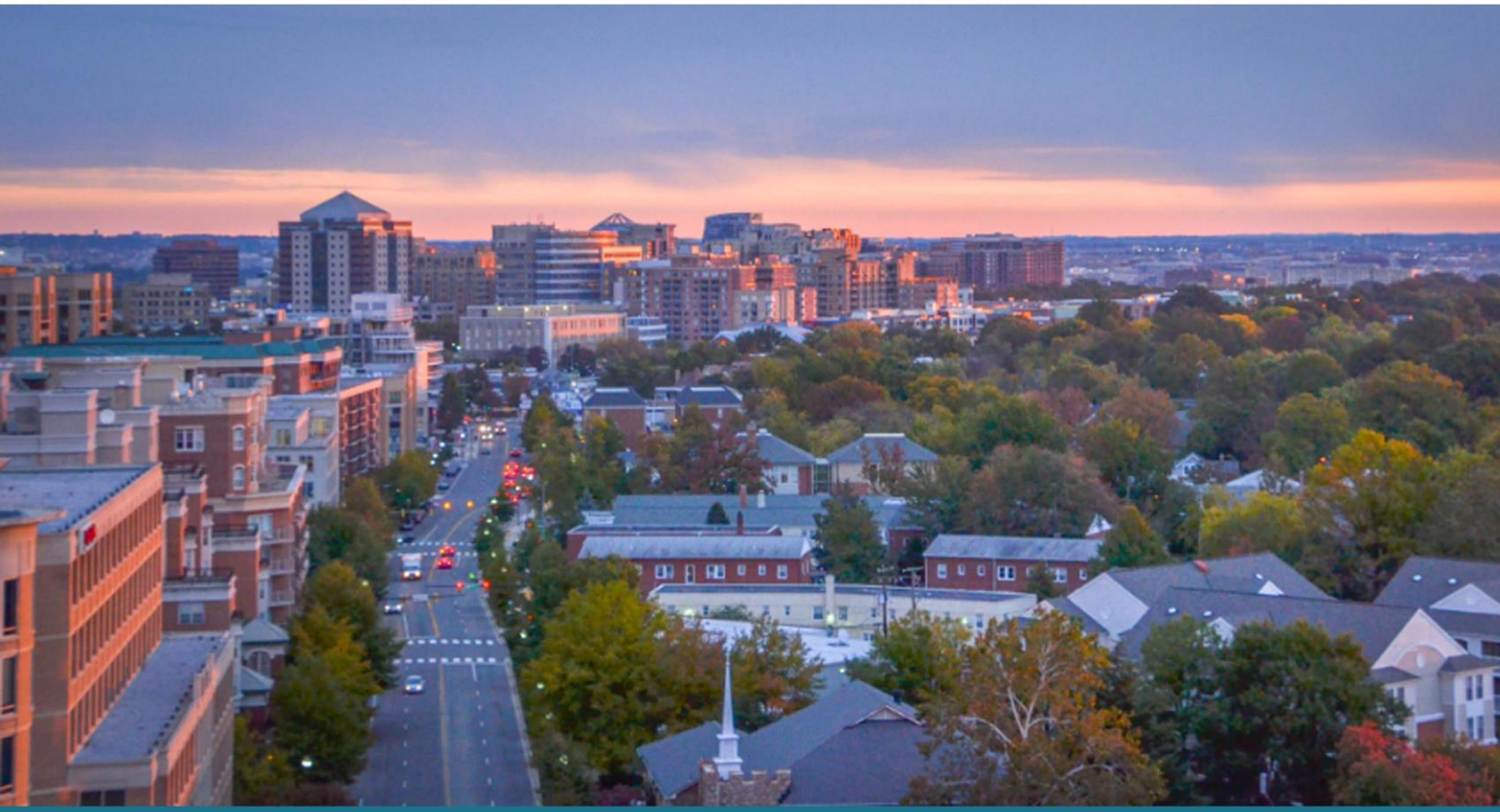
# FEASIBILITY STUDY FOR A POTENTIAL COMMUNITY CHOICE AGGREGATION IN ARLINGTON COUNTY

## Executive Summary

VIRGINIA CLEAN ENERGY



AGU THRIVING EARTH EXCHANGE

Research Paper
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Prepared by Virginia Clean Energy with support provided by the American Geophysical Union's Thriving Earth Exchange.

VIRGINIA CLEAN ENERGY

AGU THRIVING EARTH EXCHANGE

# EXECUTIVE SUMMARY

**Virginia Code § 56-589 allows municipalities and other political subdivisions of the Commonwealth to establish Community Choice Aggregations (CCAs), also referred to as municipal aggregation, as an alternative electric power option to residents and businesses that are currently served by the incumbent utility.**[1] The CCA program allows municipalities to choose their power mix with a preference for renewable energy sources while promoting local economic development as well as the community's energy and environmental goals.

**The purpose of this research effort is to answer the question: *How can a CCA program for Arlington County support its 100% renewable energy goal, and provide other community co-benefits such as competitive rates, greenhouse gas (GHG) emissions reduction, renewable energy development, and energy efficiency programs?*** Although not an official partner of this effort, Arlington County was chosen in part due to its transformative Community Energy Plan (CEP), which includes commitments to 100% electricity from renewable sources by 2035 and achieving carbon neutrality by 2050. This feasibility study (Study) is a project of Virginia Clean Energy (VCE)[2] with support provided by AGU's Thriving Earth Exchange.[3,4] The project aligns with VCE's mission to promote CCA as a tool for counties, cities, and municipalities seeking a faster transition toward a renewable energy future.

**This Study evaluates the feasibility of a potential CCA program for residential and commercial customers for the county of Arlington.** The electricity consumption of government buildings was ignored because government buildings are outside the scope of this project. To assess the viability of the CCA, several estimates and assumptions were made throughout the Study and are specifically mentioned in each section as they apply. General assumptions include the following: (1) The Arlington CCA would be established as an op-out program, where customers are automatically enrolled into the CCA service unless they choose to leave the CCA; (2) the service from the CCA program would be offered to all eligible customers in one phase at launch; and (3) the power will be procured through a Competitive Service Provider (CSP) selected via a Request for Proposal (RFP).

**Because of the lack of some data and costs, this Study is limited in its scope and does not provide a full economic and financial analysis, but rather represents a starting point to access the feasibility of this type of undertaking.**

1. § 56-589. Municipal and State Aggregation. A. Subject to the provisions of subdivision A 3 of § 56-577, counties, cities, and towns (hereafter municipalities) and other political subdivisions of the Commonwealth may, at their election and upon authorization by majority votes of their governing bodies, aggregate electrical energy and demand requirements for the purpose of negotiating the purchase of electrical energy requirements from any licensed supplier within this Commonwealth, as follows: 1. Any municipality or other political subdivision of the Commonwealth may aggregate the electric energy load of residential, commercial, and industrial retail customers within its boundaries on an opt-in or opt-out basis.
2. Virginia Clean Energy is a nonprofit organization whose mission is to accelerate the development of clean and renewable energy via Community Choice Aggregation in the Commonwealth of Virginia. https://www.virginiacleanenergy.org/
3. AGU. https://sites.agu.org/, https://thrivingearthexchange.org/
4. The project was submitted to AGU's Thriving Earth Exchange program in October 2018, and in December 2018 Virginia Clean Energy was selected to participate in the program together with other communities.

# ELECTRICITY USAGE AND LOAD FORECAST

**Arlington County's historical electricity consumption and load data were used as the basis for the Study's customer and electricity load forecast.**[5] The total numbers of accounts and aggregated residential and commercial electricity usage were provided by Arlington County employees.[6]

**As Arlington County does not have actual hourly load readings from the incumbent utility, this Study examined two approaches with respect to characterizing the load curve hour by hour: (1) Dominion weather profiles and (2) calculation of a PJM-DOM to Arlington load ratio.** The latter approach using hourly load data from the publicly available PJM Data Miner 2 database was used to generate the load profile for Arlington. The forecast electricity consumption (gigawatt hours (GWh)) for Arlington residential and commercial customers is then calculated for the years 2020 through 2030 for two scenarios: (1) CCA program with 100% customers and (2) CCA program with customer opt-out estimates.

**The aggregated monthly electricity usage analyzed over 3 years follows the same general pattern and does not differ significantly from one year to another.** Residential usage represents approximately 30% of total customer electricity usage, while commercial usage represents around 70%. Figure ES1 shows the aggregated yearly electricity usage for 2015–2018, and Figure ES2 shows the total aggregated monthly electricity usage for 2015–2017.

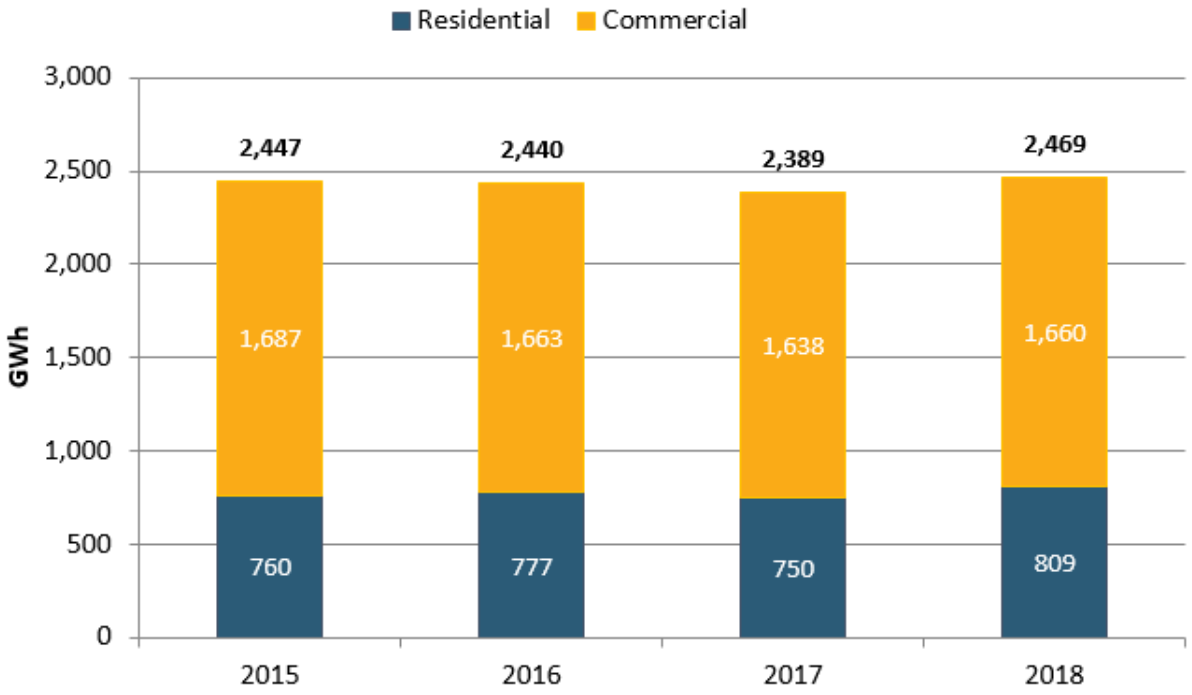



**FIGURE ES1**. Aggregated yearly electricity usage, 2015–2018.

5. Arlington customers currently purchase their electric power, transmission, and distribution services from Dominion Energy, which is the incumbent utility.
6. Historical data are available at https://data.arlingtonva.us/search/?category=Energy%20and%20Environment&resource=dt.

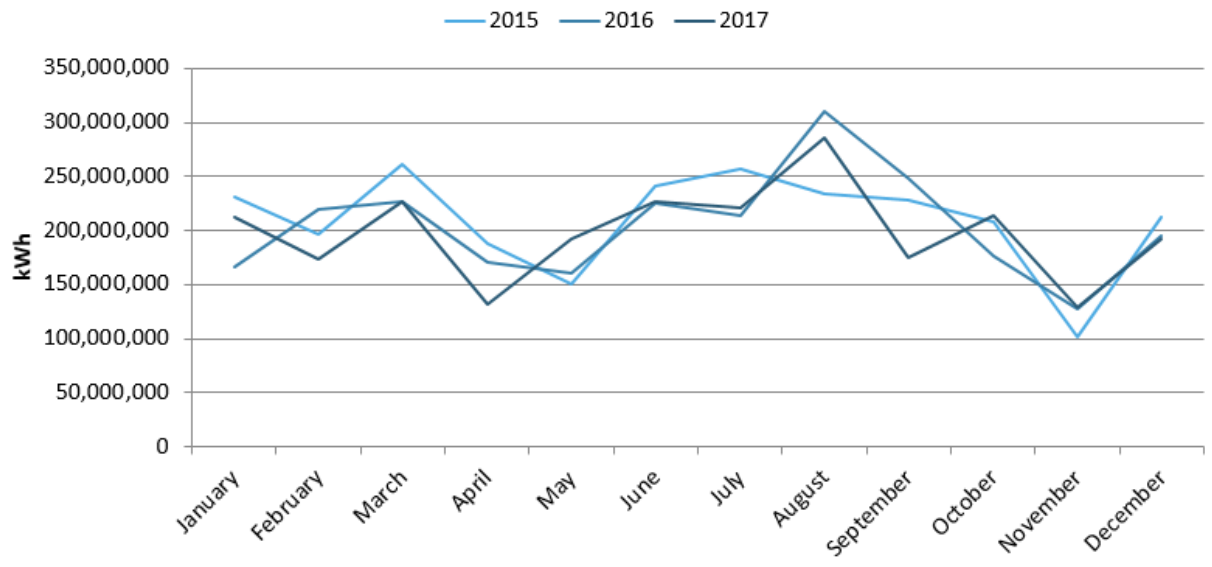



**FIGURE ES2**. Total aggregated monthly electricity usage, 2015–2017.

**The load profile in Figure ES3 shows how Arlington load varies throughout the year.** We notice higher load in the winter and summer months, most likely due to increased heating and cooling needs, respectively.[7]

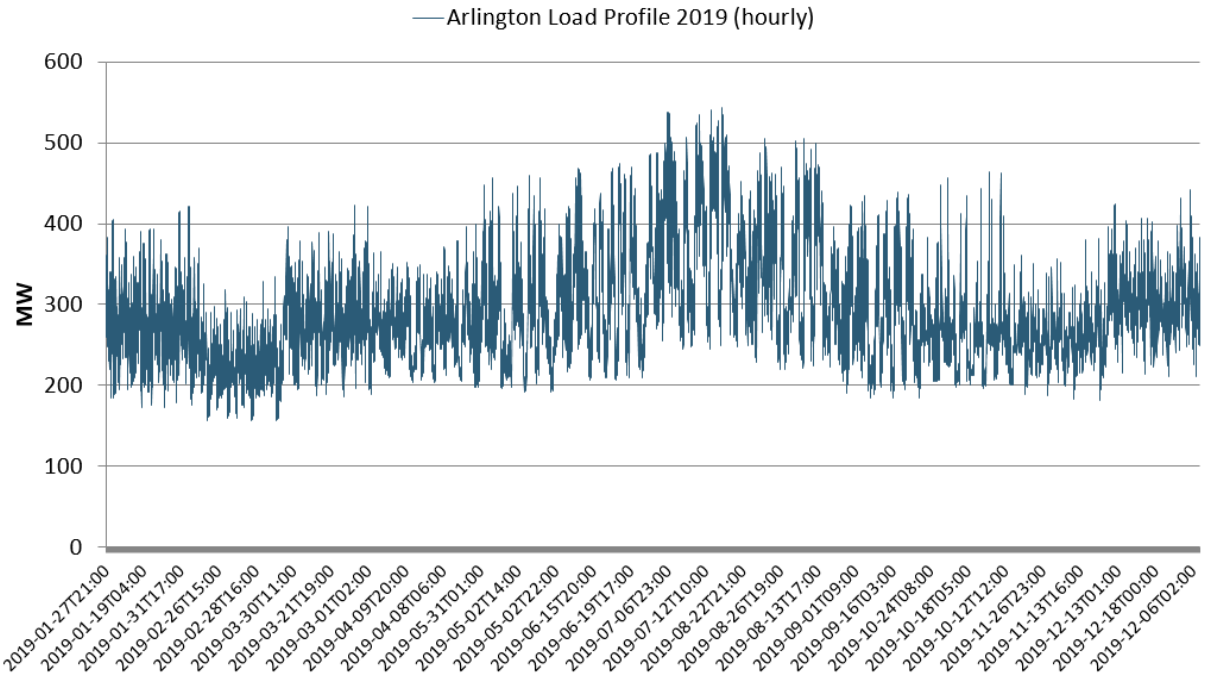



**FIGURE ES3**. Arlington hourly load profile, 2019.

7. Compared with the U.S. average, a greater proportion of Virginia households heat with electricity (55%) and a smaller proportion uses natural gas (35%). https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/VA.pdf

**The CCA program with a 100% customers scenario assumes an opt-out rate at zero, meaning all residential and commercial customers are assumed to stay in the CCA program once it is operational, while the CCA program with a customer opt-out scenario assumes some customers would return to the incumbent utility.** The CCA program opt-out rate for this Study is assumed at 15% for residential customers, to be on the conservative side, and at 5% for commercial customers[8] and is calculated on the first year of the CCA program launch (in this Study, calculated for the year 2020). **As shown in Figure ES4, the total CCA retail sales for both residential and commercial in both scenarios are estimated to increase, with the latter more steadily. However, since energy efficiency measures and electrification were not taken into account, these projections may vary**.

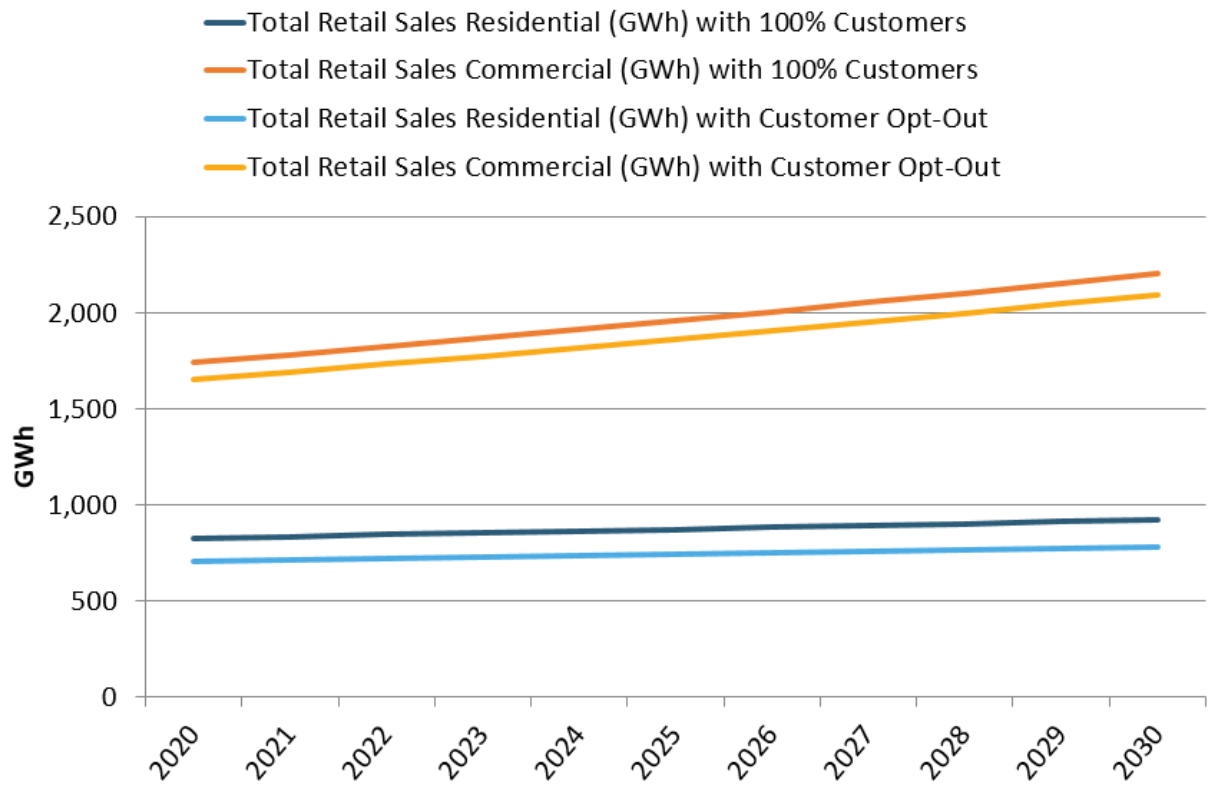



**FIGURE ES4**. Total retail sales for residential and commercial (GWh) by scenario.

8. On the basis of a recent survey, typical CCA opt-out rates are about 5%–15% on average. O'Shaughnessy, Eric, Jenny Heeter, Julien Gattaciecca, Jenny Sauer, Kelly Trumbull, and Emily Chen. 2019. *Community Choice Aggregation: Challenges, Opportunities, and Impacts on Renewable Energy Markets*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-72195. https://www.nrel.gov/docs/fy19osti/72195.pdf

# POWER PROCUREMENT STRATEGY AND COST ANALYSIS

**The power procurement strategy strongly depends on state legislation and regulation. In Virginia, the current legislation allows a CCA program to purchase electricity from a Competitive Service Provider (CSP) licensed by the State Corporation Commission (SCC).**[9] To select a CSP, the CCA writes a Request for Proposal (RFP).[10] Because of wholesale market price variability, a typical power procurement contract with a CSP is made for 12–24 months. At the time of this research, it is not clear whether the Power Purchase Agreement (PPA) option would be available to CCAs in Virginia, and further clarification with the SCC is needed.

**The CSP will procure the power on behalf of the CCA on the PJM market, the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of the 13 Mid-Atlantic, South Atlantic, and Midwestern states under its jurisdiction, including Virginia.**[11] PJM markets consist of the *Energy Market*, which includes the real-time and day-ahead markets,[12] the *Capacity Market*, which ensures the future availability of power supplies 3 years in advance,[13] and the *Ancillary Services Market*, which ensures system reliability and balance in frequency as electricity flows from generating resources to consumers.[14] Depending on which entity is responsible for collecting transmission charges, PJM then bills either a retail supplier or the utility directly.[15] In this regard, the transmission cost is a pass-through charge.

**The municipality typically decides the CCA resource strategy based on its priorities and objectives.** According to the 2019 CCA legal study,[16] "Virginia Code § 56-589 is silent as to whether a CCA may be authorized to offer multiple 'products' (e.g., portfolios with varying degrees of clean and/or renewable energy), or a single product (e.g., a 100 percent renewable energy option)." For the purpose of this Study and in line with Arlington objectives to power 100% of Arlington's electricity from renewable sources by 2035, the CCA explores the following options:

a. Voluntary Virginia Renewable Portfolio Standard (RPS) goal[17]
b. 50% renewable energy
c. 100% renewable energy

9. Further research is needed to clarify whether the CCA can also purchase its electricity needs on the wholesale market.
10. A CCA may be allowed to purchase power from multiple CSPs, but this issue needs to be clarified.
11. Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. https://pjm.com/
12. The PJM Energy Market procures electricity to meet consumers' demands both in real time and in the near term. It includes the sale or purchase of energy in PJM's real-time energy market (5 minutes) and day-ahead market (1 day forward). https://pjm.com/markets-and-operations/energy.aspx
13. PJM's capacity market, called the Reliability Pricing Model, ensures long-term grid reliability by securing the appropriate amount of power supply resources needed to meet predicted energy demand in the future. https://pjm.com/markets-and-operations/rpm.aspx
14. Ancillary services help balance the transmission system as it moves electricity from generating sources to ultimate consumers. https://learn.pjm.com/three-priorities/buying-and-selling-energy/ancillary-services-market.aspx
15. https://blogs.constellation.com/energy-management/understanding-transmission-costs-in-your-power-bill-2/
16. Legal Options for Community Choice Aggregation in Virginia, December 2019. Prepared for Virginia Clean Energy by the Environmental and Regulatory Law Clinic at the University of Virginia School of Law. http://virginiacleanenergy.org/cca-legal-study.html
17. The Virginia Clean Energy Act (VCEA), which passed on March 18, 2020, introduced mandatory RPS goals for utilities in the Commonwealth. https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+HB1526ER

**The following types of costs were considered in our case study and used to determine the historical market-based rates for 2019:**

**Power supply costs:**

- **Wholesale electricity prices.** PJM wholesale electricity prices include energy market prices, capacity market prices, ancillary services costs, administrative charges, and transmission. For this research, we have analyzed the PJM locational marginal prices (LMPs) for the 3 years from 2017 to 2019 with the Ballston node as a stand-in for the price of electricity in Arlington County. PJM capacity market costs are derived from recent auction data in the PJM-DOM region. Ancillary services costs and administrative charges (both <1%) are calculated as a proportion of the PJM total wholesale cost. We assume that the entity responsible for collecting the transmission cost is Dominion.

**Nonpower supply costs:**

- **Competitive Service Provider (CSP) fee.** The CSP proposal to the CCA shall include all the costs associated with the procurement and delivery of electricity to the required delivery point, including its profit. For this Study, the CSP profit is estimated at 7%.[18]
- **CCA administration fee.** The CCA administration fee is a fee per kilowatt hour (kWh) that the CCA negotiates with the CSP to cover the organization's expenses for managing the program, and implementing marketing and communications, customer service, and legal fees. For this Study, we assume a CCA administration fee at 0.1 cent/kWh, which is a common fee used among existing CCAs on the East Coast.

**Pass-through charges from the incumbent utility:**

- **Transmission and distribution charges.** Transmission charges are part of the Dominion generation charges as Rider T1, whereas distribution charges are set in the distribution component of the tariff.
- **Riders.** For every kWh, Dominion applies a variety of riders. For 2019, the total residential riders (Schedule 1) for generation, transmission, and distribution amount to 2.7895 cents/kWh, whereas the total commercial riders (Schedule GS1) amount to 2.1121 cents/kWh. **Dominion also has a fuel charge (Rider A), which is a pass-through cost for fuel used to produce electricity, including fuel shipment. We do not account for a Dominion fuel charge in our cost analysis, as fuel cost is already part of the wholesale electricity price.**

18. This percentage may vary according to the actual offer from the CSP.

# CASE STUDY

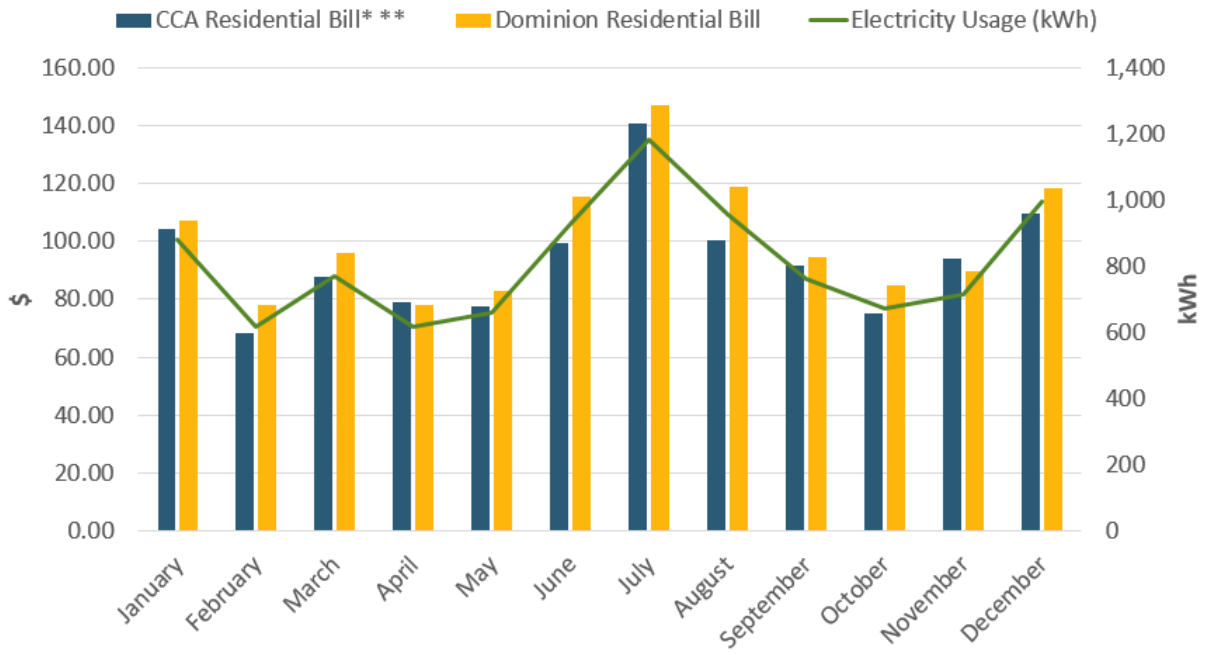
**The case study analyzes the bill for a residential customer in Arlington with 100% renewable energy certificates (RECs) assuming the CCA 100% customers scenario.**[19] This section does not provide a full economic and financial analysis. Instead, it presents a case study for comparison purposes using only the publicly available data and costs. Thus, at this stage of the research, revenue requirements were not calculated as is typically done in other CCA feasibility studies.[20] The calculations of revenue requirements are deferred to a later stage when more information will be available concerning staffing requirements for the Arlington CCA. For comparison purposes only, this Study assumes that the rate design would initially mirror the structure of Dominion rates for the different components (generation, transmission, distribution, riders). However, **as detailed rate design was not part of this Study, the CCA rates in the case study follow the hourly PJM LMPs for 2019 and do not vary above 800-kWh thresholds as Dominion rates do. A CCA would typically establish fixed rates that would be stable across the year.**

**The comparison between the CCA residential bill, procuring electricity via a third party on the wholesale market for 100% RECs, and a Dominion residential bill with the current power mix and tariffs indicates the CCA bill would be a price-competitive option for most months as shown in Figure ES5.** Figure ES6 shows the yearly and monthly average residential retail prices.[21] From our investigation, an advantage of the CCA is the exclusion of the fuel cost in the rate setting, as it is already embedded in the wholesale market pricing.

**The CCA yearly average residential retail electricity price over the 2019 period was 7% lower than Dominion, 11.57 and 12.40 cents/kWh, respectively.** The CCA generation component is slightly higher, as it includes the cost of fuel. However, the total generation cost for the CCA, including the RECs, is lower than Dominion when the latter includes the fuel cost. **As shown in Figure ES7, the fuel rider has a substantial impact on Dominion's total retail price, accounting for around 19% of the total retail price.** The RECs account for around 12% of the generation cost and approximately 5% of the total retail rate. The CSP profit and CCA fee account for only a small percentage of the total retail price. Transmission, distribution, and riders are identical in both bills. Figure ES7 shows the CCA and Dominion residential retail price breakdowns in cents/kWh from the 2019 bill calculations.

**The bill comparison was produced with our best knowledge of publicly available existing costs and existing available data.** However, there may be additional hidden charges that we may not be aware of, and thus we recommend further vetting if using these estimates for comparison externally. In addition, to get a more precise cost breakdown, a complete study of all PJM costs, including a more detailed view of transmission costs, would be necessary.

19. A case study for commercial customers is not provided in this Study because of a lack of clear indication of the ration of Arlington commercial customer rate structure—whether they are GS1 versus GS2 service.
20. See, for example, San Diego Feasibility Study for a Community Choice Aggregate, July 2017.
21. The monthly usage in kWh was derived as an average of total residential usage and existing accounts.




*For a more accurate comparison, we suggest using metered electricity usage figures from the utility. **The fuel mix includes 100% RECs from the PJM wholesale market.

**FIGURE ES5.** Case study: CCA bill versus Dominion bill.

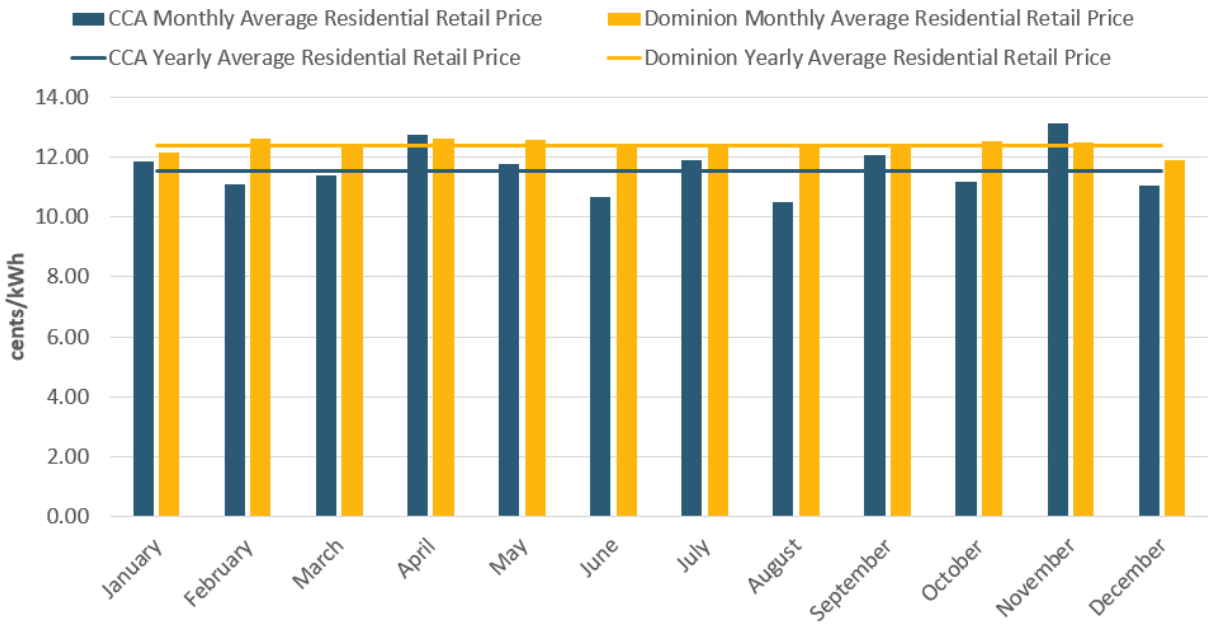



**FIGURE ES6.** CCA and Dominion monthly and yearly residential prices (cents/kWh).

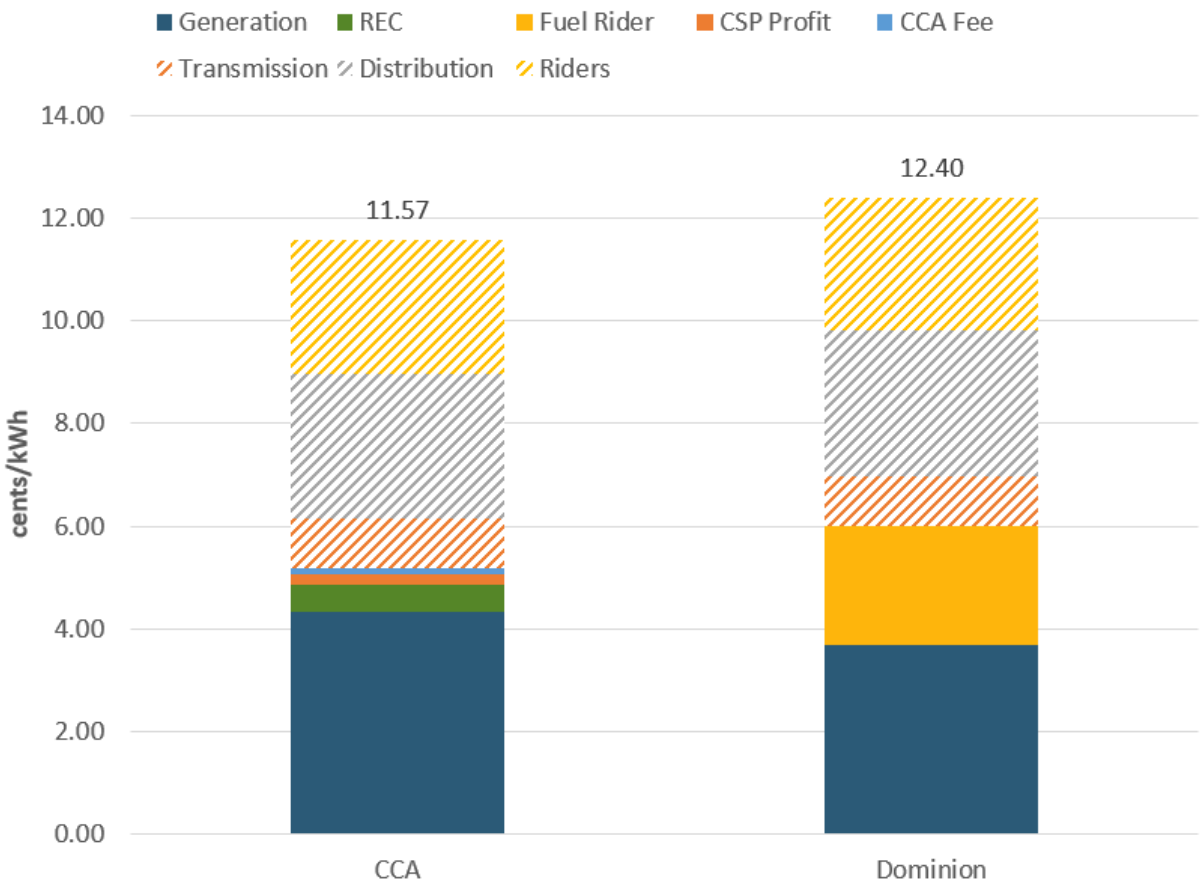



**FIGURE ES7.** Breakdown of CCA and Dominion electricity prices (cents/kWh).

# SENSITIVITY ANALYSIS

The sensitivity analysis was carried out for different scenarios and rate modeling assumptions to better understand the impacts of one or more cost variations on the CCA and Dominion residential prices in the case study.

**The sensitivity analysis suggests that the CCA residential case study would still be competitive under several cost increase/decrease assumptions.** In all sensitivity scenarios analyzed, the CCA yearly residential average retail price remains competitive compared with Dominion. Likewise, in most sensitivity scenarios, the CCA monthly residential retail price ranges remain competitive with Dominion. We noted that the CCA yearly residential retail price and the CCA monthly residential retail price ranges were more sensitive to the load increase or decrease. As per our assumptions and methodology, the CCA rates in the case study follow the hourly PJM LMPs and do not differ above 800-kWh thresholds as Dominion rates do. However, we expect the Arlington CCA to establish fixed rates that would be stable across the year. The Dominion yearly residential retail price would be only slightly affected by an increase/decrease of both generation and fuel rider costs, respectively, while testing a combination of a ±5% increase/decrease of Dominion generation and fuel rider costs does show slightly more variation in the Dominion price. **Yet even in the extreme case where both the generation and the fuel rider decrease by 5%, the CCA residential retail price is still lower than the Dominion retail price by around 4.5%.**

Figure ES8 shows the results for the electricity load increase/decrease by ±5% and ±10%. Figure ES9 shows the results for Dominion generation and fuel rider costs increase/decrease by 2%, respectively, and Dominion generation and fuel rider costs increase/decrease ±5% simultaneously. Figure ES10 shows the monthly sensitivities for all scenarios analyzed.

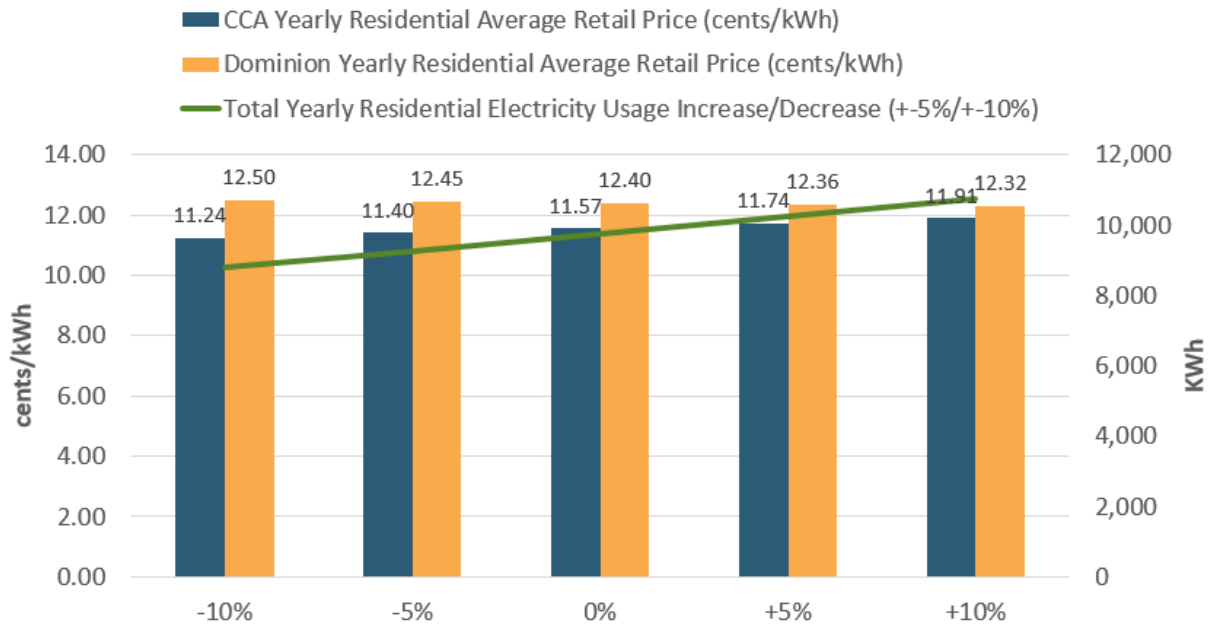



**FIGURE ES8.** Yearly residential average price comparison with CCA and Dominion sensitivity for load increase/decrease (±5%/±10%)

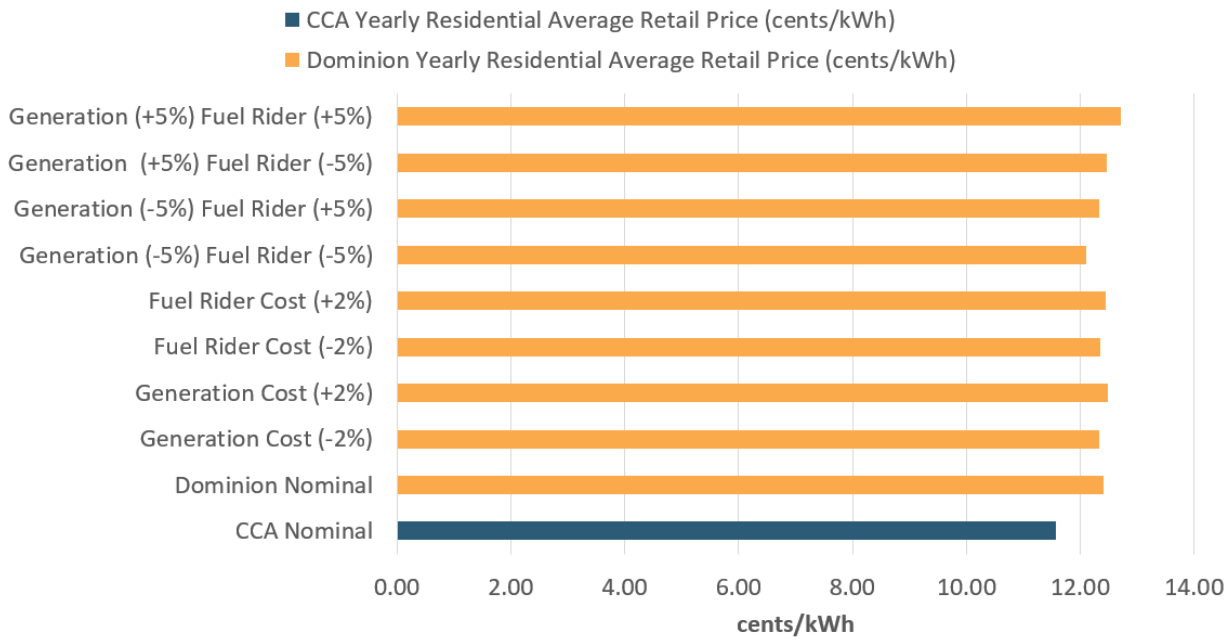



**FIGURE ES9.** Yearly residential average price comparison for all Dominion cost sensitivities.

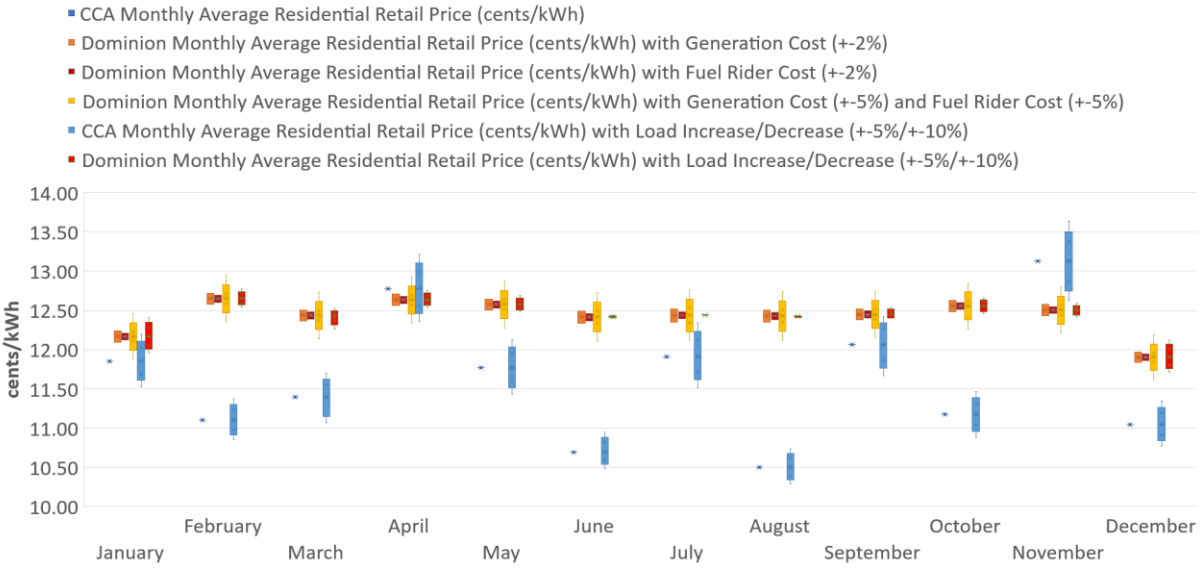



**FIGURE ES10.** Monthly residential average price range comparison for all sensitivities.

## FINANCIAL BENEFITS

**The Arlington CCA may be able to earn a profit from the sale of electricity.** To be on the conservative side, this Study assumes the CCA would be collecting a small administrative fee in the amount of 0.1 cent/kWh to use for managing the program and other energy-related initiatives. This is a common practice among CCAs in several U.S. states on the East Coast. **As shown in Figure ES11, the Arlington CCA would be able to collect around $25–$30 million over 11 years of operation, depending on scenario.**

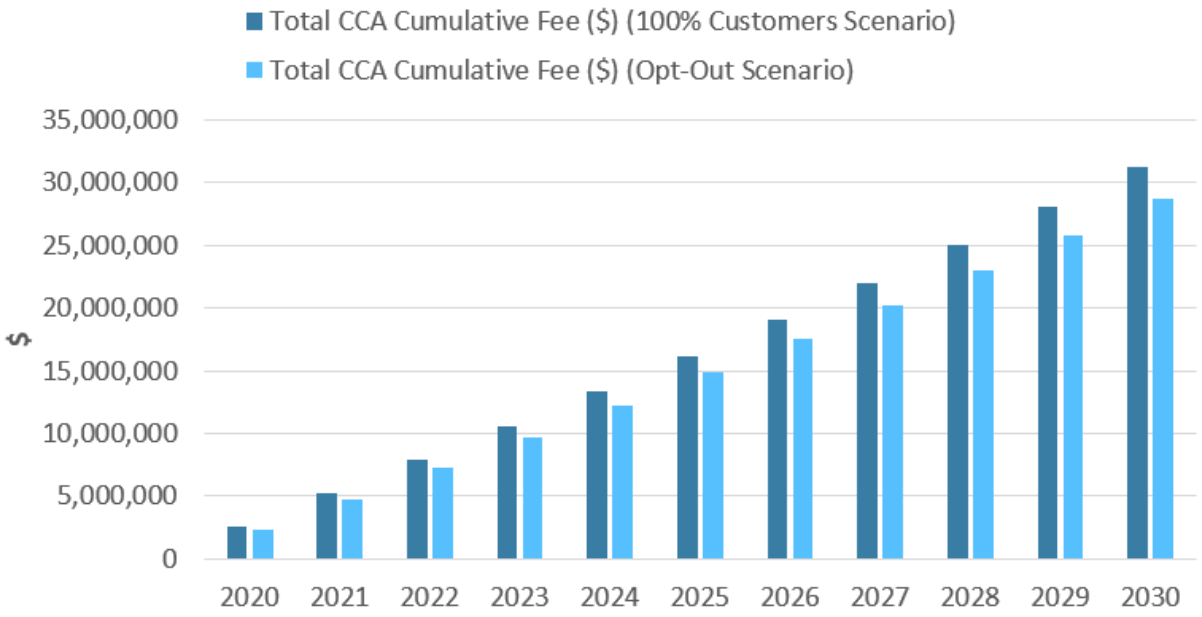



**FIGURE ES11.** Total CCA cumulative fee for the 100% customers scenario and the opt-out scenario.

# ENVIRONMENTAL AND OTHER BENEFITS

**One primary advantage of a CCA is greater local control over which resources are pursued in delivering electricity to customers.** In line with Arlington's renewable energy and carbon-neutral goals, three scenarios were analyzed for the CCA: (1) voluntary RPS scenarios for the different years, (2) 50% renewable energy, and (3) 100% renewable energy. All three assume the CCA 100% customers scenario. The 2018 Dominion Energy Integrated Resource Plan (IRP)[22] and the U.S. Environmental Protection Agency (EPA) eGRID database[23] were used in modeling these scenarios. Specifically, historical emissions factors from the eGRID database and historical and projected emissions factors from the Dominion IRP were incorporated. These emissions factors apply to the combined fuel mix, rather than to each individual resource. For comparison with the CCA, we use Dominion non-RGGI (Regional Greenhouse Gas Initiative) projected emissions factors, which are part of their lowest emissions reduction scenario.[24]

**All three CCA scenarios analyzed resulted in lower $CO_2$ emissions than the utility, as shown in Figure ES12.** Significant $CO_2$ emission reductions occur in particular for the 50% and 100% renewable scenarios compared with the incumbent utility. In contrast, emissions under the incumbent utility are expected to increase in the future assuming rising Arlington electricity demand and minimal reduction in future carbon intensity, as projected by the 2018 Dominion Integrated Resource Plan (IRP).[25] **Arlington emissions reductions would initially be derived through the purchase of unbundled RECs on the wholesale market, rather than through the direct purchase of local renewables. As such, these emissions reductions represent a shift for Arlington's carbon accounting, namely, offsetting, rather than for net emissions.** However, a CCA would work toward directly purchasing local renewable energy in the future, and the purchase of unbundled RECs in the interim would still support further development of renewables.

**These emissions reductions can be expressed as the number of cars off the road, as shown in Table ES1.[26]** The annual carbon emissions reductions were averaged for 2020–2030 resulting from each CCA scenario in comparison with the existing utility emissions, rounded down to the nearest thousand. $CO_2$ emissions reductions for 2020–2030 were projected at 76,000 metric tons per year for the Virginia voluntary RPS scenario, 489,000 metric tons per year for the 50% renewable energy scenario, and 978,000 metric tons per year for the 100% renewable energy scenario. **This is equivalent to reducing the number of cars on the road by more than 200,000, on the same order as the population of Arlington County.**

**Another benefit of the CCA is the possibility of fostering the uptake of energy efficiency measures within the community.** Many CCAs in California directly offer or partner with programs offered by utilities, municipalities, and other organizations related to energy efficiency, distributed generation and

22. https://www.dominionenergy.com/library/domcom/media/about-us/making-energy/2018-irp.pdf
23. https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid-questions-and-answers#egrid4b
24. To reduce Virginia emissions under RGGI implementation, Dominion projects higher imports of out-of-state energy, which would actually be more carbon-intensive than generation sourced in Virginia.
25. These results may vary, should Dominion change its power mix with less carbon intensity resources.
26. Assuming the EPA-estimated 4.6 metric tons of $CO_2$ per year emitted by passenger cars averaging 22 miles per gallon (mpg) and 11,500 miles per year https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100U8YT.pdf

energy storage, and demand response. **The Arlington CCA could explore different alternatives on how to implement energy efficiency programs and measures similarly to CCAs in California.**[27]

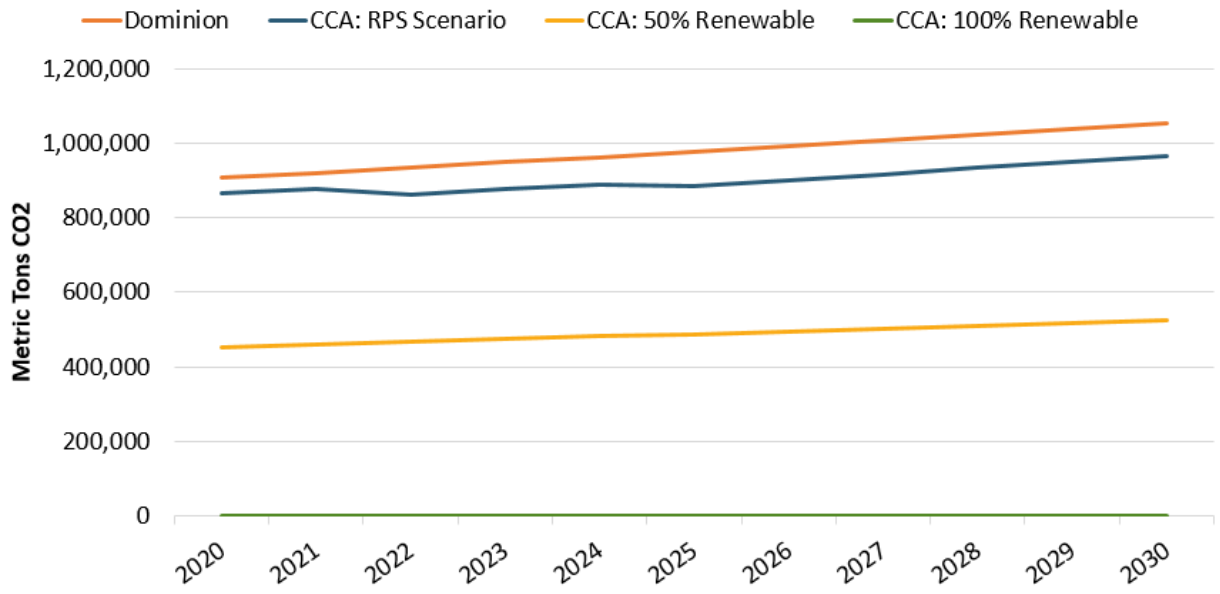



**FIGURE ES12.** Projected CO2 emissions from electricity for Arlington County for CCA scenarios and Dominion non-RGGI scenario.

**TABLE ES1.** Arlington CCA Annual Emissions Reductions, 2020–2030

| CCA Scenario | RPS | 50% Renewable | 100% Renewable |
|---|---|---|---|
| **Annual emissions reduction (metric tons $CO_2$)** | 76,000 | 489,000 | 978,000 |
| **Emissions reduction expressed as annual number of cars off the road**<br>**= 16,000 cars** | 16,000 | 106,000 | 212,000 |

27. In this Study, we did not assess the legislation on energy efficiency in Virginia, and the implementation of energy efficiency programs and measures by the CCA would need further research.

# PRELIMINARY FINDINGS AND CONCLUSION

**Our investigation suggests that the CCA is a viable option for procurement of 100% renewable energy on the wholesale market at a competitive price, allowing Arlington to offset its carbon footprint.** On the basis of the research, assumptions, and analyses conducted in this Study, preliminary findings and conclusion can be summarized as follows:

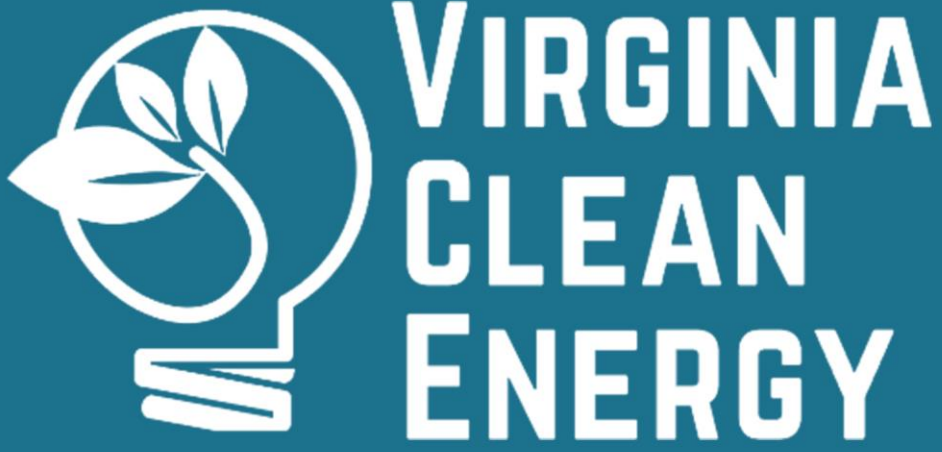
- **Support to the Arlington County CEP goals.** The formation of a CCA would support Arlington County's current CEP goals of achieving carbon neutrality by 2050 and 100% community-wide renewable electricity by 2035.
- **GHG emissions reduction through carbon offsetting.** Under the 100% renewable energy scenario, Arlington could already offset its carbon footprint by as much as 978,000 metric tons of $CO_2$/year, which is equivalent to reducing the number of cars on the road by more than 200,000, on the same order as the population of Arlington County.
- **Support for renewable energy development.** The purchase of unbundled RECs in the interim would still support the renewable energy market, as it encourages renewable electricity on a broader scale.
- **Economic benefits.** Economic benefits include electricity retail prices that are competitive with the incumbent utility**.** The case study analyzed with the CCA procuring 100% RECs resulted in an average retail electricity price 7% lower for a CCA residential customer compared with Dominion.
- **Exclusion of the fuel rider.** Our investigation suggests that an advantage of the CCA is the exclusion of the fuel cost in the rate settings, as this is already embedded in the wholesale market pricing. The fuel rider alone accounts for about 19% of Dominion residential retail price.
- **Sensitivity analysis.** The sensitivity analysis suggests that the CCA residential case study would still be competitive under several cost increase/decrease assumptions. In the extreme case where both the Dominion generation and the fuel rider decrease by 5%, the CCA residential retail price is still lower by around 4.5% compared with the Dominion retail price.
- **Financial benefits.** The CCA program would bring additional funds in an estimated amount of $25–$30 million from a cumulative administrative fee for 11 years of program operations. A portion of these funds will be used for managing the program, and the remainder could be reinvested in energy-related projects within the community, thus making the CCA a 100% self-supported program.
- **Risks.** The risks the CCA may encounter are typically related to the power supply procurement sector, which are well known and could be mitigated with the support of experienced power procurement companies. Another risk the CCA may encounter is an exit fee, which applies to CCAs in California but is not specifically addressed for CCAs in the Virginia code.

**To conclude, the CCA is a tool that can help municipalities and counties achieve their goals of a full transition to 100% renewable energy.** This Study provides many details and examples for the establishment of a CCA program in Arlington, with the hope that it would be helpful in pursuing this option. We believe that the establishment of a CCA program will allow Arlington flexibility in its power procurement options to match its long-term energy and climate goals. We also hope this Study is useful for any other municipality in the Commonwealth and for other states wishing to explore a CCA as a tool for their sustainable energy transition.

# RECOMMENDATIONS

On the basis of the Study results, the following recommendations are provided:

- **The CCA is available to municipalities by right.** Arlington should embrace this opportunity and explore the CCA program as a tool to reach its renewable energy goals and drastically reduce its carbon footprint.
- **Tailor the CCA program to the local needs.** Arlington should investigate which operating structure option is best based on its needs and objectives. For the governance option, Arlington could explore the hybrid Joint Powers Authority (JPA) of the CCA option, which would lower its procurement costs and market risks.
- **Carefully review the data.** Results in this Study were produced with our best knowledge of publicly available existing data and costs. However, we would strongly recommend that stakeholders carefully review and analyze all raw data and costs from the PJM and the utility in drawing their own conclusions. In addition, we recommend that Arlington ask Dominion for hourly metered electricity usage data so as to perform more accurate and detailed calculations of the load requirements. A subscription to a wholesale market price forecasting service to estimate future energy pricing is also advised.
- **Include energy efficiency.** While energy efficiency was not factored into our calculations, CCAs have the potential to substantially accelerate the adoption of energy efficient technologies, as well as distributed generation, energy storage, electric vehicles, demand response, more advantageous rate structures, and other similar opportunities. CCAs in California have been particularly successful in implementing programs and taking advantage of these opportunities.
- **Clarify CCA open issues.** Finally, we encourage Arlington to clarify with the State Corporation Commission the following open questions for the CCA:
  - procurement of energy directly on the wholesale market
  - purchase of power from multiple CSPs
  - contracting PPAs with independent power producers
  - establishment of a multijurisdictional CCA
  - implementation of energy efficiency programs
- **Suggestions for future research.** Opportunities for future research include a detailed study on rates design for the CCA for both residential and commercial, a comprehensive review of costs for calculating the revenue requirements, and a full financial and economic analysis.

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