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To: The Ohio Manufacturers' Association
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Update: Community Solar Bill Creates \$110 Million in Annual Cost-Shifting and Still Lacks Community Protections

Key Points

- House Bill 197 (HB197) creates a novel community solar program that allows solar to connect to the distribution grid and creates two bill credit mechanisms, setting a precedent for many future electric generation projects.
- Both bill credit mechanisms shift costs onto non-participating ratepayers, which in total could be on the order of \$110 million per year. The non-distressed sites credit could shift \$50 million per year and the distressed sites credit \$60 million per year.
- Large industrial customers are excluded from the program. This cuts out many important potential anchor customers for the solar projects while also potentially increasing cost-shifts onto medium and small manufacturers.
- HB197 requires the electric distribution utility to purchase community solar output, which is anti-competitive and could conflict with federal regulation FERC Order 2222.

Summary

Substitute House Bill 197 (HB197) amends existing state policy to permit community solar facilities throughout Ohio by establishing a Community Solar Pilot Program (CSPP)¹. The bill requires that the Public Utilities Commission (PUCO) establish a CSPP where up to 1,500 megawatts of community solar facilities are implemented across the state. It requires the PUCO to certify 250-megawatts of community solar facilities annually, until 1,000 megawatts of these facilities are certified. The remaining 500 megawatts of community solar facilities are intended specifically to be constructed on distressed sites. Any community solar project on a distressed site is eligible for a more lucrative bill credit.

Subscribers to community solar systems will receive a bill credit from their electric distribution utility (EDU) proportional to the amount of electricity subscribed to. HB197 creates two types of bill credits that community solar subscribers can qualify for: Non-distressed site bill credits and Distressed site bill credits. Bill credits that incorporate distribution charges will shift costs onto ratepayers who are not subscribers. Both bill credits do this.

¹Paragraph R, Section 4928.02 of HB197.

As the name suggests, Non-distressed site credits go to subscribers of facilities not on a distressed site. The credit is equal to the electric distribution utility's (EDU) retail rate, minus base distribution charges but not distribution service riders, which means the credit still causes cost-shifting. Distressed site bill credits are for those subscribed to facilities on a distressed site and are equal to the retail rate of the EDU, which incorporates all distribution charges, thus causing even more cost-shifting².

HB197 also details that no subscriber to a community solar facility may hold more than a 40% proportional interest in the output of the system, and no less than 60% of the facility's capacity is subscribed to by subscriptions of 40 kilowatts or less. This would allow community solar to have larger "anchor" subscribers while incorporating many smaller subscribers. All customer types except large industrial customers are eligible to participate in the program. This hamstringing the program because it excludes a large pool of potential anchor customers. Subscribers are prohibited from subscribing to more than 100% of their average annual electricity usage, and in accordance with existing Ohio state law, a subscriber whose subscription is less than 100% of their average annual usage may shop for their remaining electric coverage.

HB197 also requires that the EDUs purchase all electricity generated by community solar facilities within its certified territory. They must purchase both subscribed and unsubscribed electricity generated in that territory. Unsubscribed energy from community solar facilities must be purchased at the utility's PUCO - approved wholesale energy cost.

Why Community Solar is Needed

Community solar initiatives stem from customers who desire solar systems at their home or business, but are unable to install the systems for specific reasons, such as:

- Shaded facility - The home or business is shaded by trees or neighboring structures, and thus is not a good candidate for on-site solar.
- Tenant - The resident or business is a tenant and does not have permission to modify the building.
- Unable to access capital - The resident does not have adequate access to capital and cannot afford the up-front cost of a solar system or will not be approved a loan by a bank.

Community solar arose to provide the benefits of solar to these customers who face clear barriers to implementing solar at their home or business. The benefits of solar to customers are generally recognized as the environmental attribute (emissions free electricity), utility bill savings, local investment, and equity ownership of the solar system. For example, a homeowner with access to capital and a sunny rooftop can install solar today, and, after some period of years will have lower utility bills, a higher home value due to owning a solar system and can claim they are solar powered. From this perspective, solar ownership can be viewed as an investment vehicle that builds equity for its owner like building equity through a home mortgage versus rent. However, solar system installation, and the associated tax credits and subsidies solar systems receive, largely occur in middle to upper-income areas³. Thus, the clear market gap that community solar policies address is to provide access to the benefits of solar power to tenants and

² Paragraph C, Section 4934.08 of HB 197.

³ Solar Demographics Tool | Berkeley Lab | <https://emp.lbl.gov/solar-demographics-tool>

residents that do not have capital or will not be approved loans for solar systems, i.e, low-income and underserved residents. Community solar is of growing popularity as a policy tool to address the inequitable distribution of rooftop solar systems and the accompanying taxpayer subsidies.

Although titled a Community Solar Bill, HB 197, lacks fundamental components of such a policy. First, it is unclear if subscribers will receive the renewable energy credits, which is needed for subscribers to claim they are purchasing solar energy. Second, it does not have specific consumer protections listed to ensure the customer's promised bill savings will in fact occur. Third, it does not have any provisions for subscribers to gain financial equity, or ownership, in the solar asset and thus build wealth. For community solar to serve as an effective policy tool to create equity and wealth in low-income and underserved areas, these details need to be written in the bill. HB197 does not do this, and thus risks benefiting wealthy developers instead of the low-income communities it intends to.

Community Solar versus Utility-Scale Solar and Behind-the-Meter Solar

Community solar projects are distinct from utility-scale and behind-the-meter solar projects in two ways. First, is how the solar system is tied into the electric grid. Behind-the-meter solar systems are directly tied to customer loads, for example, a residential rooftop system. Utility-scale solar systems, such as the large rural projects spreading hundreds of acres, are tied into large electric transmission wires. Community solar is in the middle in scale, and typically tied into the smaller electric distribution system visible in our communities. Figure 1 shows the differences between the three solar project types.

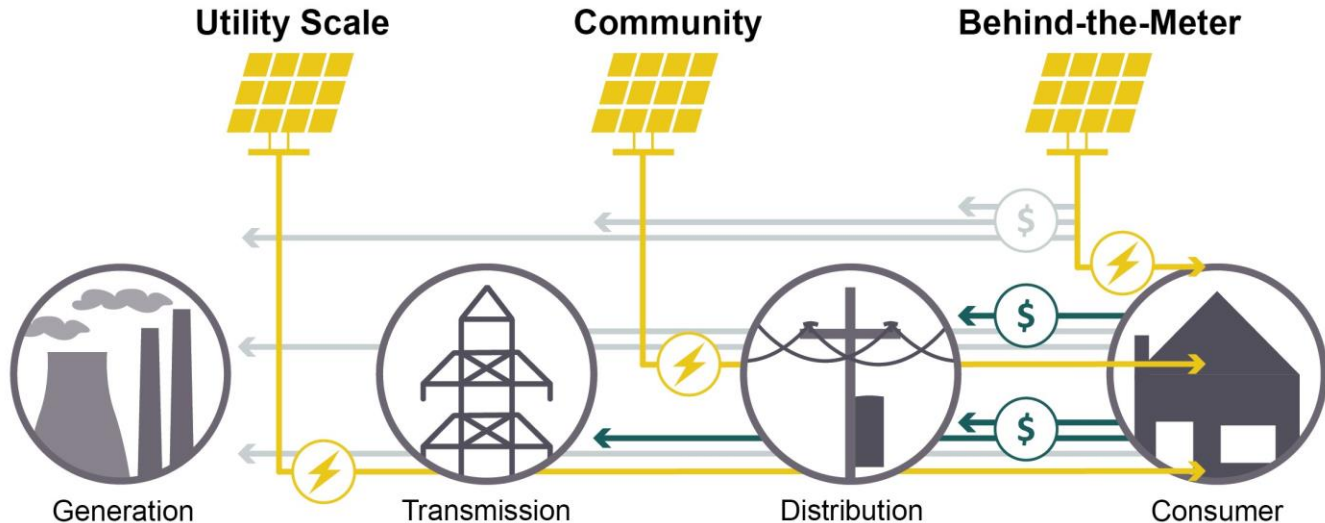








Figure 1. Differences Between Community Solar, Utility-Scale Solar, and Behind-the-Meter Solar

Second, because of the differing location of where the solar system ties into, how the solar creates revenue or cost savings from electric generation, transmission, and distribution is different. Utility scale solar systems have electric generation revenue from customers buying the solar energy instead of electricity from the grid, while behind-the-meter solar saves on generation, transmission, and distribution since the electricity from the solar does not require any transmission or distribution services to be consumed by the site. Community solar again is in the middle, receiving payment for generation since it is replacing grid

purchased energy while also saving on transmission costs. However, community solar projects still require the distribution system to deliver the electricity to customers. Therefore, community solar projects do not have an impact on customer's distribution costs.

Table 1. Revenue or Savings Value for Community Solar, Utility Scale Solar, and Behind-the-Meter Solar

	Utility Scale	Community	Behind-the-Meter
 Generation	\$	\$	\$
 Transmission	X	\$	\$
 Distribution	X	X	\$
			

HB197's Credit Mechanism and Cost-Shifting Potential

HB197 establishes two new types of bill credits, which subscribers to community solar facilities will receive for every kWh they purchase from the solar facility. Both types create significant cost shifts from subscribers to non-participating ratepayers. The non-distressed site credit cost shifts approximately \$47 million per year, while the distressed site credit cost shifts approximately \$59 million per year.

When a customer pays their regular electricity bill, the total they pay is also referred to as the full retail cost. The bill is made up of three components, as the customer is paying for three main services to get their electricity: generation, transmission, and distribution. As previously mentioned, for customers to receive power from a community solar project they need to use the distribution grid to bring the electrons to their building. Thus, they should pay for distribution service. The customer does not need the transmission grid, so they don't need to pay for transmission service and the customer is getting generation from their solar facility, so they don't need to pay for other sources of generation.

A non-distressed site subscriber would be credited "...the utility's retail rate on a per-customer class basis, minus only the utility base charge for distribution service...". In other words, they are credited for generation, transmission, and some distribution components (distribution riders) of their electric bill⁴. For example, this is currently \$0.169 /kWh for AEP Ohio residential customers⁵, as shown below.

⁴ Paragraph C, Section 4934.08 of HB 197.

Retail Rate (\$/kWh) = Generation (\$/kWh) + Transmission (\$/kWh) + Distribution (\$/kWh)

Distribution (\$/kWh) = Base Distribution (\$/kWh) + Distribution Riders (\$/kWh)

⁵ From PUCO's Utility Rate Survey Dashboard - Bill Components tab, which utilizes AEP Ohio's Residential Tariff. Dashboard inputs: "City" = Columbus; "Customer Type" = Residential; "Utility Type" = Electric; "Report Date" = December 2023; "Charge Type" = All; "Monthly Usage (kWh)" = 750; "Demand (kW)" = 0; "Reactive Demand (kVAR)" = 0.

https://analytics.das.ohio.gov/t/PUCPUB/views/UtilityRateSurvey/BillComponents?%3Adisplay_count=n&%3Aembed=y&%3AsGuestRedirectFromVizportal=y&%3Aorigin=viz_share_link&%3AshowAppBanner=false&%3AshowVizHome=n

$$\begin{aligned} \text{Non-distressed site credit} &= (\text{Utility retail rate of electricity}) - (\text{Base distribution}) = (\text{Generation} + \\ &\text{Transmission} + \text{distribution riders}) \\ &= \$0.209 / \text{kWh} - \$0.040 / \text{kWh} = \$0.169 \text{ kWh} \end{aligned}$$

This is not an appropriate way to credit community solar subscribers. It credits customers an extra \$0.027/kWh for parts of their distribution service, even though they continue to require full distribution service. They use the distribution grid the same way before and after community solar and they use it the same way as non-community solar customers. Thus, they should pay for that full service, instead of shifting these costs onto non-participating ratepayers.

A distressed site customer would be credited "...the utility's retail rate on a per-customer class basis." In other words, they are credited for everything, all three components of a bill: generation, transmission, and distribution (all distribution components)⁶. For example, this is currently \$0.209 /kWh for AEP Ohio residential customers, as shown below.

$$\text{Distressed site credit} = \text{Utility retail rate of electricity} = \$0.209 / \text{kWh}$$

This is not an appropriate way to credit community solar subscribers. It credits customers an extra \$0.067/kWh for all of their distribution service, even though, just like non-distressed site customers they use the distribution grid the same was as non-participating customers⁷.

An appropriate way to credit community solar subscribers would be to credit the generation and transmission components of a bill. Or, approximately \$0.142/kWh for AEP Ohio residential customers, as shown below.

$$\text{Appropriate credit} = \text{Generation} + \text{Transmission} = \$0.109 / \text{kWh} + \$0.033 / \text{kWh} = \$0.142 / \text{kWh}$$

The credit amounts calculated above are illustrative, a simple first-cut analysis, and should not be interpreted as the exact credit to use. Credit amounts will be different based on the EDU, the customer class, and time of year, as all three of these factors influence a customer's electricity rate and thus the associated credit.

Lacking appropriate credits, the program could, for illustrative purposes, cost shift a total of \$106 million per year with \$47 million per year from non-distressed sites and \$59 million per year from distressed sites as shown below. Again, this is an illustrative amount as it uses AEP Ohio's Residential rate from December 2023 for all participants to offer a simplified analysis. The actual cost-shifting would likely be lower than what is calculated above because the cost shift rate (\$/kWh) of commercial and industrial customers would be lower than residential since their distribution rates (\$/kWh) are lower. The point remains: significant cost shifting will occur.

$$\begin{aligned} \text{Total cost shifts (\$/year)} &= \text{Non-distressed cost shifts (\$/year)} + \text{Distressed cost shifts (\$/year)} \\ &= \$46,883,520 \text{ per year} + \$58,692,000 \text{ per year} = \$105,575,520 \text{ per year} \end{aligned}$$

⁶ Paragraph C, Section 4934.08 of HB 197.

⁷ Based on AEP Ohio's Residential Tariff in PUCO's Utility Rate Survey Dashboard, as described in earlier footnote.
 Distribution Service (\$/kWh) = Base Distribution (\$/kWh) + Distribution Riders (\$/kWh)
 \$0.067/kWh = \$0.040/kWh + \$0.027/kWh

Non-distressed cost shifts (\$/year) = Non-distressed site cost shift rate (\$/kWh) x Non-distressed site community solar subscriptions⁸ (kWh/year)

\$0.027/kWh x 1,752,000,000 kWh/year = \$46,883,520 per year

Distressed cost shifts (\$/year) = Distressed site cost shift rate (\$/kWh) x Distressed site community solar subscriptions⁹ (kWh/year)

\$0.067/kWh x 876,000,000 kWh/year = \$58,692,000 per year

Other Concerns

- The role of the electric distribution utility as community solar purchaser is concerning.
 - HB197 specifies that the electric distribution utility must purchase the generation output from community solar projects¹⁰. This provision may be unnecessary. Other entities such as Certified Retail Electric Service (CRES) providers and government aggregators could potentially be the purchaser, as they do this for utility scale solar projects today that serve residential customers.
 - Additionally, the provision might conflict with a recent order from the Federal Energy Regulatory Commission (FERC), Order 2222. Under this order a community solar system tied into the distribution grid can sell its electricity directly into PJM's wholesale electricity market as a distributed energy resource (DER), either on its own or through a competitive DER aggregator. Specifying that community solar projects must sell their output to the local electric utility, instead of into PJM markets via a DER aggregator undermines competition.
- The business and contractual models for the community solar projects are unclear.
 - It is unclear what entity holds the contract (commercial offtake) with the solar facility to purchase its electricity. The bill seems to indicate the EDUs will as they are to purchase the generation output. However, the bill also states that regional governmental aggregators may purchase any amount of electricity generated by a solar field¹¹. Who holds the contract? Are aggregators off-takers, subscribers, or middlemen?
 - Typically solar developers need a purchase contract that is a long-term agreement with a steady price (e.g. 20-year Power Purchase Agreement) with an offtaker to give financiers confidence to provide the large upfront capital. If the bill intends EDUs to hold this contract, the EDUs will be compelled to pay solar developers based on rates established and approved by the Public Utilities Commission of Ohio, which can change based on regulations and changes in

⁸ Non-distressed site community solar subscriptions (kWh/year) = 1,000 MWac x 1,000 kWac/MWac x 8,760 hours/year x 20% capacity factor = 1,752,000,000 kWh /year

⁹ Distressed site community solar subscriptions (kWh/year) = 500 MWac x 1,000 kWac/MWac x 8,760 hours/year x 20% capacity factor = 876,000,000 kWh /year

¹⁰ Paragraph A, Section 4934.07: "An electric distribution utility with a community solar facility in its certified territory shall purchase all electricity generated by the facility that is attributable to a subscriber's bill credit."

¹¹ Paragraph B, Section 4934.071

wholesale energy market prices. Will solar developers be able to finance these projects at an unsteady price?

- HB197 does not guarantee utility bill savings for subscribers.
 - The bill defines a term "guaranteed savings" in Paragraph F, Section 4934.01: "'Guaranteed savings" means the realized savings by the subscriber as the difference between the cost of a subscription to a community solar facility and the bill credit received for the generation attributed to the subscription."
 - However, the term is meaningless. Fundamentally it is "the difference between the cost of a subscription to a community solar facility and the bill credit received for the generation attributed to the subscription." It is possible for the cost to be higher than the credit, thus the realized savings is negative, and thus the "guaranteed savings" is a cost. So, it is still possible for customers to experience increased costs.
 - The bill does not explain who the "guaranteeing" party is, that is, who holds the risk if customer bills increase. Is it intended for the community solar organization to hold the risk? As it stands now, it could be the customers.
 - If subscribers are being promised lower bills or "guaranteed savings" there should be basic enforcement mechanisms listed in the bill to do so.
 - The bill requires that the state and the PUCO conduct evaluations of the program after 48 months to investigate whether consumers are saving money. However, the bill does not establish any requirements for rectifying situations where consumers are not experiencing these benefits. There are no immediate protections for customers.
- HB197 is unclear on who owns the Solar Renewable Energy Credit (SREC) from Community Solar projects.
 - Solar Renewable Energy Credits (SRECs) are produced when a renewable energy source produces 1 MWh of electricity and contributes it to the grid. This credit then represents the environmental attributes of producing that renewable energy, and owners can make the decision to keep or sell them. Whoever is in possession of the SREC is solely able to claim that they are getting renewable energy. Additionally, SREC's have financial value, and can be worth several hundred dollars in some states¹². HB197 does explain who owns the SRECs. The only mention of them is in a section that states governmental aggregators may purchase them¹³. This lack of detail could allow for circumstances where SRECs are sold to parties other than subscribers to the facility, thereby prohibiting subscribers from legally being able to claim that they use community solar or selling their share of the SRECs.
- HB197 does not ensure underserved communities receive equity in community solar.
 - Community solar is meant to provide accessibility to solar power generation to those who may not be able to install residential panels for either financial or logistical reasons. A large part of

¹² FlettExchange SREC Pricing | <https://www.flettexchange.com/>

¹³ Section 4934.071

the appeal for residential solar systems is the ability to increase the value of a home over time further building equity. Under both current law and the proposed HB197, subscribers to community solar facilities don't have explicit access to this wealth building tool, as there is no mention of equity transfer to subscribers. To be direct - a chief aim of community solar is to create wealth for underserved communities and constituencies who cannot afford to install their own rooftop solar systems. HB197 falls short of ensuring this will happen.

- Both bill credit mechanisms could be complicated to correctly implement.
 - The bill credits are based on a customer's full retail rate, which includes a range of types of charges: \$/kWh, \$/kW, \$/kVAR, \$/month, and %. It is unclear how the bill plans to establish \$/kWh credits that are based on charges like \$/kW, \$/kVAR, and %. The customer's full retail rate (\$/kWh) will change every month as their kWh, kW, and kVAR change. Will the program divide each participant's monthly bill (\$) by their usage (kWh) every month to calculate a new credit amount every month?
- There is a lack of clarity in the role of storage.
 - Community solar facilities can include forms of energy storage that would create uncertainties under the current regulation in HB197. The bill defines energy storage in Section 4928.01 paragraph 44, but otherwise does not mention energy storage anywhere else in the bill. Storage involves its own systems that may or may not be applicable to the regulations in the bill. For example, a battery located at a community solar project could charge with non-renewable grid supplied electricity at night, and discharge electricity back to the grid during the day. This energy-arbitrage is a perfectly fine application of a battery, but if included with a community solar project, could result in non-renewable energy being marketed as community solar power. The bill is unclear on how battery systems co-located at community solar sites will be treated.