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
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%

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)
Estimated rooftop solar potential of Virginia

Last updated: 06/2019

Sunlight on rooftops
- Shady
- Sunny

Existing solar arrays

Median household income

Buildings
79% solar-viable

2,400 existing solar installations

Source: Google Project Sunroof
About ¼ of Virginia’s demand from rooftop solar

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

<table>
<thead>
<tr>
<th>Roofs</th>
<th>Roofs</th>
</tr>
</thead>
<tbody>
<tr>
<td>79%</td>
<td>1.1M</td>
</tr>
</tbody>
</table>

About ¼ of Virginia’s demand from rooftop solar

<table>
<thead>
<tr>
<th>Roof space</th>
<th>Capacity</th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5B sq ft</td>
<td>20.8K MW DC</td>
<td>25.8M MWh AC per yr</td>
</tr>
<tr>
<td>599 sq ft</td>
<td>8.5 kW DC</td>
<td>10.2K kWh AC per yr</td>
</tr>
</tbody>
</table>

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

Total installation size (MW DC)

- Flat roof
- South-facing
- West-facing
- East-facing
- North-facing

Source: Google Project Sunroof
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

1. Federal Tax Credit (30% of total cost)

2. Solar Renewable Energy Certificates (SRECs)

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
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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

- **Waste 2%**
  - Includes CH4 emissions from landfills

- **Ag & Landscape 23%**
  - Includes tree cover change and emissions from soil, fertilizers, livestock, & fuel

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

- **Transportation 44%**
  - Includes vehicle travel on all public roads
Climate Action Plan

• Adopted in 2020

• Key themes:
  • Health
  • Economy
  • Environment
  • Equity

• Strategy areas:
  • Help community reduce emissions
  • Lead by example in local government
Inventories & SMART Goals by Sector

GHG Emissions Projections, 2008-2030 (tCO2e)

| Estimated emissions between 2008 and 2018 |
| Projection based on 2030 target (2022-2029) |

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
## Top 2 Prioritized Action Groups

<table>
<thead>
<tr>
<th>ID</th>
<th>Strategy / Action Group</th>
<th>Actions (top 20)</th>
<th>1-2 Year Work Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.1</td>
<td>Enable, incentivize renewable energy</td>
<td>B.1.1 – B.1.4</td>
<td>AC44, Solar Ordinance, Zoning Modernization</td>
</tr>
<tr>
<td>R.1</td>
<td>Utility-scale renewables in County Code</td>
<td>R.1.1, R.1.2, R.2.1</td>
<td>AC44, Solar Ordinance, Zoning Modernization</td>
</tr>
</tbody>
</table>
POWERS
FARM & BREWERY
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
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/grid peak contributions

Explanation of Bill Detail

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Service</td>
<td>0.00 CR</td>
</tr>
<tr>
<td>Previous Balance</td>
<td>6.81 CR</td>
</tr>
<tr>
<td>Payment Received</td>
<td>0.00</td>
</tr>
<tr>
<td>Balance Forward</td>
<td>6.81 CR</td>
</tr>
<tr>
<td>Non-Residential (Schedule GS-1)</td>
<td>04/22 05/23</td>
</tr>
<tr>
<td>Distribution Service</td>
<td></td>
</tr>
<tr>
<td>Basic Customer Charge</td>
<td>10.78</td>
</tr>
<tr>
<td>FAUQUIER Utility Tax</td>
<td>1.08</td>
</tr>
<tr>
<td>Rider TRCR Credit</td>
<td>20.58 CR</td>
</tr>
<tr>
<td>Rider VGR 2022 Credit</td>
<td>1.10 CR</td>
</tr>
<tr>
<td>Total Current Charges</td>
<td>9.82 CR</td>
</tr>
<tr>
<td>Total Account Balance</td>
<td>16.63 CR</td>
</tr>
</tbody>
</table>

View payment options, request service changes and enroll in eBill at 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
Soft Benefits To Our (Retail) Business

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

### Energy Use in kWh

**Barrel Room**

- **Total Usage**: 58,319 kWh (100%)
- **Space heater 2**: 17,964 kWh (31%)
- **Cold room AC**: 10,189 kWh (17%)
- **Freezer Plugs**: 2,821 kWh (5%)
- **HVAC Heat Pump**: 1,014 kWh (2%)
- **Food truck 50 amp**: 0,957 kWh (2%)
- **HVAC Air Handler**: 0,334 kWh (1%)
- **Interior Plugs**: 0,008 kWh (0%)
- **HVAC Heat/AC**: 0,000 kWh (0%)
- **Food truck 30 amp**: 0,000 kWh (0%)
- **Exterior Plugs Rear**: 0,000 kWh (0%)
- **Exterior Plugs Front**: 0,000 kWh (0%)

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**Barrel Room > Main**

- **Max Demand**: 10.1 kW
- **Max Usage**: 201 kWh per day
- **Total Consumption**: 7.84 kWh per day
Solar for Rural Businesses: Accessing Funding for Small Scale Solar

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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.
WHAT IS SOLAR UNITED NEIGHBORS?

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

Loan Guarantee Program
- Up to 75% of total eligible project costs
- Rates vary by lender.
- $1M max amount; 40-year max term

Grant Program
- 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
Eligibility

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 NEIGHBORS
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 (www.sam.gov)
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.

Points Tip: 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?
Besides REAP...

- 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**

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

**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

generunitedneighbors.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
Ready, Set, Solar! (REAP Edition)

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
Solar for Rural Businesses: Accessing Funding for Small Scale Solar

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• REAP Technical Assistance
• **NO COST:** 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.
MILL QUARTER CREEK GOLF COURSE
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.
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!
STEP 3: GRANT WRITING AND SUBMISSION!

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
Ag Utility Cost

Pay for Power

OR

Produce the Power

All Expense / No Return

Own the Investment
Financials (w/ REAP grant)

- 25 YR IRR: 20-30%
- Energy Offset: 100%
- Year 1 cashflow: 95% of Costs
- Construction: 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
Project Process

- Discovery & Planning
- Financial Review
- Contract
- Feasibility
- Design
- Permit
- Procure Equipment
- Net Metering
- Build
- Permission To Operate (PTO)  30-60 days to PTO
- Monitoring, O&M, Service

Power Usage
Utility Rates
Meter Configuration
Utility Interconnection
Grants & Incentives
Structural / Geotechnical
FAQs

• Roof penetrations

• Future uninstall & reinstall

• O&M

• Closing complications

• Meter Aggregation

• Landscaping (ground mounts)
Thank you
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