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City of Ann Arbor Climate Action Plan - reduce community-wide greenhouse emissions 8% by 2015, 25% by 2025, and 90% by 2050 - relative to year 2000 baseline carbon dioxide equivalent (CO2e) emissions levels. CAP Solar Goals – 24MW of new solar installations by 2025.

Report to the Energy Commission on Community Solar and Ann Arbor, MI

Renewable Energy Subcommittee:

Mark H. Clevey, Subcommittee Chairperson
Chuck Hookhaum, Member
John Mirsky, Member

February 13 2017

Introduction

In December 2012, with the passage (by the Ann Arbor City Council) of the Climate Action Plan (CAP), the City of Ann Arbor redoubled its efforts and committed to an ambitious multi-strategy vision to address Climate Change by reducing its community-wide greenhouse emissions (8% by 2015, 25% by 2025, and 90% by 2050 - relative to year 2000 baseline carbon dioxide equivalent (CO2e) emissions levels).

The CAP is driven by an overriding paradigm of sustainability. The term sustainability was coined in the paper *Our Common Future*, released by the Brundtland Commission. Sustainable development is defined as the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

By late 2015, however, the City (and community as a whole) was falling behind in sustainability. Indeed, the city only met its 2015 CAP emissions target because its energy supplier *DTE Energy fulfilled the State of Michigan 10% Renewable Energy Portfolio mandate*, not through any significant actions of its own. (Note: the RPS was expanded in December 2016 via Public act 342 to mandating at least a 12.5% renewable energy credit portfolio (RECP) in 2019 and 2020 and 15% in 2021which will require the City of Ann Arbor to consider how best to account for DTE's RPS fulfillment in relation to its CAP solar goals.

Within this context, Michael Garfield, Director, Ecology Center, has aptly observed, "in spite of the fact that the City unanimously adopted a climate plan more than three years ago it hasn't backed that up yet with policy or adequate resources." [1]

[1] Email from Mike Garfield to Mark Clevey and others, October 21 2016.

In January 2016 an Energy Commission Solar Subcommittee was formed to address the lagging CAP performance. The Solar Subcommittee published a *Solar Ready Community Report* in April 2016 that identified CAP Solar Goals of needing nominally 24 MW of new solar PV installations in Ann Arbor by 2025[2]. Adopted by the Energy Commission, the Solar Ready Community Report and its recommended resolution was subsequently *unanimously endorsed* by the Ann Arbor City Commission (See Attachment I - June 2016 *Resolution Authorizing a Commitment to Making the City of Ann Arbor a Solar Ready Community).*[3]

The City of Ann Arbor has expressed interest in Community Solar to help meet its Climate Action Plan goals as well as to address concerns regarding the compatibility of solar installation with the city's *Tree City* designation. Community Solar is an idea that has been heartily embraced by the solar community including Michigan State Senator Rebekah Warren who has described Community Solar programs in Michigan as a "major success." On the other side, however, some solar thought-leaders have also expressed serious concerns over how the Michigan Public Service Commission (MPSC) - given their mission to *"grow Michigan's economy and enhance the quality of life of its communities by assuring safe and reliable energy and telecommunications services at reasonable rates"* - has chosen to implement Community Solar in the state.

The benefits and challenges of solar PV energy are both similar and different for on-site (self-owned roof or ground mount solar PV systems) and community solar ("distributed solar system"). Both installation options are relatively equal with regard to global emissions reductions with in-community solar having scale-based benefits as well as overcoming property-based access limits. A Community Solar system located outside of the community has, however, less of a positive emissions effect on a localized basis.

Moreover, while both generate Renewable Energy Credits (REC's) typically Community Solar host or corporation retains ownership of them. Because they displace "retail" versus "wholesale" power, onsite installations tend to have a higher rate of return and shorter payback but community solar allows more flexibility for individual to purchase individual panels within a larger array and lower capital costs. Onsite installations will most likely have a positive effect on property resale (onsite energy generation) whereas a community solar system would be either decommissioned or refurbished at the end of its life. Lastly, a community solar system provides access to property owners with little or no solar accessand those who cannot afford the capital costs to install an onsite system, who anticipate moving in the near- to mid-term feel they may not get an adequate return on their investment (including resale) or who are renters.

The Dream and Promise of Community Solar

Distributed Generation (DG) refers to energy production through a series of smaller, localized distributed power generation and distribution systems (e.g., hydroelectric facilities, solar systems, wind farms, etc.) versus a few large and highly-centralized power plants (e.g., nuclear, oil, natural gas-powered plants). "Community solar" is a Distributed Generation (DG) system powered by solar photovoltaics (PV).

Community solar, also called "shared solar," is defined by the U. S Department of Energy, National Renewable Energy Laboratory (NREL), as, "a solar-electric system that provides power and/or financial benefit to multiple community members." Under a community solar model, individual investors purchase one or more solar panels in a large array (as opposed to utility stock) and receive a financial return based on the financial value of the energy produced (typically the wholesale cost versus the retail price of the energy produced by that panel). In some cases, solar panels are donated via tax-deductible charitable donations and the proceeds from the solar output are used by the host organization as a donation (See Clean Energy Coalition's XSeed Model[4]).

[2] The Solar Subcommittee also identified an *additional 30MW goal by 2050*
[3] To put this in perspective, 24 MW is equivalent to installing to the following *every year for the next ten years*: Two installations equal to the 1.1 MW 4000 PV panel DTE Energy M-14 Installation; 240 installations equal to the 10 kW Farmers Market Solar Array; OR, 740 installations equal to the 3.2 kW Michigan Theater system.
[4] See: http://cec-mi.org/structures/programs/xseed-energy/

One of the best features of community solar is that it has the potential to allow renters and other citizens whose property is not solar-ready to partake of the benefits of a solar installation. It also has the potential to make solar affordable to most citizens as individual investors can purchase one solar panel (or multiples' of such panels) in a larger solar array rather than investing in a multiple-panel array on their own property. Most importantly, community solar has the potential to provide rate payers with a financially viable way to invest in solar energy in their communities while, at the same time, helping communities grapple with the negative impacts of climate change.

A 2016 analysis conducted by Caroline McGregor, acting soft costs program manager for the DOE's SunShot Initiative found that *c*ommunity solar is gaining popularity across the US. This report notes,

> In particular, community solar projects are gaining popularity, as they allow the almost half of U.S. households that may not have access to a "solar-ready" roof to take advantage of the sun's energy and do it at a lower cost. This can make solar accessible to more low- and moderate-income (LMI) communities. Between 2010 and 2015, community solar installations grew rapidly, reaching almost 100 megawatts -- and this business model has even greater potential. The National Renewable Energy Laboratory (NREL) estimates community solar could make up half of the distributed PV market in 2020.[5]

Most importantly, a report by George Washington University Solar Institute shows that while 49.1 million households earn less than $40,000 of income per year and make up 40 percent of all U.S. households, they only account for less than 5 percent of solar installations. Community Solar provides a way for all communities to benefit from solar energy while helping communities also meet local climate goals regardless of where they live or their financial status.

Within this context, a recent paper written by Tom Stanton (Principal Researcher) with Kathryn Kline (Research Associate) titled*, THE ECOLOGY OF COMMUNITY SOLAR GARDENING: A 'COMPANION PLANTING' GUIDE* (NRRI 16-08)[6] provides an excellent snapshot of community solar activities around the country and reports on the rapid expansion of community solar projects under two different rubrics:

1. States are implementing laws and rules that govern Community Solar, with these kinds of actions already underway in 16 states and the District of Columbia; and,
2. In those and other states, individual utility companies are obtaining approvals from their state regulatory authorities, or for non-state-regulated utilities from their governing boards or commissions, for Community Solar programs.

Customer Interest

A number of studies have been completed regarding the interest of consumers in investing in Community Solar arrays. The following are two studies of particular interest as they resonate well with Ann Arbor interests.

1. **Smart Electric Power Alliance/Sheldon Group[7], *What The Community Solar Customer Wants: Identifying the right target audiences for community solar – and the marketing strategies that will win them over.***

[5] Caroline McGregor, Analysis Shows That Community Solar Is Competitive in the Vast, Greentech Media, November 21, 2016. https://www.greentechmedia.com/articles/read/new-analysis-shows-national-potential-for-solar-power-in-low-income-communi

[6] See: http://nrri.org/download/nrri-16-7-community-solar/

[7] **SEPA -** The Smart Electric Power Alliance (SEPA) is an educational non-profit dedicated to helping utilities integrate solar power into their energy portfolios for the benefit of the utility, its customers and the public good. With more than 1,000 utility and solar industry members, SEPA provides unbiased utility solar market intelligence, up-to-date information about technologies and business models, and peer-to-peer interaction. From hosting national events to one-on-one counseling, SEPA helps utilities make smart solar decisions. For more information, visit www.SEPApower.org. **Shelton Group -** Shelton Group is the nation's leading marketing communications firm focused exclusively on energy and the environment. If you're a utility or energy company trying to build brand loyalty and increase customer engagement, we understand your marketing challenges like no one else. We can help you reposition your offerings to appeal to the customers of the future. For more information, visit www.sheltongrp.com.

As part of a community solar project funded by the Solar Market Pathways grant from the U.S. Department of Energy, SEPA and Shelton Group polled American consumers and businesses to identify the audiences for community solar and find out what they want most from a community solar program. Fielded on December 11–18, 2015, the survey sampled 2,001 U.S. residential utility customers from a national online consumer panel. A mix of multiple choice, fixed response, Likert scale and discrete choice (conjoint) analysis questions were used. The stratified random sample included a mix of genders, ages, home ownership, ethnicities/races, education, incomes and geography. Survey results are summarized below:

- Americans are barely aware that community solar exists, which is by far the biggest hurdle to getting programs subscribed. But in the survey, when survey staff presented consumers with clear, complete information about how a community solar program works, nearly half of them were interested. Conclusions from this research are as follows:
    - **Financing.** An offer of zero-down, low-interest financing changed the minds of 27% of consumers who said they weren't interested in a community solar lease.
    - **Visibility.** Although this can be a divisive topic, our research showed that many likely community solar participants prefer the array to be visible, and they're actually willing to pay more
    - for that feature.
    - **Terminology.** We asked consumers what they thought community solar should be called. "Community shared solar" and "community solar" came out on top, while "solar gardens" was significantly less popular. Also note that we used the terms "panel lease" and "block subscription" for the purposes of this survey, and consumers responded positively, but we're aware that other program descriptors are used in the marketplace, and we recommend further testing to determine the optimal language to use.
    - **Recognition.** Those interested in community solar want to be recognized for their contribution (70% said so) – and they aren't asking for much: a window decal was the most popular method of recognition they chose (35%).
    - **Utility sponsorship.** Of those interested in community solar, two-thirds wanted the program to be sponsored either by their utility (34%) or a solar firm working in partnership with their utility (33%).

- The target business audience for a community solar panel lease is very similar to the audience for rooftop, with one critical difference: although they typically own their buildings, aversion to risk and maintenance costs outweighs the need for control.

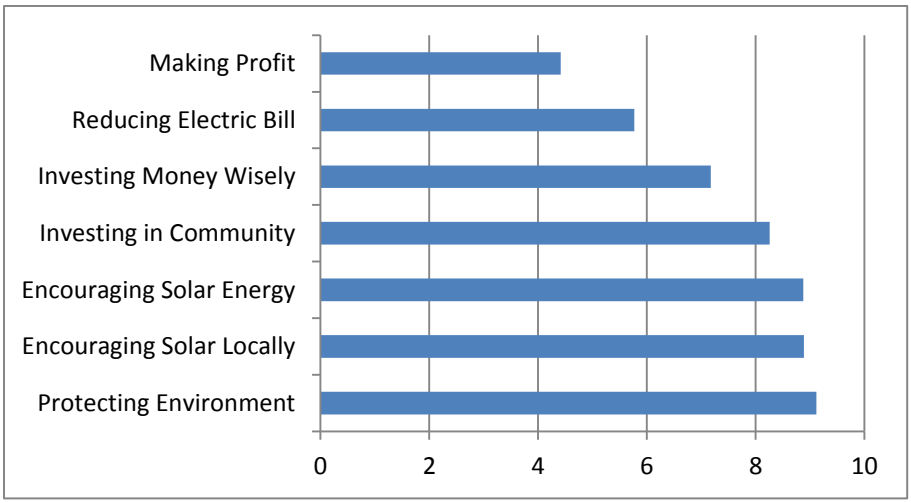
2. GLREA Traverse City Light and Power, *Survey of Community Solar Customers*

The Great Lakes Renewable Energy Association (GLREA) in cooperation with the Clean Energy Coalition and the Traverse City Light and Power municipal utility (TCL&P) surveyed their customers who are participating in the community solar program or expressed some interest in the program to better understand this first community solar effort in Michigan. In July 2013, TCL&P sent the survey link to about 100 individuals and CEC sent the link to 64 individuals. There were 57 responses to the survey, a response rate of 35%.

The survey responses are as follows:

- Almost all respondents (98%) would like to see more Community Solar projects in Michigan.
- Most of the respondents (77%) heard about the program from a CEC or TCL&P email, newsletter, or bill insert.
- Of those who responded, 18% have not joined yet.
- Many respondents (48%) joined within a week of hearing of the program.
- A third (33%) know other people who have joined.
- The survey asks how important (1=not important, 10=extremely important) various reasons were for deciding to participate.
    - "Protecting the environment" had the highest average points (9.12) and
    - "Making a profit" had the lowest average points (4.42).

- "Reducing your electric bill" (5.77) and "Investing money wisely" (7.18) also had relatively low average points.



The environment was the primary motivation for joining. Many of the comments make this clear.

- *For my grandchildren.*
- *We want to encourage generation of electricity from non-polluting renewal sources which minimize global warming. This program enabled that, and provided a 2%+ estimated return on our investment.*
- *I often talk about trying to be greener and this was a good opportunity to practice what I preach.*
- *Desire to help reduce carbon footprint which I believe is one of the causes of climate change.*
- *We want to reduce our use of fossil fuels, but live in the woods where solar and wind aren't practical. The Solar Garden allows us to use solar in an affordable, efficient way.*

Investing in solar energy and investing locally were also very important. "Encouraging the development of solar energy" had a score of 8.88 and "Encouraging the development of solar energy locally" had a score of 8.89. "Investing in your community" received a score of 8.26. Most of the respondents (71%) have been out to the Cherryland offices in Grawn to see their collectors. Some comments from the respondents:

- *The more local the energy is, the better off the community will be.*
- *It was the community aspect, more than anything else, that drew us to the project. We also liked that the panels were installed right here where we could see them.*

Michigan Public Service Commission (MPSC) – Michigan Solar Rubric

Electric utility companies in Michigan are "regulated monopolies" overseen by the Michigan Public Service Commission (MPSC). Again, the stated mission of the MPSC is *to "grow Michigan's economy and enhance the quality of life of its communities by assuring safe and reliable energy and telecommunications services at reasonable rates".* The Commission is composed of three members appointed by the Governor with the advice and consent of the Senate.[8]

[8] Michigan Public Service Commissioners are appointed to serve staggered six-year terms. No more than two Commissioners may represent the same political party. One commissioner is designated as chairman by the Governor.

In Michigan, utility-owned community solar is regulated by the MPSC which must approve all rates charged by utilities for electricity and gas sold to consumers in the state – including community solar-related rates. Such rates include cost of operations, the wholesale cost of power and profits guaranteed for the utility by the MPSC (based on the *retail sale of power* by the utility to its customers).

Both investor-owned and municipal utilities (municipal utilities are community-owned, versus investor owned) can operate community solar programs in Michigan. As early adopters, several municipal utilities demonstrated pioneering efforts on Community Solar. In April 2013, the Traverse City Light and Power (TCL&P) became the first municipal utility in the state to approve a new "Community Solar Garden" project for local ratepayers. This program was followed by Homeworks Electric Cooperative in 2014 and Lansing Board of Water & Light's (LBWL) Community Solar program in 2015.

While many community solar benefits are clear, some question the reasonableness of the rates that are applied to local citizens who participate in these programs. Indeed, some wonder if the MPSC approved rates for utility-owned Community Solar actually *conflict with their mission and goal* of enhancing the quality of life in communities where such systems are located? Others question why the MPSC does not extend "regulated monopoly" benefits to community solar investors – *such as guaranteed profit* - that it does to utility stockholders?

Community Solar and Financial Return on Investment

Community solar by definition involves ratepayer ownership (or third-party sponsorship) of a solar array. Community solar arrays can be financed with investments and/or tax-deductible donations. Michigan has a mix of non-profit, investor-owned utility and municipal utility community solar programs. Utility-owned Community Solar systems are, by definition, *wholly owned by the host utility company* but financed by individual investors who receive financial returns based on the *wholesale cost of power*. As illustrated by David Konkle, in his Community Solar presentation at the 2016 Annual Michigan Energy Fair, the MPSC has approved utility-owned projects where the payback for purchasing shares on a utility-sponsored Community Solar program in Michigan is *15 – 25 years*.

For example, a rate-payer who invests in a utility-sponsored community solar system may receive roughly $.065 - $0.075/kilowatt-hour (kWh) for any power generated by their panels (wholesale) but will pay roughly $0.15/kWh for power purchased from the utility (retail rate). Again, some has suggested that these *MPSC approved rates* for utility-owned Community Solar actually conflict with the MPSC mission and goal of enhancing the quality of life in communities where such systems are located. (NOTE: Discussions are currently taking place to adjust the cost imbalance to reflect the true cost of an installation (e.g., the costs for utility interconnection and distribution circuits are used versus the wholesale/retail pricing difference).

The *2015 Annual Net Metering and Solar Program Report*[9] recently issued by the MPSC described Community Solar as a positive solar trend in the state. According to the report,

> Cherryland Electric Cooperative and Traverse City Light & Power are the first electric providers in Michigan to offer a joint community solar program – Solar Up North (SUN) Alliance Program. The framework for this program comes from the energy optimization standard of Act 295 as opposed to net metering or the renewable energy standard. Cherryland Electric Cooperative members and Traverse City Light & Power customers can purchase solar shares for a one time investment of $470.00 each. The participants receive a $75.00 Energy Optimization rebate per panel. The electric providers use the wholesale electric market prices to determine the amount of monthly bill credit to provide to the participants. It is estimated that the credit will be an average of $2.00 per month. This amount will be based on total monthly array output and will vary based on weather conditions. The community solar program has been very successful and is continuing to grow. As of July 2013, one hundred thirty six shares had been purchased.

[9] See: http://www.michigan.gov/documents/mpsc/net_metering_report2015_534159_7.pdf

> In 2014, Tri-County Electric began offering leases as part of its community Solar Garden Program. The solar array is 20.9 kW. On May 14, 2015 the Commission approved Consumers Energy's application to add up to ten MW of Community Solar to its renewable energy plan. On March 29, 2016 the Commission approved an application for contracts related to the Solar Gardens program and the construction contract for the three MW project to be located at Grand Valley State University (GVSU).

In late 2015, LBWL announced it will develop a community solar program in which customers can lease 300 watt panels for $399. The lease term is 25 years and customers receive a credit on their bills based on the prorated amount of solar energy the customer has purchased. In January 2017, LBWL first community solar park began leasing panels to its electric customers. Once 80% of the 1,000 solar panels are leased, construction of the 300 kW array will begin at East Lansing's Burcham Park, a retired landfill. 200 panels were leased in the first few days. Solar supporters will sign a 25-year lease and pay a single, upfront cost of $399 per panel.

The LBWL will provide a monthly on-bill credit to lessees, reflective of the amount of solar energy generated per panel. The project team would like to see construction begin in time for the solar park to begin producing by Earth Day, April 22, 2017. Following completion of the East Lansing community solar park, the LBWL and project partners Michigan Energy Options and Patriot Solar intend to build a second community solar park adjacent to the LBWL Wise Road Water Treatment Plant in Lansing. (See: micommunitysolar.org/sign-up/. Questions: (517) 337-0422 ext. 4 or info@micommunitysolar.org).

Consumers Energy has two solar gardens commercially operating at Grand Valley State University (3 MW) and Western Michigan University (1 MW).[10] In both cases, the *public* universities put up a fair component of the subscription up front (in the range of 25 to 50%), with the balance being marketed to businesses, communities, and individual dwellings/homeowners. The *2015 Annual Net Metering and Solar Program Report*[11] recently issued by the MPSC describes the Consumers Energy Community Solar program as follows:

> On July 22, 2016 the Commission approved a construction contract for one MW of solar at Western Michigan University campus. Consumers Energy's Community Solar program, referred to as Solar Gardens, is the first community solar program offered by a rate regulated utility in Michigan. Participants will purchase half kW blocks up to their annual usage and receive a bill credit based on market energy and capacity prices, adjusted upward for line loss, based on a pro rata share of their subscription elections over the 25 year term. Customers can purchase their subscriptions via four options: upfront payment of $1,339; three year monthly payments of $42 per month; seven year monthly payments of $21 per month; or, 25 year monthly payments of $10 per month.10 As of July 31, 2016, the Solar Gardens program is 58.2% subscribed. This subscription has grown to over 70% in early 2017.

DTE Energy has submitted a community solar proposal to the MPSC for consideration. Under their program, DTE proposes to credit 4.0 *cents/kWh* for all solar produced while charging participants *7.2 cents/kWh* for using it (i.e., the customer is paying an extra *3.2 cents* for the green electricity). (NOTE: The Great Lakes Renewable Energy Association (GLREA) and others are urging the MPSC not to approve DTE's community solar proposal).[12]

[10] Consumers Energy Opens Second Community Solar Power Plant at Western Michigan University: *Customers Support New Renewable Energy Through Solar Gardens Program.* KALAMAZOO, Mich., Aug. 15, 2016 – Consumers Energy today announced that it has started operations at its second solar power plant, transforming 8.5 acres at Western Michigan University into a new source of renewable energy for Michigan. "We are pleased to work with Western Michigan University and the public to provide energy from new, renewable sources right here in our state," said Dan Malone, Consumers Energy's senior vice president of energy resources. "This solar power plant represents our commitment to powering our state reliably and sustainably, using our state's own natural resources."

[11] See: http://www.michigan.gov/documents/mpsc/net_metering_report2015_534159_7.pdf

[12] See: In the matter of the application of DTE Electric Company for approval of its amended Renewable Energy Plan, Case No. U-18076.

Community Solar and Ann Arbor, MI

Within the context of Ann Arbor's CAP Solar Goals and the MPSC Mission, community solar appears to be an important consideration for local policy makers. Tom Stanton's paper[13] raises several preliminary recommendations for future research that have implications for any successful community solar program in Ann Arbor:

- Explore non-utility-regulatory barriers to community solar, to better understand them and identify possible actions that might reduce or remove them;
- Review possibilities for standardizing community solar offerings;
- Gain a deeper understanding of how customers might be fully engaged to act as partners in the development of all kinds of distributed energy resources; and,
- Identify strategies for all interested parties to best manage a transition to a utility sector that will deploy many more distributed energy resources.

Within this context, Dave Friedrichs, Mgr / Bldr. Homeland Solar (www.HomelandSolar.com) offers the follow observations with regard to Community Solar in Ann Arbor:

> Local and personal decisions will define the future of energy ownership. For Ann Arbor, the city's decisions are manifest in its CAP "Solar goals" set today, however defined, will shape future realities for all who call this Tree City USA *home*. If renewable generation of energy is to reach its potential, policy makers starting at the local level will need to exert themselves to make *Open To All* access-to-solar a reality. Once local policy makers (and those more distant) engage regulated-monopoly utilities effectively, the inevitable strategic and policy changes now afoot in the energy sector will follow. It will be possible for change to evolve on a planned and better-managed basis than the alternative, contentious disruption.
>
> The conundrum for policy makers is how to achieve mutual benefit for grid-interconnected customer-owned solar under *defined and fair* Net Metering and/or Value of Solar (VOS) programs. Minnesota, Maine, Austin TX and others including California and Colorado have crafted plans and charted the way. Although Michigan's solar potential is somewhat diminished by location and cloud cover, policy improvements, public education and stronger mandates for renewables could instigate a higher adoption rate.
>
> Smart solar strategies are within reach: (a) distribution and transmission utilities can profit by collaborating with metered customers to interconnect privately-owned neighborhood solar; (b) new solar-generation technologies can use the existing grid for localized distribution, load-sharing and power back-up (as designed); and (c) local leaders can take Tip O'Neil's adage to heart (i.e., "All Politics is Local") and find the way forward, knowing there is both a need and a public will. Just as the new tech giants transformed major sectors of the economy over the past 30-years in the next 30 years energy storage and solar generation technologies will have the potential to transform the centralized generation legacy of fossil fuels into more efficient local use. We can evolve together by pursuing those actions and policies needed to open both doors and windows to the solar potential that blesses us all. The alternative is not a worthy conclusion.

A2 Solar Program, Community Solar Option - Suggested Operating Terms and Conditions

When considering community solar, it is very important to note that the City of Ann Arbor is NOT a municipal utility and its community solar options are therefore limited. Moreover, given that the City of Ann Arbor will most likely incorporate third-party owned and controlled Community Solar into its A2 Solar Program it is important that the City absolve itself of any associated liabilities. Towards that end, at a minimum, the Energy Commission recommends that, in addition to Tom Stanton's above recommendations, it seems prudent that the city consider the following operating terms and conditions as well:

[13] Tom Stanton (Principal Researcher) with Kathryn Kline (Research Associate) titled, *THE ECOLOGY OF COMMUNITY SOLAR GARDENING: A 'COMPANION PLANTING' GUIDE* (NRRI 16-08).

1. Fully disclose and clearly explain the A2 Solar Program, Community Solar Option to residents;
2. Secure a legal opinion on how the City can be held harmless from any legal liabilities associated with its Community Solar Option;
3. Require all Community Solar Service Providers that are part of the A2 Solar Program Community Solar Option to produce documentation that clearly defines true costs of installing and operating such community solar projects and how such translate into credits for Ann Arbor-based subscribers; and,
4. Clearly and publically recommend to any and all Ann Arbor citizens interested in the Community Solar Option that they consult with their financial advisor(s) regarding the investment payback before participating in any and all Community Solar Programs– including the DTE Energy sponsored community solar program.

Recommended A2 Solar Program, Community Solar Options

Within this context of the above operating recommendations, the following are five Community Solar Options that the Energy Commission suggests the City of Ann Arbor consider incorporating into its A2 Solar Program (Solar for All).

1. **Endorse DTE Community Solar Program Tied to Actual Implementation Costs and Financial Advisor Recommendation** – DTE Energy has indicated that they will follow the lead of Consumers Power and Municipal Utilities and pursue Community Solar programs in their territory.[14] Michigan State Senator Rebekah Warren, while noting that Community Solar has been a major success in Michigan, has also noted that,

   > "the Michigan Legislature has been debating a number of bills that would shape the State's energy future. While House Bill 4878 was introduced in September 17 2015, to create policy guidelines for community solar programs, there is no financial disclosure requirements included in the current version of the bill."[15]

   The DTE community solar program has obvious benefits for local citizens including local installations, simplified investment and payments, etc. There are, however, also questions regarding a fair rate of return for these citizens. Accordingly, it seems prudent that the City of Ann Arbor recommend to local citizens that they *consult with their financial advisor(s) regarding the investment payback before participating in any and all Community Solar Program – including the DTE Energy sponsored community solar program*. It also seems reasonable that the City Commission *officially request* that DTE adopt such a financial disclosure policy for Ann Arbor citizens and produce documentation that clearly defines true costs of installing and operating such community solar projects and how such translate into credits on subscriber's bills.

2. **Explore Behind-the-Meter (BTM) Community Solar** – Behind-the-Meter installations allow customers to reduce their electricity purchases from the utility by using their generated electricity "behind the meter." Most importantly, unlike traditional utility-owned/sponsored community solar programs, *behind the meter* community solar allows project costs and returns to investors to be based on the *retail* (versus wholesale) cost of power (*thereby improving the payback* for community solar project investors and stakeholders). Candidates for BTM Community Solar projects include local businesses and/or farmers who own their buildings, houses of worship and non-profits. Local governments can educate citizens on the legal terms and conditions of such BTM partnerships as well as explore ways to incentivize and encourage BTM Community Solar programs. There may be an opportunity for such a project to be constructed under the Public Utility Regulatory Policies ACT (PURPA) with a firm power purchase agreement (PPA) established.

3 **Explore External Community Solar Partnerships –** Community Solar arrays are being built in other states where the electric rates are significantly higher than Michigan and where there are state and local incentives and/or there is more sunshine thereby improving financial returns for installations. Unlike traditional utility-owned/sponsored community solar programs in Michigan, some other community solar systems are mostly investor/third-party

[14] See: http://5lakesenergy.com/consumers-energy-gets-ok-to-add-michigans-first-community-solar-program/
[15] Letter of response from Rebekaw Warren to Mark Clevey, July 12 2016, regarding Community Solar in Michigan.

financed, allowing individuals to buy-in to the array. In many cases, the project developer/owner has buy-in partnership with organization such as the Sierra Club which offers the Community Solar option to their members. The following are two community solar programs identified by the Energy Commission that appear to resonate with the CAP solar goals: Arcadia Power (http://www.arcadiapower.com/solar) and Geostellar (https://geostellar.com/).

4 **Ann Arbor Water Utility Community Solar** – Many in Ann Arbor support a program whereby the City Water Utility would both generate and sell solar PV generated electricity to Water Customers and/or City Operations. Such a program, however, would require a modification of the Franchise Agreement between DTE Energy and the City of Ann Arbor and state approval. Assuming an agreement could be reached, a Water Utility solar array could possibly be structured as a community solar program primarily for city residents. Some discussion of this option has occurred among City Councilpersons and City Staff.

5 **Clean Energy Coalition Community Solar Program** – The City of Ann Arbor, Energy Office, has awarded a grant to the Clean Energy Coalition to research and develop a CEC-sponsored community solar program in Ann Arbor. While public information on the initiative is currently limited, based on the results of the Pilot Phase of the program, it may have sufficient merit to warrant its consideration for incorporation into A2 Solar Program.

The Energy Commission currently serves as a Technical Advisor to the new A2 Solar Program, operated under by the Clean Energy Coalition under a grant from the Energy Office. As a way to move the Community Solar program options forward, the Energy Commission could expand the scope of this Technical Advisory role to include Community Solar as a way to ensure that Community Solar is effectively deployed in support of the Ann Arbor Climate Action Plan and effectively merged into the A2 Solar initiative. As previously noted, there may also be an avenue for a Clean Energy Coalition-owned solar garden under PURPA regulations.

Summary

Ann Arbor's new A2 Solar Initiative seeks to meet its CP solar goals by making solar available to all community members ("Solar for All"). Towards that end, community solar offers a way that Ann Arbor can, in accordance with the MPSC's mission "enhance the quality of life" in the community". Towards that end, the Energy Commission Community Solar report identified and recommended four community solar options for the City to consider further and possibly incorporate into its new A2 Solar Energy program.

Energy Commission Community Solar Recommendation to City Council

This report recommends that the Energy Commission recommend to City Council the following Resolution Authorizing a Commitment to Pursue Community Solar Options that are compatible with the City Council "Resolution Authorizing a Commitment to Making the City of Ann Arbor a Solar Ready Community":

Resolution Authorizing a Commitment to Pursue Community Solar Options that are compatible with the City Council "Resolution Authorizing a Commitment to Making the City of Ann Arbor a Solar Ready Community

Whereas, In December 2012, the Ann Arbor City Council passed the Climate Action Plan (CAP)[16] an ambitious multi-strategy vision to reduce our community-wide emissions 8% by 2015, 25% by 2025, and 90% by 2050, relative to year 2000 baseline emissions levels; and,

Whereas, 20% of the Climate Action Plan's 2025 electrical savings goal is slated to be met with solar photovoltaics (or equivalent) (i.e., 2.4 MW installed each year, for the next ten years for a total of 24 MW); and,

[16] http://www.a2gov.org/departments/systems-planning/energy/Documents/CityofAnnArborClimateActionPlan_low%20res_12_17_12.pdf

Whereas, in June 2016 the City Council unanimously adopted a *Resolution Authorizing a Commitment to Making the City of Ann Arbor a Solar Ready Community* which called for the City of Ann Arbor support efforts to make the City a Solar Ready Community and the Ann Arbor City Council directs all affected city departments and agencies to adopt the Clean Energy Coalition's Solar Ready Community guidelines towards the goal of securing the designation of Solar Ready Community for the city; and,

Whereas Community Solar offers an opportunity for individuals and organizations whose property is not compatible for onsite solar installation can invest in an offsite solar array and receive the financial and environmental benefits of solar ownership; and,

Whereas the economic benefits, financial returns and risks associated with utility and non-utility Community Solar compel the City Council, as public servants who promote solar energy as part of the Climate Action Plan, to actively encourage citizen investors to fully understand their associated financial benefits and risks and to seek advice and council from a financial advisor(s) prior to making such an investment; and,

Whereas, with some negotiated adjustments, four Community Solar options appear as good candidates for endorsement by the City Council for local Ann Arbor citizens; and,

Whereas the Energy Office has launched a "Solar for All" program that includes a Community Solar Initiative and - along the Climate Partnership and members of the Energy and Environmental commissions – has made an associated resource request with for City Council funding of the a program;

RESOLVED, The City of Ann Arbor support efforts to include Community Solar in the A2 Solar Energy program and directs the City Administration to ensure that all affected city departments and agencies craft and launch a Community Solar program as part of the Solar Ready Community efforts.

Attachment I

Resolution Authorizing a Commitment to Making the City of Ann Arbor a Solar Ready Community

Whereas, In December 2012, the Ann Arbor City Council passed the Climate Action Plan (CAP)[17] an ambitious multi-strategy vision to reduce our community-wide emissions 8% by 2015, 25% by 2025, and 90% by 2050, relative to year 2000 baseline emissions levels; and,

Whereas, 20% of the Climate Action Plan's 2025 electrical savings goal is slated to be met with solar photovoltaics (or equivalent) (i.e., 2.4 MW installed each year, for the next ten years for a total of 24 MW); and,

Whereas, The U.S. Department of Energy, SunShot and Rooftop Solar Challenge programs and other National Renewable Energy Laboratory (NREL) studies have found that lack of solar-specific zoning and related building permitting within a community can actually dampen the local solar market by increasing the installed cost for solar systems for consumers; and,

Whereas, The City of Ann Arbor has hosted numerous SunShot-related educational programs in an effort to increase solar awareness and interest in the community; and,

Whereas, The Michigan Energy Office has funded the Clean Energy Coalition (CEC) to build upon the SunShot Initiative and to develop a Solar Ready Community Guide for Michigan, complete with model and streamlined zoning and permitting guidelines (see: Solar Ready Community, Executive Summary, Attachment I); and,

Whereas, The Solar Ready Community Guide project was successfully piloted in Mid-Michigan (Saginaw, Bay City and Midland) and subsequently successfully adopted by several other communities in the state; and,

Whereas, The Ann Arbor Energy Commission has determined that Ann Arbor has the potential of generating up to 78.5 MW of solar power annually; and,

Whereas, The Energy Commission finds that the Solar Ready designation would provide the necessary platform to enable the solar energy components of the Ann Arbor Climate Action Plan and passed this resolution on February 9, 2016;

RESOLVED, The City of Ann Arbor support efforts to make the City a Solar Ready Community and the Ann Arbor City Council directs the Administration to investigate developing a Community Solar Program.

Sponsored by: Councilmembers Smith, Briere and Warpehoski
As Amended by Ann Arbor City Council on June 20, 2016

[17] http://www.a2gov.org/departments/systems-planning/energy/Documents/CityofAnnArborClimateActionPlan_low%20res_12_17_12.pdf