	2.444%	2.444%
5	Average Rate Base	$ 31,101	$ 16,485	$ 8,100
6	Revenue Requirement - Interest Expense on Debt	$ 760	$ 403	$ 198
7	Net Income	$ 1,440	$ 763	$ 375
8	Income Tax Gross-Up Factor	75.61%	75.61%	75.61%
9	Revenue Requirement - Net Income Including Taxes	$ 1,905	$ 1,010	$ 496
10	Revenue Requirement - Financing Costs	$ 2,665	$ 1,412	$ 694
	Operating Expenses			
11	Total Rate Year Expenses	$ -	$ -	$ 9,257
12	Pre-RAC Deferred Expenses			$ 16,199
13	Depreciation Expense		$ 565	
14	Revenue Requirement - Operating Expenses	$ -	$ 565	$ 25,456
15	Revenue Requirement Per Projected Cost Recovery Factor	$ 2,665	$ 1,977	$ 26,150

Clayton
Schedule 3

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Jurisdictional Allocators

Line No.	Description	Non-Virginia Retail	Virginia Retail	Sum
1	Demand	0.529613	0.470387	1.000000
2	Energy	0.541625	0.458375	1.000000
3	Payroll	0.503217	0.496783	1.000000

Clayton
Schedule 4

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Amortization Schedule (in 000's)
For the Year Beginning October 1, 2021

Line No.	Description	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
	Amos AFUDC													
1	Monthly Amortization		$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38
2	Monthly Ending Balance	$ 459	$ 421	$ 383	$ 344	$ 306	$ 268	$ 230	$ 191	$ 153	$ 115	$ 77	$ 38	$ -
	Mountaineer AFUDC													
3	Monthly Amortization		$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30	$ 30
4	Monthly Ending Balance	$ 364	$ 334	$ 303	$ 273	$ 243	$ 212	$ 182	$ 152	$ 121	$ 91	$ 61	$ 30	$ 0
5	O & M Compliance Pre-RAC Expenses													
6	Monthly Amortization		$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350	$ 1,350
7	Monthly Ending Balance	$ 16,199	$ 14,849	$ 13,499	$ 12,149	$ 10,799	$ 9,449	$ 8,100	$ 6,750	$ 5,400	$ 4,050	$ 2,700	$ 1,350	$ -

Clayton
Schedule 5a

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Rate Base Amos (in 000's)
For the Year Beginning October 1, 2021

Line No.	Description	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
1	Capital Expenditures	$ 25,385	$ 27,794	$ 41,499	$ 44,778	$ 50,473	$ 54,490	$ 60,255	$ 68,347	$ 76,285	$ 88,107	$ 96,676	$ 104,224	$ 114,869
2	Accumulated Depreciation													
3	Subtotal	$ 25,385	$ 27,794	$ 41,499	$ 44,778	$ 50,473	$ 54,490	$ 60,255	$ 68,347	$ 76,285	$ 88,107	$ 96,676	$ 104,224	$ 114,869
4	Demand Allocation Factor	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%
5	Subtotal - Virginia Jurisdiction	$ 11,941	$ 13,074	$ 19,520	$ 21,063	$ 23,742	$ 25,632	$ 28,343	$ 32,149	$ 35,884	$ 41,445	$ 45,475	$ 49,026	$ 54,033
6	Deferred Pre-RAC Costs													
7	AFUDC Balance (net of ADIT)	$ 459	$ 421	$ 383	$ 344	$ 306	$ 268	$ 230	$ 191	$ 153	$ 115	$ 77	$ 38	$ -
8	Virginia Jurisdictional Rate Base	$ 12,400	$ 13,495	$ 19,903	$ 21,407	$ 24,048	$ 25,899	$ 28,573	$ 32,341	$ 36,037	$ 41,559	$ 45,551	$ 49,064	$ 54,033
	13 Month Average													$ 31,101

Clayton
Schedule 5b

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Rate Base Mountaineer (in 000's)
For the Year Beginning October 1, 2021

Line No.	Description	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
1	Capital Expenditures	$ 16,497	$ 17,373	$ 18,661	$ 22,854	$ 25,795	$ 31,550	$ 35,240	$ 38,880	$ 42,537	$ 45,837	$ 49,134	$ 52,269	$ 55,300
2	Accumulated Depreciation								$ -	$ -	$ (130)	$ (268)	$ (413)	$ (565)
3	Subtotal	$ 16,497	$ 17,373	$ 18,661	$ 22,854	$ 25,795	$ 31,550	$ 35,240	$ 38,880	$ 42,537	$ 45,707	$ 48,866	$ 51,856	$ 54,735
4	Demand Allocation Factor	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%	47.04%
5	Subtotal - Virginia Jurisdiction	$ 7,760	$ 8,172	$ 8,778	$ 10,750	$ 12,133	$ 14,841	$ 16,576	$ 18,288	$ 20,009	$ 21,500	$ 22,986	$ 24,392	$ 25,747
6	Deferred Pre-RAC Costs													
7	AFUDC Balance (net of ADIT)	364	334	303	273	243	212	182	152	121	91	61	30	0
8	Virginia Jurisdictional Rate Base	8,124	8,506	9,081	11,023	12,376	15,053	16,758	18,440	20,130	21,591	23,047	24,422	25,747
	13 Month Average													16,485
	Inservice Balance													
	Dry Ash Handling System	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,771	$ 27,371	$ 29,040	$ 30,549	$ 32,009

Clayton
Schedule 6a

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
AFUDC Amos (in 000's)

Line No.	Date	Year	Monthly Expenditures	Beginning AFUDC Base	Half Month Current AFUDC	Prior Month AFUDC	AFUDC Base Used in Calc	Debt Rate	Calculated Debt	Equity Rate	Calculated Equity	Total AFUDC	Tax Rate	Revenue Requirement Equity	Total AFUDC Revenue Requirement	APCo Virginia Demand Allocation	Jurs. AFUDC Revenue Requirement
1	7/31/2020	2020	3	0	1	0	1	0.00177671	-	0.00350316	-	-	0.756114378	0	-	0.47039	0
2	8/31/2020	2020	160	3	80	-	82	0.00175489	-	0.00350941	-	-	0.756114378	0	-	0.47039	0
3	9/30/2020	2020	444	162	222	-	384	0.00174635	1.00	0.00346910	1	2	0.756114378	1	2	0.47039	1
4	10/31/2020	2020	1,418	606	709	2	1,317	0.00174720	2.00	0.00348161	5	7	0.756114378	7	9	0.47039	4
5	11/30/2020	2020	1,735	2,026	868	7	2,901	0.00173187	5.00	0.00346142	10	15	0.756114378	13	18	0.47039	8
6	12/31/2020	2020	464	3,769	232	15	4,015	0.00173187	7.00	0.00346142	14	21	0.756114378	19	26	0.47039	12
7	1/31/2021	2021	4,541	4,247	2,271	21	6,539	0.00173187	11.00	0.00326774	21	32	0.756114378	28	39	0.47039	18
8	2/28/2021	2021	3,642	8,810	1,821	32	10,662	0.00173187	18.00	0.00326774	35	53	0.756114378	46	64	0.47039	30
9	3/31/2021	2021	2,519	12,483	1,260	53	13,796	0.00173187	24.00	0.00326774	45	69	0.756114378	60	84	0.47039	40
10	4/30/2021	2021	1,480	15,056	740	69	15,865	0.00173187	27.00	0.00326774	52	79	0.756114378	69	96	0.47039	45
11	5/31/2021	2021	1,803	16,605	902	79	17,585	0.00173187	30.00	0.00326774	57	87	0.756114378	75	105	0.47039	49
12	6/30/2021	2021	1,158	18,487	579	87	19,153	0.00173187	33.00	0.00326774	63	96	0.756114378	83	116	0.47039	55
13	7/31/2021	2021	2,582	19,732	1,291	96	21,119	0.00173187	37.00	0.00326774	69	106	0.756114378	91	128	0.47039	60
14	8/31/2021	2021	1,422	22,410	711	106	23,227	0.00173187	40.00	0.00326774	76	116	0.756114378	101	141	0.47039	66
15	9/30/2021	2021	2,014	23,938	1,007	116	25,061	0.00173187	43.00	0.00326774	82	125	0.756114378	108	151	0.47039	71
16	Totals		25,385						278		530	808					459

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Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
AFUDC Mountaineer (in 000's)

Line No.	Date	Year	Monthly Expenditures	Beginning AFUDC Base	Half Month Current AFUDC	Prior Month AFUDC	AFUDC Base Used in Calc	Debt Rate	Calculated Debt	Equity Rate	Calculated Equity	Total AFUDC	Tax Rate	Revenue Requirement Equity	Total AFUDC Revenue Requirement	APCo Virginia Demand Allocation	Jurs. AFUDC Revenue Requirement
1	7/31/2020	2020	1	0	0	0	-	0.00177671	-	0.00350316	-	-	0.756114378	0	-	0.47039	0
2	8/31/2020	2020	324	1	162	-	163	0.00175489	-	0.00350941	1	1	0.756114378	1	1	0.47039	0
3	9/30/2020	2020	475	325	237	1	563	0.00174635	1.00	0.00346910	2	3	0.756114378	3	4	0.47039	2
4	10/31/2020	2020	1,392	800	696	3	1,499	0.00174720	3.00	0.00348161	5	8	0.756114378	7	10	0.47039	5
5	11/30/2020	2020	1,666	2,195	833	8	3,036	0.00173187	5.00	0.00346142	11	16	0.756114378	15	20	0.47039	9
6	12/31/2020	2020	1,867	3,869	933	16	4,818	0.00173187	8.00	0.00346142	17	25	0.756114378	22	30	0.47039	14
7	1/31/2021	2021	3,827	5,751	1,913	25	7,690	0.00173187	13.00	0.00326774	25	38	0.756114378	33	46	0.47039	22
8	2/28/2021	2021	744	9,603	372	38	10,013	0.00173187	17.00	0.00326774	33	50	0.756114378	44	61	0.47039	29
9	3/31/2021	2021	1,240	10,385	620	50	11,055	0.00173187	19.00	0.00326774	36	55	0.756114378	48	67	0.47039	32
10	4/30/2021	2021	1,473	11,675	737	55	12,467	0.00173187	22.00	0.00326774	41	63	0.756114378	54	76	0.47039	36
11	5/31/2021	2021	457	13,203	228	63	13,495	0.00173187	23.00	0.00326774	44	67	0.756114378	58	81	0.47039	38
12	6/30/2021	2021	353	13,723	177	67	13,967	0.00173187	24.00	0.00326774	46	70	0.756114378	61	85	0.47039	40
13	7/31/2021	2021	1,317	14,143	659	70	14,872	0.00173187	26.00	0.00326774	49	75	0.756114378	65	91	0.47039	43
14	8/31/2021	2021	644	15,531	322	75	15,928	0.00173187	28.00	0.00326774	52	80	0.756114378	69	97	0.47039	46
15	9/30/2021	2021	718	16,250	359	80	16,689	0.00173187	29.00	0.00326774	55	84	0.756114378	73	102	0.47039	48
16	Totals		16,497						218		417	635					364

Clayton
Schedule 7

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Compliance O&M Expenses
For the 10 Months Ended October 31, 2020

Line No.	O&M Account	Ash	CCR	Landfill	Pond	Grand Total
1	4210009			$ 36		$ 36
2	5000000	$ 81,401		$ 15,249		$ 96,650
3	5000001			$ 1,787		$ 1,787
4	5010000	$ 4,303,689	$ 522,088	$ (55,397)	$ 1,935,293	$ 6,705,672
5	5010012	$ (1,565,676)				$ (1,565,676)
6	5010027			$ 5,947,031		$ 5,947,031
7	5020004	$ 829,068				$ 829,068
8	5060000	$ 2,683	$ 32,879			$ 35,562
9	5060025			$ 6,937		$ 6,937
10	5100000	$ 513	$ 498			$ 1,010
11	5110000	$ 80,859	$ 73,916	$ 21,657	$ 81,144	$ 257,576
12	5120000	$ 1,385,293		$ 589,041	$ 153,400	$ 2,127,734
13	5130000	$ 30,857				$ 30,857
14	5140000	$ 2,327		$ 23,348		$ 25,675
15	9200000		$ 132,584	$ 27,155		$ 159,739
16	9210001		$ 2,100	$ 2,878		$ 4,978
17	9230001		$ 1,955,767	$ 17,184		$ 1,972,951
18	9230003			$ 87		$ 87
19	9301000			$ 232		$ 232
20	9310002			$ 407		$ 407
21	**Grand Total**	**$ 5,151,012**	**$ 2,719,831**	**$ 6,597,631**	**$ 2,169,837**	**$ 16,638,311**

Clayton
Schedule 8

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Compliance O&M Expenses
Actuals and Projected

		Total Company			Virginia Jurisdictional Revenue Requirement			
Line No.	Date	Demand Related O&M	Energy Related O&M	Payroll Related O&M	Demand Related	Energy Related	Payroll Related	Expense
1	Jan-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
2	Feb-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
3	Mar-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
4	Apr-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
5	May-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
6	Jun-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
7	Jul-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
8	Aug-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
9	Sep-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
10	Oct-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses
11	Nov-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
12	Dec-20	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
13		$510	$16,890	$2,566	$240	$7,742	$1,275	
14					2020 Total	$9,257		
15	Jan-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
16	Feb-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
17	Mar-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
18	Apr-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
19	May-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
20	Jun-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
21	Jul-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
22	Aug-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
23	Sep-21	$43	$1,407	$ 214	$20	$645	$ 106	Pre-RAC Expenses-Projected
24	Oct-21	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
25	Nov-21	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
26	Dec-21	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
27		$510	$16,890	$2,566	$240	$7,742	$1,275	
28					2021 Total	$9,257		
29	Jan-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
30	Feb-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
31	Mar-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
32	Apr-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
33	May-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
34	Jun-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
35	Jul-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
36	Aug-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
37	Sep-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
38	Oct-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
39	Nov-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
40	Dec-22	$43	$1,407	$ 214	$20	$645	$ 106	Rate Year Projected
41		$510	$16,890	$2,566	$240	$7,742	$1,275	
42					2022 Total	$9,257		

Clayton
Schedule 9

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Tax Gross Up Factor

Line No.	Description	Tax Rates	Percentage of Incremental Gross Revenues
1	Operating Revenues		100%
2	Less: Factoring Expense		0%
3	Income Before Income Taxes and VA Min Tax		100%
4	Less: VA Min Tax (VA Retail -- 1.45% x .483905)		0.70166%
5	Income Before Income Taxes		99.30%
6	Less: State Income Taxes (Line 3 x State Tax Rate)	3.5876%	3.5876%
7	Income Before Federal Income Taxes		95.71%
8	Less: Federal Income Taxes (Line 5 x Federal Tax Rate)	21.00%	20.0993%
9	Operating Income Percentage		75.6114%
10	Gross Revenue Conversion Factor (100% / Line 7)		1.3226

Clayton
Schedule 10

Appalachian Power Company
Case No. PUR-2020-00258
E-RAC
Estimated Yearly Revenue Requirements by Class (in 000s)

Line No.	Year	Total	Residential Service	Small General Service	Medium General Service	General Service	Large Power Service	Sanctuary Worship Service	Outdoor Lighting Service
1	2023	$ 19,987	$ 9,578	$ 820	$ 605	$ 3,131	$ 5,723	$ 48	$ 81
2	2024	$ 28,090	$ 13,461	$ 1,153	$ 850	$ 4,401	$ 8,044	$ 68	$ 114
3	2025	$ 27,266	$ 13,066	$ 1,119	$ 825	$ 4,272	$ 7,808	$ 66	$ 110
4	2026	$ 26,453	$ 12,677	$ 1,085	$ 800	$ 4,145	$ 7,575	$ 64	$ 107
5	2027	$ 25,649	$ 12,292	$ 1,052	$ 776	$ 4,019	$ 7,345	$ 62	$ 104
6	2028	$ 24,855	$ 11,911	$ 1,020	$ 752	$ 3,894	$ 7,117	$ 60	$ 101
7	2029	$ 24,069	$ 11,534	$ 988	$ 728	$ 3,771	$ 6,892	$ 58	$ 97
8	2030	$ 23,287	$ 11,159	$ 955	$ 704	$ 3,649	$ 6,668	$ 57	$ 94
9	2031	$ 22,506	$ 10,785	$ 923	$ 681	$ 3,526	$ 6,445	$ 55	$ 91
10	2032	$ 21,725	$ 10,411	$ 891	$ 657	$ 3,404	$ 6,221	$ 53	$ 88
11	2033	$ 20,944	$ 10,037	$ 859	$ 633	$ 3,281	$ 5,997	$ 51	$ 85
12	2034	$ 12,827	$ 6,147	$ 526	$ 388	$ 2,010	$ 3,673	$ 31	$ 52
13	2035	$ 12,595	$ 6,036	$ 517	$ 381	$ 1,973	$ 3,607	$ 31	$ 51
14	2036	$ 12,363	$ 5,924	$ 507	$ 374	$ 1,937	$ 3,540	$ 30	$ 50
15	2037	$ 12,130	$ 5,813	$ 498	$ 367	$ 1,901	$ 3,474	$ 29	$ 49
16	2038	$ 11,898	$ 5,702	$ 488	$ 360	$ 1,864	$ 3,407	$ 29	$ 48
17	2039	$ 11,666	$ 5,590	$ 479	$ 353	$ 1,828	$ 3,341	$ 28	$ 47
18	2040	$ 10,766	$ 5,159	$ 442	$ 326	$ 1,687	$ 3,083	$ 26	$ 44

Clayton Appendix A

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production
of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 2
To Appalachian Power Company

Interrogatory Staff 2-011:

How does the Company's Petition, and the projects, rates, and other proposals contained therein, address environmental justice, as defined in the § 2.2-234 of the Code of Virginia ("Environmental Justice")?

Response Staff 2-011:

Section 2.2-234 states that "[i]t is the policy of the Commonwealth to promote environmental justice and ensure that it is carried out throughout the Commonwealth, with a focus on environmental justice communities and fenceline communities."
The projects at issue in this Petition are located in West Virginia, and, if approved, will ensure that all of APCo's customers, including those in Virginia, will have access to reasonably priced reliable sources of energy and capacity for years to come.
Moreover, there are no negative environmental impacts as a result of the Projects – to the contrary, they will allow the plants comply with more stringent environmental regulations.

The foregoing response is made by Christian T. Beam, President & COO - Appalachian, on behalf of Appalachian Power Company.

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 2
To Appalachian Power Company

Interrogatory Staff 2-012:

Please provide a copy of the Company's Environmental Justice policy if such a policy has been adopted.

Response Staff 2-012:

A policy has not been adopted.

The foregoing response is made by Christian T. Beam, President & COO - Appalachian, on behalf of Appalachian Power Company.

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production
of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 2
To Appalachian Power Company

Interrogatory Staff 2-014:

Please refer to Schedule 46, Section 3, Statement 5 and the Company's response to Staff Interrogatory 01-003. Please reconcile the in-service balance for the Mountaineer Dry Ash Handling System for June 2022 of $27,370,982 found in the Company's response to Staff Interrogatory 01-003 and the $27,439,000 found in Schedule 46, Section 3, Statement 5.

Response Staff 2-014:

The June 2022 Mountaineer Dry Ash Handling System balance in Schedule 46, Section 3, Statement 5 should be corrected to $27,370,982, matching the Company's response to Staff Interrogatory 01-003.

The foregoing response is made by Tyler H. Ross, Dir Regulatory Acctg Svcs, on behalf of Appalachian Power Company.

PART C

<u>Summary of the Testimony of Turner L. LaBrie</u>

My testimony includes the following finding and recommendation regarding the 2021 Application of Appalachian Power Company ("APCo" or "Company") for the rate adjustment clause for costs to comply with state and federal environmental regulations ("E-RAC"):

- Staff proposes a different balance and cost of long-term debt than the Company and recommends an overall weighted cost of capital of 7.074%.

PREFILED STAFF TESTIMONY
OF
TURNER L. LABRIE

APPALACHIAN POWER COMPANY
CASE NO. PUR-2020-00258

May 7, 2021

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND THE POSITION YOU HOLD WITH THE STATE CORPORATION COMMISSION ("COMMISSION").

A. My name is Turner L. LaBrie. I am a Utility Specialist with the Commission's Division of Utility Accounting and Finance.

Q. PLEASE STATE THE PURPOSE OF YOUR TESTIMONY IN THIS CASE.

A. My testimony addresses the appropriate December 31, 2019 Appalachian Power Company ("APCo" or "Company") capital structure and overall weighted cost of capital for the rate adjustment clause for costs to comply with state and federal environmental regulations ("E-RAC").

Q. PLEASE DESCRIBE THE CAPITAL STRUCTURE AND OVERALL WEIGHTED COST OF CAPITAL REFLECTED IN THE COMPANY'S APPLICATION TO SUPPORT ITS REVENUE REQUIREMENTS UNDER THE E-RAC.

A. As shown in Schedule 46, Section 3, Statement 3 of the Company's Application, the Company is proposing to use an APCo December 31, 2019 end-of-period capital structure and overall weighted cost of capital. For the cost of equity, the Company utilizes the 9.20% return on equity approved by the Commission in Case No. PUR-2020-00015 ("Triennial Review"). Furthermore, the Company utilizes the net amount outstanding and cost of long-term debt approved in the Triennial Review. The Company proposes an overall weighted cost of capital of 7.072%.

Q. DOES STAFF SUPPORT THE CAPITAL STRUCTURE AND OVERALL WEIGHTED COST OF CAPITAL PROPOSED BY THE COMPANY?

A. No. In response to Staff interrogatories, the Company provided an update to its unamortized balance of the loss on reacquired debt.[1] Staff proposes including the updated expenses, which decreases the amount of long-term debt outstanding to $4,031,177,250 and increases the cost of long-term debt from 4.978% to 4.981%.[2] Staff proposes the capital structure found in Schedule 1 and an overall weighted cost of capital of 7.074%.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

[1] See the Company's responses to Staff interrogatories 2-017, 2-018 and 4-026, attached.

[2] A detailed breakdown of Staff's proposed balance and cost of long-term debt can be found attached as Schedule 2.

Exhibit No. _______
Witness: LaBrie
Schedule 1

Appalachian Power Company
Capital Structure and Cost of Capital
December 31, 2019

Component	Amount Outstanding	Weight	Cost Rate	Weighted Cost
Short-Term Debt	$86,057,727	1.038%	2.122% [1]	0.022%
Long-Term Debt	$4,031,177,250	48.639%	4.981%	2.423%
Common Equity	$4,170,633,836	50.322%	9.200%	4.630%
Investment Tax Credits	$0	0.000%	N/A	0.000%
Total Capitalization	$ 8,287,868,813	100.000%		7.074%

1. Cost of Short-Term Debt is equivalent to the Cost of Short-Term Debt approved in Case No. PUR-2020-00015.

Exhibit No __
Witness LaBila
Schedule 2

Appalachian Power Company
Cost of Long-Term Debt
December 31, 2019

SERIES	ISSUE DATE	DUE DATE	PRINCIPAL AMOUNT ISSUED	PREMIUM OR (DISCOUNT) AT ISSUANCE	COMPANY ISSUANCE EXPENSE	NET BALANCE UNAMORTIZED DISCOUNTS	NET BALANCE UNAMORTIZED ISSUANCE EXPENSE	NET BALANCE UNAMORTIZED LOSS ON REACQUIRED DEBT	NET BALANCE UNAMORTIZED HEDGE EXPENSES GAIN(LOSS)	NET PROCEEDS AT ISSUANCE	NET PROCEEDS RATIO	EFFECTIVE COST RATE	FACE AMOUNT CURRENTLY OUTSTANDING	NET AMOUNT OUTSTANDING 12/31/2019	ANNUALIZED COST*
			$	$	$	$	$	$	$	$	%	%	$	$	$
Senior Notes															
3.400%	5/18/2015	6/1/2025	300,000,000	(1,065,000)	2,312,703	(568,000)	1,232,672			296,622,297	98.87	3.534	300,000,000	298,199,328	10,538,701
4.400%	5/8/2014	5/15/2044	300,000,000	(2,082,000)	2,973,178	(1,688,751)	2,410,065			294,944,822	98.31	4.503	300,000,000	295,901,184	13,323,999
4.450%	5/18/2015	6/1/2045	350,000,000	(2,530,500)	97,872,163	(2,136,874)	2,941,397	79,705,749		249,597,337	71.31	6.674	350,000,000	265,215,980	17,700,267
4.600%	3/25/2011	3/30/2021	350,000,000	(978,500)	(8,597,932)	(113,925)	317,590		1,382,662	357,621,432	102.18	4.330	350,000,000	350,951,348	15,194,856
5.800%	9/29/2005	10/1/2035	250,000,000	(1,900,000)	(411,465)	(992,209)	1,219,568			248,511,465	99.40	5.842	250,000,000	247,788,223	14,476,452
5.950%	5/5/2003	5/15/2033	200,000,000	(422,000)	8,730,938	(187,600)	644,400	2,934,538	(494,284)	190,847,062	95.42	6.291	200,000,000	195,539,178	12,300,986
6.375%	4/10/2006	4/1/2036	250,000,000	(757,500)	(3,559,571)	(410,312)	1,228,013		3,155,725	252,802,071	101.12	6.291	250,000,000	251,517,400	15,823,615
6.700%	8/17/2007	8/15/2037	250,000,000	(62,500)	2,348,344	(36,608)	1,376,207			247,589,156	99.04	6.776	250,000,000	248,587,185	16,843,110
7.000%	3/25/2008	4/1/2038	500,000,000	(3,300,000)	9,237,176	(1,998,310)	2,691,157		(2,907,334)	487,462,824	97.49	7.205	500,000,000	492,403,199	35,477,698
3.300%	5/11/2017	6/1/2027	325,000,000	(1,657,500)	2,648,060	(1,219,159)	1,847,626			320,694,440	98.68	3.457	325,000,000	321,833,015	11,125,534
4.500%	3/6/2019	3/1/2049	400,000,000	(2,736,000)	3,588,791	(2,680,000)	4,047,248			393,675,209	98.42	4.588	400,000,000	393,292,752	18,062,240
Subtotal			3,475,000,000							3,340,368,115			3,475,000,000	3,361,228,790	180,887,457
Local Bank Term Loan															
2.965%	6/5/2019	6/5/2022	125,000,000		501,816		404,617			124,498,184	99.60	3.108	125,000,000	124,595,383	3,920,163
Subtotal			125,000,000							124,498,184			125,000,000	124,595,383	3,920,163
Sale/Leaseback of Property															
13.67%	6/7/1996	6/6/2026	2,559,040							2,559,040	100.00	13.670	2,070,347	2,070,347	283,013
Subtotal			2,559,040							2,559,040			2,070,347	2,070,347	283,013
Installment Purchase Contracts															
Mason County WVa-Series L															
2.750%	10/1/2018	10/1/2022	100,000,000		608,622		390,370			99,391,378	99.39	2.912	100,000,000	99,609,630	2,900,925
WV EDA SWDFRRB Mountaineer Project - Series 2008A															
1.630%	1/13/2016	2/1/2036	75,000,000		746,036		294,420	242,246		74,253,964	99.01	1.689	75,000,000	74,463,334	1,257,442
WV EDA SWDFRRB Mountaineer Project - Series 2008B															
1.77%	3/10/2016	2/1/2036	50,275,000		571,091		232,787	160,064		49,703,909	98.86	1.838	50,275,000	49,882,149	918,686
WV EDA PCRRB Amos Project - Series 2010A															
5.375%	5/18/2010	12/1/2038	50,000,000		649,267		428,829			49,350,733	98.70	5.465	50,000,000	49,571,171	2,709,170
Russell County Va-Series K															
4.625%	3/17/2010	11/1/2021	17,500,000		534,225		46,695	37,020		16,965,776	96.95	4.973	17,500,000	17,416,285	868,183
WV EDA PCRRB Amos Project - Series 2011A															
1.700%	9/1/2016	9/1/2020	65,350,000		416,278		62,236			64,933,722	99.36	1.866	65,350,000	65,287,764	1,218,275
WV EDA PCRRB Amos Project - Series 2015A															
2.550%	4/1/2019	4/1/2024	86,000,000		555,367		477,828			85,444,633	99.35	2.689	86,000,000	85,522,172	2,299,603
WV EDA PCRRB Amos Project - Series 2009A															
2.625%	5/15/2018	6/1/2022	54,375,000		788,642		245,794	272,493		53,586,358	98.55	3.008	54,375,000	53,856,713	1,620,196
WV EDA PCRRB Amos Project - Series 2009B															
2.625%	5/15/2018	6/1/2022	50,000,000		734,214		226,020	257,106		49,265,786	98.53	3.013	50,000,000	49,516,874	1,492,022
			548,500,000							542,898,258			548,500,000	545,106,092	15,280,482
Balance/Amortization of Costs Associated with Unrefunded Debt Redemptions														(1,823,362)	403,814
TOTAL LONG-TERM DEBT										4,010,321,597			4,150,570,347	4,031,177,250	200,774,929
Effective Cost of Long-Term Debt															4.981%

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COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 2
To Appalachian Power Company

210510104

Interrogatory Staff 2-017:

In the format required for Schedules 3, 4, and 5 of the Commission's Rate Case Rules and in Excel format, with formulas intact, please provide support for the Company's capital structure and cost of capital shown in Schedule 46, Section 3, Statement 3.

Response Staff 2-017:

Please see Staff 2-017 Attachment 1 for the requested information. At the time of filing, the Company had not adjusted Long Term Debt for the unamortized balance of the loss on reacquired debt associated with unrefunded redemptions. Staff 2-017 Attachment provides support for the Company's capital structure and cost of capital shown in Schedule 46, Section 3, Statement 3. However, the tab "Effective Cost of LTD" also provides the information necessary to calculate the Cost of Capital with the adjustment to Long Term Debt for reacquired debt. See also Staff 2-018 Attachment 1.

The foregoing response is made by Tyler H. Ross, Dir Regulatory Acctg Svcs and Jennifer B. Sebastian, Regulatory Analysis & Case Mgr, on behalf of Appalachian Power Company.

Case No. PUR-2020-00258
Question Staff 2-017
Attachment 1

APPALACHIAN POWER COMPANY - VIRGINIA
VIRGINIA SCC QUARTERLY REVIEW
EFFECTIVE COST OF LONG-TERM DEBT
ACTUAL AS OF DECEMBER 31, 2019

SERIES		ISSUE DATE	DUE DATE	AVERAGE TERM IN YEARS	PRINCIPAL AMOUNT ISSUED	PREMIUM OR (DISCOUNT) AT ISSUANCE	COMPANY ISSUANCE EXPENSE	DISCOUNT IS - NET BALANCE UNAMORTIZED DISCOUNTS	EXP IS + NET BALANCE UNAMORTIZED ISSUANCE EXPENSE	LOSS IS + NET BALANCE UNAMORTIZED LOSS ON REACQUIRED DEBT	GAIN (LOSS) NET BALANCE UNAMORTIZED HEDGE EXPENSES		NET PROCEEDS AT ISSUANCE	NET PROCEEDS RATIO	EFFECTIVE COST RATE	FACE AMOUNT CURRENTLY OUTSTANDING	NET PROCEEDS OUTSTANDING 12/31/2019	ANNUALIZED COST	WEIGHTED COST RATE
					$	$	$	$	$	$	$		$	%	%	$	$	$	%
Senior Notes																			
	3.400%	5/18/2015	6/1/2025	10.03	300,000,000	(1,065,000)	2,312,700	(568,000)	1,232,672	-	-	(a)	298,622,297	98.87	3.534	300,000,000	298,199,328	10,536,701	
	4.400%	5/8/2014	5/15/2044	30.00	300,000,000	(2,082,000)	2,973,178	(1,686,751)	2,410,065	-	-	(b)	294,944,822	98.31	4.503	300,000,000	295,901,184	13,323,980	
	4.450%	5/18/2015	6/1/2045	30.02	350,000,000	(2,530,500)	97,872,163	(2,138,874)	2,941,337	79,705,743	-	(c)	249,597,337	71.31	6.674	350,000,000	265,215,980	17,700,267	
	4.600%	3/25/2011	3/30/2021	10.01	350,000,000	(978,500)	(8,597,932)	(113,925)	317,590	-	1,362,862	(d)	357,621,432	102.18	4.330	350,000,000	350,951,348	15,184,866	
	5.600%	9/29/2005	10/1/2035	29.98	250,000,000	(1,900,000)	(411,465)	(892,209)	1,219,568	-	-	(e)	248,511,465	99.40	5.842	250,000,000	247,788,223	14,478,462	
	5.950%	5/5/2003	5/15/2033	30.01	200,000,000	(422,000)	8,730,938	(187,600)	844,400	2,934,538	(494,284)	(f)	190,847,062	95.42	6.291	200,000,000	195,539,178	12,300,986	
	6.375%	4/10/2008	4/1/2036	29.98	250,000,000	(757,500)	(3,559,571)	(410,312)	1,228,013	-	3,155,725	(g)	252,802,071	101.12	6.291	250,000,000	251,517,400	15,823,815	
	6.700%	8/17/2007	8/15/2037	29.98	250,000,000	(82,500)	2,348,344	(36,606)	1,378,707	-	-	(h)	247,569,156	99.04	6.776	250,000,000	248,567,185	16,843,110	
	7.000%	3/25/2008	4/1/2038	30.00	500,000,000	(3,300,000)	9,237,176	(1,998,315)	2,631,157	-	(2,907,334)	(i)	487,462,824	97.49	7.205	500,000,000	492,403,199	36,477,696	
	3.300%	5/11/2017	6/1/2027	10.05	325,000,000	(1,857,500)	2,648,060	(1,218,159)	1,947,828		-	(j)	320,684,440	98.68	3.457	325,000,000	321,833,015	11,125,534	
	4.500%	3/8/2019	3/1/2049	29.97	400,000,000	(2,736,000)	3,588,791	(2,660,000)	4,047,248		-	(k)	393,675,209	98.42	4.598	400,000,000	393,292,752	18,082,240	
Subtotal					3,475,000,000								3,340,368,115			3,475,000,000	3,361,228,790	180,887,457	
Local Bank Term Loan																			
	2.965%	6/5/2019	6/5/2022	3.00	125,000,000	-	501,816	-	404,617	-	-	(l)	124,498,184	99.60	3.108	125,000,000	124,595,383	3,920,183	
Subtotal					125,000,000								124,498,184			125,000,000	124,595,383	3,920,183	
Sale/Leaseback of Property																			
	13.67%	6/7/1996	6/6/2026	29.98	2,559,040	-	-	-	-	-	-		2,559,040	100.00	13.670	2,070,347	2,070,347	283,013	
Subtotal					2,559,040								2,559,040			2,070,347	2,070,347	283,013	
Installment Purchase Contracts																			
Mason County WVa-Series L																			
	2.750%	10/1/2018	10/1/2022	4.00	100,000,000	-	608,622	-	390,370	-	-	(m)	99,391,378	99.39	2.912	100,000,000	99,609,630	2,900,925	
WV EDA SWDFRRB Mountaineer Project - Series 2008A																			
	1.630%	1/13/2016	2/1/2036	20.05	75,000,000	-	746,036	-	294,420	242,246	-	(n)	74,253,964	99.01	1.689	75,000,000	74,463,334	1,257,442	
WV EDA SWDFRRB Mountaineer Project - Series 2008B																			
	1.77%	3/10/2016	2/1/2036	19.89	50,275,000	-	571,091	-	232,787	180,084	-	(o)	49,703,909	98.86	1.838	50,275,000	49,862,149	916,868	
WV EDA PCRRB Amos Project - Series 2010A																			
	5.375%	5/19/2010	12/1/2038	28.53	50,000,000	-	649,267	-	428,829	-	-	(p)	49,350,733	98.70	5.465	50,000,000	49,571,171	2,709,170	
Russell County Va-Series K																			
	4.625%	3/17/2010	11/1/2021	11.62	17,500,000	-	534,225	-	48,695	37,020	-	(q)	16,965,776	96.95	4.973	17,500,000	17,416,285	866,183	
WV EDA PCRRB Amos Project - Series 2011A																			
	1.700%	9/1/2016	9/1/2020	4.00	65,350,000	-	416,278	-	62,236	-	-	(r)	64,933,722	99.36	1.868	65,350,000	65,287,764	1,218,275	
WV EDA PCRRB Amos Project - Series 2015A																			
	2.550%	4/1/2019	4/1/2024	5.00	86,000,000	-	555,367	-	477,828	-	-	(s)	85,444,633	99.35	2.689	86,000,000	85,522,172	2,299,603	
WV EDA PCRRB Amos Project - Series 2009A																			
	2.625%	5/15/2018	6/1/2022	4.04	54,375,000	-	786,642	-	245,784	272,493	-	(t)	53,588,358	98.55	3.008	54,375,000	53,856,713	1,620,198	
WV EDA PCRRB Amos Project - Series 2009B																			
	2.625%	5/15/2018	6/1/2022	4.04	50,000,000		734,214	-	228,020	257,106	-	(u)	49,265,786	98.53	3.013	50,000,000	49,516,874	1,492,022	
					548,500,000								542,898,258			548,500,000	545,108,092	15,260,482	
TOTAL LONG-TERM DEBT																	$ 4,033,000,812		4.978 As Filed
Unamortized Balance Associated with Unrefunded Debt Redemptions & Amortization of Costs Associated with Unrefunded Debt Redemptions												(v)					(1,823,381,811)	403,814	
TOTAL ADJUSTED LONG-TERM DEBT													4,010,321,597			4,150,570,347	4,031,177,250	200,774,929	4.981 With Reacquired Debt Adjustment

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COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 2
To Appalachian Power Company

Interrogatory Staff 2-018:

Please provide the unamortized balance of the loss on reacquired debt associated with unrefunded debt redemptions as of December 31, 2019 and the annual amortization amount as of December 31, 2019. Include supporting dollar amounts by issue.

Response Staff 2-018:

Please refer to Staff 2 - 018 Attachment 1 for the unamortized balance of the loss on reacquired debt associated with unrefunded debt redemptions as of December 31, 2019 and the annual amortization amount as of December 31, 2019.

The foregoing response is made by Tyler H. Ross, Dir Regulatory Acctg Svcs, and Jennifer B. Sebastian, Regulatory Analysis & Case Mgr, on behalf of Appalachian Power Company.

Series	Bond Interest Rate	Date Issued	Date/Maturity Date	Call Date	2018 Y/E Balance	2019 Amortization	2019 Y/E Balance
			FMB_1890001				
	8 125%	1973-07-01	2003-07-01	1993-11-29	87,648.00	16,434.00	71,214.00
	7 125%	1983-11-08	2024-05-01	2004-05-03	452,616.00	84,865.50	387,750.50
	8 750%	1987-02-01	2017-02-01	1994-03-25			
	9 125%	1989-11-01	2019-11-01	1993-05-01	1,162.00	1,162.00	-
	9 875%	1990-12-01	2020-12-01	1994-03-25	493.00	257.22	235.78
	9 875%	1990-12-01	2020-12-01	1996-03-31	953.00	497.22	455.78
	12.500%	1987-09-01	1997-09-01	1987-03-01			
	18 250%	1982-04-01	1990-04-01	1987-04-01			
	16 250%	1987-09-01	1991-04-01	1987-04-01			
			IPC_1890002				
Series H	5 000%	1998-10-22	2021-11-01	2012-02-13	79,135.00	27,930.00	51,205.00
Series D	5 450%	1993-09-01	2019-06-01	2004-01-12	16,802.00	16,802.00	-
Series K	6 050%	1999-12-01	2024-12-01	2013-02-13	205,722.00	34,769.88	170,952.12
Series J	6 600%	1992-09-15	2022-10-01	2003-06-07	167,469.00	44,658.36	122,810.64
Series B	6 750%	1977-10-01	2007-10-01	1993-10-17	3,507.00	3,507.00	-
Series I	6 850%	1992-05-15	2022-06-01	2003-06-07	92,578.00	24,687.48	67,890.52
Series G	7 400%	1990-01-01	2014-01-01	2000-01-13	155,614.00	26,301.00	129,313.00
Series B	7 500%	1979-06-01	2009-06-01	1992-12-01	81,711.00	21,789.60	59,921.40
Series A	7 750%	1978-07-01	2008-07-01	1992-08-01	48,982.00	13,061.88	35,920.12
Series H	7 875%	1990-10-15	2013-11-01	2003-06-07	13,027.00	3,473.88	9,553.12
Series C	11 000%	1981-02-01	1993-02-01	1991-02-01	2,722.00	725.88	1,996.12
Series C	11 500%	1981-02-01	2001-02-01	1991-02-01	13,589.00	3,623.76	9,965.24
Series E	Auction Mode	2003-11-25	2019-05-01	2008-09-18	6,458.43	6,458.43	-
Series F	Auction Mode	2003-12-11	2019-06-01	2008-09-18	27,782.00	27,782.00	-
Series 2007A	Auction Mode	2007-05-23	2037-05-01	2008-06-06	483,082.91	28,278.00	454,804.91
Series 2006A	Auction Mode	2006-02-14	2036-02-01	2008-06-10	286,122.00	16,748.64	269,373.36

Annual Amortization	403,813.73	
Unamortized Balance of the Loss on Reacquired Debt		1,823,361.61

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COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
APPLICATION OF
APPALACHIAN POWER COMPANY
SCC CASE NO. PUR-2020-00258
Interrogatories and Requests for the Production
of Documents by the STAFF OF THE STATE CORPORATION COMMISSION
Staff Set 4
To Appalachian Power Company

Interrogatory Staff 4-026:

Please explain the difference between the December 31, 2019 $1,823,361 unamortized balance of the loss on reacquired debt that was supplied by the Company in response to Staff Interrogatory 2-018 and the $3,388,520 unamortized balance of the loss on reacquired debt included in the capital structure approved in Case No. PUR-2020-00015.

Response Staff 4-026:

The difference is attributed to an Excel Formula error in what was supplied in Case No. PUR-2020-00015. The correct number is $1,823,361, as shown on Staff 2-018 Attachment 1.

The foregoing response is made by Tyler H. Ross, Dir Regulatory Acctg Svcs, on behalf of Appalachian Power Company.

PART D

Summary of the Testimony of Tyler W. Lohmeyer

My testimony includes the following findings and recommendations:

1. The Company has proposed to allocate the E-RAC costs using the same allocation methodology as is used in its Dresden G-RAC. Staff is not opposed to this methodology as it is consistent with previous Commission approval involving environmental RAC cost recovery.

2. The proposed E-RAC would cost a residential customer using 1,000 kWh per month about $2.50, which is an increase of about 2.37% on the total bill of such customers as of April 1, 2021.

3. Should the Commission approve a revenue requirement that is different from the Company's requested revenue requirement, the Staff would recommend that the proposed E-RAC rates be revised consistent with the allocation and rate design methodologies proposed herein.

PREFILED TESTIMONY
OF
TYLER W. LOHMEYER

PETITION OF APPALACHIAN POWER COMPANY FOR APPROVAL OF THE E-RAC

CASE NO. PUR-2020-00258

Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE VIRGINIA STATE CORPORATION COMMISSION ("COMMISSION").

A1. My name is Tyler W. Lohmeyer. I am an Assistant Utilities Analyst in the Commission's Division of Public Utility Regulation.

Q2. WHAT ARE YOUR PRESENT RESPONSIBILITIES?

A2. My duties as an Assistant Utilities Analyst include reviewing utility rate increase and certificate applications regarding cost of service, rate design, and terms and conditions of service. I am also responsible for presenting testimony as a Staff witness and making alternate proposals to the Commission when appropriate.

Q3. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A3. My testimony addresses the petition ("Petition") of Appalachian Power Company ("APCo" or "Company") for approval of an environmental rate adjustment clause ("E-RAC") pursuant to § 56-585.1 A 5 e of the Code of Virginia ("Code"). The Company is proposing the E-RAC to recover projected costs to comply with state and federal environmental laws and regulations applicable to generation facilities used to serve the Company's load obligations.[1] My testimony will describe the Company's proposed revenue allocation methodology and rate design. My testimony will also discuss the impact of the proposed E-RAC on the bill of a residential customer using 1,000 kilowatt-hours ("kWh") per month.

Q4. PLEASE PROVIDE A BRIEF SUMMARY OF THE COMPANY'S PETITION.

A4. On December 23, 2020, APCo filed a Petition with the Commission seeking approval of an E-RAC in order to recover on a timely basis approximately $31.614 million from its Virginia retail customers to comply with state and federal environmental laws and regulations.[2] The costs requested for recovery are for certain environmental projects ("Projects") related to the installation and retrofitting of certain coal ash ponds at the Company's Amos and Mountaineer Plants ("Plants"), as well as actual operating and maintenance ("O&M") costs incurred in January through October 2020 and forecasted O&M costs through September 2022 related to compliance with State Solid Waste regulation, the National Pollution Discharge Elimination System, and provisions of the Clean Water Act at the Plants.[3] APCo proposes a rate year period of October 1, 2021, through September 30, 2022 ("Rate Year").[4]

On January 14, 2021, the Commission issued an Order for Notice and Hearing ("Order"). In its Order, the Commission scheduled a public hearing on the

[1] Petition at 1.
[2] *Id.* at 5.
[3] *Id.* at 2.
[4] *Id.* at 5.

Petition to be convened on June 23, 2021. The Commission directed that the Staff investigate the Petition and file its testimony and exhibits concerning the Petition on or before May 7, 2021. The Order also permitted Notices of Participation to be filed by March 12, 2021. Notices of Participation were filed by the Old Dominion Committee for Fair Utility Rates, Sierra Club, Steel Dynamics, Inc., and the Office of the Attorney General's Division of Consumer Counsel.

Q5. PLEASE DESCRIBE THE ENVIRONMENTAL REGULATIONS ASSOCIATED WITH THE PROPOSED E-RAC.

A5. The Company is seeking to recover costs associated with compliance for two rules established and updated by the United States Environmental Protection Agency ("EPA"). Recent revisions to EPA's 2015 rule regulating the disposal of coal combustion residuals ("CCR Rule"), which includes fly ash, bottom ash, and gypsum, require that unlined CCR storage ponds must cease operations and initiate closure by April 11, 2021..[5] The EPA can extend the compliance date for the Plants to as late as October 15, 2023.[6] Recent revisions to the Steam Electric Effluent Limitations Guidelines ("ELG Rule") establish discharge limits on flue gas desulfurization wastewater, fly ash and bottom ash transport water, and flue gas mercury control wastewater, that must be achieved as soon as possible between October 13, 2021, and December 31, 2025, based on the renewal of existing wastewater discharge permits for the facility.[7]

[5] *Id.* at 3.
[6] *Id.*
[7] *Id.* at 4.

Q6. PLEASE DESCRIBE THE PROJECTS ASSOCIATED WITH THE E-RAC COST RECOVERY.

A6. The proposed E-RAC would recover costs from capital projects at the Company's Amos and Mountaineer Plants ("Amos Project" and "Mountaineer Project," respectively) that are necessary to comply with the revisions made to the CCR and ELG rules.[8] To meet the CCR Rule, the Company's Amos Project includes removal of coal ash from the existing coal ash ponds, improvements to the natural drainage and ponds, construction of a new Lined Wastewater pond, and installing a chemical treatment system for non-CCR wastewater streams.[9] To meet the ELG Rule, the Company's Amos Project includes modifications to the bottom ash handling systems including installation of submerged grind conveyor systems, installation of two new ash bunkers, installation of economizer ash handling systems, and installation of a new Flue Gas Desulfurization (FGD) Biological Treatment System with Ultrafiltration.[10]

To meet the CCR Rule, the Company's Mountaineer Project will require removal of coal ash from the east and west Bottom Ash ponds, retrofitting on-site ponds, and installing a chemical treatment system for non-CCR wastewater streams and ground water remediation..[11] To meet the ELG Rule, the Company's Mountaineer Project includes modifications to the bottom ash handling system and installation of a submerged grind conveyor system, a new ash bunker, and

[8] Petition at 4.
[9] *Id.*
[10] *Id.*
[11] *Id.*

retrofitting a new Ultrafiltration system onto the existing FGD Biological Treatment System.[12]

The Company states in its Petition that it explored multiple alternative compliance strategies but determined that the Projects proposed were the most cost-effective means of compliance..[13] Staff witness White addresses the appropriateness of these projects as a means of compliance in his direct testimony.

Q7. PLEASE DESCRIBE THE COMPANY'S PROPOSED ALLOCATION OF COSTS TO ITS VIRGINIA JURISDICTION FOR THE E-RAC.

A7. According to Company witness Sebastian, the Company's proposed methodology for allocating the revenue requirement among Virginia jurisdictional customers is consistent with the Company's methodology used for the Dresden G-RAC ("G-RAC").[14] The Company states that demand-related costs were allocated to the Virginia jurisdiction using a twelve coincident peak allocation methodology for the year ended December 31, 2019, and the energy-related costs were allocated to the Virginia jurisdiction utilizing actual energy usage for the year ended December 31, 2019..[15] According to the Company, all of the rate base components were allocated based on demand, as well as, certain compliance O&M expenses and depreciation expense that do not vary with the level of energy production.[16] The Company

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[12] *Id.* at 4-5.
[13] *Id.* at 5.
[14] *See, Petition of Appalachian Power Company For revision of a rate adjustment clause pursuant to § 56-585.1 A 6 of the Code of Virginia with respect to the Dresden Generating Plant,* Case No. PUR-2019-00038, Doc. Con. Cen. No. 200230239, Final Order (Feb. 25, 2020).
[15] Direct Testimony of Company witness Jennifer B. Sebastian ("Sebastian Direct") at 7.
[16] *Id.*

indicated that compliance O&M expenses that vary with energy production were allocated on an energy basis.[17]

Q8. PLEASE DESCRIBE THE COMPANY'S PROPOSED METHODOLOGY FOR ALLOCATING THE JURISDICTIONAL REVENUE REQUIREMENT AMONG THE RATE CLASSES.

A8. Company witness Sebastian states that the class cost allocation methodology used by the Company is also consistent with the method approved in the Company's prior G-RAC proceeding.[18] The Company states that the class demand allocation factors were developed utilizing a six coincident peak methodology based upon a growth adjusted 2019 calendar year, and the energy allocation factors were developed using growth adjusted 2019 calendar year usage.[19]

Q9. PLEASE DESCRIBE HOW THE COMPANY DESIGNED THE PROPOSED RATES FOR THE RATE CLASSES.

A9. In general, the Company designed the proposed rates for each class by dividing each class's allocated revenue requirement by the forecasted Rate Year billing determinants from October 1, 2021, through September 30, 2022..[20] The proposed adjustment clause rates are designed to include demand and energy charges for those customers who are currently served under schedules that have demand and energy charges.

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[17] *Id.*
[18] *Id.*
[19] *Id.* at 7-8.
[20] Sebastian Direct, Schedule 46, Section 13, Statement 6, Rate Design Billing Determinants.

Q10. DOES THE STAFF HAVE ANY COMMENTS REGARDING THE COMPANY'S PROPOSED CLASS COST ALLOCATION METHODOLOGY AND RATE DESIGN IN THIS CASE?

A10. Yes. The Staff does not oppose the Company's proposed class cost allocation methodology and rate design for the purposes of this case. The Company's proposed methodology in this case is consistent with the methodology used in the Company's G-RAC. Staff further notes that the Commission has previously approved a similar environmental RAC for Virginia Electric and Power Company ("Dominion").[21] In the Dominion case, the Commission approved a cost allocation methodology consistent with how Dominion allocates generation plant. The Staff believes that this further supports the class cost allocation methodology proposed by APCo in this case.

Q11. WHAT IMPACT WILL THE PROPOSED E-RAC RATES HAVE ON A TYPICAL RESIDENTIAL CUSTOMER BILL?

A11. Company witness Sebastian's direct testimony, Schedule 2, details bill increases that would be produced by the proposed E-RAC for the various rate classes. For a residential customer using 1,000 kWh per month, the proposed E-RAC would result in an increase of $2.50 per month.[22] As of April 1, 2021, the Company had several other RAC proceedings pending before the Commission. The cumulative bill

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[21] *See, Petition of Virginia Electric and Power Company For approval of a rate adjustment clause, designated Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia*, Case No. PUR-2018-00195, S.C.C. Ann. Rpt. 328, Final Order (Aug. 5, 2019) at Footnote 47.

[22] Sebastian Direct at 8.

impact for a residential customer using 1,000 kWh that would result from all five pending RACs is provided below:

April 1, 2021 Total Bill based on 1,000 kWh:			$ 105.58
Increase effective 7/1/2021	**Current**	**Proposed**	**Difference**
Case No. PUR-2021-00018 – T-RAC	$ 20.03	$ 31.55	$ 11.52
Case No. PUR-2020-00251 – EE-RAC	$ 0.80	$ 1.19	$ 0.39
Increase effective 8/1/2021			
Case No. PUR-2020-00252 – DR-RAC	$ -	$ 0.23	$ 0.23
Increase effective 10/1/2021			
Case No. PUR-2020-00258 – E-RAC	**$ -**	**$ 2.50**	**$ 2.50**
Increase effective 12/1/2021			
Case No. PUR-2020-00259 – BC-RAC	$ 0.54	$ 2.10	$ 0.54
Rider Increase Subtotal:	$ 21.37	$ 36.57	$ 15.18
		Total Bill:	$ 120.76

Q12. DOES THE STAFF HAVE ANY ADDITIONAL COMMENTS REGARDING THE COMPANY'S PROPOSED RATES FOR THE E-RAC?

A12. Yes. Should the Commission approve a revenue requirement that differs from the Company's requested revenue requirement, the Staff would recommend that the proposed E-RAC rates be revised consistent with the allocation and rate design methodologies proposed herein.

Q13. DOES THIS CONCLUDE YOUR TESTIMONY?

A13. Yes.