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Solar Skyspace B

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I. INTRODUCTION

The cleanest source of electricity is that generated from photovoltaic solar panels (PV).[1] Unlike fossil fuels, PV does not

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1. *See, e.g.*, Sarah Pizzo, *When Saving the Environment Hurts the Environment: Balancing Solar Energy Development with Land and Wildlife*

require extraction and does not burn, so it emits no carbon.[2] Unlike hydropower, it does not require the damming of natural rivers and the destruction of upstream areas through flooding.[3] Unlike industrial-scale concentrating solar thermo-electric power, it does not consume water to generate electricity.[4] Finally, when placed on existing rooftops in developed areas, distributed solar PV does not require long-term dedication of public lands to an industrial use,[5] does not disrupt native habitat (a potential problem with all of other energy generation resources),[6] and provides power right where it is needed without requiring the construction of new transmission lines.[7]

Because of PV's advantages, one might think that state legislators or courts would give fledgling solar PV some of the many property law benefits that older energy sources have enjoyed.[8] In fact, the current legal system does just the opposite—creating hurdles to the deployment of solar PV by placing all burdens on the solar-energy host side of the scale.[9]

This Article will first explain the technological need for solar access. Next it will review the rise and fall of U.S. laws addressing the problem from the late 1970s until today. Finally, it will examine property law regimes that could strengthen protections for this valuable right. While the common law could provide some remedies, the most efficient remedies appear to be through legislative action—either

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Conservation in a Warming Climate, 22 COLO. J. INT'L ENVTL. L & POL'Y 123, 131 (2011); *Solar Energy*, SIERRA CLUB, http://content.sierraclub.org/coal/solar (last visited Oct. 10, 2013).

2. *See, e.g.*, *Solar Panels (PV)*, ENERGY SAVING TRUST, http://www.energysavingtrust.org.uk/Generating-energy/Choosing-a-renewable-technology/Solar-panels-PV (last visited Oct. 10, 2013).

3. Adele, *The Advantages of Solar Energy vs Other Renewable Energy Sources*, ONE BLOCK OFF GRID (July 22, 2010), http://1bog.org/blog/the-advantages-of-solar-power-vs-other-renewable-energy-sources/.

4. *Id.*

5. *See Id.* ("Solar doesn't necessarily need to use land space, since it can go on existing roofs.").

6. *Cf. id.* (suggesting that, in contrast to solar, hydropower can lead to flooding which destroys habitat).

7. *See Solar Technology*, SOLAR ENERGY INDUS. ASS'N, http://www.seia.org/policy/solar-technology (last visited Oct. 10, 2013) ("Solar technologies can be used at or near the point where the energy is needed . . . .").

8. *See infra* Part IV.B.

9. *See infra* Part IV.B.

through federal[10] or state statutes, or local government regulations or ordinances.

Because grid-connected solar provides broad social benefits beyond those just to the property upon which solar collectors are installed,[11] throughout this Article, I will use the neutral terminology of "Solar Host" for the property on which a grid-connected solar PV array is directly sited and "Southern Property" for a neighboring property to the south of the Solar Host which is within the solar skyspace of an array.

II. THE SOLAR SKYSPACE PROBLEM

This Part will lay out background information for understanding the technology of solar PV and the significance of protecting access to "Solar Skyspace B."

A. TECHNOLOGY CONSIDERATIONS

Until the development of cost-effective battery storage, solar power suffers from the problem of intermittency.[12] Some

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10. Currently, the federal government has no statutes or regulatory guidelines for addressing solar access issues. Under the authority of the Telecommunications Act of 1996, the FCC promulgated the Over-The-Air-Reception Device rule that explicitly restricted any private homeowner covenants that impaired the installation of satellite dishes. LaVonda N. Reed-Huff, *Are You Still Settling for Cable? A Case for Broader Application of the FCC's Over-the-Air Reception Devices Rule*, 26 HASTINGS COMM. & ENT. L.J. 179, 182–83 (2004); *see* 47 C.F.R. § 1.4000 (2012). If the federal government saw fit to nationally ban all restrictions against the installation of satellite TV dishes for the sake of competition, shouldn't there also be a federal law prohibiting restrictions on the installation of solar panels—not only for competition reasons but also for national security reasons as having distributed solar energy sources makes the United States less reliant on foreign energy sources and provides backup for grid outages? *See* LaVonda N. Reed-Huff*, Should the Federal Government Enact Regulations to Protect the Right to Install Windmills and Other Clean Energy Devices?*, 6 ABA SCITECH LAW., Winter 2010, at 4, 7 (arguing that the federal government perhaps should preempt incongruous state laws in regards to the installation of windmills to foster competitive markets, lower costs, and remove barriers to entry, but there must be serious consideration of possible property, preemption, and takings issues); *see also* LaVonda N. Reed-Huff, *Dirty Dishes, Dirty Laundry, and Windy Mills: A Framework for Regulation of Clean Energy Devices*, 40 ENVTL. L. 859, 864 (2010) (discussing the similarities between satellite dishes and clean energy devices, and arguing that a similar regulatory scheme is a viable option).

11. *See infra* notes 178–85 and accompanying text.

12. *See, e.g.*, Ethan Goffman, *Why Not the Sun? Advantages of and Problems with Solar Energy*, PROQUEST (Dec. 2008), http://www.csa.com/

of this variation is predictable: solar panels will not produce any electricity at night when the sun is down.[13] Also, it is predictable that a certain number of cloudy days may diminish PV production. These are currently unavoidable limitations of solar power.

Another reality of solar PV is that panel arrays will not perform to their maximum capacity at all times.[14] For example, the array may be rated at three kilowatts (kW), but it will only produce close to that amount when the sun is shining fully on the panels.[15] Utilities account for weather variations and potential cloud cover in a capacity factor that estimates the contributions solar PV can make to electricity demand needs.[16] Also, to be sure the public incentives are truly supporting useable solar resources, solar leasing companies and utilities generally require a certain minimum amount of solar exposure before they enter into a contract to include a Solar Host PV site in their grids.[17]

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discoveryguides/solar/review2.php ("A major disadvantage of both wafer-based and thin film solar energy is intermittency. The sun does not shine at night, and is diminished by overcast skies and storms. Energy from solar cells therefore cannot be counted on at all times.").

13. *Id.*

14. *See id.* ("[D]ecentralized energy from solar cells cannot supply what the energy industry calls baseline power, which supplies a constant energy need.").

15. *Cf. Understanding Solar Panel Power Ratings*, SUNCITY SOLAR ENERGY, http://www.suncityenergy.com/solarpanelratings/ (last visited Oct. 10, 2013) (describing efficiency ratings for solar panel arrays and distinguishing between ratings based on standard test conditions and real world conditions).

16. The *nameplate capacity* or *rated capacity* of a PV panel is the amount of energy the panel would get if it had all of the access to the sun's radiation it could possibly have. SEYED HOSSEIN MADAENI, RAMTEEN SIOSHANSI & PAUL DENHOLM, NAT'L RENEWABLE ENERGY LAB., CAPACITY VALUE OF CONCENTRATING SOLAR POWER PLANTS 1 (2011), *available at* http://www.nrel.gov/docs/fy11osti/51253.pdf. *Capacity factor* is a percentage that expresses the difference between what the rated capacity and what the panel actually achieves under normal operating conditions (due to time of year, weather, shade, etc.). *Id.* Multiplying the capacity factor by the rated capacity reveals the *capacity value* of a system, i.e. the actual power generated by the solar panel. For example, if a one hundred watt solar panel has a capacity factor of 25%, its capacity value is actually twenty-five watts. *Energy and Cost Calculations—Solar Panel Systems*, THE ENERGY GROOVE, http://www.energygroove.net/energycalculator-solarpanels.php (last visited Oct. 21, 2013).

17. *E.g.*, *Solar*Rewards: Frequently Asked Questions*, XCEL ENERGY (last visited Oct. 21, 2013), *available at* https://www.xcelenergy.com/staticfiles/xe/

However, shading obstruction from a Southern Property *after* the qualifying measurement by a utility has the potential to significantly diminish, or to completely prevent, generation from a PV array.[18] The problem of shading on solar panels is especially acute considering the current PV technology. Cost competiveness is a priority for solar PV,[19] so panels are wired along a single circuit to save money.[20] This means that solar panels respond somewhat like old-fashioned Christmas lights.[21] If one bulb goes out, it breaks the circuit, and none of the bulbs on the string will light up.[22] Similarly, with most current crystalline solar panels, blocking portions of a panel cuts efficiency exponentially.[23] Sometimes as little as four percent or less of shading, such as a tree shadow across a portion of a panel, can take all of the panels in an array out of production completely.[24]

Marketing/Managed%20Documents/co-res-bus-Solar-FAQs.pdf (describing an incentive in Colorado requiring substantially clear and unobstructed roof space during "the key sun hours of the day"); *see also Solar Frequently Asked Questions*, SOLARCITY, http://www.solarcity.com/learn/solar-faqs.aspx (last visited July 24, 2013) (describing "[t]he two biggest factors" in determining whether solar will work on a home or business as "the amount sunlight you get throughout the day and the amount of open roof space").

18. *See, e.g.*, Claire Anderson, *Energy Basics: Shading and Solar-Electric Systems*, HOME POWER, http://www.homepower.com/articles/solar-electricity/design-installation/energy-basics-shading-and-solar-electric-systems (last updated Nov. 20, 2012).

19. *See, e.g.*, Dino Green, *How Much do Solar Panels Cost?—Updated Prices*, RENEWABLE GREEN ENERGY POWER (Aug. 25, 2012), http://www.renewablegreenenergypower.com/how-much-do-solar-panels-cost-2012-updated-prices/.

20. *See, e.g.*, *Basic Tutorials: Solar Panels*, FREE SUN POWER, http://www.freesunpower.com/solarpanels.php (last visited Oct. 10, 2013).

21. George Musser, *Invert Your Thinking: Squeezing More Power Out of Your Solar Panels*, SCI. AM. BLOGS (Aug. 26, 2009), http://blogs.scientificamerican.com/solar-at-home/2009/08/26/invert-your-thinking-squeezing-more-power-out-of-your-solar-panels/ ("Because the cells are wired in series, knocking out one can knock out all, just as a single blown Christmas tree bulb can black out a whole string of bulbs.").

22. *Id.*

23. *See, e.g.*, CHRIS DELINE, NAT'L RENEWABLE ENERGY LAB., PARTIALLY SHADED OPERATION OF A GRID-TIED PV SYSTEM 5 (2009), *available at* http://www.nrel.gov/docs/fy09osti/46001.pdf ("[A] shadow can represent a reduction in power over 30 times its physical size.").

24. *See* Mark Scovell, *Solar Photovoltaic Systems and Shading Analysis*, SOLAR HAPPY NEWS (June 10, 2013), http://solarhappynews.co.uk/shading-and-shading-analysis-solar-photovoltaic-systems/# ("If one part of a panel is

B. SOLAR SKYSPACE B

The sun moves in an arc across the sky each day, and because of the earth's rotational tilt on its axis, that arc varies throughout the year.[25] The sun's arc also varies in angle depending upon latitude.[26] At the equator, the sun is mostly straight overhead all year.[27] In the northern hemisphere, the sun is high in the sky in summer and low in the southern sky in the winter.[28] The portion of this arc that may be used to generate electricity is called the solar skyspace.[29]

For purposes of this Article, "Solar Skyspace A" means the solar skyspace vertically above the Solar Host lot lines, and the skyspace vertically above the Southern Property lot lines is "Solar Skyspace B."[30] This Article focuses on rationales for legal regimes to protect Solar Skyspace B.[31]

The Solar Skyspace B label is significant because it emphasizes how potentially limited the property claim is. The Solar Host is not demanding rights to the path of the sun during its entire course across the sky.[32] Instead, Solar Skyspace B is a small portion of that space that could interfere with the generation of solar energy from an installed device.[33] In this way, recognition of Solar Skyspace B is less intrusive on a Southern Neighbor's right to develop than a universal solar fence ordinance[34] or solar energy zone restrictions on planting

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shaded, there may be insufficient voltage to fire the inverter. With small strings, very little shading (4%) is required to shut down the whole system.").

25. *See, e.g.*, Jerry Coffey, *Earth's Orbit Around the Sun*, UNIVERSE TODAY (Mar. 30, 2010), http://www.universetoday.com/61202/.

26. *See, e.g.*, *Sunrise and Sunset*, CALTECH SUBMILLIMETER OBSERVATORY, http://cso.caltech.edu/outreach/log/NIGHT_DAY/sunrise.htm (last visited Oct. 10, 2013).

27. *See id.*

28. *See* Coffey, *supra* note 25.

29. Sara C. Bronin, *Solar Rights*, 89 B.U. L. REV. 1217, 1226–27, 1236 (2009).

30. For a visual of this phenomenon, see K.K. DUVIVIER, THE RENEWABLE ENERGY READER 51 fig.2.6, (2011), *available at* http://www.RenewableEnergyReader.com; *see also id.* at 25 fig.2.4 (offering a "Depiction of solar skyspace").

31. In fact, this Article is not even advocating full use of the solar skyspace year round.

32. *See* DUVIVIER, *supra* note 30, at 51 fig.2.6.

33. *See id.*

34. *See* LARAMIE, WYO., UNIFIED DEV. CODE § 15.14.030.A(2)(d)(iii) (2012), *available at* http://www.cityoflaramie.org/DocumentCenter/Home/

trees.[35] In addition, ordinances or statutes are often drafted to further compromise the space by limiting the times of day or year during which the protections apply.[36]

III. THE RISE AND FALL OF SOLAR ACCESS RIGHT LEGISLATION

Hydropower was one of the first sources of electricity, as utilities tapped powerful water features like Niagara Falls.[37]

View/2230 ("The solar right to radiation of the sun before nine a.m. or after three p.m. Mountain Time is *de minimus* and may be infringed without compensation to the owner of the solar collector."); BOULDER REV. CODE § 9-9-17(d)(1)(A)–(B) (2013). The Boulder ordinance protects the area that would be shaded by a solar fence twelve feet in height between two hours before and two hours after local solar noon on a clear winter solstice day (i.e. 10:00 AM to 2:00 PM). BOULDER REV. CODE § 9-9-17(d)(1)(A)–(B). Protections can be additionally limited to protect certain portions of the space, e.g., rooftop v. ground mounted solar. *See, e.g.*, LARAMIE, WYO., UNIFIED DEV. CODE § 15.14.030.A(3)(c). Finally, this Article only addresses protections for that portion of the skyspace that was unused and available for solar power at the time of installation of the panels.

35. *See* K.K. DuVivier & Dan Staley, *Managing the Dark Side of Trees*, SOLAR TODAY, July–Aug. 2013, at 28, 28–29, *available at* http://www.omagdigital.com/publication/?i=164079&p=28 (discussing the ineffectiveness of solar easements, and the potential of specifying height limitations for vegetation); *see also* K.K. DuVivier, *Be-Aware of the Dark Side of Trees* (Univ. of Denver Sturm Coll. of Law, Legal Research Paper Series, Working Paper No. 12-08, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2037536 ("[W]ell-intentioned tree-planting programs ignore the dark side of trees that threaten green energy solutions such as urban gardens, buildings with passive solar designs, solar hot water, and solar-generated electricity systems.").

36. *See, e.g.*, LARAMIE, WYO., UNIFIED DEV. CODE § 15.14.030.A(2)(d)(iii). Once some protection is recognized the scope of the protection can be easily defined by statute or ordinance. For example, the City of Boulder's zoning ordinance only protects solar access for a four hour period during the winter solstice on December 21st. BOULDER REV. CODE §9-9-17(d)(1)(A)–(B). Other possibilities for limitation include protecting only second floor or rooftop solar, or varying protections to reflect various densities of development. For example, Denver's Solar Bulk Plane ordinance which previously only protected rooftop solar was rolled back in 2003. K.K. DuVivier, *Retain Solar Access in Code*, DENVER POST (Oct. 28, 2009, 1:00 AM), http://www.denverpost.com/opinion/ci_13653895; *see also* BOULDER REV. CODE §9-9-17(c)(3) (addressing different densities).

37. Bureau of Reclamation, *The History of Hydropower Development in the United States*, U.S. DEP'T INTERIOR (last updated Aug. 12, 2009), http://www.usbr.gov/power/edu/history.html. Water mills were a key source of power before its use to generate electricity. DUVIVIER, *supra* note 30, at 130 (quoting Sarah Richardson, Note, *The Changing Political Landscape of Hydropower Project Relicensing*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 499,

Next, the combustion of fossil fuels became the major source of electric power in the United States, representing approximately sixty-nine percent of generation today.[38] Solar PV is the new kid on the block: technology for converting the sun's rays directly into electricity was not developed until the race to the moon in the late 1950s[39] and was not available for individual rooftop applications until about twenty years later, and then only at a hefty price.[40]

Interest in solar energy surged in the 1970s because of sharp increases in the price of petroleum.[41] The solar systems

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501 (2000)). Some of the first hydropower to electricity plants arose in the early 1880s. *Id.* at 131 fig.4.4.

38. This percentage is based on contributions to electricity generation of coal, natural gas, and petroleum, calculated as explained below, as reported in U.S. ENERGY INFO. ADMIN., ELECTRIC POWER MONTHLY WITH DATA FOR JULY 2013 (2013), *available at* http://www.eia.gov/electricity/monthly/pdf/epm.pdf. According to the National Renewable Energy Laboratory (NREL), the breakdown of net electricity generation for 2011 is as follows: coal=42.1%, natural gas=24.7%, petroleum=0.7%, nuclear=19.2%, conventional hydropower=7.9%, wind=2.9%, biomass=1.4%, geothermal=0.4%, and solar=0.2%. NAT'L RENEWABLE ENERGY LAB., U.S. DEP'T OF ENERGY, 2011 RENEWABLE ENERGY DATA BOOK 12, 27 (2013), *available at* http://www.nrel.gov/docs/fy13osti/54909.pdf. Newer Databooks from NREL or the Energy Information Administration (EIA) have not come out. The EIA's monthly report would estimate the following 2012 figures: coal=37.4%, natural gas=30.4%, petroleum=0.6%, nuclear= 19.0%, conventional hydropower=6.8%, wind=3.5%, biomass=1.4%, geothermal=0.4%, and solar=0.1%. U.S. ENERGY INFO. ADMIN., *supra*, at tbls.1.1, 1.1A. The new percentages themselves have not been released, but the data has. These percentages are based on calculations from that data.

39. *See generally* JOHN PERLIN, FROM SPACE TO EARTH: THE STORY OF SOLAR ELECTRICITY 35–56 (2000) (describing the development of solar technology in connection with the race to the moon).

40. A solar array to power the average U.S. home in 1956 would have cost $1,430,000. *Id.* at 36. In the late 1970s and early 1980s, the price of a PV array was still significantly higher in relation to the home itself in comparison to prices in 2013 of less than $1 per watt. In 1977, PV cost $76.67 per watt, compared to the $0.74 it costs today. *Pricing Sunshine*, ECONOMIST.COM (Dec. 28, 2012, 3:31 PM), http://www.economist.com/blogs/graphicdetail/2012/12/daily-chart-19.

41. *E.g.*, *Oklahoma Economy*, ENCYCLOPEDIA OKLA. HISTORY & CULTURE, http://digital.library.okstate.edu/encyclopedia/entries/O/OK041.html (last visited Oct. 10, 2013) (noting that between the early 1970s and its peak in 1981, the price of Oklahoma crude oil increased ten-fold). The interstate highway system was effectively a "subsidy" for gasoline as demand increased 2.1% per year from 1960 to 1965, and the percentage more than doubled by 1970. JAMES L. KETELSEN, FACTORS AFFECTING U.S. OIL & GAS OUTLOOK: A REPORT OF THE NATIONAL PETROLEUM COUNCIL 42 (1987), *available at* http://www.npc.org/Study_Topic_Papers/30-GPP-HistorPerspective.pdf. The

of choice at this time were less-expensive solar thermal and solar hot water because then the cost of solar PV was almost prohibitive.[42] These new solar installations resulted in a corresponding awareness that the law needed to recognize the sun's potential as a new energy source.[43] According to law

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first oil shock was in 1973 due to the Yom Kippur war. Christopher R. Clements, *No Blood for Oil? United States National Security, Oil, and the Arctic Wildlife Refuge*, 28 WM. & MARY ENVTL. L. & POL'Y REV. 87, 92 (2003). As a response to the first oil shock, President Nixon created programs to move the United States toward energy self-sufficiency. *Id.* at 92–93; *see* David E. Missirian, *Let the Sun Shine In: An Examination of Solar Easements and a Proposed Statute*, 41 REAL ESTATE L.J. 303, 305 (2012) ("In response to [the oil shock], the Nixon Administration created the Federal Energy Administration . . . as well as the Energy Research and Development Administration, which consolidated all energy research into a single agency."); *see also* President Richard Nixon, Address to the Nation About National Energy Policy (Nov. 25, 1973), *available at* http://www.presidency.ucsb.edu/ws/?pid=4051 (introducing "Project Independence," a series of plans and goals to ensure that the United States would be able to be completely self-sufficient for energy). In 1974, the Solar Energy Research Institute (SERI) was created by the Solar Energy Research Development and Demonstration Act. ALICE BUCK, U.S. DEP'T OF ENERGY, A HISTORY OF THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION 7 (1982), *available at* http://energy.gov/sites/prod/files/ERDA%20History.pdf. Golden, Colorado was picked as the home of SERI and it opened in July 1977. NAT'L RENEWABLE ENERGY LAB., NATIONAL RENEWABLE ENERGY LABORATORY: 35 YEARS OF INNOVATION 1 (2012), *available at* http://www.nrel.gov/docs/fy13osti/57078.pdf (noting that George Bush elevated SERI to national lab status in 1991 and renamed it the National Renewable Energy Laboratory). The second oil crisis was in 1979 when the Ayatollah Khomeini came into power and his government took approximately seventy Americans as hostages. *The Hostage Crisis in Iran*, JIMMY CARTER LIBR. & MUSEUM, http://www.jimmycarterlibrary.gov/documents/hostages.phtml (last updated Nov. 6, 2012); *see also* Robert Stobaugh & Daniel Yergin, *After the Second Shock: Pragmatic Energy Strategies*, COUNCIL ON FOREIGN AFF., http://www.foreignaffairs.com/articles/32313/robert-stobaugh-and-daniel-yergin/after-the-second-shock-pragmatic-energy-strategies (last visited Oct. 10, 2013). President Carter's response to the crisis was to ban the import of Iranian oil; Iran retaliated with a corresponding embargo on the export of Iranian oil to the United States. *Carter Bans Buying Iranian Oil*, MONTREAL GAZETTE, Nov. 13, 1979, at 1, *available at* http://news.google.com/newspapers?nid=1946&dat=19791113&id=vmUxAAAAIBAJ&sjid=nqQFAAAAIBAJ&pg=4484,430629.

42. *See* DUVIVIER, *supra* note 30, at 31. One of the leading cases at this time involved installation of solar thermal heating systems, not PV. Michael G. McQuillen, Prah v. Maretti*: Solar Rights and Private Nuisance Law*, 16 J. MARSHALL L. Rev. 435, 435–36 (1983). Interestingly, the neighbor who proposed to build within Prah's skyspace also planned to install a solar heating system. *Id*. at 435 n.7.

43. *See, e.g.*, Edna Sussman, *Reshaping Municipal and County Laws to Foster Green Building, Energy Efficiency, and Renewable Energy*, 16 N.Y.U.

review articles dealing with solar energy and solar energy systems in the late 1970s and early 1980s, twenty-nine states had adopted some sort of rule or regulation relating to solar energy access by that time period.[44] In addition, thirty-two states had financial incentive programs.[45] Although the

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ENVTL. L.J. 1, 30 (2008) ("Following the oil embargo in the 1970s, there was a flurry of activity and legislation passed in various states addressing solar energy.").

44. *See* Adrian J. Bradbrook, *Future Directions in Solar Access Protection*, 19 ENVTL. L. 167, 169–70 (1988) (showing that twenty-eight states had taken legislative action relating to solar energy access); Stephen B. Johnson, *State Approaches to Solar Legislation: A Survey,* 1 SOLAR L. REP. 55 (1979); Shawn M. Lyden, *An Integrated Approach to Solar Access*, 34 CASE W. RES. L. REV. 369, 393–94 (1984) ("Although the common law has consistently honored express easements to sunlight, twenty-six states have enacted solar access easement statutes." (footnote omitted)). Massachusetts' statutes came into being at the end of this era, but not soon enough to be included in Johnson and Lyden's works. Since 1985, Massachusetts had: (1) a permissive solar easement statute, MASS. GEN. LAWS ch. 187, § 1A (2013); (2) a statute voiding legal instruments which prohibit solar energy systems, MASS. GEN. LAWS ch. 184, § 23C (2013); (3) a statute prohibiting zoning that impedes solar energy systems, MASS. GEN. LAWS ch. 40A, § 3 (2013); and (4) a statute permitting local land use planning to plan for solar energy, MASS. GEN. LAWS ch. 40A, § 9 (2013). Some laud Massachusetts' solar laws. COLLEEN MCCANN KETTLES, SOLAR AM. BD. FOR CODES AND STANDARDS, A COMPREHENSIVE REVIEW OF SOLAR ACCESS LAW IN THE UNITED STATES: SUGGESTED STANDARDS FOR A MODEL STATUTE AND ORDINANCE 8–9 (2008), *available at* http://www.solarabcs.org/about/publications/reports/solar-access/pdfs/Solaraccess-full.pdf. However, others note that permissive statutes are not very effective, and without them solar rights might be treated in the same way as a right to view, which the Massachusetts courts again rejected in June of 2012. Missirian, *supra* note 41, at 314 n.48 (citing Fazio v. Trs. of River House Condo. Rust, 967 N.E.2d 1158, 2012)).

45. *See* Johnson, *supra* note 44, at 55 ("A large majority of the states have enacted financial incentives designed to stimulate solar energy use."); John H. Minan & William H. Lawrence, *State Tax Incentives to Promote the Use of Solar Energy*, 56 TEX. L. REV. 835, 843–56 (1978) (describing various state tax incentives to promote solar energy). The incentive statutes from that time period are: ARIZ. REV. STAT. ANN. §§ 42-123.01A.5, 43-123.37, 43-128.03 (1977); ARK. STAT. ANN. § 84-2016.8 (1977); CAL. REV. & TAX CODE § 17052.5 (1977); COLO. REV. STAT. § 39-1-103 to -014 (1976); CONN. GEN. STAT. §§ 12-81(56)(a), 12-412 (1978); GA. CODE ANN. § 2-4604 (1976); HAW. REV. STAT. §§ 235-12(a), 246-34.7 (1976); IDAHO CODE ANN. § 63-3022(b) (1977); 120 ILL. COMP. STAT. 501d (1975); IND. CODE § 6-1.1-12-26 (1975); KAN. STAT. ANN. §§ 79-32, 79-45(a)-01 to -02, 167 (1977); ME. REV. STAT. 36 § 656-1.H (1978); MD. CODE ANN. TAX & REV. §§ 81-12F-5, 81-14(b)(4) (1977); MASS. GEN. LAWS ch. 55, § 38(h), ch. 59, § 5, ch. 63, § 38H (1978); MICH. COMP. LAWS § 211.7h(2) (1978); MINN. STAT. § 273.11(6) (1978); MONT. CODE ANN. §§ 84-7401, -7403, -7414(1) (1977); NEV. REV. STAT. § 32-361.795 (1977); N.H. REV. STAT. ANN. § 72:62 (1975); 1977 N.J. Sess. Law Serv. ch. 256, 2; N.M. STAT. ANN. § 72-15a-11.3 (1975); N.Y. REAL PROP. LAW § 487(2) (McKinney 1978); N.C. GEN. STAT.

incentive programs have decreased more dramatically,[46] the solar rights efforts of that period also have eroded today in comparison to where they stood in the early 1980s.[47]

A. STRONGEST STATE SOLAR ACCESS PROTECTIONS

Only three states passed significant solar access protections in the early 1980s, and only two of those regimes remain robust.[48] New Mexico's Solar Rights Act is the strongest, as it allows solar energy access as a property right obtained by prior appropriation.[49] Wyoming's Solar Rights Act[50] appears to have been codified in 1984[51] and is still in

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§§ 105-130.23(a), 151.2(a), 277(g) (1977); N.D. CENT. CODE § 57-38-01.8 (1977); OKLA. STAT. tit. 68, § 2357.2A (1978); 1977 OR. Laws ch. 196, 9 (1977); R.I. GEN LAWS § 44-3-18 (1977); S.D. CODIFIED LAWS § 10-6-35.6 (1977); TENN. CODE ANN. § 67-551 (1978); VT. STAT. ANN. tit. 32, § 3845(a) (1978); VA. CODE ANN. §§ 58.16.4.A, 58-16.4.B.1 (1977); WASH. REV. CODE § 84.36.410 (1977). Thirty-three had solar incentive plans from 1977 through 1985.

46. Eleven states have repealed all of their incentive plans from that time; eight others have repealed part of their incentive plans. This could be because of federal incentives that came into being in the mid-2000s or other reasons such as lack of funding. The incentive statutes that still exist are: ARIZ. REV. STAT. ANN. §§ 42-11054, 43-1083 (2013) (formerly ARIZ. REV. STAT. ANN. §§ 42-123.01A.5, 43-123.37, 43-128.03 (1977)); CONN. GEN. STAT. §§ 12-81(56)(a), 12-412 (2013); HAW. REV. STAT. § 235-12(a) (2013); IDAHO CODE ANN. § 63-3022(b); IND. CODE § 6-1.1-12-26; KAN. STAT. ANN. § 79-201 (2013) (formerly § 79-45(a)-01 and -02 (1977)); MASS. GEN. LAWS ch. 55, § 38(h), ch. 59, § 5 (2013); MD. CODE ANN. TAX & REV § 20.61.01.02 (2013) (formerly MD. CODE ANN. TAX & REV. § 81-12F-5 (1977)); MD. CODE PROP. TAX § 7-242 (2013) (formerly MD. CODE ANN. TAX & REV § 81-14(b)(4) (1977)); MICH. COMP. LAWS § 211.7h(2) (2013); MINN. STAT. § 273.11(6) (2013); MONT. CODE ANN. §§ 15-6-224, 15-32-201 (2013) (formerly MONT. CODE ANN. §§ 84-7403, 84-7414(1) (1977)); NEV. REV. STAT. § 701A.200 (2013) (formerly NEV. REV. STAT. § 32-361.795 (1977)); N.H. REV. STAT. ANN. § 72:62 (1977); N.J. STAT. ANN. § 54:4-3.113a (2013) (formerly 1977 N.J. Sess. Law Serv. ch. 256, 2); N.M. STAT. ANN. § 7-2-18.14 (2013) (formerly N.M. STAT. ANN. § 72-15a-11.3 (1975)); N.C. GEN. STAT. § 105-277(g) (2013); N.D. CENT. CODE § 57-38-01.8 (2013); OR. REV. STAT. 468B.100 (2013) (formerly 1977 Or. Laws ch. 196, 9); S.D. CODIFIED LAWS § 10-4-44 (2013) (formerly S.D. CODIFIED LAWS § 10-6-35.6 (1977)); VT. STAT. ANN. tit. 32, § 3845(a); VA. CODE ANN. § 58.1-3661 (2013) (formerly VA. CODE ANN. § 58.16.4.A (1977)).

47. *See infra* Part III.A.

48. *See infra* notes 49–55 and accompanying text. Wisconsin also has a solar permit statute that authorizes an injunction to remove vegetation and damages for shading by structures. WIS. STAT. ANN. § 66.0403(7)(a)–(b) (West 2013).

49. N.M. STAT. ANN. §§ 47-3-1 to -5 (LexisNexis 1978) ("[T]he right to use the natural resource of solar energy is a property right . . . .").

50. WYO. STAT. ANN. §§ 34-22-101 to -106 (1997).

effect today.[52] Both New Mexico and Wyoming's statutes address shading from human constructed obstructions and from vegetation.[53] Even though the third significant state statute, the California Solar Shade Control Act,[54] only

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51. Lyden's article did not mention Wyoming's Solar Rights Act that would have existed in the late 1970s and early 1980s, *see generally* Lyden, *supra* note 44, nor did Tiedeken's. Robert Tiedeken, *Access Rights for the Solar User: In Search of the Best Statutory Approach*, 16 LAND & WATER L. REV. 501, 502 (1981). The law that introduced the Wyoming statute into effect came to the house in 1981, but was not immediately codified. H.R. 5, 46th Leg. (Wyo. 1981). For a discussion of Wyoming's statute, see generally Peter R. Mounsey, *Solar Access Rights in Wyoming*, 19 LAND & WATER L. REV. 419 (1984).

52. WYO. STAT. ANN. §§ 34-22-101 to -106 (2013). For some reason, it seems that the Database of State Incentives for Renewables & Efficiency (DSIRE) has overlooked Wyoming's statute. *Wyoming: Incentives/Policies for Renewables & Efficiency*, DATABASE ST. INCENTIVES RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=WY (last visited Oct. 20, 2013).

53. N.M. STAT. ANN. § 47-3-4(B) (2013):

> "The following concepts shall be applicable to the regulation of disputes over the use of solar energy where practicable:
> (1) . . . .
> (2) "prior appropriation." In disputes involving solar rights, priority in time shall have the better right except that the state and its political subdivisions may legislate, or ordain that *a solar collector user has a solar right even though a structure or building located on neighborhood property blocks the sunshine from the proposed solar collector site.*" (emphasis added).

WYO. STAT. ANN. § 34-22-103(b) (2013):

> In disputes over the use of solar energy:
> (i) Beneficial use shall be the basis, the measure and the limit of the solar right, except as otherwise provided by written contract. If the amount of solar energy which a solar user can beneficially use varies with the season of the year, then the extent of the solar right shall very likewise;
> (ii) Priority in time shall have the better right, except as provided in this act; and
> (iii) Nothing in this act diminishes the right of eminent domain.

WYO. STAT. ANN. § 34-22-105(a) (2013):

> Land-use regulations of local governments may encourage the use of solar energy systems. To encourage the use of solar energy systems, local governments may regulate:
> (I) The height, location, setback and energy efficiency of structures;
> (II) The height and location of vegetation with respect to property lines;
> (III) The platting and orientation of land developments; and
> (IV) The type and location of energy systems or their components.

54. CAL. PUB. RES. CODE §§ 25980–25984 (West 2013).

addressed shading from vegetation,[55] the erosion of these protections most likely will have the most deleterious impact.

The State of California has the most aggressive renewable energy mandates in the United States[56] and is the nation's leader for grid-tied photovoltaics with approximately three times the capacity of the next highest state.[57] However, in the spring of 2008, the California State Assembly amended California's Solar Shade Control Act (Shade Act)[58] in response to state Senator Joe Simitian's "There Oughta Be a Law" contest.[59] The day Governor Schwarzenegger signed S.B. 1399 into law, solar energy development suffered an enormous setback.[60]

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55. *Id.* § 25980 ("[T]here are certain situations in which the need for widespread use of alternative energy devices, such as solar collectors, requires specific and limited controls on trees or shrubs.").

56. *See* Adam Weintraub, *California Renewable Energy: Brown to Sign 'Most Aggressive' Mandate in the U.S.*, HUFFINGTON POST (Apr. 12, 2011), http://www.huffingtonpost.com/2011/04/12/california-renewable-energy_n_848083.html. Governor Jerry Brown signed SB 2X on April 12, 2011, requiring California utilities to get 33% of their power from renewable sources by 2020. *California Boosts RPS to One-Third Renewables by 2020*, ENERGY EFFICIENCY & RENEWABLE ENERGY NEWS (Apr. 13, 2011), http://apps1.eere.energy.gov/news/news_detail.cfm/news_id=16886. Colorado's was second highest at 30% by 2020. *Colorado Boosts Its Renewable Energy Requirement to 30% by 2020,* ENERGY EFFICIENCY & RENEWABLE ENERGY NEWS (Mar. 24, 2010), http://apps1.eere.energy.gov/news/news_detail.cfm/news_id=15878; Weintraub, *supra*.

57. California's PV Cumulative Capacity in 2010 was 1564 megawatts (MW), while the next highest states in 2009 were New Jersey with 566 MW and Arizona with 398 MW. LARRY SHERWOOD, INTERSTATE RENEWABLE ENERGY COUNCIL, U.S. SOLAR MARKET TRENDS 2011, at 9 tbl.3 (2012).

58. CAL. PUB. RES. CODE §§ 25980–25984 (2013).

59. *"Oughta" Ideas Signed into Law*, ST. SENATOR JOE SIMITIAN, http://www.senatorsimitian.com/oughta/laws/ (last visited Oct. 20, 2013).

60. S. 1399, 2007–2008 Cong., Reg. Sess. (Cal. 2008), *available at* http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_1351-1400/sb_1399_bill_20080722_chaptered.pdf; *see also "Trees vs. Solar" Issue Put to Rest in the Capitol*, ST. SENATOR JOE SIMITIAN (July 22, 2008), http://www.senatorsimitian.com/entry/trees_vs_solar_issue_put_to_rest_in_the_capitol/ ("State Senator Joe Simitian . . . announced today that Governor Schwarzenegger has signed his Senate Bill 1399. To summarize, the new law will: Protect trees and shrubs planted prior to the installation of a solar collector; Eliminate criminal prosecution as a penalty for violation of the law; Provide a mechanism for written notice between neighbors; Make it easier for local communities to adopt and enforce their own local ordinances on the subject; and Clarify various provisions of the law which were vague or confusing.").

The 2008 amendment was made in response to a lawsuit.[61] Almost thirty years after its enactment in 1978, section 25983 of the Shade Act was amended to make violation of the shading provisions a "private" instead of a "public" nuisance.[62] While this revision may seem minor to a non-lawyer, it essentially guts the effectiveness of the Shade Act. In a private lawsuit, the Solar Host becomes the plaintiff with the burden of proving nuisance at trial. More importantly, in contrast to a lawsuit in which the state enforces restrictions against public nuisances, under the current private nuisance standard in the Shade Act, the Solar Host must shoulder the costs of bringing the lawsuit to attempt to protect panel production levels.[63] Because the cost of most PV systems is now lower than the costs of hiring an attorney to bring the lawsuit,[64] it generally makes more sense to write off the array than to file a case, especially with no guarantee of prevailing at trial.[65]

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61. Associated Press, *In California, It's Solar Panels vs. Redwoods*, NBCNEWS.COM, http://www.nbcnews.com/id/23258714/#.UeB51UgsiSo (last updated Feb. 20, 2008). The case involved neighbors who refused to trim giant redwood trees planted in their yard which shaded their neighbor's solar panels more than ten percent. *Id.* The neighbors were not deterred by the clarity of the statute which made it a criminal violation to shade solar panels, and were upset with the $35,000 costs of legal fees and their fine, so they lobbied State Senator Joe Simitian to amend the statute. *"Trees vs. Solar" Issue Put to Rest in the Capitol*, *supra* note 60.

62. S. 1399, 2007–2008 Cong., Reg. Sess. (Cal. 2008), *available at* http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_1351-1400/sb_1399_bill_20080722_chaptered.pdf ("The bill would repeal the public nuisance violation of the above requirement, and would provide that a tree or shrub maintained in violation of the above requirements is instead a private nuisance . . . .").

63. *See supra* notes 18–24 and accompanying text.

64. In 2011, the average installation price of a 10 kW residential PV system was $6.10 per watt in California ($61,000 total). Allan Chen, *The Installed Price of Solar Photovoltaic Systems in the U.S. Continues to Decline at a Rapid Pace*, BERKELEY LAB NEWS CENTER (Nov. 27, 2012), http://newscenter.lbl.gov/news-releases/2012/11/27/the-installed-price-of-solar-photovoltaic-systems-in-the-u-s-continues-to-decline-at-a-rapid-pace/. That figure has dropped significantly since the time of this 2011 study, with Home Depot advertising a kit for 10 kWs of PV for under $25,000. *See Grape Solar 10,000-Watt Monocrystalline PV Grid-Tied Solar Power Kit*, HOME DEPOT, http://www.homedepot.com/p/Grape-Solar-10-000-Watt-Monocrystalline-PV-Grid-Tied-Solar-Power-Kit-GS-10K-KIT/203080201?N=bm31Z12li%3FNCNI-5#.Upjs-sRDuB0 (last visited Nov. 25, 2013).

65. The Solar Shade Control Act does simplify the case a bit from a common law nuisance case because it provides a scientific definition of nuisance—"cast[ing] a shadow greater than 10 percent of the collector absorption area upon that solar collector surface at any one time between the

B. STATE SOLAR EASEMENT STATUTES

Thirty states permit property owners to create a solar easement through contract.[66] A typical statute states that

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hours of 10 a.m. and 2 p.m., local standard time." CAL. PUB. RES. CODE § 25982 (2013).

66. These state statutes are: ALASKA STAT. § 34.15.145 (2012) (requiring writing and recording of the size of the easement, any terms and conditions, and compensation for a solar easement); CAL. CIV. CODE § 801.5 (West 2013) (defining solar easements and the minimum requirements for an instrument creating a solar easement); COLO. REV. STAT. §§ 38-32.5-100.3 to -103 (2013) (providing a definition and various requirements for any instrument that creates a solar easement, as well as providing for injunctive relief or other appropriate legal remedies); FLA. STAT. ANN. § 704.07 (West 2013) (requiring six elements in written and recorded easements and protecting solar easements from extinguishment by allowing a solar collector owner to file a notice); GA. CODE ANN. §§ 44-9-20 to -23 (2013) (requiring that solar easements be in writing and include a description of airspace and any terms and conditions of the granting or termination); IDAHO CODE ANN. § 55-615 (2013) (applying writing and recording requirements in regards to the size of the easement, any terms and conditions, and compensation for an easement "obtained for the purpose of exposure of a solar energy device to sunlight"); 30 ILL. COMP. STAT. ANN. 725/1.2(f) (West 2013) (allowing solar skyspace easements for structures, vegetation, or other activity as long as the easement is described in three-dimensional terms and includes criteria for "adequate collection of solar energy"); IND. CODE ANN. §§ 32-23-4-1 to -5 (West 2013) (requiring that solar easements be in writing and must include the angles at which the easement extends over the property subject to the easement); IOWA CODE ANN. § 564A.7 (West 2013) (requiring that solar access easements be in writing and include a legal description of dominant and servient estates and of the space through which the easement extends, in addition to optional provisions such as compensating the burdened owner); KAN. STAT. ANN. §§ 58-3801 to -3802 (2013) (allowing the creation of an easement and requiring they be in writing and recorded with the property deeds); KY. REV. STAT. ANN. § 381.200(2) (LexisNexis 2013) ("A solar easement may be obtained for the purpose of ensuring access to direct sunlight."); ME. REV. STAT. ANN. tit. 33, § 1401 (2013) (providing that such easements run with the land and are subject to court-decreed abandonment and other limitations); MD. CODE ANN., REAL PROP. § 2-118 (LexisNexis 2013) (establishing an "incorporeal property interest . . . enforceable in both law and equity" for easements, conditions, or restrictions which relate to the "[p]reservation of exposure of solar energy devices"); MINN. STAT. ANN. § 500.30 (West 2013) (analogizing solar easements to any other conveyance and providing enforcement for solar easements by injunction or other proceedings in equity); MO. ANN. STAT. § 442.012 (West 2013) (calling solar energy a "property right," not subject to eminent domain, for which easements must be expressly negotiated); MONT. CODE ANN. §§ 70-17-301 to -302 (2013) (requiring that size, terms and conditions, and termination provisions of an easement be in writing); NEB. REV. STAT. §§ 66-909 to -911 (2013) (defining a "solar skyspace easement" and requiring a description of the vertical and horizontal angles of the easement); NEV. REV. STAT. §§ 111.370–.380 (2013) (providing detailed definitions of the easement, its vesting, and three methods of termination); N.H. REV. STAT.

property owners can enter into an agreement for a solar easement that is appurtenant to the Southern Neighbor's property.[67] While these statutes formalize the ability to create a solar easement, almost all are permissive, not mandatory.[68] Consequently, such easements have been labeled an "inexpensive form of legislative cheerleading"[69] for solar power

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ANN. §§ 447:49–:50 (2001) (defining a "solar skyspace easement" to include the easement form and requiring certain information to be provided therein); N.J. STAT. ANN. §§ 46:3-24 to -26 (West 2003) (requiring writing and recording of the size of the easement, any terms and conditions, and compensation); N.Y. REAL PROP. LAW §335-b (McKinney 2013) (requiring the writing and recording of the size of the easement, any terms and conditions, and compensation); N.D. CENT. CODE §§ 47-05-01.1 to -01.2 (2013) (requiring writing of the easement and subjecting it to the same regulations as other easements); OHIO REV. CODE ANN. § 5301.63 (LexisNexis 2013) (describing five necessary elements for solar access easements and allowing for owners of benefited land to access any equitable remedy and damages for obstruction); OR. REV. STAT. ANN. §§ 105.890, .895 (West 2013) (making easements appurtenant to the host property and requiring an easement to contain a description of the easement and a legal description of both properties); R.I. GEN. LAWS §§ 34-40-1 to -2 (2013) (defining "solar easement" to include restrictions, easements, covenants, or conditions to a deed "for the purpose of ensuring adequate exposure of a solar energy system"); TENN. CODE ANN. §§ 66-9-204 to -206 (2013) (providing the statutory assumption that such easement runs with the land); UTAH CODE ANN. §§ 57-13-1 to -2 (2013) (defining solar easements, setting out writing requirements and allowing enforcement by injunction); VA. CODE ANN. §§ 55-352 to -354 (2013) (requiring writing and recording of the size of the easement, any terms and conditions, and compensation for solar easements); WASH. REV. CODE ANN. §§ 64.04.140–.170 (West 2013) (requiring a "description of the extent of the solar easement which is sufficiently certain to allow the owner of the real property subject to the easement to ascertain the extent of the easement," and providing remedies such as actual damages, reasonable attorney's fees, and injunctions); WIS. STAT. ANN. § 700.35 (West 2013) (defining "renewable energy resource easement" as "an easement which limits the height or location, or both, of permissible development on the burdened land in terms of a structure or vegetation, or both, for the purpose of providing access for the benefited land to wind or sunlight passing over the burdened land").

67. Some specifically run with the land. *E.g.*, IDAHO CODE § 55-615; IND. CODE ANN. § 32-23-4-5. Some are "subject to the same conveyancing and instrument recording requirements as other easements." *E.g.*, COLO REV. STAT. § 38-32.5-101; FLA. STAT. ANN. § 704.07; GA. CODE ANN. § 44-9-22. Some do not mention it. *E.g.*, CAL. CIV. CODE § 801.5; IOWA CODE ANN. § 564A.7. It seems to be assumed that they run with the land.

68. Iowa appears to be the sole exception, creating a right to force an easement on the neighboring property once a third party establishes a fair price that the solar host must pay. IOWA CODE § 564A.4 (2010).

69. DUVIVIER, *supra* note 30, at 55 (quoting Donald N. Zillman*, Common-Law Doctrines and Solar Energy*, *in* LEGAL ASPECTS OF SOLAR ENERGY 25, 32 (John H. Minan & William H. Lawrence eds., 1981)).

because they provide little improvement over common law tort remedies such as negligence.[70]

In addition, these easement statutes come with a price against solar rights. First, they make it clear that, to be valid, the solar easement must be in writing.[71] Second, some states also would invalidate any solar easements that are not properly recorded.[72] Finally, and perhaps most importantly, these statutes generally eliminate the common law remedy that a Solar Host might have for a prescriptive easement.[73]

Although solar easement statutes do little to promote solar power—they simply allow for voluntary agreements between neighboring owners and providing little to no additional protection for a Solar Host[74]—five states have added solar

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70. *See id.* at 55 ("They are an improvement over the common law because they recognize solar rights and cut back on some impediments, but they do not go to the next level of actually promoting solar uses.").

71. *See, e.g.*, COLO. REV. STAT. § 38-32.5-101; IOWA CODE ANN. § 564A.7(2).

72. *See, e.g.*, KAN. STAT. ANN. § 58-3801 ("Any easement obtained for the purpose of exposure of a solar energy device shall be created in writing. The instrument containing such easement shall be recorded with the register of deeds of the county within which the property affected by such easement is situated.").

73. *See, e.g.*, COLO. REV. STAT. § 38-32.5-101 ("Any easement obtained for the purpose of exposure of a solar energy device shall be created in writing and shall be subject to the same conveyancing and instrument recording requirements as other easements; except that a solar easement shall not be acquired by prescription."). One of the remedies sought by the plaintiff in the seminal *Prah* case was effectively a prescriptive easements under the doctrine of prior appropriation. Prah v. Maretti, 321 N.W.2d 182, 186 (Wis. 1982). One hurdle faced with such a remedy is showing some type of intrusion onto the neighbor's land, *id.* at 186 n.4, which is difficult when the sunlight effectively comes through Skyspace B without any action on the part of the Solar Host owner. *See supra* Part II.B.

74. One exception is Iowa's easement statute, which allows a solar host to force an unwilling neighboring property owner to provide an easement. IOWA CODE ANN. §§ 564A.4–.5.1 (2013) (outlining the process of an application, a board hearing, and a grant of an easement on a neighboring property). At least one author believes this is the best form of government intervention because it "both recognizes landowners' legal entitlement in the airspace above their land and provides [solar hosts] an alternative means of purchasing solar access rights from neighbors when voluntary bargaining proves unsuccessful." Troy A. Rule, *Shadows on the Cathedral: Solar Access Laws in a Different Light*, 2010 U. ILL. L. REV. 851, 854, 896 (2010). While the Iowa easement approach may represent a sensible statutory solution to the holdout problem, it still places significant burdens on the Solar Host, including the burden of initiating the negotiation, of initiating the action before the solar

easement statutes since the early 1980s.[75] However, one state, Illinois, seems to have repealed its early 1980s solar easement statute with no explanation.[76]

C. STATE STATUTES AUTHORIZING LOCAL REGULATION OF SOLAR ACCESS

Another popular form of cheerleading for solar power by legislators appears to be state statutes that pass the buck to local authorities. By the early 1980s, the list of state solar statutes included eleven authorizing local governments to enact zoning regulations that reflect an awareness of solar access.[77]

A majority of the statutes delegating power to local governments to determine the extent of protections for solar access were merely permissive.[78] While these statutes may be useful to acknowledge and encourage local action on solar access, "they do nothing more than allow [hundreds of] individual Cities and Towns to create a patchwork of zoning regulation."[79] Again, despite the fact that these statutes provided little overall protection for solar access, two states—

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access regulatory board, and for paying both legal fees and the cost of the easement as determined by the board. IOWA CODE ANN. §§ 564A.4–.5.

75. Alaska, Iowa, Kentucky, New Hampshire, and New Jersey are the states with new solar easement statutes. *Compare* Lyden, *supra* note 44, at 393 (citing the twenty-six states that have enacted statutes), *with supra* note 66 (listing the most recent statues in thirty states).

76. Illinois' 1977 Comprehensive Solar Energy Act includes a definition of a solar skyspace easement, but has no other provisions beyond that. 30 ILL. COMP. STAT. ANN. 725/1.2(f) (West 2013). Its legislative history gives no hints as to what has happened to the rest of it. *See* 5 ILL. COMP. STAT. ANN. 80/5 (West 2006). The other twenty-five states with solar easement statutes from the early 1980s still have them on the books, even if they appear to be rarely, if ever, used. *See supra* note 44.

77. ARIZ. REV. STAT. ANN. § 9-462.01(A)(3) (1979); COLO. REV. STAT. § 31-23-301 (1979); ME. REV. STAT. ANN. tit. 30, § 4961(1) (1987); MINN. STAT. ANN. § 394.25(2) (1974); N.Y. GEN. CITY LAW § 20(24) (McKinney 1977); N.Y. TOWN LAW § 263 (McKinney 1979); N.Y. VILLAGE LAW § 7-704 (McKinney 1979); OR. REV. STAT. §§ 215.044(1), 227.190(1) (1981); TENN. CODE ANN. §§ 13-7-101, -210 (1979); UTAH CODE ANN. §§ 17-27-4, -11, -11.5, -11.6 (West 1983); UTAH CODE ANN. § 10-9a-610 (West 2005); VT. STAT. ANN. tit. 24, § 4407(13) (2003); WASH. REV. CODE ANN. §§ 35.63.080, .090 (1979); Lyden, *supra* note 44, at 398 n.205 (citing CONN. GEN. STAT. ANN. § 8-2 (West Supp. 1983)).

78. *Cf.* Lyden, *supra* note 44 ("[S]ome states make [the inclusion of solar access element in their comprehensive plans] permissive.").

79. Missirian, *supra* note 41, at 317.

Maine and Vermont—no longer have the local government solar authorization statutes that they had in the early 1980s.[80]

According to Lyden's *An Integrated Approach to Solar Access*, Maine was one of twelve states in 1984 that "expressly authorize[d] local governments to zone for solar access."[81] However, this statute was repealed in 1987.[82] In fact, the general planning and zoning statute for Maine was repealed in that year and divided among other sections of Maine's code.[83] The state's new zoning statutes, revised in 1987 and again in 1993, do not mention any sort of energy considerations at all.[84] At least one expert in Maine law believes the elimination of any language in the statewide statute that authorized local governments to zone for solar reflects an overall shift, from a Dillon Rule delegation of authority regime, to a Home Rule recognition in Maine.[85] Maine recognizes that local governments have more Home Rule powers and do not need express permission from the state legislature to validate their actions.[86]

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80. ME. REV. STAT. ANN. tit. 30, § 4961(1) (repealed 1987); VT. STAT. ANN. tit. 24, § 4407(13) (repealed 2003).

81. Lyden, *supra* note 44, at 398.

82. ME. REV. STAT. ANN. tit. 30, § 4961 (repealed 1987).

83. *Cf.* ME. REV. STAT. tit. 30-A, §§ 4501–4504 (repealed 1987), *available at* http://www.mainelegislature.org/legis/statutes/30-A/title30-Ach191sec0.html (last visited Oct. 12, 2013) (listing the zoning statutes that have been repealed).

84. ME. REV. STAT. tit. 30-A, § 4352 (2013), *available at* http://www.mainelegislature.org/legis/statutes/30-A/title30-Asec4352.html. There is no legislative history available for these statutes. The Maine Legislature page says that these ordinances are up to date subject to the 1987 laws, *id.* The Maine Legislature only says that § 4357 is repealed. ME. REV. STAT. ANN. tit. 30-A, § 4357 (repealed 2013). The current statute merely mentions that "[a] municipal zoning ordinance may provide for any form of zoning consistent with this chapter, subject to the following provisions." *Id.* § 4352. The provisions include a requirement (1) that the public be allowed to participate, (2) that zoning ordinances must be consistent with comprehensive plans, and (3) that the planning authority must provide a map. *Id.* § 4352(1)–(3). The only provision that could allude to energy zoning is the last sentence of subsection 2, which says what is not included: "For purposes of this subsection, 'zoning ordinance' does not include a cluster development ordinance or a design ordinance prescribing the color, shape, height, landscaping, amount of open space or other comparable physical characteristics of development." *Id.* § 4352(2). No energy use—solar or otherwise—is mentioned at all.

85. Telephone Interview with Orlando E. Delogu, Professor Emeritus, Univ. of Me. Sch. of Law (July 22, 2013).

86. *Id.*

Like Maine, Vermont[87] was one of the twelve states that "expressly authorize[d] local governments to zone for solar access" in 1984.[88] Vermont's statute allowing local governments to zone for solar access was also repealed, but not until 2003.[89] As with the Maine statutes, not only solar regulations were repealed, but also all of the provisions allowing and limiting zoning regulations.[90] Vermont's lack of further solar access laws has been noted as "surprising, given the other pro-solar/renewable energy policies in the state . . . ."[91] So even though statewide statutes authorizing solar regulation existed, they were not particularly generous towards solar energy in particular, but more permissive of municipalities supporting renewable energy resources as a whole.

D. LOCAL SOLAR ORDINANCES

Whether or not states delegated control to local authorities, the real powers behind solar access control have traditionally been held by local and municipal governments.[92] Many state statutes do no more than give local governments the power to pass ordinances and regulations that promote solar energy.[93] It is these local governments that then determine whether they will protect solar energy sources, impede them, or essentially do nothing.[94]

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87. VT. STAT. ANN. tit. 24, § 4407(13) (1984).

88. Lyden, *supra* note 44, at 398.

89. VT. STAT. ANN. tit. 24, § 4407(13) (repealed 2003).

90. *Id.* §§ 4404–4409 (repealed 2003). The original text that allowed for solar read: "Any municipality may adopt zoning regulations including any of the following provisions: Conditional uses . . . . Such general standards shall require that the proposed conditional use shall not adversely affect: . . . *Utilization of renewable energy resources*." *Id.* § 4407(2)(E) (emphasis added). Additionally, "[a]ny municipality may adopt zoning and subdivision regulations to *encourage protection and access to renewable energy resources*." *Id.* § 4407(13) (emphasis added).

91. KETTLES, *supra* note 44, at 6. Kettles adds that Connecticut, Illinois, Pennsylvania, and Texas also have a surprising lack of protection for solar easements or solar rights. *Id.*

92. *See* Martin Jaffe, *A Commentary on Solar Access: Less Theory, More Practice*, 2 SOLAR L. REP. 769, 770 (1980) ("In some states, . . . the state has essentially tossed the ball into the local court.").

93. *See* Lyden, *supra* note 44, at 399 n.214 (citing seven states that, in the early 1980s, gave local governments the power to pass regulation).

94. *Cf. id.* at 397–98 ("Delegating responsibility for protecting solar access to the local level entails both advantages and disadvantages.").

Around the same time most states were passing solar laws, cities and counties began to do the same.[95] These laws were of a slightly different nature from state laws. While state laws were broad and permissive, the local laws that came out tended to be narrower and mandatory.[96] Very few local governments chose to pass regulations or ordinances that merely permitted or mandated solar easements.[97] More often, local regulations came in the form of land use plans and zoning ordinances.[98] Setbacks from property lines and height requirements were the most common form,[99] with some more energy-astute municipalities mandating forms of solar heat or a percentage of solar-based energy for new subdivisions or buildings.[100]

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95. *Compare supra* note 44 (compiling sources that address solar energy access rule or regulation adopted in twenty-nine states in the late 1970s and early 1980s), *with infra* note 101 (compiling city- and county-level legislation that address solar access adopted in twenty-seven places in the late 1970s and early 1980s).

96. *See infra* note 100.

97. *Cf.* Jaffe, *supra* note 92, at 770–79 (discussing local government regulations such as zoning, building orientation, and solar access, but without elaborating on easements). In fact, none of the regulations discussed here chose to pass regulation or ordinances that merely permitted or mandated solar easements.

98. *See, e.g.*, *id.* at 770–72 (discussing local zoning regulation).

99. *See, e.g.*, *id.* at 771 (describing an Albuquerque, NM ordinance that is inspired by the solar envelope approach). The solar envelope approach, developed by architecture professor Ralph L. Knowles, is where "[b]uildings within [a boundary] will not overshadow their surroundings during critical periods of the day and year." Ralph L. Knowles, *The Solar Envelope*, USC RES. COMPUTING FACILITY, http://www-bcf.usc.edu/~rknowles/sol_env/sol_env.html (last visited Oct. 20, 2013).

100. Cerritos, California requires solar water heaters in half of residential condominium conversion projects. CERRITOS, CAL., CODE § 22.50.070(4), *available at* http://www.codepublishing.com/CA/cerritos/?Cerritos22/cerritos2250.html&?f. Santa Clara, California passed Ordinance No. NS 1207 in February 1980. It required: "mandatory energy audits upon sale of houses in unincorporated areas; protection of solar access in new subdivisions; solar water heaters in new housing in unincorporated areas; [and] mandatory retrofits of existing houses on resale starting in 1983." *Current Developments*, 2 SOLAR L. REP. 453, 473 (1980) [hereinafter *1980 Current Developments*]. Del Mar and San Dimas, California had similar provisions. *1980 Current Developments*, *supra*, at 475; SAN DIMAS, CAL., Ordinance 678 (repealed 1980) *noted in Ordinance List*, SAN DIMAS MUNICIPAL CODE (July 11, 2013), http://qcode.us/codes/sandimas/ (follow "Ordinance List" on the left). These provisions have since been altered. *See* DEL MAR, CAL., SOLAR ENERGY ORDINANCE §§ 23.20.010–.150 (1997). Del Mar mandated "the use of solar energy in new construction for space heating, hot water, and swimming pools." *1980 Current Developments*, *supra*, at 475. San Diego also mandated solar

In the late 1970s and early 1980s, twenty-seven cities or counties had some sort of solar access regulation, law, or ordinance[101] that gained more than regional attention.[102] Shockingly, thirteen, or almost half of the twenty-seven originally enacted, are now amended, repealed, or simply

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water heaters in new homes, but none of those provisions exist anymore. *Current Developments*, 1 SOLAR L. REP. 3, 10–11 (1979) [hereinafter *1979 Current Developments*].

101. CERRITOS, CAL., GENERAL PLAN § 4.08 (1978); DEL MAR, CAL., ORDINANCE No. 306 (1980), *discussed in 1980 Current Developments*, *supra* note 100, at 475; SACRAMENTO COUNTY, CAL., Res. no. 77-987 (1977), *cited in* Jaffe, *supra* note 92, at 773 n.19; SAN DIEGO COUNTY, CAL., ORDINANCE 5324 (1977), *cited in 1979 Current Developments*, *supra* note 100, at 11; SAN DIEGO COUNTY, CAL., ORDINANCE 5589 (1979), *cited in* Jaffe, *supra* note 92, at 773 n.18; SAN DIMAS, CAL., ORDINANCE 678 (repealed 1980), *noted in Ordinance List*, SAN DIMAS MUNICIPAL CODE (July 11, 2013), http://qcode.us/codes/sandimas/ (follow "Ordinance List" on the left); SANTA BARBARA, CAL., ORDINANCE 3115 (1979), *discussed in Current Developments,* 1 SOLAR L. REP. 527, 530–31 (1979); SANTA CLARA, CAL., ORDINANCE No. NS 1207 (1981), *discussed in 1980 Current Developments*, *supra* note 100, at 473; BOULDER, COLO., ORDINANCE 4208 (1977), *cited in* Jaffe, *supra* note 92, at 772 n.12; COLO. SPRINGS, COLO. (proposed 1981), *cited in* Melvin M. Eisenstadt & Albert E. Utton, *Access to Sunlight: A Legislative Approach*, *in* LEGAL ASPECTS OF SOLAR ENERGY, *supra* note 69, at 45, 47 & 64 n.11; DENVER, COLO. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; PITKIN COUNTY, COLO. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; Cheshire, Conn., Proposed Zoning Amendments for Planned Solar Developments (1980), *cited in* Jaffe, *supra* note 92, at 772 n.13; PALM BEACH COUNTY, FLA. (1979), *discussed in Current Developments,* 1 SOLAR L. REP. 527, 538–39 (1979); Lincoln, Neb., Res. A-66456 (1979), *cited in* Jaffe, *supra* note 92, at 772 n.11; ALBUQUERQUE, N.M., COMPREHENSIVE CITY ZONING CODE (1977), *cited in* Jaffe, *supra* note 92, at 772 n.6; LOS ALAMOS, N.M., ZONING CODE art. V-C, § 11 (1977), *cited in* Jaffe, *supra* note 92, at 771 n.6; Taos, N.M., Ordinance Declaring Solar Rights (1978), *cited in* Eisenstadt & Utton, *supra*, at 51 & 64 n.33; PORTLAND, OR. (1979), *discussed in Current Developments*, 1 SOLAR L. REP. 1055, 1067 (1979); WOODBURN, OR., ORDINANCE 1736 (1981), *discussed in Current Developments*, 3 SOLAR L. REP. 1, 25 (1981); ASHLAND, OR., CODE ch. 18-70 (1981), *discussed in Current Developments*, 3 SOLAR L. REP. 1, 25 (1981); PORT ARTHUR, TEX., ORDINANCE 79-78, amending Ch. 19 (1979), *cited in* Jaffe, *supra* note 92, at 773 n.20; ADDISON TOWNSHIP, VT. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; FERRISBOROUGH, VT. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; MADISON, WIS. (1980), *discussed in 1980 Current Developments*, *supra* note 100, at 467; SOLDIER'S GROVE, WIS. (1980), *discussed in 1980 Current Developments*, *supra* note 100, at 468; *see* Jaffe, *supra* note 92, at 771–72 (summarizing Los Angeles' plans for a large scale zoning for solar access); *Current Developments*, 3 SOLAR L. REP. 1, 10–11 (1981–1982) [*hereinafter 1981–82 Current Developments*] (describing Middlebury, CO, regulations providing solar access to new developments).

102. Meaning, news of the ordinance was published elsewhere.

cannot be found.[103] Statistics on how many more city or county ordinances have been repealed, or amended so they no longer include solar protections are uncertain, due to the lack of legislative history at this level.[104] Information as to why these were repealed is also difficult or impossible to find.

One example of a local ordinance that has since been repealed is that of Portland, Maine. Article X of Portland's current ordinance allows "the reasonable use of locally generated alternative sources of energy supply that help reduce greenhouse gas emissions . . . ."[105] The "purpose" section of the ordinance references "wind, solar, and geothermal energy generation."[106] However, despite the Division on Wind Energy Generation encompassing fourteen sections of the article, solar and geothermal are nowhere to be found.[107]

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103. CERRITOS, CAL., GENERAL PLAN § 4.08 (repealed); SACRAMENTO COUNTY, CAL. (although city ordinances still exist); SAN DIMAS, CAL., ORDINANCE 678 (repealed 1980), *noted in Ordinance List*, SAN DIMAS MUNICIPAL CODE (July 11, 2013), http://qcode.us/codes/sandimas/ (follow "Ordinance List" on the left); COLO. SPRINGS, COLO. (proposed 1981), *cited in* Eisenstadt & Utton, *supra* note 101, at 45, 47 & 64 n.11; DENVER, COLO. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; Cheshire, Conn., Proposed Zoning Amendments for Planned Solar Developments (1980), *cited in* Jaffe, *supra* note 92, at 772 n.13; MIDDLEBURY, CONN., *cited in 1981–82 Current Developments*, *supra* note 101, at 10–11; PALM BEACH COUNTY, FLA. (1979), *discussed in Current Developments,* 1 SOLAR L. REP. 527, 538–39 (1979); Taos, N.M., Ordinance Declaring Solar Rights (1978), *cited in* Eisenstadt & Utton, *supra* note 101, at 51 & 64 n.33; PORTLAND, OR. (1979), *discussed in Current Developments*, 1 SOLAR L. REP. 1055, 1067 (1979); ADDISON TOWNSHIP, VT. (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79; FERRISBOROUGH, VT (date unknown), *cited in* Bradbrook, *supra* note 44, at 195 n.79. *Compare* LINCOLN, NEB., MUNICIPAL CODE ch. 3.00, sec. 2 (2000), *available at* http://lincoln.ne.gov/city/attorn/designs/ds300.pdf (requiring environmental performance standards), *with Lincoln Municipal Code Book Table of Contents*, CITY LINCOLN CITY ATT'Y, http://lincoln.ne.gov/city/attorn/lmc/contents.htm#03 (last visited Oct. 20, 2013) (listing chapters 2.81 and 3.04 but not chapter 3.00).

104. *See Primary Authority*, ROBERT CROWN LAW LIBR., https://www.law.stanford.edu/organizations/offices/robert-crown-law-library/brief-guide-to-lowno-cost-online-american-legal-research/primary-authority/legisl (last visited Oct. 20, 2013) (listing federal- and state-level legislative history sources, but failing to list the city-level sources).

105. PORTLAND, ME., CITY CODE § 14-751 (2013).

106. *Id.*

107. *Id.* §§ 14-753 to -767. The eighty-one repealed provisions in the article could be presumed to be the previous solar and geothermal allowances and protections, but nothing shows why these provisions were repealed. *See id.* §§ 14-768 to -849.

E. OTHER SOLAR LEGISLATION THAT HAS BEEN ERODED[108]

Additional solar protection laws mentioned in the literature of the early 1980s include six statutes authorizing local governments to protect solar access through regulation of new subdivisions[109] and two statutes requiring local governments to include a solar access element in new comprehensive plans.[110]

By 1984, seven states had enacted permissive statutes "authoriz[ing] local governments to protect solar access through subdivision regulation."[111] In Maine, the subdivision regulation statute was repealed by the same overhaul laws that repealed

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108. The text that follows above in Part III.E does not address six statutes from the early 1980s that authorized local governments to void covenants or deeds that prohibited, or effectively prohibited, installation of solar energy systems. CAL. CIV. CODE § 714 (1979); COLO. REV. STAT. § 38-30-168(1) (1979); FLA. STAT. § 163.04 (1980); MD. CODE ANN., REAL PROP. § 2-119(1) (1980); OR. REV. STAT. §§ 105.880(1), .880(2) (1979); UTAH CODE ANN. § 17-27-11.6 (West 1983); *see* Lyden, *supra* note 44, 399 n.214. While these statutes help eliminate some restrictions that prevent installation of solar devices, they do nothing to protect solar access once a system is installed. Additional states have added similar statutes since the 1980s. For example, Maine's statute, added in 2009, defines solar rights, explains the policy behind their protection, and sets standards for the use and installation of solar energy devices. ME. REV. STAT. tit. 33, §§ 1421–1424 (2013). Maine's statutes were enacted to fulfill the State policy of "promot[ing] the use of solar energy and [ ] avoid[ing] unnecessary obstacles to the use of solar energy devices." *Id.* § 1422. Under the statute, a "legal instrument," defined as municipal ordinances or regulations, as well as the rules or regulations of an association of property owners and deeds, restrictive covenants, or contracts, *id.* § 1421(1), generally cannot prohibit a person from installing or using a solar energy device or clothesline on residential property. *Id.* § 1423(2). Vermont adopted a statute protecting renewable energy in the same year that Maine did. Similar to the Maine Solar Rights Act, the Vermont statute prohibits deed restrictions, covenants, or other agreements that run with the land from prohibiting or effectively prohibiting solar collectors, clotheslines or other renewable energy devices. VT. STAT. ANN. tit. 27, § 544(a) (2009). However, the Vermont law does not prohibit municipal regulations from doing the same thing, although that could be implied. *Id.*

109. CAL. GOV'T CODE § 66475.3 (1978); CONN. GEN. STAT. ANN. § 8-25(b) (1979); FLA. STAT. ANN. § 163.04 (1980); ME. REV. STAT. ANN. tit. 30, § 4956(3) (1990); MINN. STAT. § 462.358(2)(a) (1980); OR. REV. STAT. § 92.044(1)(a)(C) (1981); *see* Lyden, *supra* note 44, at 399.

110. ARIZ. REV. STAT. ANN. § 9-461.05(c)(1) (1979); MINN. STAT. § 462.39 (1978); *see* Lyden, *supra* note 44, at 398 & nn.202–03.

111. Lyden, *supra* note 44, at 399 & n.214 (citing the state statutes of California, Connecticut, Maine, Minnesota, Oregon, Utah, and Vermont).

zoning regulations in 1987.[112] The other six state laws allowing solar access subdivision regulation remain unchanged.[113]

Very few of the state statutes *required* the protection of solar access by local governments.[114] Of those that did, only New York's zoning statutes mandated zoning that accommodates solar energy systems and access to the sun.[115] Arizona and Minnesota required solar elements in comprehensive plans.[116] While Arizona's is still in place,[117] Minnesota's is now gone.[118]

In 1984, Minnesota had one of the most extensive sets of solar access laws.[119] It had a solar access easement statute,[120] permitted local zoning for solar access,[121] authorized local governments to protect solar access through subdivision regulation,[122] and required (not just permitted) local

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112. ME. REV. STAT. ANN. tit. 30-A, § 4956 (repealed 1987). Not only was section 4956 repealed, it has disappeared completely. *See* ME. REV. STAT. tit. 30, tit. 31 (2013), *available at* http://www.mainelegislature.org/legis/statutes/ (last visited Oct. 12, 2013) (directing to the statutes that have been repealed); *supra* text accompanying notes 81–84.

113. *Compare* MINN. STAT. § 462.358(2)(a) (1984), *with* MINN. STAT. ANN. § 462.358(2)(a) (West 2013).

114. *Cf.* Lyden, *supra* note 44, at 398 ("Twelve states expressly authorize local governments to zone for solar access.").

115. N.Y. GEN. CITY LAW § 20(24) (McKinney 1977) is now just a permissive zoning regulation. The current statutes say that towns *may* enact zoning regulations, N.Y. TOWN LAW § 262 (McKinney 2013), but that these regulations *shall* be made to accommodate solar energy systems. *Id* § 263.

116. *See supra* note 110.

117. ARIZ. REV. STAT. ANN. § 9-461.05.C.1(d) (2013).

118. *See* MINN. STAT. ANN. § 462.39(3) (West 2013) (omitting any language about solar energy); MINN. STAT. ANN. § 473.859(2) (West 2013) (referencing solar energy only under subsection about land use plan).

119. *See* Lyden, *supra* note 44, at 393 (listing the elements for an "integrated approach to solar access").

120. MINN. STAT. § 500.30 (1984); Lyden, *supra* note 44, at 393 & n.171.

121. MINN. STAT. §§ 394.25(2), 462.357(1) (1984); Lyden, *supra* note 44, at 398 n.203.

122. MINN. STAT. § 462.358(1)(a), (2)(a) (1984); Lyden, *supra* note 44, at 399 n.214. Part of section 462.358(2) was added by amendment in 1978. MINN. STAT. ANN. § 462.358(2) (West 1984), Historical and Statutory Notes. The following provision was repealed in 1980 along with other large sections that were then renumbered:

> A municipality may, for purposes of protecting and assuring access to direct sunlight for solar energy systems, prohibit, restrict, or control development through subdivision regulations. The regulations may call for subdivision development plans containing restrictive

governments to include a solar element in their comprehensive plans.[123] While most of these regulations are still in place,[124] the last in the list above—Minn. Stat. Ann. § 462.39, which required solar planning—no longer mentions solar energy anywhere in the text.[125]

IV. A CASE FOR STRONGER LEGISLATIVE PROTECTIONS FOR SOLAR SKYSPACE B

U.S. installations of grid-connected PV are growing exponentially, from less than one hundred megawatts (MW) in 2002 to over four gigawatts (greater than 4000 MW) in 2011.[126] In contrast, there were fewer than ten MW of PV in 1982.[127]

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covenants, height restrictions, side yard and setback requirements, or other permissible forms of land use controls.

Id. The quoted section was reinserted as subdivision (2)(a) in 1981. *Id.*

123. MINN. STAT. §§ 462.39(3), 473.859(2) (1984); Lyden, *supra* note 44, at 398 & n.203.

124. *See, e.g.*, MINN. STAT. § 500.30 (2013).

125. *See* MINN. STAT. ANN. § 462.39 (West 2013). The closest sentence that could be seen as giving a nod to mandatory solar elements in comprehensive plans is as follows: "The [comprehensive] plans shall recognize and incorporate planning principles which encompass physical, social, or economic needs of the region." *Id.* § 462.39(3). The 1978 amendment that included "*access to direct sunlight for solar energy systems* to the list of future developments having a region-wide impact which should be recognized by the comprehensive development plan" was eliminated in the 1997 amendment. *Id.* § 462.39 *in* History: Editor's and Revisor's Notes. Laws 1997, c. 231, art. 12, §§ 12–13 (emphasis added). The legislative history available does not mention why. *Id*. In all of the available journals that address the bill that amends the statute, no mention of solar energy is made. H.R. JOURNAL, 80-63, 80th Sess., at 4985 (Minn. 1997); S. JOURNAL, 80-63, 80th Sess., at 3809 (Minn. 1997); S. JOURNAL, 80-58, 80th Sess., at 2933 (Minn. 1997); S. JOURNAL, 80-58, 80th Sess., at 2933 (Minn. 1997); S. JOURNAL, 80-53, 80th Sess., at 2765 (Minn. 1997); H.R. JOURNAL, 80-51, 80th Sess., at 3531 (Minn. 1997); S. JOURNAL, 80-50, 80th Sess., at 2639 (Minn. 1997); S. JOURNAL, 80-49, 80th Sess., at 2597 (Minn. 1997); H.R. JOURNAL, 80-48, 80th Sess., at 3215 (Minn. 1997); S. JOURNAL, 80-48, 80th Sess., at 2411 (Minn. 1997); H.R. JOURNAL, 80-47, 80th Sess., at 3113 (Minn. 1997); H.R. JOURNAL, 80-46, 80th Sess., at 3029 (Minn. 1997); H.R. JOURNAL, 80-45, 80th Sess., at 2837 (Minn. 1997).

126. SHERWOOD, *supra* note 57, at 4.

127. *Id.* at 11 fig.6. Although this figure does not provide an exact number of MW in 1982, only 6897 PV cells and modules were shipped in the United States as of 1982. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 2011, at 297 tbl.10.8 (U.S. Energy Info. Admin. ed., 2012), *available at* http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb1008. If each of these cells or modules represented one kW, the 6897 could account for approximately 6.9 MW. Note that "other fuels" increased from 6.4% of the U.S. mix in 1970 to 13.5% of the mix in 1985, thus growing about 111% in fifteen

Yet, the research here indicates the U.S. laws provide significantly fewer solar access protections than were available in the 1980s.[128]

A. COMMON LAW RATIONALES

1. *Ad Coelum* Doctrine

One powerful common law theory of property makes it difficult for Solar Hosts to protect Solar Skyspace B from obstructions added *after* installation of solar arrays: the *ad coelum* doctrine.[129] This doctrine recognized property rights from the surface to the center of the earth and up to the heavens.[130] Under this rationale, the Southern Property would seem to have a right to use Solar Skyspace B with impunity because this portion of the solar skyspace is situated vertically upward from the Southern Property's boundary lines on the surface.

U.S. law has seen several modifications of this *ad coelum* model. In many instances, the surface owner cannot claim rights to the center of the earth. Under the dominant-servient estate doctrine, the subsurface mineral estate has a priority right of use over the surface estate.[131]

Therefore, when mineral rights are severed, the surface owner does not own below a few feet into the ground.

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years. In contrast, they grew only about 25%—from 13.5% to 16.9% from 1985 to 2010. Missirian, *supra* note 41, at 307–08; CARL E. BEHRENS & CAROL GLOVER, U.S. ENERGY: OVERVIEW AND KEY STATISTICS 5 tbl.2 (Congressional Research Service ed., 2012), *available at* http://www.fas.org/sgp/crs/misc/R40187.pdf.

128. *See supra* Part II.

129. *See* DUVIVIER, *supra* note 30, at 51.

130. "[*Ad coelum*] is [an] ancient doctrine that at common law, ownership of the land extended [from the surface of the property upwards] to the periphery of the universe—Cujus est solum ejus est usque *ad coelum*." U.S. v. Causby, 328 U.S. 256, 260–61 (1946).

131. *See, e.g.*, Champlin Refining Co. v. Corp. Comm'n of State of Okla., 286 U.S. 210, 233 (1932) ("In Oklahoma, as generally elsewhere, land owners do not have absolute title to the gas and oil that may permeate below the surface."); Jilek v. Chi., Wilmington & Franklin Coal Co., 47 N.E.2d 96, 98 (Ill. 1943) ("It has long been recognized in this State that mineral rights may be severed from the surface rights and conveyed separately, and that the two estates are thus created in the land, each of which is distinct, and each of which may be conveyed or devised, and each is subject to taxation."); *see also* Troy A. Rule, *Property Rights and Modern* Energy, 20 GEO. MASON L. REV. 803, 805–09 (2013).

Furthermore, once air travel became prevalent, it was obvious that a scheme of individual property rights that extended vertically up to the heavens was also not workable.[132] So, in recognizing the concept of navigable airspace for aircraft flying above one's surface,[133] the U.S. Supreme Court stated in *United States v. Causby*, "[the *ad coelum*] doctrine has no place in the modern world."[134]

Yet, the *Causby* Court maintained the *ad coelum* concept for the area from the surface of a property to navigable airspace.[135] Just as flight technology made portions of the *ad coelum* doctrine obsolete, solar PV technology may be another indication that *ad coelum* may be out of place for other unused portions of property vertically above the surface survey lines.[136]

2. Pre-Industrial Revolution Property Theories

Natural rights are "inherent, universal rights that are justified outside of law but may nonetheless find expression in the law."[137] Certain aspects of property ownership, such as the *ad coelum* doctrine, have historically been considered natural property rights.[138]

While the *ad coelum* right appears to be one of the biggest impediments working against any protection from obstruction of Solar Skyspace B, another natural right might be raised to counter it. Solar Hosts could assert a right to use their property

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132. *See Causby*, 328 U.S. at 261.

133. The Federal Aviation Act gives the U.S. Government exclusive sovereignty of airspace in the United States, and defines "navigable airspace" as "airspace above the minimum altitudes of flight . . . including airspace needed to ensure safety in the takeoff and landing of aircraft." 49 U.S.C. § 40102(32) (2006 & Supp. V 2011). Navigable airspace usually begins at 500 feet, but can be lower heights for takeoffs and landings. 14 C.F.R. § 91.119(c) (2012); *see also* McCarran Int'l Airport v. Sisolak, 137 P.3d 1110, 1119 (Nev. 2006).

134. *Causby*, 328 U.S. at 261. In *Causby*, landowners sued the United States under the takings doctrine due to frequent flights in the skyspace directly over their property. *Id.* at 258.

135. *Id*. at 264–65 ("The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land.").

136. *See* Troy A. Rule, *Airspace in a Green Economy*, 59 UCLA L. REV. 270, 272–73 (2011) (implying that "solar access laws, green building incentives for natural indoor lighting, and urban garden programs" were competing with infill development and urban tree program for occupation of urban airspace).

137. Sara C. Bronin, *Modern Lights*, 80 U. COLO. L. REV. 881, 889 (2009).

138. *Id.*

in its natural state—including the natural course of the sun through the solar skyspace during the year.[139] John Locke's labor theory of property justified ownership of natural rights only when property owners mixed labor with a natural object, thus creating value.[140] This justified a right of ownership in the fruits of that labor.[141] Under this rationale, the Solar Host first mixed labor (installation of the solar panels) with the unused Solar Skyspace B, and would thus appear to have a superior claim to it over that of the Southern Property under a natural rights theory.

In addition, there are a number of alternative common law rationales that could be argued to support protection of or compensation for Solar Skyspace B. In Blackstone's time, a preeminent right that attached to the ownership of property was the right to remain undisturbed, commonly known as the "right to quiet enjoyment."[142] This right included a positive right to halt any action by a neighbor that would interfere with quiet enjoyment, "for it is incumbent on [a neighboring owner] to find some other place to do that act, where it will be less offensive."[143]

Quiet enjoyment was only sustainable when there were low densities and low levels of economic activities on land that made compromise possible and conflicts rare.[144] As more disruptive uses became more frequent, the common law moved

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139. *Id.* at 886–87, 890.

140. *See* ERIC T. FREYFOGLE, THE LAND WE SHARE: PRIVATE PROPERTY AND THE COMMON GOOD 26 (2003) ("The guiding light of natural-rights thought on property was John Locke and his labor theory of property, under which a person could gain ownership of land only by mixing his labor with it and creating value."). *See generally* JOHN LOCKE, TWO TREATISES OF GOVERNMENT (1690) (enumerating the labor theory of property).

141. *See* FREYFOGLE, *supra* note 140, at 110–15 (citing JOHN LOCKE, SECOND TREATISE OF GOVERNMENT, Chap. V. (1690) and others); *id.* at 112 ("The laborer, Locke reasoned, owned himself and his labor. Because of that ownership, he also owned the fruits of his labor.").

142. *See id.* at 68–69.

143. 3 WILLIAM BLACKSTONE, COMMENTARIES *217–18, *cited in* FREYFOGLE, *supra* note 140, at 68.

144. *See* FREYFOGLE, *supra* note 140, at 68 ("So long as low levels of economic activity made land-use conflicts rare, property-as-dominion worked well enough as a guiding idea. But as land uses intensified, the contradictions within the idea became manifest. One landowner's quiet enjoyment could effectively curtail a neighbor's right to use his land productively.").

to the doctrine of *sic utere tuo ut alienum non laedas,*[145] which allowed use of one's property, so long as it was in a manner that did not injure another.[146] This concept reflects an early appreciation for the interconnectedness of any property rights.[147]

The protection of Solar Skyspace B is consistent with both the quiet enjoyment and *sic utere* property theories. Installation of the panels by the Solar Host does not interfere with the Southern Property's current use of its empty airspace and does not in other ways impact the Southern Property's quiet enjoyment. In addition, if the Southern Property's proposed subsequent use of Solar Skyspace B is of higher value, then it should be willing to compensate the Solar Host for a loss that was not anticipated at the time of installation.

3. The Right to Use

The law of property is "an evolving, organic institution with ownership rights that have varied greatly from era to era and place to place."[148] U.S. property law took a turn toward a new prioritization of a right to use during the early days of the Industrial Revolution.[149] In case after case, U.S. courts focused on prioritizing a right of use that allowed industrial development. Manufacturers, millsite owners, railway companies, and other developers that caused injury to their neighbors were able to avoid paying any damages as long as their actions were done according to industry standards and without malice.[150]

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145. *Sic utere tuo ut alienum non laedas* may be translated as "Use your own property in such a manner as not to injure that of another."

146. 3 BLACKSTONE, *supra* note 143, at *306; *see* FREYFOGLE, *supra* note 140, at 56–58.

147. *See* FREYFOGLE, *supra* note 140, at 56–57 ("Local and colony wide governments might limit how one could use land, and rights of use were always constrained by the equal rights of other owners . . . .").

148. *Id.* at 7.

149. *See generally id.* at 65–99 (describing the development of property law and theory as influenced by industrialization).

150. *See, e.g.*, Pa. Coal Co. v. Sanderson, 6 A. 453, 457, 463 (Pa. 1886). If the property owner acts "without negligence or malice on his part, an unavoidable loss occurs to his neighbor, it is *damnum absque injuria*; for the rightful use of one's own land may cause damage to another, without any legal wrong." *Id.* at 457. *See also* Phelps v. Nowlen, 72 N.Y. 39 (1878) (deciding the defendant was not liable for the malfunction of his embankment); Losee v. Buchanan, 51 N.Y. 476 (1873) (deciding the defendant was not liable for the

The right-to-use focus required rejection of precedents from England and the United States that supported more relational definitions of property. Because one of the principal rationales for this shift to utilitarianism was "[t]o encourage the development of the great natural resources of a country[,] trifling inconveniences to particular persons must sometimes give way to the necessities of a great community."[151] This approach brought about a system that prioritized intensive, industrial land uses and a focus on maximization of financial gain,[152] and, as a result, "innocent victims subsidize[d] the state's aggressive enterprises."[153]

In the context of solar access, some U.S. states quickly recognized a right to light and air under the common law.[154] These rights eroded as the right to use grew in prominence; some courts opined that recognizing a solar right was "not adapted to the growth of a new country . . . ."[155]

The seminal case of *Prah v. Maretti* attempted to put the late nineteenth- and early twentieth-century right-to-use approach into a modern perspective when it noted that the rationales for ignoring solar protections, i.e., a higher priority

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explosion of his steam boiler that injured the plaintiff as long as he was not negligent).

151. *Pa. Coal Co.*, 6 A. at 459.

152. *See* FREYFOGLE, *supra* note 140, at 69–70.

153. *Id.* at 73.

154. *See, e.g.*, Gerber v. Grabel, 16 Ill. 217 (1854) (holding that a declaration of right to light and air is enough to admit proof to it, whether it arises by prescription, contract, or otherwise); White v. Bradley, 66 Me. 254 (1876) (denying the plaintiff's claim of a light easement because they already had as much light and air as everyone else on the street); Story v. Odin, 12 Mass. 157 (1815) (stating that it is not necessary to establish the property is ancient to still have the right to light under the ancient lights doctrine); Sutphen v. Therkelson, 38 N.J. Eq. 318 (N.J. Ch. 1884) (stating that destroying someone's right to light and air is an injury of "irreparable character"); Havens v. Klein, 51 How. Pr. 82 (N.Y. Ct. Com. Pl. 1875) (stating that the right to the use of light and air is passed by express grant or covenant); Hubbard v. Town, 33 Vt. 295 (1860) (deciding that if someone conveys a building to another, they have no right to then build on their own land in a way that will shut out light to that building).

155. *Sutphen*, 38 N.J. Eq. at 322; *see also* Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc., 114 So. 2d 357, 359 (Fla. Dist. Ct. App. 1959) ("[I]t is universally held that where a structure serves a useful and beneficial purpose, it does not give rise to a cause of action, either for damages or for an injunction . . . even though it causes injury to another by cutting off the light and air . . . regardless of the fact that the structure may have been erected partly for spite.").

for a landowner's right of use in comparison to the value of sunlight and society's interest in unimpeded land development,[156] were "factual circumstances and social priorities that are now obsolete."[157]

The *Prah* court justified its decision to allow a property owner who had installed solar devices to maintain a negligence claim by noting that (1) "society has increasingly regulated the use of land by the landowner"; (2) "[as opposed to] sunlight . . . for aesthetic enjoyment or as illumination . . . [a]ccess to sunlight as an energy source is of significance both to the landowner who invests in solar collectors and to a society which has an interest in developing alternative sources of energy"; and (3) "the policy of favoring unhindered private development . . . [and] [t]he need for easy and rapid development is not as great today as it once was, while our perception of the value of sunlight as a source of energy has increased significantly."[158]

In addition, the right-to-use rationale could also be used to support solar access rights in another context. If, at the time solar collectors are installed, the neighboring property has nothing in Solar Skyspace B (as this Article assumes), then the Solar Host may have an argument under the doctrine of prior appropriation. Prior appropriation represents a first-in-time, first-in-right approach sometimes used in water law.[159] New Mexico and Wyoming both use this approach, allowing the applicant-owner of a solar collector to attain rights to solar access if the owner used the collector prior to others' uses that may block out that light.[160] Successful applicants do not "own" the sunlight, but have a right to divert it for a beneficial use.

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156. Prah v. Maretti, 321 N.W.2d 182, 189 (Wis. 1982).

157. *Id.*

158. *Id.* at 189–90.

159. *See, e.g.*, *Water Rights Definitions*, U.S. FISH & WILDLIFE SERVICE, http://www.fws.gov/mountain-prairie/wtr/water_rights_def.htm (last visited Oct. 10, 2013) ("Water laws developed in the arid Western States—where water supplies are limited and often inadequate—are known as the Appropriation Doctrine. This doctrine is essentially a rule of capture, and awards a water right to a person actually using the water. It has two fundamental principles: First in time of use is first in right (i.e., the earliest appropriator on a stream has the first right to use the water), and [a]pplication of the water to a beneficial use is the basis and measure of the right.").

160. N.M. STAT. ANN. § 47-3-4 (LexisNexis 2013); WYO. STAT. ANN. § 34-22-103 (2013).

Once obtained, solar permits in both states, like water permits received through prior appropriation regimes, are freely transferable.[161]

4. Conservation and the Right to Non-Use

Just as the right to use was justified by evoking the public good, a similar argument can be made for conservation and non-use. Because one owner's use of property "also affects the surrounding community—socially, economically, and ecologically,"[162] property law often examines the public benefit in setting its priorities[163]: "Interferences . . . are an inherent part of private property, but they are not beyond moral scrutiny, particularly given the fact that public power stands ready to enforce them."[164]

Around the middle of the twentieth century, human activities increased pollution and dramatically reduced the natural resource base: "These human actions so affected the use component of resources that the very nature of the earth's biosphere not only became controlled by one species, its integrity and sustainability was [sic] also compromised."[165] The ethic of unrestrained use gave rise to a countervailing focus on conservation to ensure "a sustainable path of resource use"[166] for the benefit of future generations: "Consideration of the long-term future necessarily limits the powers and increases the responsibilities of present-day owners."[167]

These environmental and ecological concerns triggered a shift back from an ethic of unrestrained use to one of conservation or non-use "primarily because of the anthropocentric benefits that result from leaving resources alone."[168] As a result, property law recognized that up to three human players are involved in any land use decision: "[O]wner-

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161. N.M. STAT. ANN. § 47-3-4; WYO. STAT. ANN. § 34-22-103 ("Solar rights are property rights and as such shall be freely transferable within the bounds of law.").

162. FREYFOGLE, *supra* note 140, at 15–16.

163. *In re* Opinion of the Justices, 69 A. 627, 628 (Me. 1908).

164. FREYFOGLE, *supra* note 140, at 29.

165. Jan G. Laitos & Catherine M.H. Keske, *The Right of Nonuse*, 25 J. ENVTL L. & LITIG. 303, 311–12 (2010).

166. *Id.* at 311.

167. FREYFOGLE, *supra* note 140, at 16.

168. Laitos & Keske, *supra* note 165, at 312.

users, nonowner would-be users, and non-users wishing to protect resource non-use for their own anthropocentric objectives."[169] As a result, when property law resolves a land-use conflict by allowing the owner-user to prevail under a right-to-use rationale, it "is no more neutral or more pro-private property than a law that protects sensitive land uses: It merely accentuates the right to use land intensively at the expense of the right to complain about interferences."[170] Therefore, this new recognition of competing interests guided the law of property to reclaim public rights in water, wildlife, soil, and other areas.[171]

Protections for Solar Skyspace B can be justified under a conservation or non-use rationale. At the time the panels are installed, Solar Skyspace B was open air in a state of non-use. The Solar Host does not interfere with the Southern Neighbor's current use of this empty airspace. It is only if the law devalues the Solar Host's security in the improvements already made to its land by prioritizing improvements that Southern Neighbors might make in the future. As Freyfogle notes, "[p]roperty law, like other law, evolves to keep in line with shifting communal needs. Future development rights, therefore, are inherently speculative . . . ."[172]

B. A NEED FOR LEGISLATIVE PROTECTIONS

While the common-law theories are valuable for forcing us to think about justifications for prioritizing one land use over another, there are pragmatic reasons for governments to step up their protection of solar rights. Settling these matters in courts creates additional cost and uncertainty that can only hurt development of cleaner renewable energy sources.

In addition, those who assert ownership rights to property are heavily dependent upon the government to enforce those rights. Thus, it is the law that gives an owner "authority over

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169. *Id.* at 313 (advocating a "new Age of Ecocentrism" in which a resource itself is given legal rights in the cooperative game with "the three other resource players").

170. FREYFOGLE, *supra* note 140, at 21.

171. *See id.* at 229–53.

172. *Id.* at 123.

the lives of other people" and puts "police and the courts at [the owner's] disposal to protect those rights."[173]

In many states, the loss of protections for easements of light and air was achieved by evolution of the common law through the courts.[174] New Jersey courts, however, refused to eliminate an implied easement of light and air, stating such a right

> is too deeply imbedded [sic] in our jurisprudence to be now disturbed by judicial action. If . . . the doctrine is ill adapted and repugnant to the institutions of a free and growing country, fettering as it must both the free use and transfer of real property, the remedy must be applied for to the legislative branch of the government.[175]

In weighing in to protect Solar Skyspace B, governments can consider the property law rationales discussed above, but additional property priorities and public policy rationales also apply in this context. In the past, battles for solar access have been characterized as one neighbor competing with another over uses that were beneficial for one at the expense of the other's individual use.[176] In fact, California Senator Simitian's rationale for proposing amendments to the California Solar Shade Act in 2008 was to "avoid a million neighborhood arguments."[177]

Yet, the generation of electricity from grid-connected solar PV does not simply represent a neighbor-against-neighbor battle of private interests as previous light and air easement cases may have. Distributed solar arrays are not simply individual property rights; they provide a public good in at least four ways.

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173. *Id.* at 28–29 ("Interferences . . . are an inherent part of private property, but they are not beyond moral scrutiny, particularly given the fact that public power stands ready to enforce them.").

174. EMORY WASHBURN, A TREATISE ON THE AMERICAN LAW OF EASEMENTS AND SERVITUDES 498–506 (3d ed. 1873), *cited in* Engel v. Siderides, 112 N.J. Eq. 431 (N.J. 1933).

175. *Engel*, 112 N.J. Eq. at 433.

176. *See* Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc., 114 So. 2d 357, 358 (Fla. Dist. Ct. App. 1959).

177. SIMITIAN, *supra* note 61. Some of the amendments he proposed—such as providing notice to neighbors before installing solar panels—might provide for good community relations but are no guarantee that neighbors will get along and work through their problems rather than battling in court. S. 1399, 2007–2008 Cong., Reg. Sess. (Cal. 2008), *available at* http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_1351-1400/sb_1399_bill_20080722_chaptered.pdf.

First, each PV array is, in effect, an extension of the public utilities' power plants, and any electricity generated from those arrays is a benefit that accrues to the public in general.[178] The tradeoff for electricity generation for the public is a Southern Property's right to a use that only benefits that individual property, such as adding a few additional square feet to increase the value of a home or planting a tree for aesthetic reasons.[179]

Second, solar PV generation can make the public grid more secure. It provides valuable peak-load capacity during hot, sunny days when air conditioning demands can threaten outages.[180] Also, solar PV can provide backup power if and when there are outages.[181]

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178. Even if the electricity generated by the PV panels is used primarily or exclusively at the host site, there is still a public benefit. As with other demand-side management programs, local generation and use of PV electricity means less demand on the amount the utility would have to generate at its centralized fossil-fuel power plants. Some utilities have calculated that they have saved so much electricity on the demand-side that they have avoided the cost of building an actual power plant, but instead have created a "virtual power plant," saving money for all of its customers.

179. The proposed legislation cited at the end of this Article advocates a priority and beneficial-use system that would take into account some public benefit for higher density housing on the Southern Property. Also, if trees are being planted to help mitigate greenhouse gas emissions, that can be achieved with trees that mature at lower heights or those planted in other locations of a yard so they do not directly impact Solar Skyspace B.

180. *See* JASON B. KEYES & JOSEPH F. WIEDMAN, INTERSTATE RENEWABLE ENERGY COUNCIL, A GENERALIZED APPROACH TO ASSESSING THE RATE IMPACTS OF NET ENERGY METERING 15 (2012), *available at* http://www.solarabcs.org/about/publications/reports/rateimpact/pdfs/rateimpact_full.pdf (pointing out that during the peak load in California—3:00 to 4:00 PM—modules pointed southwest are operating at only slightly less than their rated capacity, getting the most out of average output and helping owners get energy during peak demand times).

181. *See* Jessica Dumont, *Solar Backup System Powers Through Hurricane Sandy with Sunny Centrals*, SMA INVERTED (Dec. 27, 2012), http://www.smainverted.com/2012/12/27/solar-backup-system-powers-through-hurricane-sandy-with-sunny-centrals (noting that in a Bayonne, New Jersey, public elementary school being used as an emergency evacuation center, power stayed on for the duration of the storm and continued to maintain power for a week after the storm hit—the school's backup system was a diesel generator and two Sunny Central 125U commercial solar inverters); Richard Perez, *Reaching Grid Parity: The Hidden Value of Solar Power*, SUNPOWER INSIGHTS (Sept. 8, 2011), http://us.sunpowercorp.com/blogs/blog/2011/09/08/reaching_grid_parity_the_hidden_value_of_solar_power/ (claiming that in the August 2003 blackout in the northeast, as little as 500 MW of solar PV installations could have averted the outage); *see also* RICHARD PEREZ ET AL.,

Third, in addition to the power generated by a PV array belonging to the public, the array itself need not, and frequently is not, actually owned by the hosting property. Incentives from the federal government and utilities show how the public has come to value and invest in these resources. The Solar Host owner may not be the panel owner; leasing companies are currently some of the fastest-growing installers of solar PV systems that the leasing company continues to own itself.[182]

Finally, the lack of solar access protections adds costs and uncertainty to federal[183] and state[184] incentives encouraging

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AVAILABILITY OF DISPERSED PHOTOVOLTAIC RESOURCE DURING THE AUGUST 14TH 2003 NORTHEAST POWER OUTAGE (2004), *available at* http://www.energytransition.msu.edu/documents/availabilityoPVresource-04.pdf (arguing that PV was at peak capacity when the August 2003 blackout happened, and might have prevented it); *The Solar Sandy Project*, SOLAR ONE, http://www.solar1.org/solar-sandy-project/ (last visited Oct. 18, 2013) (detailing a project that brought solar-powered electricity to seventeen blacked-out sites over forty-four days).

182. In 2009, the number of residential solar lease programs was limited. There were only two launched lease programs (SolarCity and the Connecticut Solar Lease Program), and a third was launching (freEner-g). JASON COUGHLIN & KARLYNN CORY, NAT'L RENEWABLE ENERGY LAB., SOLAR PHOTOVOLTAIC FINANCING: RESIDENTIAL SECTOR DEVELOPMENT 28 (2009), *available at* http://www.nrel.gov/docs/fy09osti/44853.pdf. Lease programs quickly grew, however, as "[i]n the Los Angeles and Orange county markets, customer-owned PV was five times more prevalent than third-party owned in 2009. In 2010, the ratio had dropped to 2 to 1. And for the first quarter of 2011, the ratio was almost even." *Lease Option Increases Rooftop Solar's Appeal, Study Says*, NAT'L RENEWABLE ENERGY LAB. (Jan. 20, 2012), http://www.nrel.gov/news/press/2012/1759.html. To put it differently, "[i]n California, third-party PV systems grew from 9% of residential PV installations during the first quarter (Q1) of 2009 to 36% of residential PV installations during Q1 2011," and in Colorado, third-party residential PV systems were introduced in 2010, "and demand had grown to represent 33% of quarterly installations in Q1 2011." Easan Drury et. al., *The Transformation of Southern California's Residential Photovoltaics Market Through Third-Party Ownership*, 42 ENERGY POL'Y 681, 682 (2012).

183. *See* Small Business Liability Relief and Brownfields Revitalization Act, Pub. L. No. 107-118, 115 Stat. 2356 (2002) (neglecting to mention renewables, but renewables would fit within the scope of the law); *Energy Department Announces National Initiative to Redevelop Brownfields with Renewable Energy*, ENVTL. PROTECTION AGENCY, http://www.epa.gov/swerosps/bf/partners/brightfd.htm (last updated Oct. 4, 2011) (describing the brightfield concept and initiative); *see also Re-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Lands, Landfills, and Mine Sites*, ENVTL. PROTECTION AGENCY, http://www.epa.gov/oswercpa/ (last updated Aug. 5, 2013) (outlining agency initiative for development on contaminated lands).

the development of renewables and legislation allowing community ownership of solar.[185]

V. CONCLUSION

As solar energy becomes more prevalent, the law of property will need to recognize the importance of providing access to the necessary fuel—the Sun. The modest goal of this Article is to alert readers to the technological issues raised in attempting to exploit solar energy in a dense urban environment and the impending clash of property law priorities.

Research of solar access statutes and ordinances documented here illustrates an alarming erosion of solar access rights since the 1980s. Most troubling are the conversion of California's Solar Shade Act from a public to a private nuisance and the disappearance, without any apparent explanation, of approximately half of the solar ordinances enacted by local governments in the late 1970s and early 1980s.

At the same time solar access laws seem to be in retreat, the number of solar installations appears to be growing exponentially, with approximately 64,000 installations of PV arrays in the United States in 2011 alone.[186] Without federal, state, or local regulation protecting Solar Skyspace B, the common law and the current "cheerleading" legislation in several states place the burden of protecting this right—in forms of extra costs and burdens of proof—almost entirely on the Solar Host. Within the limited scope provided, this Article attempts to touch on a number of rationales that could be employed to shift this balance and to expand government protections.

As a closing note, the author would like to direct readers to an excellent resource for drafting legislation to protect Solar

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184. *See* William Yeatman, *The Great Solar Rip-Off: By the Numbers,* ENERGY POL'Y CENTER INDEPENDENCE INST. (Apr. 23, 2013), http://energy.i2i.org/2013/04/23/the-great-solar-rip-off-by-the-numbers (citing Pub. Serv. Co. of Colo., *Renewable Energy Standard Adjustment Budget Report* (2013), *available at* http://www.globalwarming.org/wp-content/uploads/2013/04/December-budget.pdf) (stating that in Colorado, Xcel Energy spent $275 million on ratepayer subsidies for customer-sited solar panels from 2008 to 2012).

185. *E.g.*, COLO. REV. STAT. § 40-2-127 (2010) (allowing groups of ten or more to share in solar arrays of less than 2 MW).

186. SHERWOOD, *supra* note 57, at 4.

Skyspace B. In addition to other samples this author has seen,[187] the best is a "Model Solar Energy Access Legislation" prepared by Fulbright and Jaworski, L.L.P., at the request of the Renewable Energy Resources Committee of ABA's Section on Environment, Energy and Resources.[188]

187. *E.g.*, Scott F. Stromberg, Note, *Has the Sun Set on Solar Rights? Examining the Practicality of the Solar Rights Acts,* 50 NAT. RESOURCES J. 211, 247–53 (2010); Missirian, *supra* note 41, at 326–30.

188. ERIK J.A. SWENSON, FULBRIGHT & JAWORSKI, L.L.P., MODEL SOLAR ENERGY ACCESS LEGISLATION (2010), *available at* http://www.nortonrosefulbright.com/knowledge/publications/93160/model-solar-energy-access-legislation.

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