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210310050

March 2, 2021

VIA ELECTRONIC FILING

Mr. Joel H. Peck, Clerk
c/o Document Control Center
State Corporation Commission
Tyler Building – First Floor
1300 East Main Street
Richmond, Virginia 23219

RE: Virginia Electric and Power Company — For approval of a rate adjustment clause, designated Rider RGGI, under § 56 585.1 A e of the Code of Virginia

Case No. PUR-2020-00169

Dear Mr. Peck:

Attached for filing in the above-referenced docket is the Direct Testimony of Karl R. Rábago, which is being submitted on behalf of Appalachian Voices ("Environmental Respondent"). Included with this testimony are Mr. Rábago's one-page summary and three attachments. This filing is being completed electronically, pursuant to the Commission's Electronic Document Filing system. This notice is being filed electronically, pursuant to the Commission's Electronic Document Filing system.

As authorized by Rule 140 of the Commission's Rules of Practice and Procedure, Environmental Respondent is providing, and agrees to accept, service of documents in this case exclusively via email unless parties request otherwise.

If you should have any questions regarding this filing, please do not hesitate to contact me at (434) 977-4090.

Regards,



Nathaniel Benforado

cc: Parties on Service List

**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION**

PETITION OF VIRGINIA ELECTRIC)
AND POWER COMPANY)

For approval of a rate adjustment clause,)
designated Rider RGGI, under)
§ 56-585.1 A 5 e of the Code of Virginia)

Case No. PUR-2020-00169

**Summary of Direct Testimony of
Karl R. Rábago, Rábago Energy LLC**

**On Behalf of
Environmental Respondent**

2 March 2021

1 **Summary of Direct Testimony of Karl R. Rábago**

2 I am Karl R. Rábago, and I appear on behalf of Environmental Respondent. I am
3 principal of Rábago Energy LLC, a Colorado Limited Liability Company, with a business
4 address of 2025 E. 24th Avenue, Denver, Colorado.

5 I conclude that the Company has not established that the costs it proposes to recover for
6 RGGI program compliance are necessary, nor have they established that the RGGI Rider and
7 associated allowance estimation and procurement strategy are reasonable and prudent. The
8 Company has failed to justify that it is purchasing the necessary amount of allowances and failed
9 to establish that they are planning to procure such allowances in a least-cost, optimal way.
10 Moreover, the Company proposes procuring 10 to 20 percent more allowances than it
11 purportedly needs, but has done no economic analysis to support this approach. Importantly, the
12 Company proposes an incentive to over-procure allowances—rather than accurately project
13 need—as it seeks to earn a rate of return on unused allowances.

14 I recommend that the Commission reject the petition as it relates to the Company's
15 proposed RGGI allowance strategy. I recommend that the Commission direct the Company to
16 replace its programmatic approach to RGGI allowance procurement with a more sophisticated
17 and potentially less costly resource portfolio-based strategy. I recommend that the Commission
18 grant deferred accounting treatment, subject to a later prudence review of costs incurred, for
19 allowances that the Company feels it should procure pending the development, submission, and
20 approval of an improved RGGI allowance strategy. This approach will not prejudice the
21 Company but will ensure the Commission has the information it needs to ensure only
22 “necessary” costs are passed along to customers. The Company may continue procuring
23 allowances as it has been in advance of December 31, 2023, the actual RGGI compliance date.

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

PETITION OF VIRGINIA ELECTRIC AND)
POWER COMPANY)

For approval of a rate adjustment clause,)
designated Rider RGGI, under)
§ 56-585.1 A 5 e of the Code of Virginia)

Case No. PUR-2020-00169

Direct Testimony of
Karl R. Rábago, Rábago Energy LLC

On Behalf of
Environmental Respondent

2 March 2021

INTRODUCTION & OVERVIEW

Q 1: Please state your name, business name and address, and role with Environmental Respondent.

A: My name is Karl R. Rábago. I am the principal of Rábago Energy LLC, a Colorado limited liability company, located at 2025 E. 24th Avenue, Denver, Colorado. I appear here in my capacity as an expert witness on behalf of Appalachian Voices (“Environmental Respondent”).

Q 2: Please summarize your experience and expertise in the field of electric utility regulation and the renewable energy field.

A: I have worked for more than 30 years in the electricity industry and related fields. I am and have been actively involved in a wide range of electric utility issues across the United States and around the world, in several different capacities. My previous employment experience includes Commissioner with the Public Utility Commission of Texas, Deputy Assistant Secretary with the U.S. Department of Energy, Vice President with Austin Energy, Director with AES Corporation, executive director of the Pace Energy and Climate Center, managing director with Rocky Mountain Institute, program manager with the Houston Advanced Research Center, and energy program manager for Environmental Defense Fund, among others. I hold a bachelor’s degree in business management, and I am trained as an attorney with a Juris Doctorate in Law and two post-doctorate Master of Laws degrees, one each in Military and Environmental Law. A detailed resume is attached as Attachment KRR-1.

1 **Q 3: Have you ever testified before the Virginia SCC or other regulatory agencies?**

2 **A:** Yes. In Virginia, I have submitted testimony in Virginia SCC Cases PUE-2012-00064,
3 PUE-2013-00088, PUE-2014-00026, PUE-2015-00035, PUE-2015-00036, PUE-2016-
4 00049, PUE-2016-00050, PUR-2017-00051, PUR-2017-00045, PUR-2018-00065, PUR-
5 2019-00050, PUR-2020-00035, PUR-2020-00135, and PUR-2020-00134. I have
6 submitted testimony, comments, or presentations in proceedings in Alabama, Arkansas,
7 Arizona, California, Colorado, Connecticut, District of Columbia, Florida, Georgia,
8 Guam, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts,
9 Michigan, Minnesota, Missouri, Nevada, New Hampshire, New York, North Carolina,
10 Ohio, Pennsylvania, Puerto Rico, Rhode Island, Vermont, Virginia, Washington, and
11 Wisconsin. I have also testified before the U.S. Congress and have been a participant in
12 comments and briefs filed at several federal agencies and courts. A listing of my recent
13 previous testimony is attached as Attachment KRR-2.

14 **Q 4: What materials did you review in preparing this testimony?**

15 **A:** I reviewed applicable sections of the Code of Virginia, the filing by Virginia Electric and
16 Power Company ("Company") in this proceeding, the Company's filing in its 2020
17 Renewable Portfolio Standard ("RPS") and Integrated Resource Plan ("IRP")
18 proceedings, and the Company's responses to requests for information from
19 Environmental Respondent and from other parties in the case. In addition, I reviewed my
20 testimony in prior Company filings before the Virginia State Corporation Commission
21 (the "SCC" or the "Commission").

1 **Q 5: What is the purpose of this testimony?**

2 **A:** In this testimony, I examine the Company's petition for approval of its proposed rate
3 adjustment clause ("RAC"), which it refers to as Rider RGGI. This RAC is proposed to
4 recover projected and actual costs related to the purchase of allowances through the
5 Regional Greenhouse Gas Initiative ("RGGI") program in which the Company is
6 required to participate. Based on my review, I provide a number of conclusions and
7 recommendations concerning proposed Rider RGGI. The Company also requests certain
8 waivers relating to applications and filings, on which I offer no testimony.

9 **Q 6: Based on your review of the Company's Plan, what do you conclude?**

10 **A:** Pursuant to Va. Code § 56-585.1 A 5, the Company must establish that the costs it
11 proposes to recover relating to RGGI allowance purchase requirements are necessary, and
12 that such costs are reasonable and prudent under Va. Code § 56-585.1 D. I conclude that
13 the Company has not demonstrated that the costs it proposes to incur are necessary, nor
14 has it established that the RGGI Rider and underlying allowance estimation and
15 procurement strategy are reasonable and prudent.

16 As proposed, the Company may be over-projecting allowance needs by relying
17 heavily on inputs and modeling from an IRP that is already outdated and that the
18 Commission has already rejected as not reasonable. The Company then exacerbates this
19 potential over-procurement by proposing to acquire 10 to 20 percent more allowances
20 than it projects to need. Although the Company claims these extra allowances are needed
21 to guard against price fluctuations, the proposal does not appear to be based on any
22 economic analysis. Moreover, the Company proposes to earn a return on equity on

1 unused allowances, thereby creating an incentive for the Company to over-procure
2 allowances rather than procure the optimal amount.

3 In effect, the Company is proposing to over-procure allowances now and figure
4 out how best to use them later. This scenario would cost customers more than is
5 necessary. Moreover, creating a large pool of unused allowances at the outset of the
6 program could sever or weaken the link between the price of allowances and the
7 Company making cost-effective decisions to reduce emissions over time.

8 Although I conclude there are significant problems with the Company's RGGI
9 modeling and proposed procurement strategy, I do conclude that the Company's proposal
10 to allocate allowance costs according to energy use is reasonable.

11 **Q 7: What do you recommend?**

12 **A:** I recommend that the Commission reject the petition as it relates to the Company's
13 proposed RGGI allowance strategy—both as to the quantity of allowances and mode of
14 procurement. In order to ensure that the costs the Company proposes to recover are truly
15 necessary, I recommend that the Commission direct the Company to completely revisit
16 its proposed programmatic approach to RGGI allowance procurement.

17 In particular, I recommend that the Company be required to implement a more
18 sophisticated and potentially less costly resource portfolio-based strategy. I recommend
19 that the actual costs incurred by the Company to procure necessary allowances must be
20 reviewed by the Commission in light of the Company's IRP and RPS planning efforts
21 and must be estimated and projected based on reasonable assumptions and inputs
22 regarding the operation of generating units and generation operations affected by the
23 Virginia Department of Environmental Quality's ("DEQ") Carbon Rule in 9 VAC §§ 5-

140-6-10 through 5-140-6440. In determining the appropriate amount of allowances to procure, the Company needs to plan for the optimal RGGI compliance approach, taking into account IRP and RPS information results, including generation development and energy procurement, plant retirement timing, plant upgrades, increased energy efficiency programs, support for small and distributed generation development, and many other factors.

Q 8: Does following your recommendations mean the Company should not proceed to acquire RGGI allowances pending Commission approval of its allowance strategy?

A: No. I recommend that the Commission grant deferred accounting treatment, subject to a later prudence review of costs incurred, for allowances that the Company feels it should procure pending development, submission, and approval of an improved RGGI allowance strategy. This approach affords the Company latitude in procuring allowances for interim compliance purposes while it develops a more comprehensive approach to procuring the proper number of allowances at the right time and through the right mechanisms. This approach will not prejudice the Company since its first full compliance with RGGI allowance requirements will not occur until December 31, 2023, and deferred accounting can be used to recover costs of prudent spending on allowance procurements.

OVERVIEW OF RGGI PROGRAM REQUIREMENTS AND COST RECOVERY

Q 9: Please summarize your understanding of the RGGI program requirements on the Company and the associated cost recovery issues.

A: The Company's petition provides a useful summary of the RGGI program requirements that the Company faces. The RGGI program is a multi-state cap and trade program that uses allowance allocations, auctions, offsets, sales, and retirements as the mechanism for

1 systematically reducing carbon emissions from large electric generating facilities
 2 operating within member states. The Company operates and plans to operate affected
 3 generation and therefore must acquire, hold, and retire emissions allowances in
 4 accordance with carbon dioxide emissions produced at those generation facilities.
 5 Virginia law does not prescribe the strategy the Company must use to comply with RGGI
 6 requirements. RGGI compliance will be impacted by resource planning decisions through
 7 the IRP, which changes the economics of fossil-generation operations, as well as the
 8 Virginia Clean Economy Act ("VCEA") and RPS, which impact the composition and
 9 dispatch of the generation fleet that provides the electricity the Company generates,
 10 procures, and sells in Virginia.

11 Va. Code § 56-585.1 A 5 e provides that incurred costs necessary to comply with
 12 RGGI may be recovered from customers upon approval of the Commission through a rate
 13 adjustment clause. Virginia law does not prescribe the accounting treatment that the
 14 Commission must approve associated with recovery of such costs.

15 **Q 10: What standards govern the Commission's review of the Company's RGGI Rider**
 16 **proposal?**

17 **A:** Under Va. Code § 56-585.1 A 5, the Commission must determine whether the costs
 18 proposed for recovery are necessary. And under Va. Code § 56-585.1 D, the Commission
 19 must also determine that the projected and actual costs are reasonable and prudent.

1 **Q 11: What is the timeframe for measuring the Company's compliance with RGGI**
2 **allowance requirements?**

3 **A:** At the end of 2021 and then again in 2022, the Company must comply with interim
4 control period requirements by holding at least 50 percent of the allowances it will need.¹
5 Full compliance, *i.e.*, where the Company must have one allowance for every ton of
6 carbon dioxide emitted, is only measured at the end of the 3-year control period, which
7 will occur on December 31, 2023.² In other words, the Company has some time available
8 vis-à-vis the RGGI control periods and, in fact, the Company has already been procuring
9 allowances.³ This timeframe also means the Commission need not feel pressured to
10 approve a proposed rate adjustment clause that lacks sound modelling and least-cost
11 analysis as a foundation.

12 **Q 12: How does RGGI compliance relate to IRP and RPS planning?**

13 **A:** While RGGI compliance stands as an independent environmental compliance obligation
14 under the DEQ carbon rule, cost-effective compliance is inextricably related to both the
15 IRP and RPS obligations that the Company faces under Virginia law. As a result, the
16 primary consideration in developing a RGGI allowance strategy must be its integration
17 with those planning processes.

18 In most simple terms, the RGGI allowance strategy should start from the results
19 of an approved and sufficient integrated resource plan and a least-cost VCEA compliance
20 plan, including a plan for least-cost RPS compliance. RGGI allowance costs will likely
21 constitute a material factor in the cost of operating fossil units and could affect the timing

¹ 9 VAC 5-140-6020 (definition of "Interim Control Period"); 9 VAC 5-140-6050 C.

² 9 VAC 5-140-6020 (definition of "Control Period"); 9 VAC 5-140-6050 C.

³ McMillan Direct at 9.

and scale of renewable energy development and contracts as well as unbundled REC procurements. In light of these significant and interactive relationships, I believe that a prudent RGGI allowance strategy would account for allowance costs through a portfolio management approach integrated into resource planning and would take a system-wide approach to identifying opportunities to minimize allowance procurement costs—just as with RPS compliance and REC costs.

Q 13: What else should the Company do in crafting a prudent RGGI allowance strategy?

A: The Company should ensure that the manner in which it proposes to spend customer money results in least-cost compliance—that is, that recovery is only for necessary costs. That means the Company should develop and analyze alternative approaches to allowance procurement based on risk, cost, and flexibility. The strategy should be based on price outlooks, including variations in quarterly auction prices and yearly auction prices, as is reasonable in light of control period and interim control period obligations. The Company should develop a least-cost strategy that optimizes costs from allowance auctions and secondary market purchases, including futures contracts, and also factors in offsets.

It is also wise for the Company to develop a banking strategy and to consider the procurement of an appropriate amount of excess allowances as a hedge against market volatility and unexpected increases in demand for energy. The banking quantity should be based on probabilistic analysis tied to historical trends and modeling forecasts. As I discuss later, the Company's proposed 10 to 20 percent surplus does not appear to be based on any such analysis.

1 **Q 14: Please explain what you mean by a “system-wide” approach.**

2 **A:** RGGI allowance costs are correlated with the generation of energy from fossil-fired
3 generators. First, and at the highest level, the major driver of allowance requirements is
4 the average and individual plant heat rate—the efficiency with which fossil fuels are
5 converted to useful energy. This means that measures to improve heat rate or retire plants
6 can not only generate savings in operating costs but can also realize value in avoiding
7 allowance costs. Plant retirement, upgrade investment, and dispatch are all factors that
8 come into play.

9 Second, benefits associated with reduced operation or retirement of inefficient
10 plants and improvements in plant performance are also grossed up by reductions in line
11 losses at the transmission and distribution levels. This reveals a new and added benefit to
12 increased reliance on clean and efficient distributed energy resources (“DER”), including
13 distributed generation, distributed storage, energy efficiency, energy management, and
14 others. DER incentives and program increases should be part of the Company’s RGGI
15 allowances strategy.

16 **Q 15: How should RGGI allowance costs be accounted for and what regulatory cost**
17 **treatment should be utilized?**

18 **A:** The Company should be required to demonstrate that proposed accounting and regulatory
19 treatment of allowance costs are necessary and will result in a RGGI Rider rate that is just
20 and reasonable.

21 Like fuel, emissions are directly related to energy generation. In my view, that
22 means the default approach here should be that allowance costs are treated as inventory
23 expenses, and managed according to a first-in, first-out accounting to better reflect the

1 matching principle. The Commission should approve the recovery of prudently incurred
2 financing costs related to advance procurement of allowances where that generates the
3 lowest portfolio cost. In many ways, the same cost-minimization strategies used in fuels
4 procurement should translate to RGGI allowance strategy, with the added consideration
5 that RGGI compliance obligation should also be integrated into dispatch considerations.

6 **Q 16: Should a true-up mechanism be used and how should it be structured?**

7 **A:** In my opinion a true-up mechanism, such as through an annual reconciliation of actual
8 versus projected costs, is appropriate. The reconciliation mechanism would be an ideal
9 point to integrate a performance-based revenue mechanism—an incentive compensation
10 approach—that encourages cost-effective management and careful forecasting of
11 allowance costs. For example, if the Company excels at meeting RGGI allowance
12 requirements at a lower cost than projected, a shared savings mechanism could be used to
13 reduce costs to customers and reward that performance by the Company. Likewise, a
14 shared cost feature would create an incentive for the Company to avoid significant cost
15 overruns.

16 **REVIEW OF THE COMPANY'S RGGI PROPOSAL**

17 **Q 17: How much does the Company propose as a revenue requirement associated with**
18 **RGGI allowance purchases?**

19 **A:** The Company is requesting approximately \$167 million in additional revenue recovery
20 from its customers in the rate year beginning August 2021.⁴ The proposed RGGI Rider
21 would add \$2.39 to the monthly bill for a customer using 1,000 kWh per month.⁵ In the

⁴ Ingram Direct (Corrected) at 5.

⁵ Haynes Direct at 3.

1 first year of the proposed rider all costs are projected. In later years, the Company also
 2 proposes adjustments to the projected cost via an actual cost adjustment, which it calls
 3 the "Actual Cost True-Up Factor."⁶

4 **Q 18: Does the Company offer a reasonable proposal for allocation of necessary RGGI**
 5 **allowance costs?**

6 **A:** Yes. The Company proposes an energy allocation for necessary RGGI allowance costs.⁷
 7 Based on the correlation between energy generation and emissions, this is reasonable.

8 **Q 19: How does the Company approach its RGGI allowance procurement obligation?**

9 **A:** The Company's proposed RGGI allowances strategy is to model plant dispatch and
 10 associated emissions rates, and to derive from that modeling an expected allowance
 11 requirement during RGGI control periods.⁸ The Company proposes to divide annual
 12 allowance requirements into equal quarters, gross up the amount by 10 to 20 percent to
 13 create a banked surplus, and procure the resulting amount in quarterly RGGI auctions.⁹ If
 14 the Company fails to secure the required number of allowances in the quarterly auctions,
 15 it plans to make up the difference through purchases from the secondary market for
 16 allowances.¹⁰ The Company strategy is not based on any price outlook.¹¹

⁶ Ingram Direct at 2-3.

⁷ Haynes Direct at 2.

⁸ Company Petition at ¶ 10, p. 4.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.* Through discovery, Environmental Respondent sought to understand whether this strategy was based on any analysis and specifically requested that the Company provide any supporting analysis. See Attachment KRR-3, Company Response to APV 2-4. In its response, the Company provided no documentation and instead stated that it reviewed RGGI Market Monitor reports and "evaluated a range of other strategies, including: futures contracts, forward contracts, options, and index purchases, separately and in various combinations. Ultimately, the Company determined the most prudent strategy was an

1 **Q 20: Is the Company's RGGI allowance strategy integrated with a reasonable IRP and**
 2 **RPS compliance planning efforts?**

3 **A:** It does not appear so. The Company generated its estimated RGGI allowance
 4 requirements through PLEXOS modeling,¹² but there is no indication in the Company's
 5 filing that it has updated its modeling assumptions and planning since it submitted its IRP
 6 in 2020 that the Commission has since determined was not reasonable and prudent.¹³ This
 7 raises a concern that the estimated quantity of required allowances rests on generation
 8 assumptions that the Commission has already rejected as inadequate or unreasonable. The
 9 Company did run updated dispatch modeling with estimated RGGI allowance prices but
 10 did not analyze alternative scenarios or price sensitivities. Since the Company did not
 11 develop a robust analysis of or propose a plan for least-cost compliance with the RPS, the
 12 amount of allowances required under RGGI could very well change once such analysis is
 13 conducted.

14 **Q 21: Did the Company evaluate multiple RGGI allowance price scenarios?**

15 **A:** No. Under the Company's programmatic RGGI strategy, it used the PLEXOS-generated
 16 emissions and related allowance requirements outputs with fixed estimate allowance
 17 prices for 2021 and 2022 to calculate the amount proposed for recovery through the
 18 RGGI Rider on a projected cost basis. There is no evidence in the petition filed by the
 19 Company that it conducted analysis based on price sensitivities in developing its
 20 projected revenue requirement figures.

auction-centered approach with supplemental or opportunistic purchases in the secondary markets. At this time, the Company has not rejected any strategies." *Id.*

¹² Compton Direct at 2-3; Attachment KRR-3, Company Response to APV 2-7.

¹³ See Attachment KRR-3, Company Responses to APV 2-2, 2-3.

1 **Q 22: Did the Company evaluate multiple scenarios for procurement strategies in**
2 **developing its RGGI allowances strategy?**

3 **A:** No. The Company based its revenue requirement calculation on the assumption that it
4 would acquire all necessary allowances plus a banking surplus at auction at forecasted
5 prices.

6 **Q 23: Did the Company conduct any historical or probabilistic analysis to determine**
7 **whether a surplus is appropriate and if so, at what procurement level and price?**

8 **A:** No. The Company has offered no economic analysis to support its plan to rapidly
9 purchase huge amounts of allowances and then carry a significant surplus of allowances,
10 on which the Company proposes to earn a return on equity.¹⁴ In fact, the Company's own
11 analysis shows that allowance prices are expected to be slightly less expensive (3.1%
12 less) in 2022 than in 2021.¹⁵

13 **Q 24: Did the Company evaluate the role that plant retirements and heat rate**
14 **improvements could play in reducing RGGI allowance costs?**

15 **A:** No.

16 **Q 25: Did the Company evaluate the role that increased energy efficiency, distributed**
17 **generation, and other distributed energy resources could play in reducing RGGI**
18 **allowance costs?**

19 **A:** No.

¹⁴ Attachment KRR-3, Company Response to APV 2-5. Environmental Respondent specifically requested the Company provide analysis supporting this aspect of its proposal but the Company provided none, instead stating that it "relied on its market knowledge and expertise in managing compliance with other programs like the Virginia Voluntary Program, NC REPS, and CSAPR to determine a reasonable and prudent banking strategy."

¹⁵ Compton Direct at Sched. 1.

1 **Q 26: Does the Company propose the expensing of allowance costs, as with other costs**
2 **directly related to fuel consumption?**

3 **A:** No. The Company proposes to treat allowances as intangible assets and the amortization
4 of allowance costs and recovery of return on allowance cost balances.¹⁶

5 **Q 27: Is the Company's proposed accounting method for allowance costs reasonable?**

6 **A:** No, for two reasons. First, the Company's proposed method adds costs that customers
7 must bear. Just as importantly, the proposed approach provides the Company with a
8 perverse incentive to over-procure allowances beyond what is necessary, as a means of
9 increasing Company earnings. Such over-procurement may even affect the entire RGGI
10 market, driving up RGGI allowance market prices, which could once again increase
11 Company earnings while unnecessarily increasing customer costs. And as previously
12 explained, the direct correlation between fuel combustion, the need to procure and retire
13 allowances, and the statutory limit of cost recovery to necessary costs, all countenance to
14 expensing treatment.

15 **Q 28: Is the Company's proposed Actual Cost True-Up Factor a reasonable approach to**
16 **ensuring that RGGI Rider levels reflect necessary costs?**

17 **A:** An actual cost reconciliation is a reasonable approach to ensure cost recovery is equitable
18 to both the Company and to customers. However, the Company's proposed approach
19 represents a lost opportunity to add an incentive to the Company's strategy that could
20 benefit both customers and the Company. The Company should take the time to develop
21 a mechanism for the sharing of excess costs or savings. As proposed by the Company,
22 there is no incentive for cost control or good forecasting; in fact, with the proposed

¹⁶ Attachment KRR-3, Company Response to APV 2-1.

1 amortization of surplus allowance costs, the Company actually has a financial incentive
2 to overstate RGGI allowance needs.

3 **Q 29: Taken as a whole is it your opinion that the Company developed and proposed a**
4 **least-cost RGGI allowance strategy?**

5 **A:** No.

6 **CONCLUSIONS AND RECOMMENDATIONS**

7 **Q 30: What do you conclude based on your review of the Company's RGGI allowance**
8 **strategy?**

9 **A:** The Company has not established that the costs it proposes to recover for RGGI program
10 compliance are necessary, nor have they established that the RGGI Rider and associated
11 allowance estimation and procurement strategy are reasonable and prudent. In particular:

- 12 1. To determine the needed allowances, the Company appears to have relied heavily on
13 outdated IRP assumptions and inputs—a filing that the Commission has already
14 rejected as not reasonable or prudent.
- 15 2. The Company has failed to perform a portfolio-type, least-cost analysis to determine
16 the actual number of needed allowances. For example, the Company failed to
17 properly integrate its RGGI allowance estimation with the IRP and RPS proceedings
18 and failed to adequately consider the suite of options affecting RGGI allowance
19 needs, including plant retirements, upgrade investments, and dispatch modifications,
20 as well as increased distributed energy resources and energy efficiency measures.
- 21 3. The Company arbitrarily decided to procure 10 to 20 percent more than its
22 unsupported allowance need. This surplus proposal is not supported by actual
23 economic analysis.

1 4. The Company proposes to earn a rate of return on unused allowances, creating a
2 financial incentive to over-procure allowances rather than accurately project
3 allowance needs.

4 5. Given the deficient allowance estimate, the arbitrary 10 to 20 percent surplus, and the
5 proposed rate of return on unused allowances, the Company's proposal is likely to
6 impose significant unnecessary cost on customers.

7 **Q 31: What do you recommend that the Commission do?**

8 **A:** As articulated in greater detail in this testimony, I recommend that the Commission reject
9 the petition as it relates to the Company's proposed RGGI allowance strategy. I
10 recommend that the Commission direct the Company to completely revisit its proposed
11 programmatic approach to RGGI allowance procurement in favor of a more sophisticated
12 and potentially less costly resource portfolio-based strategy. I recommend that the
13 Commission grant deferred accounting treatment, subject to a later prudence review of
14 costs incurred, for allowances that the Company feels it should procure pending the
15 development, submission, and approval of an improved RGGI allowance strategy.

16 **Q 32: Does this conclude your testimony?**

17 **A:** Yes.

Attachment KRR-1

Karl R. Rábago

Rábago Energy LLC

2025 E. 24th Avenue, Denver, CO 80205
c/SMS: +1.512.968.7543 | e: karl@rabagoenergy.com

Nationally recognized leader and innovator in electricity and energy law, policy, and regulation. Experienced as a regulatory expert, utility executive, research and development manager, sustainability leader, senior government official, educator, and advocate. Successful track record of working with U.S. Congress, state legislatures, governors, regulators, city councils, business leaders, researchers, academia, and community groups. Nationally recognized speaker on energy, environment, and sustainable development matters. Managed staff as large as 250; responsible for operations of research facilities with staff in excess of 600. Developed and managed budgets in excess of \$300 million. Law teaching experience at Pace University Elisabeth Haub School of Law, University of Houston Law Center, and U.S. Military Academy at West Point. Military veteran.

Employment

RÁBAGO ENERGY LLC

Principal: July 2012—Present. Consulting practice dedicated to providing business sustainability, expert witness, and regulatory advice and services to organizations in the clean and advanced energy sectors. Prepared and submitted testimony in more than 30 states and 100 electricity and gas regulatory proceedings. Recognized national leader in development and implementation of award-winning “Value of Solar” alternative to traditional net metering. Additional information at www.rabagoenergy.com.

- Chairman of the Board, Center for Resource Solutions (1997-present). CRS is a not-for-profit organization based at the Presidio in California. CRS developed and manages the Green-e Renewable Electricity Brand, a nationally and internationally recognized branding program for green power and green pricing products and programs. Past chair of the Green-e Governance Board.
- Director, Solar United Neighbors (2018-present).

PACE ENERGY AND CLIMATE CENTER, PACE UNIVERSITY ELISABETH HAUB SCHOOL OF LAW

Senior Policy Advisor: September 2019—September 2020. Part-time advisor and staff member. Provide expert witness, project management, and business development support on electric and gas regulatory and policy issues and activities.

Executive Director: May 2014—August 2019. Leader of a team of professional and technical experts and law students in energy and climate law, policy, and regulation. Secured funding for and managed execution of regulatory intervention, research, market development support, and advisory services. Taught Energy Law. Provided learning and development opportunities for law students. Additional activities:

- Former Director, Alliance for Clean Energy – New York (2018-2019).
- Former Director, Interstate Renewable Energy Council (IREC) (2012-2018).
- Former Co-Director and Principal Investigator, Northeast Solar Energy Market Coalition (2015-2017). The NESEMC was a US Department of Energy’s SunShot Initiative Solar Market Pathways project. Funded under a cooperative agreement between the US DOE and Pace University, the NESEMC worked to harmonize solar market policy and advance supportive policy and regulatory practices in the northeast United States.

Karl R. Rábago

AUSTIN ENERGY – THE CITY OF AUSTIN, TEXAS

Vice President, Distributed Energy Services: April 2009—June 2012. Executive in 8th largest public power electric utility serving more than one million people in central Texas. Responsible for management and oversight of energy efficiency, demand response, and conservation programs; low-income weatherization; distributed solar and other renewable energy technologies; green buildings program; key accounts relationships; electric vehicle infrastructure; and market research and product development. Executive sponsor of Austin Energy's participation in an innovative federally-funded smart grid demonstration project led by the Pecan Street Project. Led teams that successfully secured over \$39 million in federal stimulus funds for energy efficiency, smart grid, and advanced electric transportation initiatives. Additional activities included:

- Director, Renewable Energy Markets Association. REMA is a trade association dedicated to maintaining and strengthening renewable energy markets in the United States.
- Membership on Pedernales Electric Cooperative Member Advisory Board. Invited by the Board of Directors to sit on first-ever board to provide formal input and guidance on energy efficiency and renewable energy issues for the nation's largest electric cooperative.

THE AES CORPORATION

Director, Government & Regulatory Affairs: June 2006—December 2008. Director, Global Regulatory Affairs, provided regulatory support and group management to AES's international electric utility operations on five continents. Managing Director, Standards and Practices, for Greenhouse Gas Services, LLC, a GE and AES venture committed to generating and marketing greenhouse gas credits to the U.S. voluntary market. Government and regulatory affairs manager for AES Wind Generation. Managed a portfolio of regulatory and legislative initiatives to support wind energy market development in Texas, across the United States, and in many international markets.

JICARILLA APACHE NATION UTILITY AUTHORITY

Director: 1998—2008. Located in New Mexico, the JANUA was an independent utility developing profitable and autonomous utility services that provide natural gas, water utility services, low income housing, and energy planning for the Nation. Authored "First Steps" renewable energy and energy efficiency strategic plan with support from U.S. Department of Energy.

HOUSTON ADVANCED RESEARCH CENTER

Group Director, Energy and Buildings Solutions: December 2003—May 2006. Leader of energy and building science staff at a mission-driven not-for-profit contract research organization based in The Woodlands, Texas. Responsible for developing, maintaining and expanding upon technology development, application, and commercialization support programmatic activities, including the Center for Fuel Cell Research and Applications; the Gulf Coast Combined Heat and Power Application Center; and the High-Performance Green Buildings Practice. Secured funding for major new initiative in carbon nanotechnology applications in the energy sector.

- President, Texas Renewable Energy Industries Association. As elected president of the statewide business association, led and managed successful efforts to secure and implement significant expansion of the state's renewable portfolio standard as well as other policy, regulatory, and market development activities.
- Director, Southwest Biofuels Initiative. Established the Initiative as an umbrella structure for a number of biofuels related projects.

Karl R. Rábago

- Member, Committee to Study the Environmental Impacts of Windpower, National Academies of Science National Research Council. The Committee was chartered by Congress and the Council on Environmental Quality to assess the impacts of wind power on the environment.
- Advisory Board Member, Environmental & Energy Law & Policy Journal, University of Houston Law Center.

CARGILL DOW LLC (NOW NATUREWORKS, LLC)

Sustainability Alliances Leader: April 2002—December 2003. Integrated sustainability principles into all aspects of a ground-breaking bio-based polymer manufacturing venture. Responsible for maintaining, enhancing and building relationships with stakeholders in the worldwide sustainability community, as well as managing corporate and external sustainability initiatives.

- Successfully completed Minnesota Management Institute at University of Minnesota Carlson School of Management, an alternative to an executive MBA program that surveyed fundamentals and new developments in finance, accounting, operations management, strategic planning, and human resource management.

ROCKY MOUNTAIN INSTITUTE

Managing Director/Principal: October 1999—April 2002. Co-authored "Small Is Profitable," a comprehensive analysis of the benefits of distributed energy resources. Provided consulting and advisory services to help business and government clients achieve sustainability through application and incorporation of Natural Capitalism principles.

- President of the Board, Texas Ratepayers Organization to Save Energy. Texas R.O.S.E. is a non-profit organization advocating low-income consumer issues and energy efficiency programs.
- Co-Founder and Chair of the Advisory Board, Renewable Energy Policy Project-Center for Renewable Energy and Sustainable Technology. REPP-CREST was a national non-profit research and internet services organization.

CH2M HILL

Vice President, Energy, Environment and Systems Group: July 1998—August 1999. Responsible for providing consulting services to a wide range of energy-related businesses and organizations, and for creating new business opportunities in the energy industry for an established engineering and consulting firm. Completed comprehensive electric utility restructuring studies for the states of Colorado and Alaska.

PLANERGY

Vice President, New Energy Markets: January 1998—July 1998. Responsible for developing and managing new business opportunities for the energy services market. Provided consulting and advisory services to utility and energy service companies.

ENVIRONMENTAL DEFENSE FUND

Energy Program Manager: March 1996—January 1998. Managed renewable energy, energy efficiency, and electric utility restructuring programs. Led regulatory intervention activities in Texas and California. In Texas, played a key role in crafting Deliberative Polling processes. Participated in national environmental and energy advocacy networks, including the Energy Advocates Network, the National Wind Coordinating Committee, the NCSL Advisory Committee on Energy, and the PV-COMPACT Coordinating Council. Frequently appeared before the Texas Legislature, Austin City Council, and regulatory commissions on electric restructuring issues.

Karl R. Rábago

UNITED STATES DEPARTMENT OF ENERGY

Deputy Assistant Secretary, Utility Technologies: January 1995–March 1996. Manager of the Department's programs in renewable energy technologies and systems, electric energy systems, energy efficiency, and integrated resource planning. Supervised technology research, development and deployment activities in photovoltaics, wind energy, geothermal energy, solar thermal energy, biomass energy, high-temperature superconductivity, transmission and distribution, hydrogen, and electric and magnetic fields. Managed, coordinated, and developed international agreements. Supervised development and deployment support activities at national laboratories. Developed, advocated, and managed a Congressional budget appropriation of approximately \$300 million.

STATE OF TEXAS

Commissioner, Public Utility Commission of Texas. May 1992–December 1994. Appointed by Governor Ann W. Richards. Regulated electric and telephone utilities in Texas. Co-chair and organizer of the Texas Sustainable Energy Development Council. Vice-Chair of the National Association of Regulatory Utility Commissioners (NARUC) Committee on Energy Conservation. Member and co-creator of the Photovoltaic Collaborative Market Project to Accelerate Commercial Technology (PV-COMPACT).

LAW TEACHING

Professor for a Designated Service: Pace University Elisabeth Haub School of Law, 2014-2019. Non-tenured member of faculty. Taught Energy Law. Supervised a student intern practice.

Associate Professor of Law: University of Houston Law Center, 1990–1992. Full time, tenure track member of faculty. Courses taught: Criminal Law, Environmental Law, Criminal Procedure, Environmental Crimes Seminar, Wildlife Protection Law.

Assistant Professor: United States Military Academy, West Point, New York, 1988–1990. Member of the faculty in the Department of Law. Honorably discharged in August 1990, as Major in the Regular Army. Courses taught: Constitutional Law, Military Law, and Environmental Law Seminar.

LITIGATION

Trial Defense Attorney and Prosecutor, U.S. Army Judge Advocate General's Corps, Fort Polk, Louisiana, January 1985–July 1987. Assigned to Trial Defense Service and Office of the Staff Judge Advocate.

NON-LEGAL MILITARY SERVICE

Armored Cavalry Officer, 2d Squadron 9th Armored Cavalry, Fort Stewart, Georgia, May 1978–August 1981. Served as Logistics Staff Officer (S-4). Managed budget, supplies, fuel, ammunition, and other support for an Armored Cavalry Squadron. Served as Support Platoon Leader for the Squadron (logistical support), and as line Platoon Leader in an Armored Cavalry Troop. Graduate of Airborne and Ranger Schools. Special training in Air Mobilization Planning and Nuclear, Biological and Chemical Warfare.

Karl R. Rábago

Formal Education

LL.M., Environmental Law, Pace University School of Law, 1990: Curriculum designed to provide breadth and depth in study of theoretical and practical aspects of environmental law. Courses included: International and Comparative Environmental Law, Conservation Law, Land Use Law, Seminar in Electric Utility Regulation, Scientific and Technical Issues Affecting Environmental Law, Environmental Regulation of Real Estate, Hazardous Wastes Law. Individual research with Hudson Riverkeeper Fund, Garrison, New York.

LL.M., Military Law, U.S. Army Judge Advocate General's School, 1988: Curriculum designed to prepare Judge Advocates for senior level staff service. Courses included: Administrative Law, Defensive Federal Litigation, Government Information Practices, Advanced Federal Litigation, Federal Tort Claims Act Seminar, Legal Writing and Communications, Comparative International Law.

J.D. with Honors, University of Texas School of Law, 1984: Attended law school under the U.S. Army Funded Legal Education Program, a fully funded scholarship awarded to 25 or fewer officers each year. Served as Editor-in-Chief (1983–84); Articles Editor (1982–83); Member (1982) of the Review of Litigation. Moot Court, Mock Trial, Board of Advocates. Summer internship at Staff Judge Advocate's offices. Prosecuted first cases prior to entering law school.

B.B.A., Business Management, Texas A&M University, 1977: ROTC Scholarship (3–yr). Member: Corps of Cadets, Parson's Mounted Cavalry, Wings & Sabers Scholarship Society, Rudder's Rangers, Town Hall Society, Freshman Honor Society, Alpha Phi Omega service fraternity.

Karl R. Rábago

Selected Publications

- "Distributed Generation Law," contributing author, American Bar Association Environment, Energy, and Resources Section (August 2020)
- "National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources," contributing author, National Energy Screening Project (August 2020)
- "Achieving 100% Renewables: Supply-Shaping through Curtailment," with Richard Perez, Marc Perez, and Morgan Putnam, PV Tech Power, Vol. 19 (May 2019).
- "A Radical Idea to Get a High-Renewable Electric Grid: Build Way More Solar and Wind than Needed," with Richard Perez, The Conversation, online at <http://bit.ly/2YjnM15> (May 29, 2019).
- "Reversing Energy System Inequity: Urgency and Opportunity During the Clean Energy Transition," with John Howat, John Colgan, Wendy Gerlitz, and Melanie Santiago-Mosier, National Consumer Law Center, online at www.nclc.org (Feb. 26, 2019).
- "Revisiting Bonbright's Principles of Public Utility Rates in a DER World," with Radina Valova, The Electricity Journal, Vol. 31, Issue 8, pp. 9-13 (Oct. 2018).
- "Achieving very high PV penetration – The need for an effective electricity remuneration framework and a central role for grid operators," Richard Perez (corresponding author), Energy Policy, Vol. 96, pp. 27-35 (2016).
- "The Net Metering Riddle," Electricity Policy.com, April 2016.
- "The Clean Power Plan," Power Engineering Magazine (invited editorial), Vol. 119, Issue 12 (Dec. 2, 2015)
- "The 'Sharing Utility:' Enabling & Rewarding Utility Performance, Service & Value in a Distributed Energy Age," co-author, 51st State Initiative, Solar Electric Power Association (Feb. 27, 2015)
- "Rethinking the Grid: Encouraging Distributed Generation," Building Energy Magazine, Vol. 33, No. 1 Northeast Sustainable Energy Association (Spring 2015)
- "The Value of Solar Tariff: Net Metering 2.0," The ICER Chronicle, Ed. 1, p. 46 [International Confederation of Energy Regulators] (December 2013)
- "A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation," co-author, Interstate Renewable Energy Council (October 2013)
- "The 'Value of Solar' Rate: Designing an Improved Residential Solar Tariff," Solar Industry, Vol. 6, No. 1 (Feb. 2013)
- "Jicarilla Apache Nation Utility Authority Strategic Plan for Energy Efficiency and Renewable Energy Development," lead author & project manager, U.S. Department of Energy First Steps Toward Developing Renewable Energy and Energy Efficiency on Tribal Lands Program (2008)
- "A Review of Barriers to Biofuels Market Development in the United States," 2 Environmental & Energy Law & Policy Journal 179 (2008)
- "A Strategy for Developing Stationary Biodiesel Generation," Cumberland Law Review, Vol. 36, p.461 (2006)
- "Evaluating Fuel Cell Performance through Industry Collaboration," co-author, Fuel Cell Magazine (2005)
- "Applications of Life Cycle Assessment to NatureWorks™ Polylactide (PLA) Production," co-author, Polymer Degradation and Stability 80, 403-19 (2003)

Karl R. Rábago

"An Energy Resource Investment Strategy for the City of San Francisco: Scenario Analysis of Alternative Electric Resource Options," contributing author, Prepared for the San Francisco Public Utilities Commission, Rocky Mountain Institute (2002)

"Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size," co-author, Rocky Mountain Institute (2002)

"Socio-Economic and Legal Issues Related to an Evaluation of the Regulatory Structure of the Retail Electric Industry in the State of Colorado," with Thomas E. Feiler, Colorado Public Utilities Commission and Colorado Electricity Advisory Panel (April 1, 1999)

"Study of Electric Utility Restructuring in Alaska," with Thomas E. Feiler, Legislative Joint Committee on electric Restructuring and the Alaska Public Utilities Commission (April 1, 1999)

"New Markets and New Opportunities: Competition in the Electric Industry Opens the Way for Renewables and Empowers Customers," EEBA Excellence (Journal of the Energy Efficient Building Association) (Summer 1998)

"Building a Better Future: Why Public Support for Renewable Energy Makes Sense," Spectrum: The Journal of State Government (Spring 1998)

"The Green-e Program: An Opportunity for Customers," with Ryan Wiser and Jan Hamrin, Electricity Journal, Vol. 11, No. 1 (January/February 1998)

"Being Virtual: Beyond Restructuring and How We Get There," Proceedings of the First Symposium on the Virtual Utility, Kluwer Press (1997)

"Information Technology," Public Utilities Fortnightly (March 15, 1996)

"Better Decisions with Better Information: The Promise of GIS," with James P. Spiers, Public Utilities Fortnightly (November 1, 1993)

"The Regulatory Environment for Utility Energy Efficiency Programs," Proceedings of the Meeting on the Efficient Use of Electric Energy, Inter-American Development Bank (May 1993)

"An Alternative Framework for Low-Income Electric Ratepayer Services," with Danielle Jaussaud and Stephen Benenson, Proceedings of the Fourth National Conference on Integrated Resource Planning, National Association of Regulatory Utility Commissioners (September 1992)

"What Comes Out Must Go In: The Federal Non-Regulation of Cooling Water Intakes Under Section 316 of the Clean Water Act," Harvard Environmental Law Review, Vol. 16, p. 429 (1992)

"Least Cost Electricity for Texas," State Bar of Texas Environmental Law Journal, Vol. 22, p. 93 (1992)

"Environmental Costs of Electricity," Pace University School of Law, Contributor—Impingement and Entrainment Impacts, Oceana Publications, Inc. (1990)

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Aug. 13, 2014	Wisconsin Public Service Corp. 2014 Rate Application	Wisconsin PSC Docket # 6690-UR-123	RENEW Wisconsin and Environmental Law & Policy Center
Aug. 28, 2014	WE Energies 2014 Rate Application	Wisconsin PSC Docket # 05-UR-107	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 18, 2014	Madison Gas & Electric Company 2014 Rate Application	Wisconsin PSC Docket # 3720-UR-120	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 29, 2014	SOLAR, LLC v. Missouri Public Service Commission	Missouri District Court Case # 14AC-CC00316	SOLAR, LLC
Jan. 28, 2016 (date of CPUC order)	Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs, etc.	California PUC Rulemaking 14-07-002	The Utility Reform Network (TURN)
Mar. 20, 2015	Orange and Rockland Utilities 2015 Rate Application	New York PSC Case # 14-E-0493	Pace Energy and Climate Center
May 22, 2015	DTE Electric Company Rate Application	Michigan PSC Case # U-17767	Michigan Environmental Council, NRDC, Sierra Club, and ELPC
Jul. 20, 2015	Hawaiian Electric Company and NextEra Application for Change of Control	Hawai'i PUC Docket # 2015-0022	Hawai'i Department of Business, Economic Development, and Tourism
Sep. 2, 2015	Wisc. PSCo Rate Application	Wisconsin PSC Case # 6690-UR-124	ELPC
Sep. 15, 2015	Dominion Virginia Electric Power 2015 IRP	Virginia SCC Case # PUE-2015-00035	Environmental Respondents
Sep. 16, 2015	NYSEG & RGE Rate Cases	New York PSC Cases 15-E-0283, -0285	Pace Energy and Climate Center
Oct. 14, 2015	Florida Power & Light Application for CCPN for Lake Okeechobee Plant	Florida PSC Case 150196-EI	Environmental Confederation of Southwest Florida
Oct. 27, 2015	Appalachian Power Company 2015 IRP	Virginia SCC Case # PUE-2015-00036	Environmental Respondents
Nov. 23, 2015	Narragansett Electric Power/National Grid Rate Design Application	Rhode Island PUC Docket No. 4568	Wind Energy Development, LLC
Dec. 8, 2015	State of West Virginia, et al., v. U.S. EPA, et al.	U.S. Court of Appeals for the District of Columbia Circuit Case No. 15-1363 and Consolidated Cases	Declaration in Support of Environmental and Public Health Intervenors in Support of Movant Respondent-Intervenors' Responses in Opposition to Motions for Stay

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Jan. 13, 2017	Alpena Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18089	Environmental Law & Policy Center, "Joint Intervenor"
Jan. 13, 2017	Indiana Michigan Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18092	Environmental Law & Policy Center, "Joint Intervenor"
Jan. 13, 2017	Northern States Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18093	Environmental Law & Policy Center, "Joint Intervenor"
Jan. 13, 2017	Upper Peninsula Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18094	Environmental Law & Policy Center, "Joint Intervenor"
Mar. 10, 2017	Eversource Energy Grid Modernization Plan	Massachusetts DPU Case No. 15-122/15-123	Cape Light Compact
Apr. 27, 2017	Eversource Rate Case & Grid Modernization Investments	Massachusetts DPU Case No. 17-05	Cape Light Compact
May 2, 2017	AEP Ohio Power Electric Security Plan	PUC of Ohio Case No. 16-1852-EL-SSO	Environmental Law & Policy Center
Jun. 2, 2017	Vectren Energy TDSIC Plan	Indiana URC Cause No. 44910	Citizens Action Coalition & Valley Watch
Jul. 28, 2017	Vectren Energy 2016-2017 Energy Efficiency Plan	Indiana URC Cause No. 44645	Citizens Action Coalition
Jul. 28, 2017	Vectren Energy 2018-2020 Energy Efficiency Plan	Indiana URC Cause No. 44927	Citizens Action Coalition
Aug. 1, 2017	Interstate Power & Light (Alliant) 2017 Rate Application	Iowa Utilities Board Docket No. RPU-2017-0001	Environmental Law & Policy Center, Iowa Environmental Council, Natural Resources Defense Council, and Solar Energy Industries Assoc.
Aug. 11, 2017	Dominion Virginia Electric Power 2017 IRP	Virginia SCC Case # PUR-2017-00051	Environmental Respondents
Aug. 18, 2017	Appalachian Power Company 2017 IRP	Virginia SCC Case # PUR-2017-00045	Environmental Respondents
Aug. 23, 2017	Pennsylvania Solar Future Project	PA Dept. of Environmental Protection - Alternative Ratemaking Webinar	Pace Energy and Climate Center
Aug. 25, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York PSC Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center

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Sep. 15, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York PSC Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center
Oct. 20, 2017	Missouri PSC Working Case to Explore Emerging Issues in Utility Regulation	Missouri PSC File No. EW-2017-0245	Renew Missouri
Nov. 21, 2017	Central Hudson Gas & Electric Co. Electric and Gas Rates Cases	New York PSC Case # 17-E-0459, -0460	Pace Energy and Climate Center
Jan. 16, 2018	Great Plains Energy, Inc. Merger with Westar Energy, Inc.	Missouri PSC Case # EM-2018-0012	Renew Missouri Advocates
Jan. 19, 2018	U.S. House of Representatives, Energy and Commerce Committee	Hearing on "The PURPA Modernization Act of 2017," H.R. 4476	Rábago Energy LLC
Jan. 29, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts D.P.U. Case No. 17-140	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Feb. 21, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts D.P.U. Case No. 17-140 - Surrebuttal	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Apr. 6, 2018	Narragansett Electric Co., d/b/a National Grid Rate Case Filing	RI PUC Docket No. 4770	New Energy Rhode Island ("NERI")
Apr. 25, 2018	Narragansett Electric Co., d/b/a National Grid Power Sector Transformation Plan	Rhode Island PUC Docket No. 4780	New Energy Rhode Island ("NERI")
Apr. 26, 2018	U.S. EPA Proposed Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 82 Fed. Reg. 48,035 (Oct. 16, 2017) – "Clean Power Plan"	U.S. EPA Docket No. EPA-HQ-OAR-2016-0592	Karl R. Rábago
May 25, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York PSC Case Nos. 18-E-0067, 18-G-0068	Pace Energy and Climate Center
Jun. 15, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York PSC Case Nos. 18-E-0067, 18-G-0068 – Rebuttal Testimony	Pace Energy and Climate Center
Aug. 10, 2018	Dominion Virginia Electric Power 2018 IRP	Virginia SCC Case # PUR-2018-00065	Environmental Respondents

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Sep. 20, 2018	Consumers Energy Company Rate Case	Michigan PSC Case No. U-20134	Environmental Law & Policy Center
Sep. 27, 2018	Potomac Electric Power Co. Notice to Construct Two 230 kV Underground Circuits	District of Columbia Public Service Commission Formal Case No. 1144	Solar United Neighbors of D.C.
Sep. 28, 2019	Arkansas Public Service Commission Investigation of Policies Related to Distributed Energy Resources	Arkansas PSC Docket No. 16-028-U	Arkansas Audubon Society & Arkansas Advanced Energy Association
Nov. 7, 2018	DTE Detroit Edison Rate Case	Michigan PSC Case No. U-20162	Natural Resources Defense Council, Michigan Environmental Council, Sierra Club
Mar. 26, 2019	Guam Power Authority Petition to Modify Net Metering	Guam PUC Docket GPA 19-04	Micronesia Renewable Energy, Inc.
Apr. 4, 2019	Community Power Network & League of Women Voters of Florida v. JEA	Circuit Court Duval County of Florida Case No. 2018-CA-002497 Div: CV-D	Earthjustice
Apr. 16, 2019	Dominion Virginia Electric Power 2018 IRP – Compliance Filing	Virginia SCC Case # PUR-2018-00065	Environmental Respondents
Apr. 25, 2019	Georgia Power 2019 IRP	Georgia PSC Docket No. 42310	GSEA & GSEIA
May 10, 2019	NV Energy NV GreenEnergy 2.0 Rider	Nevada PUC Docket Nos. 18-11015, 18-11016	Vote Solar
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Misc. Issues	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Low- and Moderate-Income Panel	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 30, 2019	Connecticut DEEP Shared Clean Energy Facility Program Proposal	Connecticut Department of Energy and Environmental Protection Docket No. 19-07-01	Connecticut Fund for the Environment
Jun. 3, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Jun. 14, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Rebuttal Testimony	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center

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Jun. 24, 2019	Program to Encourage Clean Energy in Westchester County Pursuant to Public Service law Section 74-a; Staff Investigation into a Moratorium on New Natural Gas Services in the Consolidated Edison Company of New York, Inc. Service Territory	New York PSC Case Nos. 19-M-0265, 19-G-0080	Earthjustice and Pace Energy and Climate Center
Jul. 12, 2019	Application of Virginia Electric and Power Company for the Determination of the Fair Rate of Return on Common Equity	Virginia SCC Case # PUR-2019-00050	Virginia Poverty Law Center
Jul. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Reply Comments	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Aug. 1, 2019	Interstate Power and Light Company – General Rate Case	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Aug. 19, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Surrebuttal	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
Aug. 21, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources - Comments	Connecticut DEEP/PURA Docket No. 19-06-29	Connecticut Fund for the Environment and Save Our Sound
Sep. 10, 2019	Interstate Power and Light Company – General Rate Case - Rebuttal	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Sep. 18, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Comments and Response to Draft Study Outline	Connecticut DEEP/PURA Docket No. 19-06-29	Connecticut Fund for the Environment, Save Our Sound, E4theFuture, NE Clean Energy Council, NE Energy Efficiency Partnership, and Acadia Center
Sep. 20, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 1	Connecticut DEEP/PURA Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16715	Connecticut Fund for the Environment and Save Our Sound

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Oct. 4, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 2	Connecticut DEEP/PURA Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16766	Connecticut Fund for the Environment and Save Our Sound
Oct. 15, 2019	Electronic Consideration of the Implementation of the Net Metering Act (KY SB 100)	Kentucky Public Service Commission Case No. 2019-00256	Kentuckians for the Commonwealth & Mountain Association for Community Economic Development
Oct. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Comments on City Council Utility Advisors' Report	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana, Vote Solar, 350 New Orleans, Alliance for Clean Energy, PosiGen, and Sierra Club
Oct. 17, 2019	Indiana Michigan Power Co. General Rate Case	Michigan Public Service Company Case No. U-20359	Environmental Law & Policy Center, The Ecology Center, the Solar Energy Industries Association, and Vote Solar
Dec. 4, 2019	Alabama Power Company Petition for Certificate of Convenience and Necessity	Alabama Public Service Commission Docket No. 32953	Energy Alabama and Gasp, Inc.
Dec. 5, 2019	In the Matter of Net Metering and the Implementation of Act 827 of 2015	Arkansas Public Service Commission Docket No. 16-027-R	National Audubon Society and Arkansas Advanced Energy Association
Dec. 6, 2019	Proposed Revisions to Vermont Public Utility Commission Rule 5.100	Vermont Public Utility Commission Case No. 19-0855-RULE	Renewable Energy Vermont ("REV")
Jan. 15, 2020	General Rate Case	Washington Utilities and Transportation Commission Docket Nos. UE-190529 & UG-190530	Puget Sound Energy
Feb. 11, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Direct Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association
Mar. 17, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Surrebuttal Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association

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Jun. 16, 2020	PECO Energy Default Supply Plan V – Direct Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Respondents / Earthjustice
Jun. 24, 2020	Consumers Energy Company General Rate Case – Direct Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
Jul. 14, 2020	Consumers Energy Company General Rate Case – Rebuttal Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
July 23, 2020	PECO Energy Default Supply Plan V – Surrebuttal Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Respondents / Earthjustice
Sept. 15, 2020	Dominion Virginia Electric Power 2020 IRP – Direct Testimony	Virginia SCC Case # PUR-2020-00035	Environmental Respondents
Sept. 18, 2020	Avoided Cost Proceeding for Georgia Power – Direct Testimony	Georgia Public Service Commission Docket No. 4822	Georgia Solar Energy Industries Association, Inc.
Sept. 29, 2020	Madison Gas and Electric – General Rate Case – Affidavit in Opposition to Electric Rates Settlement	Wisconsin Public Service Commission Docket No. 3270-UR-123	Sierra Club
Sept. 30, 2020	Madison Gas and Electric – General Rate Case – Gas Rates	Wisconsin Public Service Commission Docket No. 3270-UR-123	Sierra Club
Oct. 2, 2020	Duke Energy Florida Petition for Approval of Clean Energy Connect Program	Florida Public Service Commission Docket No. 20200176-EI	League of United Latin American Citizens of Florida
Oct. 2, 2020	Ameren Illinois – Investigation re: Calculation of Distributed Generation Rebates	Illinois Commerce Commission Docket No. 20-0389	Joint Solar Parties
Dec. 9, 2020	Arkansas – In the Matter of a Rulemaking to Adopt an Evaluation, Measurement, and Verification Protocol and Propose M&V Amendments to the Commission’s Rules for Conservation and Energy Efficiency Programs; In the Matter of the Continuation, Expansion, and Enhancement of Public Utility Energy Efficiency Programs in Arkansas	Arkansas Public Service Commission Docket Nos. 10-100-R, 13-002-U	Arkansas Advanced Energy Association

Testimony Submitted by Karl R. Rábago
(as of 2 March 2021)

Dec. 22, 2020	Appalachian Power Company 2020 Virginia Clean Economy Act Compliance Plan	Virginia SCC Case No. PUR- 2020-00135	Environmental Respondent
Jan. 4, 2021	Dominion Virginia Electric Power Company Clean Economy Compliance Plan	Virginia SCC Case No. PUR- 2020-00134	Environmental Respondent
Feb. 5, 2021	Ameren Illinois – Investigation re: Calculation of Distributed Generation Rebates - Rebuttal	Illinois Commerce Commission Docket No. 20- 0389	Joint Solar Parties
Feb. 15, 2021	Kentucky Power Company General Rate Case	Kentucky Public Service Commission Case No. 2020- 00174	Joint Intervenors – Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society

Attachment KRR-3

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 1 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

John C. Ingram
Director, Regulatory Accounting
Dominion Energy Services, Inc.

Question No. 1

Reference the Company's Response to Virginia Committee for Fair Utility Rates Set 1-9. Please provide a detailed explanation for the Company's proposed accounting treatment for allowance purchase costs. In this response, please include a detailed explanation for the following issues:

- a. Why does the Company propose to amortize and depreciate allowance purchase costs?
- b. What accounting guidance or Commission rules and approaches support this approach?
- c. What costs does the proposed method add to revenue requirement as compared to alternatives such as expensing purchase costs?

Response:

See the pre-filed direct testimony of John C. Ingram for an explanation of the proposed accounting treatment for allowance purchase costs.

- a. The Company's revenue requirement reflects the per books accounting for the purchase and consumption of allowances.
- b. The Company's long-standing accounting policy regarding allowances held for consumption reflects that allowances prior to retirement meet the definition of an intangible asset and the amortization properly matches the cost of its obligation to tender allowances with the emission activities giving rise to that obligation.
- c. As presented in Schedule 46B Statement 1, financing costs included in the revenue requirement totaled \$4.566 million, primarily reflecting the purchase and use of allowances prior to this initial rate year commencing. In future filings, such financing costs would be reduced to the extent costs incurred are recovered concurrently from customers.

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 2 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

Shane Compton
Manager – Integrated Strategic Planning
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 2 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

Sarah R. Bennett
McGuireWoods LLP

Question No. 2

Please explain how the Company's IRP planning assumptions and analysis have been incorporated into the development of the estimate of required allowances. Please explain how planning assumptions and analysis will be updated in order to produce allowance procurement strategies.

Response:

The Company objects to this request because the phrase "the Company's IRP planning assumptions and analysis" is vague and undefined, failing to point to a specific IRP or any specific assumptions or analysis in a proceeding that includes many. Notwithstanding and subject to this objection, the Company provides the following response:

See the pre-filed direct testimony of Company Witness Shane T. Compton for how the Company used PLEXOS to determine the projected volume of CO₂ allowances needed. Actual allowances needed will be based on actual emissions.

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 3 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

Shane Compton
Manager – Integrated Strategic Planning
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 3 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

Sarah R. Bennett
McGuireWoods LLP

Question No. 3

Please explain how the Company's compliance plans and assumptions for the Renewable Portfolio Standard have been incorporated into the development of the estimate of required allowances. Please explain how planning assumptions and analysis will be updated in order to produce allowance procurement strategies.

Response:

The Company objects to this request because the phrases "the Company's compliance plans and assumptions for the Renewable Portfolio Standard" and "planning assumptions and analysis" are vague and undefined. Notwithstanding and subject to this objection, the Company provides the following response:

See the Company's objection and response to APV Set 2-2.

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 4 if the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

George E Hitch
Senior Market Originator
Virginia Electric and Power Company

Question No. 4

Reference Petition page 4, paragraph 10.

- a. Please explain how the Company determined that it will procure 25% of required allowances in each quarterly auction, including whether other strategies were evaluated and if so, why any other strategies were rejected.
- b. Did the Company perform any analysis in connection with determining its procurement quantity strategy? If so, please provide such analysis. If not, please explain why the Company did not perform such analysis.

Response:

- a. The Company plans to acquire approximately 25% of the annual required allowances in each quarterly RGGI auction because of the volume of allowances sold in the auctions and the historical pattern of auctions clearing at a discount to the corresponding secondary markets. The auctions are simply more liquid than the secondary market. This means auction bidders can purchase more allowances outright with less upward pressure on prices.

The Company evaluated a range of other strategies including: futures contracts, forward contracts, options, and index purchases, separately and in various combinations. Ultimately, the Company determined the most prudent strategy was an auction-centered approach with supplemental or opportunistic purchases in the secondary markets. At this time, the Company has not rejected any strategies.

- b. In determining this procurement quantity strategy, the Company reviewed and analyzed publicly available data in the RGGI Market Monitor reports available at:
<https://www.rggi.org/auctions/market-monitor-reports>

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

George E Hitch
Senior Market Originator
Virginia Electric and Power Company

Question No. 5

Reference Petition page 4, paragraph 10.

- a. Please explain how the Company decided on an allowance bank target of 10% to 20%, including whether other strategies were evaluated and if so, why any other strategies were rejected.
- b. Did the Company analyze the incremental costs to customers of procuring and banking an allowance not required or used for retirement? If so, please provide such analysis. If not, please explain why the Company did not perform such analysis.
- c. Did the Company perform any other analysis in connection with determining its allowance bank target? If so, please provide such analysis. If not, please explain why the Company did not perform such analysis.

Response:

- a. The Company decided a target of 10% to 20% was best for balancing compliance costs and compliance risk. A small bank creates compliance risk because the Company would be at risk of needing to acquire higher cost allowances, while a large bank creates greater costs because there is a carrying cost associated with banked allowances.
- b. No. The Company cannot calculate the incremental costs to customers of procuring and banking an allowance until the Company actually retires the allowances required for compliance with the fifth control period (2021-2023). This will not take place until the first quarter of 2024. At that time, the remaining allowances, if any, will constitute the bank. The Company does not foresee a situation where it does not eventually retire the allowances it procures for compliance with RGGL.
- c. The Company relied on its market knowledge and expertise in managing compliance with other programs like the Virginia Voluntary Program, NC REPS, and CSAPR to determine a reasonable and prudent banking strategy.

Virginia Electric and Power Company
Case No. PUR-2020-00169
Appalachian Voices
Second Set

The following response to Question No. 7 of the Second Set of Interrogatories and Requests for Production of Documents by Appalachian Voices received on February 22, 2021 was prepared by or under the supervision of:

Shane Compton
Manager – Integrated Strategic Planning
Dominion Energy Services, Inc.

Question No. 7

Reference Petition page 4, paragraph 9. Please provide the mathematical calculation supporting the allowance quantities stated in the paragraph.

Response:

See the pre-filed direct testimony of Company Witness Shane T. Compton, which explains that the Company used PLEXOS to determine the projected volume of CO₂ allowance needed.

CERTIFICATE OF SERVICE

I hereby certify that the following have been served with a true and accurate copy of the foregoing via electronic mail:

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DATED: March 2, 2021

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