

County of Albemarle

Facilities & Environmental Services Department

Installing a Solar Energy Generation Facility on the Roof of the 5th Street County Office Building

Albemarle County's Climate Action Plan target is to reduce greenhouse gas emissions in the community by 45% from 2008 levels by 2030 and to achieve net zero carbon by 2050. Solar energy generation plays an essential role in reducing greenhouse gas (GHG) emissions by supplanting an equivalent demand for energy from burning fossil fuels. Stationary (building) energy emissions are estimated to account for more than 30% of the emissions in Albemarle County as of 2022. Leveraging County assets to demonstrate leadership in replacing fossil fuel energy sources with renewable sources (such as solar) is essential to meeting community greenhouse gas emission reduction goals. Doing so is good fiscal stewardship, as the costs of climate disruption will be reduced over the long term.

BACKGROUND

In the County's 2020 Climate Action Plan (CAP), strategy B.7 recommends that the County make targeted investments in renewable energy at existing local government buildings. CAP action B.7.2 calls for the County to "analyze the existing portfolio of buildings for opportunities to add on-site renewable energy and define a plan and timeline for installing on-site renewable energy in feasible locations." Facilities and Environmental Services (FES) staff completed that analysis in 2023.

CAP action B.7.1 calls for the County to make roofs solar-ready when being replaced. That preparation was completed during the 2023 replacement of the roof of the 5th Street County Office Building (COB-5).

There are three ways of paying for solar energy systems:

- A building owner can purchase the system outright. This approach can be the most fiscally advantageous over the life of a solar array but requires a substantial initial investment.
- A building owner can lease the system from a solar developer, with the right to purchase the system in the future. This method requires no initial investment but does require the commitment of significant operating funds.
- A building owner can enter into a power purchase agreement (PPA), which allows (a) the solar developer to lease the roof space to install the system, (b) the developer to maintain ownership and responsibility for the system, and (c) the building owner to purchase the solar power from that system just as it would from a utility. PPA projects require no initial investment by the property owner. In the initial years of the life cycle of the solar array, anticipated operating cost savings may be modest, but improve markedly over time.

Due to the County's limited capacity to invest in a time of growing community infrastructure needs, funding for direct investment in renewable energy projects is expected to be limited in the near future. Therefore, a PPA is the County's best option for financing renewable energy projects.

MORE ABOUT POWER PURCHASE AGREEMENTS

A solar energy PPA allows a solar development company to lease either land, a rooftop, or other structure for the installation of a solar energy generation system. The system is designed, installed, financed, owned, operated, and maintained by the solar development company for the life of the agreement. During the life of the system, the property owner pays the solar development company for the energy, just as the owner pays for energy from electric utilities. In

addition to a lack of up-front costs, a primary benefit of a PPA is the predictability of energy costs from the system. The owner can design the rate of increase over the PPA term, and that price (and its increases) are fixed in the agreement. At the end of the agreement's term, the owner could either request that the solar developer remove the system, or purchase the system at an amortized rate.

PROPOSED PPA

County staff began pursuing options for a solar photovoltaic system on COB-5 in the fall of 2023. Staff consulted with six local solar developers to identify options and met with several companies to learn more. County staff also had discussions with staff of the Albemarle County Public Schools, which has installed solar energy systems on several school roofs via PPA agreements.

Based on preliminary estimates, the solar energy generation system size at COB-5 would be approximately 660 kilowatts. The system would produce an estimated 900,000 kWh of electricity annually, which is approximately half of COB-5 Street's current consumption. The resulting savings would translate to almost 10,000 tons of avoided CO₂ emissions over the term of the PPA, or the equivalent of removing 2,159 cars from the road for one year.



Figure 1. Preliminary image of the potential location of solar panels on the level portions of the COB-5 roof.

The term of the proposed PPA is 30 years. The initial rate per kilowatt hour would be \$0.0942. The price would increase by 1% each year. That rate increase is very attractive compared to both a historical average of 3.5% annual rate increases as well as Dominion Energy's 3.3% projections in its Integrated Resource Plan (IRP). Figure 2 is a visual representation of

the savings created by the difference between the market price for the energy and the price the County would pay with the PPA.

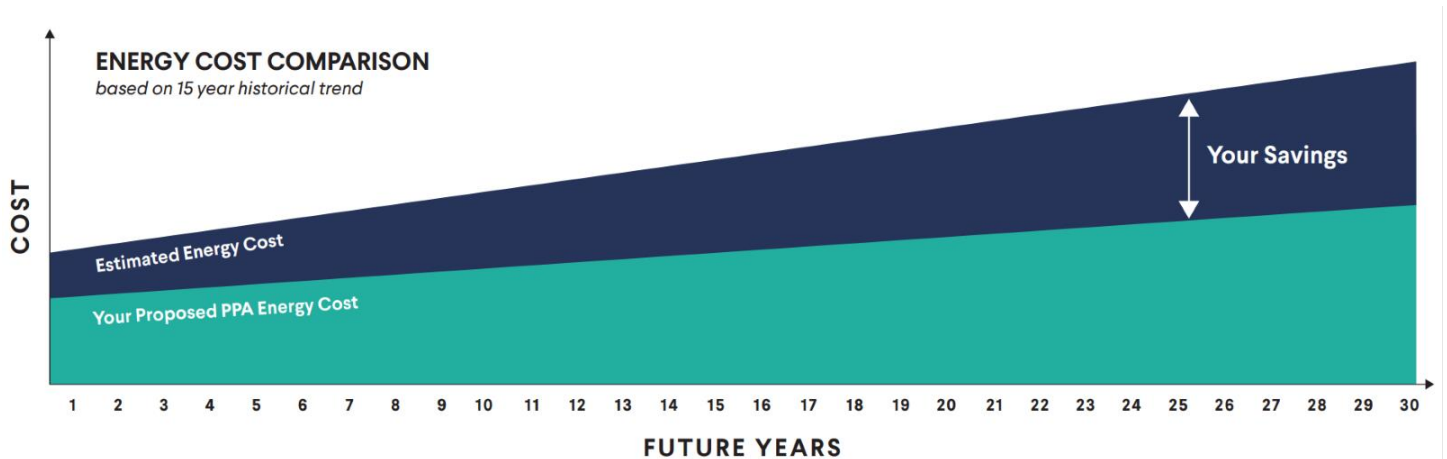


Figure 2. Comparison of PPA energy cost and estimated market costs.

Cumulative savings are estimated as follows:

- Year 1: \$1,000
- Year 5: \$26,000
- Year 15: \$263,500
- Year 30 (Total): \$1,247,000

Madison Energy Infrastructure (doing business as Sun Tribe Solar) has pre-existing cooperative contracts with several counties in Virginia. Albemarle County staff reviewed those cooperative contracts to determine whether it would be more favorable to cooperatively procure from one of those existing contracts or issue a request for proposals. Staff determined that the most advantageous arrangement would be to cooperatively procure from Sun Tribe's existing contract with Fairfax County as the basis of Albemarle's proposed agreement.

This transition away from fossil fuels would take place as staff has been updating and replacing COB-5's infrastructure to reduce energy consumption and increase energy efficiency. Electricity consumption at the facility has been decreasing annually since FY20, with FY24's consumption down more than 30% over that time. Similarly, natural gas usage in FY24 is more than 55% below FY22 levels. Reducing consumption, improving efficiency, and switching energy sources are all important elements of the County's local energy strategy.

NEXT STEPS

On August 21, the Board of Supervisors will receive a request from staff to hold a public hearing on the proposed lease agreement on October 2.

Pending Board approval, there would be a six-month project development process. System engineering would take another two months. Assuming those estimated timelines are met, installation on the COB-5 roof would commence around September 2025, with the system becoming operational in January 2026.