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Case Number (if already assigned)	PUR-2021-00236
Case Name (if known)	Petition of Appalachian Power Company for approval of a rate adjustment clause, the EE-RAC, and for approval of a new energy efficiency program
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21113000

November 30, 2021

By Electronic Filing

Hon. Bernard J. Logan, Clerk
State Corporation Commission
Document Control Center
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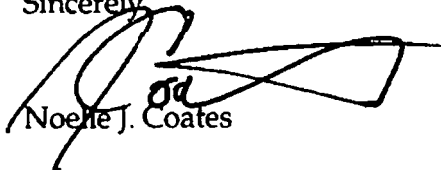
**Re: Petition of Appalachian Power Company
for approval to continue a rate adjustment clause,
the EE-RAC, and for approval of a new energy
efficiency program pursuant to §§ 56-585.1 A 5 c
and 56-596.2 of the Code of Virginia
Case No. PUR-2021-00236**

Dear Mr. Logan:

Attached for filing in the above-referenced case is the Petition of Appalachian Power Company for approval to continue a rate adjustment clause, the EE-RAC, and for approval of a new energy efficiency program pursuant to §§ 56-585.1 A 5 c and 56-596.2 of the Code of Virginia. Please note that the Company is requesting in the Petition a waiver of the Commission's Rate Case Rules that would permit it to file one hard copy of certain confidential and/or voluminous materials, as well as electronic copies of these documents on three compact disks, which are being filed simultaneously by hand with the Commission under separate cover. The Company has also made this information available to Staff.

The Company is also simultaneously filing under separate cover a Motion for Protective Ruling.

Sincerely,



Noelle J. Coates

Enclosures

cc: William H. Chambliss, Esq.
C. Meade Browder, Jr., Esq.

**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION**

PETITION OF

APPALACHIAN POWER COMPANY

Case No. PUR-2021-00236

**for approval to continue a rate adjustment clause,
the EE-RAC, and for approval of a new energy
efficiency program pursuant to §§ 56-585.1 A 5 c
and 56-596.2 of the Code of Virginia**

PETITION

PUBLIC VERSION

November 30, 2021

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**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION**

PETITION OF

APPALACHIAN POWER COMPANY

Case No. PUR-2021-00236

**for approval to continue a rate adjustment clause, the EE-RAC,
and for approval of a new energy efficiency program
pursuant to §§ 56-585.1 A 5 c and 56-596.2 of the Code of Virginia**

INDEX

PETITION

DIRECT TESTIMONY AND EXHIBITS:

FRED D. NICHOLS II

- Schedule 1 – Portfolio Overview**
- Schedule 2 – Cost Cap Summary**
- Schedule 3 – (CONFIDENTIAL) Contract Fixed and Variable Costs**
- Schedule 4 – (CONFIDENTIAL) Quality Control Processes**
- Schedule 5 - EE Stakeholder Invitees and Participants**

ZACHARY L. BACON

- Schedule 1 – True-Up Factor**

KEVIN C. BROWN

- Schedule 1 – Proposed EE Program Templates**

DAVID S. DIEBEL

- Schedule 1 – 2023-2025 C&I Custom Pilot Program EM&V Plan**
- Schedule 2 – Total Annual Energy Savings, Bill Savings, and Avoided Carbon Emissions**

JACLYN N. COST

- Schedule 1 – Proposed Tariff**
- Schedule 2 – Typical Bills**

JASON A. CASH

- Schedule 1 – Projected VVO Costs and Revenue Requirement**

RATE CASE SCHEDULES 3, 4 & 8, 5, 46

- 3: Capital Structure and Cost of Capital - Per Books and Average - Jason A. Cash**
- 4 & 8: Capital Structure and Cost of Capital – Jason A. Cash**
- 5: Short Term Debt– Jason A. Cash**
- 46A: Schedule of Projected Costs – Zachary L. Bacon**
- 46B: (CONFIDENTIAL) EE Cost Projection Support - Zachary L. Bacon**
- 46C: Annual Revenue Requirement Zachary L. Bacon**
- 46N: Calculation of Rider Rates -- Jaclyn Cost**

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

PETITION OF

APPALACHIAN POWER COMPANY

**for approval to continue a rate adjustment clause,
the EE-RAC, and for approval of a new
energy efficiency program
pursuant to §§ 56-585.1 A 5 c and 56-596.2
of the Code of Virginia**

Case No. PUR-2021-00236

PETITION AND REQUEST FOR WAIVER

Appalachian Power Company ("Appalachian" or the "Company"), by counsel, pursuant to Ordering Paragraph (4) of the Commission's Final Order in Case No. PUR-2020-00251¹ and Sections 56-585.1 A 5 c and 56-596.2 of the Code of Virginia (the "EE-RAC Statutes") respectfully petitions for the State Corporation Commission's ("Commission") approval of an increase of approximately \$2.8 million in the revenue requirement that it recovers through its existing rate adjustment clause (the "EE-RAC") related to the costs of its existing portfolio of energy efficiency and demand response programs (the "EE Portfolio"), and to request the Commission's approval of one new program. In support of this Petition, the Company respectfully states as follows.

I. BACKGROUND

Appalachian is a Virginia public service corporation serving approximately 532,000 customers in Virginia and maintaining an office at 1051 East Cary Street, Suite 1100, Richmond, Virginia 23219. The Company is an incumbent electric utility as defined in Section 56-576 of the Virginia Electric

¹ Order Approving Rate Adjustment Clause, *Petition of Appalachian Power Company for revision of 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. 210730134 (July 29, 2021) ("2021 EE-RAC Order").

Utility Regulation Act. The contact information for Appalachian's attorneys is stated at the end of the Petition.

The following witnesses testify in support of the Petition:

- **Fred D. Nichols II**, Manager of Energy Efficiency and Alternative Energy Initiatives for Appalachian. Mr. Nichols supports the request for approval of one new pilot program, the Commercial & Industrial ("C&I") Custom Pilot Program; discusses how the Company used the stakeholder process to select that Program; and describes how the Company incorporated Environmental Justice community leaders into the stakeholder process. Mr. Nichols also provides an update on the Company's progress toward the goals outlined in the Grid Transformation and Security Act as well as Va. Code § 56-596.2; and he describes the controls and procedures the Company undertakes to ensure energy efficiency programs are functioning correctly.
- **Zachary L. Bacon**, Manager of Energy Efficiency and Alternative Energy Initiatives for Appalachian. Mr. Bacon provides an update on the Company's current EE Portfolio, which were approved in Case No. PUR-2017-00126 (the "2018 EE-RAC Order") and Case No. PUR-2019-00122 (the "2020 EE-RAC Order"). Mr. Bacon also provides cost projections for the Rate Year (September 1, 2022 through August 31, 2023) for the approved and proposed EE programs; supports the Company's revenue requirement for the Rate Year; and describes the accounting for the incremental costs associated with the proposed C&I Custom Pilot Program.
- **Kevin C. Brown**, Energy Efficiency and Consumer Programs Coordinator Senior for Appalachian. Mr. Brown supports the Company's petition for approval of the proposed C&I Custom Pilot Program. Mr. Brown also provides an update on four of the programs approved in the 2018 EE-RAC Order and two of the programs approved in the 2020 EE-RAC Order. He provides an update of customers exempted from participation in the EE Portfolio.
- **David S. Diebel**, Principal at ADM Associates, Inc. Mr. Diebel supports the Company's petition for approval of the C&I Custom Pilot Program; discusses how the Company plans to comply with the "Rules Governing the Evaluation, Measurement and Verification of the Effects of Utility-Sponsored Demand-Side Management Programs" defined in 20 VAC 5-318-10, *et seq.*; discusses the Company's most recent Evaluation, Measurement and Verification ("EM&V") reports; and presents the Company's estimate of Total Annual Energy Savings – cumulative persistent energy savings for previous, existing, and proposed demand-side management programs, including customers who have elected to opt out of the Company's demand-side management programs – as well as the Company's estimates of related carbon emissions reductions and customer bill savings.
- **Jaclyn N. Cost**, Regulatory Consultant Senior, AEPSC. Ms. Cost supports the computation of the Company's annual revenue requirement and proposed rates under the EE-RAC, and presents the resulting rate impacts on customers; and

- **Jason A. Cash**, Director of Regulatory Accounting Services for American Electric Power Service Corporation (“AEPSC”). Mr. Cash provides an overview of costs that will be incurred through the Volt Var Optimization (“VVO”) Program, which was approved in the 2021 EE-RAC Order, and which will be included in the EE-RAC; and describe the required accounting for those costs.

The EE-RAC Statutes allow utilities to request the Commission’s approval to recover, through a rate adjustment clause, the “[p]rojected and actual costs for the utility to design, implement, and operate energy efficiency programs, including a margin to be recovered on operating expenses,” and provides that the “Commission shall only approve such a petition if it finds that the program is in the public interest.”

The Commission first approved the Company’s request to implement the EE-RAC in 2015, along with a portfolio of energy efficiency programs.² In 2018, the Commission approved five new programs (Residential eScore™ Program (currently known as the Home Performance Program); Residential Bring Your Own Thermostat (“BYOT”) Program; C&I Lighting Program; C&I Standard Program; and Small Business Direct Install (“SBDI”) Program) and the extension of one program, the Residential Appliance Recycling Program.³ In 2020, the Commission approved three additional EE programs: the Residential Low Income Single Family, the Residential Low Income Multi-Family, and the Residential ENERGY STAR® Manufactured Homes programs.⁴ In the 2021 EE-RAC Order, the

² Final Order at Ordering Paragraph 2, *Petition of Appalachian Power Company for approval to implement a portfolio of energy efficiency programs and for approval of a rate adjustment clause pursuant to § 56-585.1 A 5 c of the Code of Virginia*, Case No. PUE-2014-00039, 2015 S.C.C. Ann. Rep. 215 (June 24, 2015). In 2017, the Commission authorized Appalachian to continue to implement the EE-RAC with no change to the annual revenue requirement or to the portfolio of programs. Final Order, *Petition of Appalachian Power Company for approval to continue a rate adjustment clause, the EE-RAC, pursuant to § 56-585.1 A 5 c of the Code of Virginia*, Case No. PUE-2016-00089, Doc. Con. Cen. No. 170530280 (May 11, 2017).

³ Final Order, *Petition of Appalachian Power Company for approval of a rate adjustment clause, the EE-RAC, pursuant to § 56-585.1 A 5 c of the Code of Virginia and for approval of new energy efficiency programs*, Case No. PUR-2017-00126, Doc. Con. Cen. No. 180540050 (May 16, 2018) (“2018 EE-RAC Order”).

⁴ Order Approving Rate Adjustment Clause, *Petition of Appalachian Power Company for approval to continue 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-2019-00122, 2020 S.C.C. Ann. Rep. 300 (May 21, 2020).

Commission authorized the Company to implement the Residential Home Energy Report Program; the Residential Efficient Products Program; the Residential Energy Efficiency Kit Program; the Residential Home Performance Program; the Business Energy Solutions Program; and the VVO Pilot Program, and also granted extensions of the Residential BYOT Program and SBDI Program.

A. Status of C&I Programs

As Company witness Brown testifies, the C&I programs continue to experience significant interest and participation. Through September 2021, approximately 1,500 C&I projects were completed and the Company has developed a strong trade ally network of over 100 organizations including lighting distributors, electrical contractors, and consultants. Although the C&I Lighting Program and SBDI Program are performing well and meeting participation and savings goals, the C&I Standard Program continues to be adversely impacted by the COVID-19 pandemic. Specifically, the increased cost of material and hesitancy to make capital expenditures have limited customer participation. The new Business Energy Solutions program, which will launch in 2022, will build on the momentum generated by the existing C&I Lighting Program and C&I Standard Program by promoting both high efficiency lighting and non-lighting upgrades.

B. Status of Residential Programs

The Residential BYOT Program has continued to expand, as Mr. Brown testifies. In the first three quarters of 2021, the program enrolled over 1,500 devices, bringing the total to over 5,100 enrolled devices. Of the new participants, approximately 50 had previously participated in the Peak Reduction Program. In the summer of 2021, the Company called 15 events for BYOT participants, and successfully initiated events during all five PJM coincident peak days.

Mr. Bacon provides the updates on the Residential Home Performance Program. Through June 2021, approximately 2,700 customers have participated in this Program, which is 60 percent of the three

year goal. In early 2021, the Company successfully launched the three residential programs approved in the 2020 EE-RAC Order (the Residential Low Income Single Family, the Residential Low Income Multi-family, and the Residential ENERGY STAR® Manufactured Homes Program). In the first six months after its implementation, the Residential Low Income Single Family Program provided weatherization services to 82 households throughout the Company's territory. For the same time period, the Residential Low Income Multi-family Program provided services to 220 units. The Residential ENERGY STAR® Manufactured Homes Program continues to gain interest and through the first six months, has provided rebates on 61 homes.

C. Status of the VVO Pilot Program

Appalachian continues to design and implement the Program. The Company has engaged Eaton Corporation to assist in the implementation and is preparing detailed scoping documents for the first two circuits. VVO should be operational on the first two Pilot circuits by the end of 2022 (with affected customers receiving notice by mail before June 30, 2022).

II. THE REQUESTS FOR APPROVAL IN THIS PETITION

With this Petition, the Company is requesting the Commission's approval to implement one new EE pilot program, the C&I Custom Pilot Program, well as the continued implementation of the EE-RAC, through which it recovers the costs of the EE Portfolio. The Company also seeks the Commission's approval of an approximately \$2.8 million increase in the revenue requirement to be recovered through the EE-RAC during the Rate Year.

A. The Proposed Program

The program proposed in this Petition, the C&I Custom Pilot Program, is based on a similar program that Appalachian offered in its West Virginia jurisdiction. As Mr. Brown describes, as part of the Pilot Program, qualifying C&I customers will be able to earn incentives for energy efficiency improvements that are not already covered by existing programs in the EE Portfolio. C&I customers

will be able to implement non-standard and more complex energy efficiency projects that are unique to their facilities and operations. The Company will offer incentives based on resultant, verified savings, and the Company and its partners will work with participating customers throughout the Pilot Program to refine goals and performance.

The Company plans to offer the Program on a pilot basis, for three years, which will allow the Company to assess and demonstrate its cost-effectiveness. Even though each project might be different, the Company aims to demonstrate that the level of overall energy savings is predictable. If approved, the C&I Custom Pilot Program would be implemented beginning January 2023.

B. The Proposed Program is in the Public Interest

The evidence presented with this Petition supports a Commission finding that the proposed C&I Custom Pilot Program is in the public interest, as required by the EE-RAC Statutes. The C&I Custom Pilot Program is in the public interest as it will provide Appalachian's C&I customers with additional and customizable means through which they can reduce their energy usage and realize deeper energy savings. Finally, Section 56-585.1 states that "[e]nergy efficiency pilot programs are in the public interest provided that the pilot program is (i) of limited scope, cost, and duration and (ii) intended to determine whether a new or substantially revised program would be cost-effective." The C&I Custom Pilot Program is, as set out in Mr. Brown's testimony, limited in scope, as it will target a limited set of interested customers); and is limited in cost and duration (three years). Appalachian designed the Pilot to demonstrate that this type of customizable energy efficiency program for its C&I customers will be cost-effective enough to potentially be included in the Company's overall portfolio.

C. The Requested Revenue Requirement and Rate Impact

The Company requests the Commission's approval to recover a total revenue requirement of \$18,405,768 during the Rate Year. As Mr. Bacon describes, this amount consists of two factors. First, the Company projects that it will incur \$19,672,909 in costs related to the EE Portfolio during the Rate

Year. As the Rate Year encompasses two-thirds of the 2023 calendar year, the Company used two-thirds of the projected expenses for the C&I Custom Pilot Program, which is expected to be in operation in 2023. The Projected Factor also includes the rate of return on common equity of 9.2%, as approved by the Commission in Case No. PUR-2020-00015.⁵ Second, the revenue requirement includes a True-Up credit of \$1,267,141. The True-Up Factor is designed to return (or recover) any (over)/under recovery of costs associated with the EE Portfolio on August 31, 2022 (the previous rate year).⁶

If approved, overall bills, based on current rates, will increase by approximately \$0.34 or 0.3% for a residential customer using 1,000 kWh per month, as Company witness Cost testifies.

As required by amendments enacted in 2019 to the EE-RAC Statutes, petitions for approval of the energy efficiency programs must include a proposed budget for the design, implementation, and operation of the program.⁷ Mr. Brown provides the proposed budget for the design, implementation, and operation for the proposed C&I Custom Pilot Program. This budget is set out in detail in KCB Schedule 1.

D. Compliance with the GTSA

Enactment Clause 15 of the GTSA, which was codified as Section 56-596.2 of the Virginia Code, imposes a number of requirements on Appalachian related to energy efficiency. First, Section 56-596.2 requires that Appalachian petition the Commission for approval of \$140 million to design, implement, and operate energy efficiency programs between July 1, 2018 and July 1, 2028. This is the fourth petition made towards meeting that requirement that Appalachian has brought to the Commission.

⁵ Final Order, *Application of Appalachian Power Company For a 2020 triennial review of its base rates, terms and conditions pursuant to § 56-585.1 of the Code of Virginia*, Case No. PUR-2020-00015, 2020 S.C.C. Ann. Rep. 421 (Nov. 24, 2020).

⁶ The Company is not requesting the recovery of any lost revenues.

⁷ 2019 Va. Acts c.741 and 2019 Va. Acts c.773.

As Mr. Nichols testifies, the Company has in aggregate proposed approximately \$143 million towards this mandate in the Enactment Clause.

Second, Section 56-596.2 requires that Appalachian take part in a stakeholder process when developing new energy efficiency programs. As Mr. Nichols describes, there have been several stakeholder meetings so far, and the Company and the stakeholder group worked together to identify the EE program proposed in this Petition. Therefore, the C&I Custom Pilot Program has broad stakeholder support.

III. COMPLIANCE WITH RATE CASE RULES AND OTHER REQUESTS

This Petition complies with the requirements contained in the Rate Case Rules. The Company filed with the Commission on September 27, 2021 its notice of intent to file this Petition under Va. Code § 56-585.1 A 5. Copies of this Petition, to the extent required by Rule 10 J, along with the additional information required by Rule 10 J, are simultaneously being served upon persons addressed in that Rule. A complete copy of the public version of the Petition, along with testimony and supporting public schedules, has been served upon the Division of Consumer Counsel of the Office of the Attorney General.

The required components of Schedule 46 are sponsored by various Company witnesses, and are attached to and/or incorporated into their testimonies, as set out in the Index of Schedule 46 Requirements, Attachment A to this Petition.

In addition, the Company, pursuant to 20VAC5-204-10.E, respectfully requests that the Commission waive certain requirements the Rate Case Rules. Rule 20 VAC 5-204-90 requires applicants to “[p]rovide all documents, contracts, studies, investigations or correspondence that support projected costs proposed to be recovered via a rate adjustment clause.” The Company is producing schedules of the projected costs of the Programs as required by Rule 90, the Company, however, estimates that a physical production of the contracts and correspondence supporting the projected costs

would require the submission of several additional bound volumes, once the requisite copies have been made. The Company is also filing, pursuant to the 2020 EE-RAC Order, a copy of the most recent EM&V Report, which is 459 pages long. Due to the voluminous nature of these documents, as well as the current remote conditions under which much of the parties are working, it would be unduly burdensome and impractical to produce them in hard copy. Due to the size of some of these documents, as well as the current remote conditions under which many of the parties are working, it would be unduly burdensome and impractical to produce them in hard copy. Further, much of the supporting documentation is confidential, and as such would not be posted to the Commission's online docket for public review. In lieu of a physical production, consistent with the Commission's *Order Granting Limited Reconsideration* in Case No. PUR-2021-00146,⁸ the Company requests a limited waiver of this Rule to permit it to file one hard copy of these confidential and/or voluminous documents, accompanied by three compact disks containing electronic versions of the documents. In addition, the Company has made available electronic copies of these documents to the Division of Utility Accounting & Finance and the Division of Public Utility Regulation, and will make them available for review by Staff and any respondents in an iManage folder established for this proceeding.

Finally, the Company requests that the Commission permit it to delay filing its next EE-RAC petition by an additional year, until November 30, 2023. Appalachian has no immediate plans to propose new programs during that period, and projects that the revenue requirement for the next period will be substantially the same as the that proposed in this case (with any differences accounted for the in true-up factor in the next petition). If the Commission grants this request, the Company proposes to

⁸ Order Granting Limited Reconsideration, *Petition of Virginia Electric and Power Company for Approval of the RPS Development Plan, approval and certification of the proposed CE-2 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, revision of rate adjustment clause, designated Rider CE, under § 56-585.1 A 6 of the Code of Virginia, and a prudence determination to enter into power purchase agreements pursuant to § 56-585.1:4 of the Code of Virginia*, Case No. PUR-2021-00146, Doc. Con. Cen. No. 210830286 (Aug. 26, 2021).

provide the Commission with reporting on program costs, revenues, participation, and other relevant information on November 30, 2022. This proposal will not change how the Company conducts its programs, opt-out or stakeholder processes.

WHEREFORE, Appalachian respectfully requests that the Commission approve the Company's proposal to implement the new C&I Custom Pilot Program and the continuation of the EE-RAC along with the proposed increase to the EE-RAC revenue requirement; and that the Commission make the findings requested pursuant to the GTSA as codified in the EE RAC Statutes, grant the requested waivers of the Rate Case Rules, and order the Company to file its new EE-RAC Petition on or before November 30, 2023.

Respectfully submitted,

APPALACHIAN POWER COMPANY

November 30, 2021

By: 

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CERTIFICATE OF SERVICE

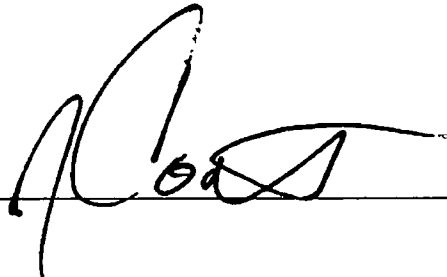
I hereby certify that on this 30th day of November 2021 a true copy of the foregoing Petition of Appalachian Power Company was delivered by hand or mailed, first-class, postage prepaid, to the following:

Confidential Version:

William H. Chambliss, Esq.
Office of General Counsel
State Corporation Commission
1300 East Main Street
Richmond, Virginia 23219

Public Version:

C. Meade Browder, Jr., Esq.
Division of Consumer Counsel
Office of Attorney General
202 N. 9th Street
Richmond, Virginia 23219

A handwritten signature in black ink, appearing to read 'C. Meade Browder, Jr.', is written over a horizontal line.

**Schedule 46 Requirements
Case No. PUR-2021-00236**

Attachment A

21130006

Schedule	Sponsor	Section	Location
An application for a rate adjustment clause filed pursuant to Chapter 23 (§ 56-576 et seq.) of Title 56 of the Code of Virginia shall include Schedule 46 as identified and described in 20VAC5-204-90, which shall be submitted with the utility's direct testimony. Additionally, applications requiring an overall cost of capital shall include Schedules 3, 4, 5, and 8.			
Schedule 3 - Capital Structure and Cost of Capital - Per Books and Average	Jason Cash	Schedule 3	Rate Case Schedules
Schedule 4 & Schedule 8 - 2020 VA Capital Structure	Jason Cash	Schedule 4 & 8	Rate Case Schedules
Schedule 5 - 2020 Short -Term Debt	Jason Cash	Schedule 5	Rate Case Schedules
1. The applicant shall provide the following information for any update to a rate adjustment clause approved by the commission pursuant to § 56-585.1 A 5 or A 6 of the Code of Virginia:			
Schedule 46 Index	Sponsor	Section	Location
i. An updated schedule of all projected and actual costs by type of cost and year and by month to the extent available.	Zachary Bacon	46A	Rate Case Schedules
ii. Within five business days of the application filing date, the applicant shall provide transaction-level details to facilitate the sampling and audit of such actual costs electronically to the Division of Utility Accounting and Finance in an electronic spreadsheet with all underlying formulas and assumptions.	Zachary Bacon	46 Workpapers	Schedule 46 Workpapers
iii. Key documents supporting the projected and actual costs recovered through the rate adjustment clause, such as: economic analyses, support used by senior management for major cost decisions as determined by the applicant, contracts, studies, investigations, results from requests for proposals, cost-benefit analyses, and other items supporting the costs that have not been provided in previous applications.	Zachary Bacon	46B	Rate Case Schedules
iv. The annual revenue requirement over the duration of the proposed rate adjustment clause by year and by class on a total company and Virginia jurisdictional basis, including all supporting calculations and assumptions.	Zachary Bacon & Jaclyn Cost	46C & 46N	Rate Case Schedules
v. Detailed information relative to the applicant's methodology for allocating the revenue requirement among rate classes and the design of class rates.	Jaclyn Cost	46N	Rate Case Schedules
2. The applicant shall provide the following additional information for an update to a rate adjustment clause approved by the Commission for energy efficiency programs pursuant to § 56-585.1 A 5 of the Code of Virginia:			
i. Evidence of the actual energy and demand savings achieved as a result of each specific program for which cost recovery is sought, along with revised cost-benefit tests that incorporate actual utility-specific energy and demand savings and cost data.	David Diebel	EM&V Report	Diebel Testimony

APCo Exhibit No. _____
Witness: FDN

2113000

**DIRECT TESTIMONY OF
FRED D. NICHOLS II
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

SUMMARY OF DIRECT TESTIMONY OF FRED D. NICHOLS II

In my direct testimony, I:

- Support the Company's petition for approval of one new pilot program, the Commercial & Industrial Custom Pilot program;
- Introduce the other witnesses who will be supporting this Petition;
- Discuss how the Company utilized the stakeholder process, as defined in Va. Code § 56-596.2, to ultimately select the proposed pilot program for this EE-RAC filing;
- Describe how the Company incorporated Environmental Justice community leaders, who may not have already been included, into the energy efficiency stakeholder process;
- Provide an update on the Company's progress toward the goals outlined in the Grid Transformation and Security Act, which includes the estimated costs of the proposed pilot program in this proceeding and Va. Code § 56-596.2; and
- Describe the controls and procedures the Company undertakes to ensure energy efficiency programs are functioning correctly.

**DIRECT TESTIMONY OF
FRED D. NICHOLS II
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

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

2 A. My name is Fred D. Nichols II. My business address is 40 Franklin Road SW, Roanoke,
3 Virginia 24011. My current position is Manager of Energy Efficiency and Alternative
4 Energy Initiatives for Appalachian Power Company (APCo or Company).

5 **Q. BRIEFLY SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL**
6 **BACKGROUND.**

7 A. I received a Bachelor of Science Degree in Electrical Engineering from West Virginia
8 Institute of Technology in 1985 and earned a Master of Business Administration Degree
9 from Averett University in 1998.

10 I joined APCo in 1985 as an electrical engineer in Charleston, West Virginia.
11 Since that time, I have held several positions of increasing responsibility within APCo
12 and American Electric Power including Energy Services Engineer, Energy Services
13 Coordinator, Energy Services Supervisor, Demand Side Management Program
14 Supervisor, Key Account Manager, National Account Executive, and Consumer
15 Programs Manager. I assumed my current position as Manager of Energy Efficiency and
16 Alternative Energy Initiatives in August 2015.

17 **Q. WHAT ARE YOUR RESPONSIBILITIES AS MANAGER OF ENERGY**
18 **EFFICIENCY AND ALTERNATIVE ENERGY INITIATIVES?**

19 A. I am responsible for overseeing the design, development, implementation and
20 measurement of consumer programs relating to energy efficiency (EE) and demand
21 response (DR) programs for APCo.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I have testified before the Virginia State Corporation Commission (Commission) in Case Nos. PUE-2009-00023, PUR-2017-00094, PUR-2017-00126, PUR-2019-00122 and PUR-2020-00251.

21150505

A. The Company is filing direct testimony of five additional witnesses. Company witness Bacon presents testimony to update the Commission on the Company's residential EE programs approved in Case No. PUR-2019-00122. Mr. Bacon also provides cost projections for the Rate Year for the approved and proposed EE programs, supports the Company's revenue requirement for the Rate Year, and describes the accounting for the incremental costs associated with the proposed EE pilot program.

Company witness Brown presents testimony to update the Commission on the Company's Commercial and Industrial (C&I) EE programs. Mr. Brown also describes the new pilot EE program, the C&I Custom Pilot program, being proposed in this Petition.

Company witness Diebel presents testimony to support the Company's most recent Evaluation, Measurement and Verification (EM&V) reports for active EE and DR programs. Mr. Diebel also presents a preliminary EM&V plan applicable to the proposed C&I Custom Pilot program. And lastly, Mr. Diebel will present the Company's estimate on Total Annual Energy Savings, a term defined in § 56-576 of the Code of Virginia, which describes the cumulative persistent energy savings for previous, existing, and proposed EE and DR programs, including customers who have elected to opt out of the Company's EE and DR programs.

Company witness Cost presents the resulting rate impacts on customers and sponsors the EE-RAC tariff sheet.

Company witness Cash will describe the accounting treatment of the Company's Volt-Var optimization pilot program, which was approved in PUR-2020-00251.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized as follows:

Section I - APCo EE Policy

Section II - Update on EE Programs

Section III - Request for Approval of new EE Program

Section IV - Cost Recovery

Section V - Quality Control for the Proposed EE Portfolio

I. APCO EE POLICY

Q. PLEASE SUMMARIZE THE REGULATORY HISTORY OF THE COMPANY'S EE PROGRAMS.

A. In its November 26, 2014 Order in the Company's 2014 base rate proceeding (Case No. PUE-2014-00026), the Commission approved the Residential Peak Reduction and Residential Low Income Weatherization Programs through December 31, 2017. In its February 15, 2018 Order (Case No. PUR-2017-00094), the Commission approved an extension of these two programs through December 31, 2020.

In its 2015 EE-RAC Order (Case No. PUE-2014-00039), the Commission approved five additional EE programs: the Residential Home Performance Program, the Residential Efficient Products Program, the Residential Appliance Recycling Program, the Residential ENERGY STAR® Manufactured Homes Program, and the Commercial & Industrial (C&I) Prescriptive Program. All of the programs approved in the 2015 EE-RAC Order, with the exception of the Residential Appliance Recycling Program, expired at the end of 2018.

1 In its 2018 EE-RAC Order (Case No. PUR-2017-00126), the Commission
2 approved five new programs and the continuation of one existing program: Residential
3 Home performance, formerly known as eScore™; Residential Bring Your Own
4 Thermostat; Residential Appliance Recycling (one year extension); C&I Lighting, C&I
5 Standard; and Small Business Direct Install. All of the programs approved in the 2018
6 EE-RAC Order were launched in early 2019 and, with the exception of the Residential
7 Appliance Recycling Program, are currently active. The Residential Appliance
8 Recycling Program closed on December 31, 2019.

9 In its 2020 EE-RAC Order (Case No. PUR-2019-00122), the Commission
10 approved three new programs: the Residential Low Income Single Family, the
11 Residential Low Income Multi-family, and the Residential ENERGY STAR®
12 Manufactured Homes programs. These programs were launched in early 2021.
13 Company witness Bacon provides a brief update on the status of these programs in his
14 direct testimony.

15 In its 2021 EE-RAC Order (Case No. PUR-2020-00251), the Commission
16 approved five new EE/DR programs, the continuation of two existing programs, and a
17 new pilot program. The five new programs are: (i) Residential Home Energy Report
18 Program; (ii) Residential Efficient Products Program; (iii) Residential Energy Efficiency
19 Kit Program; (iv) Residential Home Performance Program; and (v) Business
20 Energy Solutions Program. The two programs that were granted extensions are (i) the
21 Residential Bring-Your-Own Thermostat Program and (ii) the Small Business Direct
22 Install Program. All of these programs were approved for a five-year period beginning
23 January 1, 2022. And lastly, the Commission approved a three-year pilot program, the

1 Volt-Var Optimization Pilot program. The Company is currently working to finalize
2 contracts with program implementation contractors for the programs approved in the
3 2021 EE-RAC Order. These programs are on track to launch in early 2022.

4 A summary of the Company's historical EE and DR activities can be found in
5 APCo Exhibit No. (FDN) Schedule 1 Portfolio Overview.

6 **Q. WHAT BENEFITS DO EE PROGRAMS PROVIDE CUSTOMERS AND THE**
7 **COMMONWEALTH?**

8 A. APCo's EE programs provide immediate benefits to participating customers through
9 lower electric bills, and can provide additional benefits to all customers through reduced
10 fuel and avoided generation costs. In addition, the implementation of the EE programs
11 requires the use of a network of local providers to deliver these benefits to customers,
12 which helps local economies.

13 **II. ENERGY SAVINGS FROM THE COMPANY'S EE PROGRAMS**

14 **Q. PLEASE PROVIDE AN UPDATE ON THE ENERGY SAVINGS OF THE**
15 **PROGRAMS APPROVED IN THE 2019 EE-RAC ORDER.**

16 A. For programs that were in effect as of December 31, 2020, ADM Associates, Inc.
17 (ADM), the Company's EM&V contractor, performed an analysis on each program to
18 evaluate actual energy savings and other related metrics. Figure 1 below provides the
19 gross and net kWh savings, and net-to-gross ratios from the Company's EE programs in
20 effect during 2020. Figure 2 below provides the gross and net kW savings and net-to-
21 gross ratios. The EM&V reports, as prepared by ADM, for program year 2020 to support
22 the tables below can be found on the Commission's website in Case No. PUE-2014-
23 00039, and are also being filed with this Petition, subject to a waiver request. Company

witness Diebel also supports these EM&V reports in his direct testimony. Lastly,
 Company witnesses Bacon and Brown provide additional updates on these programs in
 their direct testimonies.

Figure 1 – Gross and Net kWh savings 2020

Program	Gross Energy Savings (kWh)	Net Energy Savings (kWh)	NTG Ratio
Home Performance Program (formerly known as eScore)	805,634	614,385	76%
Bring Your Own Thermostat	95,778	158,957	166%
Low-Income Weatherization	431,590	431,590	100%
C&I Standard	1,099,846	1,087,755	99%
C&I Lighting	16,196,110	14,097,160	87%
Small Business Direct Install	5,075,953	4,428,946	87%

Figure 2 – Gross and Net kW savings 2020

Program	Gross Demand Savings (kW)	Net Demand Savings (kW)	NTG Ratio
Home Performance Program (formerly known as eScore)	154.6	117.2	76%
Bring Your Own Thermostat	4,222.9	4,222.9	100%
Low-Income Weatherization	56.9	56.9	100%
C&I Standard	168.3	166.8	99%
C&I Lighting	2,594.6	2,233.3	86%
Small Business Direct Install	452.1	371.5	82%

III. REQUEST FOR APPROVAL OF THE PROPOSED EE PILOT PROGRAM

**Q. PLEASE DESCRIBE THE EE/DR PILOT PROGRAM FOR WHICH THE
 COMPANY IS SEEKING APPROVAL THROUGH THIS PETITION.**

A. The Company is seeking approval of one EE pilot program in this proceeding:

- C&I Custom Pilot Program

This three-year pilot program is more fully described and supported in the direct
 testimony of Company witness Brown.

1 **Q. PLEASE COMMENT ON HOW THE COMPANY USED THE STAKEHOLDER**
2 **PROCESS FOR THE DESIGN AND DEVELOPMENT OF THE PROPOSED**
3 **PILOT PROGRAM.**

4 A. Va. Code § 56-596.2 requires the Company to utilize a “stakeholder process, to be
5 facilitated by an independent monitor” when developing energy efficiency programs. For
6 the previous rate year, which was July 2020 through June 2021, the Company held three
7 stakeholder meetings on October 19, 2020, March 4, 2021, and May 5, 2021. The EE
8 pilot program proposed in this Petition met the initial priority recommendations of the
9 stakeholder group and, as a result, the program has broad stakeholder support.

10 As reference, the 2021 Report of the Independent Monitor on the Status of the
11 Energy Efficiency Stakeholder Process is available on the General Assembly’s website as
12 Report RD256 (<https://rga.lis.virginia.gov/Published/2021/RD256>).

13 The Company held its most recent stakeholder meeting on November 8, 2021.

14 **Q. PLEASE DESCRIBE HOW THE COMPANY INCORPORATED**
15 **ENVIRONMENTAL JUSTICE COMMUNITIES INTO THE ENERGY**
16 **EFFICIENCY STAKEHOLDER PROCESS.**

17 A. It is the Company’s understanding that the Virginia Department of Environmental
18 Quality (DEQ) is in the process of developing a mapping tool to pinpoint the areas in
19 Virginia that are designated as Environmental Justice Communities. And, to the
20 Company’s knowledge, such a mapping tool has not yet been developed.

21 As an alternative, the Company utilized a publically available mapping tool for
22 this purpose (<https://mappingforej.berkeley.edu/virginia/>). Using this mapping tool, and
23 as required in the Order in Case No. PUR-2020-00251, the Company, through the

1 Virginia Independent Monitor, IMPACT Paradigm Associates, invited 26 community
2 leaders in these areas to join our November 8, 2021 stakeholder meeting.

3 A summary of those invited to participate in the Company's stakeholder meetings
4 since July 1, 2020, as well as who actually participated, is provided in APCo Exhibit No.

5 (FDN) Schedule 5 – EE Stakeholder Invitees and Participants. This information was
6 provided to the Company by the Virginia Independent Monitor.

7 **Q. PLEASE PROVIDE AN OVERVIEW OF THE GTSA AS IT RELATES TO THE**
8 **COMPANY'S EE PROGRAMS.**

9 A. The GTSA, which became effective on July 1, 2018, contains provisions codified at Va.
10 Code § 56-596.2, that directly address the Company and its energy efficiency programs.
11 Va. Code § 56-596.2 requires the Company to develop a proposed suite of energy
12 conservation measures along with the projected costs for the utility to design, implement,
13 and operate energy efficiency programs, including a margin to be recovered on operating
14 expenses, of no less than an aggregate amount of \$140 million, including any existing
15 approved energy efficiency programs.

16 **Q. WHAT IS THE COMPANY'S PROGRESS TOWARDS THE \$140 MILLION**
17 **GOAL?**

18 A. In the instant proceeding, the Company is proposing one new pilot program. The
19 Company estimates this pilot program, in addition to other programs the Company has
20 proposed, and/or received approval for since July 1, 2018, or the effective date of the law,
21 represent costs of approximately \$143 million. See Figure 3 below for details.

**Figure 3 - Projected Costs to Satisfy Va. Code § 56-596.2
(\$ Millions)**

Program Name	Direct Costs	Margins	Total
C&I Prescriptive	\$0.54	\$0.05	\$0.59
Residential Appliance Recycling	\$0.96	\$0.09	\$1.04
Home Performance	\$0.77	\$0.07	\$0.84
Efficient Products	\$0.44	\$0.04	\$0.48
eScore	\$3.70	\$0.35	\$4.04
Bring Your Own Thermostat	\$2.73	\$0.26	\$2.98
C&I Lighting	\$4.13	\$0.39	\$4.52
C&I Standard	\$4.18	\$0.39	\$4.57
Small Business Direct Install	\$2.37	\$0.22	\$2.59
Low Income Single Family	\$16.63	\$1.57	\$18.19
Low Income Multi-Family	\$20.51	\$1.93	\$22.44
Manufactured Housing Energy Star	\$2.60	\$0.24	\$2.84
Peak Reduction	\$3.25	\$0.00	\$3.25
Low Income Weatherization	\$2.67	\$0.00	\$2.67
Bring Your Own Thermostat 2020 EE-RAC	\$5.32	\$0.50	\$5.82
Home Energy Report 2020 EE-RAC	\$4.34	\$0.41	\$4.75
EE Kits 2020 EE-RAC	\$1.37	\$0.13	\$1.50
Efficient Products 2020 EE-RAC	\$8.33	\$0.78	\$9.11
Volt Var Optimization 2020 EE-RAC	\$4.05	\$0.03	\$4.08
Business Energy Solutions 2020 EE-RAC	\$18.91	\$1.78	\$20.69
SBDI 2020 EE-RAC	\$5.65	\$0.53	\$6.18
Home Performance 2020 EE-RAC	\$11.79	\$1.11	\$12.90
C&I Custom Pilot 2021 EE-RAC	\$6.19	\$0.62	\$6.81
Total	\$131.39	\$11.50	\$142.90
SB 966 Goal			\$140.00
Remaining Proposals to Meet Goal			(\$2.90)

Q. THE VIRGINIA CLEAN ECONOMY ACT (VCEA) REQUIRES THE COMPANY TO MEET CERTAIN TOTAL ANNUAL ENERGY SAVING TARGETS. CAN YOU ELABORATE?

A. In the VCEA, the Company is required to meet a certain percent of “average annual energy jurisdictional retail sales” starting in calendar year 2022 with its energy efficiency and demand response programs. The baseline year for these jurisdictional retail sales is calendar year 2019. This mandate is commonly referred to as an Energy Efficiency Resource Standard (EERS). The VCEA states that a Phase I utility (APCo) must implement energy efficiency programs and measures to achieve the following “Total Annual Energy Savings”:

- In calendar year 2022, at least 0.5 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2023, at least 1.0 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2024, at least 1.5 percent of the average annual energy jurisdictional retail sales by that utility in 2019; and
- In calendar year 2025, at least 2.0 percent of the average annual energy jurisdictional retail sales by that utility in 2019.

Q. FROM AN ENERGY EFFICIENCY PERSPECTIVE, HOW DOES THE VCEA DEFINE TOTAL ANNUAL ENERGY SAVINGS?

A. The VCEA defines Total Annual Energy Savings as “the total combined kilowatt-hour savings achieved by electric utility energy efficiency and demand response programs and measures installed in that program year, as well as savings still being achieved by measures and programs implemented in prior years...” Therefore, any energy efficiency measures included in any previous program(s) that is (are) still producing energy savings, no matter when the program(s) was (were) initially implemented, would count toward the “Total Annual Energy Savings” component as defined in the VCEA.

Q. DID THE COMPANY WORK WITH STAFF TO PREPARE ANY REQUIRED PRE-FILED EXHIBIT(S)?

A. Yes. As required in the Commission’s Final Order in Case No. PUR-2020-00251, the Company and Staff discussed the filing and any pre-filed exhibit(s) deemed necessary.

Q. WERE THERE OTHER PRE-FILED EXHIBITS REQUESTED BY STAFF?

A. Yes. In addition to the pre-filed exhibits included in Case No. PUR-2020-00251, Staff requested one additional exhibit related to the estimated Total Annual Energy Savings, as defined in § 56-576 of the Code of Virginia, which describes, among other things, the

1 estimated cumulative persistent energy savings to comply with the provisions of the

2 VCEA. Company witness Diebel supports this additional exhibit.

3 **IV. COST RECOVERY**

4 **Q. HOW DOES THE COMPANY PROPOSE TO RECOVER THE COSTS OF THE**
5 **PROPOSED EE PROGRAM?**

6 A. The Company is proposing to recover the costs of the proposed EE program through the
7 existing EE-RAC, which went into effect on January 1, 2016.

8 **V. QUALITY CONTROL FOR THE PROPOSED EE PORTFOLIO**

9 **Q. ARE THE COMPANY'S CONTROLS AND PROCEDURES FOR ITS EXISTING**
10 **ENERGY EFFICIENCY PROGRAMS THE SAME, AND CONSISTENT WITH,**
11 **THE PREVIOUS EE-RAC FILING, CASE NO. PUR-2020-00251?**

12 A. Yes. The Company's controls and procedures reflected in APCo Exhibit No. __ (FDN)
13 Schedule 4 have remained unchanged for all approved EE and DR programs since the
14 Company's last EE-RAC filing. These controls and procedures have been consistently
15 applied since the launch of the initial programs approved in Case No. PUE-2014-00039.
16 Furthermore, these controls and procedures will be applied to EE programs approved in
17 the Commission's Final Order in Case No. PUR-2020-00251, which begin January 2022.

18 **Q. HOW IS THE COMPANY ENSURING ITS CONTROLS AND PROCEDURES**
19 **REMAIN APPROPRIATE AND ARE FUNCTIONING CORRECTLY?**

20 A. The assigned APCo program manager oversees and monitors contractor performance,
21 customer satisfaction, data collection activities and compliance with contractual
22 requirements. Where appropriate, the Company's program implementation contractors
23 conduct random on-site field visits to verify measure installations for quality assurance

1 purposes. Additionally, site visits performed by the Company's EM&V contractor
2 provide additional support for quality assurance. In addition, all rebate requests are
3 verified to ensure that rebates are only issued to qualifying eligible customers.
4 Combined, these processes ensure that the Company's controls and procedures remain
5 effective and are functioning correctly.

6 **Q. DOES THE COMPANY HAVE A PROPOSAL REGARDING THE FREQUENCY**
7 **OF EE-RAC FILINGS?**

8 A. Yes. The Company proposes to extend the period between EE-RAC filings to two years.
9 Because the Company does not anticipate the immediate need to initiate any new
10 programs in the interim, and the revenue requirement proposed in the second year would
11 be substantially the same as the revenue requirement proposed in this case, this proposal
12 is in the interest of efficiency for all parties involved. If granted, the Company proposes
13 to provide the Commission with reporting on program costs, revenues, participation, and
14 other relevant information at the one-year point. This proposal will in no way change
15 how the Company conducts its programs, opt-out or stakeholder processes.

16 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

17 A. Yes, it does.

Appalachian Power Company
Virginia-based DSM Programs Life-to-Date Activity Through 06/30/2021
Portfolio Overview

Case No. PUE-2014-00026
 Filed: March 31, 2014
 Order: November 26, 2014
 Dollars in Millions

Program	Subprogram	Type	Energy	Program Costs Approved	Program Costs Rejected	Costs to Date	Start Date	End Date	Current in	Participation ¹	Energy Savings (Gross kWh)	Demand Savings (Gross kW)
Low Income Weatherization	Residential	Energy Efficiency	Approved	\$8.4M (\$3.2M+\$5.2M)	\$8.4M (\$3.2M+\$5.2M)	\$5.97M	Jan. 2015	Dec. 2020	Base	1,385 Homes	6,974,142	1,605
Peak Reduction	Residential	Demand Response	Approved ²	\$7.8M (\$3.9M+\$3.9M)	\$7.8M (\$3.9M+\$3.9M)	\$5.97M	Jan. 2015	Dec. 2020	Base	7,874	408,662	9,950

¹ Program extension of three years approved in Case No. PUR-2017-00094 with additional cost cap approval of \$3,207,454
² Program extension of three years approved in Case No. PUR-2017-00094 with additional cost cap approval of \$3,888,890
³ Participation, realized gross energy and realized gross demand savings through 12/31/2020

Case No. PUE-2014-00039
 Filed: October 24, 2014
 Order: June 24, 2015
 Dollars in Millions

Program	Subprogram	Type	Energy	Program Costs Approved	Program Costs Rejected	Costs to Date	Start Date	End Date	Current in	Participation ¹	Energy Savings (Gross kWh)	Demand Savings (Gross kW)
Home Performance	Residential	Energy Efficiency	Approved	\$5.18M	\$8.48M	\$4.61M	Jan. 2016	Dec. 2018	EE-RAC	13,249 Customers	8,055,867	882
Appliance Recycling	Residential	Energy Efficiency	Approved	\$2.68M	\$4.36M	\$2.65M	Jan. 2016	Dec. 2018	EE-RAC	3,394 Appliances	3,204,197	377
Manufactured Housing ENERGY STAR®	Residential	Energy Efficiency	Approved	\$1.33M	\$2.72M	\$1.33M	Jan. 2016	Dec. 2018	EE-RAC	217 Homes	1,521,788	66
Efficient Products	Residential	Energy Efficiency	Approved	\$2.95M	\$3.91M	\$2.64M	Jan. 2016	Dec. 2018	EE-RAC	733,579 Bulbs 2,934 Appliances	22,752,272	2,068
C&I Prescriptive	Non-Residential	Energy Efficiency	Approved	\$4.15M	\$8.08M	\$3.16M	Jan. 2016	Dec. 2018	EE-RAC	738 Projects	66,091,096	10,534
C&I Custom	Non-Residential	Energy Efficiency	Denied	\$2.57M								

¹ Costs Cap includes direct program cost as well as projections for lost revenue and equity margins
² Represents direct program costs exclusive of net lost revenue or equity margins
³ Participation, realized gross energy, and realized gross demand savings through 12/31/2020

Appalachian Power Company
Virginia-based DSM Programs Life-to-Data Activity Through 06/30/2021
Portfolio Overview

Case No. PUR-2017-00126
Filed: September 28, 2017
Order: May 16, 2018
Dollars in Millions

Program	Segment	Type	Result	Program Costs Excluded	Program Costs Approved	Costs to Date	Completion Date	Status	Current Year Participation	Energy Savings Estimated (Gross + Net)		
eScore	Residential	Energy Efficiency	Approved	\$3.69M	\$3.69M	\$2.7M	Jan. 2019	Active	EE-RAC	1,858 Homes	1,541,947	287
Multifamily Direct Install	Residential	Energy Efficiency	Densad	\$3.02M								
Bring Your Own Thermostat	Residential	Demand Response	Approved	\$2.73M	\$3.02M	\$1.6M	Jan. 2019	Active	EE-RAC	3,884 Thermostats	134,903	4,977
Efficient Products	Residential	Energy Efficiency	Withdrawn ⁶									
Appliance Recycling	Residential	Energy Efficiency	Approved ⁷	\$1.52M	\$0.65M	\$0.3M	Jan. 2019	Dec. 2019	EE-RAC	1,588 Appliances	1,552,935	183
C&I Lighting	Non-Residential	Energy Efficiency	Approved	\$4.13M	\$12.87M	\$3.1M	Jan. 2019	Active	EE-RAC	318 Projects	31,038,347	5,176
C&I Standard	Non-Residential	Energy Efficiency	Approved	\$4.17M	\$10.77M	\$1.1M	Jan. 2019	Active	EE-RAC	54 Projects	1,567,372	219
Small Business Direct Install	Non-Residential	Energy Efficiency	Approved	\$2.39M	\$0.59M	\$1.3M	Jan. 2019	Active	EE-RAC	506 Projects	7,183,919	818

⁶ Represents direct program costs exclusive of net lost revenue or equity margins

⁷ The Company withdrew its request to extend this program beyond 12/31/2019

⁸ Approved extension of 1 year

⁹ Participation, realized gross energy, and realized gross demand savings through 12/31/2020

Case No. PUR-2019-00122
Filed: September 30, 2019
Order: May 21, 2020
Dollars in Millions

Program	Segment	Type	Result	Program Costs Excluded	Costs to Date Approved	Costs to Date Approved	Program Status	End Date	Current Year Participation	Energy Savings Estimated (Gross + Net)	Energy Savings Estimated (Gross + Net)	
Low Income Single Family ^{10,11}	Residential	Energy Efficiency	Approved	\$16.6M	\$16.6M	\$0.7M	Jan. 2021	Active	EE-RAC	0	0	0
Low Income Multi-Family ^{10,11}	Residential	Energy Efficiency	Approved	\$20.5M	\$20.5M	\$1.9M	Jan. 2021	Active	EE-RAC	0	0	0
Manufactured Housing ENERGY STAR [®]	Residential	Energy Efficiency	Approved	\$2.4M	\$2.4M	\$0.07M	Jan. 2021	Active	EE-RAC	0	0	0

¹⁰ Represents direct program costs exclusive of net lost revenue or equity margins

¹¹ Participation, realized gross energy, and realized gross demand savings through 12/31/2020

¹² Case No. PUR-2019-00122 Fraud Order. The LIME and LSE programs satisfy the requirements of Code § 56-586.2-1, and the Company is permitted to apply the first three years of these programs towards meeting the \$25 million goal established therein.

¹³ Section § 56-586.2 states that "at least 15 percent of such proposed costs of energy efficiency programs shall be allocated to programs designed to benefit low-income elderly or disabled individuals or veterans." Since July 1, 2018, the Company has proposed \$43.3M in low income programs, which is approximately 31 percent of the \$140M goal.

Appalachian Power Company
Virginia-based DSM Programs Life-to-Date Activity Through 06/30/2021
Portfolio Overview

Case No. PUR-2020-00231
Filed November 30, 2020
Order July 29, 2021
Dollars in Millions

Program	Category	Year	Status	Eligible Load (MW)	Cost (\$M)	Program Cost (\$M)	Customer Cost (\$M)	Customer Savings (\$M)	Program Savings (\$M)	Program Type	Participant	Program Start Date	Program End Date
Home Energy Reports	Residential	Energy Efficiency	Approved	\$4.3M	\$4.3M	\$4.3M	\$0	\$0	\$0	EE-RAC	0	0	0
Efficient Products	Residential	Energy Efficiency	Approved	\$8.3M	\$8.3M	\$8.3M	\$0	\$0	\$0	EE-RAC	0	0	0
Energy Efficiency Kits	Residential	Energy Efficiency	Approved	\$1.4M	\$1.4M	\$1.4M	\$0	\$0	\$0	EE-RAC	0	0	0
Home Performance	Residential	Energy Efficiency	Approved	\$11.8M	\$11.8M	\$11.8M	\$0	\$0	\$0	EE-RAC	0	0	0
Business Energy Solutions	Non-Residential	Energy Efficiency	Approved	\$18.9M	\$18.9M	\$18.9M	\$0	\$0	\$0	EE-RAC	0	0	0
Bring Your Own SMART Thermostat	Residential	Demand Response	Approved	\$5.3M	\$5.3M	\$5.3M	\$0	\$0	\$0	EE-RAC	0	0	0
Small Business Direct Install	Non-Residential	Energy Efficiency	Approved	\$5.6M	\$5.6M	\$5.6M	\$0	\$0	\$0	EE-RAC	0	0	0
Volt Var Optimization Pilot	Multiple	Energy Efficiency	Approved	\$1.7M	\$1.7M	\$1.7M	\$0	\$0	\$0	EE-RAC	0	0	0

¹ Represents direct program costs exclusive of net lost revenue or equity margins

² Participation realized gross energy and realized gross demand savings through 12/31/2020

**Cost Caps for Commission-Approved EE-RAC Programs
 Through June 30, 2021**

Programs approved in Case No. PUE-2014-00039⁵

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Program Name	Actual Costs	Margin	Subtotal	Lost Revenues ¹	Total (4) + (5)	Total Approved Cost Cap ²
C&I Prescriptive	\$4,384,855	\$415,223	\$4,800,078	\$4,617,006	\$9,417,084	\$8,080,000
Residential Appliance Recycling	\$707,129	\$66,581	\$773,710	\$1,416,603	\$2,190,313	\$4,360,000
Home Performance	\$4,095,526	\$387,712	\$4,483,238	\$2,613,492	\$7,096,730	\$8,490,000
Efficient Products	\$2,748,545	\$260,228	\$3,008,773	\$1,013,415	\$4,022,188	\$3,910,000
Manufactured Housing Energy Star	\$421,436	\$39,774	\$461,210	\$1,256,418	\$1,717,628	\$2,720,000
Subtotal	\$12,357,492	\$1,169,518	\$13,527,010	\$10,916,934	\$24,443,944	\$27,560,000

Programs approved in Case No. PUR-2017-00126⁵

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Program Name	Actual Costs	Margin	Subtotal	Lost Revenues ³	Total (4) + (5)	Total Approved Cost Cap ⁴
Residential Appliance Recycling	\$343,697	\$32,376	\$376,073	\$100,837	\$476,910	\$655,000
eScore	\$2,651,072	\$247,339	\$2,898,411	\$1,585,758	\$4,484,169	\$5,630,000
Bring Your Own Thermostat	\$1,586,871	\$147,941	\$1,734,812	\$37,078	\$1,771,890	\$3,021,000
C&I Lighting	\$3,104,740	\$289,408	\$3,394,148	\$8,152,705	\$11,546,853	\$12,674,000
C&I Standard	\$1,133,196	\$105,802	\$1,238,999	\$6,206,702	\$7,445,701	\$10,774,000
Small Business Direct Install	\$1,282,789	\$119,553	\$1,402,343	\$3,999,930	\$5,402,273	\$6,589,000
Subtotal	\$10,102,365	\$942,420	\$11,044,785	\$20,083,010	\$31,127,795	\$39,343,000

Programs approved in Case No. PUR-2019-00122⁵

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Program Name	Actual Costs	Margin	Subtotal	Lost Revenues ⁶	Total (4) + (5)	Total Approved Cost Cap ⁷
Low Income Multi-family	\$1,507,196	\$138,662	\$1,645,858	\$0	\$1,645,858	\$22,441,975
Low Income Single-family	\$665,811	\$61,255	\$727,066	\$0	\$727,066	\$18,192,318
Manufactured Housing Energy Star	\$66,630	\$6,130	\$72,759	\$0	\$72,759	\$2,598,725
Subtotal	\$2,239,636	\$206,047	\$2,445,683	\$0	\$2,445,683	\$43,233,018

**Cost Caps for Commission-Approved EE-RAC Programs
 Through June 30, 2021**

Programs approved in Case No. PUR-2020-00251⁵

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Program Name	Actual Costs	Margin	Subtotal	Lost Revenues ⁶	Total (4) + (5)	Total Approved Cost Cap ⁸
Small Business Direct Install	\$0	\$0	\$0	\$0	\$0	\$5,647,400
Business Energy Solutions	\$0	\$0	\$0	\$0	\$0	\$18,913,019
Energy Efficiency Kits	\$0	\$0	\$0	\$0	\$0	\$1,371,550
Home Energy Reports	\$0	\$0	\$0	\$0	\$0	\$4,340,900
Volt Var Optimization	\$0	\$0	\$0	\$0	\$0	\$1,727,146
Home Performance	\$0	\$0	\$0	\$0	\$0	\$11,787,077
Efficient Products	\$0	\$0	\$0	\$0	\$0	\$8,325,107
Bring Your Own Thermostat	\$0	\$0	\$0	\$0	\$0	\$5,315,700
Subtotal	\$0	\$0	\$0	\$0	\$0	\$57,427,898
Total	\$24,699,494	\$2,317,984	\$27,017,478	\$30,999,944	\$58,017,422	\$167,563,916

Notes:

¹ Lost revenues were provided in Ex. 12 (Ellis) at Schedule 1 - Revised from Case No. PUE-2014-00039

² EE-RAC Order at 12-14 and Ex. 12 (Ellis) at Schedule 1 - Revised from Case No. PUE-2014-00039

³ Lost revenues were provided in Ex. 10 (Mangalam) in Case No. PUR-2017-00126

⁴ From the Commission's Final Order in Case No. PUR-2017-00126

⁵ This table is provided at the request of Staff. The Company is not requesting recovery of lost revenues at this time.

⁶ Staff recommended cost caps based solely on the programmatic costs of the EE programs

⁷ From the Hearing Examiner Report in Case No. PUR-2019-00122

⁸ From Mangalam direct testimony in Case No. PUR-2020-00251

APCo Exhibit No. (FDN) Confidential Schedule 3
Filed Under Seal

APCo Exhibit No. (FDN) Confidential Schedule 4
Filed Under Seal

Session on Monday, October 19, 2020

Name	Email	Job Title	Company Name	Noticed	Registered	Attended
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Williams, Shane	swilliams3@aep.com	Coordinator	AEP	X	X	X
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Marlowe, Kelly	kmarlowe@apc.com		Appalachian Power	X	X	X
Brown, Kevin	kbrown1@aep.com	EE & Consumer Program Coord	Appalachian Power	X	X	X
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Robbins, Lindsay	lrobbins@nrcs.org		Natural Resources Defense Council	X		
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Moe, Jeff	Jeff.Moe@trane.com			X		

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Project Coordinator

Company Name

True Value

U.S. Green Building Council

U.S. Salvation Army

VA Advanced Energy Group

VA Multifamily EE Coalition

VAEEC

VA-GEO

Veteran LED

Virginia Conservation Network

Virginia Housing Alliance

Virginia SCC

Virginia State Corporation Commission

Virginia State Corporation Commission

Virginia State Corporation Commission

Virginia State Corporation Commission

Virginia Tech University

Virginia Tech University

Virginia Tech University

Vindiant

Virginia Poverty Law Center

Session on Wednesday, March 4, 2021

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Kretzing, Maria	mikretzing@bidgely.com	Director of Sales	Better Building Works	X	X	X
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Vance, Ken	kvance@cvt.org	Weatherization Program Manager	Central Va Alliance for Community Living	X	X	X
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Slater, Dean	dslater@clearesult.com		CLEAResult	X	X	X
Davis, Jaymar	jdavis@clearesult.com		CLEAResult	X	X	X
Carpenter, Leslie	leslie.carpenter@clearesult.com		CLEAResult	X	X	X
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Dix, Carla	cdix@nsource.com		Columbia Gas	X	X	X
Nelson, Andrew	anelson@chpc2.org		Community Housing Partners	X	X	X
Beachy, Bill	nelsonr@aol.com	Assistant Director of Operations	Community Housing Partners	X	X	X
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Bacon, Caroline	cbacon@chpc2.org		Community Housing Partners	X	X	X
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Fore, Lesley	lesley.fore@chpc2.org		Community Housing Partners	X	X	X
Jackson, Mark	markjackson@chpc2.org		Community Housing Partners	X	X	X
McMillen, Meghan	mmcmillen@chpc2.org		Community Housing Partners	X	X	X
Weber, Stephanie	sweber@chpc2.org	Director of Weatherization Programs and Services	Community Housing Partners	X	X	X
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Oslen, Nick	nick.oslen@dmme.virginia.gov		EnergyHub, Inc.	X	X	X
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Session on Thursday, May 3, 2021

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Session on Monday, November 8, 2021

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2025 RELEASE UNDER E.O. 14176

APCo Exhibit No.	Witness	Organization	Position	APCo Exhibit No.	Witness	Organization	Position
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37	Stemp, Chuck	chuck.stemp@cc.virginia.gov	Director	37	Stemp, Chuck	chuck.stemp@cc.virginia.gov	Director
38	Sorrell, Rita	rita.sorrell@cc.virginia.gov	Director	38	Sorrell, Rita	rita.sorrell@cc.virginia.gov	Director

9 10 11 12

APCo Exhibit No.
Witness: ZLB

211303

**DIRECT TESTIMONY OF
ZACHARY L. BACON
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

SUMMARY OF DIRECT TESTIMONY OF ZACHARY L. BACON

In my direct testimony, I:

- Support the Company's petition for approval to continue the EE-RAC;
- Present cost projections for the Rate Year, which covers September 1, 2022 through August 31, 2023 (2022 Rate Year), for the approved and proposed energy efficiency programs;
- Support the Company's request to increase its current EE-RAC recovery factor during the 2022 Rate Year; and
- Describe the accounting for the incremental costs associated with the approved and proposed EE Programs. The accounting mechanisms have not changed since the last EE-RAC case.

**DIRECT TESTIMONY OF
ZACHARY L. BACON
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

21130035

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

2 A. My name is Zachary L Bacon. My business address is 40 Franklin Road SW, Roanoke,
3 VA 24011. My current position is Manager of Energy Efficiency and Alternative Energy
4 Initiatives for Appalachian Power Company (APCo or Company).

5 **Q. BRIEFLY SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL**
6 **BACKGROUND.**

7 A. I received a Bachelor of Architecture degree from Virginia Polytechnic Institute and State
8 University in 2011 with a focus on residential energy efficiency. Before joining APCo, I
9 was a building science and weatherization trainer and received numerous certifications
10 related to energy efficiency. In 2013, I was hired by APCo in the Energy Efficiency
11 group.

12 **Q. WHAT ARE YOUR RESPONSIBILITIES AS MANAGER OF ENERGY**
13 **EFFICIENCY AND ALTERNATIVE ENERGY INITIATIVES?**

14 A. I am responsible for various aspects of the design, development, implementation and
15 measurement of consumer programs relating to Energy Efficiency (EE) for APCo.

16 **Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE THIS**
17 **COMMISSION?**

18 A. Yes. I have testified before the Virginia State Corporation Commission (Commission) in
19 Case Nos. PUR-2017-00094, PUR-2017-00126, PUR-2018-00118, and PUR-2020-
20 00251.

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

A. My testimony supports the Company's petition for approval to continue implementation of the EE Programs and the Energy Efficiency Rate Adjustment Clause (EE-RAC).

Specifically, the purpose of my testimony is to:

- (1) Provide an update on the Company's current EE Programs, which were approved in Case No. PUR-2017-00126 (the 2018 EE-RAC Order) and Case No. PUR-2019-00122 (the 2020 EE-RAC Order);
- (2) Provide cost projections for the Rate Year for the approved and proposed EE Programs;
- (3) Support the Company's revenue requirement for the Rate Year; and
- (4) Describe the accounting for the incremental costs associated with the proposed EE programs.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring:

- APCo Exhibit No. ____ (ZLB) Schedule 1 – True-Up Factor

Q. ARE YOU SPONSORING ANY RATE CASE SCHEDULES?

A. Yes. I am sponsoring:

- APCo Exhibit No. ____ (ZLB) Rate Case Schedule 46A Part 1– Schedule of Projected Costs
- APCo Exhibit No. ____ (ZLB) Rate Case Schedule 46A Part 2– Schedule of Projected Costs
- APCo Exhibit No. ____ (ZLB) Confidential Rate Case Schedule 46B (46.1.iii) Part 1– Confidential EE Cost Projection Support
- APCo Exhibit No. ____ (ZLB) Confidential Rate Case Schedule 46B (46.1.iii) Part 2– Confidential EE Cost Projection Support
- APCo Exhibit No. ____ (ZLB) Rate Case Schedule 46C – Annual Revenue Requirement

I. UPDATE ON APPROVED EE PROGRAMS

Q. PLEASE UPDATE THE COMMISSION ON THE PROGRESS OF THE EE PROGRAMS APPROVED IN THE 2018 EE-RAC ORDER.

A. Since the launch of these programs in January 2019, the Company has worked diligently with its implementation contractors to effectively achieve its participation and energy savings goals. Through June 2021, approximately 2,700 customers have participated in the Residential Home Performance Program (formerly called eScore), representing 60 percent of the three year goal. The Program was initially approved for a three-year period ending December 31, 2021 and is scheduled to continue with similar offerings starting in 2022.

Q. PLEASE UPDATE THE COMMISSION ON THE PROGRESS OF THE EE PROGRAMS APPROVED IN THE 2020 EE-RAC ORDER.

A. In its 2020 EE-RAC Order, the Commission approved three new programs consisting of the Residential Low Income Single Family, the Residential Low Income Multi-family, and the Residential ENERGY STAR® Manufactured Homes Program. All three programs were successfully launched in 2021 and are available to the Company's residential customers. In the first six months, the Residential Low Income Single Family Program provided weatherization services to 82 households throughout the Company's territory. For the same time period, the Residential Low Income Multi-family Program provided services to 220 units. The Residential ENERGY STAR® Manufactured Homes Program continues to gain interest and through the first six months, has provided rebates on 61 homes.

II. COST RECOVERY

Q. HOW DOES THE COMPANY PROPOSE TO RECOVER THE COSTS OF THE PROPOSED COMMERCIAL & INDUSTRIAL CUSTOM PILOT?

A. The Company is proposing to recover the costs of the proposed pilot program, including a margin on the pilot expenses, through the existing EE-RAC, which went into effect on January 1, 2016.

Q. WHAT MARGIN DOES THE COMPANY SEEK ON ITS OPERATING EXPENSES?

A. The Company calculated the margin on EE program expenses incurred through December 31, 2021 based on the Commission-authorized 9.2% return on common equity (ROE) set in Case No. PUR-2020-00015. The Virginia Clean Economy Act states beginning January 1, 2022, any margin awarded pursuant to its subdivision shall be applied as part of the Company's next rate adjustment clause true-up proceeding, subject to the Commission's review of the Company's achievement of its annual energy standards. The Company has excluded margins on projected EE program expenses after January 1, 2022 from the revenue requirement and will seek recovery of these margins in a future true-up proceeding.

Q. WHAT IS THE RATE YEAR IN THIS CASE?

A. The rate year is September 1, 2022 through August 31, 2023 (2022 Rate Year).

Q. WHY IS THE COMPANY BEGINNING THE RATE YEAR ON SEPTEMBER 1 INSTEAD OF JULY 1?

A. The rate year for the EE-RAC has typically followed a July through June timeline. Because the Company now files the EE-RAC filing in late November, the Order will

likely not be issued in time for rates to go into effect the following July. Thus, the Company is proposing to start the Rate Year on September 1.

Q. PLEASE DESCRIBE THE DEVELOPMENT OF THE REVENUE REQUIREMENT ASSOCIATED WITH THE 2022 RATE YEAR.

A. The Company utilized two components to develop a total revenue requirement for the 2022 Rate Year: (1) the Projected Factor and (2) the True-Up Factor. The Projected Factor is designed to recover projected costs associated with the EE programs and any portfolio design costs during the 2022 Rate Year inclusive of the ROE. The True-Up Factor is designed to return (or recover) any (over)/under recovery of costs associated with the EE programs on August 31, 2022. APCo Exhibit No. __ (ZLB) Schedule 2 presents the calculations used to determine the True-Up Factor.

Q. FOR THE PROPOSED PILOT THAT WILL BEGIN DURING THE 2022 RATE YEAR, HOW DID THE COMPANY DETERMINE THE EXPENSES TO BE INCLUDED IN THE PROJECTED FACTOR?

A. As the 2022 Rate Year encompasses 2/3 of the 2023 calendar year and the proposed pilot program would commence on January 1, 2023, the Company used 2/3 of the projected expenses for the C&I Custom Pilot expected to be in operation in 2023.

Q. WHAT IS THE COMPANY'S PROPOSED EE-RAC REVENUE REQUIREMENT FOR THE 2022 RATE YEAR?

A. As shown in Schedule 46C, the Company proposes a total EE-RAC revenue requirement of \$18,405,768 for the 2022 Rate Year. The Revenue requirement consists of a Projected Factor of \$19,672,909 and an actual True-Up Factor credit of \$1,267,141.

1 **Q. IS THE COMPANY REQUESTING A CHANGE TO THE RECOVERY**
2 **FACTOR?**

3 **A. Yes. The Company is requesting an increase in the recovery factor of approximately \$2.8**
4 **million. As described by Company witness Cost, the overall bills will increase by**
5 **approximately \$0.34 or 0.3% for a residential customer using 1,000 kWh per month.**

6 **Q. IS THE COMPANY PROPOSING ANY CHANGES TO THE ACCOUNTING**
7 **PROCEDURES FOR THE COSTS OF THE EE PROGRAMS?**

8 **A. No. Schedule 46D describes the accounting procedures and internal controls.**

9 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

10 **A. Yes, it does.**

Appalachian Power Company
 Energy Efficiency True-Up Factor
 From January 1, 2016 - August 31, 2022

(1)	(2)	(3)	(4)	(5)	(6)
Line No.	Description	Launch - Jun 30, 2020 (actual)	Jul 1, 2020 - Jun 30, 2021 (actual)	Jul 1, 2021 - Aug 31, 2022 (projected)	Total
1	C&I Prescriptive	4,384,855	-	-	4,384,855
2	Appliance Recycling	1,050,826	-	-	1,050,826
3	Home Performance	4,095,526	-	1,571,810	5,667,337
4	Efficient Products	2,748,545	-	1,110,014	3,858,560
5	Manufactured Housing ENERGY STAR®	421,436	66,630	554,167	1,042,232
6	eScore	1,563,743	1,087,329	530,214	3,181,286
7	Bring Your Own Thermostat	885,647	701,224	1,026,134	2,613,006
8	C&I Standard	703,522	429,674	695,878	1,829,074
9	C&I Lighting	1,714,889	1,389,851	820,948	3,725,688
10	Small Business Direct Install	698,393	584,386	1,009,544	2,292,334
11	Low Income Multi-family	-	1,507,196	4,571,827	6,079,022
12	Low Income Single-family	-	665,811	3,679,432	4,345,243
13	Energy Efficiency Kits	-	-	182,873	182,873
14	Home Energy Reports	-	-	578,787	578,787
15	Business Energy Solutions	-	-	2,521,738	2,521,738
16	VoltVar Voltage Control	-	-	29,222	29,222
17	Portfolio Design Costs	-	-	100,000	100,000
18	Total Direct Costs	\$ 18,267,382	\$ 6,432,111	\$ 18,982,387	\$ 43,681,880
19	Margin on Direct Costs at	varies	9.20%	9.20%**	
20	C&I Prescriptive	415,223	-	-	415,223
21	Appliance Recycling	98,922	-	-	98,922
22	Home Performance	387,712	-	-	387,712
23	Efficient Products	260,227	-	-	260,227
24	Manufactured Housing ENERGY STAR®	39,774	6,130	21,850	67,754
25	eScore	147,118	100,034	48,780	295,932
26	Bring Your Own Thermostat	83,327	64,513	40,459	188,299
27	C&I Standard	66,182	39,530	64,021	169,732
28	C&I Lighting	161,283	127,866	57,127	346,276
29	Small Business Direct Install	65,694	53,764	39,805	159,264
30	Low Income Multi-family	-	138,662	180,261	318,923
31	Low Income Single-family	-	61,255	152,980	214,235
31	Energy Efficiency Kits	-	-	-	-
32	Home Energy Reports	-	-	-	-
33	Business Energy Solutions	-	-	-	-
34	VoltVar Voltage Control	-	-	-	-
35	Portfolio Design Costs	-	-	3,943	3,943
36	Total Margin	\$ 1,725,463	\$ 591,754	\$ 609,206	\$ 2,926,423
37	EE-RAC Revenue Requirement				
38	C&I Prescriptive	4,800,078	-	-	4,800,078
39	Appliance Recycling	1,149,748	-	-	1,149,748
40	Home Performance	4,483,238	-	1,571,810	6,054,848
41	Efficient Products	3,008,773	-	1,110,014	4,118,787
42	Manufactured Housing ENERGY STAR®	481,210	72,759	576,017	1,109,986
43	eScore	1,710,861	1,187,363	578,994	3,477,219
44	Bring Your Own Thermostat	968,974	785,737	1,066,593	2,801,304
45	C&I Standard	769,704	469,204	759,899	1,998,807
46	C&I Lighting	1,876,172	1,517,717	678,075	4,071,964
47	Small Business Direct Install	784,087	638,161	1,049,349	2,451,597
48	Low Income Multi-family	-	1,645,858	4,752,087	6,397,945
49	Low Income Single-family	-	727,066	4,032,392	4,759,458
49	Energy Efficiency Kits	-	-	182,873	182,873
50	Home Energy Reports	-	-	578,787	578,787
51	Business Energy Solutions	-	-	2,521,738	2,521,738
52	VoltVar Voltage Control	-	-	29,222	29,222
53	Portfolio Design Costs	-	-	103,943	103,943
54	Total Actual Costs	\$ 19,992,845	\$ 7,023,865	\$ 19,591,592	\$ 46,608,303
55	Revenue Collected/Projected	\$ 23,024,768	\$ 9,054,071	\$ 15,638,904	\$ 47,717,744
56	EDIT Adjustment	\$ (157,700)	\$ -	\$ -	\$ (157,700)
57	(Over)/Under Recovery	\$ (3,189,623)	\$ (2,030,206)	\$ 3,852,688	\$ (1,267,141)

**Margin only calculated on costs through December 31, 2021

2111300000

APCo Exhibit No. _____
Witness: KCB

2113006

**DIRECT TESTIMONY OF
KEVIN C. BROWN
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

SUMMARY OF DIRECT TESTIMONY OF KEVIN C. BROWN

In my testimony, I:

- Support the Company's petition for approval of one proposed Commercial and Industrial (C&I) Pilot program, the C&I Custom Pilot Program. If approved by the Commission, the C&I Custom Pilot Program would be implemented beginning January 2023;
- Provide an update on four of the five programs approved in Case No. PUR-2017-00126. These include the C&I Lighting Program, C&I Standard Program, Small Business Direct Install Program, and Bring-Your-Own Smart Thermostat Program;
- Provide an update on the new Business Energy Solutions Program and Volt Var Optimization Program approved in Case No. PUR-2020-00251; and
- Provide an update of customers exempted from participation in the energy efficiency programs.

**DIRECT TESTIMONY OF
KEVIN C. BROWN
FOR APPALACHIAN POWER COMPANY
IN VIRGINIA S.C.C. CASE NO. PUR-2021-00236**

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

2 A. My name is Kevin C. Brown. I am employed by Appalachian Power Company (APCo or
3 Company) and my business address is 500 Lee St. E., Suite 800, Charleston, West
4 Virginia 25301. My current position is Energy Efficiency and Consumer Programs
5 Coordinator SR.

6 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
7 **BUSINESS EXPERIENCE.**

8 A. I received a Bachelor of Science Degree in Electrical Engineering from West Virginia
9 Institute of Technology in 1988 and earned a Master of Business Administration Degree
10 from California University of Pennsylvania in 1989. I am a registered Professional
11 Engineer in West Virginia and hold the Certified Energy Manager designation.

12 I was initially employed by APCo in 1989 and held various engineering positions
13 of increasing responsibility in the generation organization. I left APCo in 1999 to work
14 in the telecommunication industry and held various positions in operations, engineering,
15 and construction. In July 2010, I became the Engineering and Construction Manager for
16 Frontier Communications where I was responsible for outside plant engineering and
17 construction in central West Virginia. In August 2017, I rejoined APCo and assumed my
18 current role in the Energy Efficiency group.

**Q. WHAT ARE YOUR RESPONSIBILITIES AS ENERGY EFFICIENCY AND
CONSUMER PROGRAMS COORDINATOR SR?**

A. I am responsible for various aspects of the design, development, implementation, and measurement of consumer programs relating to Energy Efficiency (EE) and Demand Response (DR) for APCo.

**Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY AS A WITNESS
BEFORE ANY REGULATORY COMMISSION?**

A. Yes. I have testified before the Virginia State Corporation Commission in Case No. PUR-2020-00251. I have also testified before the Public Service Commission of West Virginia in Case No. 19-0396-E-P and 21-0332-E-P.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to:

- Provide an update on the following programs, which were approved in Case No. PUR-2017-00126 (the 2018 EE-RAC Order):
 - Commercial and Industrial (C&I) Lighting Program
 - C&I Standard Program
 - Small Business Direct Install (SBDI) Program
 - Residential Bring-Your-Own Smart Thermostat (BYOT) Program
- Provide an update on the progress of the new Business Energy Solutions program (BES) and the Volt Var Optimization (VVO) Pilot program (the VVO Pilot), both of which were approved in Case No. PUR-2020-00251 (the 2021 EE-RAC Order);
- Describe one new pilot program; and
- Provide an update on customers currently exempted from the energy efficiency programs.

Q. ARE YOU SPONSORING ANY EXHIBITS IN THIS PROCEEDING?

A. I am sponsoring the following exhibit:

- APCo Exhibit No. (KCB) Schedule 1 = Proposed EE Program Template

I. UPDATE ON APPROVED PROGRAMS

Q. PLEASE PROVIDE AN UPDATE ON THE C&I EE PROGRAMS.

A. The C&I programs continue to experience significant interest and participation. Through September 2021, approximately 1,500 projects were completed through the C&I Programs. In addition, the C&I Programs continue to have a strong trade ally network of over 100 organizations including lighting distributors, electrical contractors, and consultants. The C&I Lighting Program and SBDI Program are performing well and meeting participation and savings goals.

The Standard Program continues to be adversely impacted by the COVID-19 pandemic. The increased cost of material and customers' hesitancy to make capital expenditures resulted in the program underperforming. An additional factor was the difficulty that customers and trade allies had distinguishing between the two programs. As a result, they would often focus on the lighting portion while overlooking the cost saving benefits of non lighting measures. The new Business Energy Solutions program, which will launch in 2022, will build on the momentum generated by the existing C&I Lighting Program and C&I Standard Program by promoting both high efficiency lighting and non-lighting upgrades. By including both lighting and non-lighting upgrades in one program, it will encourage trade allies and customers to consider adding additional measures to their application throughout the project process.

Q. PLEASE PROVIDE AN UPDATE ON THE BYOT PROGRAM.

A. Since the launch of the program in January 2019, the program has continued to increase participation. In the first three quarters of 2021, the program enrolled over 1,500 devices,

1 bringing the total to over 5,100 enrolled devices. Of the new participants through
2 September of 2021, approximately 50 participated in the previous Peak Reduction
3 Program. The BYOT Program called 15 events during the summer of 2021. In 2021, the
4 Company was successful in initiating events during all five PJM coincident peak days
5 (SCP). Participant satisfaction with the program remained high.

6 **Q. PLEASE PROVIDE AN UPDATE ON THE BES PROGRAM THAT WAS**
7 **APPROVED IN CASE NO. PUR-2020-00251.**

8 A. The BES Program continues to prepare for launch and transition in early 2022. The
9 implementer is currently putting staff in place to have a successful launch. The
10 implementer continues to work with APCo on data analysis of customers, marketing, and
11 transition of existing programs to the new program.

12 **Q. PLEASE PROVIDE AN UPDATE ON THE VVO PILOT PROGRAM THAT WAS**
13 **APPROVED IN CASE NO. PUR-2020-00251.**

14 A. The VVO program continues to progress. APCo has engaged Eaton Corporation on
15 equipment, software, and other aspects to ensure a successful program. APCo is
16 preparing detailed scoping documents for the first two circuits. It is estimated that VVO
17 will be operational on the first two circuits near the end of 2022. By June 30, 2022,
18 APCo expects to send out targeted postcards to the customers who are served by the
19 circuits scheduled to be turned on at the end of 2022. Additional targeted postcards are
20 planned in 2023 and 2024 for customers served by the circuits with VVO implemented in
21 those years. By sending postcards close to the implementation date, APCo will ensure
22 that customers receive timely communication on the changes being made to the circuit.

II. C&I CUSTOM PILOT PROGRAM

Q. PLEASE DESCRIBE THE C&I CUSTOM PILOT PROGRAM.

A. The Company is designing the C&I Custom Pilot Program based on a similar program that was offered by APCo in its West Virginia jurisdiction. Under the new Pilot Program, qualifying C&I customers will have the opportunity to earn incentives for energy efficiency improvements that are not already covered by the BES Program and/or Small Business Direct Install Program. Customers would receive an incentive customized to the specific results of the energy efficiency technologies, processes, and measures proposed for implementation. For example, the Company may offer a certain energy incentive (\$/kWh) for verified kWh savings and/or (\$/KW) reduction from the customer's energy project. However, any incentives would be subject to the Company's and/or implementer's review and acceptance of the savings claims in advance of the project installation. Larger projects will have a split payment with a partial payment paid after project completion and final payment based on the completion EM&V analysis. Throughout the pilot program, performance goals, budgets, avoided cost, and participation will be analyzed to refine and calculate incentive levels to increase the cost-effectiveness.

Q. WHY IS APCO PROPOSING A C&I CUSTOM PILOT PROGRAM?

A. APCo's C&I programs have been largely successful. The proposed pilot program will provide C&I customers with the opportunity to implement non-standard, more complex energy efficiency projects that fall outside of the current offerings. The program will provide comprehensive savings opportunities by maximizing energy savings in their

1 unique facilities and for their specific operations, driving repeat customer participation in
2 all APCo energy efficiency programs.

3 **Q. WHY IS THE PROGRAM BEING PROPOSED AS A PILOT?**

4 A. The Company has decided to implement the C&I Custom Pilot Program on a limited
5 duration of three years. By limiting the duration to three years, it also limits the cost and
6 total scope of a complete Custom Program while allowing the Company to demonstrate
7 the cost-effectiveness of the program. While each project in the program will be unique,
8 the pilot will demonstrate that results for custom projects are predictable and are in the
9 public interest.

10 **III CUSTOMERS EXEMPTED FROM ENERGY EFFICIENCY PROGRAMS**

11 **Q. PLEASE PROVIDE AN UPDATE ON CUSTOMERS EXEMPTED FROM**
12 **PARTICIPATION IN THE ENERGY EFFICIENCY PROGRAMS.**

13 A. Case No. PUR-2020-00172 established rules by which large general services customers
14 may be exempt from participation in energy efficiency programs. The Company had 10
15 customers, for a total of 16 electric accounts, file for non-participation in the energy
16 efficiency programs. Of the 16 electric accounts, the Company accepted 15. One was
17 denied because the customer missed the deadline to apply. The Company verified the
18 criteria for a large general service customer set forth in 20VAC-350-10 was met for each
19 account and all required information by 20VAC5-350-30 was provided. Therefore, the
20 exemptions were accepted. The Virginia Clean Economy Act states that “[s]avings from
21 large general service customers shall be accounted for in utility reporting in the standards
22 in §56-596.2.” Company witness Diebel reports the savings as part of the persistent
23 energy savings in his direct testimony.

1 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

2 A. Yes, it does.

C&I Custom Pilot Program

Appalachian Power Company – Virginia

Objective:	The objective of the C&I Custom Pilot Program is to compliment the Business Energy Solutions Program (BES) and Small Business Direct Install Program (SBDI). The program will generate energy savings for commercial and industrial (C&I) customers served by Appalachian Power Company (APCo or Company), through the promotion of energy efficient buildings, systems, operations and measure. The program encourages energy and demand reductions by C&I customers and will focus on improving the energy efficiency for processes, systems, operations, and measures not available to customers through the Business Energy Solutions Program and or Small Business Direct Install Program.
Target Market:	Non-residential customers, that are not served under the Public Authority or Commonwealth of Virginia Tariff's or have not elected to opt out of APCO's energy efficiency programs are eligible to participate. Generally, the program design to offers cross cutting technologies that address a variety of market sectors and industries.
Program Description:	<p>The C&I Custom Pilot Program incentivizes C&I customers to perform work or install measures not currently covered in the BES Program and/or SBDI Program. Any project that produces a set annual minimum of kWh savings will potentially qualify for an incentive. For each project, an analysis must be performed that certifies the savings on the rebate application. The following lists types of projects that may qualify.</p> <ul style="list-style-type: none"> • Building/facility re-commissioning that results in kWh savings • Motor control system upgrades • Air compressor system upgrades • Cooling • Ventilation • Industrial Processes <p>The program will generally utilize local contractors and installers for the energy efficiency equipment installations and create local jobs. A third-party program implementation contractor, selected by APCo, leverages the local trade ally community to deliver results. The implementation contractor is responsible for providing turnkey services to APCo and, among other things, performs all trade ally recruitment, enrollment and training sessions, including face-to-face workshops with trade allies and APCo customers.</p> <p>The incentive is to help offset the initial project costs, which are barriers for many customers to perform the upgrades on their own.</p>
Incentive Strategy:	Cash-back incentives will be available to customers for the resulting reduction of kWh that are not included in the BES Program and/or SBDI Program. Tiered incentive approaches and incentive caps per customer account may also be designed to help ensure customers who wish to participate have the opportunity to do so. All customer incentive calculations will be

	verified to ensure completeness and accuracy.
Eligible Measures:	Energy saving measures resulting in a reduction of kWh that the customer is not eligible for in the BES Program and/or SBDI are eligible for the C&I Custom Pilot Program. Each application will have a pre installation Technical Review conducted and post installation review that certifies the energy savings for the incentive to be paid.
Implementation Strategy:	<p>All program-specific administrative requirements will be handled by a third party implementation contractor selected through a competitive bid process. APCo will provide general oversight to the contractor and ensure that program objectives are in step with contractor performance, goals are being obtained, and recommend adjustments to program design and/or delivery as required.</p> <p>The high level process steps for participation in this program, subsequent to the customer becoming aware of the program, are outlined below:</p> <ol style="list-style-type: none"> 1. Customer submits a Pre-Approval Application <ul style="list-style-type: none"> • Customer defines the project, equipment to be replaced, and other data to ensure eligibility in the program. • Pre-inspection and analysis of existing equipment by the contractor is required for all projects greater than 250,000 kWh. • If application is approved, the Company "reserves" funds in the program for the customer. Reservation of funds will help control the overall program budget. • Approval of the pre-approval application provides authorization for the customer to proceed with the installation of energy efficiency equipment and materials. 2. Upon completion of the project, the customer submits a final application <ul style="list-style-type: none"> • Provides pre- / post-equipment listing and other required data • Provides other appropriate documentation (itemized invoices, purchase orders, proof of payment, etc.) • A post-inspection of installation by the program implementation contractor is required for the first 3 projects and projects over 250,000 annual kWh. • A final analysis is required to confirm energy savings 3. Contractor to define recommended post-inspection schedules and guidelines to ensure quality control <ul style="list-style-type: none"> • The contractor reviews final application, ensures all required documentation has been provided, verifies the project meets program qualifications, and calculates the incentive payment. Documentation is then issued to Company. <p>Project is approved, either as submitted or modified as recommended by the Contractor and the Company, and Customer receives appropriate incentive payments. Projects with savings greater than 500,000 annual kWh, a partial payment will be made upon project completion and the remainder paid following M&V and will account for actual savings realized.</p>
Marketing Strategy:	C&I customers are the ultimate target of marketing campaigns. There are two distinct marketing channels that will be utilized: direct marketing to the customer and indirectly through trade allies. The marketing strategies for each channel are summarized below.

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	<p>Direct to the customer:</p> <ul style="list-style-type: none">• Direct mail, bill inserts, program brochures and other print media can be used to inform the customer of the program and its benefits.• The program details will be available on APCo’s program website.• APCo’s account executives that manage larger C&I customers will be utilized to inform their clients.• Industry groups and associations that C&I customers may belong to will be engaged to help disseminate program information at events or via their publications. <p>Trade Allies:</p> <ul style="list-style-type: none">• C&I customers utilize many trade allies to perform upgrades and improve systems. These trade allies are often the best channel to these customers as they have a direct interest in assisting their clients. The following types of trade allies will be engaged in the marketing campaign.<ul style="list-style-type: none">○ Energy Service Companies (ESCOs)○ Engineering firms with commercial and industrial clients○ Electrical distributors○ Electrical, mechanical, and HVAC contractors• Workshops and training sessions will be conducted with Trade Allies to educate them on the program details, available incentives, and how to incorporate energy efficiency into their sales strategies.															
<p>Evaluation, Measurement & Verification (EM&V):</p>	<p>All EM&V activities will be conducted by a third-party contractor. An integrated evaluation approach will be taken which includes addressing evaluation at the onset of program design, collecting evaluation data as part of program administration, assessing and documenting baseline conditions, establishing tracking metrics, developing and refining deemed savings measure databases, as well as conducting primary and secondary research as part of impact and process evaluations.</p> <ul style="list-style-type: none">• The overall goal of the <i>impact evaluation</i> will be to validate/calibrate the savings values and determine program cost-effectiveness. Self-report surveys with both participants and non-participants may be used to assess free riders/spillover. The participant and non-participant surveys would also address program awareness, barriers to participation, participant satisfaction, and process efficiency. These surveys will be enhanced by collecting market data and assessing trends as well as interviews with program staff, vendors, and other trade allies.															
<p>Estimated Program Impacts</p>	<p>Estimated impacts, both energy and demand, are provided in the table below.</p> <table><tr><td>C&I Custom Program</td><td>2023</td><td>2024</td><td>2025</td><td>Total</td></tr><tr><td>Energy Savings (MWh)</td><td>10,000</td><td>10,000</td><td>10,000</td><td>30,000</td></tr><tr><td>Demand Savings (kW)</td><td>5,000</td><td>5,000</td><td>5,000</td><td>15,000</td></tr></table>	C&I Custom Program	2023	2024	2025	Total	Energy Savings (MWh)	10,000	10,000	10,000	30,000	Demand Savings (kW)	5,000	5,000	5,000	15,000
C&I Custom Program	2023	2024	2025	Total												
Energy Savings (MWh)	10,000	10,000	10,000	30,000												
Demand Savings (kW)	5,000	5,000	5,000	15,000												

**Program
Budget**

The anticipated cost to APCo for offering this program to customers involves budgets for:

- An incentive to lower the cost of performing the engineering study and project
- Administrative costs of the selected implementation contractor to develop, implement, advertise, oversee, monitor, track and report on the program.
- Program EM&V
- Supplemental marketing performed by the Company
- Utility administration includes APCo VA staffing and corporate support costs
- Margins are estimated based on HB 1526 "Virginia Clean Economy Act" of

C&I Custom Program	2023	2024	2025	Total
Incentives	1,000,000	1,000,000	1,000,000	3,000,000
Contractor Program Costs	850,000	750,000	750,000	2,350,000
Evaluation & Measurement	80,000	80,000	80,000	240,000
Utility Promotion	75,000	75,000	75,000	225,000
Utility Administration	125,000	125,000	125,000	375,000
Margins	213,000	203,000	203,000	619,000
Total	2,343,000	2,233,000	2,233,000	6,809,000