

**GROWING A GREENER FUTURE: THE DEVELOPMENT OF A LEGAL  
FRAMEWORK FOR SOLAR ENERGY IN PENNSYLVANIA**

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**I. INTRODUCTION**

Pennsylvania's path to clean, renewable energy began with an expansive history of "dirty energy."<sup>2</sup> The energy industry predominantly consists of fossil fuels comprised of coal, oil, and natural gas.<sup>3</sup> Pennsylvania has long been a producer of coal and natural gas, which are both particularly "dirty" in their extraction and use.<sup>4</sup> Recently, however, Pennsylvania has shifted its perspective to value the use of renewable energy as a critical resource in protecting the environment and creating a reliable energy source.<sup>5</sup>

Pennsylvania's energy policies have historically been deeply entwined with the United States' industrial needs.<sup>6</sup> From as early as the American Industrial Revolution and up through both World Wars, Pennsylvania's coal industry powered the manufacturing of iron, steel, arms, and machinery across the country.<sup>7</sup> Beginning

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<sup>2</sup> *Dirty Energy: It's Time to Break Free From a Dirty Energy Past*, PENNFUTURE, <https://www.pennfuture.org/dirty-energy> (Last visited Sept. 19, 2025).

<sup>3</sup> *Even as renewables increase, fossil fuels continue to dominate U.S. energy mix*, U.S. ENERGY INFO. ADMIN. (July 3, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=31892>.

<sup>4</sup> *Coal explained: Coal and the environment*, U.S. ENERGY INFO. ADMIN. (Apr. 17, 2024), <https://www.eia.gov/energyexplained/coal/coal-and-the-environment.php>. Coal is typically extracted through strip mining and blasting, which changes the environment's landscape and can release methane gas into the atmosphere. *Id.*: Natural gas is often extracted through fracking, which produces an exceptionally hazardous fluid that can be leaked into the ground. *Natural gas explained: Natural gas and the environment*, U.S. ENERGY INFO. ADMIN. (Apr. 16, 2024), <https://www.eia.gov/energyexplained/natural-gas/natural-gas-and-the-environment.php>. Natural gas is also primarily methane, a greenhouse gas. *Id.*

<sup>5</sup> *What is Renewable Energy?*, COMMONWEALTH OF PA. DEP'T OF ENV'T PROT., <https://www.pa.gov/agencies/dep/residents/saving-energy/renewables>, (Last visited Sept. 20, 2025).

<sup>6</sup> *Emergence of the modern state*, BRITANNICA, <https://www.britannica.com/place/Pennsylvania-state/Emergence-of-the-modern-state>, (Sept. 19, 2025).

<sup>7</sup> *Id.*

in the 1970s, Pennsylvania's production of coal slowed; the United States began sourcing its coal from other states and countries with competitive industries.<sup>8</sup> Even with this decline, Pennsylvania continues to be a substantial supplier of energy to other states.<sup>9</sup>

Renewable energy did not command national attention until the 1970s when the United States was impacted by an oil embargo posed by members of the Organization of Petroleum Exporting Countries ("OPEC").<sup>10</sup> The OPEC embargo caused inflation to spike and oil imports to stagnate, leaving the U.S. with the realization that it needed to change its approach to energy.<sup>11</sup> In response, The Public Utility Regulatory Policies Act of 1978 ("PURPA") was enacted with the intent to encourage renewable resource use and electric conservation.<sup>12</sup> PURPA imposed mandatory renewable purchase obligations for power from combined heat and power facilities and small output facilities.<sup>13</sup> Since its enactment PURPA has been amended

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<sup>8</sup> CHRISTINA SIMEONE, ET AL., *Reimagining Pennsylvania's Coal Communities*, KLEINMAN CENTER FOR ENERGY POLICY, (May 23, 2018), <https://kleinmanenergy.upenn.edu/research/publications/reimagining-pennsylvanias-coal-communities-stakeholder-perspectives-and-strategies-for-economic-revitalization/>.

<sup>9</sup> *Pennsylvania State Energy Profile*, U.S. ENERGY INFO. ADMIN. (Jan. 16, 2025), <https://www.eia.gov/state/print.php?sid=PA#:~:text=Pennsylvania%20Quick%20Facts,Last%20Updated:%20January%2016%2C%202025>. Pennsylvania is the nation's second-largest natural gas producer, third-largest coal-producing state, and the second-largest net supplier of energy to other states. *Id.*

<sup>10</sup> *The Public Utility Regulatory Policies Act of 1978*, AMERICAN PUBLIC POWER ASSOCIATION, <https://www.publicpower.org/policy/public-utility-regulatory-policies-act-1978>, (Last visited: Nov. 17, 2025); *Oil Embargo, 1973–1974*, U.S. OFFICE OF THE HISTORIAN, <https://history.state.gov/milestones/1969-1976/oil-embargo>, (Last visited: Nov. 11, 2025).

<sup>11</sup> *Id.* The OPEC Embargo made such an impact on the United States economy in part because the Embargo made it apparent that the U.S. was majorly dependent on foreign oil and unequipped to support itself in an energy crisis. *Oil Embargo, 1973–1974*, *supra* note 10. To make matters worse, the price of oil per barrel quadrupled as a result of the Embargo around the time the U.S. dollar saw devaluation, leaving the U.S. economy in significant distress. *Id.*

<sup>12</sup> *The Public Utility Regulatory Policies Act of 1978*, *supra* note 10.

<sup>13</sup> *Id.*

and expanded, but its objective to create a more sustainable energy landscape continues today.<sup>14</sup>

Of the types of renewable energy, or energy naturally produced and continuously replenished, PURPA offered significant support to solar developers.<sup>15</sup> Solar energy is divided into two subgroups: photovoltaics and concentrating solar-thermal power (“CSP”).<sup>16</sup> Photovoltaics is the better known of the two, recognizable by the large, black panels. These panels work by absorbing the energy produced by sunlight into smaller cells within the panel.<sup>17</sup> The energy then “creates electrical charges that move in response to an internal electrical field in the cell, causing electricity to flow.”<sup>18</sup> In this essay, solar farming and any reference to solar energy will mean photovoltaic systems. Any reference to solar farming or solar paneling should not be understood to mean CSP.

Part II of this article outlines the current regulatory framework that solar energy operates under by analyzing relevant federal and state energy policies, including a comparison of local government regulations. Part III examines how Pennsylvania’s policies and regulations can evolve to promote sustainable and well-

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<sup>14</sup> *Id.*

<sup>15</sup> *What is Renewable Energy?*, PENNSTATE, Mar. 9, 2023, <https://extension.psu.edu/what-is-renewable-energy>, (Defining renewable energy); *PURPA 101*, SOLAR ENERGY INDUSTRIES ASS’N, Oct. 18, 2017, <https://seia.org/research-resources/purpa-101/#:~:text=In%201978%2C%20Congress%20passed%20the,the%20PDF%20of%20this%20Factsheet>.

<sup>16</sup> *Solar Energy*, U.S. DEP’T OF ENERGY, <https://www.energy.gov/topics/solar-energy>, (Last visited: Nov. 17, 2025).

<sup>17</sup> *How Does Solar Work?*, U.S. DEP’T OF ENERGY, <https://www.energy.gov/eere/solar/how-does-solar-work>, (Last visited: Nov. 17, 2025).

<sup>18</sup> *Id.*

regulated solar energy, advancements in relevant practices, and growing industry standards.

## II. BACKGROUND

The Environmental Protection Agency (“EPA”) recognizes that renewable energy regulations are a patchwork of federal, state, and local policies which together impact project development.<sup>19</sup> There is no comprehensive federal or Pennsylvania law; in actuality, the regulation of solar energy falls primarily within the purview of municipalities. An analysis of each level of government provides a more complete understanding of how solar energy is regulated.

### *i. The Federal Approach*

#### *a. Federal Regulations*

At the federal level, solar panel regulations are a combination of general environmental and energy laws that are supplemented by specific incentives. The four laws most applicable to energy production are the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Endangered Species Act, all of which are overseen by the EPA.<sup>20</sup> Solar panels emit no greenhouse gas or other air pollutants and thus the Clean Air Act is not relevant to this analysis.<sup>21</sup>

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<sup>19</sup> *Policies and Regulations*, U.S. ENV’T PROT. AGENCY, Sept. 30 2025, <https://www.epa.gov/green-power-markets/policies-and-regulations>.

<sup>20</sup> *Laws & Regulations*, U.S. ENV’T PROT. AGENCY, Aug. 13, 2025, <https://www.epa.gov/laws-regulations>.

<sup>21</sup> *Solar explained; Solar energy and the environment*, U.S. ENERGY INFO. ADMIN., Jan 19, 2024, <https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php>.

The Clean Water Act (“CWA”) creates a foundation for regulating the discharge of pollutants into water sources and management of water quality.<sup>22</sup> The CWA also addresses the issue of stormwater pollution, which occurs when rain and snowmelt flow over impervious surfaces, like large solar panels, and collect pollutants such as chemicals, oils, dirt, or garbage, which then negatively impact aquatic ecosystems.<sup>23</sup> To proactively avoid stormwater pollution, the CWA requires solar farm constructors to obtain construction stormwater permits establishing a plan to design, install, and maintain proper stormwater controls; conduct regular site inspection by qualified personnel; and accurately report and address stormwater issues at the site.<sup>24</sup> Although solar panels do not excrete pollutants, their implementation and maintenance can affect the channels by which stormwater reaches the ground, potentially leading to erosion and excess sediment in waterways.<sup>25</sup> In places with plentiful rain and snow, like Pennsylvania, placement of solar panels in areas with a well-established ecosystem and healthy ground vegetation is critical to prevent erosion and protect environmental attributes that solar panels may endanger.<sup>26</sup>

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<sup>22</sup> *Summary of the Clean Water Act*, U.S. ENV’T PROT. AGENCY, May 22, 2025, <https://www.epa.gov/laws-regulations/summary-clean-water-act>.

<sup>23</sup> *Id.*; *NPDES Stormwater Program*, U.S. ENV’T PROT. AGENCY, May 14, 2025, <https://www.epa.gov/npdes/npdes-stormwater-program>.

<sup>24</sup> *EPA Announces Settlements to Resolve Clean Water Act Violations at Four Solar Farm Construction Sites in Alabama, Idaho and Illinois*, U.S. ENV’T PROT. AGENCY, Nov. 14, 2022, <https://www.epa.gov/newsreleases/epa-announces-settlements-resolve-clean-water-act-violations-four-solar-farm#:~:text=Increased%20sediment%20in%20waterways%20can,settlements%20only%20include%20civil%20penalties>.

<sup>25</sup> LAUREN MCPHILLIPS and ROUHANGIZ (NASIM) YAVARI, *Maximizing hydrological and environmental benefits of solar farms*, PENNSTATE INSTITUTE OF ENERGY AND THE ENVIRONMENT, Feb. 15, 2023, <https://iee.psu.edu/news/blog/maximizing-hydrological-and-environmental-benefits-solar-farms>.

<sup>26</sup> *Id.*

The Resource Conservation and Recovery Act (“RCRA”) is the primary authority that controls hazardous waste from “cradle to grave,” including generation, transportation, treatment, storage, and disposal.<sup>27</sup> The EPA built a network of laws under RCRA to enhance hazardous solid waste programs, providing a framework for safe and effective material disposal.<sup>28</sup> Hazardous waste is defined by the EPA as “waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment.”<sup>29</sup> Over 95% of solar panels sold today are silicon solar; meaning the solar cells within the panels are made from crystal silicon containing both valuable and hazardous metals.<sup>30</sup> Hazardous metals, if present in high enough quantities, could classify the panels as hazardous waste.<sup>31</sup> As of now, RCRA has not concretely established a disposal plan for solar panels.<sup>32</sup>

The Endangered Species Act (“ESA”) provides protection for fish, wildlife, vegetation, and ecosystems that are threatened or endangered.<sup>33</sup> The species that stand to be impacted by solar panels are as follows: migrating avians which nest or forage around solar sites; hooved mammals in geographic range; burrowing mammals and reptiles; aquatic species that are highly dependent on water quality; and

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<sup>27</sup> *Resource Conservation and Recovery Act (RCRA) Overview*, U.S. ENV’T PROT. AGENCY, Sep. 5, 2025, <https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview#:~:text=RCRA%20gives%20EPA%20the%20authority,source%20reduction%20and%20beneficial%20re-use>.

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

<sup>29</sup> *Learn the Basics of Hazardous Waste*, U.S. ENV’T PROT. AGENCY, Mar. 4, 2025, <https://www.epa.gov/hw/learn-basics-hazardous-waste>.

<sup>30</sup> *End-of-Life Solar Panels: Regulations and Management*, U.S. ENV’T PROT. AGENCY, Aug. 13, 2025, <https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management>.

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

<sup>32</sup> *Id.* In October 2023, the EPA announced it was developing a proposal to add end-of-life solar panels to the universal waste regulations. *Id.*

<sup>33</sup> *Summary of the Endangered Species Act*, U.S. ENV’T PROT. AGENCY, Jul. 25, 2025, <https://www.epa.gov/laws-regulations/summary-endangered-species-act>.

pollinators that interact with the vegetation at a solar site.<sup>34</sup> These species are particularly likely to be affected if solar development takes place in deserts, grasslands, forests, or wetlands.<sup>35</sup> Habitat loss, fragmentation, and degradation, as well as interaction with the panels themselves may be the most impactful ways solar implementation can affect surrounding wildlife.<sup>36</sup> These solar-wildlife interactions must be considered before the implementation of solar panels at any level, but particularly on a large scale.<sup>37</sup>

### *b. Federal Incentives*

Federal incentives are a substantial influence on deciding to implement solar farming and renewable energy. Tax incentives in particular are especially alluring because they provide a financial incentive for investing in renewables.<sup>38</sup> In 2022, Congress passed the Inflation Reduction Act (“IRA”), which changed a range of tax laws to, among other things, invest in renewable energy production.<sup>39</sup> From the IRA came the Residential Clean Energy Credit (“RCE Credit”), which provides tax deduction credits for up to 30% of the costs of new, qualified renewable energy equipment installed in a home between 2022 and 2032.<sup>40</sup> The U.S. Department of the

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<sup>34</sup> *Solar Impacts on Wildlife and Ecosystems*, U.S. DEPT. OF ENERGY, Nov. 2021, <https://www.energy.gov/sites/default/files/2021-11/Solar%20Impacts%20on%20Wildlife%20and%20Ecosystems%20Request%20for%20Information%20Summary.pdf>.

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

<sup>38</sup> *Renewable energy explained; Incentives*, US ENERGY INFO. ADMIN., Dec. 30, 2022, <https://www.eia.gov/energyexplained/renewable-sources/incentives.php>.

<sup>39</sup> *SUMMARY: THE INFLATION REDUCTION ACT OF 2022*, SENATE DEMOCRATS, [https://www.democrats.senate.gov/imo/media/doc/inflation\\_reduction\\_act\\_one\\_page\\_summary.pdf](https://www.democrats.senate.gov/imo/media/doc/inflation_reduction_act_one_page_summary.pdf), (Last Visited, Oct. 8, 2025).

<sup>40</sup> *Residential Clean Energy Credit*, IRS, Jul. 3, 2025, <https://www.irs.gov/credits-deductions/residential-clean-energy-credit#:~:text=Related%20resources-,How%20it%20works,Who%20qualifies.> Other renewable credits

Treasury released data in 2024 that showed more than 3.4 million American families benefitted from \$8.4 billion in tax credits, including RCE Credits, as a result of updating their residences to become clean energy consumers.<sup>41</sup> However, the recent promulgation of the One Big Beautiful Bill Act made significant rollbacks to tax credits, particularly environment and energy credits.<sup>42</sup> At the close of 2025, RCE Credits and other tax credit programs for individuals were phased out.<sup>43</sup>

Grant and loan programs are another incentive for private citizens. These programs encourage renewable energy use by making solar more accessible.<sup>44</sup> In particular, the Rural Energy for America Program (REAP) seeks to provide loan financing and grant funding to agricultural producers and small businesses in rural areas.<sup>45</sup> REAP recipients can use funding for implementation of renewable energy systems or making energy efficiency improvements.<sup>46</sup> Loan guarantees provided by REAP cover up to 75% of total eligible project costs, and grants account for up to

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exist for non-corporate taxpayers, including the Clean Electricity Investment Credit, which also has been affected by the One Big Beautiful Bill Act to repeal solar. *Clean Energy Investment Credit*, IRS, May 29, 2025, <https://www.irs.gov/credits-deductions/clean-electricity-investment-credit>; ALEX MURESIANU, *How the One Big Beautiful Bill Changes Green Energy Tax Credits*, TAX FOUNDATION, Jul. 31, 2025, <https://taxfoundation.org/blog/big-beautiful-bill-green-energy-tax-credit-changes/>.

<sup>41</sup> *U.S. Department of the Treasury Releases New Data on American Consumer Energy Savings Under Inflation Reduction Act*, U.S. DEP'T OF THE TREAS., Aug. 7, 2024. <https://home.treasury.gov/news/press-releases/jy2521#:~:text=In%202023%2C%203.4%20million%20American,to%20their%20homes%20during%202023.>

<sup>42</sup> LAURIE ABRAMOWITZ, DAVID A. SAUSEN, and LAUREN OLAYA, *From IRA to OBBBA: A New Era for Clean Energy Tax Credits*, ARNOLD & PORTER, Jul. 22, 2025, <https://www.arnoldporter.com/en/perspectives/advisories/2025/07/from-ira-to-obbba-a-new-era-for-clean-energy-tax-credits#:~:text=Terminated%20Tax%20Credits,construction%20after%20June%2030%2C%202026.> Amongst other purposes, the One Big Beautiful Bill Act (OBBBA) significantly altered the nature of clean energy tax credits established under the IRA. *Id.* The OBBBA introduced “accelerated repeal schedules” for, *inter alia*, the RCE Credit. *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Renewable energy explained; Incentives, supra* note 38.

<sup>45</sup> *Rural Energy for America Program Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants*, U.S. DEP'T OF AG., <https://www.rd.usda.gov/programs-services/energy-programs/rural-energy-america-program-renewable-energy-systems-energy-efficiency-improvement-guaranteed-loans>, (Last visited Oct. 3, 2025).

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

50%.<sup>47</sup> REAP funding can make a drastic and long lasting impact on farmers and small business owners, as seen in the case of Somerset County, PA farmer, Rich Perkoski.<sup>48</sup> Perkoski used his REAP grant to install solar panels on his farm, which brought his energy bill down from \$2,500 per month to a mere \$74 – an average saving of nearly \$29,000 per year for the farm.<sup>49</sup> As Perkoski noted, such a difference in operation costs allows farmers to reinvest in their businesses by purchasing more livestock, crops, and equipment.<sup>50</sup>

*ii. Pennsylvania’s Approach*

Like the federal government, Pennsylvania lacks comprehensive solar regulation laws; rather, Pennsylvania law covers renewable energy in an advisory sense with the bulk of regulatory action taking place at the local level.<sup>51</sup> The Environmental Rights Amendment of the Pennsylvania Constitution lays an overarching foundation for existing law by establishing that “[t]he people have a right to clean air, pure water and to the preservation of the natural, scenic, historic and esthetic values of the environment[]” which “the Commonwealth shall conserve and maintain [...] for the benefit of all the people.”<sup>52</sup>

*a. Promulgated Legislation*

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

<sup>48</sup> DANIEL BLOTTENBERGER, ‘We’re making energy’: Somerset farmer sees success with solar, U.S. DEP’T OF AG., Oct. 15, 2024, <https://www.rd.usda.gov/newsroom/success-stories/were-making-energy-somerset-farmer-sees-success-solar>.

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

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

<sup>51</sup> *Pennsylvania Solar Ordinances*, PENNSTATE CENTER FOR ENERGY LAW AND POLICY, <https://celp.psu.edu/pa-solar-ordinances/>, (Last visited Oct. 15, 2025).

<sup>52</sup> PA. CONST. § 27, <https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/00/00.001.027.000..HTM>.

Of the advisory acts, laws, and regulations, the Alternative Energy Portfolio Standards Act (“AEPS Act”) of 2004 is a main driver of the Commonwealth’s alternative energy regulation. The AEPS Act requires electric distribution companies and electric generation suppliers to include a specific, increasing percentage of renewable energy within the total electricity sold to Pennsylvanians.<sup>53</sup> Electric distribution companies and electric generation suppliers comply with this requirement through the use of alternative energy credits (“AECs”), which are produced by approved alternative energy sources, such as solar.<sup>54</sup> AECs are traded and sold separately from the power itself, meaning individuals and businesses are able to invest in renewable energy without overhauling their existing strategy.<sup>55</sup> The owner of a qualifying energy source is required to submit an application to the Pennsylvania Utility Commission to be approved as an energy facilitator, denoting their status as energy sellers to electric distribution companies and electric generation suppliers.<sup>56</sup> Under the AEPS Act the total percentage of solar energy sold by electric distribution companies or electric generation suppliers must include a certain increasing percentage every year from 2006 (0.0013%) to 2020 (0.5000%), remaining consistent at 0.5000% each year thereafter.<sup>57</sup> The AEPS Act effectively creates a market demand for renewable energy.

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<sup>53</sup> *About the AEPS Act*, PA. PUBLIC UTILITY COMM. - PA. ALTERNATIVE ENERGY CREDIT PROGRAM, <https://pennaeps.com/>, (Last visited Oct. 16, 2025). This practice is known as a carve-out. *Policies and Regulations*, *supra* note 19.

<sup>54</sup> *Id.*; *Alternative Energy and Economic Development in Pennsylvania*, PA. PUBLIC UTILITY COMM., [https://www.puc.pa.gov/general/consumer\\_ed/pdf/AEPS\\_Fact\\_Sheet.pdf](https://www.puc.pa.gov/general/consumer_ed/pdf/AEPS_Fact_Sheet.pdf), (Last visited Oct. 6, 2025).

<sup>55</sup> *Alternative Energy and Economic Development in Pennsylvania*, *supra* note 54.

<sup>56</sup> *Id.*

<sup>57</sup> ALTERNATIVE ENERGY PORTFOLIO STANDARDS ACT, P.L. 1672, No. 213, § 3 (b)(1).

The AEPS Act also provides an incentive that allows residential solar systems up to fifty kilowatts to sell their excess generation back into the electrical grid for the full retail rate, known as net metering.<sup>58</sup> The AEPS Act defines net metering as:

[t]he means of measuring the difference between the electricity supplied by an electric utility and the electricity generated by a customer-generator when [the renewable energy generating system is intended primarily] any portion of the electricity generated by the alternative energy generating system is used to offset part or all of the customer-generator's requirements for electricity. Virtual meter aggregation on properties owned or leased and operated by a customer-generator and located within two miles of the boundaries of the customer-generator's property and within a single electric distribution company's service territory shall be eligible for net metering.<sup>59</sup>

Before RCE Credits were phased out, net metering did not have an effect on the Credits, meaning there were no limits on co-use of credits and net-metering.<sup>60</sup> The AEPS Act thus sets forth minimum requirements for renewable energy sales as well as the incentive of net metering.

While the AEPS Act outlines how energy interacts with the market, Act 129 provides for energy efficiency. Act 129 of 2008 requires Pennsylvania's electric distribution companies to prioritize efficiency over greater use by setting targets for

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<sup>58</sup> *Resources for Residents and Homeowners Assessing Potential Solar Energy Use*, PA. DEP'T OF ENV'T PROT., <https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub/residents#:~:text=Net%20Metering:%20In%20Pennsylvania%2C%20residential,at%20the%20full%20retail%20rate.>, (Last visited Oct. 6, 2025).

<sup>59</sup> ALTERNATIVE ENERGY PORTFOLIO STANDARDS ACT, P.L. 114, NO. 35 (AMENDED). Consumer-generator is defined as a non-utility owner or operator of a net metered distributed generation system with a capacity not greater than 50kW if installed at a residence, or not larger than 3,000kW at other customer locations (except for customers whose systems are 3mW to 5mW who make their systems available to operate with electric utility during emergencies or to maintain critical infrastructure. *Id.* They must follow the technical rules promulgated by the Institute of Electrical and Electronic Engineers and the PUC. *Id.*

<sup>60</sup> *Residential Clean Energy Credit*, *supra* note 40.

each company based on a review of efficiency potential.<sup>61</sup> Currently, Pennsylvania is in Phase IV of the program and will continue to be so until June 2026, by then achieving nearly a 3.1% cumulative reduction in annual electricity use.<sup>62</sup> As part of its energy efficiency and conservation measures Act 129 includes solar panels in its considered strategies.<sup>63</sup> Act 129 brings solar energy to the forefront of efficient and renewable energy efforts.

Finally, Pennsylvania’s Department of Environmental Protection (“DEP”) regulates stormwater management through the National Pollutant Discharge Elimination System (“NPDES”).<sup>64</sup> Solar farms that disturb more than one acre of land are guided under NPDES, erosion and sediment control (“E&S”), and post-construction stormwater management (“PCSM”).<sup>65</sup> The required procedures for NPDES, E&S, and PCSM vary greatly based upon the scale of the solar project, however there are certain common themes across all projects. The earth disturbance associated with solar farms is typically construction related activities such as excavation, timber harvesting, and sorting of earth materials.<sup>66</sup> The project scale may necessitate grading, or clearing the land, to account for the disturbance.<sup>67</sup> Best practice for E&S circumstances is also highly dependent on the scale of the operation,

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<sup>61</sup> *Act 129*, KEYSTONE ENERGY ALLIANCE, <https://keealliance.org/act-129/>, (Last visited Oct. 6, 2025).

<sup>62</sup> *Id.*

<sup>63</sup> PUBLIC UTILITY CODE (66 PA.C.S.) - OMNIBUS AMENDMENTS ACT OF OCT. 15, 2008, P.L. 1592, No. 129, Section 2, § 2806.1 (1)(m)(2).

<sup>64</sup> *Chapter 102 Permitting for Solar Panel Farms Frequently Asked Questions (FAQ)*, 1, PA. DEPT OF ENV’T PROT., BUREAU OF CLEAN WATER, (revised Apr. 30, 2021), [https://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/ConstructionStormwater/Solar\\_Panel\\_Farms\\_FAQ.pdf](https://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/ConstructionStormwater/Solar_Panel_Farms_FAQ.pdf). NPDES permitting occurs when a person or entity must obtain a permit for their construction to ensure they are abiding by stormwater regulations. *Id.*

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

<sup>66</sup> *Id.* at 1-2, quoting 25 PA. CODE § 102.1.

<sup>67</sup> *Id.*

however, projects should aim to minimize disturbance, avoid soil compaction, maximize protection of existing natural drainage features, and use any other precautions to avoid excess runoff.<sup>68</sup> As to PCSM, all solar farms are required to consider stormwater runoff.<sup>69</sup> In particular, the following general factors, among many others, are essential to excess runoff prevention: (1) minimized disturbance and maximum vegetation preservation; (2) post-construction land should have a minimum uniform 90% perennial vegetation cover capable of withstanding E&S, with supplemental considerations; (3) arrangement of panels to support PCSM; (4) assessment of panels, earth disturbance, and impervious surface area by a licensed professional; (5) steep slopes should be evaluated by a licensed professional and, if higher than 10% grade, feature sheet flow and drip edges; and, (6) adjust vertical clearance to be as low as possible without impacting vegetation.<sup>70</sup> The Pennsylvania DEP provides these guidelines to mitigate the impact of stormwater runoff on the surrounding land.

*b. Proposed Legislation*

In recent years, legislation has been introduced to provide a single framework for local governments to operate under so long as they adhere to minimum standards. Pennsylvania Senate Bill 349 aims to provide for the decommissioning of solar energy facilities, an unprecedented effort in the Senate.<sup>71</sup> SB 349 first states that solar

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<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* at 2-6.

<sup>71</sup> BRENDAN A. O'DONNELL, *Pennsylvania Solar Energy Facility Decommissioning Bill Moves Closer to Passage*, HOUSTON HARBAUGH, PC, May 21, 2025, <https://hh-law.com/blogs/renewable-energy-zoning-land-use/pennsylvania-solar-energy-facility-decommissioning-bill-moves-closer-to-passage/>.

energy facility agreements must have a provision the facility operator is responsible for the decommissioning of the facility, which must be completed within eighteen months of when production concludes.<sup>72</sup> Most of SB 349 is reserved for the financial assurance of the entire estimated cost of decommissioning to assure that it occurs even if the facility owner does not complete the process within eighteen months.<sup>73</sup> Finally, SB 349 would supersede local regulations on decommissioning, regardless of a township’s decommissioning practice.<sup>74</sup> As of the publication of this article, SB 349 has reached the House and has been reported as committed from Environmental and Natural Resource Protection.<sup>75</sup>

Other proposals have been introduced to create new laws outlining and regulating novel renewable ideas, including community solar. Community solar is a solar project or program where the benefits are reaped by multiple customers, for which they receive an electric bill credit, and are often a viable option for those who cannot or will not install their own systems.<sup>76</sup> House Bill 504 proposes to “allow[] shared community energy projects where subscribers can access solar or biofuel energy and receive a credit for that on their electric bills[]” comments the Bill’s sponsor, State Representative Peter Schweyer.<sup>77</sup> Rep. Schweyer ensures that only

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<sup>72</sup> *Id.*

<sup>73</sup> *Id.*

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

<sup>75</sup> *Senate Bill 349*, PA. GENERAL ASSEMBLY, <https://www.palegis.us/legislation/bills/2025/sb349>, (Last visited Oct. 17, 2025).

<sup>76</sup> *Community Solar Basics; What is Community Solar*, U.S. DEP’T OF ENERGY, <https://www.energy.gov/eere/solar/community-solar-basics>, (Last visited Oct 6, 2025).

<sup>77</sup> REP. PETER G. SCHWEYER, *Schweyer bill for shared community energy clears PA House*, PA HOUSE DEMOCRATS NORTHEAST DELEGATION, May 7, 2025, <https://www.pahouse.com/NorthEastDelegation/InTheNews/NewsRelease/?id=138514>. HB 504 is a part of a larger network of bills, including Senate Bill 504, to “create jobs, lower costs for consumers, speed up permitting, and [...] build more energy generation in Pennsylvania[.]” *Id.*

participants who opt-in to the program will be affected by it.<sup>78</sup> HB 504 would be the first to address community renewable energy programs, and potentially make it more accessible for those who will not implement solar on their own property. As of the publication of this article, HB 504 has passed the Pennsylvania House and has been referred to the Consumer Protection and Professional Licensure Committee in the Senate.<sup>79</sup>

*iii. Local Regulation*

Local governments in Pennsylvania implement the vast majority of regulations for solar installation.<sup>80</sup> They not only regulate where and how solar projects may be built, but can solicit solar for their own use at municipal facilities.<sup>81</sup> These installations are typically governed by zoning ordinances.<sup>82</sup> Zoning is local legislative action that divides land into sections, which are each regulated differently based on their intended use in compliance with the municipal zoning ordinance.<sup>83</sup> In essence, zoning determines how a piece of land may be used, which is essential to solar development because many solar projects in Pennsylvania are and will be developed in non-urban areas where unoccupied tracts of land are ripe for economic opportunity.<sup>84</sup> To gain a better understanding of how solar farming traverses the legal

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

<sup>79</sup> *House Bill 504*, PA. GENERAL ASSEMBLY, <https://www.palegis.us/legislation/bills/2025/hb504>, (Last visited Oct. 17, 2025).

<sup>80</sup> *Solar Energy; Local Government*, PA. DEP'T OF ENV'T PROT., <https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub/local-government>, (Last visited Oct. 16, 2025).

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *Zoning*, CORNELL LAW SCHOOL LEGAL INFO. INST., <https://www.law.cornell.edu/wex/zoning>, (Last visited Oct. 16, 2025).

<sup>84</sup> *Solar Energy; Local Government*, *supra* note 80.

landscape, it is essential to conduct a study of the local ordinances in counties familiar with solar farming.

Thus far in this article the term “solar farming” has been used to refer to the process of installing, operating, and maintaining solar panels on a spectrum from as small scale as the paneling of family farms to as large as hundreds of corporate owned acres. At the municipal level, however, the size distinction is essential to the municipal regulatory process.<sup>85</sup> Solar energy can be “distributed,” meaning solar panels are placed on or around a structure that it feeds energy to; distributed solar is typically small-scale and defined by local governments as “accessory use.”<sup>86</sup> On the other hand, medium and large projects that are not intentionally designed to power an on-site structure but instead funnel energy into the grid are referred to as, among many other names, grid-scale solar.<sup>87</sup>

A complete analysis of the breadth of local ordinances related to solar paneling is beyond the scope of this article. Rather, the contrast of approaches may be better evaluated by selecting two municipalities that take different stances on land use, aesthetic, and environmental and agricultural protections but are effective in their own right.

*a. Franklin Township, Luzerne County*

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<sup>85</sup> *Pennsylvania Solar Ordinances*, *supra* note 51.

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

At the outset of Franklin Township’s zoning ordinance are definitions for relevant terms, including accessory use.<sup>88</sup> However, Franklin Township does not recognize grid-scale solar specifically, instead using the term commercial solar power generation (“commercial solar”) and defining it as “[a] facility where one (1) or more solar collectors and/or other accessory structures and buildings ... are located and are used for the generation of electricity which is sold on the open market.”<sup>89</sup> Rather than make the distinction between scale, Franklin Township zones solar power based on its relationship to the electrical market.

Accessory solar collectors are permitted in all zoning districts so long as they comply with other zoning standards, including not selling energy on the market, but commercial solar is only permitted as special exception use in the Agriculture Zoning District and the Industrial Zoning District.<sup>90</sup> By placing comparatively firm restrictions on commercial solar, Franklin Township regulates how commercial solar uses the land, interacts with public opinion, and preserves the environment.

Franklin Township requires an entity seeking solar implementation to comply with all applicable land use zoning regulations as outlined in the zoning ordinance.<sup>91</sup>

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<sup>88</sup> FRANKLIN TOWNSHIP, PA., ZONING ORDINANCE, Enacted Dec. 4, 1995, <http://www.ftwp.com/pdfs/Zoning%20Ordinance%20single%20doc.pdf>. Franklin Township defines accessory use solar as follows: “A freestanding or fixed device, or combination of devices, structures, or part of a device or structure that transforms direct solar energy into thermal, chemical, or electrical energy that contributes significantly to a structure's energy supply and which is sized and intended to be used to generate electricity for the principal structure to which it is accessory.” *Id.* at ART. III §303, p. III-21.

<sup>89</sup> *Id.* at p. III-21.

<sup>90</sup> *Id.* at p. IV-4, IV-12; Franklin Township defines a special exception as “[a] use allowed, with permission granted by the Zoning Hearing Board, to occupy and use land and/or a building for specific purposes in accord with this Ordinance.” *Id.* at ART. III §303, p. III-21. Meaning the land may be approved for use besides that which it is zoned for. BRENDAN A. O’DONNELL, *What is a Special Exception?*, HOUSTON HARBAUGH, Oct. 20, 2023, <https://hh-law.com/blogs/renewable-energy-zoning-land-use/what-is-a-special-exception/>. Builders seeking solar implementation may request a variance, but for the sake of clarity variances will not be assessed in this section.

<sup>91</sup> FRANKLIN TOWNSHIP, *supra* note 88, at ART. VIII §857.

Franklin Township's ordinance consists, in relevant part, of three limitations on land use: associated use, second principal use, and parcel size and setbacks.<sup>92</sup> The associated use provision states that all other uses necessary for solar facility functioning that are greater than one thousand square feet are prohibited, barring being otherwise permitted in the relevant zoning district.<sup>93</sup> The ordinance continues by providing standards for second principal use, or where a solar power facility is permitted on a property with an unrelated existing use.<sup>94</sup> Second principle use facilities are subject to the following land development standards: (1) following all size, setback and height rules, and the property remainder must meet the existing use standards; (2) automobile access to the equipment building along the driveways of the existing use; and (3) the applicant must present documentation from the property owner granting legal interest for the proposed solar facility land, and that facility automobile access.<sup>95</sup> Finally, the ordinance develops regulations for if the parcel is distinct parcels or leased.<sup>96</sup> If the parcel where the facility is located is a separate and distinct parcel or if it is leased, the minimum lot size applies, and ubiquitously must be of an appropriate size to satisfy setbacks.<sup>97</sup> Franklin Township's ordinance employs associated use, second principal use, and parcel size to expansively govern the majority of manners a solar facility may be implemented.

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<sup>92</sup> *Id.* at ART. VIII §857.2 (A) (B), §857.2 (B).

<sup>93</sup> *Id.* at ART. VIII §857.2 (B). Such other uses may be office buildings or maintenance depots. *Id.*

<sup>94</sup> *Id.* at ART. VIII §857.2 (C).

<sup>95</sup> *Id.* at ART. VIII §857.2 (C)(1-3).

<sup>96</sup> *Id.* at ART. VIII §857.3 (B)

<sup>97</sup> *Id.* Setbacks are the minimum distance the land use must be from the road or other landmark. *Id.* at ART. III p. III-20. The ordinance also provides for a mandatory site plan, proof of proper licensing, and minimum standards for access. *Id.* at ART. VIII §857.3 (R), (E), (J), (F).

As for the aesthetics and public opinion considerations, Franklin Township's ordinance places considerable importance on the maintenance of the facility's appearance and public availability. In addition to the ordinance's general requirements, commercial solar facilities are responsible for making the facility as visually unobstructive as possible. The first consideration in the ordinance is the height of the solar panels, which may not exceed the principle structure height limitations for the zoning district which they are in.<sup>98</sup> Given the nature of solar panels, the ordinance also considers potential risks of glare.<sup>99</sup> The solar facility must provide in its application details about glare from the facility, including when and what direction glare may appear, and how glare is expected to be a nuisance to surrounding property.<sup>100</sup> Though not always mandatory, landscaping in the form of vegetation, walls, or decorative features around the facility may be required to serve as a visual buffer.<sup>101</sup> Even then, if it serves the public's interest a fence may be required to protect residents.<sup>102</sup> Should members of the public find themselves concerned or interested in the operations at a commercial solar facility, they may contact the solar facility's mandatory maintained phone number and identify a responsible person to address their concerns.<sup>103</sup> Members of the public are permitted to contact the solar facility with inquiries and complaints during the lifespan of the project, however long that may be.<sup>104</sup> It is the responsibility of the solar facility to

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<sup>98</sup> *Id.* at ART. VIII §857.3 (A).

<sup>99</sup> *Id.* at ART. VIII §857.3 (H).

<sup>100</sup> *Id.*

<sup>101</sup> *Id.* at ART. VIII §857.3 (D).

<sup>102</sup> *Id.* at ART. VIII §857.3 (C).

<sup>103</sup> *Id.* at ART. VIII §857.4.

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

make reasonable efforts to respond.<sup>105</sup> These aesthetic and community concern regulations ensure that the commercial solar facility is not impeding on the life and welfare of those who live in close proximity to the facility. A community-based stance protects the value of the surrounding area while allowing solar facilities to operate nearby.

When it comes to environmental and agricultural protections, Franklin Township's ordinance affords importance to the environmental impact of facility and panel decommissioning but does not have specific provisions as to how solar panels on agricultural land may interact with farming practices. At the onset of the solar facilities permit application, the owner or operator must provide Franklin Township a financial security bond of no less than \$50,000 to ensure decommissioning even if the facility is unable to shoulder the financial burden at the end of its lifespan.<sup>106</sup> Once the solar facility or its individual components have reached their useful end, decommissioning must be complete within twelve months of such determination.<sup>107</sup> If the process is still incomplete by the twelve month mark, an additional 180 days are allotted to the landowner to complete the process.<sup>108</sup> Finally, all disturbed earth shall be graded and re-seeded, barring a request in writing from the landowner that the land remains as it is.<sup>109</sup> Franklin Township's decommissioning processes ensure that the facility and panel environmental impacts are low, if anything, following the

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<sup>105</sup> *Id.*

<sup>106</sup> *Id.* at ART. VIII §857.5 (E).

<sup>107</sup> *Id.* at ART. VIII §857.5 (A),(G). It must also be noted that if decommissioning is not completed the township will intervene in all means necessary. *Id.* at ART. VIII §857.5 (H).

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

<sup>109</sup> *Id.* at ART. VIII §857.5 (C).

end of its useful life. Even the financial security bond serves as a protection mechanism should the decommissioning process be troublesome. Further, the restoration of the land through grading and re-seeding can contribute to the protection of agricultural land if the solar facility is in that zone.

Franklin Township in Luzerne County approaches solar paneling through the lens of commercial, vendible energy. Although accessory and personal use farming are subject to the general provisions of solar farming, they are not nearly under the level of scrutiny as their commercial counterpart.

*b. Dover Township, York County*

Dover Township’s zoning ordinance similarly begins with a glossary of relevant terms.<sup>110</sup> However, where Franklin Township regulates based on the facility’s relationship to the electrical market, Dover Township considers the primary use of the land. A principal solar energy system (“PSES”) is an area of land with the primary use of solar collection to capture solar energy and convert it to electrical energy, primarily for off-site use.<sup>111</sup> A PSES consists of one or more ground or roof-mounted solar collection devices, related equipment, or accessory structures.<sup>112</sup> These PSES are permitted in Agricultural Districts, Commercial Districts, and Industrial Districts exclusively by special exception.<sup>113</sup> Use is considered a special exception when the zoning board approves an application to use land in a district for a purpose

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<sup>110</sup> DOVER TOWNSHIP, PA., ZONING ORDINANCE NO. 2024-01, at Part 2, Enacted May 13, 2024, <https://www.dovertownship.org/wp-content/uploads/2024/05/2024-01-ZO-Adoption-5.13.24.pdf>.

<sup>111</sup> *Id.* at Part 2, §27-202, 24 (defining PSES).

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

<sup>113</sup> *Id.* at Part 3, *Dover Township Use Chart*.

other than its designated use.<sup>114</sup> Dover Township does not, however, explicitly consider second principal use solar in its zoning ordinance.

Dover Township’s land use regulations impact PSES through the nature of principle usage and setbacks.<sup>115</sup> This portion of the ordinance begins with the principal use statement that “[o]n any lot or portion thereof on which a PSES is located, two (2) principal uses may be permitted, one (1) principal use being the PSES and the other being a principal use reserved unto the owner of the lot.”<sup>116</sup> The location of the PSES must be on a lot or lots comprising no less than twenty five contiguous acres including multiple contiguous parcels, so long as these individual parcels are at least five acres.<sup>117</sup> Like Franklin Township, Dover Township also outlines setback requirements, particularly in regard to perimeter fencing, panels and equipment.<sup>118</sup> The ordinance necessitates PSES fencing be set back twenty-five feet from all property or public street lines.<sup>119</sup> Likewise, panels must be thirty-five feet from all property lines, and fifty feet from all public street lines.<sup>120</sup> In the case of both fencing and paneling, no setbacks are required between contiguous parcels included within the PSES.<sup>121</sup> As a catchall provision, the ordinance further provides a general requirement that, in all cases, there must be a “minimum distance of seventy-five

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<sup>114</sup> *Id.* at Part 2, §27-202, 31. Dover Township defines a special exception as “permission or approval granted by the zoning board, to use land in a district for a purpose other than that which is generally permitted outright.” *Id.* For the purpose of this article, it is assumed that any solar development in an agricultural, commercial, or industrial district has met the standards for special exception – which will not be reviewed here.

<sup>115</sup> *Id.* at Part 6, §27-660 (1), (2)(C).

<sup>116</sup> *Id.* at Part 6, §27-660 (1).

<sup>117</sup> *Id.* at Part 6, §27-660 (2)(B).

<sup>118</sup> *Id.* at Part 6, §27-660 (2)(C)(1-3).

<sup>119</sup> *Id.* at Part 6, §27-660 (2)(C)(1).

<sup>120</sup> *Id.* at Part 6, §27-660 (2)(C)(2).

<sup>121</sup> *Id.* at Part 6, §27-660 (2)(C)(1-2).

(75') feet between adjacent non-participating property lines and any component of the PSES including fences, buildings, panels, and other equipment.”<sup>122</sup>

Considering aesthetics and public opinion, Dover Township regulates the visual qualities of PSES through height, screening, and glare.<sup>123</sup> A maximum cap is placed on the solar panels and their racking systems, which may not exceed seventy-five feet.<sup>124</sup> In order to shield surrounding land owners from the panel systems, PSES must be hidden from view with a Type III screening as prescribed in the Subdivision and Land Development Ordinance (SALDO) from adjacent parcels unless the affected landowner waives this right.<sup>125</sup> Further adding to the protection of adjacent landowners, PSESs in residential area must be completely screened prior to any structure being built.<sup>126</sup> Should the screening mechanism involve trees in any case, they must be of such a species specified by SALDO or be of the type to provide opaque screening within five years of planting.<sup>127</sup> Finally, the design requirements of the ordinance further states that the solar panels be coated with anti-reflective material, and, to the extent possible, be faced away from adjacent properties and roadways to avoid reflection on residents, motorists, and aviators.<sup>128</sup> In its recent ordinance update, Dover Township included a provision that requires the owner and operator of a PSES to maintain a phone number for public inquiries and complaints.<sup>129</sup> It also

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<sup>122</sup> *Id.* at Part 6, §27-660 (2)(C)(3).

<sup>123</sup> *Id.* at Part 6, §27-660 (2)(D), (F), (I).

<sup>124</sup> *Id.* at Part 6, §27-660 (2)(D).

<sup>125</sup> *Id.* at Part 6, §27-660 (2)(F)(2-3).

<sup>126</sup> *Id.* at Part 6, §27-660 (2)(F)(4).

<sup>127</sup> *Id.* at Part 6, §27-660 (2)(F)(1).

<sup>128</sup> *Id.* at Part 6, §27-660 (2)(I)(2)(b).

<sup>129</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(J).

provides that the PSES owner or operator must respond to the inquiries and complaints within forty-eight hours of being notified of such.<sup>130</sup>

Finally, Dover Township places considerable weight on the agricultural and environmental impact of PSES through its regulation of impervious coverage, location, and decommissioning. Impervious coverage means generally the surface area of a parcel that is covered by manmade structures and therefore may not be penetrated by stormwater or snowmelt.<sup>131</sup> In Dover Township, the total land area of a PSES may have up to 25% of permanent impervious coverage, which should be calculated as a percent of the total PSES acreage.<sup>132</sup> The land under the PSES that is covered by grass or vegetation may be considered pervious, but the foundation systems, mechanical equipment, and gravel or road access are excluded.<sup>133</sup> Continuing with its consideration of runoff, Dover Township requires PSES structures to be designed, constructed, and maintained in accordance with the Township Stormwater Management Ordinance.<sup>134</sup> Regardless of the qualities of the PSES, sites may not be located in floodways, drainage corridors, wetlands, riparian buffers around wetlands, legal easements, setback areas, woodland areas, or slopes in excess of 15%.<sup>135</sup> The ordinance goes on further to place limitations on what kind of soil solar related equipment may be placed on. PSES related equipment may not be placed on prime agricultural soil; or only be located on 10% of the PSES area

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<sup>130</sup> *Id.*

<sup>131</sup> BETH YOUNT, *Impervious Surfaces and Stormwater Impacts*, Aug. 16, 2024, PENNSTATE EXTENSION, <https://extension.psu.edu/impervious-surfaces-and-stormwater-impacts>.

<sup>132</sup> DOVER TOWNSHIP, PA., ZONING ORDINANCE NO. 2024-01, *supra* note 110 at Part 6, §27-660 (2)(E).

<sup>133</sup> *Id.* at Part 6, §27-660 (2)(E)(1-2).

<sup>134</sup> *Id.* at Part 6, §27-660 (2)(H).

<sup>135</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(C)(1-3), (2)(I)(5)(F)(1-8).

containing prime soil; or be limited to 10% of the development area unless said area will be devoted to agrivoltaics, in which case 5% of the prime soils may be included in development areas.<sup>136</sup> Lastly, an applicant shall install the PSES in a manner as to not require tree removal, absent necessary circumstances, in which case they must explain why the trees must be removed and present a plan on how they will be replaced.<sup>137</sup>

The relevant PSES section of Dover Township's ordinance concludes with an outlined process of decommissioning and removal.<sup>138</sup> The PSES owner in particular is the party required to notify Dover Township of cessation or abandonment of the project.<sup>139</sup> Prior to the construction permit issuance, the owner of the PSES must provide financial security in the amount of 110% of the estimated decommissioning cost minus the salvageable value of the property's additions.<sup>140</sup> The security amount is adjusted every five years by an engineer, for which the PSES owner must pay.<sup>141</sup> Finally, the ordinance provides that removal of PSES facilities be entirely completed before the release of any financial security, including proper disposal of unsalvageable or unsellable materials; obtaining of any necessary permits prior to decommissioning; and, the grading and reseeded of any disturbed earth; and the

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<sup>136</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(C)(3).

<sup>137</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(G).

<sup>138</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(K).

<sup>139</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(K)(1).

<sup>140</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(K)(2).

<sup>141</sup> *Id.*

complete decommission within twelve months of cessation or abandonment, subject to Dover Township's intervention.<sup>142</sup>

Dover Township's ordinance contains different provisions regarding land usage than Franklin Township's. The most glaring difference is the outlook each township takes, with Franklin zoning through the lens of the electrical market and Dover the land's purpose. Dover Township does not address associated use paneling in the ordinance, nor does it consider second principle use facilities beyond the reservation of the second principle use for the landowner, like Franklin Township. However, Dover Township's regulations pertaining to setbacks are tailored to PSES, unlike the general setback instructions that regulate solar energy as well as many other zoning areas. Although Dover and Franklin Townships approach land use regulations differently, they both achieve the purpose of controlling where and how solar energy may be implemented by special use within their respective zoning districts.

Franklin Township's regulations on aesthetics, including height, glare, and fencing, are nearly identical to that of Dover Township. However, Dover Township places greater responsibility on the landowner or operator to respond to public comments. The implementation of a required timeframe provides the governing body with a cause of action should the PSES owner or operator evade their obligations to

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<sup>142</sup> *Id.* at Part 6, §27-660 (2)(I)(5)(K)(3)(a-d).

the public. Where Dover Township is like Franklin Township in its regulations on appearance, it goes beyond in compelling PSES to interact with the public.

Whereas Franklin Township and Dover Township have similarities in the protection of the environment and agricultural land, including financial security for decommissioning and the restoration of disturbed earth, it is evident that Dover Township employs stricter provisions on these concerns. Stormwater and snowmelt runoff do not permeate Franklin Township's ordinance but are a pillar of the PSES portion of Dover Township's ordinance. As for where the solar facilities may be located, Dover Township provides an extensive list of off-limits land and even considers the novel use of agrivoltaics in site selection. Finally, the decommissioning process is rather similar, barring the substantial difference in securities bonds.

The comparison of Franklin and Dover Townships exhibits drastic variation between local governments. The townships present significant differences in land use, public opinion and aesthetics, and agricultural and environmental protections, but neither is more appropriate than the other. Where the federal and Pennsylvania governments provide the regulatory framework, like the CWA, it is the responsibility of the municipalities to govern the implementation, maintenance, and decommission of solar panels on all scales. For some townships, regulation of major corporations seeking to implement hundreds of acres of grid-scale solar panels is a very real consideration, but for others their ordinances may be tailored to accommodate accessory use, small-scale solar farming.

*c. Litigating Solar-Related Municipal and Zoning Disputes*

When a landowner wishes to implement solar panels inconsistent with the zoning regulation's prescribed methods, they may file a request for a variance from the ordinance.<sup>143</sup> Most municipalities in Pennsylvania are fitted with a zoning hearing board whose responsibility is to render decisions regarding land use and variance actions.<sup>144</sup> However, if a variance request to the zoning hearing board is unsuccessful or there is no alternative remedy following the appeal process, litigation may be the next step.<sup>145</sup>

*G. Morris Solar, LLC* aptly puts into perspective how solar energy ordinances appear in court and are ultimately resolved. In April 2022, G. Morris Solar, LLC (“G. Morris”) applied to develop a solar project on a parcel of land that is predominantly zoned as conservation land, but a small portion is located in a single-family residential district.<sup>146</sup> Under Borough ordinance, grid-scale solar projects are permitted in the conservation district by conditional use, and the entire parcel is deemed conservation land if that zone comprises at least 80% of the parcel.<sup>147</sup> Following a public hearing the Borough Council denied G. Morris’ application citing, *inter alia*, failure to show that 80% of the parcel is conservation land, unharmonious relationship with residential land use, and impairment of neighboring property value

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<sup>143</sup> BRENDAN A. O'DONNELL, *What is a Variance?*, HOUSTON HARBAUGH, P.C., Mar. 7, 2024, <https://hh-law.com/blogs/renewable-energy-zoning-land-use/what-is-a-variance/>. A variance is “a form of relief that allows a property owner to use the land in a different way than what is strictly required by the zoning ordinance.” *Id.*

<sup>144</sup> *Zoning Hearing Board Procedures; Navigating the Zoning Hearing Process*, PA. GOVERNOR'S CENTER FOR LOCAL GOV'T SERVICES, [https://dced.pa.gov/download/tip-sheet-zoning-hearing-board-procedures/?wpdmdl=56224&refresh=6148cc145895d1632160788#:~:text=The%20Zoning%20Hearing%20Board%20\(ZHB,&%20ECONOMIC%20DEVELOPMENT](https://dced.pa.gov/download/tip-sheet-zoning-hearing-board-procedures/?wpdmdl=56224&refresh=6148cc145895d1632160788#:~:text=The%20Zoning%20Hearing%20Board%20(ZHB,&%20ECONOMIC%20DEVELOPMENT).

<sup>145</sup> *How to Challenge Zoning Decisions in Pennsylvania: A Step-by-Step Guide*, DAVIS BUCCO & MAKARA, <https://davisbucco.com/how-to-challenge-zoning-decisions-in-pennsylvania/>.

<sup>146</sup> *G. Morris Solar, LLC v. Borough Council of Borough of Gratz*, 337 A.3d 988 (Pa. Commw. Ct. 2025), *reargument denied* (May 8, 2025)

<sup>147</sup> *Id.*

through aesthetic impact.<sup>148</sup> The Borough Council's decision did not contain findings of fact, determinations of witness credibility, or conclusions of law.<sup>149</sup> G. Morris appealed to the court.<sup>150</sup> When the action was fully briefed and ripe for disposition, the trial court reversed the Borough Council's decision as an abuse of discretion and error of law, finding that G. Morris satisfied the objective criteria for conditional use.<sup>151</sup>

On appeal, the Borough Council raised a number of issues for review, arguing in relevant part (1) the trial court erred or abused its discretion by finding a grid-scale solar project is harmonious with residential use, (2) there lacks substantial evidence that the solar project will not negatively impair adjacent property value, including value based in aesthetics, (3) the record lacks substantial evidence that 80% of the parcel is in the area zoned for conservation.<sup>152</sup>

In evaluating the first issue, the court considered the nature of a conditional use provision, which entitles an applicant to conditional use unless the governing body finds that the use does not satisfy the ordinance's specific and objective criteria.<sup>153</sup> Thus, the burden is shifted to the Borough Council to show with a high degree of probability that the proposed use of the parcel will have a direct and adverse

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<sup>148</sup> *Id.* During this dispute the Borough adopted a zoning amendment that modified the regulation of grid-scale solar energy systems, which had the potential to hinder G. Morris's project. In a separate case, the court ruled this amendment to be *void ab initio* for failing to adhere to the procedural requirements for adoptions. See *Borough Council of the Borough of Gratz v. G. Morris Solar, LLC* (Pa. Cmwlth., No. 1049 C.D. 2022, filed October 13, 2023), *appeal denied*, 318 A.3d 96 (Pa. 2024).

<sup>149</sup> *Id.*

<sup>150</sup> *Id.*

<sup>151</sup> *Id.*

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*, quoting *In re Drumore Crossings, L.P.*, 984 A.2d 589, 595 (Pa. Cmwlth. 2009).

effect on the public welfare that is not typically expected.<sup>154</sup> Restated, G. Morris was entitled to the assumption that the solar plan was compatible, and the court held that the Borough Council failed to meet its burden.

The court considered the final two issues using similar reasoning. Regarding whether the project would negatively affect adjacent property value, the court concluded that this assertion lacked substantial evidentiary support.<sup>155</sup> The court pointed to the fact that the Borough Council relied primarily on a resident's complaint, but neglected to accept the testimony of an appraiser who surveyed the land and cited multiple supporting studies.<sup>156</sup> The court rejected the Borough Council's dismissal of credible expert witness testimony, determining instead that the appraiser's analysis constituted substantial evidence to support the finding that G. Morris' project would not impair neighboring property values.<sup>157</sup>

In regard to whether the conservation zone of the parcel constituted 80% of the total parcel, the court likewise found no substantial evidence to support the claim that the trial court erred in finding that 80% of the land was zoned for conservation.<sup>158</sup> In reaching this conclusion, the court relied on the testimony of a project manager, the zoning map, and the lack of evidence suggesting the contrary.<sup>159</sup>

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<sup>154</sup> *Id.*, quoting *Aldridge v. Jackson Township*, 983 A.2d 247, 253 (Pa. Cmwlth. 2009).

<sup>155</sup> *Id.*

<sup>156</sup> *Id.*

<sup>157</sup> *Id.*

<sup>158</sup> *Id.*

<sup>159</sup> *Id.*

*G. Morris Solar, LLC* reveals a common collision between solar energy and zoning ordinances that may be unresolvable at the local level. As solar energy continues to develop, there is likely to be an increase in this kind of litigation.

### III. ANALYSIS

#### *i. Improvement of State Level Solar Regulations*

As solar energy grows, establishment of a regulatory system suited to promote expanding implementation is essential to the industry's future. Because the federal and state governments largely take a step back from solar regulation, the argument may be made that higher government is primed to take a leading role in the regulation of solar panels. On the other hand, because solar paneling is most impactful at the local level, removing this power from municipal governments may create tension with the state. Therefore, balancing these factors leads to the conclusion that solar energy is most effectively regulated by the local government, but Pennsylvania should take a more active approach to standardize crucial points of regulation.

Specifically, the decommissioning process must become standardized to provide a powerful base protection for townships. The current status of decommissioning is that each township is responsible for regulating the decommissioning of panels, besides adherence to RCRA. Ideally, the facility developer will fund the decommissioning process in full to the standards of the township either through their own funds or funds posted in a financial security bond. However, issues may arise when a developer cannot, for various foreseeable reasons, effectively

decommission the panels. The passage of Senate Bill 349 is critical to ensuring proper and consistent decommissioning practices. SB 349 not only sets out the requirement of full estimated cost in financial security bonds and delegation of responsibility to the developer, but also a timeline for project completion. This is beneficial for both the township, who can rely on the financial security bonds, and the implementor. In the case of grid-scale, corporate developers, consistency may promote better practices on a scale greater than townships. Requiring comprehensive financial security bonds, an acceptance of responsibility, and a time limit for completion would provide a base safeguard for townships so as to limit cases of a sudden weight of financial and resource burdens, especially in the context of grid-scale paneling.

With the rolling back of federal tax incentives like RCE credits and the cut in funding to the REAP program, it appears the time has come for Pennsylvania to produce its own incentive program. Credits and programs are critical to garner interest in renewable energy systems. State level tax credits need not be different from federal credits to be effective. In fact, familiar benefits and processes may be positive for residents as a way of making the application process easier and providing residents with a predictable amount of credits. RCE credits could provide states with a model baseline credit system that is malleable based on needs and resources. In Pennsylvania, this could mean increasing credit amounts for residents who opt to locate panels on the roof of a structure rather than green spaces. State run credits also provide the state with more freedom as to the repurpose of industrial sites. Because credits are so alluring to potential solar implementors, Pennsylvania may

use them to incentivize proper regulation, such as by creating a credit for developers who exceed environmental requirements or regularly have the site inspected by qualified professionals. RCE credits have had a clear impact on the implementation of solar energy across the country, and their expiration could be supplemented by state tax credits.

*ii. Utilizing Agrivoltaics*

As solar energy becomes more common, so does the concern about best use of land. Solar energy proves to be a profitable venture for local farmers and landowners, and the same is to be said about grid-scale solar facilities. It is well recognized, however, that solar panel cells have low efficiency and obtaining a reasonable amount of solar energy requires more panels than one might imagine.<sup>160</sup> Thus, producing enough solar energy to sustain a community may require tens to hundreds of acres.<sup>161</sup> In recent years, the Pennsylvania Department of Agriculture has expressed growing concern that prime agricultural land is being used for solar farming and not traditional uses of farmland.<sup>162</sup> These issues may be settled by the newly popularized process of agrivoltaics.

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<sup>160</sup> *Solar PV Energy Factsheet*, CENTER FOR SUSTAINABLE SYSTEMS, UNIVERSITY OF MICHIGAN, <https://css.umich.edu/publications/factsheets/energy/solar-pv-energy-factsheet>, (Last visited Nov. 6, 2025). Most available solar panels have efficacy rating of around 20%, with some developing models rate around 50%. *Id.*

<sup>161</sup> *Frequently Asked Questions (FAQs); How much electricity does an American home use?*, ENERGY INFO. ADMIN., Jan. 8, 2024, <https://www.eia.gov/tools/faqs/faq.php?id=97&t=3>. The average U.S. residential electric-utility customer purchases about 10.791 megawatts of energy per year. *Id.* It is estimated that the production of one megawatt requires approximately ten acres of land. JESSI WYATT, MAGGIE KRISTIAN, *The True Land Footprint of Solar Energy*, Sep. 14, 2021, <https://betterenergy.org/blog/the-true-land-footprint-of-solar-energy/#:~:text=Estimating%20the%20land%20footprint%20of,used%20for%20solar%20electric%20generation>.

<sup>162</sup> Although there is no statewide ban on siting solar on farmland, the Pennsylvania Department of Agriculture has published materials for the consideration of potential developers that aim to inform about the potential risks associated with this practice, including loss of crop production. *Farmland Considerations for siting Grid-Scale Solar*, PA. DEPT. OF AG., Dec. 22, 2022, [https://www.puc.pa.gov/media/2728/farmland\\_considerations\\_for\\_siting\\_grid-scale\\_solar\\_panels.pdf](https://www.puc.pa.gov/media/2728/farmland_considerations_for_siting_grid-scale_solar_panels.pdf).

Agrivoltaics is a land use method that co-locates solar and agriculture, typically by implementing shade tolerant crops, pollinator habitats, or grazing animals under the panels.<sup>163</sup> As of November 2024, the National Renewable Energy Laboratory has identified nearly six hundred agrivoltaic sites within the United States, almost double the amount identified in 2023.<sup>164</sup> Utilizing agrivoltaics is particularly appealing for farmers and small-scale landowners because it allows for two sources of income from a single parcel. For example, a farmer may produce enough energy to power her farm and extra to sell to electric distribution companies and electric generation suppliers; all the while producing leafy greens and root vegetables or livestock.

Co-location not only benefits the farmer, but the larger community as well. In 2019, Pennsylvania State University (“Penn State”) entered into a twenty-five-year solar power purchase agreement to implement over 150,000 solar panels on roughly 500 acres.<sup>165</sup> Although the operation contributes substantially to Penn State’s energy requirements, it also acts as a “living laboratory” for Penn State students and other environmental scholars to conduct hands-on research.<sup>166</sup>

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<sup>163</sup> *Agrivoltaics: Solar and Agriculture Co-Location*, U.S. DEPT OF ENERGY, <https://www.energy.gov/eere/solar/agrivoltaics-solar-and-agriculture-co-location>, (Last visited Nov. 4, 2025).

<sup>164</sup> *Id.* As of March 2023 there were 314 agrivoltaic projects in the United States. *Id.*; SARA FALL, *Lighting the Way for Agrivoltaics: How NREL Empowers Communities To Capture the Benefits of Solar Energy, Agriculture, and Ecosystems*, NAT’L RENEWABLE ENERGY LABORATORY, Nov. 21, 2024, <https://www.nrel.gov/news/feature/2024/lighting-the-way-for-agrivoltaics>.

<sup>165</sup> *Solar Projects at Penn State*, PA. STATE UNIVERSITY, <https://sustainability.psu.edu/campus-efforts/operations/energy/solar-projects/>, (Last visited Nov. 5, 2025).

<sup>166</sup> *Solar farm, living laboratory*, LIGHTSOURCEBP, Aug. 6, 2022, <https://lightsourcebp.com/us/news/solar-farm-living-laboratory-lightsource-bps-nittany-solar-projects-in-pennsylvania/>.

Agrivoltaics is a growing industry that has yet to be fully studied, but it provides a purposeful alternative to using viable land for a single purpose.

*iii. Lessening the Permitting Burden on Municipalities*

In Pennsylvania, non-commercial residents seeking to implement solar panels must have the proper permits required by their municipality, which may only be approved by that same municipality. With municipalities being the chief governor of solar implementation, locations with high solar demand may become backlogged with permits, leading to less renewable energy and more procedural hurdles for potential investors. An alternative to this system is the use of authorized local third-party professionals to review and approve permits, thus lessening the burden on municipalities. This may take the form of resident energy companies and providers who have the tools and skills to perform such permitting.

In 2025, Texas passed Bill 1202 authorizing third-party professionals to review and inspect, amongst other documents, permits for electric generating infrastructure that operate at or under 600 volts, regardless of grid connectivity.<sup>167</sup> It must be noted, however, that Texas greatly benefits from its fossil-fuel production, and some speculate that these initiatives can potentially foster an ulterior purpose of altering the traditional control and oversight afforded to communities through local zoning.<sup>168</sup>

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<sup>167</sup> S.B. 1202, 89<sup>th</sup> Legislature, Tx. 2023, <https://legiscan.com/TX/text/SB1202/id/3245770/Texas-2025-SB1202-Enrolled.html>.

<sup>168</sup> MOHAMMED ABDALLA, *SB1202 & SB1252: Faster Solar & Battery Permitting in Texas in 2025, But What's the Catch?*, Aug. 18, 2025, GOOD FAITH ENERGY, <https://goodfaithenergy.com/sb1202-sb1252-faster-solar-battery-permitting-in-texas-in-2025-but-whats-the-catch/#:~:text=While%20SB1202%20introduces%20major%20improvements,No%20Deadline%20for%20Review%20Completion.>

Pennsylvania may be well-positioned to benefit from the adoption of third-party permitting. Across the state, approval timelines for building and energy installation can greatly vary depending on the municipality and local resources. The fluctuating timelines for solar projects may produce uncertainty in residents as to the viability or value of solar installation. Implementing a third-party system like that in Texas would streamline the approval process by distributing responsibility to qualified external reviewers who can handle these low-risk permits more efficiently, thus allowing municipalities to conserve their resources for more pressing and complex grid-scale ventures. Faster review timelines further mean residents and businesses gain easier access to clean energy options while moving the state closer to its solar carve out goals. The issues posed in Texas concerning potential undermining of local power may be alleviated in Pennsylvania by implementing rigorous, conditional, and individualized approval programs by municipalities. This would allow municipalities to retain control over the permitting process but still benefit from the distributed work. Third party permitting has the potential to drive continued growth in the renewable industry while benefiting private citizens.

#### IV. CONCLUSION

Solar energy has infiltrated the major considerations of energy in general, and it is likely that areas with significant open land, like Pennsylvania, will increasingly encounter the presence of solar panels. Ultimately, the development of a legal framework in Pennsylvania at the federal and state levels has been largely similar to an advisory agency, acting only to establish certain tools such as carve-outs and

minimum standards like clean water. The bulk of regulatory action occurs at the local level and can vary widely between townships, as seen with Townships of Dover and Franklin. The regulatory power for solar energy must remain in the hands of the municipalities, but that is not to say the state should not take on a larger role. By filling the gaps left by recent federal changes, Pennsylvania has the opportunity to continue growing solar energy within itself while promoting a standardized process for essential tasks. The same may be said about land usage and the benefits of evolving the practice of solar energy to create sustainable solutions to land use. Finally, the expansion of permitting processes to allow for third party involvement may further promote responsible yet efficient growth of small and large scale solar ventures.