Solar for Rural Businesses: Accessing Funding for Small Scale Solar

Workshop held on May 7th, 2024 in North Garden, VA



Energy Talk

- Definitions
 - 1,000 KW=1 MW
 - 1,000 MW = 1 GW
 - kWh= electricity produced
 - Transmission/Distribution/
 Substation

Electricity generation, transmission, and distribution



Source: Adapted from National Energy Education Development Project (public domain)

Virginia Clean Economy Act

- Mandatory Renewable Portfolio Standard
 - 100% renewable energy by
 2050
- From 2025, 75% of Dominion's renewable generation MUST come from within VA
- Distributed Generation Cap → 6%



Utility-Scale Solar Distributed Solar

Figure 4. Annual Net Generation from Solar in Virginia Source: U.S. EIA

What Type of Solar do we see in Rural areas

Types:

- Utility Scale Solar (Over 5MW)
- Community Solar (Under 5MW)

• On-Site

Operations/Distributed Generation

"Add-Ons"

- Batteries
- Agrivoltaics



Benefits of Distributed Generation

- Less Transmission
- Energy Independence
- Protection from Increasing Utility Rates
- Collectively decreases the need for large scale solar
- Ideal time to optimize benefits (net metering and incentives)



Cost of Solar

Electricity costs according to data from Lazard



Year



Estimated rooftop solar potential of Virginia

Last updated: 06/2019

Sunlight on rooftops		
Shady	Sunny	
Existing solar arrays		Ø
Median household income		2

Buildings 79% solar-viable 2.4K existing solar installations

Based on 40% data coverage over buildings in this geographic area. All estimates are based on buildings viable for solar panels. Included panels receive at least 75% of the maximum annual sun in the county. For Virginia, the average value of the threshold is 1,057 kWh/kW. Read about Project Sunroof's methodology for defining solar viability below.

READ METHODOLOGY

Source: Google Project Sunroof

Overall

Total estimated size and solar electricity production of viable roofs for Virginia

Roofs 79%	Roofs Roofs 1.1M				About ¼ of Virginia's demand from rooftop solar					
Roof spac	е	(Capaci	ty		ł	Electric	city		
1.5 E	}	1	20. ww.dc	.8K		, , ,	25. MWh A	. 81 C per yr	/	
Total instal	lation size	(MW D)C)							
Flat roof										
South-facing										
West-facing										
East-facing										
North-facing										
	U 1000	2000	3000	4000	5000	6000	/000	8000	9000	10000

Per roof

Median estimated system size and solar electricity production per viable roof for Virginia

Roof space	Capacity	Electricity
599	8.5	10.2K
sq ft	kW DC	kWh AC per yr

Rooftop solar capacity distribution (number of roofs, < 50kW)



Battery Backup & EV Charging

Advantages:

- Grid resilience & independence
- Benefit to peak load
- Bi-directional EV's
- Virtual power plant/Microgrid
- Federal incentives (30%)

Challenges:

- Cost
- Lack of state incentives



On Site Solar "Behind the Meter" Incentives Available for Small Rural Businesses

- Federal Tax Credit (30% of total cost)
- 2. <u>Solar Renewable Energy</u> <u>Certificates (SRECs)</u>
- 3. USDA Rural Energy for America Program (REAP): Up to 50% for energy efficiency and renewable energy projects





Solar for Rural Businesses

Albemarle County Climate Protection Program

Jamie Powers Climate Protection Project Manager jpowers2@albemarle.org albemarle.org/climate | albemarle.org/stewardship

May 7, 2024



Context: Large, Rural County

- 726 square miles
- 95% Rural Area
- 5% Dev. Areas





Context: GHG Emissions

Ag & Landscape 23% Includes tree cover change and emissions from soil, fertilizers, livestock, & fuel Waste 2% Includes CH4 emissions from landfills



Transportation 44% Includes vehicle travel on all public roads

Stationary Energy 32% Includes heating cooking, electricity use in buildings, and streetlights

■ Transportation ■ Stationary Energy ■ Ag & Landscape ■ Waste ¹³



Climate Action Plan

- Adopted in 2020
- Key themes:
 - Health
 - Economy
 - Environment
 - Equity
- Strategy areas:
 - Help community reduce emissions
 - Lead by example in local government



Albemarle County <u>Climate Action Plan</u> (2020)

Inventories & SMART Goals by Sector

GHG Emissions Projections, 2008-2030 (tCO2e) 2,000,000 Estimated emissions between 2008 and 2018 1,800,000 Projection based on 2030 target (2022-2029) | 1,600,000 1,400,000 1,200,000 1,000,000 800,000 600,000 400,000 200,000 ■Transportation ■Stationary Energy ■Waste ■AFOLU —Target

Inventory Year (actual emissions) — Target Year SMART Goals (2030)



Types of Actions

The CAP's actions include a mix of tactics based on the tools at our disposal in local gov't:

- promote / educate
- support partners
- incentivize
- plan
- update policies and ordinances



DRAFT

Top 2 Prioritized Action Groups

ID	Strategy / Action Group	Actions (top 20)	1-2 Year Work Plan
B.1	Enable, incentivize renewable energy	B.1.1 – B.1.4	AC44, Solar Ordinance, Zoning Modernization
R.1	Utility-scale renewables in County Code	R.1.1, R.1.2, R.2.1	AC44, Solar Ordinance, Zoning Modernization





Our Setup

22.4 kW, half rooftop, half pedestal (~19kW A/C)

- Would have preferred 100% rooftop
- Metal roof did full weather sealing before install (~16' x 44' each)
- Installed by Virtue Solar

Net Metering (Dominion)

- Requires dedicated ag-use meter
- Literally nets in real time
- Cannot become a generator

Production and Consumption kWh 2,500 -2,000 -. 1,500 -1,000 -500 -0 ---Jul Jun Feb Маг Арг May Aug Sep Oct Nov Dec Jan Production Consumption

The Money Part - The Cost

\$58,000 total install fee (2019) – look at price per kW

Paid for:

- \$14k REAP grant
- \$17k Income Tax Credit
- \$27k Bank loan, 7 year term balance this with your utility bill?
 - Crowdfund loan for retail operations?

Debt

The Money Part - The Debt

Before considering debt:

- Do you have a quality installer?
- Do you have reliable & warrantied parts?
- Do you have quality insurance?

The debt:

• Set the payment to your utility bill average and get an install

Other Money Things

- Fauquier County Property Tax Exclusion
 - Note on zoning & permits
 - Fully exempt with new state laws

- Batteries vs Grid
 - Can you ensure you generate more than you use?
 - Do you have good grid reliability? Can you beat \$12/mo in "grid fees"?
 - Sustainability/gid peak contributions

Explanation of Bill Detail			
Customer Service	1-866-DOM-HELP (1-866-366-4357)		
Previous Balance Payment Received Balance Forward	6.81CR 0.00 6.81CR		
Non-Residential (Scheo Distribution Service Basic Customer Cha	iule GS-1) 04/22-05/23 Irge 10.78		
FAUQUIER Utility Tax Rider TRCR Credit Rider VCR 2022 Credit Total Current Charges	1.08 20.58CR 1.10CR 9.82CR		
Total Account Balanc	e 16.63CR		
View payment options, request service changes and enroll in eBill at			

View payment options, request service changes and enroll in eBill www.dominionenergy.com, search: Manage Your Account

Solar Renewable Energy Certificates

- A state-by-state program, with quotes set for energy producers
- Credits are generated by solar power generation
- Must be sold through a broker
- The market price for these credits appears to be declining

Virginia SREC Pricing

Option	Price
Mint & Sell (spot market)*	\$69.50 – \$63.50 (6-n
3-Year (2023-2025)	\$40.00 (12-months p
5-Year (2023-2027)	\$30.00 (12-months p
15-Year Upfront	\$125 per kW DC

Soft Benefits To Our (Retail) Business

- Initial publicity
- Roadside visibility
- Putting money where mouth is
- Opportunity to spread the word on solar?

Local agricultural operation generates its own electricity

By Lawrence Emerson Jul 29, 2019 🔍

powersfarmbrew ~

9:19

661 3,036 732 Posts Followers Following

 (\pm)

Powers Farm & Brewery Brewery Farming & Brewing in Fauquier. Taproom Open Thr & Fri 2-8, Sat & Sun Noon-8 - Jink + about our Fauquiergrown Bloody Butcher beer

NO/

Story highlights

POWERS FARM & BREWERY

o a federal grant, the operations at <u>Powers Farm & Brewery</u> near Casanova got even reek.

Virtue Solar on Thursday completed installation of a 22-kilowatt solar electricity em. With 36 panels on the main building's roof and 40 panels on metal racking nearby, by Powers hope to generate enough electricity to cover most of their demand.

nt of Agriculture grant paid one-quarter of the \$60,000 cost.

Monitoring - Sense







Monitoring - Emporia







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REAP grants

Hi! I'm Emily Axel.



Go Solar Rural Specialist Solar United Neighbors



WHAT IS SOLAR UNITED NEIGHBORS?

We're a vendor neutral, national 501(c)(3) nonprofit.

We help people go solar, join together, & fight for their energy rights.

WHAT IS SOLAR UNITED NEIGHBORS?



Our National Impact

8,000+ families with solar 68 Megawatts of solar 898,000 Tons of CO2 Saved









What is REAP?

REAP – Rural Energy for America Program

The Rural Energy for America Program helps farmers & rural business owners access renewable & efficient energy technologies.





REAP – Rural Energy for America Program

<u>Two Programs:</u>

Loan Guarantee Program

- Up to 75% of total eligible project costs
- Rates vary by lender.
- \$1M max amount; 40-year max term
- >> Grant Program <<</pre>
- Up to 50% of total eligible project costs



REAP – Rural Energy for America Program

Eligible Technologies:

Renewable Energy Systems (\$1M max)

- Biomass (25%)
- Geothermal for electric generation or direct use
- Hydropower (below 30 megawatts)
- Hydrogen
- Small and large wind generation
- Small and large solar generation
- Ocean (tidal, current, thermal) generation
- Storage? Only when paired w/eligible technology

Energy Efficiency Improvements (\$500K max)



What's new with REAP?

The IRA:

- \$1.7B additional funding available until 2031
- Raised the maximum grant from 25% to 50%
- Raised project size cap to \$1M for renewable energy projects





2 groups are eligible for REAP grants:

- 1. Farmers
 - 50% or more of gross income from agricultural operations
- 2. Rural small businesses:
 - Rural area (per USDA Rural Eligibility Map)
 - Small business (net worth <\$15M,

net annual income <\$5M)



Business benefits to going solar



- Enjoy more energy choice
- Reduce & control energy costs
- Improve your energy security
- Clean, abundant solar energy
- Save up to 50% with REAP grant
- Tax incentives (ITC and MACRS)

ITC: Investment Tax Credit MACRS: Modified Accelerated Cost Recovery System





Adam Schaller's Story

Rural Energy for America Program (REAP) Grantee

SOLAR UNITED

How to apply for a REAP solar grant

Overview

- 1. Select installer
- 2. Get unique ID from www.sam.gov
- 3. Fill out REAP application
- 4. Submit to USDA
- 5. Hear back 60 days after deadline





About the application

- Scored out of 100 points
- Our guide offers step-by-step guidance, including how to estimate your project's score
- 4 deadlines each year:
 - Mar 31 **
 - Jun 30
 - Sep 30 **
 - Dec 31 **



** Award requests of \$20K or less have funding carve out while it lasts



Submit your REAP application *before* building your project.

What you'll need to apply

You'll need the following documents:

- 1. 3 years of tax returns
- 2. Employee payroll (for small businesses)
- 3. Electric bills for last 12 months
- 4. Project quote from installer
- 5. Financial documentation of committed funds
- 6. Your federal Unique Entity ID (<u>www.sam.gov</u>)



Application forms

The main component of the application is Form RD-4280-3A.

You'll also fill out:

- 1. Form SF-424 (Application for Federal Assistance)
- 2. Form SF-424C (Budget Information Construction)
- 3. Form SF-424D (Assurances for Construction Programs)
- 4. Environmental Checklist Form



Follow step-by-step instructions

How to apply

Starting the application: Form RD-4280-3A

The heart of the REAP grant application is Form RD-4280-3A "Application for Renewable Energy Systems and Energy Efficiency Improvement Projects - Total Project Costs of \$80,000 or Less". Please confirm you have the right form.There are separate forms for larger projects. The majority of folks apply for the smaller tier "\$80,000 and under project size" or mid-tier "\$80,000 to \$200,000 project size".

The mid-tier project size application is very similar to the small tier project size application. It does have additional components. One component is a technical feasibility study. Your solar project company should assist you with this.

You can download the PDF version of Form RD-4280-3A "Application for Renewable Energy Systems and Energy Efficiency Improvement Projects - Total Project Costs of \$80,000 or Less" here. (under "To Apply").

Or, you can contact your state Office of Rural Development's Rural Energy Coordinator. Open the PDF outside of a web browser. This will allow you to save your work and use the self-calculating features built into the PDF form. Do not fill in the application inside a web browser. The inputs will be erased if you close or change something in the browser.

Block I. A. Application legal name

Use your farm or small business entity's legal name. Folks who apply as sole proprietors or single member limited liability companies rely on their social security number later in the application when they register in the System for Award Management (SAM). This is common practice but it is important that the farm or small business legal name match the tax identification number.

How to apply

Blocks I. B., C., and I.D. are self explanatory.



Up to 10 discretionary points may be awarded by the Office of Rural Development's State Director for any of these criteria:

- Achieves geographic diversity
- Owned by a veteran
- Owned by a socially-disadvantaged group (members of which have been subjected to racial, ethnic, or gender prejudice because of their identity without regard to their individual qualities. Note: The application must include a statement indicating the applicants are socially-disadvantaged).
- The project advances a Presidential Initiative or a Secretary of Agriculture priority
- Project location is in a federally-declared disaster area (within the last two years)

Block II: Project Title

Folks typically title their project with a short description. For example, "14.5 KW Solar Array for Sally Smith's Apple Farm".

Block III: System for Awards Management (SAM) Commercial and Unique Entity ID

Each applicant to the REAP grant program must have a Unique Entity ID corresponding to the tax identification number or social security number provided on all components of the REAP grant application.

In order to obtain a Unique Entity ID, you must register your business in SAM and request a Unique Entity ID. This ID code is necessary to complete the REAP application.

What if I don't own the property?

Businesses who rent are still eligible for REAP

Include the following 3 things along with your application:

- Documentation of support from building owner
- A plan to show what happens tenant leaves the space
- An option to renew the lease (ideally a 7-year lease with

option to renew. Include history of renewal, if applicable.)

Besides REAP, what else should I know about solar for my farm or rural business?

- Tax benefits (ITC & MACRS)
- Local solar export crediting rules
- Interconnection & potential costs
- Changes to your utility tariff



Federal Tax Credit & MACRS

• Federal Investment Tax Credit (ITC)

30% of system cost

- + 10% for domestic content (not enough market info yet)
- + 10% for energy communities (there's a map for this)
- MACRS

Accelerated depreciation of asset over a 5-year schedule

Bonus depreciation available in year 1 (phasing out)



Example Business Financials

SAMPLE CASH PURCHASE (25 kW solar)	COST
CAPITAL COST (upfront)	\$70,000
REAP GRANT (50% of system cost)	-\$35,000
FEDERAL TAX CREDIT AT 30% (after tax filing)	-\$21,000
NET INVESTMENT (after you get grant + credit)	\$14,000
YEARS 1 – 5 AVOIDED TAX (MACRS)	-\$X,XXX**
NET INVESTMENT AFTER MACRS	\$X,XXX

**MACRS value depends on your federal and state tax rates.

Please consult your tax professional for regulations and guidance specific to your business.

Solar Export Crediting

- The value of what you export to the grid
- Net Metering
- Other compensation types
- Ask your installer what applies in your area



Interconnection

- Maximum you can generate annually
- Approval to connect to local utility system
- Solar can trigger system upgrades

(transformer replacement, new lines, etc.)

- Very location-specific
- Cost often born by project owner



Tariff changes

- Not common but can happen
- Sometimes tied to a change in your

transformer size

 Charged for demand (power) vs. just energy (kWh)





Photo courtesy of the American Solar Grazing Association (www.solargrazing.org)

Support for REAP applicants

REAP Education Outreach & Support

- **REAP Application Guide**
- Solar Help Desk
- Ready, Set, Solar! (REAP Edition)



Our new REAP application guide:

solarunitedneighbors.org/reap
Our guide includes:

- Program basics
- Eligibility
- Application process
- Forms & materials
- How to apply:
 - Step-by-step
 - Score estimates
- List of pros





Solar Helpdesk

solarunitedneighbors.org/helpdesk

Solar Helpdesk

A light touch:

Solar questions, proposal tips, practical answers



Get a free roof review

Curious if your home is good for solar? We can tell you!



Phone Call

Have more questions or prefer to chat with someone over the phone?

Book 15 minutes with our team!



Solar Questions?

Have a question about your proposal or just a general one about going solar?

We can help!

Ready, Set, Solar! (REAP Edition) solarunitedneighbors.org/rssreap

When you join you will receive:

- Timed email content on key solar topics
- Guidance on how to apply for REAP
- Unbiased, installer-neutral support



Questions?



Emily Axel eaxel@solarunitedneighbors.org

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(SINCE 2010)

- REAP Technical Assistance
- <u>NO COST</u>: Consultation, Assessments, AND grant writing!
- Engineering, Procurement, Const.
- After installation partner

Organizations like your's that have benefited: Blue Ridge Graphics, Advanced Concrete, Mill Quarter Golf Course, Virginia Panel, Cedar Park Storage, MS Events, S.L. Williamson Pavers INC., etc.



WELLNESS CENTER



#

01

SUN

UAY Solar



YOU'RE INTERESTED IN LOW COST SOLAR For your operation, what next?



STEP 1: CONSULTATION!



We determine whether Solar and the REAP Grant is a good fit!

We ask the following questions:

Name and location of the operation? What does the operation do? How much electricity does

- it use and for what? How is the business structured?
- We set expectations!
- Expect high quality Solar installations, great customer service, low cost, but the process is not
- Fast! And requires the candidate provide historical business records.

STEP 2: DESIGN ANALYSIS!

Now that we know that the REAP Grant is right for you, we proceed to a design analysis of your solar opportunity!

This will outline costs involved, equipment, installation, maintenance!

Financing options: loans, leases, incentives, and government subsidies

Return on investment and break-even point analysis: Analysis discussion and fine tuning! Final

design set will then be agreed upon!



We set our eyes on the submission deadline ahead and get to

work gathering the required information!





Contractor Perspective What should you expect after Contracting?

Our Work



- Engineering, Procurement, & Construction (not door knocking)
- Grid-tied

(not off grid)

• Behind the meter

(used on site)

- Local
- People First





Pay for Power

OR





All Expense / No Return

Produce the Power



Own the Investment

Financials (w/ REAP grant)

100





et	100%
flow	95% of Costs
n	1-4 months

Total project

8-12 months













Project Process

- Discovery & Planning
- Financial Review
- Contract
- Feasibility
- Design
- Permit
- Procure Equipment
- Net Metering
- Build
- Permission To Operate (PTO)
- Monitoring, O&M, Service



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Power Usage Utility Rates Meter Configuration Utility Interconnection

Grants & Incentives Structural / Geotechnical

30-60 days to PTO

FAQs



- Roof penetrations
- Future uninstall & reinstall
- O&M
- Closing complications
- Meter Aggregation
- Landscaping (ground mounts)



ALC: NORMAN DESIGNATION



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