

# Community-Scale Solar: Watt's In It for Indian Country?

*Racheal M. White Hawk\**

*Native American households disproportionately lack electricity service in comparison to other households in the United States. Community-scale solar energy could be a valuable means of helping to address this disparity, especially on remote Indian reservations where access to the electric grid can be cost-prohibitive. However, federal policymakers will need to address several obstacles, including funding constraints, cultural barriers, energy storage limitations, and jurisdictional issues, to make widespread access to community-scale solar energy possible for Indian communities. This Article explores each of these obstacles in detail and provides a comprehensive set of recommendations for dramatically expanding community-scale solar development in Indian country.*

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\* JD May 2016. Sustainability Law Student Research Fellow, Arizona State University's Sandra Day O'Connor College of Law, and enrolled citizen of the Rosebud Sioux Tribe of South Dakota. This Article was researched and written under the supervision of Professor Troy A. Rule as part of the Sandra Day O'Connor College of Law's Sustainability Law Research Clusters project. Many thanks to those involved in the Clusters project and to Pilar Thomas, Of Counsel, Lewis Roca Rothgerber Christie LLP, for their valuable input on early stages of this Article.

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## I. INTRODUCTION

On the western edge of the Navajo Reservation in northern Arizona sits the Navajo Generating Station—a massive power generating facility that pumps sixteen million tons of carbon dioxide into the atmosphere each year and consumes fifteen tons of coal per minute, twenty-four hours a day, every day.<sup>1</sup> The station is the largest coal-fired power plant in the West in terms of generating capacity and provides electricity for much of the southwest, supplying power to portions of Arizona, California, and Nevada.<sup>2</sup> It is also responsible for twenty-nine percent of Arizona’s emissions from electricity generation.<sup>3</sup> Much of the coal that feeds this station originates in the Black Mesa mine, a large surface mining site that is also situated on Navajo and Hopi lands.<sup>4</sup>

Despite having this massive coal-powered energy generator and the mine that serves it in their backyard, thirty-seven percent of households on the Navajo Reservation lack electricity.<sup>5</sup> Navajo Nation lands suffer the most from the station’s pollution yet enjoy almost none of its benefits in terms of access to electric power. Sadly, the Navajo Reservation is not unique in this regard: 14.2 percent of Indian households on reservations nationally have no access to

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<sup>1</sup> Abraham Lustgarten, *End of the Miracle Machines: Inside the power plant fueling America’s drought*, PROPUBLICA (June 16, 2015), <https://projects.propublica.org/killing-the-colorado/story/navajo-generating-station-colorado-river-drought>.

<sup>2</sup> *Id.*

<sup>3</sup> *Id.*

<sup>4</sup> Charles F. Wilkinson, *Home Dance, the Hopi, and Black Mesa Coal: Conquest and Endurance in the American Southwest*, 1996 B.Y.U. L. REV. 449, 475 (1996) (discussing the supply of coal from deposits under Navajo and Hopi lands on Black Mesa to the Navajo Generating Station to power the Central Arizona Project).

<sup>5</sup> See David Tarasi et al., *18,000 Americans Without Electricity: Illuminating and Solving Navajo Energy Crisis*, 22 COLO. J. INT’L ENVTL. L. & POL’Y 263, 265 (2011).

electricity, compared to only 1.4 percent of all U.S. households.<sup>6</sup> Moreover, for tribal households that do have electricity, they spend a disproportionate amount of their income on energy compared to non-Indian households.<sup>7</sup> Some tribal households without electricity have to drive long distances to purchase food and because they lack refrigeration they have to cook their food the same day.<sup>8</sup> Provided it is cold enough, they will store their food outside.<sup>9</sup> For heat, they have to haul coal or chop wood.<sup>10</sup> They use propane for cooking and kerosene or flashlights to navigate their homes or study at night.<sup>11</sup> To power appliances in the home, some will use car batteries, running back and forth between their homes and vehicles to recharge the batteries.<sup>12</sup> Assuming they have water to pump, electricity is needed to pump water to their home.<sup>13</sup>

In contrast, people living in urban off-reservation cities supplied with electricity from the Navajo Generating Station can simply flip a light switch to study. Internet is accessible from their homes. Cell phones and laptops can be charged in nearby outlets. Water is accessed by simply turning on the faucet. Hospitals can preserve vaccines and medicines within reach for patients. Indeed, lack of electricity is an enormous barrier to development that is all too often forgotten, and it does more than almost anything else to keep the poor trapped in poverty.<sup>14</sup> Not only does lack of electricity keep families in poverty, it can also severely affect their health. Native Americans are 1.3 times more likely than

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<sup>6</sup> Tracey LeBeau, *Reclaiming Reservation Infrastructure: Regulatory and Economic Opportunities for Tribal Development*, 12 STAN. L. & POL'Y REV. 237, 240 (2001) [hereinafter *Reclaiming Reservation Infrastructure*].

<sup>7</sup> *Id.* at 238; see also OFFICE OF INDIAN ENERGY, U.S. DEP'T OF ENERGY, INDIAN ENERGY START PROGRAM & CAPACITY BUILDING: 2012-2013 SUCCESS HIGHLIGHTS 2 (2013), <http://www.nrel.gov/docs/fy13osti/58757.pdf> ("DOE research has revealed that the availability of household electricity is significantly lower on Native American reservations compared to the rest of the country. Additionally, Native Americans spend a disproportionate percentage of their household income on electricity compared to the rest of the U.S. population.")

<sup>8</sup> Kathy Helm, *18,000 Navajo homes still lack electrical access*, NEWS FROM INDIAN COUNTRY (June 2008), <http://www.indiancountrynews.com/index.php/news/9-news-from-through-out-indian-country/3833-18000-navajo-homes-still-lack-electrical-access>.

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*; Alysa Landry, *Not Alone in the Dark: Navajo Nation's Lack of Electricity Problem*, INDIAN COUNTRY TODAY MEDIA NETWORK (Feb. 11, 2011), <http://indiancountrytodaymedianetwork.com/2015/02/11/not-alone-dark-navajo-nations-lack-electricity-problem-159135>.

<sup>11</sup> Helm, *supra* note 8; Landry, *supra* note 10.

<sup>12</sup> Ibbby Caputo, *Solar Power Makes Electricity More Accessible On Navajo Reservation*, NPR (April 21, 2015).

<sup>13</sup> Helm, *supra* note 8.

<sup>14</sup> Bryan Walsh, *Building a Country by Switching On the Lights*, TIME (Jan. 31, 2011), <http://content.time.com/time/health/article/0,8599,2045426,00.html#ixzz1DZNYEk4v> ("As long as those hundreds of millions remain in the dark, they will remain poor — yet solving energy poverty isn't even one of the U.N.'s ambitious Millennium Development Goals.")

non-Natives to have asthma.<sup>15</sup> High rates of asthma have been linked to indoor air pollution, such as the combustion created from burning wood, coal, or kerosene to heat or light the home.<sup>16</sup> Indeed, repeated exposure to kerosene fumes can be as toxic as smoking two packs of cigarettes a day.<sup>17</sup>

Community-scale solar, particularly solar installations on buildings, is an increasingly viable way to provide clean, affordable energy to remote tribal communities that currently lack electricity or spend a disproportionate amount of their income on energy.<sup>18</sup> This Article describes how solar energy technologies could improve hundreds of thousands of lives on Indian reservations in the United States and suggests policy changes capable of facilitating faster adoption of these technologies on reservation lands. Part II of this Article describes the opportunities for community-scale energy in Indian country. Part III highlights several obstacles to implementation of community-scale solar in Indian country, including issues of funding, culture, storage, and jurisdiction. Finally, Part IV advocates for new policy strategies capable of spurring far more community-scale solar energy development in Indian country.

## II. OPPORTUNITIES FOR SOLAR ENERGY IN INDIAN COUNTRY

Solar energy technologies offer numerous potential benefits for Indian country. Solar energy generally comes in two types of technologies: concentrated solar power and photovoltaic (“PV”) solar panels.<sup>19</sup> Community-scale solar panels can be comprised of concentrated solar panels or PV panels. Concentrated solar power projects benefit from economies of scale,<sup>20</sup> but can be significantly more expensive to construct and maintain than other renewable energy projects.<sup>21</sup> Such projects also require a significant amount of water for

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<sup>15</sup> *Asthma and American Indians/Alaska Natives*, OFFICE OF MINORITY HEALTH, U.S. DEP’T OF HEALTH & HUMAN SERVS., <http://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=30> (last visited Oct. 30, 2016).

<sup>16</sup> Kathleen Belanger & Elizabeth W. Triche, *Indoor Combustion and Asthma*, 28 IMMUNOLOGY & ALLERGY CLINICS OF NORTH AMERICA 507 (2008) (“Indoor combustion produces both gases (eg, nitrogen dioxide, carbon monoxide) and particulate matter that may affect the development or exacerbation of asthma . . . . Overall, there is some evidence of an association between exposure to indoor combustion and asthma, particularly asthma symptoms in children.”).

<sup>17</sup> JIM ROGERS & STEVEN P. WILLIAMS, *LIGHTING THE WORLD: TRANSFORMING OUR ENERGY FUTURE BY BRINGING ELECTRICITY TO EVERYONE* 39 (2015).

<sup>18</sup> See Michael Pappas, *Defining Power Property Expectations*, 45 ENVTL. L. REP. NEWS & ANALYSIS 10542, 10542 (2015).

<sup>19</sup> OFFICE OF INDIAN ENERGY, U.S. DEP’T OF ENERGY, *DEVELOPING CLEAN ENERGY PROJECTS ON TRIBAL LANDS* 33 (2012), <http://www.nrel.gov/docs/fy13osti/57048.pdf> [hereinafter *CLEAN ENERGY ON TRIBAL LANDS*].

<sup>20</sup> David A. Lewis, *Identifying and Avoiding Conflicts Between Historic Preservation and the Development of Renewable Energy*, 22 N.Y.U. ENVTL. L. J. 274, 281 (2015).

<sup>21</sup> Jessica A.R. Hamilton, Note, *Finding New Power in the Wind, the Earth, and the Sun: A Survey of the Regulation of Alternative Energy Generated on American Indian Reservations in the United States and First Nation Reserves in Canada*, 44 CONN. L. REV. 1383, 1393 (2012).

power generation, a resource that can be scarce in arid regions.<sup>22</sup> In contrast, PV solar panel projects can be quite cost-effective regardless of size, and are particularly well-suited for supplying power in remote areas where energy distribution costs would be far higher than in urban settings.<sup>23</sup> Many tribal communities are located in remote, rural parts of the country and thus are potentially great candidates for solar PV development.<sup>24</sup> Moreover, most PV solar panel projects require no water for routine operation and use only insignificant amounts of water for cleaning.<sup>25</sup> This Part discusses the overall potential for solar energy on Indian lands and the feasibility of greater community-scale solar energy in Indian country.

#### A. Solar Energy Potential on Indian Lands

The United States holds approximately fifty-six million acres of land in trust on behalf of Indian tribes and individuals.<sup>26</sup> This land has the potential for 17.6 billion kilowatt-hours (“kWh”) per year of solar energy production, or 4.5 times the total national energy generation in 2004.<sup>27</sup> Currently, 83 of the 326 reservations in the U.S. have the solar resources needed for economically viable concentrated solar power generation.<sup>28</sup> However, concentrated solar power production is very location-dependent.<sup>29</sup> PV solar panel projects, on the other hand, are less location-dependent and can be quite cost-effective when implemented in remote areas.<sup>30</sup>

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<sup>22</sup> Maria O’Brien & Christina Sheehan, *Water and Renewable Energy Generation in the Western United States – An Overview of Current Challenges and Opportunities*, 2012 No. 3 ROCKY MTN. MIN. L. FOUND.-INST. 9, 25 (2012).

<sup>23</sup> See U.S. DEP’T OF ENERGY, ENERGY CONSUMPTION AND RENEWABLE ENERGY DEVELOPMENT POTENTIAL ON INDIAN LANDS (2000), [http://webapp1.dlib.indiana.edu/virtual\\_disk\\_library/index.cgi/4265704/FID1578/pdf/renew/ilands.pdf](http://webapp1.dlib.indiana.edu/virtual_disk_library/index.cgi/4265704/FID1578/pdf/renew/ilands.pdf) [hereinafter ENERGY POTENTIAL ON INDIAN LANDS REPORT].

<sup>24</sup> See *The New Energy Future in Indian Country: Confronting Climate Change, Creating Jobs, and Conserving Nature*, NAT’L WILDLIFE FED’N 5 (2010), [https://www.nwf.org/pdf/Reports/03-23-10\\_NWF\\_TribalLands\\_LoRes.pdf](https://www.nwf.org/pdf/Reports/03-23-10_NWF_TribalLands_LoRes.pdf) [hereinafter *Future of Indian Energy Report*].

<sup>25</sup> O’Brien & Sheehan, *supra* note 22.

<sup>26</sup> COHEN’S HANDBOOK OF FEDERAL INDIAN LAW 995 (Nell Jessup Newton et al. eds., LexisNexis 2012) [hereinafter COHEN’S HANDBOOK].

<sup>27</sup> *Future of Indian Energy Report*, *supra* note 24, at 5.

<sup>28</sup> See *Frequently Asked Questions*, BUREAU OF INDIAN AFFAIRS, U.S. DEP’T OF INTERIOR, <http://www.bia.gov/FAQs/> (last visited Oct. 30, 2016); Hamilton, *supra* note 21, at 1393. For concentrated solar power production, a high degree of six to eight kWh/m<sup>2</sup>/day of solar insolation is recommended for optimal performance. Hamilton, *supra* note 21, at 1393. Solar insolation is a measure of solar radiation received on a given surface at a given point in time. ALASKA VILL. ELEC. CORP., BERING STRAIT REGIONAL ENERGY PLAN 27 (2014), <http://beringstrait.com/wp-content/uploads/2015/01/Bering-Strait-Regional-Energy-Plan-draft.pdf> [hereinafter BERING STRAIT PLAN].

<sup>29</sup> Hamilton, *supra* note 21, at 1394.

<sup>30</sup> See *id.*

Alaska, for instance, has one of the highest degrees of undeveloped renewable resources on the planet, including solar power.<sup>31</sup> Alaska has great potential for distributed solar energy production. In Alaska Native villages, the use of solar energy would decrease the combustion of diesel fuel for power, which is expensive as well as damaging to the environment<sup>32</sup> and to human health.<sup>33</sup>

PV and solar thermal heating technologies are becoming an increasingly reliable and important source of power in many arctic and sub-arctic communities in Alaska.<sup>34</sup> For example, the Bering Straits Native Corporation in Nome, Alaska, installed a solar PV array on one of its office buildings that produces 16,000 kWh of electricity per year and offsets 1,000 gallons of diesel fuel.<sup>35</sup> Using federal Coastal Impact Assistance Program funds, the Northwest Arctic Borough similarly installed a solar array in Ambler, Alaska, to power the region's water plant and sewer system.<sup>36</sup> Across its useful life of about twenty-five years, the array will provide a savings of at least \$230,000 and offset the burning of 27,000 gallons of fuel.<sup>37</sup> At a cost of \$75,000, the company's payback for the solar array system is expected to be approximately eleven years.<sup>38</sup>

Overall, Indian lands hold great potential for solar energy development. Numerous reservations have the degree of solar radiation necessary for optimal concentrated solar energy development. Community-scale solar power, however, has even *more* potential on Indian lands because such systems are less location-dependent than concentrated systems and can be very cost-effective for many remote Indian lands throughout the United States.

### B. Feasibility of Community-Scale Solar in Indian Country

Community-scale solar energy on Indian lands is increasingly feasible. Such projects have become much more economical as the cost of PV solar panels has

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<sup>31</sup> Jeffrey Aslan, *Building Alaska Native Village Resilience in a Post-Peak World*, 37 VT. L. REV. 239, 262 (2012).

<sup>32</sup> See Hamilton, *supra* note 21, at 1394.

<sup>33</sup> See *Health Effects: Diesel Exhaust and Your Health*, U.S. DEP'T OF ENVTL. PROT., [http://www3.epa.gov/region1/eco/diesel/health\\_effects.html](http://www3.epa.gov/region1/eco/diesel/health_effects.html) (last visited Oct. 30, 2016) ("Diesel exhaust contains significant levels of small particles, known as fine particulate matter . . . . Fine particles in the air are a serious public health problem. They pose a significant health risk because they can pass through the nose and throat and lodge themselves in the lungs. These fine particles can cause lung damage and premature death.").

<sup>34</sup> BERING STRAIT PLAN, *supra* note 28, at 29.

<sup>35</sup> *Id.* at 27; *Bering Straits Native Corporation PV Solar*, ALASKA ENERGY WIKI, <http://energy-alaska.wikidot.com/nome-solar> (last visited Oct. 30, 2016).

<sup>36</sup> BERING STRAIT PLAN, *supra* note 28, at 28; *Energy Issues*, NORTHWEST ARCTIC BOROUGH, <http://www.nwabor.org/departments/economic-development/energy/> (last visited Nov. 19, 2016).

<sup>37</sup> BERING STRAIT PLAN, *supra* note 28, at 28–29.

<sup>38</sup> *Id.*

declined in recent years.<sup>39</sup> The price of PV is dropping rapidly due to economies of scale and technological advances.<sup>40</sup> The national average as of early 2016 was \$3.57/watt (“W”) for residential solar installations, representing a twelve percent decrease in price from 2015.<sup>41</sup> Projected costs for PV in 2020 are \$1.50/W for residential and \$1.25/W for commercial solar PV installations.<sup>42</sup> According to the Department of Energy (“DOE”), once solar installation costs reach \$1.00/W installed, solar will be competitive with the wholesale rate for electricity without any further subsidies.<sup>43</sup> Solar energy systems can also be job-creators and long-term assets for tribes.<sup>44</sup>

As energy storage technologies advance, it will likewise become increasingly affordable for tribes to pair off-grid PV systems with battery banks for use on cloudy days or at night.<sup>45</sup> This would allow for total energy independence and promote tribal self-sufficiency.<sup>46</sup> Off-grid PV systems are a critically important alternative to on-grid or utility-scale solar generation for tribal communities that lack electricity mainly due to geographic isolation<sup>47</sup> because the cost of extending power lines needed for on-grid and utility-scale solar projects to remote locations is high.<sup>48</sup> By one estimate, it would cost \$27,000 to extend a

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<sup>39</sup> See Ryan David Dreveskracht, *Native Nation Economic Development via the Implementation of Solar Projects: How to Make it Work*, 68 WASH. & LEE L. REV. 27, 48–49 (2011); see also Erica Solomon, *How a New Tandem Solar Cell is at the Forefront of Solar Innovation*, MASDAR INSTITUTE (May 29, 2016), <https://news.masdar.ac.ae/explore-news/stories-by-type/exploration/item/9171-how-a-new-tandem-solar-cell-is-at-the-forefront-of-solar-innovation.html> (“The cost of solar power is beginning to reach price parity with cheaper fossil fuel-based electricity in many parts of the world[.]”).

<sup>40</sup> CLEAN ENERGY ON TRIBAL LANDS, *supra* note 19, at 33; see also Solomon, *supra* note 39 (describing new low-cost, highly efficient “step cell” solar technology recently developed by researchers from MIT and the Masdar Institute of Science and Technology).

<sup>41</sup> Sarah Matasci, *What is the Average Cost of Solar Panels in the U.S.?*, ENERGYSAGE (Oct. 8, 2016) <http://news.energysage.com/how-much-does-the-average-solar-panel-installation-cost-in-the-u-s/>.

<sup>42</sup> CLEAN ENERGY ON TRIBAL LANDS, *supra* note 19, at 33.

<sup>43</sup> Samantha Ruiz et al., *Promoting Clean Reliable Energy Through Smart Technologies and Policies: Lessons from Three Distributed Energy Case Studies*, 6 SAN DIEGO J. CLIMATE & ENERGY L. 39, 51–52 (2015).

<sup>44</sup> Uma Outka, *Environmental Justice Issues in Sustainable Development: Environmental Justice in the Renewable Energy Transition*, 19 J. ENVTL. & SUSTAINABILITY L. 60, 110 (2012); Rona Fried, *Solar Provides Clean Energy, and Also Creates Jobs*, SUSTAINABLEBUSINESS.COM (May 16, 2007), <http://www.sustainablebusiness.com/index.cfm/go/news.feature/id/1449> (“Solar photovoltaics (PV) creates more jobs per megawatt of capacity than any other energy technology - 20 manufacturing and 13 installation/maintenance jobs per installed megawatt, according to [a University of California] report.”).

<sup>45</sup> *Future of Indian Energy Report*, *supra* note 24, at 8.

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

<sup>47</sup> See Tarasi et al., *supra* note 5, at 266; Robert Glennon & Andrew M. Reeves, *Solar Energy’s Cloudy Future*, 1 ARIZ. J. ENVTL. L. & POL’Y 91, 133–34 (2010).

<sup>48</sup> Tarasi et al., *supra* note 5, at 266–67.

power line one mile on the Navajo Reservation.<sup>49</sup> Because of the low population density of the Navajo Reservation that cost often cannot be split over a sufficient number of customers to make it economically viable.<sup>50</sup>

The feasibility of utility-scale solar in tribal communities is likewise limited by transmission availability and access,<sup>51</sup> in part because most electric transmission infrastructure was not designed with on-reservation energy generation in mind.<sup>52</sup> Indeed, tribes are often left out of significant discussions among federal, state, and regional organizations when planning transmission line corridors, resulting in Indian land being excluded from transmission routing altogether.<sup>53</sup> Transmission pricing has also generally evolved to serve coal and nuclear projects, resulting in a pricing structure that creates challenges for intermittent power sources such as solar.<sup>54</sup>

### III. OBSTACLES TO COMMUNITY-SCALE SOLAR DEVELOPMENT IN INDIAN COUNTRY

For the reasons highlighted above,<sup>55</sup> community-scale solar can be an excellent resource for energy-deprived tribes and can reduce bills for tribal communities that currently pay disproportionately higher rates for energy than nontribal communities. However, there are significant obstacles to community-scale solar energy implementation in Indian country. Tribes face significant funding issues, cultural barriers may sometimes prevent solar project development, current technology for energy storage remains inadequate or too expensive, and tribal jurisdictional authority over solar projects is not always clear.

#### A. Lack of Funding

Lack of funding is one major obstacle to energy development in Indian country.<sup>56</sup> Without adequate funding, energy projects cannot happen. Funding for such projects can potentially come from a wide array of sources, such as federal, state, or tribal governments.<sup>57</sup> Funding could also come from nonprofits

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<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> CLEAN ENERGY ON TRIBAL LANDS, *supra* note 19, at 34.

<sup>52</sup> TROY A. RULE, SOLAR, WIND AND LAND: CONFLICTS IN RENEWABLE ENERGY DEVELOPMENT 122 (2014).

<sup>53</sup> Tracey A. LeBeau, *The Green Road Ahead*, 56 APR FED. L. 38, 43 (2009).

<sup>54</sup> *See Electricity Regulation in the U.S.: A Guide*, THE REGULATORY ASSISTANCE PROJECT, 67 (2011), <http://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-electricityregulationintheus-guide-2011-03.pdf>.

<sup>55</sup> *See supra* notes 19–54 and accompanying text.

<sup>56</sup> *See* Hamilton, *supra* note 21, at 1410–11.

<sup>57</sup> *See infra* notes 181–204 and accompanying text.



or from tribal partnerships with private entities.<sup>58</sup>

Federal funding for tribal renewable energy and energy efficiency projects has increased since President Barack Obama entered office<sup>59</sup> as a result of his initiative to help tribes reduce fossil fuel use, save money, and lessen the environmental impact of energy use.<sup>60</sup> One of the central themes behind President Obama's initiative is for tribes to produce their own energy as a way to ensure energy and climate security in the U.S.<sup>61</sup> During the Tribal Leaders Conference in 2009, President Obama remarked that he was "securing Tribal access to financing and investments for new energy projects."<sup>62</sup> Indeed, for the 2013 fiscal year, the Department of the Interior ("DOI") awarded nine tribes Tribal Energy Development Capacity Grants totaling over \$700,000.<sup>63</sup> And in 2015, the DOE awarded eleven tribes with \$6 million in grants for renewable energy projects.<sup>64</sup>

The Agua Caliente Band of Cahuilla Indians in California received one of the DOE grants and will install a 76.9-kW solar PV system to offset the energy costs of its education and family services offices, saving the band \$20,000 annually.<sup>65</sup> The DOE currently lists thirty tribal solar energy projects on its website, many of which are community-scale projects.<sup>66</sup> Over half of those projects were funded within the last five years.<sup>67</sup> Currently, the most successful federal investments for solar energy are those for community-scale projects,

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<sup>58</sup> See *infra* notes 205–212 and accompanying text.

<sup>59</sup> *Tribal Energy Project Funding History*, OFFICE OF INDIAN ENERGY, U.S. DEP'T OF ENERGY, <http://energy.gov/indianenergy/tribal-energy-project-funding-history> (last visited Nov. 23, 2016). Between 2002 and 2008, DOE contributed \$5 million or less each year of funding for tribal energy projects. *Id.* After President Obama entered office, DOE expended nearly \$15 million of funding in 2010 alone and over \$5 million in 2011, 2012, and 2014. *Id.* In 2015, the DOE granted \$6 million to tribal energy projects. *Energy Department Selects 11 Tribal Communities to Deploy Energy Efficiency and Renewable Energy Technologies*, U.S. DEP'T OF ENERGY (Mar. 18, 2105), <http://energy.gov/articles/energy-department-selects-11-tribal-communities-deploy-energy-efficiency-and-renewable>. And in 2016 it awarded \$9 million to tribal energy projects. *Energy Department Announces Over \$9 Million in Funding for 16 Indian and Alaska Native Community Clean Energy and Energy Efficiency Projects*, U.S. DEP'T OF ENERGY (Mar. 22, 2016), <http://energy.gov/articles/energy-department-announces-over-9-million-funding-16-indian-and-alaska-native-community>.

<sup>60</sup> *Tribes Get \$6 Million in Federal Funds for Energy Efficiency Projects*, INDIAN COUNTRY TODAY MEDIA NETWORK (Mar. 23, 2015), <http://indiancountrytodaymedianetwork.com/2015/03/23/tribes-get-6-million-federal-funds-energy-efficiency-projects-159721>.

<sup>61</sup> LeBeau, *The Green Road Ahead*, *supra* note 53, at 44.

<sup>62</sup> *Future of Indian Energy Report*, *supra* note 24, at 16.

<sup>63</sup> See FY 2013 TRIBAL ENERGY DEVELOPMENT CAPACITY GRANT PROGRAM, OFFICE OF INDIAN ENERGY & ECON. DEV., U.S. DEP'T OF INTERIOR, 1, 1–2 (2013), <http://www.bia.gov/cs/groups/public/documents/text/idc1-026611.pdf>.

<sup>64</sup> See *Tribes Get \$6 Million in Federal Funds for Energy Efficiency Projects*, *supra* note 60.

<sup>65</sup> *Id.*

<sup>66</sup> See *Tribal Energy Projects Map*, OFFICE OF INDIAN ENERGY, U.S. DEP'T OF ENERGY, <http://energy.gov/indianenergy/maps/tribal-energy-projects-map> (last visited Nov. 25, 2016).

<sup>67</sup> See *id.*

such as installing solar panels on a casino and reducing energy costs for tribal governments.<sup>68</sup> That community-scale projects are the most successful federal projects is evidenced by the fact that there are currently only two tribal utility-scale solar projects in the U.S., both of which are operated by the same tribe.<sup>69</sup> Utility-scale projects on Indian lands generally require an energy purchaser.<sup>70</sup> There are many tribes that possess phenomenal solar resources, but that have no external purchaser.<sup>71</sup> For example, although the Jemez Pueblo in New Mexico received a DOE grant and planned to create a utility grid of solar PV panels to deliver energy, the Pueblo ultimately was forced to decline the award because it could not find a buyer for its excess solar energy.<sup>72</sup>

### B. Cultural Barriers

Solar projects may face cultural obstacles to implementation in tribal communities. Many Indian tribes and Indian people have a strong spiritual connection to their ancestral lands. A tribal land claim, for instance, is not simply about obtaining acreage, but rather the land represents sacred ground where generations of Indian people have practiced traditional ceremonies.<sup>73</sup> Land forms a central point in the life of Native Americans and is critical for the cultural survival of Indian communities.<sup>74</sup> Gail Small, a citizen of the Northern Cheyenne Nation and an attorney and former director for the Native American environmental justice nonprofit Native Action, has noted that Indian people have a “profound spiritual dimension to [their] natural environment” and that they “know and appreciate the beauty of the land.”<sup>75</sup>

Many indigenous peoples similarly believe in the interconnectedness of

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<sup>68</sup> See Interview with Ann Marie Bledsoe Downes, Deputy Assistant Sec’y–Indian Affairs, Bureau of Indian Affairs, in Phoenix, Ariz. (Oct. 13, 2015).

<sup>69</sup> *Secretary Jewell Announces Approval of Second Utility-Scale Solar Energy Project on American Indian Trust Land*, OFFICE OF INDIAN ENERGY POLICY & PROGRAMS (May 8, 2014), <http://www.energy.gov/indianenergy/articles/secretary-jewell-announces-approval-second-utility-scale-solar-energy-project> (“The Record of Decision for the Moapa Band of Paiute Indians’ project approves the construction, operation and maintenance of a photovoltaic solar power generation facility on an 850-acre site on the Moapa River Indian Reservation, which is located about 20 miles northeast of Las Vegas. The facility is expected to generate enough power to run approximately 60,000 homes and will support up to 500 jobs at peak construction and 10 permanent positions.”); *Salazar Approves First-Ever Commercial Solar Energy Project on American Indian Trust Lands*, U.S. DEP’T OF THE INTERIOR (June 21, 2012), <https://www.doi.gov/news/pressreleases/Salazar-Approves-First-Ever-Commercial-Solar-Energy-Project-on-American-Indian-Trust-Lands>.

<sup>70</sup> Interview with Ann Marie Bledsoe Downes, *supra* note 68.

<sup>71</sup> *Id.*

<sup>72</sup> Jenny Small, *Renewable Energy on Tribal Land & Water Resources: Jemez Pueblo*, 17 U. DENV. WATER L. REV. 99, 118 (2013).

<sup>73</sup> WILMA MANKILLER, EVERY DAY IS A GOOD DAY 76 (Memorial ed. 2004).

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

<sup>75</sup> *Id.* at 204–05.

humans and nature.<sup>76</sup> For instance, according to the Lakota worldview, humans are connected to not only all other humans, but to all other things in existence.<sup>77</sup> This is because the Lakota believe that everything in existence is a relative that originated from the same source—the Creator.<sup>78</sup> Indeed many Indians have historically held “in some form a belief in a sacred and indissoluble bond” between themselves and their ancestral land.<sup>79</sup> The Navajo Nation also recognizes in its tribal code that its people are part of Mother Earth and Father Sky and that this is a sacred bond that should be treated with love and respect.<sup>80</sup>

In the United States, many Indian people have sought to protect their natural environment, especially sacred sites, as evidenced by the many lawsuits over the proper use or protection of such sites.<sup>81</sup> Various federal laws protect certain sites on Indian lands and solar developers should be aware of such laws.

One such federal law is the National Environmental Protection Act (“NEPA”).<sup>82</sup> NEPA requires certain environmental tasks of all federal agencies, including the preparation of an Environmental Impact Statement (“EIS”) for “every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.”<sup>83</sup> While NEPA provides important protection for the environment, allegations of NEPA violations could significantly block the development of renewable energy projects. Allegations could include that a tribe’s project damaged certain sites with religious or cultural significance or that a project interfered with a person’s use and enjoyment of those sites.<sup>84</sup>

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<sup>76</sup> See Rebecca Tsosie, *Tribal Environmental Policy in an Era of Self-Determination: The Role of Ethics, Economics, and Traditional Ecological Knowledge*, 21 VT. L. REV. 225, 276–77 (1996).

<sup>77</sup> *Indian Nations on the Eve of the Twenty-First Century*, Symposium, 43 S.D. L. REV. 438, 456 (1998).

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

<sup>79</sup> *Lyng v. Nw. Indian Cemetery Protective Ass’n*, 485 U.S. 439, 461 (1988) (Brennan, J., dissenting) (citing EDWARD H. SPICER, *CYCLES OF CONQUEST: THE IMPACT OF SPAIN, MEXICO, AND THE UNITED STATES ON THE INDIANS OF THE SOUTHWEST, 1533–1960* (1962)).

<sup>80</sup> NAVAJO NATION CODE, tit. I, § 205.

<sup>81</sup> See, e.g., *Lyng*, 485 U.S. 439; *S. Fork Band Council of W. Shoshone v. U.S. Dep’t of Interior*, 588 F.3d 718 (9th Cir. 2009); *Navajo Nation v. U.S. Forest Serv.*, 535 F.3d 1058 (9th Cir. 2008) (en banc); *Snoqualmie Indian Tribe v. FERC*, 545 F.3d 1207 (9th Cir. 2008); *Bear Lodge Multiple Use Ass’n v. Babbitt*, 2 F. Supp. 2d 1448 (D. Wyo. 1998), *aff’d*, 175 F.3d 814 (10th Cir. 1999); *United States v. Means*, 858 F.2d 404 (8th Cir. 1988); *Confederated Tribes & Bands of the Yakama Nation v. U.S. Fish & Wildlife Serv.*, 19 F. Supp. 3d 1114 (D. Wash. 2014); *La Cuna De Aztlan Sacred Sites Prot. Circle Advisory Comm. v. U.S. Dep’t of Interior*, No. CV 11-00400 DMG, 2013 U.S. Dist. LEXIS 123331 (D. C.D. Cal. Aug. 16, 2013); *Slockish v. U.S. Fed. Highway Admin.*, No. 3:08-CV-1169-ST, 2012 WL 398989 (D. Or. Feb. 7, 2012); *Winnemem Wintu Tribe v. U.S. Dep’t of Interior*, 725 F. Supp. 2d 1119 (D. E.D. Cal. 2010); *Comanche v. United States*, No. CIV-08-849-D, 2008 WL 4426621 (D. W.D. Okla. Sept. 23, 2008); *Havasupai Tribe v. United States*, 752 F. Supp. 1471 (D. Ariz. 1990).

<sup>82</sup> 42 U.S.C. §§ 4321-4370(h) (2012).

<sup>83</sup> *Id.* § 4332(C).

<sup>84</sup> *Winnemem Wintu Tribe v. U.S. Dep’t of Interior*, 725 F.Supp.2d 1119, 1134 (E.D. Cal.

One possible solution for tribes facing NEPA concerns is to undertake smaller scale projects. The high cost and time-consuming nature of doing an EIS may be a barrier for tribes seeking to do utility-scale projects.<sup>85</sup> On the other hand, community-scale projects may face less of a barrier because such projects are smaller in scale and might not require an EIS. Another possible solution to alleviate NEPA violation concerns is to avoid approval by the Secretary of the Interior (“Secretary”), which is generally required for approval of leases of Indian lands.<sup>86</sup> This can be done by entering into leases for less than seven years, which typically do not require Secretarial approval.<sup>87</sup> Avoiding Secretarial approval circumvents the requirement of review under NEPA because only federal actions are subject to NEPA review.<sup>88</sup>

Solar projects can also have a negative aesthetic impact on the landscape and can inhibit the protection of landscapes, cultural resources, and historical sites.<sup>89</sup> Mapping of cultural resources is largely confidential so it can be difficult to know where to place solar projects.<sup>90</sup> One of the more well-known cases in the area of energy development and cultural protection, *Quechan Tribe v. U.S. Department of the Interior*,<sup>91</sup> resulted from the federal government’s failure to adequately consult with the Quechan Tribe before approving a concentrated solar project. The project consisted of 30,000 suncatcher solar collectors, which were expected to be forty feet high, thirty-eight feet wide, and attached to pedestals approximately eighteen feet high.<sup>92</sup> The site contained hundreds of known historical sites to which the tribe attached great cultural and religious significance.<sup>93</sup> Hundreds of the sites also contained human remains and ancient trails.<sup>94</sup> As a result, the U.S. District Court for the Southern District of California granted the tribe’s motion for preliminary injunctive relief.<sup>95</sup>

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2010).

<sup>85</sup> See Allen O’Neil, Note, *Applicability of NEPA to Federal Energy Market Restructuring*, 32 B.C. ENVTL. AFF. L. REV. 247, 259 (2005).

<sup>86</sup> See 25 U.S.C. § 415 (2012).

<sup>87</sup> See 25 U.S.C. § 81(b) (2012).

<sup>88</sup> See COHEN’S HANDBOOK, *supra* note 26, at 821.

<sup>89</sup> See Outka, *supra* note 44, at 78–81; Amy Wilson Morris & Jessica Owley, *Mitigating the Impacts of the Renewable Energy Gold Rush*, 15 MINN. J. L. SCI. & TECH. 293, 305–06 (2014); Lewis, *supra* note 20, at 352; Diana Coronel David, *Green Energy in Indian Country as a Double-Edged Sword for Native American: Drawing on the Inter-American and Colombian Legal Systems to Redefine the Right to Consultation*, 38 ENVIRONS ENVTL. L. & POL’Y J. 223, 227 (2015).

<sup>90</sup> See Morris & Owley, *supra* note 89, at 305–06.

<sup>91</sup> 755 F. Supp. 2d 1104 (S.D. Cal. 2010).

<sup>92</sup> See *id.* at 1107, 1119–20.

<sup>93</sup> See *id.* at 1120.

<sup>94</sup> See *id.*

<sup>95</sup> *Id.* at 1122.

### C. Inadequate Storage Technologies

Because solar power is an intermittent source of energy, community-scale solar energy systems typically require some form of energy storage to independently meet a building's power needs.<sup>96</sup> Energy storage is particularly important in Indian country because of the remoteness of many reservations.<sup>97</sup> Indeed, many Indian households disproportionately lack electricity compared to non-Indian households.<sup>98</sup> For instance, on the Pine Ridge Indian Reservation in South Dakota, nearly forty percent of households lack electricity.<sup>99</sup> The high cost of extending transmission lines to remote communities is the primary reason that these communities lack access to grid-supplied electric power.<sup>100</sup> Microgrids that combine distributed energy with energy storage may be the only cost-effective means of providing electricity to these remote communities.

Unfortunately, current energy storage technologies are largely inadequate or too expensive to allow for the rapid development of solar energy-based microgrid systems in Indian country.<sup>101</sup> Today's main storage technologies are batteries, such as "Li-ion, NaS, NiCd, Metal Air, lead acid, [and] liquid."<sup>102</sup> Battery-based systems are expensive and need to be rather large in order to store a meaningful amount of electricity.<sup>103</sup> For example, Alaska has one of the world's largest batteries, which is larger than an American football field, but the battery can only provide electricity for about 12,000 people for less than ten minutes.<sup>104</sup> According to the DOE, battery storage costs would need to be cut in half to truly be economically viable.<sup>105</sup>

While likely cheaper than extending power lines, other energy storage techniques might still be cost prohibitive for certain communities. In one instance, a family in Wyoming would have had to pay \$80,000 to their local utility company to bring electricity to their home.<sup>106</sup> While the cost of installing solar panels was cheaper, it still would have cost the family about \$50,000 for

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<sup>96</sup> See ENERGY POTENTIAL ON INDIAN LANDS REPORT, *supra* note 23, at 38.

<sup>97</sup> See *Future of Indian Energy Report*, *supra* note 24, at 5.

<sup>98</sup> See *Reclaiming Reservation Infrastructure*, *supra* note 6, at 240; see also LeBeau, *The Green Road Ahead*, *supra* note 53, at 43.

<sup>99</sup> Laurie Guevara-Stone, *Native Energy: Rural Electrification on Tribal Lands*, ROCKY MOUNTAIN INST. (June 24, 2014), [http://blog.rmi.org/blog\\_2014\\_06\\_24\\_native\\_energy\\_rural\\_electrification\\_on\\_tribal\\_lands](http://blog.rmi.org/blog_2014_06_24_native_energy_rural_electrification_on_tribal_lands).

<sup>100</sup> See Tarasi et al., *supra* note 5, at 266–67.

<sup>101</sup> See Leigh Paterson, *When Relying On The Sun, Energy Storage Remains Out Of Reach*, NPR (Aug. 4, 2015), <http://www.npr.org/2015/08/04/427734398/when-relying-on-the-sun-energy-storage-remains-out-of-reach>.

<sup>102</sup> Amy L. Stein, *Reconsidering Regulatory Uncertainty: Making a Case for Energy Storage*, 41 FLA. ST. U. L. REV. 697, 707 (2014).

<sup>103</sup> See *id.*

<sup>104</sup> *Id.*

<sup>105</sup> Paterson, *supra* note 101.

<sup>106</sup> See *id.*

the panels and batteries.<sup>107</sup> Such expenses could be prohibitively expensive for Indian households, many of which live at or below the poverty line.<sup>108</sup>

However, the potential for affordable distributed energy storage solutions is greater today than ever before, especially with new systems from companies such as Tesla Motors, Inc. Tesla recently began selling its “Powerwall” home battery, which is designed to be paired with rooftop solar panels to help power homes.<sup>109</sup> The Powerwall costs \$3,000 and is a rechargeable lithium ion battery with liquid thermal control.<sup>110</sup> One version of the battery has a 7 kWh daily storage capacity while another version comes with a 10 kWh weekly cycle for backup applications.<sup>111</sup> Multiple such batteries may be installed together on a single home.<sup>112</sup>

Still, depending on how much electricity a household uses, one battery may not be sufficient to ensure a twenty-four-hour-a-day supply of electricity. For example, an average refrigerator uses about 4.8 kWh per day.<sup>113</sup> Many homes may need as many as eight batteries, according to one estimate.<sup>114</sup> Moreover, the total cost is generally higher than \$3,000 for one battery because a trained electrician must install it and a DC-AC converter is required.<sup>115</sup> Surprisingly, Tesla’s Chief Executive, who is also the chairman of SolarCity (the largest solar rooftop installer in the U.S.), decided not to install the 7 kWh Powerwall for SolarCity customers.<sup>116</sup> According to a SolarCity spokesman, the battery “doesn’t really make financial sense” because of regulations that allow net metering, which allow solar customers to sell extra electricity back to the grid.<sup>117</sup> Furthermore, the Powerwall batteries are currently only for homes already on the power grid.<sup>118</sup> However, SolarCity is planning to sell off-grid systems in Hawaii soon, where electricity prices are nearly triple the average

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<sup>107</sup> See *id.*

<sup>108</sup> According to the BIA, “[a]n estimated 23 percent of all Native American families in the United States in 2010 earned incomes that are below the poverty line.” OFFICE OF THE ASSISTANT SEC’Y–INDIAN AFFAIRS, U.S. DEP’T OF THE INTERIOR, 2013 AMERICAN INDIAN POPULATION AND LABOR FORCE REPORT 11 (2014), <http://www.bia.gov/cs/groups/public/documents/text/idc1-024782.pdf>). The BIA based its definition of poverty line in its report on the U.S. Census Bureau’s definition and used U.S. Census Bureau statistics in formulating its report. *Id.* at 6.

<sup>109</sup> See *Powerwall*, TESLA, <https://www.teslamotors.com/powerwall> (last visited Oct. 30, 2016).

<sup>110</sup> *Id.*

<sup>111</sup> Tom Randall, *Tesla’s New Battery Doesn’t Work That Well with Solar*, BLOOMBERG BUSINESS (May 6, 2015), <http://www.bloomberg.com/news/articles/2015-05-06/tesla-s-new-battery-doesn-t-work-that-well-with-solar>.

<sup>112</sup> See *Powerwall*, *supra* note 109.

<sup>113</sup> Larry N. Zimmerman, *Tesla’s Powerwall*, J. KAN. B.A., 16 (May 2015).

<sup>114</sup> See Randall, *supra* note 111.

<sup>115</sup> See Zimmerman, *supra* note 113, at 16; See also *Powerwall*, *supra* note 109.

<sup>116</sup> See Randall, *supra* note 111.

<sup>117</sup> See *id.*

<sup>118</sup> See *Powerwall*, *supra* note 109.

cost.<sup>119</sup> Tesla has also experienced a substantial demand for its Powerwall despite the cost, which could help decrease the overall cost of the product over time.<sup>120</sup> This technology currently cannot be used by tribal households that lack access to the grid. In the event that off-grid options become available, perhaps one battery may suffice for those tribal households that simply need a minimum of storage to meet their needs. However, under the Powerwall model, it may not be possible, or may be cost prohibitive, for a trained electrician to go to remote tribal communities to install the battery as Powerwall requires.

#### D. Jurisdictional Issues

Overlapping and uncertain regulatory jurisdiction also impede the development of small solar energy projects on Indian lands.<sup>121</sup> Overlap and uncertainty can result from conflicts between neighboring tribes.<sup>122</sup> However, conflicts often arise over state and tribal authority to regulate and tax activities that take place on Indian lands as well.<sup>123</sup> Renewable energy production may result in sales, property, and corporate income taxes that can create uncertainty as to whether the state, tribe, or both have the authority to regulate and tax the energy production.<sup>124</sup> This sub-section discusses the federal laws that likely govern community-scale solar energy production in Indian country and the possibilities for state and tribal jurisdiction over such activity.

##### 1. Federal Laws Governing Community-Scale Solar in Indian Country

One federal law in particular, the Indian Long-Term Leasing Act (“ILTLA”), has been a major impediment to land development in Indian country.<sup>125</sup> Under the ILTLA, leases of Indian lands require the approval of the Secretary.<sup>126</sup> Leases for solar energy projects are typically approved under the ILTLA.<sup>127</sup> Requiring Secretarial approval for leases significantly lengthens the leasing process, which expands the development timeline.<sup>128</sup> ILTLA might apply to

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<sup>119</sup> See Randall, *supra* note 111.

<sup>120</sup> See *id.*

<sup>121</sup> See Lewis, *supra* note 20, at 294.

<sup>122</sup> See Tarasi et al., *supra* note 5, at 267.

<sup>123</sup> See, e.g., Cotton Petrol. v. New Mexico, 490 U.S. 163, 166 (1989).

<sup>124</sup> Hamilton, *supra* note 21, at 1411.

<sup>125</sup> See 25 U.S.C. § 415 (2012).

<sup>126</sup> *Id.*

<sup>127</sup> Pilar M. Thomas, *Governance and Jurisdictional Considerations for Renewable Energy Development in Indian Country*, NATIVE AMERICAN RES. COMM., A.B.A. SEC. OF ENV'T, ENERGY, AND RES. 15 (July 2013), [http://www.americanbar.org/content/dam/aba/publications/nr\\_newsletters/nar/201307-2\\_nar\\_authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/publications/nr_newsletters/nar/201307-2_nar_authcheckdam.pdf).

<sup>128</sup> Judith V. Royster, *Tribal Energy Development: Renewables and the Problem of the Current Statutory Structures*, 31 STAN. ENVTL. L. J. 91, 106 (2012) (describing secretarial approval process as “a time-consuming and often cumbersome step in Indian lands development.”); Bryan Newland,

permanent improvements on Indian lands as well, including houses and other structures, which could limit an individual's ability to enter into a lease to install a rooftop solar panel on his or her home.<sup>129</sup> ILTLA also limits the ability of tribes to enter into leases with solar developers to implement community-scale solar projects because of the need for Secretarial approval. However, in 2012, President Obama signed into law the Helping Expedite and Advance Responsible Tribal Homeownership Act ("HEARTH Act"), amending the ILTLA to expedite leasing on tribal lands.<sup>130</sup> The HEARTH Act allows tribes to approve their own leases as long as the tribe's regulations have been approved by the Secretary.<sup>131</sup>

Provisions in NEPA are also relevant to certain types of community-scale solar energy development in Indian country.<sup>132</sup> Federal actions in Indian country are subject to NEPA.<sup>133</sup> Secretarial approval of a lease in Indian country constitutes such federal action.<sup>134</sup> Leases and similar uses of trust land generally require the approval of the Secretary.<sup>135</sup> Therefore, surface leases of Indian trust land may require compliance with NEPA.<sup>136</sup> Because NEPA violations may be raised by tribal members and any non-Indian with standing, a tribe's failure to properly follow NEPA procedures under a lease approved by the Secretary could lead to costly litigation, which would prevent projects from moving forward in a timely, cost-efficient manner.<sup>137</sup>

Additionally, for community-scale projects, a right-of-way may also be needed to connect the solar power generated from the project to an energy substation. Such a right-of-way would fall under the 1948 General Rights-of-Way

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*The HEARTH Act: Transforming Tribal Land Development*, 61-APR FED. LAW. 66, 68 (2014) (noting Secretarial approval "has proven to be a significant obstacle to successful economic development on Indian lands" and that approval was withheld for years in some cases).

<sup>129</sup> Jessica A. Shoemaker, *Emulsified Property*, 43 PEPP. L. REV. 945, 993 & n.237 (2016) (discussing the Department of Interior's differing conclusions about whether houses and other structures on Indian trust lands are trust real property, trust personal property, or property in fee); *cf.* *Confederated Tribes of Chehalis Reservation v. Thurston County Bd. of Equalization*, 724 F.3d 1153, 1157 (9th Cir. 2013) (holding that exemption of trust lands from state and local taxation under federal statute extends to permanent improvements on such lands because "use of permanent improvements upon land is so intimately connected with use of the land itself that an explicit provision relieving the latter of state tax burdens must be construed to encompass an exemption for the former").

<sup>130</sup> *See Salazar Finalizes Reforms to Streamline Leasing, Spur Economic Development on 56 Million Acres of American Indian Trust Land*, U.S. DEP'T OF INTERIOR (Nov. 27, 2012), <https://www.doi.gov/news/pressreleases/salazar-finalizes-reforms-to-streamline-leasing-spur-economic-development-on-56-million-acres-of-american-indian-trust-land>.

<sup>131</sup> *Id.*

<sup>132</sup> *See* 42 U.S.C. § 4321 (2012).

<sup>133</sup> *See* COHEN'S HANDBOOK, *supra* note 26, at 821.

<sup>134</sup> *See id.*

<sup>135</sup> *See id.*

<sup>136</sup> *See id.* at 1118.

<sup>137</sup> *See* COHEN'S HANDBOOK, *supra* note 26, at 824.



Act governing rights-of-way on Indian lands.<sup>138</sup> Although the BIA recently updated regulations to streamline the process of obtaining grants of rights-of-way on Indian land, the process could still delay the implementation of a community-scale solar project.<sup>139</sup>

## 2. Civil Regulation and Taxation of Community-Scale Solar on Indian Lands

Policies related to the regulation and taxation of community-scale solar energy on Indian lands can further impede the use of community-scale solar in many Indian communities. These issues could become heavily disputed between tribes and states, especially if solar energy gains large enough traction in Indian country. Tribes and states generally disagree over who has the proper authority to regulate and tax certain economically profitable activity in Indian country.<sup>140</sup> The status of the land in Indian country typically affects who has civil jurisdiction over the activity on that land.

Generally, Indian country is the area in which tribal laws and customs as well as federal laws relating to Indians are applied.<sup>141</sup> Indian country is defined by criminal statute 18 U.S.C. § 1151(a)–(c).<sup>142</sup> However, the U.S. Supreme Court has generally applied this criminal statute to civil contexts as well.<sup>143</sup> Therefore, this statute’s definition of Indian country applies in almost every facet of Indian law unless it is displaced by another statutory definition.<sup>144</sup> This Article will only focus on solar projects on land that falls under the definition of 18 U.S.C. §

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<sup>138</sup> See General Rights-of-Way Act, 25 U.S.C. §§ 311–28 (2012); 25 C.F.R. § 169 (2014).

<sup>139</sup> See RIGHTS-OF-WAY ON INDIAN LAND, U.S. DEP’T OF INTERIOR (Nov. 3, 2015), <http://www.bia.gov/cs/groups/xraca/documents/text/idc1-032117.pdf> (noting that the new rule “requires that owners of a majority of the interests in a tract must consent to the right-of-way . . . and specifies that tribes and individual Indian landowners may negotiate the terms of their consent[,]” but “that negotiations between the parties may slow down the process of obtaining landowner consent.”).

<sup>140</sup> See, e.g., *Washington v. Confederated Tribes of Colville Indian Reservation*, 447 U.S. 134 (1980) (dispute between a tribe and state regarding whether the state had the authority to tax tribal cigarette sales to non-Indians in Indian country); *Cotton Petrol*, 490 U.S. 163 (dispute between tribe and state regarding whether the state had the authority to tax a non-Indian business for extracting oil from the tribe’s reservation).

<sup>141</sup> See COHEN’S HANDBOOK, *supra* note 26, at 183.

<sup>142</sup> Indian country “means (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including any rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of the state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.” 18 U.S.C. § 1151 (2012).

<sup>143</sup> See COHEN’S HANDBOOK, *supra* note 26, at 184; CONFERENCE OF WESTERN ATTORNEYS GENERAL, AMERICAN INDIAN LAW DESKBOOK 112 (ed., 2015.) [hereinafter DESKBOOK].

<sup>144</sup> See COHEN’S HANDBOOK, *supra* note 26, at 184; DESKBOOK, *supra* note 143, at 112.

1151(a). Under § 1151(a), Indian country is defined as “all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation.”<sup>145</sup> The U.S. Supreme Court has broadly interpreted the term “reservation” to include all land within a reservation, including trust and fee land.<sup>146</sup>

Relevant to community-scale solar regulation, case law suggests that the state may not regulate tribal members and nonmembers within the reservation where: (1) a tribe and the federal government have created a comprehensive framework for regulation of both tribal members and nonmembers; (2) the state cannot identify any regulatory service it provides; and (3) the state cannot point to any off-reservation effects of the activity.<sup>147</sup> This is true even though the state’s regulations may be more stringent than those of the tribe.<sup>148</sup> This case law may be of particular relevance for community-scale solar projects where the solar power is generated and consumed entirely within the tribe’s reservation. To leave no question as to whether the state is preempted from regulation, it is therefore important for tribes to have in place a comprehensive regulatory framework for community-scale solar projects, including a framework for the construction, installation, operation, and maintenance of such projects. The federal laws mentioned above also likely weigh in favor of preemption of state regulatory authority of community-scale solar generation on Indian lands.<sup>149</sup> For *leases* of tribal trust land, tribes generally retain adjudicative and regulatory jurisdiction over non-Indians that lease tribal trust land.<sup>150</sup>

The rules for regulation of non-Indian fee land within a reservation are, however, quite different from the rules for regulation of trust land. The general rule for tribal civil regulatory jurisdiction on non-Indian fee land in Indian country was first articulated in *Montana v. United States*.<sup>151</sup> The U.S. Supreme Court established in *Montana* that, as a general rule, tribes lack inherent sovereignty to regulate non-Indians on non-Indian owned fee land within the reservation except where: (1) the non-Indian enters into a consensual relationship with the tribe or its members; or (2) the non-Indian’s activity threatens the political integrity, economic security, or health or welfare of the

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<sup>145</sup> 18 U.S.C. § 1151(a).

<sup>146</sup> See COHEN’S HANDBOOK, *supra* note 26, at 192 (citing *Seymour v. Superintendent*, 368 U.S. 351, 358 (1962)); DESKBOOK, *supra* note 143, at 113 (noting that tribal trust land is also the equivalent of a reservation and is therefore Indian country according to the U.S. Supreme Court).

<sup>147</sup> See *Mescalero Apache Tribe v. New Mexico*, 462 U.S. 324, 325, 342–44 (1983).

<sup>148</sup> See *id.*

<sup>149</sup> See *supra* notes 125–139 and accompanying text.

<sup>150</sup> See *Water Wheel Camp Recreational Area, Inc. v. LaRance*, 642 F.3d 802, 811–12, 814 (9th Cir. 2011).

<sup>151</sup> See 450 U.S. 544 (1981).

tribe.<sup>152</sup> Consensual relationships include commercial dealings, contracts, leases, and other arrangements.<sup>153</sup> Thus, an agreement between a tribe and a non-Indian solar developer, for example, would likely allow the tribe to exercise regulatory jurisdiction over the developer through the contract or lease. The tribe should include a provision directly in its lease or contract to clarify its regulatory jurisdiction and deter lawsuits disputing such jurisdiction. However, simply because the tribe may exercise regulatory jurisdiction does not mean that the state is thereby excluded from also exercising regulatory jurisdiction concurrently.<sup>154</sup>

Rights-of-way can also raise particularly challenging jurisdictional issues on Indian lands. The Supreme Court held in *Strate v. A-1 Contractors* that a state highway right-of-way over trust land within a reservation, where the tribe has retained no gatekeeping right, is the equivalent of non-Indian fee land and is therefore subject to *Montana's* general rule against tribal civil regulation.<sup>155</sup> Therefore, it may be wise for tribes providing solar energy in partnership with non-Indian businesses to lease tribal land under the ILTLA to transmit community-scale solar within the reservation rather than utilize a right-of-way, even one that runs through the reservation, in case a court deems the right-of-way the equivalent of non-Indian fee land under *Strate*. This would help ensure the tribe retains jurisdiction over as many aspects of the project as possible as well as alleviate any tribal member concern that using rights-of-way may hinder tribal sovereignty.<sup>156</sup>

Not only can overlapping and uncertain regulatory jurisdiction deter solar energy development on tribal lands, dual taxation from the state and the tribe can also be a significant impediment.<sup>157</sup> Tribes generally have an inherent right

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<sup>152</sup> See *id.* at 565–66; COHEN'S HANDBOOK, *supra* note 26, at 721; DESKBOOK, *supra* note 143, at 304; WILLIAM C. CANBY, AMERICAN INDIAN LAW IN A NUTSHELL 230 (6th ed. 2015) [hereinafter NUTSHELL].

<sup>153</sup> See *Montana*, 450 U.S. at 565–66.

<sup>154</sup> See, e.g., *Cotton Petrol.*, 490 U.S. at 189.

<sup>155</sup> 520 U.S. 438, 456 (1997); NUTSHELL, *supra* note 152, at 209 (In *Strate*, the Supreme Court “held that tribes had no jurisdiction over a tort action between ‘nonmembers’ arising out of an automobile accident on a state right-of-way through the reservation.”) (quoting *Strate*, 520 U.S. at 442); DESKBOOK, *supra* note 143, at 314 (“The Supreme Court next concluded in *Strate* that the state highway was the equivalent of ‘alienated, non-Indian reservation land.’”) (quoting *Strate*, 520 U.S. at 454).

<sup>156</sup> See Winona LaDuke, *A Solar Future For an Ancient Civilization*, YES! MAGAZINE (Sept. 30, 2001), <http://www.yesmagazine.org/issues/technology-who-chooses/459?searchterm=solar+native+american> (noting that one-third of Hopi villages refused to accept electric power lines into their village areas due to concern that because the utilities would have rights-of-way it would threaten their sovereignty).

<sup>157</sup> See GOV'T ACCOUNTABILITY OFFICE, GAO-15-502, REPORT TO THE CHAIRMAN, COMMITTEE ON INDIAN AFFAIRS, U.S. SENATE, INDIAN ENERGY DEVELOPMENT, POOR MANAGEMENT BY BIA HAS HINDERED ENERGY DEVELOPMENT ON INDIAN LANDS 30 (2015), <http://www.gao.gov/assets/680/670701.pdf>.

to tax on trust land within their reservations.<sup>158</sup> However, whether the state has the right to tax depends upon the status of the person being taxed. While the state cannot tax a tribe or tribal member directly, the state is generally not prohibited from taxing nontribal members on a reservation.<sup>159</sup> To determine the legality of a state tax on nontribal members, courts typically analyze whether federal law preempts the state tax, or whether the state tax would interfere with the tribe's sovereignty.<sup>160</sup>

In *White Mountain Apache Tribe v. Bracker*, the Supreme Court established that when determining whether a state's tax would violate federal law, a particularized inquiry must be made into the nature of the state, federal, and tribal interests at stake to determine whether exercise of state authority would be appropriate.<sup>161</sup> This became known as the "*Bracker* interest-balancing test."<sup>162</sup> Subsequently, the Supreme Court upheld a state tax on non-Indians on a tribe's reservation as not violating federal law where: the state provides substantial services to the tribe and the non-Indians; the state tax imposes no substantial economic burden on the tribe; and federal and tribal regulation are not exclusive.<sup>163</sup> Thus, despite the seemingly clear statutory definition of an Indian reservation, because of the aforementioned case law, determining whether the tribe, the state, or both have civil regulatory and taxing authority over activities or people within the tribe's reservation can be quite confusing and can create uncertainty for solar developers.

### 3. Criminal Jurisdiction over Community-Scale Solar on Indian Lands

Theft of solar panels is an issue tribes and federal policymakers should be prepared to address. Across the U.S., and particularly in California due to its large amount of solar usage, solar panels have been stolen from the roofs of

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<sup>158</sup> See *Merrion v. Jicarilla Apache Tribe*, 455 U.S. 130, 152 (1982); COHEN'S HANDBOOK, *supra* note 26, at 721 ("The power to tax is an essential attribute of Indian sovereignty because it is a necessary instrument of self-government and territorial management.") (quoting *Merrion*, 455 U.S. at 137); DESKBOOK, *supra* note 143, at 747.

<sup>159</sup> See, e.g., *Confederated Tribes of Colville Indian Reservation*, 447 U.S. at 151 ("The State may sometimes impose a nondiscriminatory tax on non-Indian customers of Indian retailers doing business on the reservation. Such a tax may be valid even if it seriously disadvantages or eliminates the Indian retailer's business with non-Indians."); COHEN'S HANDBOOK, *supra* note 26, at 706.

<sup>160</sup> See COHEN'S HANDBOOK, *supra* note 26, at 706 (citing *Ramah Navajo Sch. Bd., Inc. v. Bur. of Revenue*, 458 U.S. 832, 837 (1982); *White Mountain Apache Tribe v. Bracker*, 448 U.S. 136, 142 (1980)).

<sup>161</sup> 448 U.S. 136, 145 (1980); COHEN'S HANDBOOK, *supra* note 26, at 707; DESKBOOK, *supra* note 143, at 337.

<sup>162</sup> *Wagon v. Prairie Band Potawatomi*, 546 U.S. 95, 99–100 (2005).

<sup>163</sup> See *Cotton Petrol*, 490 U.S. at 171–73, 186, 189; COHEN'S HANDBOOK, *supra* note 26, at 710 ("A state tax on non-Indians doing business with tribes may also be preempted if it is so large that it imposes a 'substantial burden' on the tribe.") (quoting *Cotton Petrol*, 490 U.S. at 186).

residential homes, schools, businesses, office buildings, and traffic signals.<sup>164</sup> The amount of money lost from theft depends on how many panels are stolen and the overall cost of the panels. Some small panels may be worth \$250 each while larger panels may cost \$1,500 each.<sup>165</sup> Fortunately, insurance may be able to cover the price of stolen panels.<sup>166</sup> To prevent theft, individuals and businesses have installed video cameras, alarms, and difficult to detach solar panels.<sup>167</sup> Owners have also begun to permanently engrave serial numbers on panels, which may help the police and owners identify missing solar panels.<sup>168</sup> Indeed, in places where solar panel theft is rampant, such safeguards are commonplace.<sup>169</sup> Placement of solar panels in remote locations, however, can exacerbate the problem of solar panel theft.<sup>170</sup> Unsecured ground-mounted systems also are more at-risk to theft than fenced or elevated solar panels.<sup>171</sup> Individual ownership in a community-scale solar project may be one way to deter theft.<sup>172</sup> Another way to prevent theft is to implement a GPS tagging system on the solar panel to track the whereabouts of missing panels.<sup>173</sup> Tribes are at risk for solar panel theft much like any other solar panel owner. But because many tribes are located in remote regions, they may be especially vulnerable.

Additionally, tribes may face barriers to prosecuting non-Indian solar panel thieves. While a tribe may generally prosecute a tribal member or a nontribal member Indian within Indian country,<sup>174</sup> tribes generally lack criminal

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<sup>164</sup> See Kate Galbraith, *Solar Panels Are Vanishing, Only to Reappear on the Internet*, N.Y. TIMES (Sept., 23, 2008), [http://www.nytimes.com/2008/09/24/technology/24solar.html?\\_r=0](http://www.nytimes.com/2008/09/24/technology/24solar.html?_r=0); Beck Ireland, *Crime Stoppers: Rise in Solar Panel Theft Prompts Stronger Security Measures*, ELEC. CONSTR. & MAINT. (Mar. 1, 2010), <http://ecmweb.com/contractor/crime-stoppers>.

<sup>165</sup> Galbraith, *supra* note 164.

<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

<sup>168</sup> *Id.*

<sup>169</sup> *Id.* (“In Europe, where the solar industry is well-established, thievery is entrenched, and measures to ward it off have become standard, including alarm systems and hard-to-unscrew panels.”).

<sup>170</sup> See Julie Nania & Doug Vilsack, *Put out the Fire: Developing a Sustainable Energy Policy for all Namibians*, 21 COLO. J. INT’L ENVTL. L. & POL’Y 287, 320 (2010).

<sup>171</sup> Ireland, *supra* note 164.

<sup>172</sup> Nania & Vilsack, *supra* note 170 (“Theft of communally-owned PV panels is common [in Namibia], leading some to believe that the combination of charitable handouts and a lack of personal ownership over systems facilitates theft. Individual ownership has proven to be somewhat more successful.”).

<sup>173</sup> See Chris Bryant, *Solar Panel Theft on the Rise in Germany*, FIN. TIMES (June 7, 2015), <http://www.ft.com/cms/s/0/745382e0-0525-11e5-9627-00144feabdc0.html#axzz4148q5uRF>.

<sup>174</sup> COHEN’S HANDBOOK, *supra* note 26, at 765 (“As sovereigns, tribes possess the power to exercise at least concurrent jurisdiction over all crimes committed by an Indian against the person or property of another Indian in Indian country.”) (citing *United States v. Wheeler*, 435 U.S. 313, 328–29 (1978)).

jurisdiction over non-Indians.<sup>175</sup> Likewise, states also generally lack jurisdiction in Indian country to prosecute non-Indians.<sup>176</sup> However, states may prosecute crimes in Indian country if they involve only non-Indians or if the crimes are truly “victimless.”<sup>177</sup> It is unlikely a solar panel theft would be a victimless crime though because the theft would likely be deemed a crime against a person’s property, which is not a victimless crime.<sup>178</sup> Thus, if a non-Indian were to steal a solar panel from another non-Indian within the tribe’s reservation, the state might have jurisdiction over that crime.<sup>179</sup> However, if a non-Indian were to steal a solar panel from an Indian within the tribe’s reservation, the state would likely not have jurisdiction because the crime would involve an Indian. The tribe would likely also lack jurisdiction over this crime as well, leaving the culprit unprosecuted unless the federal government decides to prosecute the individual. The jurisdiction section below will provide guidance with regard to how tribes may establish community-scale solar projects in ways that reduce the amount of jurisdictional issues.<sup>180</sup>

#### IV. POLICY STRATEGIES FOR BRINGING MORE COMMUNITY-SCALE SOLAR TO INDIAN COUNTRY

While the aforementioned challenges may seem daunting, federal policymakers can successfully incentivize a dramatic increase in community-scale solar installations in Indian country in numerous ways. Policies that promote continued and increased governmental and nonprofit funding are needed to ensure adequate funding for solar projects. Private entity funding is also essential to bring community-scale solar to tribal communities and can be increased through solar investment tax credits. Cultural sensitivity is critical for

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<sup>175</sup> *Id.* (“Tribes lack most criminal jurisdiction over non-Indian defendants as a result of the Supreme Court’s 1978 decision in *Oliphant v. Suquamish Indian Tribe*.”) (citing *Oliphant v. Suquamish Indian Tribe*, 435 U.S. 191 (1978)).

<sup>176</sup> *See id.* at 763 (“As a general rule, states lack jurisdiction in Indian country absent a special grant of jurisdiction . . . [T]he Supreme Court has interpreted the [Indian Country Crimes Act] to allow state prosecutions of crimes committed in Indian country by a non-Indian against another non-Indian.”). This exception is known as the *McBratney* exception after the Supreme Court case that found state jurisdiction over non-Indian crimes against other non-Indians in Indian country. *See id.* at 763–64.

<sup>177</sup> *See id.* at 764 (“The Supreme Court has not ruled on the application of the *McBratney* exception to victimless crimes committed by a non-Indian within Indian country. Most courts considering the question have applied the *McBratney* principle to determine that the state government, not the federal government, possesses jurisdiction over non-Indians who commit crimes within Indian country that are truly victimless . . .”).

<sup>178</sup> *See id.* at 741 (“Significant questions arise in the application of the [Indian Country Crimes Act] to so-called ‘victimless crimes.’ By its terms, the statute refers to an identifiable victim, as a result of a crime against either that person or that person’s property . . .”).

<sup>179</sup> *See id.* at 764.

<sup>180</sup> *See infra* notes 263–286 and accompanying text.

solar projects as well. Tribes (and any non-Indian partner companies) should ensure engagement of the tribal community to determine culturally-acceptable forms of energy production and to find appropriate locations to place solar projects. Storage is needed for community-scale solar energy systems, but because storage technologies are currently expensive and inadequate, governmental policies to strengthen storage capacity are also highly important. Federal policymakers can help tribes by providing guidance on contractual agreements between Indians and non-Indians when negotiating solar power contracts with non-Indians that clarify jurisdictional authority. Federal policymakers should assist tribes with implementing tribal regulations to cover solar energy development, maintenance, and operations to ensure that tribal and federal jurisdiction over such projects preempts any state jurisdiction.

#### A. *Increased Funding*

##### 1. Federal, State, and Tribal Funding

Federal policymakers should ensure that President Obama's initiative to promote renewable energy in tribal communities continues. In particular, federal policymakers should ensure that the DOI and DOE grant programs continue to receive funding. More tribes should be able to receive grants to establish community-scale solar projects to provide electricity in their communities. Indeed, the federal government has a special trust relationship with tribes,<sup>181</sup> which underscores the importance of this issue. The federal government has used the trust relationship in the past to justify broad uses of power to dispose of tribal property, even in cases lacking tribal consent.<sup>182</sup> Courts have even upheld constitutionally suspect exercises of power under the trust relationship.<sup>183</sup> However, in the modern era, the federal government has often underscored its trust relationship in more positive ways, one of which is to support tribal self-determination.<sup>184</sup> As part of its trust relationship with tribes, the federal government should address the lack of electricity in Indian country because it is a serious impediment to tribal self-determination. A lack of energy only serves to keep tribes that are poor in poverty, which is a continuing injustice to tribal communities.

In addition to using federal funds, tribes are also providing funding for solar installation projects themselves. For instance, the NativeSUN Hopi Solar

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<sup>181</sup> COHEN'S HANDBOOK, *supra* note 26, at 412.

<sup>182</sup> *Id.* at 413.

<sup>183</sup> *See id.* at 413–14 (“Courts frequently invoked the trust relationship to uphold the exercise of powers that would have been constitutionally suspect at the time and to immunize the United States from suit challenging these actions.”).

<sup>184</sup> *See id.*; Indian Self-Determination and Education Assistance Act, Pub. L. No. 93-638, 88 Stat. 2203 (1975).

Electric Enterprise allows Native Americans on the Hopi and Navajo Reservations to apply for low interest loans, which allows residents to either rent or buy solar PV panels to power their homes.<sup>185</sup> The enterprise's loan structure may also create an ownership interest in the panels that may act as a deterrent to solar panel theft.<sup>186</sup> The enterprise is especially important for the many residents on the Hopi and Navajo Reservations who lack electricity altogether.<sup>187</sup> The enterprise also trains local residents to install and maintain the solar panels, thereby creating jobs.<sup>188</sup> Funding to start the enterprise came from private foundation grants and the State of Arizona.<sup>189</sup> Indeed, most states offer programs to incentivize renewable energy, including distributed energy projects.<sup>190</sup>

Tribes could also potentially obtain funds for community-solar projects from any resource extraction contracts they enter into with non-Indian partners. The Black Mesa coal mining project mentioned above is one example. In that instance, the tribe entered into a lease with a non-Indian entity to extract coal from Navajo and Hopi lands.<sup>191</sup> While the issue of coal mining in Black Mesa is quite controversial, if the tribe decides to enter into such a contract it could include provisions to provide a certain percentage of revenue specifically for renewable energy development, such as solar panel installation, on the tribe's lands. Coal companies might not wish to enter into a contract that supports a source of energy that is arguably in competition with coal; but the contract need not necessarily state that the funds would go to "renewable energy." Rather, the contract could provide for infrastructure for the tribal community. The tribe could then internally agree to spend the funds on rooftop or community solar panel projects for its members. However, because the federal government often approves these types of contracts, the federal government could mandate that such projects include a provision to provide money to solar projects that is separate from the profits the tribe would receive from the coal mining operation.

The federal government could even require state public utility commissions to

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<sup>185</sup> See ENERGY POTENTIAL ON INDIAN LANDS REPORT, *supra* note 23, at 31 n.23; DEBBY TEWA & CONNIE BROOKS, SANDIA NAT'L LABS., U.S. DEPT' OF ENERGY, NATIVESUN: A MODEL FOR SUSTAINABLE SOLAR ELECTRIC SYSTEMS ON INDIAN LANDS (2006), [http://eeredevapps1.nrel.gov/tribalenergy/pdfs/course\\_solar\\_tewa.pdf](http://eeredevapps1.nrel.gov/tribalenergy/pdfs/course_solar_tewa.pdf) [hereinafter NATIVESUN REPORT].

<sup>186</sup> See Nania & Vilsack, *supra* note 170.

<sup>187</sup> Tarasi et al., *supra* note 5; *Energy Consumption and Renewable Energy Development Potential on Indian Lands*, U.S. DEP'T OF ENERGY (2000), <http://www.eia.gov/renewable/archive/nea0001.pdf> (noting that twenty-nine percent of Hopi households lacked electricity while the Navajo reservation accounts for seventy-five percent "of all Indian households on tribal lands not having electricity.").

<sup>188</sup> See NATIVESUN REPORT, *supra* note 185.

<sup>189</sup> See *id.*

<sup>190</sup> *Energy Incentive Programs*, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, <http://energy.gov/eere/femp/energy-incentive-programs> (last visited Oct. 30, 2016).

<sup>191</sup> Wilkinson, *supra* note 4, at 465–66.



have utilities *consider* implementing a donation option on utility bills.<sup>192</sup> Such an option could allow customers to voluntarily contribute funds to providing solar panels in impoverished Indian communities that lack electricity.

Alternatively, some tribes have profitable casinos from which revenue could be set aside to provide solar panels to community members.<sup>193</sup> Those panels need not be provided for free, but rather could be provided through a loan as NativeSUN does. However, if casino profits are distributed on a per capita basis, it may be difficult to obtain tribal community support for decreasing per capita payments in order to provide money for a solar panel project.<sup>194</sup> Furthermore, not all tribes have highly profitable casinos to support solar projects.<sup>195</sup> This is especially true for tribes that are located far from any populous city.<sup>196</sup> For those communities, funding for solar projects would likely need to come from outside the reservation.

Some tribes with profitable businesses and casinos provide funds to other tribes in the form of charitable donations. The Shakopee Mdewakanton Sioux Community, for example, provides a very generous sum of money each year to other tribes in the form of charitable donations.<sup>197</sup> Indeed, the Shakopee have given over \$325 million to tribes, Native organizations, and other charities.<sup>198</sup> A tribe seeking funds to obtain solar panels to power its community might consider sending a letter of request to the Shakopee for a charitable donation.<sup>199</sup> The Shakopee do not offer business loans or grants.<sup>200</sup> However, banks such as the Native American Bank offer personal and business loans with a focus on lending to Native American individuals as well as to tribes and tribally-owned

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<sup>192</sup> Steven Ferrey, *Virtual "Nets" and Law: Power Navigates the Supremacy Clause*, 24 GEO. INT'L ENVTL. L. REV. 267, 304 (2012) (noting that "[t]he Energy Policy Act of 2005 directed utilities to consider whether to adopt net metering policies, and net metering has grown significantly since that time").

<sup>193</sup> See *infra* note 197 and accompanying text.

<sup>194</sup> *Of slots and sloth*, THE ECONOMIST (Jan. 17, 2015), <http://www.economist.com/news/united-states/21639547-how-cash-casinos-makes-native-americans-poorer-slots-and-sloth> (noting that "per capita payments [of casino revenues] range from as little as a few hundred dollars a year to more than \$100,000" and that "[d]irect [per capita] payments are popular, so tribal leaders are reluctant to cut them.").

<sup>195</sup> Kevin Washburn, *Recurring Problems in Indian Gaming*, 1 WYO. L. REV. 427, 434–35 (2001) ("Indian gaming revenues are not earned evenly across the country. Like many industries, the Indian gaming industry is concentrated. A handful of highly successful operations account for most of the revenue.").

<sup>196</sup> *Id.* at 435 ("Not surprisingly, the most successful gaming operations are located in close proximity to large urban areas.").

<sup>197</sup> *Frequently Asked Questions*, SHAKOPEE MDEWAKANTON SIOUX CMTY, <http://www.shakopeedakota.org/faq/charitable.html> (last visited Oct. 30, 2016).

<sup>198</sup> *Id.*

<sup>199</sup> See *Dakota Value of Sharing*, SHAKOPEE MDEWAKANTON SIOUX CMTY, <https://shakopeedakota.org/charitable-giving/donations-grants-scott-county> (last visited Oct. 30, 2016).

<sup>200</sup> See *id.*

businesses.<sup>201</sup> Business loans from the Native American Bank are available in all fifty states.<sup>202</sup> The Native American Bank utilizes federal government guarantee programs from the Bureau of Indian Affairs, the U.S. Department of Housing and Urban Development, the Small Business Administration, the U.S. Department of Agriculture, and the U.S. Department of Transportation.<sup>203</sup> Continuance of these federal programs makes it possible for such banks to loan to Native American communities, which generally suffer from lack of access to capital.<sup>204</sup>

## 2. Nonprofit Funding

Nonprofit funding could potentially provide another significant source of capital for tribal communities. GRID Alternatives, for example, a non-profit based in Oakland, California, has partnered with over thirty tribal communities nationwide to install solar electric systems for more than 330 tribal families.<sup>205</sup> Over the next three years, GRID Alternatives will be helping the Shinnecock Nation of New York install rooftop solar panels for fifty tribal member homeowners and a battery backup system on the Shinnecock Community Center.<sup>206</sup> GRID Alternatives, along with California Single Family Affordable Homes program, also helped the Bishop Paiute Tribe of California install fifty solar panel systems.<sup>207</sup> The tribe will also install twenty-two solar panel systems

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<sup>201</sup> *Personal Loans*, NATIVE AMERICAN BANK, [http://www.nabna.com/personal\\_loans.php](http://www.nabna.com/personal_loans.php) (last visited Oct. 30, 2016); *Business Loans*, NATIVE AMERICAN BANK, [http://www.nabna.com/business\\_loans.php](http://www.nabna.com/business_loans.php) (last visited Oct. 30, 2016).

<sup>202</sup> *Business Loans*, *supra* note 201.

<sup>203</sup> *Id.*; Jon Swan, *Native American Bank: Banking the Unbanked*, COMMUNITIES & BANKING, FEDERAL RESERVE BANK OF BOSTON 23 (2008), <https://www.bostonfed.org/publications/communities-and-banking/2008/summer-2008.aspx>.

<sup>204</sup> See OFFICE OF THE COMPTROLLER OF THE CURRENCY, COMMERCIAL LENDING IN INDIAN COUNTRY: POTENTIAL OPPORTUNITIES IN A GROWING MARKET 10 (2016), <http://www.occ.gov/topics/community-affairs/publications/insights/insights-commercial-lending-indian-country.pdf> (“Lenders with experience in Indian Country recommend that banks interested in this market get to know the program directors at the BIA, USDA, DOE, and SBA as part of the banks’ credit risk strategies. These lenders noted that use of these agencies’ loan guarantee programs was critical for them to move forward with Indian Country transactions.”); see also NAT’L CONGRESS OF AMERICAN INDIANS & OFFICE OF INDIAN ENERGY AND ECON. DEV., U.S. DEP’T OF INTERIOR, NATIVE AMERICAN ECONOMIC POLICY REPORT 17 (2007), <http://www.ncai.org/resources/ncai-publications/native-american-economic-policy-report.pdf> (“Lack of capital in Native economies is created in part by the notable absence of financial institutions serving tribal communities.”).

<sup>205</sup> See *Tribal Program*, GRID ALTERNATIVES, <http://www.gridalternatives.org/programs/tribal-program> (last visited Oct. 30, 2016).

<sup>206</sup> *GRID and Bill Clinton Stand With Solar for Tribal Communities*, GRID ALTERNATIVES (June 10, 2015), <http://www.gridalternatives.org/news/grid-and-bill-clinton-stand-solar-tribal-communities>.

<sup>207</sup> *Solar partnership brings tribe’s vision of sustainability to life*, GRID ALTERNATIVES (Sept. 30, 2015), <http://www.gridalternatives.org/news/solar-partnership-brings-tribes-vision-sustainability->

on low-income homes through a DOE grant.<sup>208</sup> The Bishop Paiute Tribe has utilized federal, state, *and* nonprofit funding to install solar PV panels within its community.

Nonprofit activity can be generally increased through greater tax benefits and other subsidies available through governmental programs.<sup>209</sup> Therefore, on a basic level, government policies should strive to provide greater tax benefits and other subsidies to nonprofits. However, such incentives typically only minimally increase nonprofit activity.<sup>210</sup> Nonprofits that resemble for-profit organizations could be encouraged to increase their charitability by requiring them to spend a certain portion of their revenue on redistributive activities as the federal government and some states promote similar policies.<sup>211</sup> Therefore, some nonprofits that resemble for-profit firms, such as nonprofit hospitals, universities, museums, orchestras, theaters, or libraries, could be encouraged to spend a certain portion of their money on renewable energy projects in some tribal communities.<sup>212</sup>

### 3. Private Entity Funding, Partnership Flips, and Tax Credits

Tribes that lack capital may also have the option of partnering with non-Indian investors that have the necessary capital to begin a solar project. Investment tax credits are a major incentive for nontribal businesses to invest in solar energy development.<sup>213</sup> Tribes, however, generally cannot take advantage of such tax credits because they are not subject to income taxation.<sup>214</sup> Although a tribe may not itself take advantage of tax credits, a tribe may enter into an agreement with a nontribal entity that can take advantage of the tax credits. The nontribal entity might also provide the capital needed to begin the project.

In negotiating such agreements, the tribe can arrange a partnership flip, one of

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life.

<sup>208</sup> *Tribes Get \$6 Million in Federal Funds for Energy Efficiency Projects*, *supra* note 60; *Solar partnership brings tribe's vision of sustainability to life*, *supra* note 207; see also *Bishop Paiute Tribe-2015 Project*, U.S. DEP'T OF ENERGY (last visited Nov. 21, 2016), <http://energy.gov/indianenergy/bishop-paiute-tribe-2015-project> (project expected to be completed by December 2017).

<sup>209</sup> Avner Ben-Ner, *Who Benefits from the Nonprofit Sector? Reforming Law and Public Policy Towards Nonprofit Organizations*, 104 YALE L. J. 731, 747 (1994) (book review).

<sup>210</sup> *Id.*

<sup>211</sup> *Id.*

<sup>212</sup> *Id.*

<sup>213</sup> Kevin Potter, et al., *Credits and Incentives Provide Green for Going Green*, 25 J. MULTISTATE TAX'N AND INCENTIVES, 2-3 (July 2015), <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/Tax/us-tax-mts-july-2015-credits-and-incentives-talk.pdf> (noting the tax benefits to businesses in investing in solar through taking advantage of federal and state investment tax credits).

<sup>214</sup> See Erik M. Jensen, *Taxation and Doing Business in Indian Country*, 60 ME. L. REV. 1, 48 (2008).

“three main tax equity structures in use today.”<sup>215</sup> A partnership flip can be arranged in a contract between a developer and a tax equity investor (“TEI”).<sup>216</sup> In such an arrangement, the tribe would be the developer and the non-Indian entity would be the TEI. The TEI must own the assets of the project, and is typically allocated ninety-nine percent of partnership net income and losses over a five-year period.<sup>217</sup> The TEI must own the project for a period of five years to prevent the federal government from recapturing the tax credit.<sup>218</sup> After that period, the ownership interest flips so the developer owns ninety-nine percent while the TEI retains a one percent interest.<sup>219</sup> The tribe could later choose to buy the TEI’s interest if it wishes.<sup>220</sup> The goal of this type of arrangement is for the TEI to obtain income and tax credits for its investment while the developer obtains the project five years later at a discounted rate.<sup>221</sup> When a tribe buys such a project at a discounted rate, tribal customers buying the energy also save money in the form of lower rates.<sup>222</sup>

Companies with large tax liabilities, such as Google, are investing in energy projects to receive tax credits and offset their tax liability.<sup>223</sup> In 2015, Google invested \$300 million into a \$750 million fund for SolarCity to install solar panels on 25,000 residential homes.<sup>224</sup> SolarCity is receiving the rest of the \$750 million from debt financing.<sup>225</sup> Google, the TEI, would receive thirty percent of the project’s cost in tax credit (or \$225 million).<sup>226</sup>

The TEI market has its drawbacks, however, including the limited supply of TEIs relative to the demand for project finance.<sup>227</sup> One solution is to reinstate

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<sup>215</sup> See Felix Mormann, *Beyond Tax Credits: Smarter Tax Policy for a Cleaner, More Democratic Energy Future*, 31 YALE J. ON REG. 303, 330–31 (2014).

<sup>216</sup> See Kevin M. Walsh, *Renewable Energy: Where We Are Now and How Renewable Energy Investment and Development Can Be Expanded*, 23 U. MIAMI BUS. L. REV. 69, 78 (2014).

<sup>217</sup> *Id.*

<sup>218</sup> Mormann, *supra* note 215, at 330.

<sup>219</sup> See Walsh, *supra* note 216, at 78.

<sup>220</sup> See *id.* at 79.

<sup>221</sup> *Id.* at 78.

<sup>222</sup> *What Drives the Growth of Community Solar Market*, COMMUNITY SOLAR HUB (July 14, 2016), <https://www.communitysolarhub.com/blog/what-drives-the-growth-of-community-solar-market> (“The cost of solar equipment and development soft costs are continuing to fall and economies of scale are making the development costs of a project more palatable . . . . [Solar p]rograms will soon be offered at a cost equal to or less than the cost of traditional fuel sources. This leveled cost of energy (LCOE) is what makes solar energy accessible to more people like low-income households, fueling the growth in community solar programs.”).

<sup>223</sup> See Uclia Wang, *It’s Time To Hurry Up And Beat A Solar Tax Credit Deadline?*, FORBES (Feb. 26, 2015), <http://www.forbes.com/sites/uciliawang/2015/02/26/its-time-to-hurry-up-and-beat-a-solar-tax-credit-deadline/>.

<sup>224</sup> *Id.*

<sup>225</sup> *Id.*

<sup>226</sup> *Id.*

<sup>227</sup> See *Tax Credits, Tax Equity and Alternatives To Spur Clean Energy Financing*, U.S. P’SHIP FOR RENEWABLE ENERGY FIN. 1 (2011), <http://uspref.org/wp-content/uploads/2011/09/Tax-Credits->

the U.S. Treasury Department's Section 1603 cash grant program. The program gave investors the opportunity to forego a tax credit in favor of a direct nontaxable cash payment from the Treasury in an amount equal to the corresponding investment tax credit.<sup>228</sup> The Section 1603 cash grant program increased the tax equity available in 2010 from \$3.3 billion to \$7.2 billion.<sup>229</sup> The availability of more tax equity equates to more money potentially available for investments in Indian country.

TEI partnerships unfortunately tend to have high transaction costs due to professional and personnel fees needed for these often highly complex and customized transactions.<sup>230</sup> The costs can be prohibitively high for distributed energy projects.<sup>231</sup> Although the transaction costs may be high, this is not necessarily a new phenomenon for projects in Indian country, and tax equity may be the only means of securing debt financing for some tribes. It should be noted that some tribes are able to build their own solar facilities, and tax credits (or lack thereof) do not present a problem for such tribes.<sup>232</sup>

The solar investment tax credit has helped annual solar installations to grow by 1,600 percent since the credit was first implemented in 2006.<sup>233</sup> The solar installation tax credit was set to decrease in 2016 from thirty percent to ten percent for commercial projects and to zero percent for homeowners who own solar panels.<sup>234</sup> However, Congress recently provided a three-year extension of the thirty percent solar investment tax credit.<sup>235</sup> After 2019, the credit will gradually decrease each year to ten percent in 2022, and will continue to decrease after that.<sup>236</sup> Because of the huge growth associated with the solar investment tax credit, the federal government should reassess in 2019—rather than deciding now—whether it should keep the percentage the same or decrease the percentage automatically each year after 2019.

Private solar companies could also consider donating either profits or solar panels to supply tribal community-scale solar projects. Companies such as Kyocera have donated solar energy systems and storage batteries to schools in

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Tax-Equity-for-Clean-Energy-Financing.pdf [hereinafter *Spur Clean Energy Report*].

<sup>228</sup> Richard D. Martinson, *Federal Tax Legislation Favors Alternative Energy Development and Energy Efficiency Initiatives*, 270 N.J. LAW., June 2011, at 22, 23.

<sup>229</sup> *Spur Clean Energy Report*, *supra* note 227, at 1.

<sup>230</sup> See Mormann, *supra* note 215, at 309, 332–33.

<sup>231</sup> See *id.*

<sup>232</sup> See Glennon & Reeves, *supra* note 47.

<sup>233</sup> *Solar Investment Tax Credit (ITC), Issues & Policies*, SOLAR ENERGY INDUS. ASS'N, <http://www.seia.org/policy/finance-tax/solar-investment-tax-credit> (last visited Oct. 30, 2016).

<sup>234</sup> Wang, *supra* note 223.

<sup>235</sup> See Thomson Reuters, Energy Credits 62 1/14/2016 Fed. Taxes Weekly Alert Art. 24 (Jan. 14, 2016) (“The solar energy credit was extended for five years and will be gradually phased out over that time.”); Alan K. Ota, *Lawmakers look to move energy measures on FAA bill*, 2016 WL 157997 (Jan. 14, 2016).

<sup>236</sup> Ota, *supra* note 235.

Tanzania and Uganda that lack access to the electric grid.<sup>237</sup> Kyocera began research in solar in 1975 and has since donated solar energy systems to regions lacking electricity in China, Pakistan, and Nepal.<sup>238</sup> First Solar, a company specializing in PV solar energy, also has a donation program to provide either funds or solar panels to various organizations.<sup>239</sup> Other similarly situated companies should consider donating solar panels or funds to tribal communities for community-scale solar projects by partnering with tribes. Generally, this can be done by reaching out to the tribal government or a tribally-owned business. Most tribes have websites that provide general contact information for their tribal governments. Tribes should also form community-scale solar plans and submit requests for donations from such companies as well.

### B. Ensuring Respect for Tribal Culture

Cultural concerns are very important in tribal communities for the reasons highlighted above.<sup>240</sup> Many of these concerns, however, can be avoided with community-scale solar energy projects. While concentrated solar projects tend to have large physical footprints extending thousands of acres,<sup>241</sup> community-scale solar projects can be located on top of buildings, providing just enough energy to power those structures.<sup>242</sup> Even for those projects located directly on tribal land, community-scale solar poses less of a concern than concentrated solar. Smaller projects by definition will implicate less land use and will pose less of a risk for affecting landscape aesthetics or using culturally-significant land. However, rooftop solar projects can pose conflicts with culture and belief systems, as the NativeSUN enterprise has experienced. Some recipients of rooftop solar panels from NativeSUN were concerned that the solar panels would take away from the sun.<sup>243</sup> Such concerns can be addressed, as the NativeSUN enterprise did, through respect and cultural sensitivity.<sup>244</sup> NativeSUN also noted the benefits of solar power as opposed to less clean, non-renewable forms of energy for both human health and environmental protection

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<sup>237</sup> *KYOCERA Donates Solar Power Generating Systems to Schools in Tanzania and Uganda*, KYOCERA (June 13, 2013), [http://global.kyocera.com/news/2013/0602\\_koiz.html](http://global.kyocera.com/news/2013/0602_koiz.html).

<sup>238</sup> *Id.*

<sup>239</sup> *Request for Donations*, FIRST SOLAR, <http://www.firstsolar.com/About-Us/Corporate-Responsibility/Charitable-Giving> (last visited Oct. 30, 2016).

<sup>240</sup> See *supra* notes 73–95 and accompanying text.

<sup>241</sup> See Lewis, *supra* note 20, at 280–81.

<sup>242</sup> See, e.g., *BERING STRAIT PLAN*, *supra* note 28, at 27 (discussing the installation of solar panels on office and apartment buildings to power those buildings).

<sup>243</sup> See Sally MacAdams, *Towards Energy Sovereignty: Case Studies from North American First Nations*, CMTY. POWER AGENCY 9 (July 2016), <http://cpagency.org.au/wp-content/uploads/2016/07/Towards-Energy-Sovereignty-First-Nations-case-studies-from-North-America.pdf>.

<sup>244</sup> See *id.*

in addressing concerns about solar panels.<sup>245</sup> Furthermore, most of the cultural issues that arise from projects on Indian land are a result of governmental action and outside entities having control of the project.<sup>246</sup> For community-scale projects, tribes should take the lead in choosing appropriate locations for their projects. Tribes will have the most knowledge regarding culturally or spiritually significant sites and the best ways to approach solar projects for their own communities.

### C. Incentivizing Energy Storage on Reservation Lands

Because solar power is an intermittent source of energy, community-scale solar energy systems generally require some form of energy storage.<sup>247</sup> Energy storage is particularly important in Indian country because of the remoteness of many reservations.<sup>248</sup> In order to ensure solar project success in Indian country, federal policymakers need to provide adequate incentives for companies to develop solar storage technologies. Companies are currently developing new technologies for energy storage and costs may decrease over time as the price for PV solar panels did.<sup>249</sup> However, governments can help by providing grants for storage technology development and utilization. Furthermore, as PV solar panels become more prevalent, the demand for energy storage will likely increase. One way to incentivize storage technology development would be to continue the solar investment tax credit. The tax credit would increase the use of solar energy<sup>250</sup> and increase the demand for energy storage, especially if the right net metering policies are in place.

Net metering can serve as an incentive for solar storage technology development because it can encourage customers to purchase solar storage. Net metering is the practice by which utility companies offset their customers' energy bills by paying customers for their use of renewable energy technologies, such as solar panels, when those technologies feed energy back into the grid.<sup>251</sup> Net metering is not available for communities that are not connected to the utility grid.<sup>252</sup> However, policies that promote net metering where customers can

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<sup>245</sup> *Id.*

<sup>246</sup> *See supra* notes 73–95 and accompanying text.

<sup>247</sup> ENERGY POTENTIAL ON INDIAN LANDS REPORT, *supra* note 23, at 38.

<sup>248</sup> *Future of Indian Energy Report supra* note 24, at 5.

<sup>249</sup> *See supra* notes 39–40, 109–112 and accompanying text.

<sup>250</sup> *See supra* note 233 and accompanying text.

<sup>251</sup> *See* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES, SECTION OF ENVIRONMENT, ENERGY, AND RESOURCES, AMERICAN BAR ASSOCIATION, 200, 356 (Michael B. Gerrard ed., 2011) [hereinafter LAW OF CLEAN ENERGY].

<sup>252</sup> Net metering is a utility company “accounting concept” that entails a distributed power generator, i.e., a solar panel, connected to a bi-directional meter that runs forward when a utility customer uses energy from the grid and backward when the customer produces more energy from the generator than the customer consumes. Ferrey, *supra*, note 192, at 273. Thus, to engage in net

utilize time-of-use pricing have the potential to lower the cost of storage technologies and make such technologies more readily available on remote reservations.

If net metering customers can utilize time-of-use pricing to store their solar energy, customers may be more willing to purchase storage technologies. By storing energy during times when grid prices are low and selling it back to the grid during peak hours when prices are high, customers can reap profits from selling their energy to the grid. Customers typically make high profits when they are able to sell energy to the grid through net metering because they generally are paid the residential retail price for their energy rather than the wholesale market price.<sup>253</sup> Therefore, instead of receiving \$0.02 or \$0.05 per kWh, customers receive \$0.10 or \$0.20 per kWh.<sup>254</sup> Net metering is also an important policy for many solar panel businesses that rely on net metering and other subsidies to succeed.<sup>255</sup> However, net metering also has the potential to act as a deterrent to solar storage.<sup>256</sup> In particular, if time-of-use pricing is not available on a particular grid, it may be more profitable for customers to sell their excess solar energy to the grid rather than store it for later use.

Where time-of-use pricing is not available and net metering is therefore less profitable for customers, net metering could be replaced with a value of solar tariff (“VOST”).<sup>257</sup> VOST tends to equally distribute costs across the grid to all users rather than simply placing all of a utility’s transmission and distribution costs on nonsolar users.<sup>258</sup> This might make storage more appealing to solar users and battery technology cheaper, which would also be beneficial to utility companies in times of energy surges.

Utility companies allow customers to sell their excess energy to the grid typically because some states require that utilities implement net metering policies.<sup>259</sup> The federal government, through the Energy Policy Act of 2005,

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metering, individuals must be connected to a utility grid. *Id.*

<sup>253</sup> See David Raskin, Response, *Getting Distributed Generation Right: A Response to “Does Disruptive Competition Mean a Death Spiral for Electric Utilities?”*, 35 ENERGY L. J. 263, 270 (2014).

<sup>254</sup> *Id.*

<sup>255</sup> *Id.* (“Our ability to sell solar energy systems or the electricity they generate may be adversely impacted by the failure to expand existing limits on the amount of net metering in states that have implemented it, the failure to adopt a net metering policy where it currently is not in place or the imposition of new charges that only or disproportionately impact customers that use utility net metering.”) (quoting SolarCity’s Securities and Exchange Commission Form 10-K).

<sup>256</sup> See Randall, *supra* note 111.

<sup>257</sup> See Kayci G. Hines, *Solar Shift: An Analysis of the Federal Income Tax Issues Associated with the Residential Value of Solar Tariff*, 5 ARIZ. J. ENVTL. L. & POL’Y 388, 391 (2015).

<sup>258</sup> See *id.* at 391–92.

<sup>259</sup> See LAW OF CLEAN ENERGY, *supra* note 251, at 200; Ferrey, *supra* note 192, at 271 (noting that the “Energy Policy Act of 2005 requires all electric utilities to offer net metering” and that “eighty-six percent of states are in compliance, at least in adopting net metering[.]”).



also influences net metering by requiring state public utility commissions to consider net metering standards for utilities.<sup>260</sup> The federal government could go further than simply requiring state public utility commissions to consider implementing net metering standards. The federal government could require state commissions to consider implementing time-of-use pricing for utility companies, which would allow customers to store their solar energy and sell it to the grid during peak times when grid prices are high. This would provide an even greater incentive for customers to purchase energy storage.

Net metering is generally not available for many Indian households simply because those households are not connected to the grid. However, perhaps the greatest incentive for the use of energy storage on reservations is for governments to implement policies that make such storage technologies cheaper. Any decreases in energy storage costs would likely make it easier to implement such technologies on Indian reservations. As mentioned earlier, many Indian households suffer from poverty.<sup>261</sup> Furthermore, tribes also struggle to access funds and capital.<sup>262</sup> More affordable forms of energy storage would make it easier for tribes to better utilize any governmental grants or private loan money tribes receive to purchase more energy storage.

#### D. Clarifying Jurisdiction

As discussed above, criminal and civil jurisdiction in Indian country can be quite complicated.<sup>263</sup> Tribes and states often disagree over who should have regulatory and taxation authority over certain activities on Indian lands. Indeed, sometimes tribes and states *both* have jurisdiction over certain activities.<sup>264</sup> However, new federal regulations might change the *Bracker* interest-balancing test discussed above<sup>265</sup> and provide clarity as to whether dual taxation will occur for solar energy projects.<sup>266</sup> An example of this is Part 162 in Title 25 of the Code of Federal Regulations<sup>267</sup> (authorized by the ILTLA), which significantly alters the old regulations.<sup>268</sup> Part 162 contains new provisions preempting state taxes that cover residential, business, and, for the first time, wind and solar

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<sup>260</sup> See *id.*

<sup>261</sup> See *supra* note 108 and accompanying text.

<sup>262</sup> Tim Berg, *Growing Indian Economies: The Model Tribal Secured Transactions Act*, 42-MAR ARIZ. ATT'Y 30, 32 (2006) ("Access to financing and capital is key to economic growth, and such access is hampered in Indian Country by the lack of standard laws governing business and lending transactions.").

<sup>263</sup> See *supra* notes 140–80 and accompanying text.

<sup>264</sup> See *supra* notes 147–163.

<sup>265</sup> See *supra* notes 161–62 and accompanying text.

<sup>266</sup> See Joe Lennihan, *The New Indian Leasing Regulations: Express Preemption of State Taxation in Indian Country?*, 23 J. MULTI-STATE TAX'N & INCENTIVES 30, 32 (2013).

<sup>267</sup> See 25 C.F.R. § 162 (2014).

<sup>268</sup> Lennihan, *supra* note 266, at 33.

leases.<sup>269</sup> Specifically, section 162.017 replaces and broadens the scope of the prohibition on state taxes for business, residential, wind, and solar leases.<sup>270</sup> Section 162.017(a) also prohibits state taxation of permanent improvements and section 162.017(c) preempts state taxes upon the leaseholds themselves.<sup>271</sup> Section 162.017(b) contains the broadest prohibition on state taxes because it preempts state taxes on *activities* under a lease conducted on the leased premises.<sup>272</sup> These regulations became effective in 2013.<sup>273</sup> Additionally, tribes may choose to lease their land under the ILTLA rather than seek a right-of-way, which can be quite time consuming.<sup>274</sup> Leasing land under the ILTLA would also avoid jurisdictional issues over rights-of-way on Indian lands as discussed above. In addition to changing regulations, case law can also play a role in clarifying jurisdiction. The U.S. Court of Appeals for the Ninth Circuit has recently held that permanent improvements on trust land that become part of the land in an Indian reservation cannot be taxed by a state regardless of who owns the land.<sup>275</sup> Based on the new regulations under the ILTLA and relevant case law, states likely cannot tax community-scale solar projects under leases. Therefore, tribes leasing land to non-Indians for solar energy project development should lease their projects through the ILTLA and make sure they are in compliance with relevant regulations in order to ensure preemption of state taxes on the leases.

Furthermore, as mentioned above, the HEARTH Act and its accompanying regulations can streamline leasing on tribal lands by allowing tribes to approve leases themselves under tribal regulations approved by the Secretary.<sup>276</sup> This would eliminate the need for each individual lease to be approved by the Secretary.<sup>277</sup> Thus, tribes that have HEARTH Act regulations in place may expedite leasing of their tribal lands for community-scale solar projects.

If tribes wish to involve a non-Indian developer through a lease in their project, but do not have HEARTH Act-approved regulations, tribes could expedite their projects by agreeing to leases with non-Indian solar developers for terms less than seven years because such leases do not require Secretarial

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<sup>269</sup> *Id.*

<sup>270</sup> See 25 C.F.R. § 162.017 (2014); Lennihan, *supra* note 266, at 34.

<sup>271</sup> *Id.* § 162.017(a), (b).

<sup>272</sup> *Id.* § 162.017(c).

<sup>273</sup> See *id.*

<sup>274</sup> See *supra* notes 138–39 and accompanying text.

<sup>275</sup> *Confederated Tribes v. Thurston City. Bd. of Equalization*, 724 F.3d 1153, 1159 (9th Cir. 2013).

<sup>276</sup> See *supra* note 131 and accompanying text.

<sup>277</sup> HEARTH Act, 25 U.S.C. § 415(h) (2012); Justin Gerdes, *Obama Administration Clears Barriers Holding Up Tribal Renewable Energy*, FORBES (Nov. 29, 2012), <http://www.forbes.com/sites/justingerdes/2012/11/29/obama-administration-clears-barriers-holding-up-tribal-renewable-energy/>.

approval.<sup>278</sup> Secretarial approval can take quite a long time in some instances, and can also implicate NEPA.<sup>279</sup> Therefore, if tribes wish to partner with non-Indian companies for their solar projects, an approach that will ensure not only time efficiency but also jurisdictional clarity is to enter into leases that have durational terms of seven years or less.

Jurisdiction can also affect how tribes deal with theft of solar panels. Theft is a substantial concern for any solar panel owner, but is even more likely to occur in remote locations. Because many tribes are located in such locations, it will be important for tribes to develop plans to deter theft of solar panels from their projects. Tribes could consider creating an ownership interest in the solar project for individual tribal members to prevent theft. The tribe could do so by providing the solar power generated by the panels to tribal homes and charging customers for electricity use. If the tribe is using its community-scale solar project to power a community building, the tribe could consider asking for minimal donations, specifically for the solar panels, when members attend community events that use electricity generated from the solar panels. If a tribe uses the community-scale solar project to provide electricity for its hotel and casino operations, the tribe could invest some of its revenues into securing and monitoring the solar panels.

To combat theft for any tribal community-scale solar project, regardless of location or intended use of the solar power, tribes have many options. The tribe could place the project in a central location within the community along with video cameras and alarms. The tribe could also make sure to use difficult to detach solar panels for the project, which could include using specialty bolts that are cut in odd patterns that do not fit ordinary wrenches and screwdrivers.<sup>280</sup> Another remedy is to permanently engrave serial numbers on the panels, or purchase panels that have serial numbers visible under ultraviolet light to aid police when searching for stolen panels.<sup>281</sup> Installing GPS tracking systems on the tribe's panels or purchasing panels that have computer chips that disable the panels if they are removed from their arrays is another option.<sup>282</sup> Additionally, a neighborhood-watch program could be formed, as these programs have worked well in other communities.<sup>283</sup> Finally, the tribe could also purchase insurance to cover the cost and replacement of any stolen solar panels. With such safeguards in place, tribes can more readily deter solar panel theft around its community-

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<sup>278</sup> See 25 U.S.C. § 81(b) (2012).

<sup>279</sup> See *supra* notes 128, 133–34 and accompanying text.

<sup>280</sup> Stephanie Simon, *Stop That (Solar) Thief!*, WALL STREET JOURNAL (Oct. 19, 2009), <http://www.wsj.com/articles/SB10001424052970203278404574417320162879860>.

<sup>281</sup> *Id.*

<sup>282</sup> See FOCUS ON: SOLAR PHOTOVOLTAIC ENERGY, MUNICH RE 2 (2012), [https://www.munichre.com/site/mram-mobile/get/documents\\_E1375873699/mram/assetpool.mr\\_america/PDFs/3\\_Publications/Research\\_Spotlight/FS\\_FO\\_Solar\\_Energy.pdf](https://www.munichre.com/site/mram-mobile/get/documents_E1375873699/mram/assetpool.mr_america/PDFs/3_Publications/Research_Spotlight/FS_FO_Solar_Energy.pdf).

<sup>283</sup> Simon, *supra* note 280.

scale solar project as well as replace panels if such theft occurs.

Federal policymakers can also play a role in combating solar theft. As one Congressman suggested, federal policymakers could establish a national registry of solar panels and require the Secretary of the U.S. Department of Energy to develop a plan to address solar panel theft.<sup>284</sup> However, no consistent standard exists for identification protocols of solar panels.<sup>285</sup> Therefore, the federal government may also need to require a standard system of identification protocols for PV panels before any national registry can be created and maintained.

If these safeguards do not deter theft, tribes may need laws to punish theft. Tribes generally may prosecute tribal members and nontribal member Indians and should either utilize existing law against theft or enact a law if none exists to deter theft. Although tribes generally lack criminal jurisdiction over non-Indians, there are other ways a tribe may have jurisdiction over non-Indians. A tribe may be able to assert civil forfeiture authority against non-Indians over property used in criminal offenses.<sup>286</sup> Therefore, a tribe may be able to assert such authority over the theft of solar panels regardless of who commits the crime. Ultimately, for community-scale solar projects, tribes should ensure their solar panels are located on Indian-owned or tribally-owned fee land or trust land and that the panels are ultimately owned by the tribe or an Indian to ensure the greatest degree of both tribal criminal and civil jurisdiction over the project.

## V. CONCLUSION

Community-scale solar energy is an increasingly affordable way to provide clean energy to remote tribal communities that lack electricity or currently spend a disproportionate amount of their income on energy. There is a great deal of solar energy potential on Indian lands, and the potential benefits of community-scale solar in Indian country are immense, including job creation and improved energy access. Unquestionably, there are significant obstacles to widespread implementation of community-scale solar in Indian country, including constraints related to funding, culture, storage, and jurisdiction. Still, despite these impediments, there are ways to incentivize community-scale solar energy in Indian country. Continued and increased governmental and nonprofit funding, tribal business partnerships with TEIs, reinstatement of the Section 1603 cash grant program, and grants to improve storage technologies all are possible solutions. New regulations and recent case law developments also suggest that

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<sup>284</sup> Katherine Bourzac, *Black Market for Solar Panels*, MIT TECH. REV. (Dec. 28, 2009), <https://www.technologyreview.com/s/416932/black-market-for-solar-panels/>.

<sup>285</sup> See FOCUS ON: SOLAR PHOTOVOLTAIC ENERGY, *supra* note 282, at 2.

<sup>286</sup> COHEN'S HANDBOOK, *supra* note 26, at 765 (citing *Miner Elec., Inc. v. Muscogee (Creek) Nation*, 505 F.3d 1007 (10th Cir. 2007)).

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some former impediments, including issues of dual taxation from states and tribes, may no longer exist. Tribes may also decrease jurisdictional issues by choosing ownership models and locations within the reservation for their community-scale solar projects that will support tribal over state jurisdiction of such projects.

Overall, community-scale solar is an exceptionally promising way to bridge the energy gap between nontribal and tribal communities, improve the lives of tribal members, and promote tribal energy self-sufficiency in a renewable, environmentally-clean way. Community-scale solar is also a way for federal policymakers to fulfill their trust relationship with tribes and to end decades of poor electricity service that have helped to keep tribes in a cycle of poverty. Through proactive policymaking, obstacles to community-scale solar energy development on reservation lands can be overcome, enabling tribal communities to harness the abundant and much-needed energy benefits of the sun.