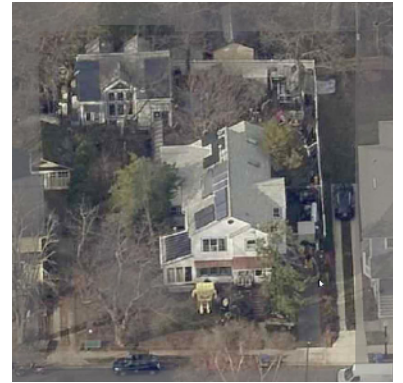


Two Self-Powered Buildings in Arlington, VA

OVERVIEW

In 1985, Scott Sklar bought a Sears kit bungalow in Arlington County, VA. In 1995, he built a small two story office building on the same lot to house his company, The Stella Group, Ltd, which assists companies, local governments, infrastructure owners, and institutions on integrating high value energy efficiency, renewable energy, and energy storage.

From the start, Scott's goal for the buildings was to use commercially-available sustainable energy products, elegantly integrate them, and hold tours for engineers, architects, professors & students, the media, laboratories, home builders, and international guests. He has been conducting these tours every other week since 1990, and the property has also been a part of the national American Solar Energy Society solar home tours for the last 25 years.



“I am not sure anyone has done such a living, ongoing demonstration in Virginia for as long as I have, but I believe it is as relevant today, as it was when my tours began in 1990.” -Property Owner, Scott Sklar

THE CHALLENGE

The tortuous journey to get the energy efficiency and renewable measures - solar thermal, solar electric, battery banks, direct exchange geothermal heat pumps, small wind turbine, hydrogen fuel cell, electrochromic glass, thermal barrier paint, etc. - approved by the County, and all at one location was not for the weak-hearted.

Aside from support from the U.S. DOE laboratories, as an Adjunct Professor at George Washington University (GWU) and a Sustainable Energy Director at GWU's Environment & Energy Management Institute (EEMI), Scott was able to enlist his faculty colleagues to support, assist, and now bring their students to tour the site. These tours add to the educational and academic value of his living investment.

The **Virginia Energy Efficiency Council**, a member-based 501c3, launched the Energizing Efficiency Campaign in 2023 to further the mission of advancing EE across the state by showcasing incredible work being done in our communities and inspiring others to act. Learn more at VAEEC.org/Energizing-Efficiency-Campaign.



Two Self-Powered Buildings in Arlington, VA

THE RESULTS

1985 Single Family Home Retrofit

Energy conservation and generation measures for the residential building were installed between 1985 to 2020. These retrofits include:



- Double-pane/argon-filled windows,
- LO/MIT thermal barrier roof paint,
- R38 insulation,
- LED lighting,
- Energy-efficient appliances,
- Solar water heating,
- Direct exchange geothermal heat pump, and
- Multi-type module photovoltaics tied to a large battery system.

During this time, Scott has seen a **total energy savings of \$36,000**, which breaks down to approximately \$2,7000 saved per year. The payback is estimated to be 12.3 years levelized.

New Construction Office Building

The office building was built in 1995 using:

- R50 insulation,
- Super-insulated windows,
- LED lighting,
- Solar daylighting,
- Small wind and hydrogen fuel cell, and
- Solar roofing shingles tied to a web-enabled battery bank.

In 2022, Scott bought a 2022 Nissan Leaf SL, and expanded the solar PV on his roof to make the vehicle fully self-powered. He has seen a **total energy savings of \$32,000**, which breaks down to \$2,200 saved a year. The payback for this building is estimated to be 14 years.

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