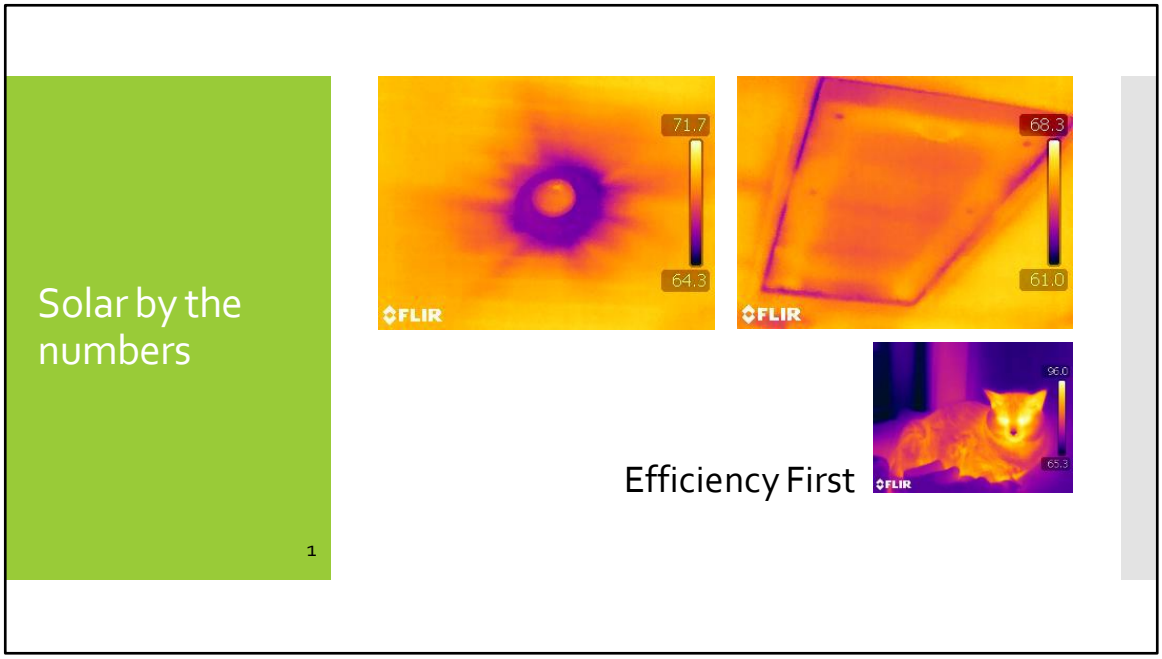
How do new laws affect homeowners and businesses that want to go solar?

Solar Freedom and other new laws have removed many barriers

1. Solar Freedom and other new laws have removed many barriers to customer-owned and third-party-owned solar, opening up new opportunities. This presentation covers changes that affect homeowners and businesses; at then end, we touch briefly on areas that remain priorities for future legislative sessions. Nothing in this outline should be taken as legal advice.



2. Solar by the numbers (Joy)

• Do efficiency first! It usually doesn't make economic sense to install more solar than what will meet actual need. Obtaining an energy audit and making recommended improvements (e.g., upgraded insulation or windows, reducing air leaks) before deciding how much solar to buy will often mean lower costs for the solar install. Some solar installers offer such audits and there are often local experts who do them as well.

• Cost savings through Solarize (LEAP) or VA Solar United Neighbors co-ops. Advantages to becoming part of a solar co-op include: group pricing; support throughout the process; join the solar movement and help fight for energy choice (or not). VA SUN co-op model allows members to help select installer--or not. Co-op members can include homeowners, businesses, farms, non profits. Whether one joins a co-op or not, being an informed consumer is important. A few considerations:

1. Solar is priced by the watt (not by panel)
2. Solar is long-term (no moving parts & 20-25 year lifespan)
3. Average residential utility rate at time of installation, potential for rising energy prices (e.g., Dominion: ~30% rate increase in last 10 years)

4. Before consulting prospective installers, review your past 12-months' utility bills. Be prepared for the site visit that every installer will want to do. Educate yourself; take advantage of information offered by LEAP and VA SUN.

• Loans are readily available, often through installer. Local credit unions and banks may also offer such products. There is a federally chartered credit union, Clean Energy Credit Union (https://www.cleanenergycu.org), established expressly for this purpose. Mortgage refinancing, home equity loan,s and lines of credit can also serve as good financing options.

Solar by the numbers

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SOLAR UNITED NEIGHBORS OF VIRGINIA

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More Solar Numbers

Federal tax credit 26% - 2020
22% - 2021
GONE for homes -2022

- Homeowners report payback times under 10 years.
- Net metering provides 1:1 credit

Utility Payment Statement - Net Metered Home

Payment Date	Payment Amount
04/27/2020	$7.98
03/24/2020	$3.08
11/25/2019	$7.98
10/22/2019	$7.98
09/23/2019	$7.98
08/21/2019	$7.98
07/24/2019	$7.98
06/24/2019	$2.63
05/28/2019	$7.98
04/22/2019	$8.04
03/25/2019	$11.38

Federal tax credit is 26% this year, will drop to 22% in 2021 (and go away for residential in 2022). Expect to spend around $15K, with small systems under $9K and large over $20K. Typically, homeowners install: 2 kW – 12 kW. At $2.75 per watt (how solar is priced), a rough cost estimate for a 4 KW system = ~$11,000, federal tax credit = $,2860, net cost = $8,140;
8 KW system, = ~$22,000, federal tax credit =$5,720, net cost =$16,280.

• Homeowners report payback times under 10 years. VA SUN says average return on investment in Virginia is 9–13 years. Payback depends on site and pricing.

• Net metering provides 1:1 credit for surplus electricity fed back to the grid. Utility calculates credits on an annual Billing Cycle, though monthly bills show monthly kWh that customer produces and utility provides, Depending on # of sunny days, electricity usage, and time of year, most solar producers experience daily and/or seasonal and/or annual surpluses or deficits.

New laws from 2019 and 2020

Solar Freedom: HB572/SB710 (overlap with Va. Clean Economy Act)

HOAs: HB414/SB 504

Shared solar: HB1634/SB629

2019 co-op legislation: HB2547

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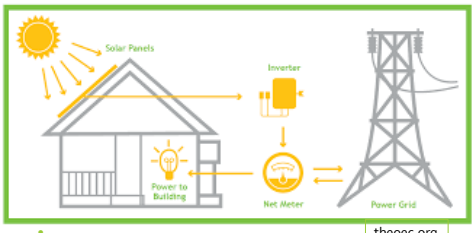
Many of the Solar Freedom provisions also appear in the Virginia Clean Economy Act. That was a strategic decision to give us two bites at the apple given how uncertain the legislative landscape was in Richmond this year. In the end, both bills passed. In the places they overlap, the language is identical. In addition to Solar Freedom, another important bill we will cover is the HOA bill. Finally, since Solar Freedom only applies to investor-owned utilities like Dominion and APCo, we will also address the rules that apply for rural electric cooperatives and municipal electric companies.

Net metering cap raised for IOUs



. Net metering cap raised for IOUs
Cap goes from 1% to 6% for Dominion, APCo, ODP
Consumers will have at least 3-4 years to install solar and lock in net metering for the life of the project
Fits with federal ITC timeline
At 3%, or 2024 (APCo) or 2025 (Dominion), SCC to conduct a solar study
Study may result in lower net metering credit

A major provision of Solar Freedom is raising the overall cap on net metered projects from 1% of a utility's peak electric demand to 6%, with 1% set aside for low-income projects. Although net metered solar currently makes up less than that 1% cap in both Dominion and APCo territories, rooftop solar is growing so fast that we needed to increase the cap.

In return for raising the cap to 6%, the utilities got something they wanted. When net metering reaches 3%, or 2024 (APCo) or 2025 (Dominion), the SCC will conduct a solar study to determine what happens next. Net metering might go away, replaced by some other way to compensate customers for surplus electricity. However, existing net metering customers will be grandfathered, so anyone who installs solar in the

next few years can be confident they will be able to net meter for as long as they want.

Residential standby charges

6. Standby charges (residential)

- Previously Dominion and APCo could impose on any residential NM solar over 10 kW, served to penalize large projects
- Now gone for APCo, ODP
- Will apply only above 15 kW for Dominion

Standby charges have been a big problem for homeowners who have solar arrays over 10 kilowatts. Utilities were given authority to impose these charges to compensate them for the fact that they have to be ready to provide electricity to solar customers as soon as the sun goes down. But utilities never balanced that cost with the benefit they received from having the free use of surplus solar during the day, so the standby charges they implemented were really high, and essentially punitive, so no one wanted to install a facility over 10 kW. Solar Freedom will make standby charges go away entirely in APCo territory and Kentucky Utilities/Old Dominion Power, and apply only to facilities over 15 kW in Dominion territory.

7. How much solar can you install and still net meter?
150% of last year's demand for Dominion, 100% for APCo, no limit for ODP (except must be "intended primarily to offset all or part of the customer's own electricity requirement")

BUT overbuilding is not economic

Residential project size limit now 25 kW, commercial limit now 3 MW

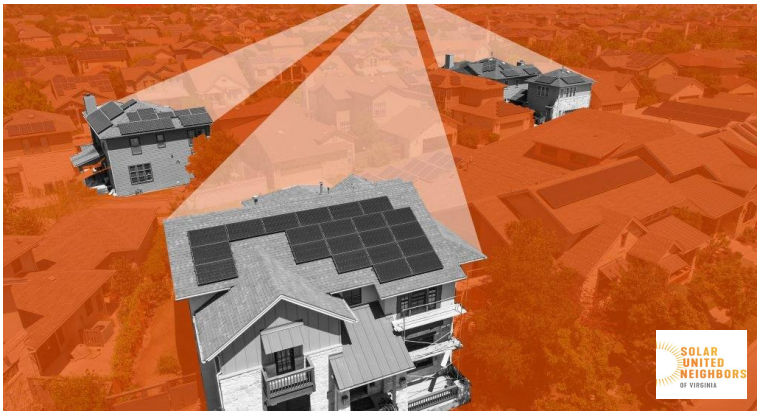
A few years ago a law passed limiting solar customers to installing only enough solar to meet 100% of their previous year's demand. This will still be the rule for APCo, but Dominion has agreed to raise that to 150%. Overbuilding doesn't make economic sense usually, but some people want to do it because for some reason they expect their electric demand to increase (maybe they're buying an EV).

The other good news for homeowners is that the residential size limit has gone from 20 kW to 25, although in Dominion territory there will be standby charges for anything over 15 kW,

For commercial customers, the size limit for net metered projects goes from 1 megawatt currently to 3 MW. That's a really big solar array for distributed generation,

but there are universities and institutional customers who sometimes want projects that big, and increasingly we hope to see local governments building projects that size.

What if your HOA hates solar?



Unreasonable restrictions are quantified.
New rules apply state wide
"Independent solar panel design specialist" must document the impact

8. What if your HOA hates solar?

- HB414/SB 504 makes it much harder for HOA to relegate solar to north-facing or shady side to hide the panels
- An HOA restriction is unreasonable if it
  - (i) increases the cost of installation of the solar energy collection device by 5 percent over the projected cost of the initially proposed installation or
  - (ii) reduces the energy production by the solar energy collection device by 10 percent below the projected energy production of the initially proposed installation
- "Independent solar panel design specialist" must document the impact
- Applies statewide, not just Dominion and APCo

A complementary bill to Solar Freedom is a bill that addresses a problem hundreds of would-be solar homeowners have encountered, with homeowner's associations that don't want solar arrays on the front of homes. That effectively bans solar if the front of the house is the only place that gets sun. A few years ago the GA passed a bill that said HOAs can't ban solar, but they can impose reasonable restrictions. That term "reasonable" turned out to

be a point of contention, so this year's bill clarifies it with actual numbers.

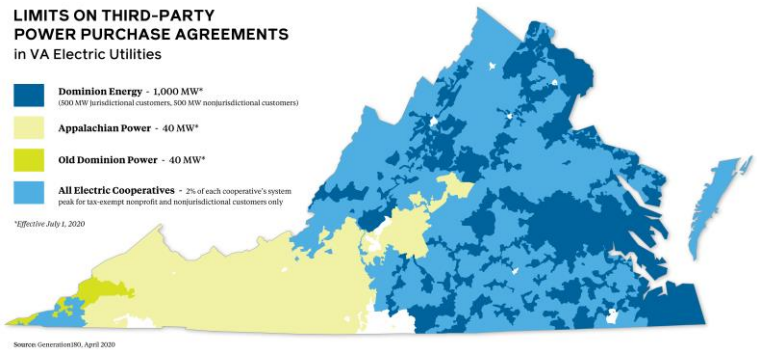
Opportunities beyond single-family homes

9. Opportunities beyond single-family homes
Community solar bills HB1634/SB629 require SCC rulemaking
Shared solar on apartment buildings and condos (Solar Freedom)
Owner can install solar, sell to residents
Requires SCC proceeding to develop program

It is still the case in Virginia that you can't run your home or business on solar unless you yourself have a sunny rooftop. Solar Freedom has a provision that allows the owner of a multifamily building to install solar to sell to tenants. The SCC will have a rulemaking to implement that, but the SCC is explicitly directed to make sure the terms are such as to make the program successful.

Another bill sets up a program for community solar that anyone can participate in. The SCC will have a rulemaking for that, too. Even though that program would be available to anyone, the terms of the legislation suggest that people who subscribe are likely to find it more expensive than what they pay now, possibly a lot more.

Third-party power purchase agreements (PPAs)



. Third-party power purchase agreements (PPAs)

- How it works: solar company owns the array on a customer's property, customer just pays for the electricity
  - Usually no money down, contract averages 20 years, customer can buy the system after 6-8 years
  - Allows solar developer to take tax credits and accelerated depreciation and pass savings on to customer in a price typically below what utility charges
  - Important tool for tax-exempt entities like local governments, non-profits
  - Was limited to 50 MW in Dominion territory, reached earlier this year; 7 MW in APCo territory, only for private colleges and universities
- New limit 500 jurisdictional/500 non-jurisdictional Dominion, 40 MW APCo and ODP
- Facility must be at least 50 kW, waived for tax-exempt entities, in APCo territory no longer limited to private colleges
- Not available to residents

Are there incentives for solar customers?

What the heck is a REC?

Federal investment tax credit is 26% for 2020, 22% for 2021. Payback times for a solar array purchased with cash as part of a bulk purchase likely under 10 years

- After payback, electricity is free, panels will last 30 years or more

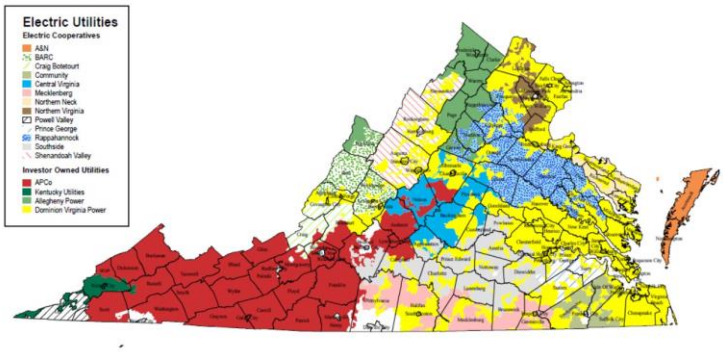
SRECs? 1% carve-out for DG in VCEA's renewable target

- But carve-out can also be met with energy from pig waste (Dominion has a deal with Smithfield), so there may be little demand for solar RECs from homeowners and small businesses
- Since RECs are the "bragging rights," customers may prefer to keep ("retire") them rather than selling

Business customers will be able to use C-PACE financing for RE and EE

- Available now in certain counties (Arlington, Fairfax, Loudoun)
- DMME writing a statewide program under new law

Rules for members of electric co-ops, from 2019 legislation



[1] SCC, http://www.scc.virginia.gov/pue/elec/map.aspx, June 24, 2010. Shows Allegheny Power service territory which was transferred in 2010 to Rappahannock and Shenandoah Valley Electric Cooperatives.

12. Rules for members of electric co-ops, from 2019 legislation

Solar Freedom does not apply to co-ops

Residential size limit still 20 kW, commercial 1 MW

Customers still limited to 100% of demand until transition date

HB2547 from 2019 changed net metering cap for co-ops

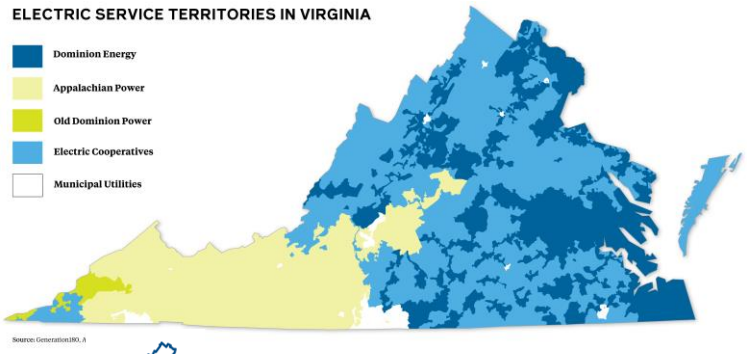
- Net metering cap now 2% for residential, 2% non-profits and non-jurisdictional, 1% non-residential

Other HB2547 changes:

- PPAs for tax-exempt customers only, no program limit
- Co-ops that elect to may impose demand charges starting when NM cap met or in 5 years, whichever is first ("transition date")
  - Standby charges will be eliminated, replaced by demand charges phased in over 5 years
  - All NM customers signed up before that will be grandfathered
  - Residential customers can install enough solar to meet 125% of previous year's demand
  - Commercial customers can install 100% of demand, up to 1.2 MW or 1% of co-op's system peak
  - New net metering program cap will be 3% for residential, 4% for non-

profits and non-jurisdictional, 2% other nonresidential
Since transition is elective, check with the individual co-op for their rules

Municipal electric utilities



DANVILLE UTILITIES

13. Municipal electric utilities (Joy)

• VA has 16 MEUs: Bedford, Blackstone, Bristol, Culpeper, Danville, Elkton, Franklin, Front Royal, Harrisonburg, Manassas, Martinsville, Radford, Richlands, Salem, VA Tech, and Wakefield.

• Most legislation involving VA utilities excludes MEUs. Solar Freedom does not apply to municipal electric utilities (MEUs)

• Some MEUs generate some or most of their electricity and some contract with other companies to supply it.

• Most VA MEUs are owned, operated, and governed by their towns or cities and MEU management reports to city officials. Elected officials are responsible for decisions such as rate structure and changes and net metering policy, as well as major decisions such as major capital investments, billing procedures, and budgets and contract approvals

• Harrisonburg Electric Commission (HEC) is an exception; by city code, it receives

limited oversight from the City Council. That oversight does not necessarily include rate changes, net metering policy, billing procedures, or approval of budgets, major capital investments, or contracts.

• Thus, the changes to net metering caps for VA's large utilities and electric co-ops do not apply to MEUs. Each MEU sets its own net metering policy and may choose not to allow net metering. For example, HEC established its net metering policy in 2010, setting a cap of 1%; it raised the limit to 2% in April 2019 when the total net metered systems were approaching the original limit.

Priorities for 2021 and beyond

- Raise DG solar-specific carve-out in RPS of at least 3% to start, rising to 10% by 2030
- R-PACE to make low-cost financing more available
- Mandate for new housing to be solar ready (wiring in place), roof designed to accommodate enough solar to provide 100% of energy use; builder must offer solar as an option
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Resources

- Links to solar group purchasing and financing opportunities:
- https://leap-va.org/services/solar/
  https://www.solarunitedneighbors.org/dc/go-solar-in-d-c/dc-go-solar-group/
  https://www.cleanenergycu.org
- To get a copy of these slides: img.vasierra.club/solar.new.laws.pdf
- To get a link to the recorded version of this presentation: sierraclub.org/virginia/grassroots-conversations
- To get the text behind these slides: img.vasierra.club/solar.laws.pdf
- To better understand REC's: Read "What the heck is a REC?" Blog by Ivy Main
- To get involved with Sierra Club advocacy: sierraclub.org/virginia/optin
- To get the acronym decoder: http://vasierra.club/acronym
- For additional information: sierraclub.org/clean-energy-series

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