

**Solar Commons and the Solar “Trust” Model:
Applications to Tribes in Arizona and Minnesota**

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About the Author

Pilar Thomas (Pascua Yaqui) is Of Counsel at Lewis Roca Rothgerber Christie LLP in Tucson Arizona, where she provides strategic legal advice to tribal governments and tribal enterprises on energy planning and policy, renewable energy project development and finance; federal and state energy regulatory, programs and policy efforts. Ms. Thomas previously served as the Acting Director and Deputy Director for the Office of Indian Energy Policy and Programs at the U.S. Department of Energy, where she was responsible for developing and implementing policy and program efforts within the department and across the federal government to achieve statutory policy objectives, particularly the promotion of energy development, electrification, and infrastructure improvement on tribal lands. She spearheaded federal agency efforts to coordinate and collaborate on tribal energy development efforts, in partnership with the White House Council on Native American Affairs, the Departments of the Interior, Agriculture, Commerce and Environmental Protection Agency. She is also the former Deputy Solicitor of Indian Affairs for the U.S. Department of the Interior, where she provided legal advice to the Secretary, Assistant Secretary-Indian Affairs, and other department officials on decisions related to tribes and matters related to federal Indian law, tribal law, administrative law, Indian lands and natural resources, treaty rights and water rights. She has served as the Interim Attorney General and Chief of Staff to the Chairwoman of the Pascua Yaqui Tribe, of which she is a member. In 2002, Pilar was appointed to the position of trial attorney in the U.S. Department of Justice, Environment and Natural Resources Division, Indian Resources Section. Her practice included Indian treaty rights, water rights, and regulatory litigation. Ms. Thomas graduated from the University of New Mexico School of Law, magna cum laude, with a certificate in Indian Law. She received her bachelor of arts in economics from Stanford University.

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Introduction

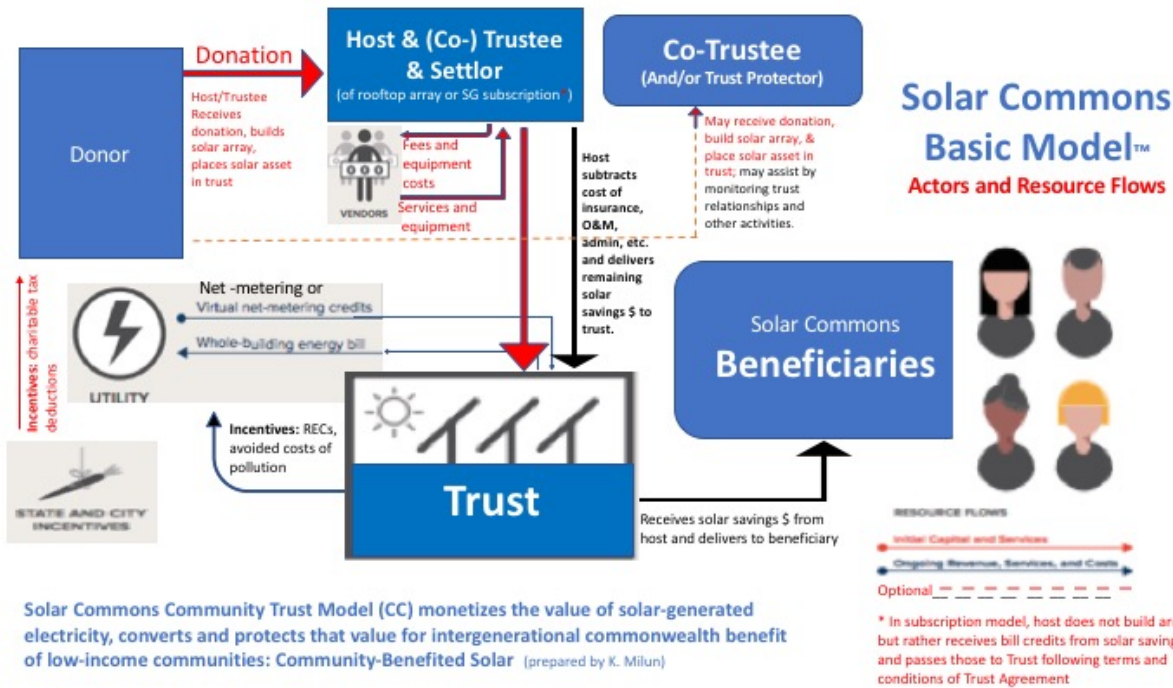
The Solar Commons™ “Trust Model”¹ is designed to promote policies and a philosophy similar to that of the “Commons” – resources that are available and managed for all to share in and benefit from. The Solar Commons™ trust model promotes the use of distributed solar energy resources to leverage net metering electric utility cost savings to contribute to the common good by providing an income stream to programs that benefit underserved communities. The Solar Commons trust model has been deployed in both Arizona in a behind-the-meter rooftop solar system, and in Minnesota in a community solar (in-front-of-the-meter) system.

Solar Commons Model™

The Solar Commons trust model basically works as follows:

- * A community group/process identifies a social equity community need, a non-profit program to serve that need, and local partners who will oversee the funding of the program through a trust relationship.
- * Philanthropist donates funds to Host/Trustee to build a solar project that will be the “corpus” of the trust.
- * Host/Trustee uses funds to build distributed energy project and obtain net metering benefits.
- * Host/Trustee receives a portion of the net metered savings to cover their costs and passes on the remaining funds to the beneficiary running programs for their constituents.

¹ The Solar Commons™ name and model is licensed under a Creative Commons Attribution-Noncommercial-No Derivative License. For more information on the license, see: <https://creativecommons.org/licenses/by-nc-nd/3.0/> You can contact the license holder, Kathryn Milun at kmilun@d.umn.edu.



Application to Tribes

As it could apply to tribes in Arizona and Minnesota, the model could work similarly, but with key differences:

- * An interested philanthropist or non-profit corporate donates funds or obtains donations to build a solar project on tribal government, tribal enterprise or tribal housing buildings.
- * The Tribe would receive the net-metering benefits, reducing the cost of electricity bills to the Tribe, its enterprise or tribal members.
- * The Tribe would create a “beneficiary” fund that is earmarked to specific tribal programs that support tribal members, such as energy utility subsidies, clean energy job training, energy efficiency upgrades grants, regenerative agriculture training, paid youth internships for local reporting on environmental justice issues, etc.. The Tribe would then contribute a portion of the savings – if not all – to the beneficiary fund.

Background

The Solar Commons Project², through the Solar in Your Community Challenge sponsored by the U.S. Department of Energy Solar Technologies Program, commissioned the Rocky Mountain Institute (RMI) to analyze the economic feasibility of the trust model in Arizona and Minnesota, given the current status of the net metering programs in the respective states. Because both states have a large number of tribes – 22 in Arizona and 11 in Minnesota – the Solar Commons

² The Solar Commons Project is a community-based research project directed by Kathryn Milun, Associate Professor, University of Minnesota-Duluth.

Project commissioned this white paper to evaluate the applicability of the trust model to the tribes in those states.

This white paper will provide a short background on the tribes, including their governments, enterprise, and housing authorities. It will then summarize the basic electric retail regulatory authority in the two states related to net metering and other programs for distributed energy resource projects. Using the financial analysis of the RMI paper, this paper will then outline – by state – the key opportunities for tribal governments, tribal enterprises, and tribal housing authorities to deploy the Solar Commons trust model to achieve tribal goals to support tribal members, economic development and community development.

RMI – Summary of Analysis³

RMI completed two reports that analyzed the financial results of the Solar Commons (SC) trust model™, and the potential scalability and constraints of the model. RMI also developed a financial analysis model that can be accessed to determine the projected financial results for a particular size system in Arizona and Minnesota.

From a financial perspective, the RMI analysis found:

- * For three system sizes – 14.5 kW, 410 kW and 500 kW – the SC trust model provides significant benefits to the environment and community beneficiaries
- * In Arizona, the SC trust model provides a positive impact-investment opportunity for donors across all system sizes.
- * In Minnesota, the model provides a positive impact-investment opportunity for larger, community solar systems.

RMI further evaluated the potential scalability of the model. The study analyzed the size of the distributed solar energy market, as well as some of the major constraints to the deployment of the SC trust model. In short, the RMI study showed:

- * The total potential market is 10 GW.
- * Most likely constraints are willingness of commercial / industrial building owners to be hosts and share in the economic benefits.

Arizona – Tribes, Regulatory Scheme, Opportunities

Arizona Tribes

There are 22 tribes located in Arizona, with over 19,000,000 acres of land, 296,000 tribal members, and 22 tribal housing authorities. Of the 22 tribes, 17 of them are customers of electric utilities, including investor owned utilities, rural electric cooperatives, and publicly owned utilities.

The 17 tribes also own over 50 gaming facilities, hotels, resort facilities, and other economic development infrastructure.

³ Brehm, K., Lillis, G. Solar Commons Financial Analysis Results: Solar Commons Project Analysis Phase 1 of 2, Rocky Mountain Institute, 2018

According to the National Renewable Energy Lab, the Arizona tribes have over 1,000 GW of technically feasible ground mount solar PV resources.

Arizona Net Metering Regulatory Scheme

In December 2016, the Arizona Corporation Commission formally changed the state’s residential net metering program to a net export rate (NER) program. Under the NER program, a utility residential customer that has a “behind the meter” solar project will be compensated by the utility at an approved “net export rate.” The NER will be multiplied by the amount of solar power produced, and the resulting amount will be a credit against the customer’s electricity bill. For example, if the NER is .09/kWh, and the customer produces 1,000 kWh for the month, then the customer will receive a credit of \$90 on their monthly bill.

Each regulated utility has a different NER. Tucson Electric’s NER is .0964/kWh and Arizona Public Service NER is .129/kWh. All regulated utilities must publish their NER, and are able to change the NER every year (with ACC approval). Salt River Project is not regulated by the ACC, and thus has its own net metering program. Under the SRP program, customers must pay a very high fixed monthly fee. Because the SRP net metering program does not provide any financial benefits to its customers, there has been a substantial decrease in rooftop solar project deployments.

RMI Analysis for Arizona

The following table shows the results of a potential \$500,000 donation for different project sizes in Arizona.

Benefits of \$500,000 Solar Commons Investment Project Size in Arizona

Project Size	14.5 kW	410 kW	500 kW
Donation to Solar Commons Projects	\$500,000	\$500,000	\$500,000
Number of __ kW projects installed	9.72	.53	.43
Total Capacity Installed (kW)	140.88	217.30	217.30
Lifetime Energy Production (kWh)	5,421,479	8,361,938	8,524,193
GHG reduction (tons CO2 lifetime)	2,304	3,554	3,623
Cumulative Savings (To Distribute) Including ITC	\$926,779	\$1,444,648	\$1,472,028
Average Benefit to Trust	\$37,071	\$57,786	\$58,881
Cumulative Net Savings	\$426,779	\$944,648	\$972,028
Net Present Value of Investment	\$116,141	\$431,812	\$448,434

Minnesota - Tribes, Net Metering, Opportunities

Tribes

There are 12 tribes located in Minnesota, with over 773,000 acres of land, approximately 100,000 American Indian/Alaska Native population in the state and 56,000 tribal members and 11 tribal housing authorities. Because no Minnesota tribe operates its own electric utility, all of the tribes are customers of electric utilities, including investor owned utilities, rural electric cooperatives, and publicly owned utilities.

The tribes also own 17 gaming facilities, and many more hotels, resort facilities, and other economic development infrastructure.

According to the National Renewable Energy Lab, the Minnesota tribes have approximately 250 GW of technically feasible ground mount solar PV resources.

Minnesota Net Metering Scheme

Minnesota utilities offer net metering programs to customers for distributed energy projects. Net metering allows the customer to either be compensated for the energy produced (net billing) or to have an offset against energy used (net energy metering). The net metering program differs by utility, and are based on several factors, including system size, type of utility, and compensation rate options. Investor owned utility (IOU) customers can have a system size up to 1 MW, while electric cooperative and municipal or public utility customers have a system size limit of 100 kW. Compensation rates are set by the utilities, and published with their tariffs. Customers typically have the choice of receiving a check or a monthly bill credit for the energy produced. For customers with systems above 40 kW (but less than 1 MW), the customer can elect to roll-over, or bank, excess energy credits to offset future energy consumption.

The utilities can also offer aggregate metering, which allows a customer to aggregate multiple meters. The aggregate meters can then be offset by a single distributed energy system for net metering savings.

RMI Analysis for Minnesota⁴

The RMI financial analysis for Minnesota looked at both rooftop solar and a community solar array. Unlike in Arizona, where all system sizes behind the meter are financially viable, in Minnesota the analysis shows that larger systems are financially viable when they are in front of the meter – in a community solar program.

Financial Return for 410 kW Array

⁴ The RMI Financial Analysis Tool can be used to evaluate different system sizes, net metering rates, and other utility information for smaller size projects that are behind the meter or community scale.

Location/ Utility	Minnesota - Xcel (BTM)	Minnesota - Xcel (CS)
Lifetime Energy Production (kWh)	\$13,550,088	\$13,550,088
GHG reduction (metric tons CO2e)	6271	6271
Cumulative Savings (To Distribute) Including ITC	\$975,151	\$2,134,565
Annual Benefit to Trust (Including ITC)	\$39,006	\$85,383
Install Price (Donation)	\$943,410	\$943,410
Cumulative Net Savings (minus donation)	\$31,741	\$1,191,155
Net Present Value of Donation	-\$257,185	\$436,994

Tribal Opportunities to Leverage the Solar Commons Trust Model

Instant Savings

Because the solar project is donated to the Tribe, the energy generated from the solar project will create immediate savings for a tribe. Ongoing operations and maintenance costs – which will be funded through the energy cost savings – will depend on the size and type of project. These costs can be easily estimated. In any event, it will be highly unlikely that operations and maintenance costs will exceed the energy cost savings. Thus, any tribe that participates in the Solar Commons trust model will obtain some net benefit to save on energy costs and fund tribal programs to support tribal members.

Arizona

Because of the NER program in Arizona, tribal governments and enterprises must evaluate the potential net economic benefit based on the NER and the retail rate paid to the utility. For example, if the tribal government is paying .15/kWh retail rate, and the NER is .09/kWh, then the tribal government will save up to .06/kWh. The key issue for tribes to consider is whether these savings are sufficient to warrant interest in the program. The RMI analysis shows that all system sizes will create a positive net benefit, so roof top solar arrays and larger systems can be deployed by Arizona tribes. But, since the RMI financial analysis also shows that the larger the system, the larger the financial benefit, the tribe’s decision to participate in the SC trust model may also turn on how large the energy load is for the tribe.

Tribal Government as “Host”. Tribal government buildings can serve as hosts for rooftop solar arrays. The tribal government would interconnect the systems to their utility (unless it is SRP), and enroll in the NER program for that utility. Tribal government savings will be based on the difference between the retail rate for electricity, and the NER for power produced from the solar arrays. The tribe can then use the resulting costs savings to fund particular tribal member programs.

Tribal Enterprise as “Host”. Tribally owned enterprises, such as casinos, hotels, gas stations, or any other enterprise facility, can also serve as a “host” for a solar array. Because the tribal enterprises likely have a larger energy load than the tribal government buildings, the solar project

can/should be a larger system. The larger system will result in larger financial benefits, lower operating costs, and more energy savings. Those resulting cost savings can be deposited directly into a special fund set up by the Tribe, and the fund can support specific programs for tribal members.

Tribal Housing as “Host”. Many, if not most, tribal housing authorities own and manage tribal rental housing. This housing is typically available to lower income and elderly tribal members. The tribal housing authority could use tribal rental housing as the “host,” placing rooftop solar projects on tribally owned housing. The tribal member who is responsible to pay the electricity bill would see the direct benefits in energy costs savings. Where the tribal housing authority pays the electricity bill (such as for elder housing, or through direct utility subsidy programs), the tribal housing authority will receive the direct benefits. These direct benefits can then be used to support tribal housing programs for tribal members.

Minnesota

Unlike Arizona, Minnesota have several limitations on the size of a solar project for the net metering program. For tribes served by an IOU, the size limit is 1 MW. But for tribes served by a cooperative or municipal utility, the size limit is 100 kW. However, the compensation rates are more favorable in some cases. In addition, tribes can aggregate meters to allow offsets against multiple buildings. Lastly, larger projects are eligible for roll-over or banking of excess energy produced, which reduces energy costs for future energy consumption.

Tribal Government as “Host”. Tribal government buildings can serve as the “host” for a rooftop or community scale solar array. If the tribe has multiple buildings, it can take advantage of aggregate metering to allow the tribe to offset the energy consumption from multiple buildings under the net metering program. The tribe can then use the resulting costs savings to fund particular tribal member programs.

Tribal Enterprise as “Host”. Tribally owned enterprises, such as casinos, hotels, gas stations, or any other enterprise facility, can also serve as a “host” for a solar array. Because the tribal enterprises likely have a larger energy load than the tribal government buildings, the solar project can/should be a larger system. The larger system will result in larger financial benefits and energy savings. However, for tribes served by a cooperative or municipal utility, their size will be limited to 100 kW. Most casinos have substantially larger loads – usually 3-5 MW – so it is unlikely that those buildings will be good candidates for serving as a host, relative to other candidates. Instead, those tribes might look at smaller load buildings, and take advantage of aggregate metering to offset loads up to 100 kW.

Tribal Housing as “Host”. The RMI analysis shows that smaller systems are not likely to create positive net benefits. However, Minnesota tribal housing authorities might be able to take advantage of the aggregate metering to combine multiple houses to create a larger load – and thus rationalize a larger solar array. Again, the tribe has to consider the utility size limitations. But, even with a 100 kW limit, the tribal housing authority should achieve substantial economic benefits in reducing the cost of energy for tribal owned housing.

Tribal Beneficiaries

The beneficiaries of the Solar Commons trust model in the Tribe can be specific tribal programs and tribal members. Tribes can use the benefits obtained through the reduced cost savings to establish programs that:

- * Support tribal members in energy costs reduction, through utility bill subsidies, energy efficiency upgrades, or distributed energy projects
- * Provide job training, workforce development for tribal members in clean energy technologies, construction and maintenance
- * Invest in clean energy and energy efficiency programs for tribal government facilities and tribal member housing to continue to reduce energy costs for the tribal community.
- * Invest in other non energy-related programs such as regenerative agriculture and paid youth internships for researching and reporting on local issues

Additional Considerations for Tribes

As the RMI financial analysis has shown, the larger the project the greater the savings (and thus the benefits). Tribes should strongly consider leveraging additional federal and state programs to increase the number and size of projects where this makes financial sense.

Federal Funding to Increase Project Size

DOE IE Deployment Grants. The Department of Energy Office of Indian Energy Policy and Programs typically issues an annual deployment grant program for tribes, tribal enterprises and entities to construct “facility” scale and “community” scale energy generation and energy efficiency projects. Grants are available for up to \$1 million and typically require a 50% match. The donation amount can serve as the match for this program.

USDA REAP Program. The USDA administers several energy programs that Tribes can access to deploy solar energy projects. Those programs include the Rural Energy for America Program (REAP), which provides grants and loans to tribal enterprises for renewable energy projects. REAP grants are usually up to \$50,000 and require a 25% match. As with the DOE program, the donation amount can serve as the match for this program.

HUD ICDBG Program. The HUD Native American housing programs operate the Indian Community Development Block Grant program. This is typically a competitive grant programs for tribes, that provides funding for community development projects. Several tribes have used ICDBG funds to develop and install rooftop solar projects on new community facilities or tribal housing.

State Funding/Incentive Programs

Arizona utilities have ended their incentive programs to install rooftop solar projects. The state does not offer any other funding or incentive programs to support rooftop or distributed energy solar projects.

Minnesota utilities may offer additional incentives for rooftop solar programs, through payments for the renewable energy credits generated by the rooftop solar project. This will increase the economic value for rooftop solar project owners – including the tribes – and thus increase the benefit (through savings) that will go to tribal programs and tribal members.

Conclusion

The Solar Commons trust model should be able to provide positive net benefits to tribes, tribal members and tribal communities in both Arizona and Minnesota. The tribes have several options for “hosting” a solar project, including tribal government and tribal enterprise buildings, and tribal owned housing. Project size and location will likely be determined by net metering compensation, utility type, and additional funding or incentives available to the tribal facilities.