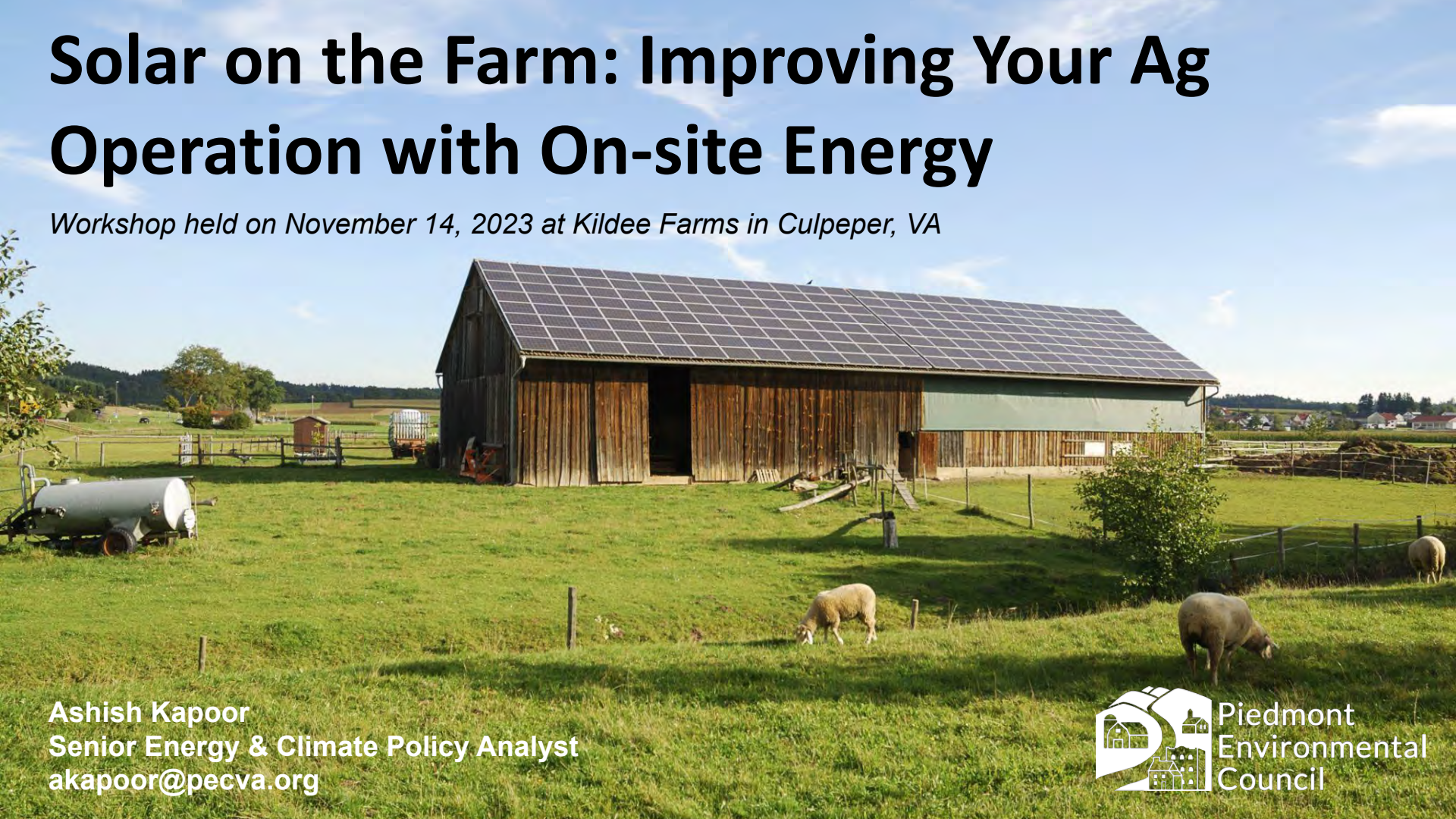
Solar on the Farm: Improving Your Ag Operation with On-site Energy

Workshop held on November 14, 2023 at Kildee Farms in Culpeper, VA



Ashish Kapoor
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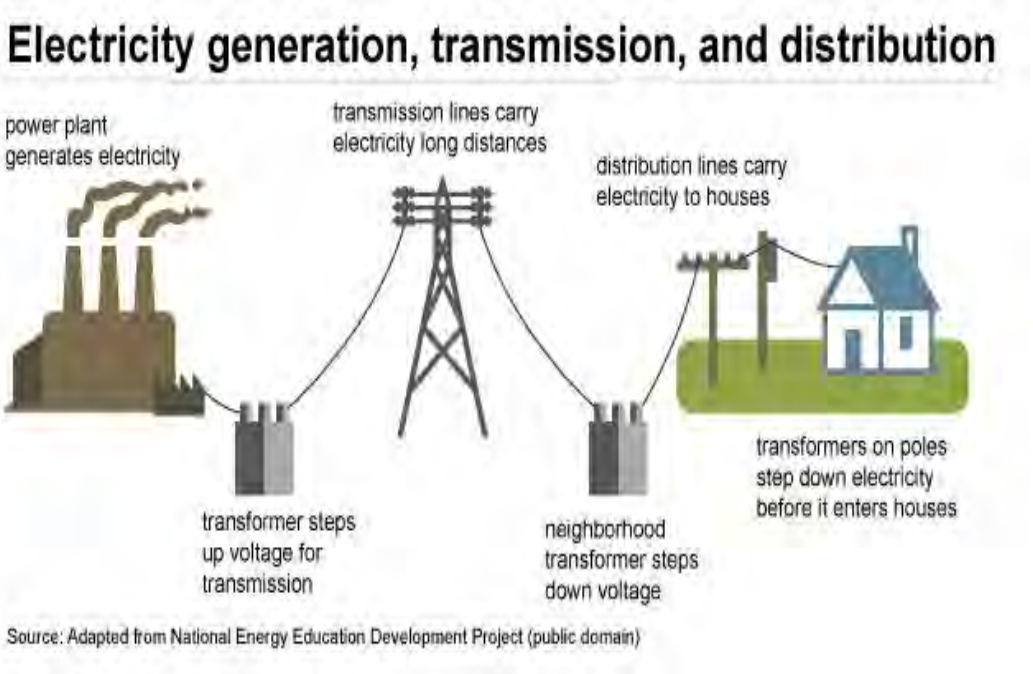
Piedmont Environmental Council

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%

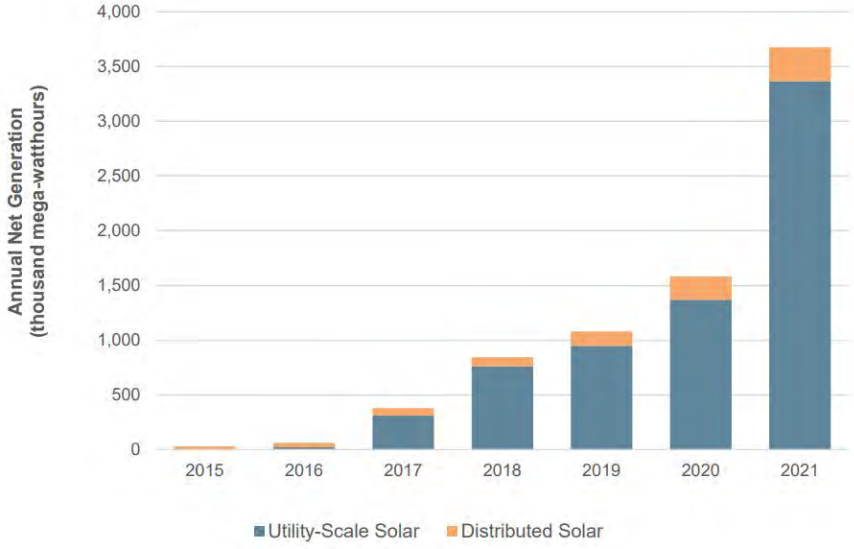
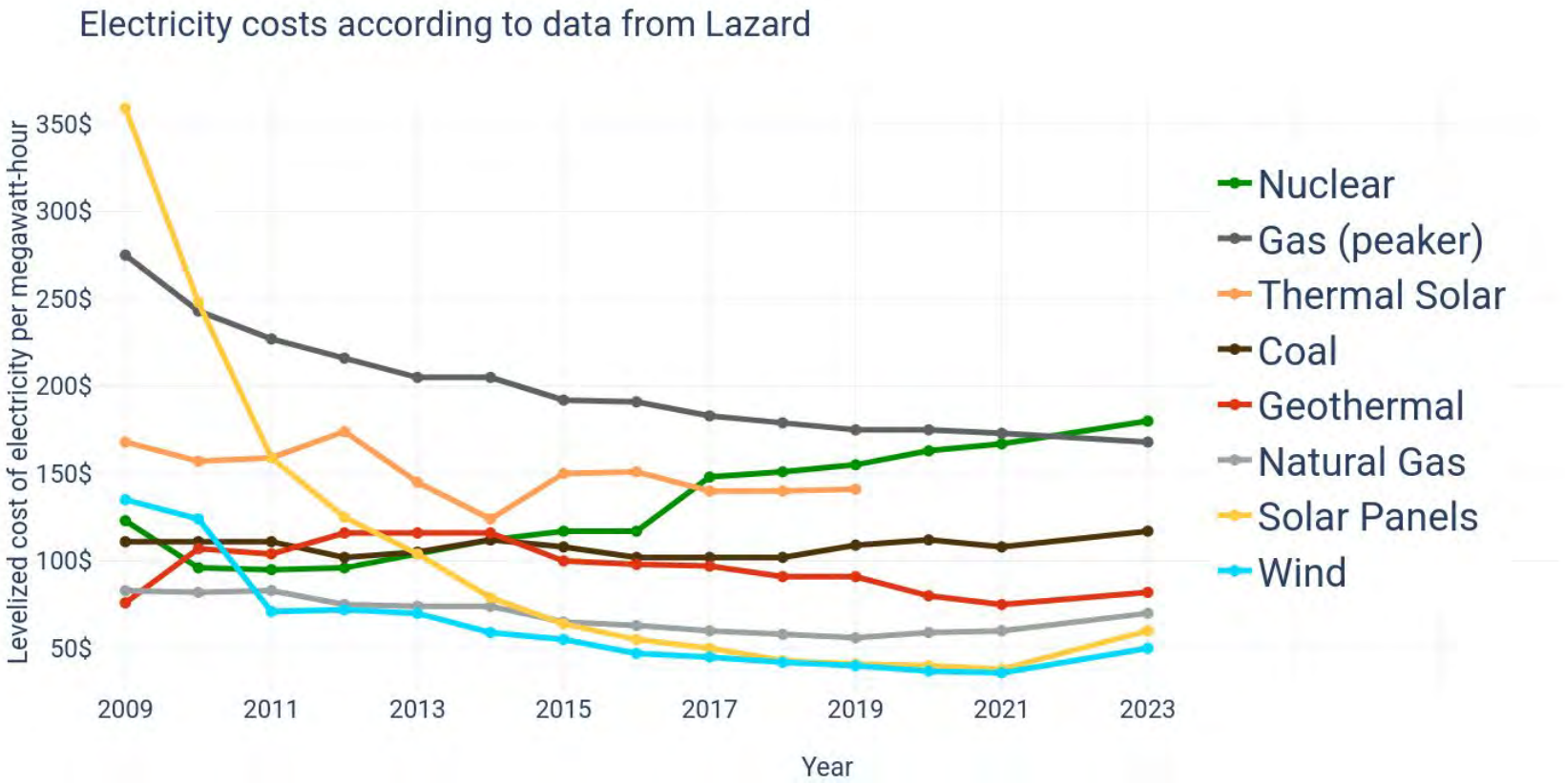


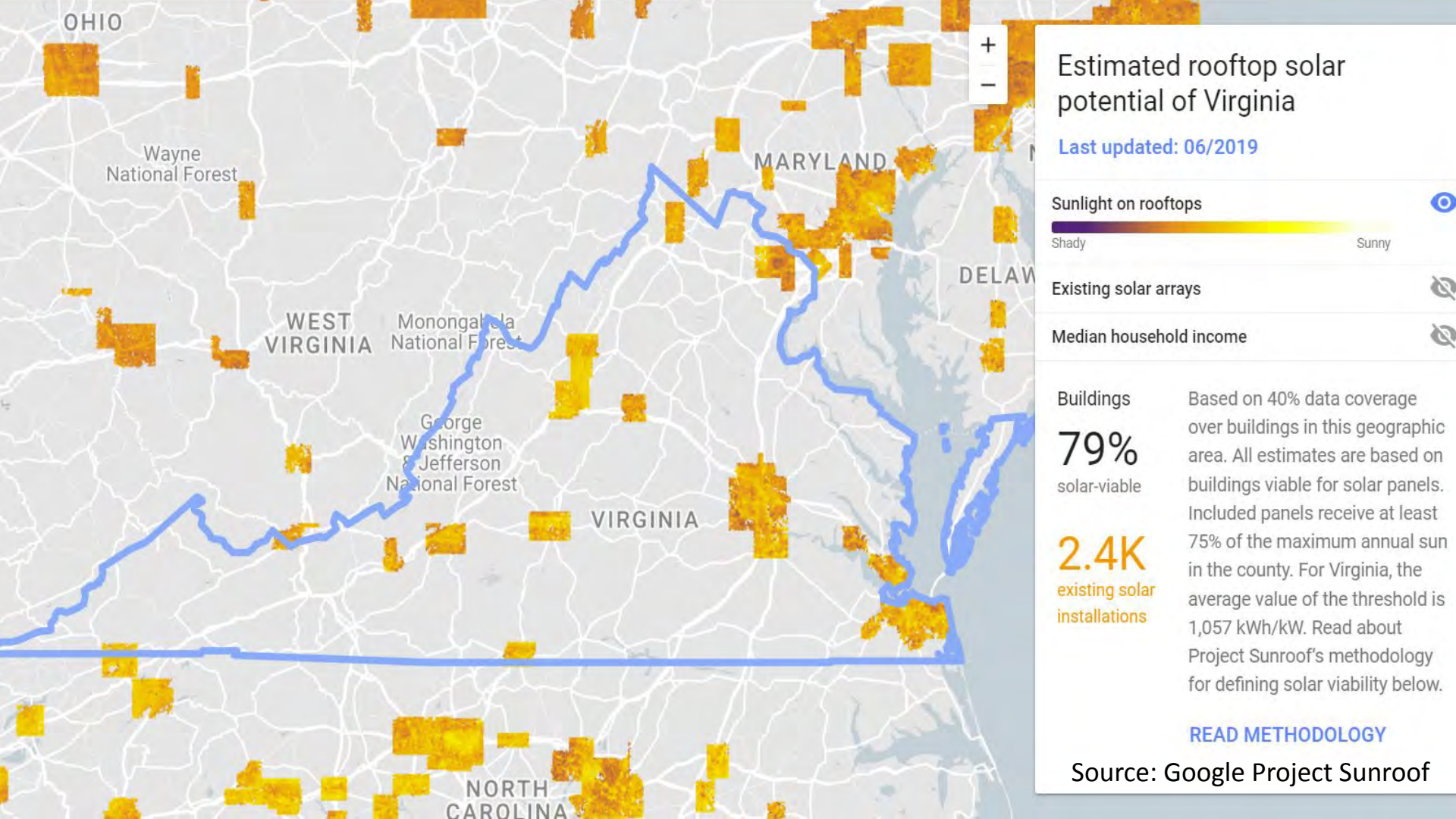
Figure 4. Annual Net Generation from Solar in Virginia
Source: U.S. EIA

Benefits of Distributed Generation

- Less Transmission
- Energy Independence
- Protection from Increasing Utility Rates
- Collectively decreases the need for large scale solar

Cost of Solar





Source: Google Project Sunroof

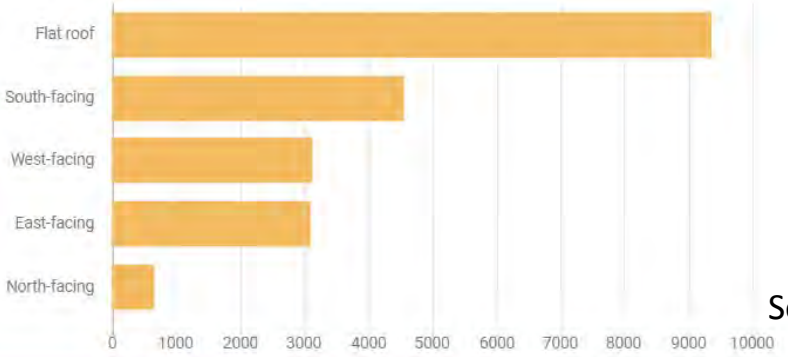
Overall

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

Roofs	Roofs	Roof space	Capacity	Electricity
79%	1.1M	1.5B sq ft	20.8K MW DC	25.8M MWh AC per yr

About ¼ of Virginia's demand from rooftop solar

Total installation size (MW DC)

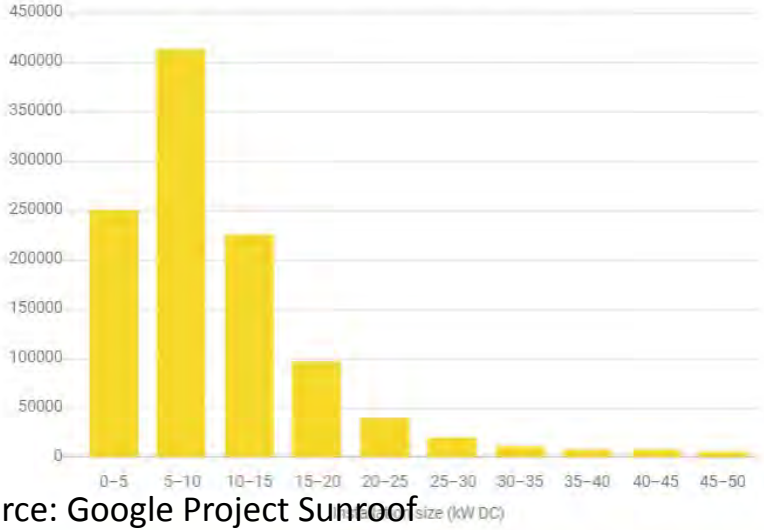


Per roof

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

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

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



Source: Google Project Sunroof

What is Farm Solar

Types:

- On-Site Operations
- Community Solar (Under 5MW)
- Utility Scale Solar (Over 5MW)

“Add-Ons”

- Batteries
- Agrivoltaics

Agrivoltaics

- Co-location of agricultural production and energy production
- Elevated panels
- Crop success has been found with winter wheat, kale, broccoli, potatoes, swiss chard. Shade tolerant crops tend to do better

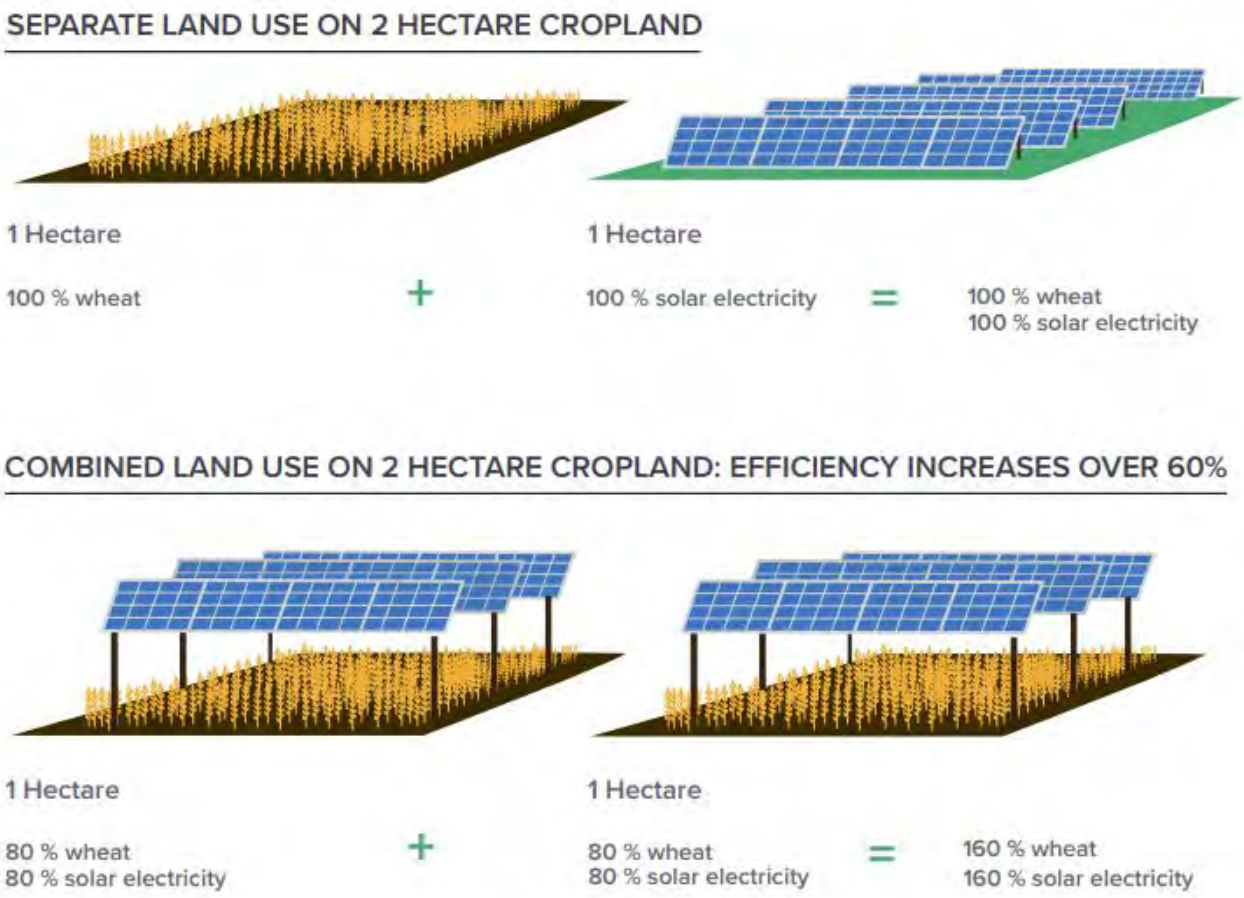


Figure 6: Product visualization under agrivoltaic systems.
Photo source—Fraunhofer Institute for Solar Energy Systems

Battery Backup

Advantages:

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

Challenges:

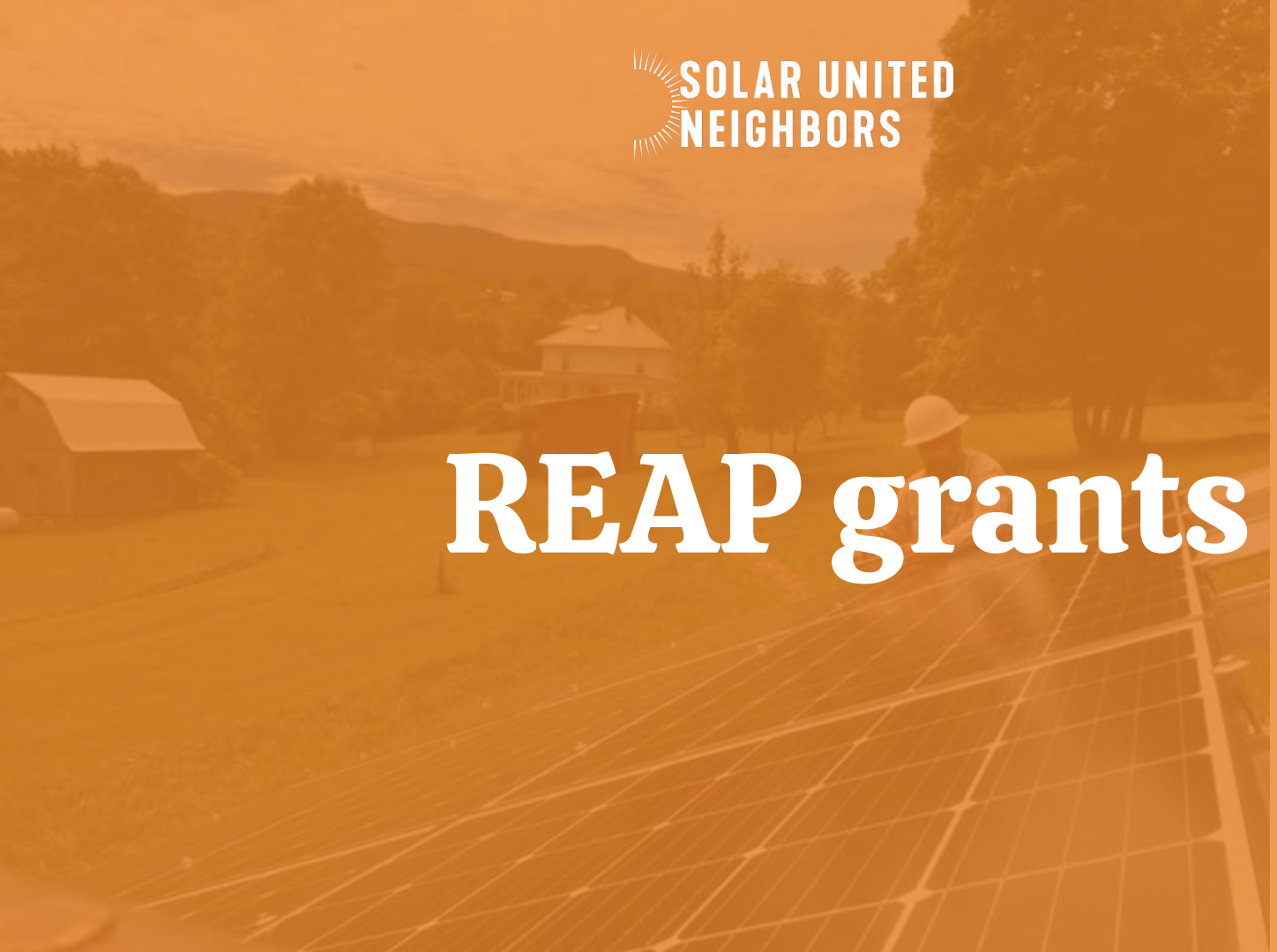
- Cost
- Lack of state incentives

On Site Solar: Incentives Available

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

2. USDA Rural Energy for America Program (REAP): Up to 50% for energy efficiency and renewable energy projects

3. Renewable Energy Certificates (RECs)



REAP grants

Hi! I'm Corey Ramsden.

VP, Go Solar Programs

Solar United Neighbors

- Leads operational and technical support
- Washington, DC
- Solar owner since 2012

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.

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REAP – Rural Energy for America Program

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**

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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)

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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

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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)

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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

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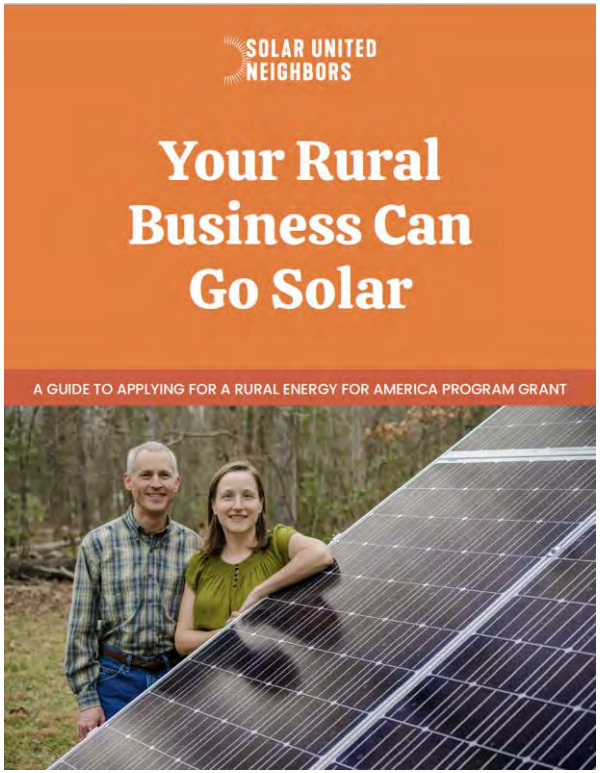
How to apply for a REAP solar grant

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



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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

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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)

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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. Form RD-1940-20 (environmental documentation)

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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 1.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.

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

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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)

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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

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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

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Tariff changes

- Not common but can happen
- Sometimes tied to a change in your transformer size
- Charged for demand (power) vs. just energy (kWh)

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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)

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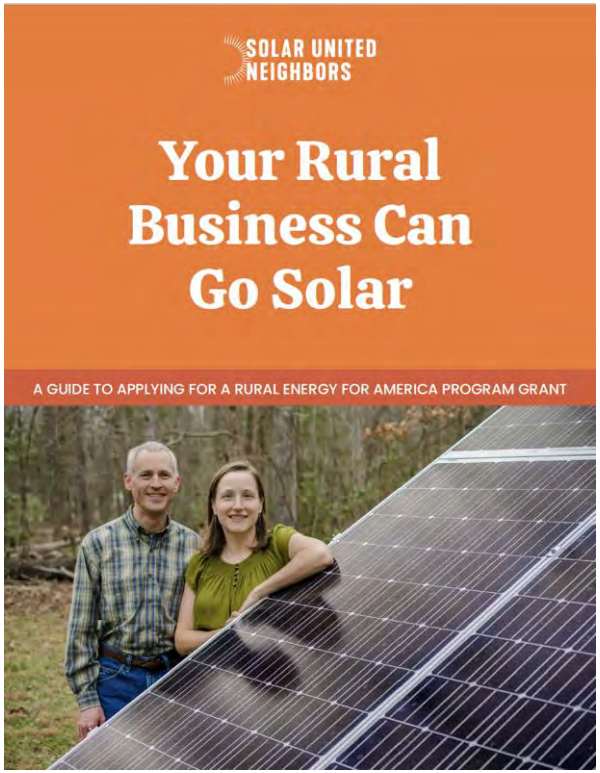
Our new REAP application guide:

solarunitedneighbors.org/reap

Our guide includes:

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



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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!

SOLAR UNITED NEIGHBORS

Ready, Set, Solar! (REAP Edition)

solarunitedneighbors.org/rssreap

Questions?

Corey Ramsden
corey@solarunitedneighbors.org

Solar on the Farm: Improving your ag operation with on-site energy

Piedmont Environmental Council

Clifton Farm

Rixeyville, Va

DIY Solar System for Farm and Home

Background

Family Farm - 1844 - 5th Generation

300 Acres

1845 Farm House restored to period conditions

5 Barns and Sheds

Wood Working Shop

Old Summer Kitchen

House Well and Ag Well serving 80 to 90 Angus Cow/Calf Operation

12.6 KW Ground Mount System with 40 Panels

Grid Tied

Installed April 2016

40 - 315 watt panels

40 Power Optimizers

2 Solar Edge Inverters (6000 watts each)

Ground Mount Iron Ridge Rail System

All Ordered online from California

$22,600

Also needed:

Foundation and Structural Plans and Certification $800

Building Permits for Electrical and Structure $575

Concrete and Rebar $1500

3 inch Galvanized Pipe $1700

Electrical Cable, Conduit and Boxes $800

Total Materials Cost $29,670

30 % Tax Credit of Approx. $9000

Concrete Foundation Beams and 3 Inch Pipe Structure

Inverters and Disconnects AC and DC

DIY Man Hours

Layout and Sitework	12
Excavation, Forming, Pouring	18
Erection of Posts, Rails, Panels	28
Fence	4
Electrical and Trenching	7
Total	69 hours

Grid Tied using Net Metering From Rapp Elec Coop

Forward Meter reading

Reverse Meter Reading

Net Meter Reading

As of Jan. 4, 2023

80 Months of Service

System has provided 73% of our total electrical requirements

Has saved $14,950 in electrical costs over the 7 years

Simple ROI of approximately 11 years

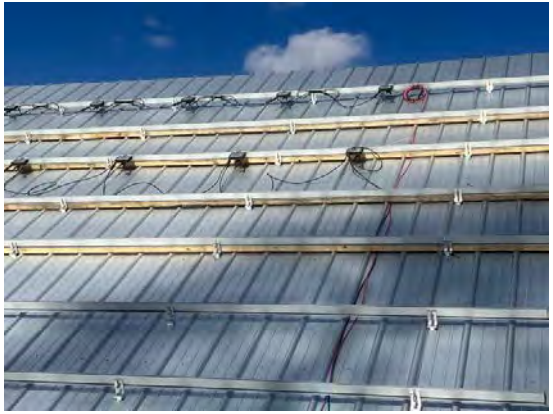
Solar system production 115,000 Kwh

1437 Kwh per month

METER

From Grid 103,834 Kwh 538 Kwh/Mo **To House 158,000 Kwh 1975 Kwh/Mo**

To The Grid 60,390 Kwh



Key Takeaways

Size your system based on 12 months of actual usage

Buy a system based on matching its AC output to your needs

Panels produce DC which inverters convert to AC with losses

Panels degrade about 0.5% per year

Buy high efficiency panels

Buy a couple extra panels as spares

Annual Kwh / 12 / 30 / 4.2 Sun Hours in Virginia times 1.15 = DC size

For 20,000 Kwh annual use, need 15.2 KW DC System

For 100% replacement with Solar

Solar on the Farm: Improving your ag operation with on-site energy

Piedmont Environmental Council

Sun Tribe
TRADING

Nov 2023

Virginia SRECs

Solar Renewable Energy Certificates

PEC - Solar on the Farm

Ian Ayers – VP of Aggregation

Sun Tribe's native pollinator program

Topics Covered

- Example: 50kW system on a farm
- What is an SREC?
- Virginia Clean Economy Act
- What is “Selling Your SRECs”? (Pros/Cons)
- Valuing SRECs: Market & Pricing
- Process & Timeline
  - Selecting a Payout Option
  - Registration
  - Energy Reporting
  - Payments Over System Lifetime
- Your Questions

Example Farm System

50 kW system

× 1.2

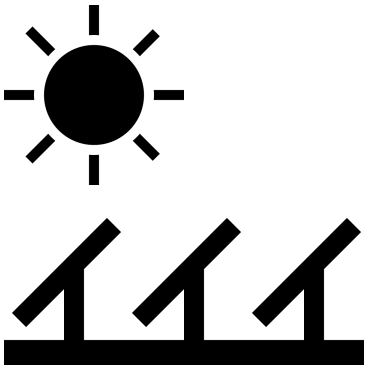
~60 SRECs per year

× ~$40

price fluctuates

$2,400 per year

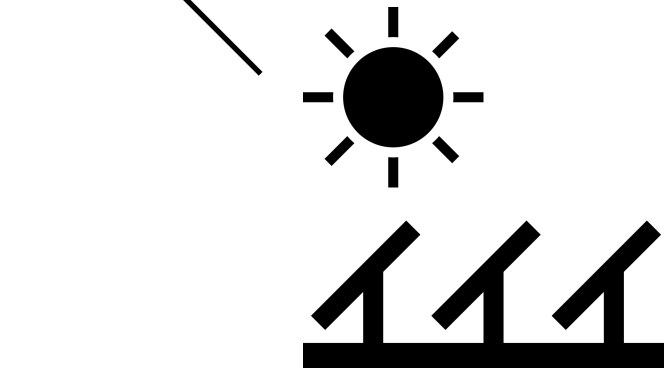
$200 per month



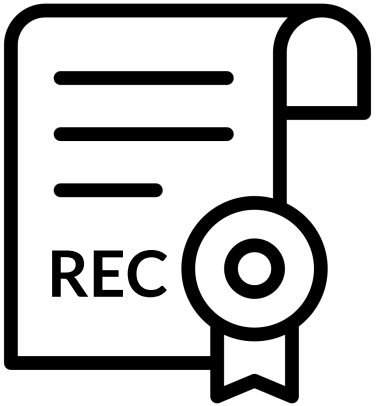
Credited Energy

Tax Credits

SRECs



Renewable Energy Certificate Credit

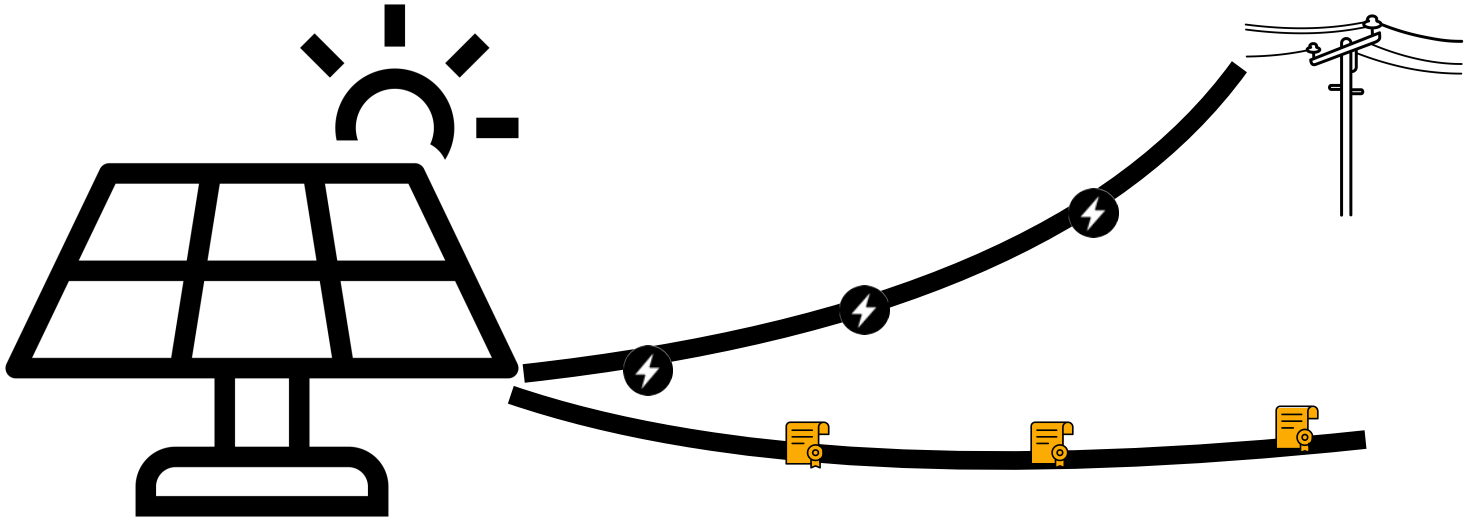


1 REC = *the "renewableness" associated with 1 MWh hour of energy*

RECs are not synonymous with "carbon offsets"

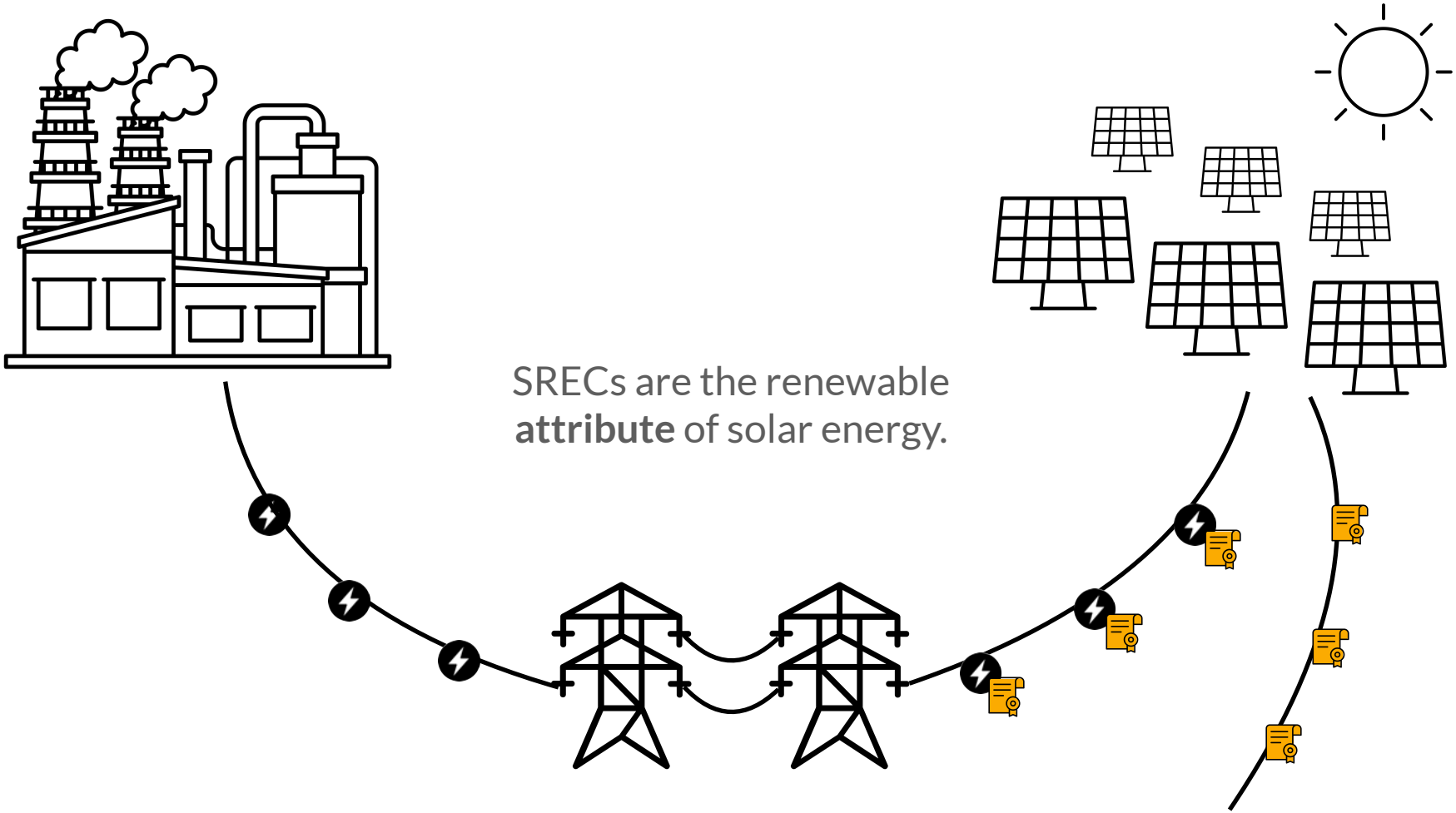
SRECs are not energy.

selling SRECs ≠ selling energy

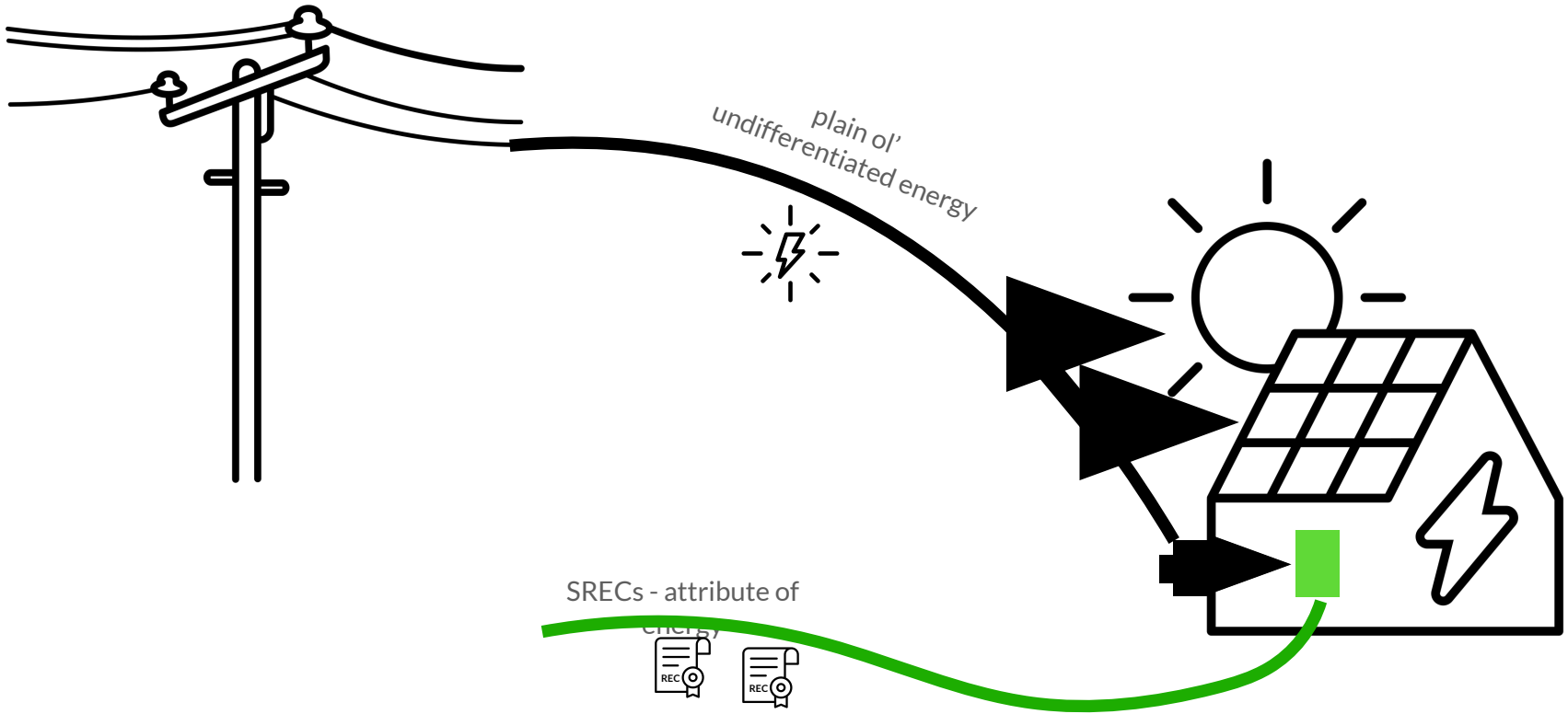


10 kW DC system → operating at full capacity for 2 hours → makes 20 kWh

kilowatt-hours


SRECs are the renewable
attribute of solar energy.

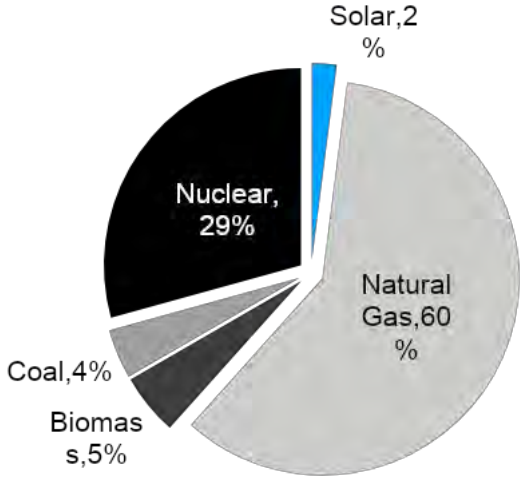
Think of your SRECs as a separate value stream.



SRECs often used to substantiate compliance.

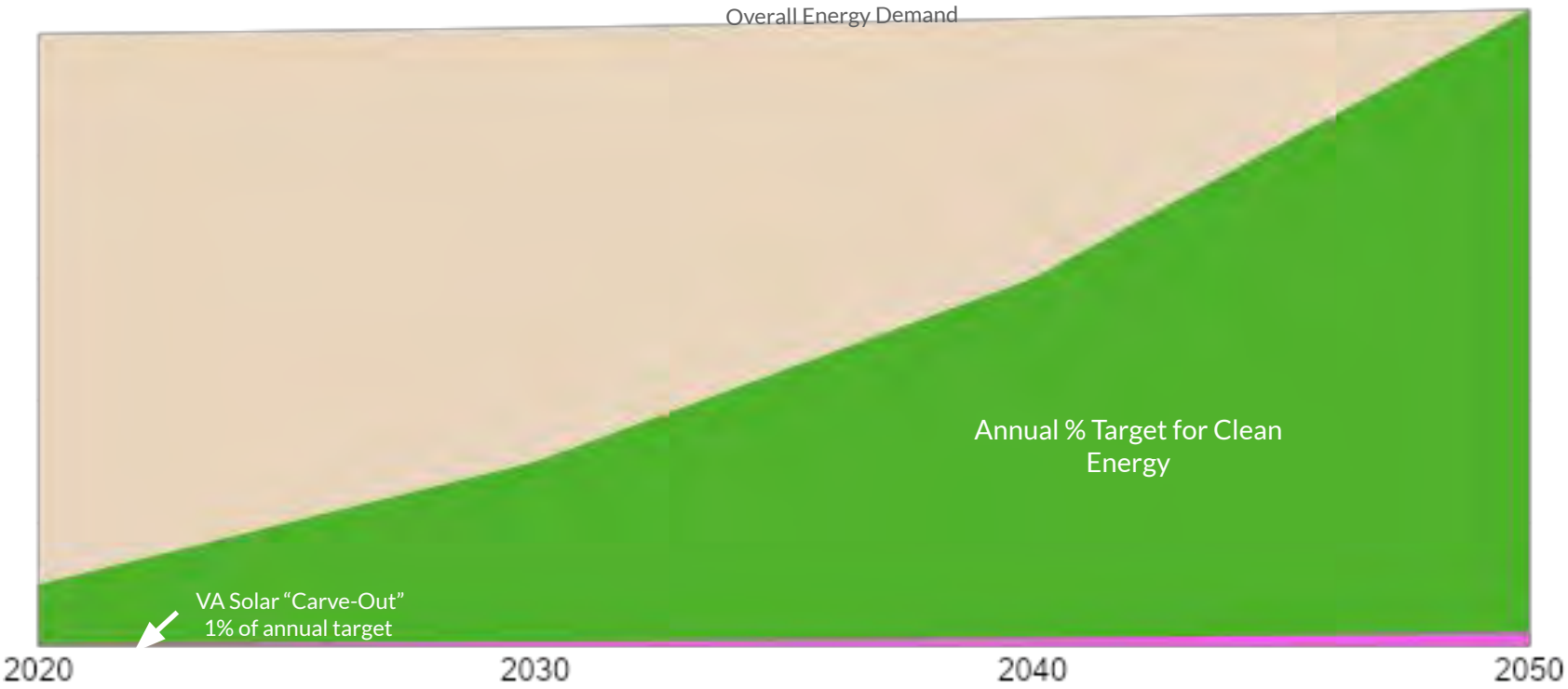
VCEA
Virginia Clean Economy Act
2020

Goal
100% clean energy in Virginia by 2050

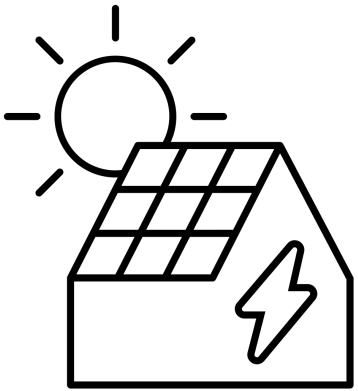


2022 Virginia utility-scale electricity mix

Virginia's "Solar Carve-Out"

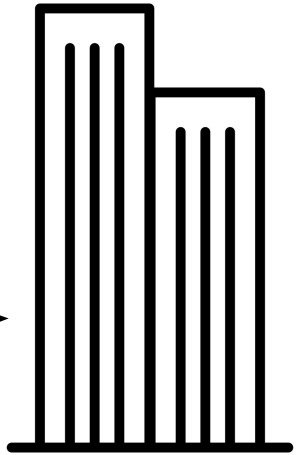


Aggregators buy and sell RECs.



Solar PV Generator-owners

Aggregator



Bulk Buyers

Utilities

Corporate

Selling Your SRECs

What does it mean to do that? Pros/Cons?

- When you sell your SRECs, you essentially trade away your right to substantiate claims about renewable energy produced at your site.
  - “Bull Run Farm operates on 100% solar energy produced here on site.”
- Utilizing a “REC Swap” mechanism allows flexibility in making claims. But there are limitations.
  - “Bull Run Farm operates on 100% solar energy.”
  - “Bull Run Farm uses 100% renewable energy.”
  - “All of our products are made with 100% solar energy.”
  - “All of our products are made with renewable energy.”

Aggregators often buy SRECs from owners in several ways.

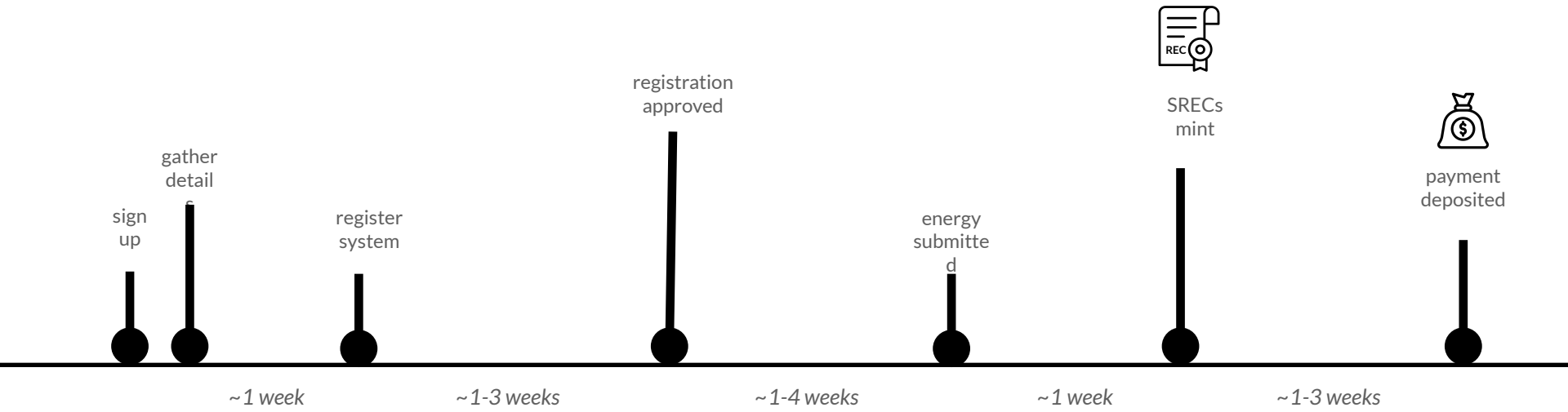
Locked-Rate
3 year, 5 year
Annuity, Strip

Upfront
10, 15, 20, 25 year

Spot Market

	3-Year or 5-Year Locked-In Rate	15-Year Upfront	Spot Market
Price paid	$40.00 / REC $38.00 / REC *Nov 2023*	$180 / kW DC *Nov 2023*	$50.00 / REC *Oct 2023*
Price variability	price fixed for term period	none	varies monthly
Upfront amount	-	100% for term	-
Regularity of payments	quarterly	all paid at contract signing	typical time between payments 1mo – 4mo
Percentage of sellers who select this option	65%	5%	30%

Timeline to first payment.



about 4-12 weeks

Full Energy Automation

ENPHASE

solaredge

Fronius

SMA

We Do it For You

APsystems
ALTENERGY POWER

GENERAC

TESLA

GAF ENERGY

SUNPOWER

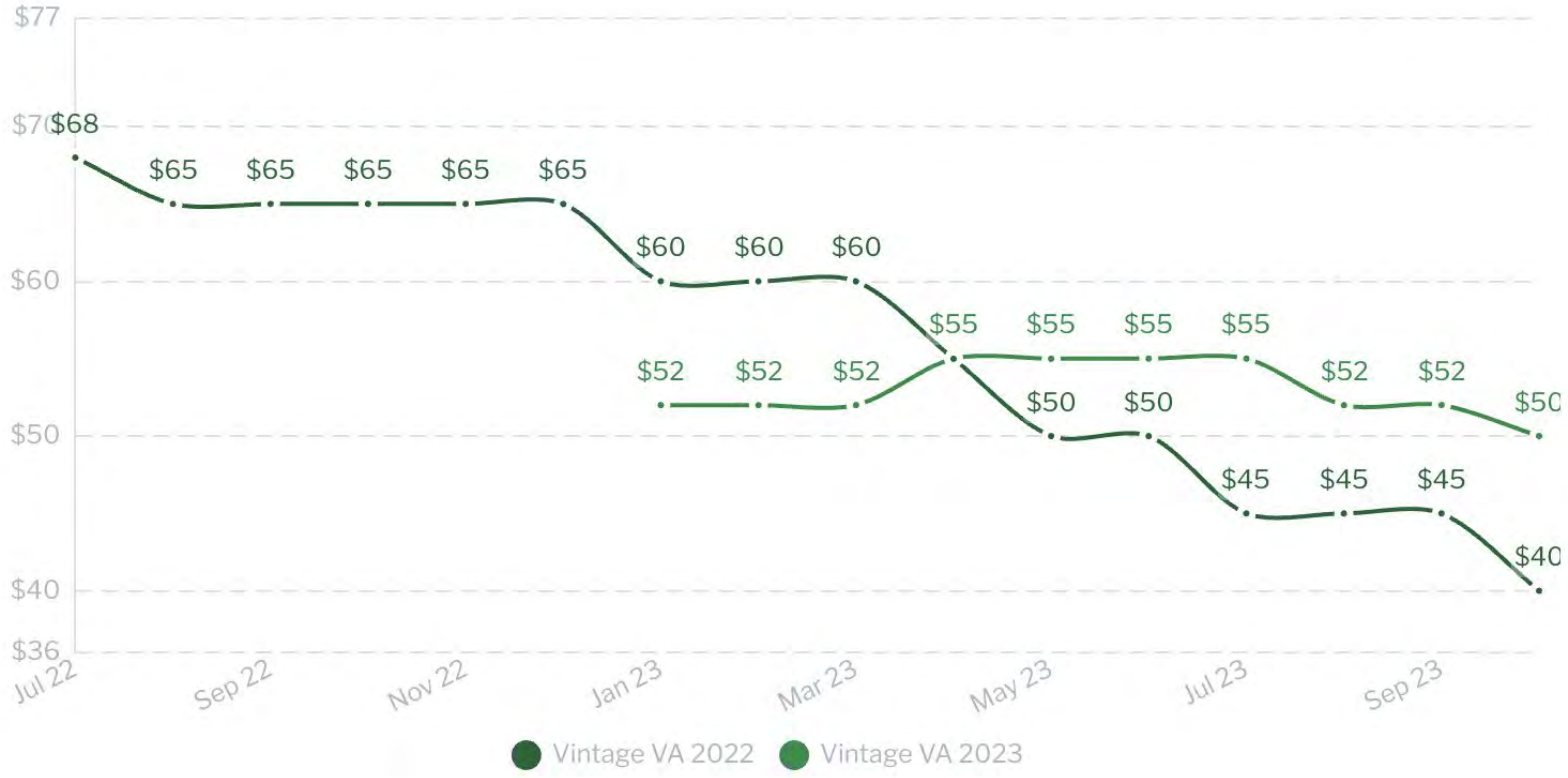
Data Reporting & Meter Compliance

Revenue Grade Meters

- All production meters must be ANSI C.12 certified
- Older systems often need to be upgraded
- Preferably, systems should be Internet-connected
- Systems that are connected to the Internet can still report their production data by snapping monthly or quarterly photographs of a mechanical meter, though this is not a good long-term solution

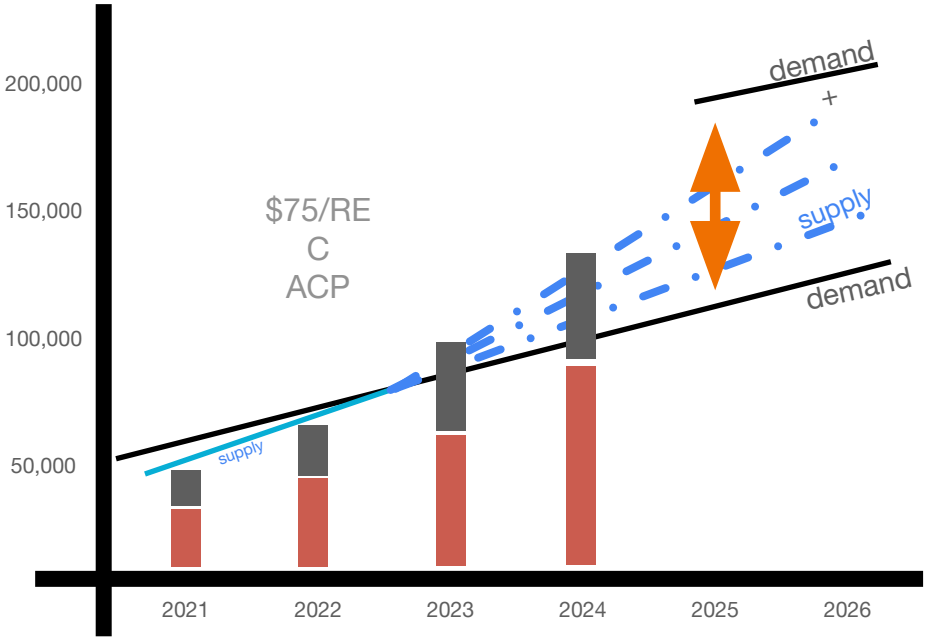

Sun Tribe
TRADING

VA DER REC Spot Price (CY2022, CY2023)



Virginia DER REC Market Example

VA
Carve-out
RECs



? change in VA carve out %

Solar on the Farm: Improving your ag operation with on-site energy

Piedmont Environmental Council


POWERS
FARM & BREWERY


POWERS
FARM & BREWERY

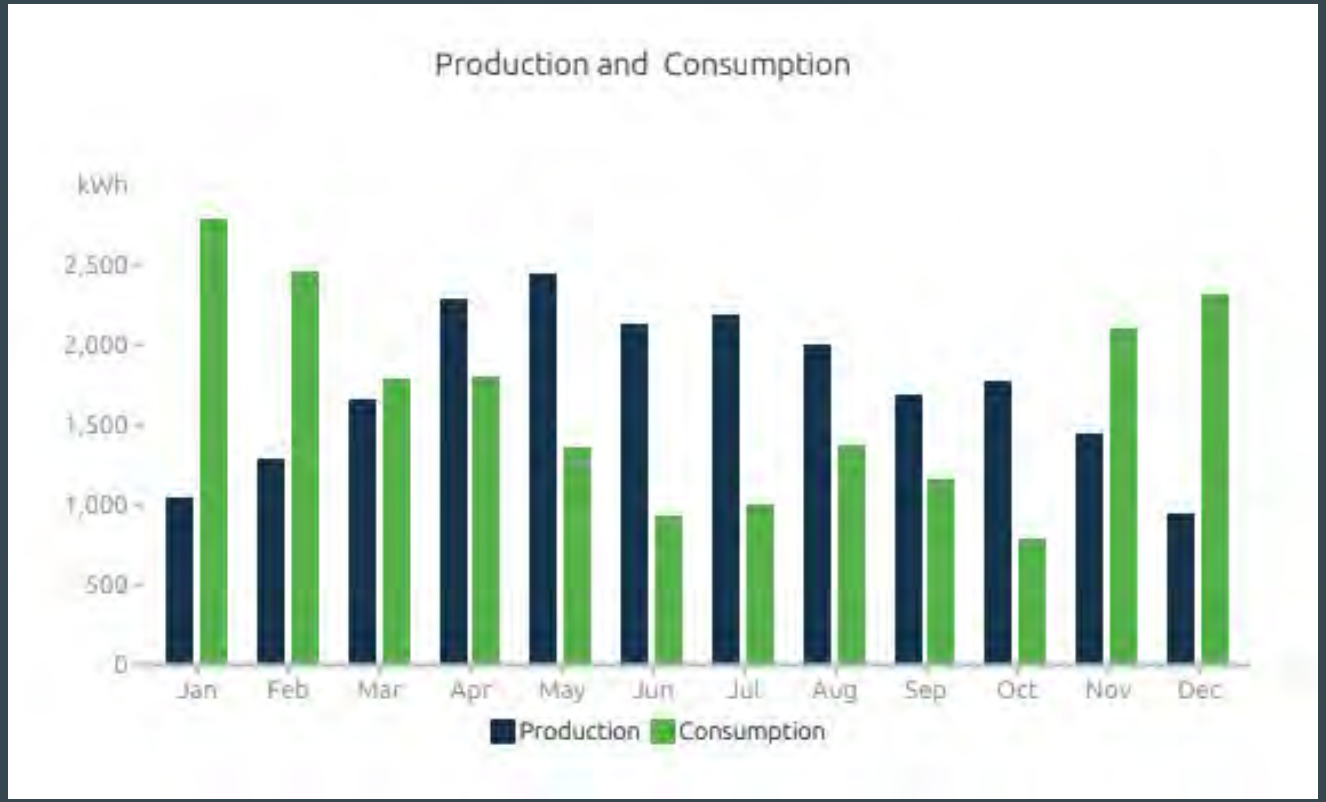
Our Setup

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


Production and Consumption
kWh
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Production
Consumption


MAX
THERMASHEATH -3
MAX


OUR BEERS


MONTCLAIR
2018 TOUGHCUT RUN


ERS
&
VERY
ALT


Psycho Br
MADE IN MICHIGAN
Psycho Brew

The Money Part

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

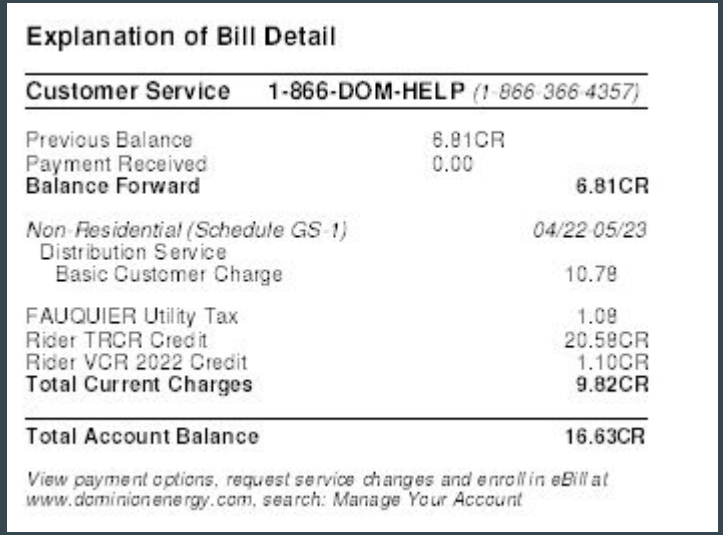
Paid for:

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

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	6.81CR	
Payment Received	0.00	
Balance Forward		**6.81CR**
Non-Residential (Schedule GS-1)		*04/22-05/23*
Distribution Service		
Basic Customer Charge		10.78
FAUQUIER Utility Tax		1.09
Rider TRCR Credit		20.59CR
Rider VCR 2022 Credit		1.10CR
Total Current Charges		**9.82CR**
Total Account Balance		**16.63CR**

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

SRECs

Solar Renewable Energy Certificates

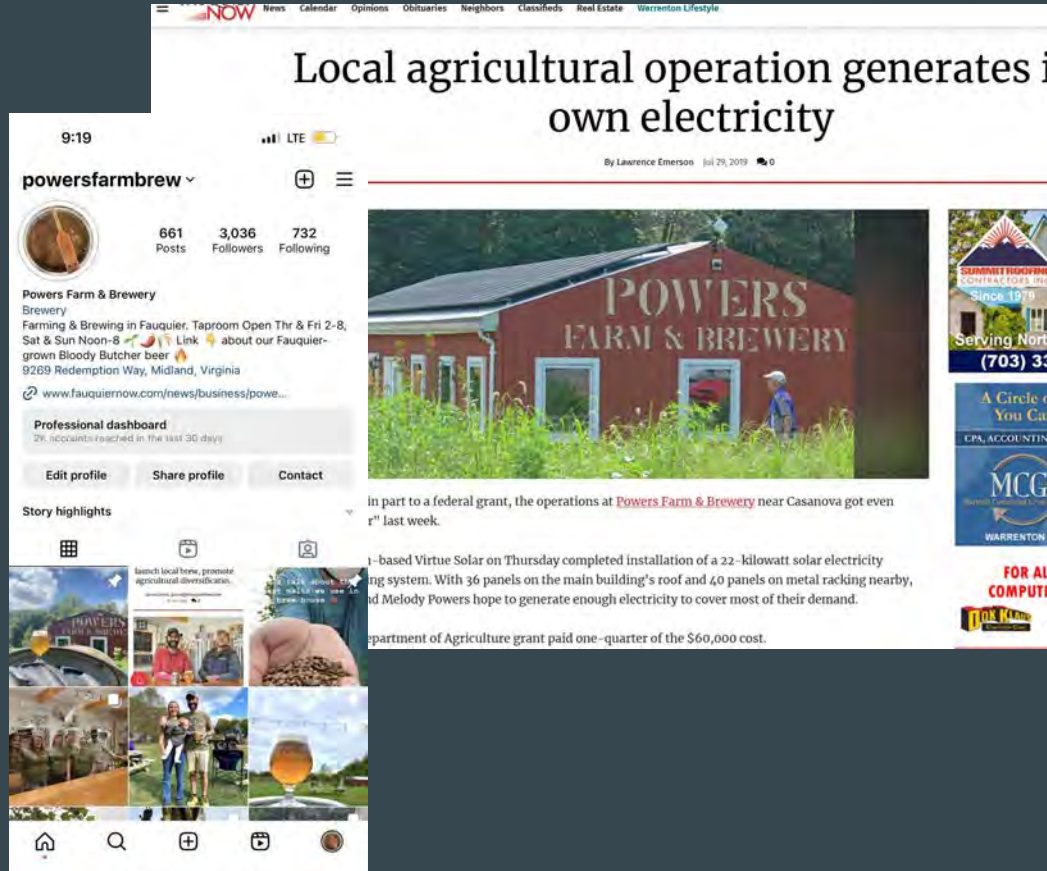
- A state-by-state program, with quotes set for energy producers
- Credits are generated by solar power generation
- Must be sold through a broker
- The market price for these credits appears to be declining

Virginia SREC Pricing

Option	Price
Mint & Sell (spot market)*	**$69.50 – $63.50** (6-m
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

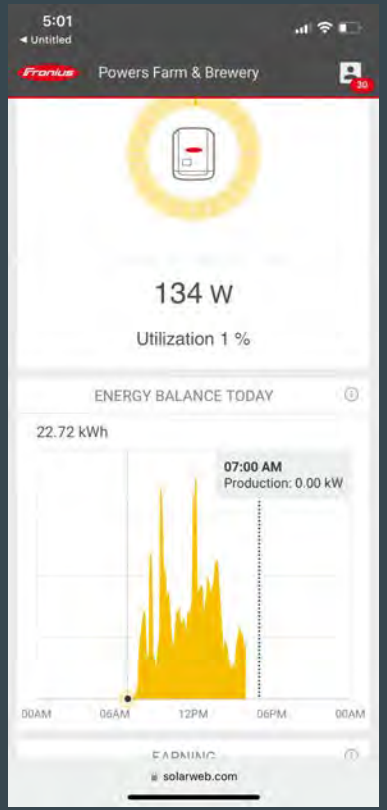
- Initial publicity
- Roadside visibility
- Putting money where mouth is
- Opportunity to spread the word on solar?



Monitoring


5:00
HVAC Air Handler
Other
11,186W
$1/hr
NEWS
You hit an all-time high energy use peak at 9:48 AM of 25,597 W (previous 22,652 W)
Now
Dashboard
Meter
Devices
Settings


5:00
Usage
DAY
WK
MO
YR
BILL
Jan 20
2023
Feb 19
Other 14.4%
Glycol Chiller Compressor 12.9%
Always On 4.8%
Glycol Pump 4.3%
Heat pump (?) 3.9%
Dashboard


5:01
Untitled
Powers Farm & Brewery
134 W
Utilization 1 %
ENERGY BALANCE TODAY
22.72 kWh
07:00 AM
Production: 0.00 kW
00AM
06AM
12PM
06PM
00AM
solarweb.com

Solar on the Farm: Improving your ag operation with on-site energy

Piedmont Environmental Council

Ashish Kapoor
Senior Energy & Climate Policy Analyst
akapoor@pecva.org

Contractor Perspective

What Service does a Solar Installer Provide?

Farm Utility Cost

TIGERSOLAR

Buy the Power

OR

Produce the Power

with financing

with a cash investment

Renting pros/cons

Long term finance

Short Term Finance

Lease

Benefits of Owning

Net Metering Solar

Behind the Meter

Virtual

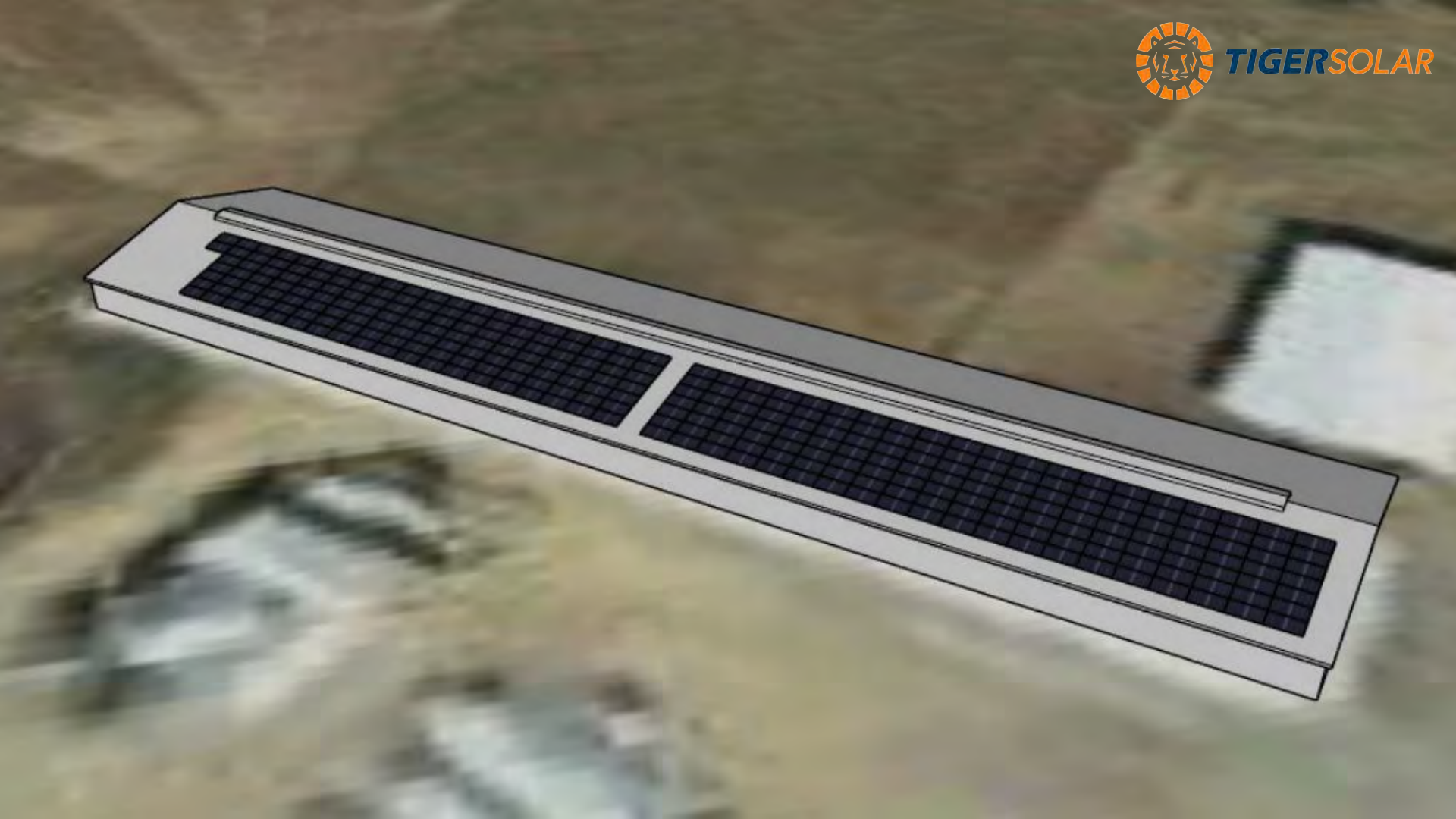
•

Utility Scale

Our Work

TIGERSOLAR

- Engineering, Procurement, & Construction (not door knocking)
- Grid-tied (not off grid)
- Behind the meter (used on site)
- Local
- People First


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR


TIGERSOLAR

What Many Solar Contractors Do

- Interrupt
- Nag
- Translucent (not transparent)
- Promise moons
- Outsource sales
- Outsource design
- “use only the best” equipment
- Outsources installation
- Keep you in the dark
- Terrible to get ahold of after

What a Solar Contractor Should Do

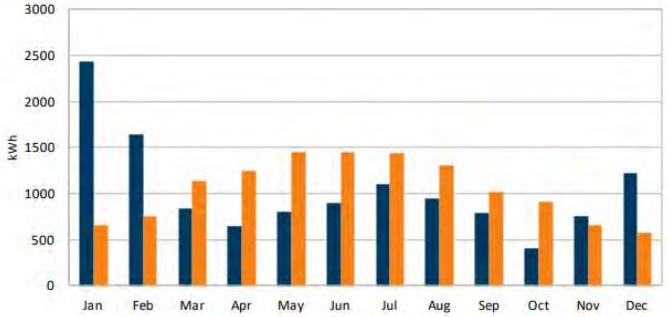
- Interrupt
- Nag
- Translucent (not transparent)
- Promise moons
- Outsource sales
- Outsource design
- “use only the best” equipment
- Outsources installation
- Keep you in the dark
- Terrible to get ahold of after

- **Have a warm introduction**
- **Vet the property / meters / rates**
- **Consult re: the financing & investment**
- **Fair Agreement**
- **Design**
- **Procure**
- **Permit**
- **Build**
- **Net Metering / Permission to operate**
- **Monitor**
- **Service**

Does it make Cents?

- Project conservatively
- Use national weather data
- Incorporate the actual design
- Incorporate maintenance costs

Year	Month	Average Power Demand Usage	Solar Power Production	kWh Offset Rate	Dollar Value of Savings	Monthly Solar Offset
2022	Jan	2428	658	$0.135	$89	27%
2022	Feb	1647	758	$0.135	$102	46%
2022	Mar	840	1134	$0.135	$153	135%
2022	Apr	652	1252	$0.135	$169	192%
2022	May	798	1446	$0.135	$195	181%
2022	Jun	900	1453	$0.135	$196	161%
2022	Jul	1104	1442	$0.135	$195	131%
2022	Aug	947	1312	$0.135	$177	139%
2022	Sep	794	1015	$0.135	$137	128%
2022	Oct	402	911	$0.135	$123	227%
2022	Nov	749	657	$0.135	$89	88%
2022	Dec	1223	570	$0.135	$77	47%
Totals		**12484**	**12608**	**$0.135**	**$1,702**	**101%**



Does it make Cents?

- Project conservatively
- Use national weather data
- Incorporate the actual design
- Incorporate maintenance costs
- Use a realistic utility rate escalator
- Incorporate incentives & funding

Is it better to own, or rent your power?

TIGERSOLAR

Your Internal Rate of Return

Internal Rate of Return:	10.79%
Payback Period (Years):	8.1
Price Per Watt:	$ 2.63
25 yr. Cost of Elec. by not Going Solar:	$ 941,603
25 yr. Cost of Elec. by Going Solar:	$ 347,314
25 yr. Savings by Going Solar:	$ 770,695

Year	System Cost	Federal Tax Credit	Depreciable Amount	Federal Depr. Value	State Depr. Value	Annual Insurance	SREC*	kWh Production	kWh Price**	Avoided kWh Bills	Annual Cashflow	Cumulative Cashflow
	($636,000)										($636,000)	($636,000)
1		$190,800	$540,600	$113,526	$7,632	($1,272)	$7,578	303,100	$0.090	$27,279	$345,543	($290,458)
2					$12,211	($1,272)	$7,532	301,281	$0.093	$27,983	$46,454	($244,003)
3					$7,327	($1,272)	$7,487	299,474	$0.096	$28,705	$42,247	($201,756)
4					$4,388	($1,272)	$7,442	297,677	$0.099	$29,446	$40,004	($161,752)
5					$4,388	($1,272)	$7,397	295,891	$0.102	$30,206	$40,720	($121,032)
6					$2,213	($1,272)	$7,353	294,115	$0.105	$30,986	$39,280	($81,753)
7						($1,272)	$7,309	292,351	$0.109	$31,785	$37,822	($43,931)
8						($1,272)	$7,265	290,597	$0.112	$32,606	$38,598	($5,332)
9						($1,272)	$7,221	288,853	$0.116	$33,447	$39,396	$34,064
10						($1,272)	$7,178	287,120	$0.119	$34,310	$40,216	$74,280
11						($1,272)	$7,135	285,397	$0.123	$35,196	$41,059	$115,339
12						($1,272)	$7,092	283,685	$0.127	$36,104	$41,924	$157,263
13						($1,272)	$7,050	281,983	$0.131	$37,036	$42,813	$200,076
14						($1,272)	$7,007	280,291	$0.136	$37,992	$43,727	$243,803
15	Inverter(s) Replacement Cost					($1,272)	$6,965	278,609	$0.140	$38,972	$44,665	$288,468
16	($2,200)					($1,272)	$6,923	276,937	$0.144	$39,976	$43,429	$331,898
17	($2,200)					($1,272)	$6,882	275,276	$0.149	$41,010	$44,420	$376,317
18	($2,200)					($1,272)	$6,841	273,624	$0.154	$42,068	$45,437	$421,754
19	($2,200)					($1,272)	$6,800	271,982	$0.159	$43,154	$46,481	$468,235
20	($2,200)					($1,272)	$6,759	270,351	$0.164	$44,267	$47,554	$515,789
21	($2,200)					($1,272)	$6,718	268,728	$0.169	$45,410	$48,656	$564,445
22	($2,200)					($1,272)	$6,678	267,116	$0.174	$46,582	$49,788	$614,233
23	($2,200)					($1,272)	$6,638	265,513	$0.180	$47,784	$50,950	$665,183
24	($2,200)					($1,272)	$6,598	263,920	$0.186	$49,017	$52,143	$717,326
25	($2,200)					($1,272)	$6,558	262,337	$0.192	$50,282	$53,369	$770,695
		$190,800	$540,600	$113,526	$38,160	($31,800)	$176,405	7,056,209		$941,603	$1,406,695	$770,695

Financing Options

“Look Verrrry Closely”

- Feather out Investment Short (~5yrs)
- Improve Cash Flow Long (~25)
- Beware of dealer fees

Battery Backup

"Maybe?"

- Va Today: Power Back Up, Early Adopters, Solar Pairing
- Later? Time of Use-Solar Pairing

\+ Installation, Maintenance, Noise, Virtual Power Plants

\- 2-3x Cost of Generator

Farm Utility Cost

TIGERSOLAR

Buy the Power

OR

Produce the Power

with financing

with a cash investment

Renting pros/cons

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Benefits of Owning

Thank you