

# **Bringing New Light to One of the Oldest Forms of Property Ownership: An Innovative Solution for Benefiting Underserved Communities Using the Solar Commons Community Trust Model**

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*This Article presents a new ownership model for distributed solar energy in the United States.: the Solar Commons Community Trust Model (SCCTM). Designed and realized by the authors, SCCTM uses trust law to create an ownership vehicle to hold solar energy assets and distribute their benefits to low-income communities. The Solar Commons model is contrasted with current “community solar” models which pass on to individual households the monetary savings from a remotely located solar energy array. SCCTM passes the solar energy savings of a remotely located solar energy array into a Solar Commons trust and makes those trust funds into a “common good” benefiting a whole community through the charitable purposes of the Solar Commons Trust agreement. This Article lays out the practical steps of creating low-income community benefits using the SCCTM. We address legal ramifications and policy barriers that can be overcome drawing on details of Solar Commons prototypes designed by the authors in Arizona and Minnesota. This Article also describes how the SCCTM fits into the historical framework of trust law as a tool of legal reform thanks to the use of trusts as practical solutions to equity issues arising in dominant property regimes. Based on the historical evolution of trust law, this Article evaluates why features of trust ownership such as equitable title, fiduciary duty to beneficiaries, trust protectorship and intergenerational equity are appropriate tools for solving equity issues facing twenty-first century technology and policies underlying solar energy as a common good. In placing SCCTM in the history of legal reforms enabled through trust law, we draw on key ethical and common property theories supporting the creative evolution of trust ownership for environmental and social equity today. The Article concludes by noting the social innovations for intergenerational equity and common good that result in using SCCTM.*

- I. Introduction: Why Solar Commons Trusts Today?
- II. Trust Ownership as a Practical Problem-Solving and Conceptual Law Reforming Tool in Feudal and Modern Property Regimes
  - A. *Trusts in Feudal Property Regimes*
  - B. *Trusts and Modern Property Regimes*

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*C. Solar Commons Trusts: A Logical Place for Trust Law to Serve Social Equity Interests in Twenty-First Century Regimes of Energy Ownership*

III. The Solar Commons Community Trust Model (SCCTM) in Practice

A. *Solar Commons Trust Creation: Engaging the Three Basic Components of a Trust*

B. *Scenarios that Demonstrate Trust Creation Using SCCTM*

1. General Steps to Create a Solar Commons Trust

2. A Hypothetical Community Using the SCCTM

IV. Solar Commons Trust Model Legal Ramifications and Policy Barriers

A. *Addressing Legal Ramifications of the SCCTM*

B. *Avoiding Policy Barriers with SCCTM*

V. Social Innovations of the Solar Commons Community Trust Model

A. *Equitable Ownership, Community Stakeholders, Energy Democracy*

B. *Institution-Building for Commons: Solar Commons Trust Protector and Intergenerational Equity*

VI. Conclusion

## I. INTRODUCTION: Why Solar Commons Trusts Today?

By 2019, distributed solar energy was among the fastest growing renewable energy sources in the United States.<sup>2</sup> However, U.S. solar laws have created a “solar income gap” whereby low-income communities are not equitably sharing in the benefits of solar ownership.<sup>3</sup> Although the sun shines for everyone, markets and states have not been able to make the benefits of this common property resource accessible to all. This Article demonstrates how trust law, as applied in the Solar Commons Community Trust Model (SCCTM)<sup>4</sup>, provides a practical, equitable, and local approach

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<sup>2</sup> See Silvio Maracci, *Renewable Energy Job Boom Creates Economic Opportunity As Coal Industry Slumps*, FORBES (April 22, 2019), <https://www.forbes.com/sites/energyinnovation/2019/04/22/renewable-energy-job-boom-creating-economic-opportunity-as-coal-industry-slumps/#616e0afe3665>.

<sup>3</sup> See James A. Mueller & Amit Ronen, *Bridging the Solar Income Gap* (GW Solar Inst. Working Paper, 2015).

<sup>4</sup> For an analysis of the Solar Commons financial model and its scalability potential in the United States, see KEVIN BREHM & GENEVIEVE LILLIS, ROCKY MOUNTAIN INST., SOLAR COMMONS FINANCIAL ANALYSIS RESULTS: SOLAR COMMONS PROJECT ANALYSIS PHASE 1 OF 2 (2018); and KEVIN BREHM & GENEVIEVE LILLIS, ROCKY MOUNTAIN INST., SOLAR COMMONS SCALABILITY AND CONSTRAINTS

for low-income communities that have principally been left out of the economic benefits of the solar energy boom. SCCTM<sup>5</sup> is built on the use of trusts, one of the oldest forms of property ownership. Simply put, a trust is a collection of assets committed or entrusted to one to be managed or cared for in the interest of another. SCCTM is innovative in that it uses this resilient and time-tested legal structure to capture, monetize, and locally distribute the benefits of solar generated energy to provide a multitude of benefits to underprivileged communities in ways that go far beyond what is possible in current U.S. community solar ownership models. Thanks to the charitable purposes inherent in SCCTM, a Solar Commons Trust provides an economic tool for community empowerment and engagement. As this Article demonstrates, there are many practical benefits to using the SCCTM. Additionally, we argue that the Solar Commons Model could play a larger role supporting legal innovation of the method, means and scalability of the distribution of solar energy benefits to low-income communities within the U.S. electricity system.

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ANALYSIS: SOLAR COMMONS PROJECT ANALYSIS PHASE 2 OF 2 (2018) accessible at [https://static1.squarespace.com/static/5855aade3e00be1ae0b98fb2/t/5cce0ab4e2c4833aaec0c78d/1557007034233/RMI\\_SolarCommonsReportPhase2.pdf](https://static1.squarespace.com/static/5855aade3e00be1ae0b98fb2/t/5cce0ab4e2c4833aaec0c78d/1557007034233/RMI_SolarCommonsReportPhase2.pdf) and [https://static1.squarespace.com/static/5855aade3e00be1ae0b98fb2/t/5cce0a76eef1a108d731746b/1557006971607/RMI\\_SolarCommonsReportPhase1.pdf](https://static1.squarespace.com/static/5855aade3e00be1ae0b98fb2/t/5cce0a76eef1a108d731746b/1557006971607/RMI_SolarCommonsReportPhase1.pdf). Kathryn Milun is the founder and principle researcher of the Solar Commons Project which created and prototypes the SCCTM. Dr. Milun is licensed to use the trade-marked name “Solar Commons” and to design the standards and processes of the SCCST model as it is prototyped and developed into shareable, open source tools for all communities to use. The first Solar Commons prototype was connected to the grid in Tucson, Arizona in 2018.

<sup>5</sup> The basics of the Solar Commons Community Trust Model (as explained in more detail in Section III of this Article) are as follows: (1) community actors wishing to fund a project or program serving a **low-income, reparative justice need** in their community (2) find a willing a civic-minded organization to host a solar array **in trust** on its building or real property; (3) working with a solar installer, the community group determines the costs and site requirements for a solar installation, (4) sources donations or financing for **the solar** array, (5) builds the array for the trust and (6) creates a trust agreement with community members outlining how the energy savings resulting from the array’s output realized on the host’s electricity bill will be monetized and used to create a community benefit. The host (7) becomes a Solar Commons co-trustee along with community actors and (8) follows the directives of the trust agreement to subtract any hosting costs and pass the remaining sum on to the beneficiary--an organization, community group or program serving the identified low-income need.

To understand the dual contribution that the SCCTM makes as a practical equity solution and as a broader conceptual tool for legal innovation, this Article notes how the SCCTM overcomes specific limitations of U.S. community solar ownership and considers the broader conceptual issues inherent in how the current dominant property regimes supporting U.S. energy ownership. Notably, existing US community solar ownership models are embedded in the dominant ownership models and distribution infrastructures of twentieth-century electric grids and utilities—large scale technologies with centralized ownership institutions overlaid by private property and public regulatory regimes. We ask the reader to consider whether these current energy ownership models, designed for extractive fuel industries of coal, oil and gas, have the conceptual property framework to further the distributed ownership potential inherent in renewable energy resources like solar and wind. (The authors and several legal scholars think they do not.<sup>6</sup>) The sun shines and the wind blows for everyone. These renewable energy resources have potential to expand energy democracy in the United States. The authors argue that solar-generated electricity is a twenty-first-century common property resource whose potential is limited by dominant private and public property regimes of the twentieth century.

Current U.S. community solar ownership models, in particular, demonstrate the impacts of conventional property regime constraints when they fail to serve community need in two key

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<sup>6</sup> Shalanda H. Baker, *Unlocking the Energy Commons: Expanding Community Energy Generation* in LAW AND POLICY FOR A NEW ECONOMY: SUSTAINABLE, JUST AND DEMOCRATIC 211 (Melissa K. Scanlan, ed., 2017). Alexandra B. Klass, *Property Rights on the New Frontier: Climate Change, Natural Resource Development, and Renewable Energy*, 38 ECOLOGY L.Q. 363 (2011); Saskia Vermeylen, *Resource Rights and the Evolution of Renewable Energy Technologies*, 35 RENEWABLE ENERGY 2399 (2010); Dan Van Der Horst & Saskia Vermeylen, *The New Energy Commons: Exploring the Role of Property regimes in the Development of renewable Energy Systems* (paper presented at the Twelfth Biennial Conference of the International Association for the Study of Commons, University of Gloucestershire, Cheltenham, June 14–18, 2008); see generally Margaret A. McKean, *Common-Property Regimes as a Solution to Problems of Scale and Linkage*, in RIGHTS TO NATURE: ECOLOGICAL, ECONOMIC, CULTURAL, AND POLITICAL PRINCIPLES OF INSTITUTIONS FOR THE ENVIRONMENT 223 (Susan Hanna et al. eds., 1996).

ways: first, there is a paucity of community solar ownership models—basically three-- available in the United States.<sup>7</sup> Second, individual households, not the collective community, are the beneficiaries from these types of “community solar” ownership.<sup>8</sup> Notably, with current ‘community solar’ ownership models, only *individual* households receive the solar savings on their private net energy metered electric bills. By contrast, the Solar Commons Community Trust Model passes an array’s solar savings to a community trust fund that can be used to run after-school programs, job trainings, safer spaces to play and congregate, in short common goods that empower the community as a whole.

The authors will show how the Solar Commons Trust Model addresses the above problems in practical and conceptual ways. From a practical standpoint, the Solar Commons Community Trust Model creates an equitable title for low-income community stakeholders to be “owners” of

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<sup>7</sup> Compare with, for example, the variety of citizen-owned, community solar ownership models in the European Union, in particular coming from Scotland in JOSH ROBERTS ET AL., CLIENT EARTH COMMUNITY POWER: MODEL LEGAL FRAMEWORKS FOR CITIZEN-OWNED RENEWABLE ENERGY (2014). Recently, the U.S. Department of Energy sought to trigger innovation around community solar ownership models for moderate and low-income communities by sponsoring the eighteen month “Solar in Your Community Challenge” competition which ended in 2018. *See Solar in Your Community Challenge*, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, <https://www.energy.gov/eere/solar/solar-your-community-challenge> (last visited July 30, 2019). The Solar Commons Project was a finalist in this competition.

<sup>8</sup> The three types of U.S. community solar ownership, all of which remove the locus of control away from the consumer and are aimed, by design, to benefit utility-scale generation and economies of scale. The three types of community solar ownership all involve “the construction of a solar generation facility; a promoter or sponsor who solicits subscriptions for the project; and once the project is fully subscribed, the promoter receives any relevant tax or renewable energy credits and the electricity generated is credited to subscribers.” *See Baker* *supra* note 6, citing JASON COUGHLIN ET AL., NAT’L RENEWABLE ENERGY LAB, A GUIDE TO COMMUNITY SHARED SOLAR: UTILITY, PRIVATE, AND NONPROFIT PROJECT DEVELOPMENT note 10, at 7 (2012). The three ownership types are: utility or third-party owned projects; special purpose entity-owned projects; and non-profit owned projects (COUGHLIN ET AL., note 10, at 7). Baker notes that while all three community solar ownership models emerged from the complex “energy policy soup” that aimed at addressing the equity issues of the solar income gap, they did little to offer authentically equitable opportunities for community energy development, did little to foster more distributed models of generation and they remain inadequate to serve moderate and low-income communities. Baker further notes that while “[a] cottage industry of sorts has emerged to capitalize on new models of customer-owned generations . . . however, [the National Renewable Energy Lab continues to emphasize] that utilities should take the lead in developing such projects.” Baker, *supra* at 215-217.

the benefits of a local solar array. Solar Commons also offer a process for stakeholders to participate in the local governance of these solar-generated community benefits for the duration of the solar panels' life. Finally, by generating money for the Solar Commons Trust fund, a Solar Commons-owned array produces an income stream maximized to support local low-income community empowerment programs.

It is important at this point to introduce the concept of the “commons”, a foundational framework of the Solar Commons Community Trust Model. From a conceptual standpoint, the SCCTM treats the clean energy of the sun as a common property generating common wealth.<sup>9</sup> In doing so, Solar Commons Trusts engage the terminology and framework of “commons”<sup>10</sup>, recalling both the historic function of trust ownership in stewarding common property energy

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<sup>9</sup> Common property regimes, generally speaking, define rights and duties that a group of resource users share toward a resource. Common property regimes change with the nature of the resource they govern. Air, water and biodiversity, for example, are diverse common property resources with diverse governance rules. Changes in technology can also create new kinds of common property resources, as with the emergence of the internet and photovoltaic electricity generation. For a general introduction to common property regimes, see ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990). See also Margaret A. McKean, *Common property: What is it, What is it Good for, and What Makes it Work*, in PEOPLE AND FORESTS: COMMUNITIES, INSTITUTIONS, AND GOVERNANCE 27–55 (Clark Gibson et al. eds., 2000); Bob Pokrant, *Common Property Theory*, in GREEN POLITICS: AN A-TO-Z GUIDE 64–66 (Dustin Mulvaney & Paul Robbins eds., 2011). For a discussion of the emergence of common property regimes for governing shared resources whose conditions are given in terms of the biophysical realities and potentials of twenty-first century environments and technologies, see DAVID BOLLIER & BURNS H. WESTON, GREEN GOVERNANCE: ECOLOGICAL SURVIVAL, HUMAN RIGHTS, AND THE LAW OF THE COMMONS (2013).

<sup>10</sup> The term “commons” denotes both the modern understanding of shared resources—natural, social, cultural—in which each stakeholder has an equal interest,” C. Hess, *Research on the Commons, Common-Pool Resources, and Common Property*, DIGITAL LIBR. COMMONS (Oct. 2006), <http://dlc.dlib.indiana.edu/dlc/contentguidelines>, as well as the historical practice of “commoning” as practiced in England on shared agricultural fields, grazing lands and forests, see CONTESTED COMMON LAND: ENVIRONMENTAL GOVERNANCE PAST AND PRESENT (Christopher P. Rodgers et al. eds., 2012). The concept of “commons” also exists in the Roman legal category *res communis*, applied to things common to all to be used and enjoyed by everyone (e.g., air, water, seashore) extended in international law to include the high seas, the earth’s atmosphere, outer space and other global domains now accessible through new technologies. See KATHRYN MILUN, THE POLITICAL UNCOMMONS: THE CROSS-CULTURAL LOGIC OF THE GLOBAL COMMONS (2018). More recently the concept of “commons” has been applied to the modern energy sector. See Shalanda Helen Baker, *supra* note 6. See JEFFREY R. BROWNSON, SOLAR ENERGY CONVERSION SYSTEMS 287 (2013).

resources (such as forests, agricultural fields, and peat bogs as “commons” for underserved communities in feudal property regimes) and the contemporary function of commons terminology to describe emerging digital domains (such as the internet built on infrastructure code supporting “net neutrality” and Creative Commons licensing). Like the radically new internet and the enduring ancient forest commons, solar energy offers technological and social equity opportunities to use common property terms and frameworks.

Through its conceptual and practical solutions, the Solar Commons Community Trust Model enables creative, effective and meaningful community ownership for the free, ubiquitous, renewable, and common property resource of solar energy.<sup>11</sup> SCCTM allows communities to hold solar energy assets even within current utility ownership structures, which have many obstacles regarding renewable energy ownership. By accomplishing this, Solar Commons Community Trust Model creates an iterable and scalable way to create equitable interests for low-income communities in the sun’s common wealth, produce common good benefits to communities, and expand intergenerational equity by demonstrating how to name, claim, and legally reframe specific earth resources as common property for common good.

Thanks to its practical value for local communities and its innovative use of trusts, the Solar Commons Trust Model can also be viewed in the larger context of the role that trust law has historically played in the reform of the English legal system. Harvard law professor A.W. Scott,

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<sup>11</sup> Writing of the value of community owned solar in the new, sustainable economy, Kevin Jones, Director of the Vermont Law School Energy Clinic notes: “It is paramount that this free, ubiquitous and renewable resource should be locally owned and developed in a manner that respects the local landscape, enhances community wealth, and brings the community together in celebration of the magnificence of the sun.” Kevin B. Jones & Mark James, *Distributed Renewables in the New Economy: Lessons from Community Solar Development in Vermont*, in LAW AND POLICY FOR A NEW ECONOMY 210 (Melissa K. Scanlan ed., 2017).

the author of a foundational twentieth century treatise on the law of trusts<sup>12</sup> noted this dual function of trust law in his historical essay *Trust as an Instrument of Law Reform*.<sup>13</sup> The trust, Scott emphasized, was fundamentally a practical tool: “No logician, no philosopher, could have evolved [the trust]. It has developed as it has as a practical means of accomplishing certain results which could not otherwise have been easily attained.”<sup>14</sup> But, thanks to its practical nature, Scott noted, the trust played a fundamental role in reforming key areas of English law: “It was chiefly by means of uses and trusts that the feudal system was undermined in England...that the economic position of married women was ameliorated...” and that civic associations, charities and business enterprises were enabled to accomplish their purposes.<sup>15</sup> The Solar Commons Community Trust Model, we argue, has the capacity to carry on the historic tradition of law reform and innovation noted by Scott: it is at once a practical response to the limitations of current U.S. community solar ownership models and, as we demonstrate in this Article, it can play a larger role supporting legal reform of our fossil fuel-based electricity system.

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<sup>12</sup> See AUSTIN W. SCOTT & WILLIAM F. FRATCHER, THE LAW OF TRUSTS (Mark Ascher ed., 4th ed. 1987). Scott’s work was also the foundation for the Uniform Trust Code issued in 2000 by the National Conference of Commissioners on Uniform State Laws, a nonprofit association which promotes the adoption of uniform laws from state to state. See UNIF. TRUST CODE (UNIF. LAW COMM’N 2005). As of 2018, thirty-one states have adopted the Uniform Code in part or in whole. For updates on state adoption, see the website of the Uniform Law Commission at <https://www.uniformlaws.org/committees/community-home?CommunityKey=193ff839-7955-4846-8f3c-ce74ac23938d> (accessed September 30, 2019). For a discussion on the unification of trust law, see John H. Langbein, *Why Did Trust Law Become Statute Law in the United States*, 58 ALA. L. REV. 1069 (2006).

<sup>13</sup> Austin W. Scott, *Trust as an Instrument of Law Reform*, 31 YALE L.J. 457 (1922).

<sup>14</sup> *Id.* at 468. Scott notes that “it was the trust device which actually was chiefly instrumental in bringing [these reforms] to pass.” *Id.* at 458. Scott sums up the history of trust law by noting:

The development of the trust idea has involved a great deal of muddling and a great deal of common sense; little of sound logic, but much of expediency. It is no wonder that Gierke said to Maitland that he could not understand the English trust. No logician, no philosopher, could have evolved it. It has developed as it has as a practical means of accomplishing certain results which could not otherwise have been easily attained.

*Id.* At 468.

<sup>15</sup> *Id.* at 457-458.

The following Section (Part II) provides historical context for the argument that, just as trust ownership was a tool for legal reform of past property regimes, SCCTM has the capacity to be a vehicle for legal reform in current U.S. energy ownership. This historical section demonstrates why trust ownership is a logical legal tool to help address inequities facing low-income communities who want to capture wealth from the solar market today. From its earliest uses to circumvent inequitable property regimes of the feudal English economy to its later uses to bypass restrictions in public and private property regimes and avoid inequities of market speculation in a capitalist economy, trust ownership has evolved to become an efficient vehicle to gain control of an asset despite obstacles of the dominant property regimes of its times. Part II describes enduring features of trust law adapted by the SCCTM to create a new, equitable model for trust ownership within the emerging field of distributed solar energy.

Part III provides a practical outline of the Solar Commons Community Trust Model, pointing out how it applies principles of trust creation to low-income community ownership of solar energy assets. Two detailed scenarios of Solar Commons Trust creation, in practice, are offered based on Solar Commons prototypes which the authors have worked on in the United States.

Part IV considers the legal ramifications of using the SCCTM and describes how the model avoids policy barriers facing deployment and scaling of community solar in the United States today.

Part V evaluates the contribution of Solar Commons Community Trust Model in the areas of intergenerational equity and institution-building for twenty-first century common-property regimes that serve the common good.

The Article concludes by reiterating the enduring value of using one of the oldest forms of property ownership, the trust, to direct and manage the benefits of a twenty-first century technological asset, solar energy, for intergenerational equity.

## II. TRUST OWNERSHIP AS A PRACTICAL PROBLEM-SOLVING AND CONCEPTUAL LEGAL REFORM TOOL IN FEUDAL, MODERN, AND CONTEMPORARY PROPERTY REGIMES

Solar Commons Trusts use basic legal structures that have evolved in the Anglo-American common law tradition to form a creative, well-tested vehicle to gain control of an asset outside the constraints of the dominant property regimes of the time. By recounting the strategic uses of trusts in the past, this Section provides deep insight into why trusts offer a logical ownership vehicle today for low-income communities whose equitable interests in accessing the common wealth benefits of solar energy are not adequately served by current U.S. solar energy ownership models.

### A. Trusts in Feudal Property Regimes

In medieval England, trust ownership evolved to be a creative solution, enforced by equity courts, to hold assets in land that would otherwise be subject to the hierarchical ownership rules and obligations of the feudal property system imposed by the Norman Invasion of 1066.<sup>16</sup> After the invasion, all land in England was owned by the King who could grant estates in land to lords who in turn could parcel out property to tenants. The feudal property regime was generally ineffective for serving vulnerable groups such as women (who could not own property) and

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<sup>16</sup> See SIR JOHN BAKER, INTRODUCTION TO ENGLISH LEGAL HISTORY (5th ed. 2019).

soldiers (who were away from their land during wartime).<sup>17</sup> Thus, an early solution-oriented form of trust ownership often involved a knight or a tenant of a feudal estate entrusting the legal title of their land to a friend or relative who would swear to return the property to them or their heir after a given period of time in order to avoid the land being turned over to the wardship of the lord of the manor. Both soldiers away on crusade and widows unable to hold their deceased husband's property might ask a trustworthy male friend or relative to hold legal title of their land in trust for safekeeping until they returned from that distant war or their male children were of age to inherit. Without this entrustment of property, soldiers, widows, and their heirs would be deprived of the future benefits the property could provide for them. The effect of such trust ownership uses was thus to sever land ownership into a legal title (which was held by the entrusted friend) and an equitable title which favored the beneficiary. The SCCTM also uses these legal structures to sever ownership of a solar asset into a legal title (held by the owner of the site hosting the solar array) and an equitable title (held by an entity mandated to serve the common good needs of a specific low-income community).

The SCCTM also uses trust ownership relationships that emerged with the feudal property status of agricultural and energy “commons.” Feudal commons are lands belonging to the lord of a feudal manor that contain specific agricultural fields and pastures for food provisioning or wetlands and forests rich in energy resources like peat and wood—in short, land parcels which, through established custom, had served the subsistence needs of local farmers and villagers from

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<sup>17</sup> For a discussion of the rules that disadvantaged women and minors in the inheritance regime of medieval England, see W.S.WS Holdsworth, A HISTORY OF THE ENGLISH LAW 442–48 (3d ed. 1924). For a discussion of how trusts were used to remedy disadvantages faced by soldiers away from their land, see Scott, Austin W. Scott, "Trust as an Instrument of Law Reform, 31." YALE L.J. 457LJ 31 (1921).): 457.

time immemorial.<sup>18</sup> Post-conquest English common law could recognize and protect the customary uses<sup>19</sup> of these land parcels as *commons*, often using trust arrangements to secure and manage these food and energy resources for the benefit of the local peasant class who could not own land.<sup>20</sup> A peasant's user right in designated arable fields, woods, and even streams might belong as an appurtenant equity interest to generations of inhabitants (beneficiaries) of cottages residing on manor lands.<sup>21</sup> The aristocratic or ecclesiastic land owners who held legal title to these lands would also hold fiduciary duties to maintain access to and sustainably manage the *commons* which often had local bylaws that were well-known and adapted over time for local peasant users.<sup>22</sup> Fiduciary duties to oversee these lands might be held by a manor overseer or a parish-level civic counsel.

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<sup>18</sup> See Susan Oosthuizen, *Archaeology, Common Rights and the Origins of Anglo-Saxon Identity*, 19 EARLY MEDIEVAL EUROPE 153 (2011); Susan Oosthuizen, *The Roots of the Common Fields: Linking Prehistoric and Medieval Field Systems in West Cambridgeshire*, 4 LANDSCAPES, July 2003, at 40.

<sup>19</sup> See also E. P. THOMPSON, CUSTOMS IN COMMON 259-351 (1991) (discussing the relationship between customary law, commons, and the idea of a persistent “moral economy” in late feudal and early capitalist England); Marc Edelman, *E. P. Thompson and Moral Economies*, in A COMPANION TO MORAL ANTHROPOLOGY 49–66 (Didier Fassin ed., 2012) (“Thompson’s use of ‘moral’ in moral economy conflated two interrelated meanings of the word (sometimes with more emphasis on one than the other). The first is ‘moral’ in relation to ‘mores’ or customs, with both understood as historical products thoroughly interwoven in a social fabric... The second meaning of ‘moral’ relates to a principles stance vis-à-vis society, the world, and especially the common good, with the latter defined both in terms of customary rights and utopian aspirations.”); KARL POLANYI, THE GREAT TRANSFORMATION: THE POLITICAL AND ECONOMIC ORIGINS OF OUR TIME (Boston: Beacon Press 2001) (1944) (arguing that the commons and stunted local markets that protected English peasants during this period formed a “moral economy” that would be challenged by larger scale financial arrangements arising with capitalism).

<sup>20</sup> Common Law cases (court upholding rights of “non-property owners”); G.H. JONES, HISTORY OF THE LAW OF CHARITY, 1532-1827, at 22, 25, 72 (1969); W.K. JORDAN, PHILANTHROPY IN ENGLAND 75, 143 (2016); see also Sara Birtles, *Common Land, Poor Relief and Enclosure: The Use of Manorial Resources in Fulfilling Parish Obligations 1601–1834*, 165 PAST & PRESENT, Nov. 1999, at 74 (1999). “The use of common land in sustaining the poor, as it developed, fell within the sphere of philanthropy and was thus insulated from the formal relief structure. The practical and monetary benefits arising from such perpetual charities were so great in the early years of the poor law that its full implementation was unnecessary except in years of particular hardship.” *Id.* at 82.

<sup>21</sup> See Birtles, *supra* note 20. In the feudal land ownership system, the poor included paupers (landless poor) and “cottagers” who were peasants working on manorial lands and holding rights to inhabit cottages that belonged to the manorial estate. User rights (enfeoffments to use) in local commons were rights that were allotted (appurtenant) to the cottage itself.

<sup>22</sup> For an example of commons bylaws see A. J. Winchester, *Upland commons in northern England, in THE MANAGEMENT OF COMMON LAND IN NORTH WEST EUROPE, C. 1500-1850* at 33–57 (Martina De Moor et al. eds., 2002).

When legal title to land containing such designated *commons* was conveyed for charitable purposes to a local church, a trust might be used so that churchwardens of the local parishes would become trustees of the equitable property interests of the peasant commoners (beneficiaries).<sup>23</sup> As early as the thirteenth century, the Magna Carta also recognized and protected use rights throughout the King's forests and fens for commoners to collect firewood (estover); to graze cattle (agistment); to cut turf/peat for fuel (turbary) and much else.<sup>24</sup> Trust law often provided the equitable solution to secure these use rights for the intergenerational needs of the peasant class who were not allowed to own land.

It is a sign of the robust nature of trust ownership that, to this day in Ireland, England, Wales, and Scotland, the ancient practice of energy commoning still functions. U.K. citizens in rural areas exercise their equitable property rights to local turbary and forest commons to cut peat and gather wood to heat their homes.<sup>25</sup> The National Land Trust is one institution that continues

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<sup>23</sup> Birtles, *supra* note 20, at 81–82 (“Churchwardens and [manorial] overseers acted as trustees when administering charitable bequests, a role they kept separate from the distribution of parish relief.”). For a discussion of manorial jurisdictions, see William J. Jones, *A Note on the Demise of Manorial Jurisdiction: The Impact of Chancery*, 10 AM. J. LEGAL HIST. 297 (1966).

<sup>24</sup> While students of law are familiar with the Magna Carta's description of basic civil liberties and rights to protection from the sovereign's arbitrary abuses of power, less well known are the Magna Carta's forest provisions for commoners. The Magna Carta's Forest Charter was one of the first written documents on the limits of privatization. See DAVID BOLLIER & BURNS H. WESTON, *supra* note 9. See also Peter Linebaugh, THE MAGNA CARTA MANIFESTO: LIBERTIES AND COMMONS FOR ALL (2008) (discussing the variety of rights included in “commoning”, particularly grazing rights, estovers—the taking of wood from the common for specified use upon the appurtenant property, and the right of turbary—the cutting of turf and flags for fuel in the house to which the right is attached).

<sup>25</sup> The persistence of diverse rights of common in the United Kingdom today is noted in several contemporary venues. See, e.g., *Turbary and Estovers: Even the Hearthstone Has Rights!*, NEW FOREST COMMONER (Dec. 10, 2013), <http://newforestcommoner.co.uk/2013/12/10/even-the-hearthstone-has-rights/>

“The ancient rights of common were not assigned to an individual but to the property. If the homeowner sold the house the rights would pass to the next owner. In the case of Turbary and Estovers, upon which many commoners depended, the rights were assigned to a specific part of the house, namely the hearthstone or fireplace. If a commoner, with fuel rights, rebuilt his dwelling elsewhere on his land he was careful to preserve the old fireplace. De Crespigny and Hutchinson remarked, “it is for this reason that we sometimes

the function of fiduciary protector of local energy provisioning practices in the United Kingdom by holding the legal property title and sustainably managing the peat or forest resource for the commoners' benefit. By splitting the ownership of land into a legal title and an equitable title, these forests and turbary *commons* are precursors to the energy commons proposed by the Solar Commons Community Trust Model: they are examples of the historic capacity of trust law to deliver, over centuries, intergenerational equity by using energy derived from the *commons* to provide for the needs of underserved households. Even within a legal system that protected the interests of the dominant feudal land owners, trust ownership provided a vehicle to protect the equitable interests of landless commoners, women, and soldiers over generations. The SCCTM owes its name, its roots in intergenerational equity, and its robust legal structure to the historic English energy commons.

## B. Trusts and Modern Property Regimes

How does the SCCTM use the features of trust ownership to update the concept of an “energy commons” to serve low-income communities with the new, distributed, solar energy-capturing technologies of the twenty-first century? To answer this, it is important to understand how trust law evolved from serving those who were under-represented in feudal property regimes (peasants, women, soldiers) to serving the emerging issues of ownership in a modern private property regime with expanding capitalist markets. Indeed, the same trust features that were creatively used in the past were flexible enough to adapt over time. In particular, two features made

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see in the Forest a fireplace curiously situated in a cabbage bed or an orchard, with no apparent function or reason for existence. It stands there in witness of its owner's rights of fuel.”

*See also Commoning in the New Forest*, NEW FOREST DISTRICT COUNCIL (Feb. 7, 2020), <http://www.newforest.gov.uk/article/295/Commoning-in-the-New-Forest> (describing commoners' rights in the New Forest).

trust ownership an attractive tool to protect property assets within the growing powers and emerging institutions of markets and states: the trust's capacity to own and manage property 1) with severed title and 2) without specific permissions from outside authority (of either feudal lords or modern states). These two features of trust ownership made it an attractive, regulation-light vehicle for expanding modern businesses and protecting ownership interests over the past half century. By understanding how these two features—severed title and the protected privacy to create trust agreements—became useful ownership strategies to avoid restrictions in modern property regimes, it becomes clearer why the SCCTM provides a logical and equitable solution for holding solar resource assets for low-income-communities within the dominant ownership structures of regulated electric utilities and monopoly-owned grids, legal structures which are proving resistant to the new renewable energy technologies and pollution standards which increasingly assume the common property values of sunshine, wind, clean air, and a robust climate system.

Severed title proved to be a useful ownership tool during both the waning of feudalism and the expansion of the private property system under capitalism. While feudal law had ensured intergenerational property transfer through patriarchal birthright (namely, the rule of primogeniture), by the sixteenth century and with the rise of a money economy, English landowners would use trusts to convey the legal title of their land to third parties for the purpose of avoiding some of the harsh realities of the feudal inheritance rules.<sup>26</sup> By creating a trust, landowners could also protect their property from creditors,<sup>27</sup> and ensure their property would

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<sup>26</sup> See John Morely, *The Common Law Corporation: The Power of the Trust in Anglo-American Business History*, 116 COLUM. L. REV. 2145 (2016).

<sup>27</sup> *Id.* at 2167; also see generally RESTATEMENT (THIRD) OF TRUSTS (AM. LAW INST. 2012).

continue to be used for a particular purpose after their death.<sup>28</sup> To do so property owners would sever the title of their property. The landowner would transfer the legal title to a third party, the trustee, and retain the equitable, or beneficial, title.<sup>29</sup> In the context of the emerging private property laws of the time, the landowner became the settlor of the trust by conveying the legal title and either retained the right of enjoyment of the property or gave the equitable title to someone else, such as their spouse, tenants, female or minor children (i.e., beneficiary).<sup>30</sup> This arrangement entitled the beneficiary to have all of the benefits of ownership (i.e., equitable title)—such as the benefit of use, enjoyment, and the right to profits—while simultaneously protecting the loss of that interest.<sup>31</sup> By functioning as an ownership vehicle with creditor protection, the trust model became even more popular.<sup>32</sup> While some creditor protections of trust law have remained the same, many aspects have evolved throughout the centuries and led to its application in other areas of practice.<sup>33</sup>

**Severed title** of trust ownership thus became a useful modern tool for holding assets in the

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<sup>28</sup> *Id.* at 2155

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at 2151; also see generally RESTATEMENT (THIRD) OF TRUSTS (AM. LAW INST. 2012).

<sup>31</sup> *Id.* at 2155

<sup>32</sup> Historically, a creditor could only establish a claim against a legal property interest held by the debtor. By severing the legal and equitable title, the settlor transferred their ownership interests to the trustee and beneficiary, respectively. The beneficiary held an equitable interest and had no right to transfer or encumber the property and thus did not risk losing legal title, which was held by the trustee. Correspondingly, the same was true for the settlor who no longer risked losing legal title. On the other hand, the trustee, who held the legal title, had no right to benefit from the property and thus the creditors of the trustee found themselves without reparation. *Id.* The same creditor protections offered by trust are unique and still not available to most third party beneficiaries under contract law. David M. Summers, “Third Party Beneficiaries and the Restatement (Second) of Contracts”, 67 *Cornell L. Rev.* 880 (1982). Since the recognition of third party beneficiary rights, courts have grappled with two major problems: (i) third party beneficiary law should be able to allow equitable recovery without conferring enforcement rights upon every party who might receive some benefit from a contract; and (ii) it is important to preserve the rights of the original parties to modify their contract without nullifying the protection of third party rights. *Id.* at 880. Trust law, by contrast, acknowledges a beneficiaries rights by permitting greater enforcement protections. See generally RESTATEMENT (THIRD) OF TRUSTS (AM. LAW INST. 2012) and Unif. Trust Code (Unif. Law Comm'n 2005)

<sup>33</sup> John H. Langbein, “The Secret Life of the Trust: The Trust as an Instrument of Commerce”, 107 *Yale L.J.* 166 (1997).

transition from a feudal to a capitalist market economy. Today, the SCCTM uses severed title as a way to protect the equitable (or beneficial) property interests of low-income communities to their commonwealth share of the energy resource of the sun.

In addition to the tool of severed title, trust ownership offered another creative and protective feature to manage an asset despite restrictions in the dominant property rules of its time. While feudal trust arrangements were used to protect private estates (for the equitable benefit of absent soldiers or widows) and land shared as *commons* (for the equitable benefit of landless peasants) from coming under the full authority of a feudal lord, later trust ownership evolved to protect interests in private property and in public lands from, respectively, the growing powers of the regulatory state and the emerging market economy. Thus, over the nineteenth and twentieth centuries, we find trust ownership becoming (especially in the United States) a popular ownership structure for large businesses with many passive investors<sup>34</sup> and a useful governance structure to restrict harmful economic development on private and public lands.<sup>35</sup> What features of trust ownership allowed both large businesses and local and state land conservationists to manage their financial and natural resource assets in ways that creatively circumvented the powerful legal regimes in which they were embedded? To answer this question, we need to look specifically at how the trust business model and the trust land conservation model adapted trust law to the conditions of their time. Understanding this, we can see the underlying logic of using trust ownership today for gaining control of distributed solar energy technologies for the interests of low-income communities in the United States.

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<sup>34</sup> *Id.* at 170.

<sup>35</sup> John L. Sax, “The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention”, 68 *Michigan L. Rev.* 471 (1970). Also see Ciriacy-Wanrup, S. V., and Richard C. Bishop. “‘Common Property’ As A Concept In Natural Resources Policy” 15 *Natural Resources Journal* 713 (1975).

Beginning with the rise of the business trust, we see the flexibility and privacy of trust creation offering an advantage over another key form of business ownership arising at the time: the corporation. Both trusts and corporations were emerging as organizational structures for businesses during the transition from a feudal to a regulated market economy. The early form of the business corporation, however, was actually a more restricted ownership vehicle than the trust. While English courts recognized centuries of trust common law and statutory authority to enforce the business trust's obligation to serve the interests of its' company's *passive* investors (i.e., the beneficiaries of the trust),<sup>36</sup> the English corporation, on the other hand, was a new and more unpredictable ownership vehicle. It required the additional step of a license (at first from the king and subsequently from parliament) to gain recognition and protection from the law. Moreover, the license of the early business corporation generally permitted the corporation to serve only a particular purpose in the interests of its *active* investors. The business corporation thus initially evolved as an ownership vehicle that had more government restrictions than the trust.<sup>37</sup> Contrary to their function in the twentieth century, the early English corporations were often used to raise capital to fund defined *public* purposes. In eighteenth- and nineteenth-century England, for example, corporations raised money to build railways and canals. These early corporations had active investors, shareholders who provided capital for construction, but their role as investors was subordinate to the primary function of the corporation which was to fulfill their state-licensed condition of bridge-building or canal construction. Once they served their licensed purpose, the corporation dissolved. Indeed, it was not until the twentieth century that the interests of corporate

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<sup>36</sup> *Dodge v. Ford Motor Co.*, 170 N.W. 668 (Mich. 1919). While fiduciary duties can exist in other legal relationships, such as contractual relationships, this article focuses on the use of trust law to enforce centuries of trust common law and statutory authority to monetize the benefits of solar energy to low income and underserved communities.

<sup>37</sup> See Colin Meyer et al., *Ownership: Evolution and Regulation*, 22 REV. FIN. STUD. 4009 (2009).

shareholders to generate profits on their investment became the established primary function of the publicly-licensed corporate form.<sup>38</sup> Thus, in the early days of capitalism, the business trust had the advantage of trust law to enforce centuries of trust common law and statutory authority whereas the corporation rested on newly developing statutes that could be both rigid and unstable. Over time, trust-based companies became known as “unincorporated” companies and corporation-based companies were known as “incorporated” companies.<sup>39</sup>

Both trusts and corporations grew in popularity in the late 1600s and early 1700s, with perhaps a hundred unincorporated trust-based companies operating in England by the late 1600s.<sup>40</sup> The trust, as a business model, made its way to America and remained popular throughout the early part of the twentieth century due in large part to the fact that statutes in the United States disincentivized the incorporation of American companies.<sup>41</sup> Eventually, by the eighteenth century,

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<sup>38</sup> See COLIN MEYERS, FIRM COMMITMENT: WHY THE CORPORATION IS FAILING US AND HOW TO RESTORE TRUST IN IT (2013). Today there is a renewed interest in how the corporate business model might once again serve the public interest through restrictions that involve fiduciary duty. The public-benefit corporation, for example, is specific type of corporation that allows for public benefit to be a charter purpose in addition to the traditional corporate goal of maximizing profit for active shareholders. See David G. Yosifon, *Opting out of Shareholder Primacy: Is the Public Benefit Corporation Trivial*, 41 DEL. J. CORP. L. 461 (2016); see also Alissa Mickels, *Beyond corporate social responsibility: Reconciling the ideals of a for-benefit corporation with director fiduciary duties in the US and Europe*, 32 HASTINGS INT'L & COMP. L. REV. 271 (2009).

<sup>39</sup>See Paddy Ireland, *Capitalism Without the Capitalist: The Joint Stock Company Share and the Emergence of the Modern Doctrine of Separate Corporate Personality*, 17 J. LEGAL HIST. 41 (1996).

<sup>40</sup> See John Morely, "The Common Law Corporation: The Power of the Trust in Anglo-American Business History." Colum. L. Rev. 116 (2016): 2145 -- at 2158.

<sup>41</sup> American laws offered much harsher treatment of companies that chose to incorporate. These laws detailed, among other things, shareholder voting requirements, maximum capitalization limits, personal liability for directors, restrictions on dividend payments, complicated appraisal remedies in mergers, and restrictions on ownership of shares in other corporations. Ron Harris & Naomi Lamoreaux, Contractual Flexibility Within the Common Law: Organizing Private Companies in Britain and the United States 13 (June 2010) (unpublished manuscript), (<http://economics.yale.edu/sites/default/files/files/Faculty/Lamoreaux/Contractual-Flexibility-10.pdf> [<http://perma.cc/2J8U-J9WS>]). (noting American incorporation statutes were restrictive in that they limited the size of the corporation, limited the business in which it could engage, and mandated governance structures). See generally Harwell Wells, *The Modernization of Corporation Law, 1920–1940*, 11 U. PA. J. BUS. L. 573 (2009).

English incorporation statutes required all English businesses to incorporate. In contrast, the general corporate statutes in the United States did not mandate the incorporation of all American businesses. Instead, for U.S. companies that did not like the rigidity of the corporation statutes, a trust business model offered governance from the robust body of trust law without the uncertainty and inflexibility of the new corporation statutes at the time.<sup>42</sup> Trusts gave a company more flexibility than the corporate statutes that were still evolving at the time.<sup>43</sup> Perhaps the most attractive perceived option in terms of flexibility was that, unlike a corporation, a trust could be formed privately, without any public filings.<sup>44</sup> As a result of optional incorporation, many American companies during this era chose the trust-based structure. Trust ownership allowed American businesses to avoid the more onerous legal filing and governance requirements imposed by the incorporation laws and thus enjoy greater privacy from public scrutiny.<sup>45</sup> As a result, the business trust was popular in the United States as a “regulation-light”<sup>46</sup> alternative to the corporate form.<sup>47</sup> The most prominent examples of the trust’s enduring popularity in the United States were the large monopoly trusts that enabled railroad companies and businesses such as United States

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<sup>42</sup> The New York Constitution of 1846, for example, indicated that “[c]orporations may be formed under general laws” but did not require businesses to incorporate. Ronald E. Seavoy, *The Origins of the American Business Corporation, 1784–1855*, at 183 (1982).

<sup>43</sup> See John Morely, "The Common Law Corporation: The Power of the Trust in Anglo-American Business History." Colum. L. Rev. 116 (2016): 2145-- at 2166

<sup>44</sup> See 1 FRANCIS WILLIAMS SANDERS, AN ESSAY ON USES AND TRUSTS, AND ON THE NATURE AND OPERATION OF CONVEYANCES AT COMMON LAW, AND OF THOSE, WHICH DERIVE THEIR EFFECT FROM THE STATUTE OF USES 15–16 (4th ed. 1824) (indicating that conveyances in trust had been made in secret since late medieval times).

<sup>45</sup> See John Morely, "The Common Law Corporation: The Power of the Trust in Anglo-American Business History." Colum. L. Rev. 116 (2016): 2145-- at 2157.c.

<sup>46</sup> *Id.* at 2164.

<sup>47</sup> *Id.*

Steel and Standard Oil to accumulate enormous private wealth, eventually leading to the “anti-trust” backlash at the end of the nineteenth century.<sup>48</sup>

As governance regimes of modern states and markets gained power in the twentieth century, ironically, the same features of trust ownership that made trusts popular for businesses to expand and secure private property assets also made trusts useful for public and community ownership of assets. Severed title and trust governance proved to be popular forms for local and state land, water and wildlife conservation.<sup>49</sup> The community land trust movement<sup>50</sup> also demonstrated that local associations could use trust ownership to remove land from speculative markets and gentrification, holding the land in trust for the benefit of low-income home owners and apartment renters<sup>51</sup> and, in the case of agricultural land,<sup>52</sup> for the needs of small farmers.<sup>53</sup>

These examples show how trust law continued to evolve over the last five hundred years, bypassing restrictions and circumventing inequities in modern property regimes, making possible both large, for-profit monopoly business trusts and small nonprofit land trusts.

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<sup>48</sup> See Herbert Hovenkamp, *The Antitrust Movement and the Rise of Industrial Organization*, 68 TEX. L. REV. 105, 160 (1989) (discussing late-nineteenth-century monopoly cases against those trusts).

<sup>49</sup> Erin Ryan, *Public Trust and Distrust: The Theoretical Implications of the Public Trust Doctrine for Natural Resource Management*, 31 ENVTL. L. 447 (2001).

<sup>50</sup> John Emmeus Davis, *Origins and Evolution of the Community Land Trust in the United States*, THE COMMUNITY LAND TRUST READER 1, no. 4, at 3 (Lincoln Inst. Land Policy, 2010).

<sup>51</sup> See James Meehan, *Reinventing Real Estate: The Community Land Trust As a Social Invention in Affordable Housing*, 8 J. APPLIED SOC. SCI. 113 (2014).

<sup>52</sup> Elizabeth Brabec & Chip Smith, *Agricultural Land Fragmentation: The Spatial Effects of Three Land Protection Strategies in the Eastern United States*, 58 LANDSCAPE & URBAN PLANNING 255 (2002); Cynthia Abbott Cone & Andrea Myhre, *Community-supported agriculture: A Sustainable Alternative to Industrial Agriculture?*, 59 HUMAN ORGANIZATION 187 (2000); GREG ROSENBERG & JEFFREY YUEN, BEYOND HOUSING: URBAN AGRICULTURE AND COMMERCIAL DEVELOPMENT BY COMMUNITY LAND TRUSTS, (Lincoln Inst. Land Policy, 2012); Marcia Caton Campbell & Danielle A. Salus, *Community and Conservation Land Trusts as Unlikely Partners? The Case of Troy Gardens, Madison, Wisconsin*, 20 LAND USE POLICY 169 (2003).

<sup>53</sup> For a discussion of the urban land trust movement in the United Kingdom, see Susannah Bunce, *Pursuing Urban Commons: Politics and Alliances in Community Land Trust Activism in East London*, 48 ANTIPODE 134 (2016).

### C. Reforming Modern Property Regimes: Trust Law in a New Earth Era

The twenty-first century presents new equity problems for the practical tools of trust law: scientific warnings of global ecosystem collapse,<sup>54</sup> growing economic disparities,<sup>55</sup> and impending harms of anthropogenic climate change caused, in large part, by carbon dioxide (CO<sub>2</sub>) emissions from burning fossil fuels including in the electric power sector.<sup>56</sup> In the U.S. energy sector, CO<sub>2</sub> emissions increased in 2018.<sup>57</sup> Modern property regimes in the U.S. electricity sector—corporate investor-ownership of power utilities and electric grids and even rural electric cooperatives—are proving highly resistant to scientific warnings, citizen demand, and even financial incentives to lowering their carbon emissions . For these legacy institutions of U.S. electricity provision, their investments in fossil fuel infrastructure, and the path dependency of their governance structures make these institutions protect against stranded fossil fuel assets and

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<sup>54</sup> See United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Global Services, Global Assessment Report on Biodiversity and Ecosystem Services (2019) (noting the dangerous “unprecedented” decline of the natural world with species extinction rates accelerating and grave impacts on people around the world), <https://ipbes.net/global-assessment-report-biodiversity-ecosystem-services>. See also *UN Report: Nature’s Dangerous Decline ‘Unprecedented’; Species Extinction Rates ‘Accelerating’*, UNITED NATIONS: SUSTAINABLE DEVELOPMENT (May 6, 2019) (summarizing the 2019 report) <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>.

<sup>55</sup> See World Inequality Report (Facundo Alvareto et al., eds., 2018) (noting that in the United States in 1980, the richest 10% of the population held just under 35% of national income; by 2016, that share had risen to around 47%). The Report notes that as wealth disparities have widened, so have differences in outcomes such that the rich now have a hugely better chance at educational attainment, good health, and even longer life expectancy than the poor.

<sup>56</sup> See generally Intergovernmental Panel on Climate Change Reports (reporting the findings by the United Nations body for assessing the science related to climate change) <https://www.ipcc.ch/reports/>. See also *Frequently Asked Questions*, U.S. ENERGY INFORMATION ADMINISTRATION (reporting that the US electricity sector contributed about 33% of total U.S. energy-related CO<sub>2</sub> emissions in 2018) <https://www.eia.gov/tools/faqs/faq.php?id=77&t=11>.

<sup>57</sup> U.S. ENERGY INFO. ADMIN., *U.S. Energy-Related CO<sub>2</sub> Emissions Increased in 2018 but will Likely Fall in 2019 and 2020*, EIA.GOV (Jan. 28, 2019), <https://www.eia.gov/todayinenergy/detail.php?id=38133>.

unlikely to be agents of the necessary change to a low-carbon future.<sup>58</sup> Even when renewable energy technologies like solar and wind prove to be economically viable, equitable ownership models for communities are scarce and face crippling obstructions.<sup>59</sup> Indeed, both the earth's atmosphere and the sun's energy appear to be twenty-first century common property resources trapped in twentieth-century private and public property regimes, resistant to financial and moral economy arguments from citizenry. As in the past, trust ownership, with its enduring and robust history of bypassing restrictions and overcoming inequities in dominant property regimes, has a role to play here.

The Solar Commons Community Trust Model demonstrates that the historic uses of trust law can be creatively adapted to serve twenty-first century needs. Importantly, the SCCTM brings together two areas of trust law that have historically been kept separate in modern property regimes: the public dimension inherent in public trust ownership of natural resources like air, water, and wildlife; and the private dimension that characterizes the charitable purpose trust used by private foundations and nonprofit organizations to serve specific community needs. While legal scholars note that the types of private and charitable trusts managing community trust assets are not the same as the public trusts managing assets like wildlife, navigable waters and air,<sup>60</sup> the SCCTM demonstrates how these traditionally separate areas of trust law can be creatively engaged in a common property framework using aspects of both private and public

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<sup>58</sup> See Amy L. Stein, *Breaking Energy Path Dependencies*, 82 BROOK. L. REV. 559 (2017) (arguing that clean energy development faces an uphill battle given the one hundred years of “stickiness” associated with the legal and regulatory framework governing energy derived from fossil fuels).

<sup>59</sup> Matthew J. Burke & Jennie C. Stephens, *Political Power and Renewable Energy Futures: A Critical Review*, 35 ENERGY RES. & SOC. SCI., Jan 2018, at 78 (2018). Arguing that the renewable energy transition is fundamentally a political struggle and that efforts to shift from fossil fuels and decarbonize societies will not prove effective without confronting and destabilizing dominant systems of energy power.

<sup>60</sup> Darragh Hare & Bernd Blossey, *Principles of Public Trust Thinking*, 19 HUM. DIMENSIONS WILDLIFE 397 (2014). The authors note that while private and charitable trusts can help guide public trustees, comparisons should be treated as indicative, not literal.

trust law.<sup>61</sup> In other words, the SCCTM severs ownership of renewable energy assets into legal and equitable title in order to bring together private and public property regimes that can then function under the umbrella of a larger property interest essential to human and earth well-being in the twenty-first century: common property.

The Solar Commons Community Trust Model uses public trust law in the terms of its trust agreement by defining the sun, which shines for everyone, as a natural resource like air and navigable waters, access to which is protected, at the state level, by the public trust doctrine. Solar Commoners thus assert their rights, as members of a state, to access the sun's electricity generating capacity. To access their common-property share of the sun's energy, Solar Commons trustees and beneficiaries would need permission from their private, investor-owned utility who controls the grid interconnection process in their electricity jurisdiction. Current U.S. solar energy access law builds on public trust law analogies<sup>62</sup> arguing that the sun's energy capacity can be considered a common property (*res communis*) resource comparable to air or water with

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<sup>61</sup> The SCCTM builds on economic and legal arguments of the emerging “commons movement” which argues that current failures of states and markets to effectively and equitably govern natural and community resources call for new governing institutions that can bypass public and private property restrictions to better serve the common good. The Solar Commons Trust is one such new governing institutions in a growing commons sector. See the work of the 2009 Nobel laureate in economics, Elinor Ostrom, *OSTROM, supra* note 9, Peter Barnes, *PETER BARNES, CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS* (2006), and Bollier & Burns, *supra* note 9, and in the digital domain, the work of the P2P Foundation, especially Michel Bauwens, Vasilis Kostakis, Stacco Troncoso, and Ann Marie Utratel, *see COMMONS TRANSITION PRIMER*, <https://primer.commonstransition.org> (last visited July 10, 2019).

<sup>62</sup> Alexandra B. Klass, *Renewable Energy and the Public Trust Doctrine*, 45 U.C. DAVIS L. REV. 1021 (2011); *see also* Lance Noel & Jeremy Firestone, *Public Trust Doctrine Implications of Electricity Production*, 5 MICH. J. ENVTL. & ADMIN. L. 169 (2015) (arguing that “[t]he public trust doctrine is a powerful legal tool in property law that requires the sovereign, as a trustee, to protect and manage natural resources . . . [h]istorically . . . [applied] to navigable waterways and wildlife management . . . [whose] purposes . . . can ensure reasonable and timely development of renewable electricity as well as sufficient protection of trust resources”). Solar access law in the United States emerged in the 1970s, the early days of the solar energy industry. Sophia Douglass Pfeiffer, *Ancient Lights: Legal Protection of Access to Solar Energy*, 68 A.B.A. J. 288 (1982); John William Gergacz, *Legal Aspects of Solar Energy: Statutory Approaches for Access to Sunlight*, 10 B.C. ENVTL. AFF. L. REV. 1 (1982); GAIL BOYER HAYES, OFFICE OF POLICY DEVELOPMENT AND RESEARCH, *SOLAR ACCESS LAW: PROTECTING ACCESS TO SUNLIGHT FOR SOLAR ENERGY SYSTEMS* (1979).

analogous access rights established in Roman civil law<sup>63</sup> and protected in the United States by the public trust doctrine<sup>64</sup> which is also the basis of U.S. conservation law.<sup>65</sup> The three-party fiduciary relationships of trust ownership allows that a trustee can be either a natural person, a business entity, or a public body.<sup>66</sup> When the trustee is a public body managing natural resource assets like sunshine, air or water, the government trustee must be accountable to the beneficiaries of the trust, the public. The public, as the beneficiary of the trust, has legal rights to enforce accountability upon its government, typically through litigation.<sup>67</sup> In the case of solar-energy

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<sup>63</sup> English law only partially recognized Roman common property access rights in the Forest Charter of the Magna Carta:

Roman civil law was reaffirmed by the English Magna Carta in 1215 AD, and redefined by English common law in 1641. English disfavor for “ownerless property” caused them to express the Roman concept in a less assertive way by assigning ownership of common property to the king, not for his private use, but *as a trustee* of these properties for the benefit of the people....In earlier times this arrangement resulted in the dispersion of privileges taken or allowed by royalty... Regarding waters, this introduced the concept of common easements for public navigation and fishing with an understanding that the Crown owned submerged lands and shorelines in trust for the people.

THE WILDLIFE SOCIETY, TECH. REV. 10-01, THE PUBLIC TRUST DOCTRINE: IMPLICATIONS FOR WILDLIFE MANAGEMENT AND CONSERVATION IN THE UNITED STATES AND CANADA 11 (2010). In the United States, the Crown’s common-property ownership applied at first to the thirteen colonies and then, post revolution, was redefined and assigned to the states where it has continuously evolved in the courts which have effectively reinstated the full Roman civil law concept of *res communis* ownership in the modern public trust doctrine. See Michael C. Blumm, *The Public Trust Doctrine: A Twenty-First Century Concept*, 16 HASTINGS W.-NW. J. ENVT'L L. & POL'Y 105 (2010).

<sup>64</sup> Molly Selvin, The Public Trust Doctrine in American Law and Economic Policy, 1789-1920, 1980 WIS. L. REV. 1403 (1980); Joseph L. Sax, *Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

<sup>65</sup> Wildlife conservation in the United States is currently an area of enormous experimentation with regard to how public agencies, tribes, and local communities share governance of local public trust resources. See Cynthia A. Jacobson et al., *Conservation Institution for the 21st Century: Implications for State Wildlife Agencies*, 74 J. WILDLIFE MGMT. 203 (2010) (noting that outside the United States, alternative governance models are based on private ownership of fish, wildlife and habitat managed for personal or corporate gain).

<sup>66</sup> See generally Jeffrey W. Henquinet & Tracy Dobson, *The Public Trust Doctrine and Sustainable Ecosystems: A Great Lakes Fisheries Case Study*, 14 N.Y.U. ENVT'L L.J. 322 (2005).

<sup>67</sup> These critical elements of the Public Trust Doctrine were made clear in 1892 by the landmark United States Supreme court case *Illinois Central Railroad Co. v. Illinois*, 146 U.S. 387 (1892). The Court supported the State of Illinois and acknowledged that, as the trustee of land submerged in navigable waters, the state was not empowered to relinquish the trust’s assets in sale to the railroad because the state’s role in holding these lands in trust for the public would have substantially impaired the public’s

access, the court would have authority under the public trust doctrine to limit grid owners' private property rights for the public interest. While public trust litigation has served to expand protection to water resources,<sup>68</sup> and is currently inching its way through U.S. courts to protect air against climate changing pollutants from fossil fuel burning,<sup>69</sup> public trust litigation has not, to our knowledge, been used to enforce a citizen's right to access state regulated electric grids for purposes of solar energy capture.<sup>70</sup> Theoretically, Solar Commons trustees and beneficiaries may exercise public trust claims requiring state agency accountability with regard to the protection of citizens' solar energy access rights.

More practically, the SCCTM already offers the *charitable purpose trust* as a quicker and more effective way around many obstacles facing low-income communities who wish to access their share of the sun's common wealth. Part III lays out the specific steps to create a Solar Commons charitable purpose trust around a solar array. As a practical tool, Solar Commons charitable trust ownership takes its place among a handful of creative, diverse community ownership strategies emerging around renewable energy technologies.<sup>71</sup> SCCTM offers a vehicle

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rights and exceeded the state's authority as trustee of the land. See Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICHIGAN LAW REVIEW 471 (1970).

<sup>68</sup> See George Cameron Coggins, *Watershed as a Public Natural Resource on the Federal Lands*, 11 VA. ENVTL. L. J. 1; Joseph L. Sax, *The New Age of Environmental Restoration*, 41 WASHBURN L. J. 1 (2001) (arguing that environmental law has expanded its focus beyond the individual factory and discharge pipe to focus on biologically integral units, commonly a watershed, and thus ushering in a more regionally-oriented management of land and water).

<sup>69</sup> See JACQUELINE PEEL & HARI M. OSOFSKY, *CLIMATE CHANGE LITIGATION: REGULATORY PATHWAYS TO CLEANER ENERGY* (2015); Mary Christina Wood, *Nature's Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577 (2007).

<sup>70</sup> Burke & Stephens, *supra* note 59 (discussing the current lack of legal and political remedies for solar energy obstruction).

<sup>71</sup> See Niki Frantzeskaki, Flor Avelino & Derk Loorbach, *Outliers or Frontrunners? Exploring the (Self-) Governance of Community- Owned Sustainable Energy in Scotland and the Netherlands*, in RENEWABLE ENERGY GOVERNANCE 101 (Evanthe Michalena & Jeremy Maxwell Hills eds., 2013) (exploring several community-owned solar and wind ownership models in the European Union).

for underserved communities to hold their equitable property interests in the sun's energy and monetize that property as a source of revenue for community empowerment. Using a charitable purpose trust to own the common wealth of solar energy, low-income neighborhoods, we show, have a new device to improve and participate in the governance of their social and ecological well-being.

In summary, for centuries trusts functioned as a local governance structure to control and sustainably manage agricultural and energy *commons*<sup>72</sup> as subsistence resources for the majority population of feudal England. It is not a coincidence that this robust common property ownership vehicle is still used today to supply peat and wood resources to remaining pockets of rural energy users in the United Kingdom, as noted above. As one of the oldest forms of property ownership and business organization structures, trusts have also long been associated with charitable endeavors. The following Section details how a Solar Commons Trust is created for both governance of a local solar asset and for charitable purposes. The SCCTM demonstrates the versatility of trust law to create an equitable and enduring solution to current legal obstacles blocking low-income communities from accessing their fair share of the sun's energy-making capacity. Embedded in the SCCTM is the intention to engage community stakeholders to use the common resource of solar energy to serve low-income and underserved communities. The SCCTM is unique and innovative because it uses the trust legal structure to realize this charitable intention and it finds in the trust agreement a legal tool to secure creative local participation in the

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Note distributed nature of solar technology opens a field for new, local ownership models. Cite some models. Note uniqueness of Solar Commons. It is interesting to consider that Scotland, a country taking new measures to sustainably manage commoners' ancient turbary rights for energy provisioning is also the country with the most diverse local, community solar ownership structures in Europe. See ROBERTS ET AL., *supra* note 7, at 271–95.

<sup>72</sup> See Giangiacomo Bravo & Tine De Moor, *The Commons in Europe: From Past to Future*, 2 INT'L J. COMMONS 155 (2008) for a broader look at European commons ownership from its feudal past to its twenty-first century aspirations.

governance of equitable benefits that a community can derive from solar energy technology. These uniquely practical qualities of trust law make the Solar Commons Community Trust Model a highly useful tool for addressing equity issues in current U.S. community solar ownership; and with its conceptual framework for serving the interests of common property holders, it is possible that the SCCTM may create a broader vehicle for twenty-first century legal reform such as trust law has offered in its resilient past. With the Solar Commons Community Trust Model, trust law becomes a tool to circumvent inequities of modern private and public property regimes and to hold the interests of communities of need in common property resources and common wealth potential of solar energy.

### III. THE SOLAR COMMONS TRUST MODEL IN PRACTICE

To better understand the legal structure of the SCCTM, we first identify the three basic components of a trust and then illustrate, with two scenarios, how these three components look in action when creating a Solar Commons Trust.

#### A. Solar Commons Trust Creation: Engaging the Three Basic Components of a Trust

Although trusts may seem complex, there are only three key elements to their creation: 1) the settlor's intention to create a trust;<sup>73</sup> 2) property (known as the "res") or interests to be placed in the trust;<sup>74</sup> and finally, 3) a beneficiary who enjoys the benefits of the trust res.<sup>75</sup> Trusts can serve a number of purposes from business to estate planning, or, as demonstrated by the SCCTM for charitable purposes. A charitable trust is a trust in which the settlor requires that the trust

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<sup>73</sup> See Rufford G. Patton, "The Nature of the Beneficiary's Interest in a Trust," 4 *U. Miami L. Rev.* 441 (1950).

<sup>74</sup> *Id.*

<sup>75</sup> See Unif. Trust Code (Unif. Law Comm'n 2005).

property shall be used for charitable purposes.<sup>76</sup> A key component in any type of trust is the fiduciary relationship that exists between the trustee and the beneficiaries.<sup>77</sup> Inherently imbedded in the connection between the trustee and beneficiaries is a relationship that includes a multitude of duties that the trustee owes to the beneficiaries.<sup>78</sup> In developing the SCCTM, an earlier model used a complex contractual legal structure to create ‘trust like’ relationships. Because the goal of the model was to empower the communities served and to promote local protection and local stewardship of the trust assets, it quickly became evident that a trust-based model offered more of the necessary benefits without the complexity, inflexibility, volatility, and impermanence that can exist under a contractual model.<sup>79</sup>

Adapting the three components of trusts--the intention of the trust creator; the asset placed in trust; and the property rights and interests of the beneficiary—to serve the interests of low-income community empowerment through ownership of solar energy technology, the Solar Commons Trust Model offers an ownership vehicle that works with the existing governance regimes of US power grid infrastructure. Without waiting for further policy changes to occur, low-income neighborhoods in many utility jurisdictions can use the Solar Commons Model to

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<sup>76</sup> Charitable purposes are defined in each jurisdiction differently. Charitable trusts are typically monitored by the Attorney General in the state in which the benefiting charity presides. See RESTATEMENT (THIRD) OF TRUSTS § 94 cmt. g (Tentative Draft No. 5, 2009) (noting that there may be a need for special interest standing because attorneys general lack sufficient means of enforcement); James J. Fishman, Improving Charitable Accountability, 62 MD. L. REV. 218, 224 (2003) (“The object of charitable trusts is to benefit the community rather than private individuals.”); About NAAG, NAT’L ASS’N ATTORNEYS GEN., [http://www.naag.org/about\\_naag.php](http://www.naag.org/about_naag.php) (last visited January 15, 2020) (“As chief legal officers of the states, commonwealths, and territories of the United States, the attorneys general serve as counselors to state government agencies and legislatures, and as representatives of the public interest.”).

<sup>77</sup> See generally RESTATEMENT (THIRD) OF TRUSTS; also see Unif. Trust Code (Unif. Law Comm’n 2005).

<sup>78</sup> -- *Id.*

<sup>79</sup> David M. Summers, “Third Party Beneficiaries and the Restatement (Second) of Contracts”, 67 *Cornell L. Rev.* 880 (1982).

participate in the benefits that come from the US transition to a clean energy economy.<sup>80</sup> Trusts can hold a variety of assets and serve a multitude of purposes including the rights to and benefits of solar energy. The intention behind creating trusts using the Solar Commons Trust Model is to capture some of the economic benefits created by the sun--which, in the *commons* context, “shines for everyone”--and distribute those benefits as common wealth (as opposed to commodity value) benefits for the common good.<sup>81</sup> Even though no one can own the sun, the rules to monetize and control the resource of solar energy have been shaped to serve the interests of the twentieth century

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<sup>80</sup> See Brehm & Lillis, *supra* note 4, at 3 (RMI analyzed the financial and environmental benefits of Solar Commons projects in three states (Arizona, Colorado, and Minnesota), for three system sizes (14.5 kW, 410 kW, and 500 kW) and under two rate options (community solar and behind-the-meter”). Finding that:

Solar Commons provides significant benefits to the environment and to community beneficiaries (the trust) under all scenarios; Solar Commons further provides a positive net present value (NPV) to an impact-focused donor for all system sizes in Arizona; Solar Commons provides a positive NPV for community solar projects in Colorado and Minnesota, and for large behind-the-meter systems in Colorado; Financial performance of behind-the-meter Solar Commons projects are highly dependent on rate structure, location-specific solar production, and the impact of solar on a system host’s monthly peak demand.

<sup>81</sup> The distinction between common wealth and commodity property is an important one. The Solar Commons Model uses trust relationships to maximize the benefits of solar energy and incentivize community stakeholders to creatively engage the potential of the community trust ownership structure to re-localize the value of solar energy from **a commodity property** (a small amount of market-rate savings measured on the electric meter and monthly utility bill of individual electricity users) to **a common wealth property** (a use-value that serves a subsistence community need in a meaningful and enduring way with an inherent obligation to the health of the larger natural world and future generations). The Solar Commons Trust Model shows that solar generated electricity can generate more value for underserved communities as a community trust asset than as than a quantity of savings on an individual entity’s electricity bill. More than a quickly traded market property that promotes liquidity, the common wealth value of solar energy includes the potential to create an enduring community commitment that lasts for the twenty plus year life of the solar panel: thus, the trust can support a low-income household weatherization program, a community homeless shelter or food shelf, a paid youth internship program—the only limit on what the trust can support is the creative process that goes into the trust agreement when the settlor, the community-embedded trustee and the low-income community beneficiary follow the general commons-enhancing standards of the SCCTM and collectively decide what will work best to serve, over time, the community’s need. As a Solar Commons Trust property, solar energy can be governed as a long-term relationship between a community beneficiary and a thoughtful trustee who has accepted a fiduciary duty to make the sun’s common wealth contribute to the well-being of their local community. See MARY WOOD, NATURE’S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE (2014) at 312-318.

electric utility model of monopoly, investor-ownership.<sup>82</sup> Corporate investment in U.S. power generation and grid infrastructure has created market advantage for fossil fuel industries and barriers to entry for renewable energy providers.<sup>83</sup> However, with today's distributed energy technologies that harvest their fuel from common property resources like wind and solar energy, the grid is the site of enormous potential for diverse ownership structures and diverse benefit creation, benefits that go beyond the price of electricity as a commodity good to include the common wealth benefits of low-income community empowerment and the health of the larger natural world and future generations. Creating equitable access to the economic and ecological benefits inherent in energy resources of the sun and wind remains a civic task in building the twenty-first century U.S. energy infrastructure system. Not unlike medieval peasants who used trust property arrangements to access their equitable common property energy interests in wood and peat despite the obstacles of the feudal property regime, low-income neighborhoods today can use the SCCTM to circumvent obstacles of the monopoly ownership structure of the U.S. electricity grid to access their share of the sun's abundant common wealth potential.

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<sup>82</sup> In economic terms, the sun's electric energy capacity is a non-frivolous, non-rivalous, non-subtractable good—meaning that using the sun's abundant energy to create electricity does not take the resource away from another user or diminish the energy resource itself. *See BROWNSON, supra note 10; OSTROM, supra note 9* (further discussing this economic framework). However, access to the sun's energy for electricity generation in the United States is controlled, for the most part, by corporate, monopoly utilities who own the electric grid. Either one must have the capital to build a solar energy system that can be used completely disconnected from the grid, or one must get permission from the private grid owner to interconnect one's solar energy system to the grid. Thus, the grid owner is the gatekeeper for solar energy access for most urban and rural electricity users in the United States. Discussion of the technical and legal details involving U.S. grid infrastructure and ownership is beyond the scope of this paper. For more general information on the socio-technical context of the U.S. grid, see GRETCHEN BAKKE, THE GRID: THE FRAYING WIRES BETWEEN AMERICANS AND OUR ENERGY FUTURE (2016).

<sup>83</sup> *See Stein, supra note 58.*

## B. Scenarios that Demonstrate Trust Creation Using the Solar Commons Trust Model

We offer the following two scenarios to demonstrate the structure and function of the SCCTM. First, based on our legal research prototyping a Solar Commons Trust, we describe the general steps needed to create a SCT and how the trust components—settlor, trustee, beneficiary, trust protector—work together to fulfill the charitable purposes of the trust agreement with solar energy. Second, we offer a hypothetical example of how a low-income community would use these steps to create their own Solar Commons Trust.

### 1. Scenario one: general steps to create a Solar Commons Trust

Based on fieldwork to build Solar Commons prototypes<sup>84</sup>, the following iterable steps describe the process of trust creation using the SCCTM in utility districts with basic net-metering policies.<sup>85</sup> In

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<sup>84</sup> Prototyping research is an ongoing part of the Solar Commons Project whose aim is to create SCCTM as an innovative low-income community empowerment tool. Once the Solar Commons Trust Model has been sufficiently prototyped with community partners in the United States, best practices research will be published as a “*Do-It-Yourself Community Guide To Building A Local Solar Commons Trust.*” The guide will include standards and legal templates, based on the prototypes, so that low-income communities can save on the legal requirements of executing a Solar Commons Trust agreement. In the SCCTM prototyping, the founder and director of the Solar Commons Project is the solar facilitator working with community actors. Until the Solar Commons open source legal templates are released to the public, parties using the SCCTM must seek authorization for the proprietary templates and resources (including but not limited to a Creative Commons license). As the SCCTM is prototyped in the US, researchers will be using the Solar Commons nonprofit to determine the function and institutional needs of Solar Commons trust protectors.

<sup>85</sup> *Net Metering*, SEIA.ORG, [www.seia.org/initiatives/net-metering](http://www.seia.org/initiatives/net-metering) (last visited Jul. 2, 2004) (SEIA is an acronym for Solar Energy Industries Association), describing net-metering thus:

“Net metering is a billing mechanism that credits solar energy system owners for the electricity they add to the grid. For example, if a residential customer has a PV system on their roof, it may generate more electricity than the home uses during daylight hours. If the home is net-metered, the electricity meter will run backwards to provide a credit against what electricity is consumed at night or other periods when the home's electricity use exceeds the system's output. Customers are only billed for their “net” energy use. On average, only 20-40% of a solar energy system’s output ever goes into the grid, and this exported solar electricity serves nearby customers’ loads.”

During sunny hours of the day most solar customers produce more electricity than they consume, thus relying on net metering to export that excess power to the grid and reduce their future electric bills. However, some utilities perceive net metering policies as lost revenue opportunities. SEIA points to cost-benefit studies showing that, in fact, net metering policies create a smoother demand curve for electricity

step one, a community solar facilitator<sup>86</sup> will work with low-income community leaders, to identify which community need and which community-based program serving that need can benefit from the funding of a Solar Commons Trust. The solar facilitator and community leaders then seek a community partner willing to allow their roof or property to host a solar array generating clean electricity that would be used by their building and be measured on their electric meter. This “host/off-taker” can either 1) own the array together with entering into a contract with the Solar Commons trust that determines how the array’s benefits will be passed on to the trust; or 2) enter into an arrangement where the SC trust owns the array, in which case the SC trust will access and control the economic benefits directly. In either case, the “host/off-taker” would be compensated for any costs incurred in hosting the solar system. Together, the solar facilitator and community partners will go to local donor to raise the funds required to purchase and install the solar array.<sup>87</sup>

The size of the array will depend on the off-taker’s electric “load” (average annual amount of

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and allow utilities to better manage their peak electricity loads. “By encouraging generation near the point of consumption, net metering also reduces the strain on distribution systems and prevents losses in long-distance electricity transmission and distribution.” *Id.* Evidence showing that solar adds value to local economies and the electricity system as a whole is offered in state-level studies (since states have diverse mechanisms to set net-metering policies). Many states have passed net metering laws, while in other states the utilities’ net metering programs are offered voluntarily or as a result of regulatory decisions. Given these differences between state legislation, regulatory decisions and implementation policies, the mechanisms for compensating solar customers (and thus bringing revenue to a Solar Commons Trust) varies widely across the country. To view a selection of solar cost-benefit studies commissioned in a variety of states, see *Solar Cost-Benefit Studies*, SEIA.ORG, <https://www.seia.org/initiatives/solar-cost-benefit-studies> (last visited Aug. 5, 2019). Given the complexity of net-metering rules, this article will not deal with net-metering “export rates” and other policies introduced to slow the development of distributed solar in the United States. For a further discussion of how the Solar Commons Trust Model works with a variety of net-metering policies, see Brehm & Lillis, *supra* note 4. This study also references a calculation tool that Brehm & Lillis built to determine how much revenue is available to a Solar Commons trust in diverse states based on inputs dependent on local net-metering rules. This tool will eventually be available for public use at <https://www.solarcommons.org/>.

<sup>86</sup> See Blumm, *supra* note 58 (detailing how even solar installers might take on the role of a Solar Commons facilitator *after* completion of the initial prototyping phase of the Solar Commons Trust Model).

<sup>87</sup> The SCCTM can also be used without a donation. While discussion of how SCCTM works with a standard solar financing arrangement is beyond the scope of this article, it is important to know that the model is also flexible for a standard solar financing arrangement.

electricity consumed) which will often be in excess of the annual amount of electricity generated by the array.<sup>88</sup> The solar array and/or its net income stream generated, will be considered the “res” of the Solar Commons Trust with the net income being calculated as follows: as the solar array produces electricity (measured in kilowatt hours/kWh), the off-taker’s electric meter tracks the amount of solar kWh captured<sup>89</sup> by turning the meter “backwards.” These negative kWhs function as credits to be used later in the day when the sun goes down and the host needs to draw electricity from the grid. The Solar Commons host/off-taker will only pay the utility for the “net” of these kilowatt hours on its monthly electric bill (total kilowatt hours of electricity used minus total kilowatts hours “credited” from the solar array multiplied by the retail rate of electricity). Before the Solar Commons host/off-taker sends the credited solar savings on its monthly electric utility bill to the Solar Commons Trust, he/she will deduct all costs of hosting the array—a set calculation

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<sup>88</sup> The prototypical Solar Commons described here is a behind-the-meter arrangement. (However, the Solar Commons Trust Model also works “in-front-of-the-meter”, an arrangement that will be discussed later in the article.) The amount of solar panels installed will depend on many factors, including the restrictions which the utility imposes on a host placing solar photovoltaic panels “behind the meter” of their home or business. As noted above in footnote 85, monthly surplus solar generation behind-the-meter is typical with, on average, only 20-40% of a solar energy system’s monthly output going into the grid. See SEIA, *supra* note 85. This “exported” solar electricity immediately serves nearby customers’ loads and is calculated in the solar host’s electric bill as a credit that can be used to off-set the host’s drawing from the electric grid at night or other times when the sun is not shining. Some utilities have **net metering rules** that allow a solar producer to generate 120% of their **annual** household electricity. For **annual solar surplus** the utility reimburses the solar provider at a price per kilowatt hour established by the local regulatory agency. Readers should be aware that local utility laws for solar photovoltaic interconnection differ. The SCCTM requires the same legal considerations as other local solar energy projects in the same utility jurisdiction.

<sup>89</sup> As noted above (footnote 85), in most states, net metering allows for a one-to-one credit for a host’s solar electricity. In other words, the electricity a Solar Commons Trust host/off-taker produces is equal in value to the electricity that host/off-taker receives from its utility, both valued at the retail rate. So, if the host/off-taker’s solar array produces one kWh of electricity, the host/off-taker can directly reduce its electric bill by one kWh. If that kWh of solar electricity is generated when the host/off-taker doesn’t need it, the electricity will go into the grid and be used by neighboring buildings. Regardless of whether the host/off-taker or its neighbors use the solar generated electricity, it is the Solar Commons Trust’s host/off-taker who will be compensated with a bill credit for the full retail value of that kWh, which it can then use to offset its electricity consumption at a later time. Again, for a fuller discussion of utility push-back against compensating solar energy producers at the full retail rate, see SEIA *supra* note 85, for the position of the Solar Energy Industry Association (SEIA).

of monthly insurance, operations and maintenance and administrative costs. The remaining monies become the host/off-taker's monthly deposit to the Solar Commons Trust and become part of that trust's *res*. The trustee(s) of the SCT, which can be the host/off-taker and a community organization recruited for that specific role,<sup>90</sup> will then distribute the monetary benefits to the beneficiaries in various ways in accordance with the trust instrument. The trust instrument is a formal agreement executed by the settlor which lays out the conditions and principles for managing the solar energy res: it names the beneficiaries, outlines the expectations, duties and responsibilities of the trustee, and appoints a trust protector. These conditions and governance principles are partially given by the SCCTM which uses principles of a commons framework to ensure equitable outcomes. The SCCTM also allows flexibility for a myriad of possibilities that settlors, hosts/off-takers and community participants can co-create in the trust instrument to ensure that local governance of their Solar Commons best fits their community.<sup>91</sup> The SCCTM includes open source legal templates, shaped by the best practices research of the Solar Commons legal research team, and an open source digital calculator tool allowing the host/off-taker to make monthly calculations

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<sup>90</sup> For example, the Solar Commons prototype in Tucson used a local community development financial institution (CDFI) who offered to manage the trust and its disbursement, without cost, to the local beneficiary. CDFIs, which exist in many underserved communities across the US, will usually know all the local community players involved in a Solar Commons project and thus make great partners for monitoring and distributing the trust funds.

<sup>91</sup> There are many possibilities for how a Solar Commons Trust can be created and function in a community. For example, a Solar Commons host/off-taker can locate the solar arrays on rooftops of public buildings, apartment complexes, large retail stores, office buildings; off-takers can host ground mounted solar arrays in parks, urban brownfields, down freeways, boulevards, light rail corridors, in fallow agricultural fields and unused rural lands. Off-takers can be public or private entities; churches, schools, factories—any community entity which owns an electric meter and is willing to participate as a host (and possibly as a co-trustee as well) in making the benefits of solar energy work for the common good of its local community. Likewise, community leaders who function as co-trustees and trust beneficiaries of a Solar Commons Trust can be as diverse as the communities they serve. It is a principle of the Solar Commons Community Trust Model that Solar Commons Trusts be designed to look like the communities they serve. This is why the Solar Commons Trust Model, like other trust instruments, offer flexibility to settlors, trustees and beneficiaries to use a participatory process to come up with their own unique, local rules for equitably governing the trust asset.

that will be recorded in a data base accessible to the Solar Commons Trust Protector and beneficiary for transparency and accountability in the co-governance of the Solar Commons Trust.<sup>92</sup>

It is important to note that the SCCTM functions with existing utility rules in either a behind-the-meter or in-front-of-the-meter (solar garden) arrangement. This is demonstrated by the independent 2018 analysis of the Solar Commons financial model by the Rocky Mountain Institute which reports a positive net present value for Solar Commons built in three utility jurisdictions (Arizona, Colorado, and Minnesota) at two scales (14.5kW and 500kW) and in two positions (behind-the-meter and in-front-of-the-meter).<sup>93</sup> The SCCTM users will also have access to the digital tool built by the Rocky Mountain Institute to calculate inputs of net-metering and other state and utility jurisdiction policy variations to determine the income stream that a Solar Commons Trust array will produce for its community beneficiary.<sup>94</sup> The solar electricity rates and utility rules for solar are so complex, in flux, and varied depending on the specific utility

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<sup>92</sup> Dr. Milun is working with computer science designers to create the open source digital tools that make Solar Commons Trusts accountable and transparent for local co-governance. SCCTM researchers envision a public-facing digital Solar Commons dashboard that will show how the sun's common wealth in sunshine is converted to usable electricity (kWh), and then to a market commodity (local retail price for solar electricity), and then back into common wealth (trust funds) and then into a common good that benefits the local community (beneficiaries' use of the funds). It is useful to think of the conversion of common wealth to market wealth and then back to common wealth as a kind of "translation" of value from one economic regime (gift economy) to another (market economy) and then back again (to gift economy). The Solar Commons Trust agreement, the community-created rules by which the trust funds are governed, follow principles and standards established by the Solar Commons license. These general principles and standards assure that the trustees manage the trust funds to create a "common good" which keeps the sun's common wealth useable by the community as a form of common wealth. For a general discussion of common wealth trusts, see Peter Barnes, *Common Wealth Trusts: Structures of Transition*, GREAT TRANSITION INITIATIVE (Aug. 2015), <http://peter-barnes.org/article/common-wealth-trusts-structures-of-transition/>. For a discussion of how gift economies differ from and intersect with market economies, see Peter Barnes, *CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS* (2006) and David Graeber, *DEBT: THE FIRST FIVE THOUSAND YEARS* (2011).

<sup>93</sup> See Brehm et al., *supra* note 4.

<sup>94</sup> Dr. Milun will make the Rocky Mountain Institute's calculation tool available on a forthcoming website dedicated to reporting research on the Solar Commons Project.

jurisdiction, that a discussion of such is unnecessary here because the SCCTM is designed to transcend these variations.

## 2. Scenario two: a hypothetical community using the Solar Commons Trust Model

The following hypothetical example will demonstrate how the SCCTM innovates trust ownership so that a low-income community can gain control of the sun's clean energy resources and create an empowering community impact with scaling capacity for other low-income communities in the United States today.

A community group<sup>95</sup> in City A wishes to support or create a local program that empowers underserved members of their community. Working with a solar installer,<sup>96</sup> the group finds a potential host/off-taker to support this charitable undertaking. The potential off-taker offers the use of a roof of its building for a solar array and works with the solar installer to calculate the size (kW) and costs (e.g., construction, operation and management, insurance, etc.) to build and maintain a photovoltaic system that would feed solar-generated electricity through the buildings' meter, supplying the off-taker's building with, for example, 80% of its annual electricity needs. The solar installer helps the off-taker calculate the average amount of kilowatt hours (kWh) that would be net-metered monthly on its electric meter.<sup>97</sup> These calculations will provide the sum amount of solar savings the off-taker will see on its monthly electric bill. After subtracting all the

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<sup>95</sup> Examples would include: local club or business, school, nonprofit, religious organization, community association.

<sup>96</sup> In its prototyping phase, the facilitator of the SCCTM will be the owner of the SCCTM proprietary interests (Creative Commons license and trademark). Eventually, once the prototyping has informed sufficient best practice research, a Community Guide to Solar Commons will outline the role of SCCTM facilitator so that solar installers and other community members can take on the tasks of iterating the SCCTM through an open source license.

<sup>97</sup> This illustration is an example of a behind the meter/ net metered Solar Commons. Variations in these calculations will come from the solar capacity of the building's geographical location and climate, the slope of the roof, the net-metering rules and solar pricing options operating in its utility jurisdiction, and any monthly solar interconnection fees charged by the utility.

costs of managing the solar array, it will be determined how much of those monthly savings will be placed into the Solar Commons Trust to benefit the designated charitable organization. With this information—cost of buying and installing the array, costs of hosting the array, monetary benefits of array going to the trust, beneficiary program receiving the trust funds, names of community stakeholders to serve as trustee and trust protector, governing principles and duties and obligations of all stakeholders—the community group can approach a funder. If the funder donates money, this can be the step in the process where the Solar Commons Trust can be qualified as a charitable trust and formalized through a trust agreement.<sup>98</sup> The trustees (who may be the host/off-takers and/or members of the community group) will continue their work with the installer to build the array and deliver the solar savings to the beneficiary following the directives of the Solar Commons Trust agreement. If the funder is a community development bank or another financing entity willing to work with the off-taker (host) and community group in a loan arrangement, this too can be set up by formalizing the Solar Commons Trust to pay off the loan through a portion of the net-metered solar savings while passing the remaining savings on to the beneficiary.

In this illustrative SCCTM, the off-taker/host serves as a trustee; the array becomes the res; and the Trust beneficiary is the charitable organization. The community group who has curated these arrangements may, in some instances, become a co-trustee or even a trust protector, continuing their local governance role. In establishing the Solar Commons Trust, the ownership

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<sup>98</sup> Once the off-taker and charitable organization are identified, the intent of executing a Solar Commons Trust agreement can be formalized. The Solar Commons Trust agreement outlines the duties of the trustee (e.g. to install and interconnect the solar array, to monetize the solar bill credit savings and deliver benefits to the trust beneficiary for a set number of years). The trust agreement provides details about what to do in specific contingencies and notes the right of the host/off-taker to deduct from the net-metered solar savings all costs—O&M, insurance, technical repairs—before sending the beneficiary their monthly or yearly benefits. Application should be made to the IRS to obtain charitable trust or private foundation status. As noted, open source templates of Solar Commons Trust agreements laying out the details of the model will be made freely available to communities once the Solar Commons Project prototyping is complete.

interests of the solar array have been severed. The host/off-taker, as trustee, owns the solar array's legal title and the charitable organization owns the equitable title to the solar array's benefits. Together these community partners will be able to access the common wealth of the sun's energy and, for the thirty plus year life of the solar technology, to support an enduring community benefit. In many ways, these solar commoners are like their medieval legal ancestors who used trust arrangements to equitably distribute local peat and wood resources and sustainably steward English bogs and forests as energy commons centuries ago. As verified in the study done by the Rocky Mountain Institute, with such a simply structured model, it is clear that the SCCTM has "the potential to provide significant benefits to the environment and community beneficiaries under all scenarios."<sup>99</sup> As it scales to serve communities in rural and urban America, the SCCTM will have effectively utilized trust law to address a social inequity by bridging the solar income gap.<sup>100</sup>

#### IV. THE SOLAR COMMONS TRUST MODEL LEGAL RAMIFICATIONS AND POLICY BARRIERS

The Solar Commons Community Trust Model should be viewed as a tool for sustainable social innovation. This Section brings attention to specific legal ramifications of using SCCTM based on the Authors' experience prototyping Solar Commons in the United States. In the first part we address: fiduciary duties, the creative potential in the role of the trust protector, interfacing with local utility law, and finally the advantages of trust over contract law for the purpose of delivering community benefit through community solar ownership. In the second part, we highlight ways which a Solar Commons Trust can circumvent the barriers to low-

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<sup>99</sup> See BREHM & LILLIS, *supra* note 4.

<sup>100</sup> See Mueller & Ronen, *supra* note 3.

income community solar access in current grid ownership policies and state regulatory structures.

As demonstrated in the historical examples of trust ownership over the past five hundred years, trust law offers a unique ownership strategy to gain control of an asset despite the dominant property rules of its time. In the twenty-first century, where solutions to key ecological and social crises depend on transitioning to renewable energy and creating equitable access for all to the benefits of the coming renewable energy economy, we demonstrate how trust law has the potential to be a robust tool to gain local control of distributed, renewable energy assets and, through trust co-creation with community stakeholders, to use the trust agreement process and structure to innovate local participation in and governance of the common wealth in the trust asset.

#### *A. Addressing Legal Ramifications of the Solar Commons Community Trust Model*

While simple in structure, there are potentially complex legal ramifications of the SCCTM which should not go unexamined. One of the major considerations that should be discussed by the solar facilitator, potential donors, off-takers, and beneficiaries prior to formalizing their trust relationship are the fiduciary duties the off-taker will owe to the beneficiaries as the trustee, and the inherent conflict of interest that can be present.<sup>101</sup> An off-taker, as trustee, will owe, *inter alia*,

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<sup>101</sup> An off-taker may receive additional benefits outside of the clean, solar electricity they now have for their building and the avoided carbon pollution they would have emitted into the atmosphere; therefore it is important to make sure that no conflict of interest arises from these benefits. Additional benefits for an off-taker may include retaining the Renewable Energy Credits which, once a stable carbon market has developed, may be traded to provide additional income to the off-taker. The off-taker may also enjoy a lower price for their electricity negotiated with the trust as an incentive for not charging leasing fees for the use of their roof. In other words, the Solar Commons Trust may negotiate, in the trust agreement, the amount of money the off-taker will deliver to the trust. This provides a win-win-win situation for all parties: the off-taker has reduced their electricity costs, is now helping to mitigate climate change, and is supporting a low-income neighborhood charity or empowerment program; the settlor has been able to support multiple charitable missions while receiving a positive net present value for its investment.

a duty of loyalty, “to administer the trust solely in the interest of the beneficiary.”<sup>102</sup> However, the off taker has a duty of loyalty to its own organization as well and by having physical possession of the array on its property, that duty may be at cross purposes with providing the solar array benefits to the beneficiaries. As such, a trust relationship, like most relationships, can have its periods of disenchantment. While judicial enforcement is available when trustees fail to uphold their duties, it can be ineffective and cost prohibitive for beneficiaries to seek court intervention. One way the SCCTM avoids potential pitfalls is to appoint a trust protector.<sup>103</sup> A trust protector has limited authority over the trust. Unlike trustees that have a duty to the beneficiaries, the trust protector acts as an intercessor when necessary. Generally, a trust protector is a neutral third party or organization (not the settlor, beneficiary, off-taker, or trustee) who is appointed to exercise one or more powers affecting the trust and the interest of the beneficiaries by providing oversight of certain decisions which allows for a degree of flexibility not easily accommodated without one. A trust protector’s authority may include the ability to appoint additional or successor trustees, the ability to modify when distributions are made, or the ability to modify or terminate the trust. The concept of a trust protector is just another example of how trust law continues to evolve.<sup>104</sup> The

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<sup>102</sup> RESTATEMENT (SECOND) OF TRUSTS § 170(1) (1959). *See also* UNIF. TRUST CODE § 802(a) (2000), 7C U.L.A. 229 (Supp. 2004) (“A trustee shall administer the trust solely in the interests of the beneficiaries.”).

<sup>103</sup> Richard C. Ausness, The Role of Trust Protectors in American Trust Law, 45 *Real Prop Tr. & Est. L.J.* 319 (Summer 2010).

<sup>104</sup> As Solar Commons Trusts become more widely used across the United States, the need may arise for state-by-state institutions that can take on the tasks of trust protector and monitor the solar trust arrangements in their state jurisdictions. It remains to be seen what Solar Commons Trust Protector institutions would look like and what tasks they would do. This is currently the work of the Solar Commons Research Project which is prototyping, creating open source legal templates, digital tools, and best practices for Solar Commons to become robust ownership models for low-income community trust solar in the US. Again, the historic flexibility of trust law suggests that, with climate change and energy transition, there will be a need and opportunity to connect the benefits of the renewable energy transition to the needs of climate change refugees and others who will be disproportionately suffering. It is instructive to remember that in the twentieth century, trust law provided a creative arena to meet the needs of community groups working in the under-developed legal arena of environmental protection. In this context, conservation trusts were created to hold easement property rights over buffer zones and thus control how land could be used

language of a trust instrument together with the appointment of a trust protector provide the flexibility needed to handle the very unique situations that are bound to be encountered. It is important for all parties to consider the roles of settlor, the off-taker, the trustee, the beneficiaries, and the trust protector when building a Solar Commons Trust.

While using the SCCTM can provide a multitude of legal and practical benefits such as asset protection, community engagement, and legal enforcement for all parties involved, parties must ensure they are familiar with local laws regarding public utilities. The SCCTM is typically structured “behind the meter” when the array is donated to the trust so that the off-taker’s interaction with the local utility company remains the same as any other local solar energy user interconnected to the power grid.<sup>105</sup> Innovating community solar with the SCCTM allows community solar stakeholders to avoid unnecessary contractual agreements, negotiations, and regulations that otherwise might be relevant to the power grid.

The benefits of using trust law over a contractual agreement in designing Solar Commons should be emphasized. As previously discussed, an alternative arrangement to a trust-

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near fragile wetlands and waterways to avoid contamination by harmful chemical fertilizers or other developments that work against the public interest. Such buffer zone easements become trust property held by counties, land trusts and other entities acting as trustees. Around the country, trust institutions have been created to serve equitable, public interests that are not sufficiently served by the laws of the time. In the area of affordable housing, urban and rural community trusts have arisen to hold property outside the speculative commodity value of the marketplace, thus helping low-income communities hold their neighborhood common wealth values when new improvements—light rail corridors, new housing developments—would have otherwise put these neighborhoods at risk of gentrification. See *supra* text accompanying notes 50–52 (discussing twentieth century U.S. conservation and housing trusts). Solar Commons Trust Protectors should be viewed in this category of new trust institutions arising to address inequities and protect public and common property goods that have not been adequately served by current laws. Like these creative trust institutions, Solar Commons will also provide new local governance opportunities to emerge among diverse property owners: state authorities managing public property, market actors controlling private property, and local citizens co-governing local resources for intergenerational equity and local benefit. For a discussion of the legal innovations that arise with commons governance strategies, see Bollier & Burns, *supra* note 9.

<sup>105</sup> See discussion *supra* note 85 (explaining the “net-metering” billing mechanism used by grid-integrated solar energy arrays).

based model would have been to create these relationships by contract, however, the need for contract negotiation is greatly diminished when utilizing the SCCTM since many of the desired terms are already incorporated as fundamental principles of trust law. For example, if the term fiduciary duty ever finds its way to a negotiation table for any type of contract, the goal for the party where such a duty would be imposed is to ensure they are held to a lesser standard in order to protect their interests. In a contractual structure, any and all terms are negotiable. In trust law, while the fiduciary duties of a trustee may be limited by choice, they are rarely negotiated, due to the fact that fiduciary duties are imbedded in foundational principles of the trust structure. Aside from fiduciary duties, other considerations and items for negotiation in a contractual Solar Commons arrangement would be premises liability issues, reversionary rights, maintenance and insurance costs, and identification of the intended third-party beneficiaries to the contract. All of the considerations mentioned above are addressed under the SCCTM and available without the need for negotiation.

Another advantage of trust law is seen in how Solar Commons beneficiaries, who hold the legal right to benefit from the trust assets, can enforce their legal rights as necessary.<sup>106</sup> The fiduciary relationship between the trustee and beneficiaries ensures the trust's charitable purposes are upheld.<sup>107</sup> In addition, if the trustee fails to provide the benefits of the trust to the beneficiaries in accordance with the trust agreement, the beneficiaries are permitted to request court supervision of the trust and mandate the trustee provide the benefits owed to the beneficiaries.<sup>108</sup> Under a contractual solar model structure, beneficiaries' rights would need to be

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<sup>106</sup> See generally UNIF. TRUST CODE; also see generally RESTATEMENT (THIRD) OF TRUSTS (AM. LAW INST. 2012).

<sup>107</sup> *Id.*

<sup>108</sup> *Id.*

established by proving they were intended third party beneficiaries, which are facts and circumstances dependent, thereby making enforcement by the beneficiaries less certain.<sup>109</sup> The rights of third party beneficiaries under a contract can vary greatly from one jurisdiction to the next and parties must establish standing prior to bringing a claim against an off-taker. In contrast, a trust-based model establishes automatic standing for trust beneficiaries and can implement conditions and procedures to ensure issues involving beneficiaries do not go unaddressed due to their financial constraints.<sup>110</sup>

Another major advantage of the Solar Commons Trust is the "ease of conveyance."<sup>111</sup> The transfer of ownership of the res property to a different off-taker, or, as long as the trust agreement provides for it, to different classes of beneficiaries, can greatly lessen the complexity of the transfer of ownership of the array and its benefits.<sup>112</sup> In contrast, a contract based arrangement would likely not provide the same level of ease.<sup>113</sup> Such a transfer, under the contract model, would need to occur as an assignment and/or release of rights and obligations by all parties to the contract.<sup>114</sup> Transferring the legal title of the trust property can be done simply with the appropriate documents prepared by an attorney, without a court proceeding or the possibility of contentious negotiations that can occur under other ownership arrangements.<sup>115</sup> Taken together

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<sup>109</sup> See generally David M. Summers, "Third Party Beneficiaries and the Restatement (Second) of Contracts", 67 Cornell L. Rev. 880 (1982); also see generally Rufford G. Patton, The Nature of the Beneficiary's Interest in a Trust, 4 U. Miami L. Rev. 441 (1950)

<sup>110</sup> See John Morely, "The Common Law Corporation: The Power of the Trust in Anglo-American Business History." Colum. L. Rev. 116 (2016): 2145. – at 2192

<sup>111</sup> See generally David M. Summers, "Third Party Beneficiaries and the Restatement (Second) of Contracts", 67 Cornell L. Rev. 880 (1982); also see generally Rufford G. Patton, The Nature of the Beneficiary's Interest in a Trust, 4 U. Miami L. Rev. 441 (1950)

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> *Id.*

<sup>115</sup> *Id.*

with the philanthropic nature of the parties involved, it is evident that the SCCTM provides the necessary terms and basic principles that no contract based model can achieve.

#### *B. Avoiding Policy Barriers with Solar Commons Community Trust Model*

The following section demonstrates how the SCCTM addresses both the practical and legal barriers low-income communities face when attempting to engage in solar energy projects. Three barriers that all low-communities commonly face when attempting to engage solar energy are: 1) lack of resources to build their own array; 2) available government assistance programs often lack sufficient funding, sustained consistency, and conceptual vision to effectively help those in need; and 3) investor-owned utilities currently challenge a key policy mechanism used by all US solar programs—net-metering. Below we discuss these policy barriers and the ways they are addressed by the SCCTM.

Low income communities lack resources because they cannot afford to purchase and maintain their own solar arrays. The Solar Commons Trust Model circumvents this barrier by establishing a donation-based model<sup>116</sup> whereby community facilitators can locate and identify local donors and financiers with philanthropic aspirations to alleviate needs of the impoverished and underprivileged in their communities.<sup>117</sup> In fact, the Rocky Mountain Institute’s scalability analysis of the Solar Commons Model recognizes a contribution potential of \$1 billion available for Solar Commons projects.<sup>118</sup> The trust structure of the Solar Commons Trust Model provides a viable and attractive donation vehicle because the property once transferred belongs to the trust

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<sup>116</sup> The Solar Commons Project is also exploring financial models in which a Solar Commons can be self-financed – in cases where the money stream is sufficient to pay for the array over several years and still provide a significant financial benefit to the beneficiaries.

<sup>117</sup> Richard C. Ausness, The Role of Trust Protectors in American Trust Law, 45 *Real Prop Tr. & Est. L.J.* 319 (Summer 2010). *Also see UNIF. TRUST CODE §808*

<sup>118</sup> See also BREHM & LILLIS, *supra* note 4.

which, along with its res, is shielded from legal actions against the donors, off-takers, and beneficiaries of the trust.<sup>119</sup>

Second, while it is well known that federal government energy assistance programs available to low income communities are insufficient for those in need,<sup>120</sup> it is only recently that solar energy has been proposed to help low-income families reduce their energy burden and move toward greater self-sufficiency.<sup>121</sup> The Solar Commons Community Trust Model contributes significant societal benefits to such government-sponsored energy assistance programs by addressing some of their key weaknesses. One significant weakness is that, even when fully funded, such programs are insufficient to meet the needs of all qualified households.<sup>122</sup> Donation-based or self-financed Solar Commons would thus contribute a further funding source for low-income energy assistance in the United States. Another key weakness of existing energy assistance programs is that, while they provide needed utility bill assistance to individual households to cover energy costs and keep utilities running, they do so regardless of how well those individual homes are insulated. Thus, the Low-Income Household Energy Assistance Program (LIHEAP) pays

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<sup>119</sup> See generally "The Common Law Corporation: The Power of the Trust in Anglo-American Business History." *Colum. L. Rev.* 116 (2016): 2145.

<sup>120</sup> The long-standing insufficiency of the two key federal Low-Income Weatherization (WAP) and Low-Income Home Energy Assistance Programs (LIHEAP) is well established. For a discussion of the sources of decline and eventual transformation of these initiatives into largely symbolic adjuncts to state social welfare systems, see Lorie Higgins & Loren Lutzenhisler, *Ceremonial Equity: Low-Income Energy Assistance and the Failure of Socio-Environmental Policy*, 42 SOC. PROBLEMS 468 (1995).

<sup>121</sup> For a more recent discussion of how incorporating solar energy into federal energy assistance programs can improve the effectiveness of using public resources to provide societal benefits, see Amit Ronen, Dor Hirsch Bar Gai & Lucas Crampton, *Can Electricity Rate Subsidies Be Reallocated to Boost Low-Income Solar?* (GW Solar Inst. Working Paper, 2016) (arguing that, given the proven ability of residential solar systems to decrease monthly electric bills, rooftop solar could help relieve this disproportionate energy burden and become a source of ongoing wealth creation in lower-income communities more effectively than existing rate subsidy programs).

<sup>122</sup> LIHEAP is a block grant program which the federal government gives states and other jurisdictions to fund local energy assistance programs. For a report on the consistent shortfall in funds for qualified households, see EMILIE SOLTZFUS & JULIE WHITTAKER, CONG. RESEARCH SERV., THE LOW-INCOME HOME ENERGY ASSISTANCE PROGRAM (LIHEAP) (2003).

utility companies directly for the high heating or cooling charges that qualified low-income households see on their bills without fixing the true cause of the household's high energy use: badly insulated buildings. If federal LIHEAP funds were used to directly fund a Solar Commons array, on the other hand, the Solar Commons Trust fund would not deliver its solar savings as credits on individual low-income household's electricity bills. Rather than continue this inefficient practice, a Solar Commons Trust fund would go to a program that weatherized the homes of low-income families using the same vetting institutions and processes already in place for LIHEAP delivery throughout the United States. This is exactly what the Solar Commons prototype in Tucson, Arizona did.<sup>123</sup> Thus a government program like LIHEAP may be used to fund Solar Commons Community Trusts, but the trust would not be designed to support individual low-income household electricity bill savings unless the root problem of inadequate housing had first been corrected through energy efficiency upgrades. Finally, an enormous weakness of current energy assistance programs like LIHEAP is that they provide state and federal dollars directly to the utility billing the low-income household, regardless of whether that utility is using fossil fuels or nuclear energy to generate electricity. In an equitable and urgent transition to a clean energy future, taxpayer subsidies should not be conceptually and programmatically separated from the fuel sources used to generate energy. Such an arrangement does not incentivize utilities to be energy efficient or to adopt clean energy generation technologies. Finally, it should be remembered that government energy assistance programs can have rigid qualifying rules that leave many low-income households outside the assistance zone; government programs can also be unpredictable and vary greatly based upon the agenda of each administration. The Solar Commons

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<sup>123</sup> The Solar Commons prototype operating in Tucson, Arizona makes an existing low-income household weatherization program operated by the Tucson Urban League a beneficiary of the trust's funds.

Trust Model offers a steady income stream for low-income community benefit, with or without government assistance and linked to clean and efficient energy practices that set a precedent for the twenty-first century energy transition.

The third policy barrier facing low-income community use of solar energy comes from utility push back against a key policy mechanism used by all US community solar models including Solar Commons: net energy metering.<sup>124</sup> Utility push-back against the increased efforts by individuals, communities and federal and state governments to generate and capture solar energy at the community level, whether for direct community use or monetization, often involves arguments claiming that such community programs in fact harm low-income communities because net-metered billing does not adequately account for the true costs of solar and thus inadvertently passes costs onto non-solar customers which include low-income households.<sup>125</sup> Advocates of net-metering argue that such solar providers are actually helping utilities (and therefore all ratepayers)

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<sup>124</sup> See *supra* note 85 and accompanying text for a full discussion of net-metering.

<sup>125</sup> Utility companies and regulators frequently allude to negative economic impacts of the very net energy metering (NEM) programs that enable distributed community solar programs to exist, thereby justifying utility efforts to decrease, cap, or suspend NEM programs across the country. See Stephen Comello & Stefan Reichelstein, *Cost Competitiveness of Residential Solar PV: The Impact of Net Metering Restrictions*, 75 RENEWABLE AND SUSTAINABLE ENERGY REV. 46 (2017).

Utility companies and regulators claim NEM programs have the potential to harm low-income ratepayers because NEM removes customer-generators from the rate base and leaves low-income rate payers holding the bag and footing the bill when it comes to power grid maintenance costs. See, e.g., Benjamin Inskeep et al., *The 50 States of Solar* (North Carolina Clean Energy Technology Center & Meister Consultants Group, 2015); Peter Kind, *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*, EDISON ELECTRIC INSTITUTE (Jan. 2013), <http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf>. Advocates of NEM argue that, in fact, net-metered solar customers put clean energy into the utility-owned grid and are therefore saving money for utilities who thus avoid the costs of adding new generation assets as population grows and as dirty, coal plants are taken off line; avoid the costs associated with public health impacts of fossil fuel generation plants; avoid the costs of future carbon accounting, etc. All such avoided costs, NEM advocates argue, bring down the cost of electricity for rate-payers, including low-income rate-payers who do not own solar energy. In the United States, support for and against NEM policies are increasingly politicized positions. See Leah C. Stokes & Hanna Breetz, *Politics in the U.S. Energy Transition: Case Studies of Solar, Wind, Biofuels and Electric Vehicles Policy*, 113 ENERGY POL'Y 76, 76–86 (2018) (discussing the increasing politicization of renewable energy policy).

avoid additional costs of adding new electricity generation assets as older and dirtier coal generation plants are taken off line. While it is beyond the scope of this article to discuss the intricacies of these net-metering policy arguments, there are several reasons why we feel that the Solar Commons community trust ownership model can overcome current push-back against the net-metering policies that make solar energy, and Solar Commons, cost efficient. First, it is important to recognize that criticism of net-metering benefits investor-owned utilities with assets in coal, gas and nuclear power plants. Of the three types of electric utility ownership operating in the United States today—investor, municipal and cooperative, investor-owned utilities dominate the US electricity sector, serving three out of every four utility customers.<sup>126</sup> Because they remain heavily invested in fossil fuel and nuclear power plants, increases in solar and wind generation not owned by these dominant utilities represent lost revenue and stranded assets on their electric grids. It is no wonder that any policy enabling increases in distributed solar energy generation and ownership presents a threat to this twentieth-century, investor-owned business model. However, if we consider that utility arguments against community (and residential) solar programs come in a moment when there is no charge on utilities or the fossil-fuel industry generally for using the air (a common property resource belonging to all breathers, high and low-income alike) as a dump for greenhouse gas pollutants contributing to the disastrous health impacts of climate change, another economic variable emerges. Once a carbon fee is factored into the US energy economy, utility arguments against community solar programs and their net-metering requirements will need to be

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<sup>126</sup> the U.S. Energy Information Administration (EIA) reported that in 2017 investor-owned utilities serve three out of every four utility customers in the United States. For a summary of the report, see Kevin Randolph, “*EIA: Investor-owned utilities served 72 percent of US electricity customers in 2017*” DAILY ENERGY INSIDER (2019) at <https://dailyenergyinsider.com/news/21198-eia-investor-owned-utilities-served-72-percent-of-us-electricity-customers-in-2017/>. See the full report at <https://www.eia.gov/electricity/annual/pdf/epa.pdf>

reframed.<sup>127</sup> The Solar Commons Community Trust ownership model is one of many efforts to equitably value and protect our common property interests in shared earth resources—both clean air and sunshine for clean electricity generation.<sup>128</sup>

There is further reason to think that community solar programs using strong net-metering policies will find more and more political support from federal and state actors. As noted above, in recent years there has been increased interest within the United States to use the common resource of the sun to benefit low-income households through community solar programs. The US Department of Energy recognized this by hosting a “Solar In Your Community Challenge” competition between 2016 and 2018 with the goal of expanding solar energy access to all Americans including those in moderate and low-income households.<sup>129</sup> (The Solar Commons Project was a finalist in this competition.) Furthermore, state legislatures around the United States are also attempting to provide viable pathways to community participation in “community solar” and “community energy” programs, all of which require strong net-metering policies.<sup>130</sup> An

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<sup>127</sup> Todd Levin, Jonghwan Kwon, & Audun Botterud, *The Long-Term Impacts of Carbon and Variable Renewable Energy Policies on Electricity Markets*, 131 ENERGY POL’Y 53, 53–71 (2019) (arguing that a carbon tax is the most system cost-efficient means for reducing carbon emissions and noting that growth in variable renewable energy infrastructure requires specific policy support).

<sup>128</sup> For a review of renewable energy policies around the world connecting the common good of stabilizing our shared climate system and equitably accessing the free and abundant sources of clean energy, see *Renewable Energy Policies in a Time of Transition*, IRENA, IEA & REN21 (2018). These authors note the importance of the kind of net metering policies that support distributed generation of solar energy in the manner that underpins Solar Commons and US community solar programs generally.

<sup>129</sup> See *Solar In Your Community Challenge*, OFF. ENERGY EFFICIENCY & RENEWABLE ENERGY (2017), <https://www.energy.gov/eere/solar/solar-your-community-challenge>.

<sup>130</sup> The statutes of Maine, Vermont, New Hampshire, Massachusetts, Connecticut, New York, Delaware, Maryland, Minnesota, Colorado, Washington, Oregon, California, and Hawaii all feature some form of shared renewables which allow multiple utility customers to participate in the ownership of renewable energy. For a summary of state programs see *USA Shared Energy Map*, SHARED RENEWABLES HQ, at <http://sharedrenewables.org/community-energy-projects> (last visited July 24, 2020). See BENJAMIN INSKEEP ET AL., *supra* note 3, at 5 (noting that as of “August 2014, there were 57 active or proposed utility-offered community solar programs in 22 states,” and that such “utility programs range significantly in design and size”). For an argument supporting the above community solar programs, see John Farrell, *Community Solar Power: Obstacles and Opportunities*, ENERGY, Sept. 2010, [http://www.economicgateway.com/media/userfiles/subsite\\_1/files/RADC/CommunitySolar.pdf](http://www.economicgateway.com/media/userfiles/subsite_1/files/RADC/CommunitySolar.pdf).

analysis of the current success of Minnesota's net-metered community solar program, which has installed the largest amount of community solar megawatt capacity in the United States, supports the argument that 1) all customers (subscribers or not) are seeing financial benefits from community solar and that 2) by enabling individuals and public institutions to save money with community solar, the field of those who benefit from solar has been expanded.<sup>131</sup> The Rocky Mountain Institute's analysis of the Solar Commons Community Trust financial model demonstrated that it would produce a positive net present value for a donor using the rules of Minnesota's community solar program.<sup>132</sup> The Authors are currently designing a Solar Commons prototype that will work in-front-of-the-meter with Minnesota's community solar program in the historically underserved neighborhoods of North Minneapolis providing, through its trust ownership mechanism, a monetary benefit that will pay for internships for local high school students to report on neighborhood environmental issues in their local community newspaper.

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<sup>131</sup> Minnesota's community solar program (in the jurisdiction of investor-owned utility Xcel Energy) has been analyzed by the Institute for Local Self-Reliance (ILSR) which finds that

"Minnesota's community solar program hit a record 635 megawatts of operational capacity in December 2019....Data from Xcel Energy shows that bill credits for all customers totaled more than \$2.2 million in February, for 17.3 million kilowatt-hours. Based on the 2018 approved value of solar, the energy was worth at least \$2.2 million. According to ILSR's analysis, **all customers (subscribers or not) are seeing financial benefits** from community solar. The \$2.2 million figure **does not include** factoring in the distribution capacity value of solar nor the potential volatility of gas prices that are avoided, nor does it include the benefits of shifting wealth from power generation ownership away from a private monopoly and to a broad set of subscribers across the state.

.... While most of the program's total capacity continues to serve commercial customers (87%), a majority of that total capacity (61% or 198 megawatts out of 325 megawatts) now notably serves public entities (up from one-third or about 100 megawatts of the total program capacity in March 2018). These public entities include schools, colleges, hospitals, and county and local governments, as outlined in Xcel Energy's 2018 Annual Operations Report (April 2019).

....In other words, community solar helps broaden those who benefit from solar by enabling individuals and public institutions to save money with solar."

*See also* John Farrell, *Why Minnesota's Community Solar Program is the Best*, INST. FOR LOCAL SELF-RELIANCE (Mar. 23, 2019), <https://ilsr.org/minnesotas-community-solar-program/>.

<sup>132</sup> KEVIN BREHM & GENEVIEVE LILLIS, ROCKY MOUNTAIN INST., SOLAR COMMONS FINANCIAL ANALYSIS RESULTS: SOLAR COMMONS PROJECT ANALYSIS PHASE 1 OF 2 (2018).

This Solar Commons prototype will demonstrate the variety of benefits, beyond electricity bill savings, that a low-income community can create when using strong net-metering policies together with trust ownership to capture and distribute the common wealth of solar energy.

Strong net-metering policies are indeed a key to increasing solar energy generation in the twenty-first century. However, it is not clear whether investor-owned utility monopolies will continue to dominate the electric grid once distributed renewable energy generation technologies present new opportunities and call for new and shared ownership policies.<sup>133</sup> It is important to note that, even without the strong net-metering policies, the Solar Commons model presents an opportunity for low-income communities to capture a common wealth benefit by using battery storage. Thus, in another investor-owned utility jurisdiction of Minnesota where strong net-metering policies for community solar do not exist, the Authors are designing a behind-the-meter Solar Commons prototype that will use a battery to store solar energy and sell it back into the grid when demand charges create a higher price than what weak net-metering rules allow.<sup>134</sup> This will create a greater revenue stream for the trust and thus more funding for the Solar Commons beneficiary.

In summary, we have noted several ways that the Solar Commons Community Trust Model can circumvent current policy barriers facing US solar energy ownership in an investor-owned

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<sup>133</sup> For a discussion on challenges facing incumbent utilities from distributed renewable energy generations, see Kevin B. Jones, Taylor L. Curtis, Marc de Konkoly Thege, Daniel Sauer, & Matthew Roche, *Distributed Utility: Conflicts and Opportunities Between Incumbent Utilities, Suppliers, and Emerging New Entrants*, in *FUTURE OF UTILITIES*, UTILITIES OF THE FUTURE 399–415 (2016). For a discussion of the negative impacts of strengthening monopoly ownership in the US electricity sector see John Farrell & Karlee Weinmann, *Mergers and Monopoly: How Concentration Changes the Electricity Business*, INSTITUTE FOR LOCAL SELF-RELIANCE (Oct. 31, 2017), <https://ilsr.org/electricity-mergers-and-monopoly/>.

<sup>134</sup> For a description of how PV batteries can change the economic value of a grid-connected solar array, see Kelvin Say, Michele John & Roger Dargaville, Power to the People: Evolutionary Market Pressures From Residential PV Battery Investments in Australia, 132 ENERGY POL’Y 110977 (2019).

utility monopoly landscape in order to provide a common good benefit to low-income communities.<sup>135</sup> It is important to note that public utility companies provide an essential service to consumers by delivering effective and efficient access to power. The public utility industry creates thousands of jobs by powering our nation’s industries and commerce; without them, we would all be left in the dark. Nevertheless, investor-owned public utilities, like other for-profit companies, must keep the interests of their shareholders paramount and provide acceptable levels of profits and returns on investment. In contrast, the Solar Commons Trust Model plugs community members into a mission of serving their own communities by using solar generated energy and by creating incentives for engagement as stakeholders in the process of creating the local governance rules of the trust agreement. Current struggles over how solar energy use can be designed to benefit Americans at all income levels reveal that there is a great need for a more resilient and flexible model than current investor-owned, publicly regulated utility companies and government programs can provide. As solar and other distributed renewable energy technologies create new opportunities for greater consumer participation in the area of self-generating energy at point of use—where traditional energy “consumers” of dirty electricity coming from distant and enormous coal and gas power plants transition into “prosumers” of clean electricity produced from small solar arrays on nearby rooftops and urban brownfields, the need for innovation in solar energy ownership models will also grow. Many barriers facing low-income communities seeking

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<sup>135</sup> We have not described solar energy programs set up by investor-owned utility companies are limited in the amount of support they can provide due to the fact that such companies are ultimately driven by their profit motives which naturally limits the amount of support they can or will provide to low-income communities

access to the benefits of solar energy in current public and private property regimes can be circumvented using the Solar Commons Community Trust ownership model.

## V. SOCIAL INNOVATIONS OF SOLAR COMMONS COMMUNITY TRUSTS

The Solar Commons Trust Model should be viewed as a tool for sustainable social innovation. New technologies often create opportunities for social innovations.<sup>136</sup> Users of solar energy, like adopters of earlier energy technology systems, can become social inventors as they seek new ways to overcome barriers to equitable solar deployment.<sup>137</sup> As in the past, the legal reforms that come with wide spread applications of the practical solutions of trust law can also enable new social forms such as new business institutions and new vehicles for social inclusion. As noted previously, the Solar Commons Community Trust Model's practical structure offers flexibility to work within and around current utility laws. It also offers advantages over contract law and other utility or government programs in delivering community benefits. As we suggest below, offering such flexibility within the dominant property regimes gives the Solar Commons Community Trust Model opportunities to foster new, practical frameworks that institutionalize and protect solar energy as a form of common property holding a common good asset for intergenerational equity. SCCTM's structures also offer new opportunities to expand energy democracy by including low-income communities as stakeholders in the co-governance of

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<sup>136</sup> THE SOCIAL CONSTRUCTION OF TECHNOLOGICAL SYSTEMS: NEW DIRECTIONS IN THE SOCIOLOGY AND HISTORY OF TECHNOLOGY (Wiebe E. Bijker, Thomas P. Hughes & Trevor Pinch eds., 1989).

<sup>137</sup> THOMAS P. HUGHES, NETWORKS OF POWER: ELECTRIFICATION IN WESTERN SOCIETY, 1880–1930 (1993).

community solar assets through the beneficiaries' role as equitable title holder and consultant in the rule-making process of the trust agreement.

#### *A. Equitable Ownership, Community Stakeholders, Energy Democracy*

Solar energy technology offers expanded possibilities for the design and practice of energy ownership in the twenty-first century. The centralized ownership institutions appropriate for industrial scale power generation plants and the massive networks of gas pipelines and coal trucks that carry fossil fuels to those plants evolved over the twentieth century to serve specific stakeholders in a carbon-intensive energy infrastructure system. Ownership vehicles appropriate for low-carbon energy infrastructure systems that include solar energy are only beginning to take shape. In the case of solar, it is the technology itself that offers insight for social innovation. Solar energy's distributed fuel source (sunshine) and the variety of scales and sites available for deploying its photovoltaic technology--from small rooftop installments at point of use to larger arrays in rural settings that feed solar electricity directly into transmission grids—provide keys for social innovators looking to expand equity and democracy in a twenty-first century clean energy system. The technological facts and social possibilities surrounding solar energy are leading social thinkers toward innovations in what is called “energy democracy;” decentralized ownership models for renewable energy, broadened access to clean energy ownership and greater participation in governance of energy resources.<sup>138</sup> There are several ways in which the Solar Commons Community Trust Ownership Model participates in and expands energy democracy.

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<sup>138</sup> The term “energy democracy” refers to evolving hopes and opportunities within the field of energy transformation. The following articles summarize the scope of the term: Kacper Szulecki, *Conceptualizing Energy Democracy*, 27 ENVTL. POL. 21 (2018); Jennie C. Stephens, *Energy Democracy: Redistributing Power to the People Through Renewable Transformation*, 61 ENV'T: SCI. AND POL'Y FOR SUSTAINABLE DEV. 4 (2019); Matthew J. Burke & Jennie C. Stephens, *Political Power and Renewable Energy Futures: A Critical Review*, ENERGY RES. & SOC. SCI. 35 (2018): 78-93.

First, Solar Commons apply the concept of “equitable ownership” to low-income communities who are underserved by current community solar ownership models (as noted in the introduction to this article) thereby expanding the quantity and quality of solar energy beneficiaries. The equitable owner of the benefits of a Solar Commons Trust is a community program serving the interests of low-income neighborhoods otherwise left out of traditionally administered solar energy benefits. Second, as a bottom-up community empowerment tool, Solar Commons Trust Ownership is designed to include community participation in the process of trust creation. Community members can use public and civic association processes to form partnerships to initiate bringing a Solar Commons project to their neighborhood. Alternatively, nonprofit associations, churches, temples, mosques and other forms of community congregation can initiate the process of partnership building to determine what local need might be served through a Solar Commons Trust. Once the Solar Commons Trust partnerships—settlor, host, trustees, trust protector and beneficiaries—are established, the process of writing the trust agreement can also include community stakeholders as participants. Community stakeholders might also be active once the solar array is built and generating an income stream for the Solar Commons trust beneficiary. Since the beneficiary is the equitable owner of the trust benefits, stakeholders involved in the governance structure of the beneficiary institution will also have a voice in monitoring the effectiveness of the trust arrangement and reporting to the Solar Commons Trust Protector if changes need to be made.

Third, these local, practical means of expanding community participation in solar energy ownership through the legal design of Solar Commons Trust arrangements will also be amplified by scaling Solar Commons in the US and by applying conceptual design principles expressed in community-engaged public art. The equitable title to solar energy commonwealth established in

the Solar Commons Community Trust ownership model needs to be made visible and public in the communities who benefit from the Solar Commons trust. In the expanded notion of energy democracy enabled by solar energy, these Solar Commons community stakeholders are, in a cultural sense, “owners” of their fair share of the sun’s common wealth. They are like the users of the enduring medieval peat and wood commons in English law who remain, generation after generation, equitable owners of energy resources in lands whose legal title is held in trust. In order to innovate a locally effective Solar Commons Trust ownership model and scale that model to be nationally effective, the Solar Commons Trust Model needs to “translate” the equitable title of trust law out of its technical legal language and into its informal, communicable (and thus “equitable”) cultural form. Thus the social innovation of SCCTM ownership needs a cultural innovation that can be delivered in public art so that community education and celebration can help give meaning to the collective “community” that is at the heart of real community solar ownership. In the Tucson-based Solar Commons prototype, several public art elements were created, with community members, in the low-income neighborhood of the Solar Commons beneficiary thus giving the conceptual legal practice of equitable title a public face.<sup>139</sup>

While the authors are currently involved in actualizing the legal and cultural design of Solar Commons Trust ownership through prototypes built in Minnesota and Arizona,<sup>140</sup> their aim is to see Solar Commons proliferate quickly in cities and towns across the US as part of the broader energy democracy work to innovate democratic institutions to address the twin crises of social inequality and climate change. In this larger goal, the authors are inspired by the successful scaling strategy accomplished by another innovation linked to expanding democracy through America’s

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<sup>139</sup> Readers are invited to visit the Solar Commons Research Project website at <http://solarcommonsproject.org>. to view the Solar Commons neighborhood art.

<sup>140</sup> See the work of the Solar Commons Research Project at <http://solarcommonsproject.org>.

social infrastructures over a century ago: the Carnegie Library model. To better understand how the Solar Commons Trust Model views its contribution to social innovation, it is instructive to consider the cues it takes from the Carnegie model.

At the turn of the twentieth century, the Carnegie Endowment sought to support democratization of knowledge by building over 1,500 “free libraries” in cities and towns throughout the United States. The free Carnegie Libraries were a gift of US Steel magnate, Andrew Carnegie, who maximized his Gilded Age wealth for the common good by outlining key principles of open-access, open-shelf library design and providing grants to communities willing to build and steward such “free libraries.” The Carnegie Foundation worked with local organizers—often women’s clubs partnering with local government officials to locate sites and other in-kind supports—and within a span of decades helped institutionalize these new “open shelf” access practices that further democratized how public libraries served local communities in the United States.<sup>141</sup> Taking its cue from the success of the Carnegie Libraries, the Solar Commons

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<sup>141</sup> See ABIGAIL A. VAN SLYCK, *FREE TO ALL: CARNEGIE LIBRARIES & AMERICAN CULTURE, 1890-1920* (1995) (noting how Carnegie libraries contributed to the broader picture of American democracy). For a discussion of how Carnegie library design principles impacted local architectural design in spatializing democracy and education see Nan Dahlkild, *The Emergence and Challenge of the Modern Library Building: Ideal Types, Model Libraries, and Guidelines, from the Enlightenment to the Experience Economy*, 60 LIBRARY TRENDS 11, 18–20 (2011), writing:

The introduction of “open shelves” or “open access” around the turn of the last century was an important and much-discussed prerequisite for the development of modern public libraries ....An important conception was the library’s central role in education, enlightenment, and democracy. The ideal was that library materials should be available to all, regardless of class, race, origin, language, or education. These libraries were often founded and funded by private patrons of culture and education.” (18) A special type of this library model were the Carnegie libraries. The Scottish-American steel magnate Andrew Carnegie funded no fewer than 2,509 libraries throughout the English-speaking world as an early example of globalization: 1,681 in the United States; 125 in Canada; 660 in England and Ireland; 18 in New Zealand; 4 in Australia; 12 in South Africa; 6 in the Caribbean; and 1 each in the Seychelles, Mauritius, and Fiji (Grimes, 1998, p. 9). These libraries, built as miniature temples of knowledge, belong to a distinctive category of their own. To begin with, Carnegie supported a plethora of charitable initiatives. In his essay “The Best Fields for Philanthropy” (published in the North American Review in 1889), he listed seven fields: universities, libraries, hospitals, public parks, meeting and concert halls, public

Trust Ownership Model could provide similar design principles to scale and democratize solar energy over the next decade in the United States. Below are examples of how the Solar Commons Trust model would scale in the US following the Carnegie library model.

First, based on the prototyping work of the Solar Commons research team that is designing and testing flexible and clear trust guidelines and open source Solar Commons legal templates, Solar Commons Community Trust Model could be a vehicle for large, Carnegie-like donors with missions to mitigate climate change and enhance social equity to partner with low-income community program providers to fund Solar Commons projects in rural and urban areas across the US.<sup>142</sup> In addition to providing the legal vehicles for scaling, Solar Commons Community Trust Model could also provide communities and donors with the legal “translations,” the cultural designs and neighborhood engagement processes that are a significant part of how Solar Commons will become an effective “commons option” in the solar energy sector. Just as the Carnegie libraries expanded twentieth century ideals of American democracy by offering local readers the practical experience of exploring knowledge in open-access book shelves, the Solar Commons Community Trust Model would expand twenty-first century democracy concepts by providing a creative, public art-making process for local, low-income neighborhoods to become conscious of the broader democratic principles behind equitable ownership of renewable energy assets and, by extension, in the sustainable stewardship of common property earth resources. Solar Commons Community Trust Model would realize these democracy-expanding ideals by outlining processes

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baths, and churches. But the best gift that could be made to a local community, he argued, was a public library. Later he concentrated his donations to libraries.

<sup>142</sup> The business plans to scale the Solar Commons Trust Model in the US are being developed by the Solar Commons nonprofit, a 501(c)3 charitable organization. For further information see Solar Commons, <https://www.solarcommons.org>.

whereby neighborhoods benefiting from programs supported through Solar Commons trust funds can see themselves and participate as stakeholders in equitable ownership. Just as Carnegie library architects were given general and flexible design principles to incorporate democratic ideals of knowledge-sharing—open shelf access; loft structures to designate the “higher” ideals of enlightenment knowledge--into the library building structure, communities developing a Solar Commons Community Trust would have design principles to co-create public art that defines the neighborhood as a Solar Commons beneficiary and celebrates their stakeholder status in the equitable title to the sun’s common wealth.<sup>143</sup> Solar Commons design principles would include creating a “public face” for Solar Commons ownership through both public art (as noted above) and through digital app tools that make public and transparent the kilowatt hours produced by a local Solar Commons array and the benefits it funds for its low-income community stakeholders.<sup>144</sup> Based on ancient legal precedent, we know that community stakeholders benefiting from feudal energy commons of peat and wood celebrated their equitable interests in the earth’s energy gifts

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<sup>143</sup> To create the public art, Solar Commons Research Team members worked in the Solar Commons beneficiary neighborhood of the first Solar Commons prototype in Tucson, Arizona. See Solar Commons Project, [www.solarcommonsproject.org](http://www.solarcommonsproject.org). Researchers collaborated with students at the University of Arizona School of Art and children in afterschool programs of the Solar Commons beneficiary neighborhood, the Garden District, to create a board game that teaches “design principles” of earth commons (water, air, plants, animals, minerals, and sun) in connection with design principles of Solar Commons (agreement, gathering/technologies, electricity, trusts, neighborhood). The children become the “messengers” of Solar Commons in their neighborhood by playing the board game in local festivals and with family members. The children playing the board game are also the subject of a neighborhood mural and utility box paintings throughout the neighborhood.

<sup>144</sup> The digital face of the Solar Commons includes an app tool whereby hosts and trustees input the kilowatt hours produced by the Solar Commons array, the savings on their electric bill, the cost subtractions made to maintain the array, and the final amount of money owned by the trust and sent to the beneficiary. This information is registered and maintained in a data base accessible by all parties to the Solar Commons trust including the trust protector. By creating transparency in the electronic and monetary processes, the digital tools help maintain TRUST in the Solar Commons ownership system. Again, all of these technical and conceptual design elements are part of the work of the Solar Commons Research Project, a team of community-engaged, multi-disciplinary researchers who view community trust ownership of solar energy assets to include both technical legal and cultural norm-shaping forms.

in yearly festivals, local saints' days, and local village fairs.<sup>145</sup> Modern legal forms of community ownership can also be more powerfully and meaningfully iterated and scaled using both technical documents and joyful celebrations.

Carnegie libraries have lasted in various forms for three generations. Solar Commons Trusts will last as long as is stipulated in the trust agreement, generally a period given by the solar technology itself: twenty-five to thirty years. But once the practice of “Solar Commoning”<sup>146</sup> is recognized in local communities and the role of Solar Commons trust protectors is institutionalized in all states, Solar Commons can continue to iterate and scale throughout the twenty-first century in legal and cultural forms that articulate its democratic, regenerative vision of energy commons in sync with earth commons. Despite its very different material form from the brick and mortar of a Carnegie library, the “public face” that community stakeholders and funders co-create for Solar Commons will nevertheless offer an opportunity for general, democratic principles informing the common good to be adapted to local, contemporary realities. Carnegie libraries are all different; local architects designed them to look like the places where they were built. Solar Commons Trusts will likewise adapt principles of local, equitable energy ownership to meet the diverse needs of twenty-first century life that arise differently for diverse communities. The

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<sup>145</sup> Much as medieval commoners had festivals and other cultural forms that reinforced the shared public memory of their equitable title to turbary or forest commons, Solar Commoners should also have cultural forms that iterate their solar access rights and stewardship duties to sustainably manage shared assets for the good of the community.

<sup>146</sup> Activists and scholars associated with the “commons movement” use the noun “commons” as a verb for reasons best articulated by two prominent commons scholars, David Bollier and Peter Linebaugh. See David Bollier, DAVID BOLLIER: NEWS AND PERSPECTIVES ON THE COMMONS (Aug. 2019), <http://www.bollier.org/commons-different-engine-innovation-0> accessed August 1, writing:

Our basic challenge is to rediscover “commoning” – the commons as a verb, the commons as a set of social practices. “The allure of commoning,” historian Peter Linebaugh has written, “arises from the mutualism of shared resources. Everything is used, nothing is wasted. Reciprocity, sense of self, willingness to argue, long memory, collective celebration and mutual aid are traits of the commoner.”

diversity of Solar Commons adaptations should also be visible in the community's Solar Commons public art.

How the legal idea of equitable title evolves to address community needs for social and ecological equity in twenty-first century America will require a wide-ranging legal imagination. The Solar Commons Research Project aims to deliver the tools to experiment with trust law so that trust ownership can expand energy democracy with solar technology just as it expanded energy equity four hundred years ago with peat and wood commons. Initially, Solar Commons projects will stand as neighborhood models; perhaps, in the future, a significant segment of our national renewable energy powered electric grid could be allocated to serving local underserved communities through a "commons option" delivered by Solar Commons Trust ownership.<sup>147</sup>

#### *B. Institution-Building for Commons: the Solar Commons Trust Protector and Intergenerational Equity*

The Solar Commons Trust Model embraces the notion that each generation has a responsibility to maintain the resources of our Earth so that they remain available for each generation to come. Solar energy is among one of these valued resources.<sup>148</sup> The equitable considerations that support the principles of utilizing a trust-based model for solar energy support the notion that later

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<sup>147</sup> A 2018 study of the scalability potential of the Solar Commons model by the Rocky Mountain Institute found that a minimum of ten gigawatts could be installed in the US. (There are currently sixty gigawatts of installed solar in the US.) See BREHM ET AL., *supra* note 4.

<sup>148</sup> See Dinah Shelton, *Intergenerational Equity*, in SOLIDARITY: A STRUCTURAL PRINCIPLE OF INTERNATIONAL 131 (Rfidiger Wolfrum & Chie Kojima eds., 2010); Edith Brown Weiss, *Climate Change, Intergenerational Equity and International Law: An Introductory Note*, 15 CLIMATIC CHANGE 327, 330 (1989) ("Each generation is both a trustee and a beneficiary, or a custodian and user, of the planet."). See also E.B. Weiss, *Intergenerational Equity: A Legal Framework for Global Environmental Change*, in CHANGE AND INTERNATIONAL LAW 395 (1992); Donna R. Christie & Marine Reserves, *The Public Trust Doctrine and Intergenerational Equity*, 19 J. LAND USE 427, 434 (2004).

generations should not be worse off than previous generations.<sup>149</sup> Solar Commons has advanced the notion that each and every generation serves as both a trustee for the planet, with obligations to care for its resources, and as a beneficiary, with rights to use and enjoy its resources. To institutionalize these principles in the solar energy sector, the Solar Commons Research Team is defining and testing the roles and responsibilities of a Solar Commons Trust Protector.

The role of “trust protector” is given in trust law as a flexible device to encourage transparency and accountability between the trustee and beneficiary in a trust relationship. Trust protector roles have evolved to meet the needs of community land trusts and conservation land trusts. In the Solar Commons Community Trust Model, the role of trust protector will evolve to meet the needs of the solar array hosts, trustees and community beneficiaries. Its key role will be to protect the trust asset for the good of the community beneficiary. But how it carries out that role, how it sets up its relationships with the trust beneficiaries and trustees, how it creates rules to change the rules of the trust agreement when necessary, all of these functions of the trust protector are part of the social innovation called for by the adaptation of trust ownership to community solar. Researchers involved with the Solar Commons Research Project have created a charitable purpose organization, the Solar Commons nonprofit, to innovate and institutionalize the role of the trust protector for Solar Commons ownership in the US.<sup>150</sup> As solar energy is increasingly and successfully owned by Solar Commons Trusts as a form of common wealth, the work of a Solar Commons trust protector will become clearer and can be shared and even standardized to bring stability to the institutionalization of Solar Commons Trust ownership.

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<sup>149</sup> Edith Brown Weiss, *What Obligation Does Our Generation Owe to the Next? An Approach to Global Environmental Responsibility: Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INT'L L. 198, 200 (1990).

<sup>150</sup> See <https://www.solarcommons.org/>

The social shape of common wealth trusts and the institutions needed to protect and institutionalize them are an area of growing concern to legal thinkers and environmental activists alike. The social innovations offered by the research behind the Solar Commons Trust Protector will contribute to this ongoing field of legal and institutional design. As noted previously, invoking the Public Trust Doctrine is an emergent legal strategy to protect the earth's atmosphere and bring its carbon-carrying capacity into line with the conditions needed for the next generation of earthlings to thrive as their forebears have for the past 10,000 years of the relatively stable climate regime of the Holocene.<sup>151</sup> Many scientists, economists, and politicians are calling for the creation of common wealth trusts to protect, govern, and steward air, water and other resources diminished and under ever more serious threat given ineffective state laws and harmful market sector practices. As noted by Peter Barnes, commons activist and scholar, "Designing and creating common wealth trusts, when and where possible, will involve research, discussion, and experimentation. What assets should be held by common wealth trusts? How should the trusts be governed? How should their valves—that is, the mechanisms that reduce overuse of nature—operate, and how should revenue be collected? There are no perfect answers to these questions, but there are many good ones worth testing." Barnes goes on to note, A transition to an economy in harmony with nature and human needs will take a great deal of time and effort. During this multi-decade endeavor, I would not place too much faith in public policies that can fluctuate with the vagaries of politics. However, I would place it in solidly built common wealth trusts, supported by a society of co-owners and bound as much as humanly possible to generations to come.<sup>152</sup>

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<sup>151</sup> Mary C. Wood, *Nature's Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577, 590 n.69 (2007).

<sup>152</sup> Peter Barnes, *Common Wealth Trusts: Structures of Transition*, GREAT TRANSITION INITIATIVE (Aug. 2015), <http://peter-barnes.org/article/common-wealth-trusts-structures-of-transition/>. See also PETER BARNES, CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS (2006).

It is important to understand the social innovations proposed and being tested by researchers designing Solar Commons Community Trust Ownership in the larger category of the “structures of transition” which many social activists and thinkers have undertaken in recent decades. A key concern and design feature of all these structures is intergenerational equity: how can we protect the conditions and resources of life on Earth for future generations? Given its deep historical roots in protecting intergenerational equity, trust law is inherently structured to assist in creating the social structures to transition from a fossil fuel to a renewable energy economy. The Solar Commons Community Trust Model is part of this larger social work.

## CONCLUSION

The brief history that opened our introduction to the Solar Commons Trust Model demonstrated how trust ownership, since its beginnings as an equitable solution for women, soldiers and landless peasants living within feudal property regimes, has been used as a vehicle to gain control of both private property and *commons* assets, despite the constraints of the laws of its time. The Solar Commons Model shows that trust law remains a logical place to look for equitable solutions to twenty-first century problems of US energy distribution and ownership. The electric utility industry, arguably one of the largest industries in the US economy, has successfully avoided anti-trust liability despite its key business model being a publicly regulated monopoly.<sup>153</sup> Over the past

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<sup>153</sup> The purpose of antitrust law is to promote competition and prevent undesirable monopoly power. Congress designed antitrust laws to protect free competition and to prevent the excessive exercise of private monopoly power. Section two of the Sherman Anti-Trust Act provides that:

Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony. . . .

15 U.S.C. § 2 (1982).

The US electricity industry avoids monopoly liability by claiming to be a natural monopoly (and submitting to public . Natural monopolies exist, by definition, where economic factors determine that competition

decades, the electric utility industry is slowly undergoing deregulation.<sup>154</sup> As the prices of solar and other renewable energy-sourced electricity come down thanks to new technological advances, the natural monopoly status of the electricity sector is being challenged.<sup>155</sup> Despite increased deregulation and new technology-enabled opportunities, the monopoly privileges of electric utilities continue to create obstacles to local community ownership of solar, with the greatest impacts on low-income communities.<sup>156</sup> In the past, trust law proved a useful tool to equitably hold property in ways that were at odds with a dominant property regime; today the Solar Commons Trust Model provides relief from utility monopoly overreach that may be more reminiscent of a feudal landlord than a modern, competitive business. Solar Commons Trusts offer an important set of conceptual and practical tools to de-lever the influence of current monopoly utility companies on the potential community value of solar power. While there is some irony in Solar Commons using trust law against carbon-intensive, path dependent monopoly utilities given the historic power of trusts to enable some of America's largest monopoly organizations (i.e. US Steel and Standard Oil) to grow in the nineteenth and twentieth centuries, we must remember that trust law also reprised its role as a protector of local and low-income community interests in land in the late twentieth century as a tool for nature conservancy trusts and community land trusts. The current US public trust litigation strategies that hold states

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cannot regulate the market because, inevitably, only one supplier for the market can survive. In such cases, it is argued, a sole supplier should not face antitrust liability for achieving the position of a monopolist. For a defense of the natural monopoly position, see Neil W. Hamilton & Anne M. Caulfield, *The Defense of Natural Monopoly in Sherman Act Monopolization Cases*, 33 DEPAUL L. REV. 465 (1983).

<sup>154</sup> For a critique of the natural monopoly status see Jeffery D. Schwartz, *The Use of the Antitrust State Action Doctrine in the Deregulated Electric Utility Industry*, 48 AM. U. L. REV. 1449 (1998). See also Ronald L. Lehr, *New Utility Business Models: Utility and Regulatory Models for the Modern Era*, 26 ELECTRICITY J. 35 (2013).

<sup>155</sup> For an analysis of the social and legal factors behind the electric utility industry's success at avoiding anti-trust liability see Amy L. Stein, *Breaking Energy Path Dependencies*, 82 BROOK. L. REV. 559 (2017).

<sup>156</sup> Mueller & Ronen, *supra* note 3.

accountable for stewarding the carbon-carrying capacity of the air as a common property are another example of the evolving legacy of U.S. trust law for the twenty-first century.

This article has also laid out the practical dimensions of Solar Commons Trusts. In order to empower communities and reinforce the principle that solar energy should be available for everyone, we have demonstrated how the Solar Commons Trust Model offers all of the benefits of a traditional trust such as, flexibility, sustainability, versatility, resiliency, and scalability, while serving a charitable purpose. The application of a trust-based model in the solar arena allows for the philanthropic aspirations of local donors and financiers to support self-governing civic efforts to alleviate the needs of the impoverished and repair historical injustices persisting in their local communities and, at the same time, mitigate the globally harmful effects of climate change whose impacts fall hardest on those living in poverty, wherever they live on our shared planet.<sup>157</sup> Solar Commons Trusts can also avoid specific barriers that private, investor-owned utilities and government sponsored energy programs present to low-income community energy ownership. In short, this article has laid out the Solar Commons Community Trust Ownership Model as a common property device, a “commons option,” deployable among the public and private property regimes that dominate the solar energy sector today.

The Solar Commons Trust Model should be viewed as part of the creative legal thinking that is reinvigorating public purpose ownership in areas where twentieth century market and state governance has failed to sufficiently protect the equitable interests of local communities in their economic and ecological well-being. Applying the resilient and time-tested ownership ideas of

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<sup>157</sup> Robert Mendelsohn, Ariel Dinar, & Larry Williams, *The Distributional Impact of Climate Change On Rich and Poor Countries*, 11 ENV'T AND DEV. ECON. 159 (2006).

trusts, the Solar Commons Trust Model sheds new light on this most ancient property form and takes us back to first principles in the preservation of our planet's most precious resources.<sup>158</sup>

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<sup>158</sup> Michael McGinnis & Elinor Ostrom, *Design Principles for Local and Global Commons*, in THE INTERNATIONAL POLITICAL ECONOMY AND INTERNATIONAL INSTITUTIONS 465–493 (2nd ed. 1996).