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# FACILITY SITING FOR RENEWABLE ENERGY: FLORIDA'S LAND USE CONTEXT

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## ABSTRACT

*This Article takes up the increasingly important land use question of siting for renewable energy. As concern over climate change grows, new policies are being crafted at all levels of government to support renewable energy as a way of reducing greenhouse gas emissions. These policies are driving the need to site and construct new power plants that will utilize renewable resources. Historically, power plant siting has been the province of state and local governments, so the regulatory context into which renewables are being integrated varies, sometimes significantly, jurisdiction by jurisdiction.*

*To examine this regulatory context, this Article focuses on Florida – the third largest consumer of electricity in the U.S. with less than two percent generated from renewable resources. The Article first provides an overview of Florida's power supply sector and sets out the existing regulatory context for terrestrial siting of energy facilities. It then situates Florida's most promising renewable resources within that context, identifies regulatory barriers that implicate siting, and considers the siting issues unique to each resource. As the Article explains, we now have a window of opportunity in which state and local governments can plan for and guide renewable energy siting – an approach that contrasts with utility-driven planning and siting that has long been standard practice.*

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## INTRODUCTION

Across the nation, electrical power is supplied overwhelmingly by burning fossil fuels. This is starting to change – as concern over climate change grows, new policies are being crafted at all levels of government to support renewable energy as a way of reducing greenhouse gas emissions. These policies are driving the need to site and construct new power plants that will utilize renewable resources. As interest in renewable energy grows, however, questions arise. How do existing legal frameworks for siting power plants accommodate renewable energy facilities? Are the same siting considerations at play, or are there others, unique to specific renewable resources or technologies?

This Article takes up this increasingly important land use question of siting for renewable energy. Historically, power plant siting has been the province of state and local governments, so the regulatory context into which renewables are being integrated varies, sometimes

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significantly, jurisdiction by jurisdiction. The Article examines this regulatory context with a focus on Florida – the third largest consumer of electricity in the U.S. with less than two percent generated from renewable resources.

The effort to advance renewable energy in Florida has been building slowly over the last several years. The Florida Legislature declared in 2005 that “it is in the public interest to promote the development of renewable energy resources in this state.”<sup>1</sup> In 2006, the Legislature passed the Florida Energy Act, creating a Florida Energy Commission (FEC), renewable energy grants, and a solar rebate program, among other things, and in 2007, Governor Charlie Crist signed a series of Executive Orders aimed at reducing greenhouse gas emissions and establishing an Action Team on Energy and Climate Change.<sup>2</sup> The Legislature passed an energy bill in 2008 calling on the Public Service Commission to develop a renewable portfolio standard (RPS) – a mechanism employed in many states to ensure that a fixed percentage of electricity is generated from renewable resources.<sup>3</sup> The Action Team released Florida’s Energy and Climate Change Action Plan, concluding, among other things, that “now is the time for strategic investment in Florida’s low-carbon energy infrastructure....”<sup>4</sup>

A range of regulatory approaches could facilitate a pronounced increase in power generation from renewable sources in Florida.<sup>5</sup> Although the Legislature failed to ratify the RPS during the 2009 legislative session, the measure remains under consideration.<sup>6</sup> The RPS, as originally drafted, would have required 20 percent of the state’s energy supply to be derived from renewable resources. Of course, this and other policies may still come into effect through

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<sup>1</sup> § 366.91(1), F.S. (2009).

<sup>2</sup> 2006 Fla. Laws ch. 2006-230 (still commonly referred to as Florida Senate Bill 888); Exec. Order No. 07-126, “Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government (July 13, 2007); Exec Order No. 07-127, “Immediate Actions to Reduce Greenhouse Gas Emissions within Florida” (July 13, 2007); Exec. Order No. 07-128, “Florida Governor’s Action Team on Energy and Climate Change” (July 13, 2007).

<sup>3</sup> 2008 Fla. Laws ch. 2008-227 (H.B. 7135).

<sup>4</sup> CENTER FOR CLIMATE STRATEGIES, FLORIDA’S ENERGY AND CLIMATE CHANGE ACTION PLAN 11 (2008) (hereinafter ACTION PLAN), available at: <http://www.flclimatechange.us/documents.cfm> (last visited Jan. 2010) (referencing both renewable and nuclear energy). This opening highlights a few key policy events in recent years, but is by no means a summary of the range of regulations now in effect with respect to renewable energy. For more, see, e.g., Database of State Incentives for Renewable Energy (DSIRE), “Florida Incentives/Policies for Renewables and Efficiency,” <http://www.dsireusa.org/incentives/index.cfm?re=1&ee=1&spv=0&st=0&srp=1&state=FL> (last visited Feb. 2010).

<sup>5</sup> The Governor’s Action Team recommended 50 policy actions to structure the state’s response to climate change, including 22 dealing specifically with energy supply and demand. See ACTION PLAN, *supra* note 4, Appendix A. For overviews of the range of policies being implemented across the country, see U.S. ENVTL. PROT. AGENCY, CLEAN ENERGY-ENVIRONMENT GUIDE TO ACTION: POLICIES, BEST PRACTICES, AND ACTION STEPS FOR STATES (2006) and the more recent ELIZABETH DORIS, ET AL., NAT’L RENEWABLE ENERGY LAB., STATE OF THE STATES 2009: RENEWABLE ENERGY DEVELOPMENT AND THE ROLE OF POLICY, Technical Report, NREL/TP-6A2-46667 at 74 (2009). For information on state adoption of renewable energy policies, see DSIRE, available at: <http://www.dsireusa.org> (providing searchable online inventory of state renewable energy policies and incentives).

<sup>6</sup> See SB 774 and 596, 112<sup>th</sup> Legislature (2010). Florida is one of only 15 states that have not adopted an RPS or similar measure. DORIS ET AL., *supra* note 5, at 74. See also DSIRE, *supra* note 5.

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federal legislation, or at the state level in future sessions. At this juncture, states have many policy options to encourage renewable energy.<sup>7</sup> Yet, as the National Commission on Energy Policy recently observed, “energy-facility siting and permitting remains a major cross-cutting challenge for U.S. energy policy.”<sup>8</sup> This challenge arises from a variety of factors – “[e]nvironmental concerns, federal-state regulatory conflicts, aesthetic preferences, highly localized planning processes, investment risks and preferences and regional policy differences,” to name a few.<sup>9</sup> Ultimately, the context for siting is always local, but as component parts of a national effort to mitigate climate change, “local siting decisions frequently have national implications.”<sup>10</sup>

Even absent an RPS or other policy to accelerate resource development, siting is vitally important in at least two respects. First, renewable energy facilities are already being sited and constructed, though less often in Florida than would be the case with an RPS in effect. Second, and perhaps more important, if an RPS is adopted in Florida or mandated at the federal level,<sup>11</sup> there will be new pressure to develop renewable energy facilities, rapidly bringing siting decisions and controversies to communities around the state. Analysis of recurring siting issues when there is still time to plan can help determine how best to incorporate renewable energy into the Florida landscape. Whether or not an RPS passes, in other words, we can expect the number of renewable energy facilities across the state to increase.

This Article proceeds from several basic premises. First, the Article supports the general premise that renewable energy should be promoted, supported, and advanced in Florida and across the nation. It does not, however, presume that all forms of renewable energy should be treated alike, from either a policy or a siting standpoint. How “renewable energy” is defined has genuine implications for how and whether it should be promoted categorically.<sup>12</sup> The Article attempts to untangle some of these questions insofar as they touch upon siting.

Second, from an environmental standpoint, the foremost siting imperative should be to

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<sup>7</sup> There are, of course, non-regulatory factors that affecting renewable energy development in the U.S. See, e.g., ACTION PLAN, *supra* note 4, at 3-9 (citing “price distortions, failure of the market to value the public benefits of renewables, and the social cost of fossil fuel technologies, inadequate information, institutional barriers to grid interconnection, high transaction costs due to small project size, high financing costs because of lender unfamiliarity, and perceived risk.”); DORIS, ET AL., *supra* note 5, at 121-134 (similar list).

<sup>8</sup> NAT’L COMM’N ON ENERGY POLICY, SITING CRITICAL ENERGY INFRASTRUCTURE: AN OVERVIEW OF NEEDS AND CHALLENGES I (2006).

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

<sup>10</sup> *Id.* at 4.

<sup>11</sup> Although the RPS model has been utilized in many states, some argue that the feed-in tariff model would be more effective. I cite RPS simply because Florida has considered an RPS developed by the PSC, and has not yet considered a feed-in-tariff policy at the state level. See FLA. PUB. SERV. COMM’N, DRAFT RENEWABLE PORTFOLIO STANDARD RULE (2009), available at: [http://www.psc.state.fl.us/utilities/electricgas/RenewableEnergy/209\\_FPSC\\_Draft\\_RPS\\_Rule.pdf](http://www.psc.state.fl.us/utilities/electricgas/RenewableEnergy/209_FPSC_Draft_RPS_Rule.pdf).

<sup>12</sup> Debate during the 2009 Florida legislative session over whether the “renewable” portfolio standard should be renamed “clean” portfolio standard to allow for the addition of nuclear energy underscored the importance and implications of how “renewable energy” is defined. The same difference exists in competing bills being considered in the 2010 session, *supra* note 6.

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avoid the need for new facilities through energy efficiency and conservation. Power plant siting in Florida depends on assumptions about Florida's future demand for electricity, but these estimates are not fixed.<sup>13</sup> How much future demand can and should be offset through efficiency measures is an essential and hotly contested question.<sup>14</sup> The American Council for an Energy-Efficient Economy projects that "[e]nergy efficiency resource policies can offset the majority of projected load growth in the [Florida] over the next 15 years...deferring the need for many new electric power generation projects in the state."<sup>15</sup> Similarly, researchers who analyzed recent efficiency studies found consistency among the data showing "a reservoir of cost-effective energy savings" and strategies in Florida that, if fully deployed, could "largely offset the growth in energy consumption forecasted for the State over the next decade," while "minimiz[ing] capacity-related costs associated with energy infrastructure expansion and supply."<sup>16</sup> Florida can and should pursue energy efficiency aggressively in multiple directions – building codes, for example, are key – but utility-sector efficiency is arguably the most important.<sup>17</sup>

The potential for efficiency to offset demand growth underscores the land use implications of energy *inefficiency*. Building a new energy facility is never environmentally neutral – even a non-polluting resource like solar energy comes with negative environmental impacts associated with component manufacturing and construction.<sup>18</sup> A new facility avoided can mean a local community not burdened with unnecessary environmental impacts, or a natural site left pristine.

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<sup>13</sup> In their 2009 Ten-Year Site Plans, Florida electric utilities planned to add a net summer capacity of approximately 11,000 MW over the next 10 years – a figure that represents a decrease of approximately 4,500 MW compared to the 2008 plans and projections. FLA. PUB. SERV. COMM'N, REVIEW OF 2009 TEN-YEAR SITE PLANS FOR FLORIDA'S ELECTRIC UTILITIES 4 (2009).

<sup>14</sup> Every five years, the Florida Energy Efficiency and Conservation Act (FEECA) requires the Public Service Commission to set numeric energy conservation goals for regulated utilities. In 2009, a FEECA year, the commission applied 2008 amendments to the statute that require the goals to be based on "the full technical potential of all available demand-side and supply-side conservation and efficiency measures, including demand-side renewable energy systems." § 366.82(3), F.S. (2009). *See In re: Commission review of numeric conservation goals*, 2009 Fla. PUC LEXIS 1100 (Dec. 30, 2009).

<sup>15</sup> NEIL ELLIOT, ET. AL., AM. COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, POTENTIAL FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY TO MEET FLORIDA'S GROWING ENERGY DEMANDS, Report No. E072, viii (2007).

<sup>16</sup> Sharon (Jess) Chandler & Marilyn A. Brown, Georgia Tech Ivan Walker College School of Public Policy, Working Paper # 51 - Meta-Review of Efficiency Potential Studies and Their Implications for the South, Appendix D, State-Specific Summaries, 26 (Aug. 2009). *See also* JOHN FARRELL & DAVID MORRIS, THE NEW RULES PROJECT, ENERGY SELF-RELIANT STATES, SECOND AND EXPANDED EDITION 20 (2009) (finding that "most states could achieve absolute reductions [in electricity consumption] in the short term if they approached the electricity efficiency of California.").

<sup>17</sup> ELLIOT, ET. AL., *supra* note 15, at 17. Florida has made notable strides in this area. *See, e.g.*, § 553.9061, F.S. (2009) (scheduled increase in thermal efficiency standards for buildings). For an assessment of Florida's energy code and recommendations for improvements, see FLA. SOLAR ENERGY CTR., EFFECTIVENESS OF FLORIDA'S RESIDENTIAL ENERGY CODE: 1979-2009, FSEC-CR-1806-09 (2009).

<sup>18</sup> *See, e.g.*, SILICON VALLEY TOXICS COALITION, TOWARD AN JUST AND SUSTAINABLE SOLAR ENERGY INDUSTRY (2009) (detailing pollution impacts of solar panel manufacture and disposal), *available at*: [http://www.svtc.org/site/PageServer?pagename=svtc\\_publications](http://www.svtc.org/site/PageServer?pagename=svtc_publications) (last visited Jan. 2010).

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The scope of this Article is limited to siting renewable energy for electricity generation.<sup>19</sup> Likewise, siting for nuclear energy is not discussed, for several reasons. First, although nuclear energy is recognized as a “low-carbon” resource, it is consistently distinguished from “renewable” under federal and Florida law.<sup>20</sup> Second, policies to advance renewable energy and nuclear power are frequently conjoined, but not always,<sup>21</sup> and the two industries accordingly compete for policy precedence and governmental subsidies.<sup>22</sup> Third, nuclear facilities are subject

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<sup>19</sup> This limitation is to the exclusion of biofuels and solar thermal collectors producing heat for hot water, both of which rely on renewable energy resources for other purposes. For a general overview of infrastructure siting for biofuels, see NAT’L COMM’N ON ENERGY POLICY, *supra* note 8, 38-41. For an overview and analysis of the most prominent U.S. biofuels and biomass policies to date, their interactions, and import to the electricity, transportation, and agriculture sectors, see JOSHUA BLONZ ET. AL., RES. FOR THE FUTURE, *GROWING COMPLEXITIES: A CROSS-SECTOR REVIEW OF U.S. BIOFUELS POLICIES AND THEIR INTERACTIONS*, Discussion Paper 08-47, 2 (2008).

<sup>20</sup> This distinction persists in spite of rebranding efforts of the nuclear energy industry. See, e.g., James Kanter, *Is Nuclear Power Renewable?*, Green Inc., N.Y. TIMES, Aug. 3, 2009. (discussing industry efforts and motivations to rebrand, and noting that “...so far, efforts to categorize nuclear as a renewable source of power are making little headway.”); Keith Johnson, *Is Nuclear Power Renewable Energy?* Environmental Capital, WALL ST. J. May 21, 2009 (similar general commentary). For a discussion of Florida’s definition of “renewable energy,” see *infra* Part II(B). See also Energy Policy Act of 2005: “The term ‘renewable energy’ means electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.” 42 USCS § 15852 (2009); U.S. Energy Info. Admin., [http://www.eia.doe.gov/energyexplained/index.cfm?page=nuclear\\_where](http://www.eia.doe.gov/energyexplained/index.cfm?page=nuclear_where) (stating that “uranium is nonrenewable” and most of the kind of uranium required for nuclear plants is imported) (last visited Jan. 2010).

<sup>21</sup> Unresolved debate continues over public health and environmental impacts of radioactive waste disposal from nuclear power, and security risks associated with importing needed uranium and nuclear proliferation. See, e.g., ACTION PLAN, *supra* note 4, at A-28 (highlighting “significant potential risks associated with nuclear power, including unresolved waste disposal issues, negative impacts on human health, cost overruns, and siting and permitting issues that must be considered.”) See also Richard B. Stewart, *U.S. Nuclear Waste Law and Policy: Fixing a Bankrupt System*, 17 N.Y.U. ENVTL. L. 783 (2008) (describing flaws in nuclear waste disposal policy); Amory Lovins, “*Proliferation, Oil, and Climate: Solving for Pattern*,” Rocky Mountain Institute, available at: [http://www.rmi.org/rmi/Library/2010-02\\_ProliferationOilClimatePattern](http://www.rmi.org/rmi/Library/2010-02_ProliferationOilClimatePattern) (last visited Feb. 2010) (arguing against increased reliance on nuclear power based on risk of proliferation). But compare information on U.S. Department of Energy website for overviews of programs promoting renewable and nuclear energy as distinct but compatible, [http://www.energy.gov/energy\\_souces/index.htm](http://www.energy.gov/energy_souces/index.htm) (last visited Jan. 2010). See also INREC ‘10, International Nuclear & Renewable Energy Conference, <http://www.inrec10.inrec-conf.org> (last visited Feb. 2010) (“the first of a planned series of biennial meetings focusing on the practical aspects of carbon-free energy forms (nuclear and renewables)”).

<sup>22</sup> See generally U.S. ENERGY INFO. ADMIN., FEDERAL FINANCIAL INTERVENTIONS AND SUBSIDIES OF ENERGY MARKETS 2007, Executive Summary (2008), available at: <http://www.eia.doe.gov/oiaf/servicerpt/subsidy2/df/execsum.pdf> (comparing subsidies allotted in support of competing energy industries but noting that although “[s]ome of the most significant subsidy provisions in EPACKT2005 concern nuclear power... the report provides no estimates for the value of these provisions” because “no nuclear power plants are expected to produce electricity before the middle of the decade.” *Id.* at xiii). Within the “renewable energy industry,” of course, there can be competition

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to extensive federal regulation, from siting to decommissioning, that does not apply to renewable resources.<sup>23</sup> Thus, although nuclear and renewable energy may be compatible sources of low-carbon power in the face of climate constraints, the differing regulatory and policy contexts for each warrants separate examination.

Finally, the Article does not take up siting for transmission infrastructure. Transmission expansion is an issue of national importance that gives rise to significant siting challenges.<sup>24</sup> In some areas of the country, the shift to renewable energy is playing a part in creating the need for new transmission lines.<sup>25</sup> In Florida, however, although there are new transmission lines being proposed and sited in the state, there is no immediate concern for increased transmission line siting as a result of renewable energy development.<sup>26</sup> This will change when and if offshore wind and ocean energy facilities are proposed, but these resources are at least several years away from commercialization off Florida's coasts.<sup>27</sup>

Part I provides both a general overview of Florida electricity production and consumption and a brief summary of the renewable resources considered viable in Florida. Part II lays out the

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between proponents of particular resources, but typically from within the same pool of allocated benefits for "renewable energy," distinct from nuclear.

<sup>23</sup> For summary and detailed information about federal regulation of nuclear power plants, see the U.S. Nuclear Regulatory Commission website, <http://www.nrc.gov> (last visited Jan. 2010).

<sup>24</sup> NAT'L COMM'N ON ENERGY POLICY, *supra* note 8, at 16 (noting the "consensus among transmission system users... that substantial investments in new transmission lines and related equipment are needed to maintain the reliability and operational requirements of the system meet growth in demand and in transactions, and to ensure a robust wholesale market for power.")

<sup>25</sup> See generally AM. WIND ENERGY ASS'N & SOLAR ENERGY INDUS. ASS'N, GREEN POWER SUPERHIGHWAYS: BUILDING A PATH TO AMERICA'S CLEAN ENERGY FUTURE (2009), available at: <http://www.awaea.org/GreenPOwerSuperhighways.pdf>. In response to this need, some Western states have even established offices or agencies specifically to address transmission for renewable energy. See, e.g., New Mexico Renewable Energy Transmission Authority, <http://www.nmreta.org>; California's Renewable Energy Transmission Initiative, <http://www.energy.ca.gov/reti> (both last visited Jan. 2010).

<sup>26</sup> As a peninsular state, Florida is also subject to unique complexities beyond the scope of this Article. For information on Florida's present transmission infrastructure capacity and planned expansions, see FLA. PUB. SERV. COMM., REVIEW OF 2009 TEN-YEAR SITE PLANS FOR FLORIDA'S ELECTRIC UTILITIES 32-35 (2009) (listing new transmission lines proposed and/or in development, and noting that transfer capacity between Florida and the Southern grid to the north is not limited by reliability constraints at this time). With an RPS or other policies in place to stimulate renewable energy development, however, transmission expansion could become a more pressing issue. A recent report on energy siting by Resources for the Future asserts that "development of both intra-state and inter-state transmission capacity is a necessary prerequisite for any considerable renewable energy penetration into the market in coming years" and analyzes transmission siting difficulty by state. SHAHINI VAJHALA, RES. FOR THE FUTURE, SITING RENEWABLE ENERGY FACILITIES: A SPATIAL ANALYSIS OF PROMISES AND PITFALLS, Discussion Paper 06-34, at 6 (2006). The spatial analysis determined Florida to be above average in difficulty and below average in demand for expansion. *Id.* at 8. The author predicts that "difficulty associated with siting transmission lines provides an important litmus test of the potential difficulty facing new renewable energy development" and specifically an "indicator of potential siting problems facing new renewable energy facilities." *Id.* See also S.P. Vajjhala & P.S. Fischbeck, *Quantifying Siting Difficulty: A Case Study of U.S. Transmission Siting*, 35 ENERGY POL'Y, 650 (2007).

<sup>27</sup> See discussion *infra* Part II(B).

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existing legal framework for siting energy facilities in Florida. Part III takes up Florida’s most promising near-term renewable resources – solar energy and biomass – considering each in the larger siting context. Part IV argues that a window of opportunity exists to guide renewable energy siting and offers a range of potential approaches at the state and local level.

## I. OVERVIEW OF POWER PRODUCTION AND CONSUMPTION IN FLORIDA

In shared concern over climate change, policymakers in Florida and nationwide are grappling with how to reduce greenhouse gas (GHG) emissions generated within their borders.<sup>28</sup> The energy supply sector has the distinction of being both the most significant source of GHG emissions<sup>29</sup> as well as the sector in which emissions have risen most sharply in recent years.<sup>30</sup> Between 1970 and 2004, a period marked by a dramatic upward trajectory for GHG emissions worldwide from all sources, emissions from electricity generation increased 145 percent.<sup>31</sup>

In Florida, which consumes more electricity than almost any other state,<sup>32</sup> power production and consumption is responsible for 54 percent of Florida’s GHG emissions.<sup>33</sup> Fortunately, from the standpoint of emissions reductions, reforms in the energy sector also have the greatest potential for improvement.<sup>34</sup> Reducing the use of fossil fuels and shifting toward renewable energy production is a key reform with broad-based support. Debate continues over how significant the role for renewable energy can be or should be, but movement in this direction is occurring in every state and at the federal level. Over 25 states have adopted renewable portfolio standards,<sup>35</sup> 49 have grants or other financial incentives for renewable

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<sup>28</sup> For an overview of existing and projected climate change impacts, see generally U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES (2009) *available at*: <http://www.globalchange.gov/usimpacts> (last visited Sept. 2009) (Program established in 1990 by Global Change Research Act, *id.* at 7 n. a); *see also* ACTION PLAN *supra* note 4, at 31-39 (discussing link between GHG and climate change).

<sup>29</sup> ACTION PLAN, *supra* note 4, at 14 (showing electricity consumption to be largest source of GHG emissions nationwide and in Florida).

<sup>30</sup> GOVERNOR’S ACTION TEAM ON ENERGY AND CLIMATE CHANGE, PHASE 1 REPORT: FLORIDA’S ENERGY AND CLIMATE CHANGE ACTION PLAN 8 (2007), *available at*: <http://www.flclimatechange.us/documents.cfm> (last visited Jan. 2010). For a discussion of climate change impacts nationally, see U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 28.

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

<sup>32</sup> U.S. Dep’t of Energy, “Electric Power and Renewable Energy in Florida,” <http://apps1.eere.energy.gov/states/electricity.cfm/state=FL>. Only California and Texas consume more. *See* U.S. Energy Info. Admin., “Consumption, Price, and Expenditure Estimates,” [http://www.eia.doe.gov/emeu/states/hf/jsp?incfile=sep\\_sum/plain\\_html/rank\\_use.html](http://www.eia.doe.gov/emeu/states/hf/jsp?incfile=sep_sum/plain_html/rank_use.html).

<sup>33</sup> ACTION PLAN *supra* note 4, at 3-1.

<sup>34</sup> ACTION PLAN, *supra* note 4, at 17 (showing greatest potential for GHG reductions in energy supply sector compared with transportation/land use or agriculture, forestry and waste management). *See also* ELLIOT, ET. AL., *supra* note 15, at vii.

<sup>35</sup> *See generally* DSIRE, *supra* note 5 (searchable by state or policy/incentive category).

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energy,<sup>36</sup> and hundreds of millions of federal dollars are being funneled to renewable energy projects and research nationwide.<sup>37</sup>

Although Florida has yet to jumpstart its own renewable energy market, many in and outside of government have been working to that end. In considering measures to reduce emissions from the energy supply sector, the Governor's Climate Action Team identified the three most promising policy approaches to be: (1) promoting renewable energy, (2) power plant efficiency improvements, and (3) demand-side management of power consumption.<sup>38</sup> Reasons to pursue these policies extend beyond climate mitigation, however. According to the Action Plan, "[t]he policy objectives for encouraging renewable electricity generation are to reduce GHG emissions," but also to "provide fuel diversity, provide more energy security and stimulate Florida's economy."<sup>39</sup> The Legislature, likewise, declared that "it is in the public interest to promote the development of renewable energy resources in this state" because doing so can "diversify fuel types to meet Florida's growing dependency on natural gas for electric production, minimize the volatility of fuel costs, encourage investment within the state, improve environmental conditions, and make Florida a leader in new and innovative technologies."<sup>40</sup> This goal is articulated in the State Comprehensive Plan as a policy to "[p]romote the use and development of renewable energy resources and low-carbon-emitting electric power plants."<sup>41</sup>

#### A. Existing Power Generation

Despite the aspirational statements of support, renewable energy currently makes up less than two percent of the state's generation capacity.<sup>42</sup> Florida relies most heavily on natural gas for its power supply, followed by coal, nuclear, and oil.<sup>43</sup> With the exception of nuclear energy, these resources emit GHG emissions at high levels.<sup>44</sup> Absent policy mandates to alter the state's

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

<sup>37</sup> *Id.* In a recent example at the federal level, the American Recovery and Reinvestment Act of 2009, for example, Congress awarded \$16.8 billion to the Department of Energy's Office of Energy Efficiency and Renewable Energy for its programs and initiatives. *See* U.S. Dep't of Energy, "American Recovery & Reinvestment Act" available at: <http://www1.eere.energy.gov/recovery/> (last visited Jan. 2010).

<sup>38</sup> ACTION PLAN, *supra* note 4, at 3-5.

<sup>39</sup> *Id.* at 3-8.

<sup>40</sup> § 366.91(1), F.S. (2009). *See also* § 366.81, F.S. (2009) ("Since solutions to our energy problems are complex, the Legislature intends that the use of solar energy, renewable energy sources, highly efficient systems, cogeneration, and load-control systems be encouraged.")

<sup>41</sup> § 187.201(11)(b)(9), F.S. (2009).

<sup>42</sup> FLA. PUB. SERV. COMM'N, FACTS AND FIGURES OF THE FLORIDA UTILITY INDUSTRY 1 (2009). *See also* FLA. RELIABILITY COORDINATING COUNCIL, 2009 LOAD AND RESOURCE RELIABILITY ASSESSMENT REPORT 34 (2009), available at: <http://www.frcc.com/Planning/default.aspx>.

<sup>43</sup> FLA. PUB. SERV. COMM'N, FACTS AND FIGURES OF THE FLORIDA UTILITY INDUSTRY 1 (2009).

<sup>44</sup> *See, e.g.*, U.S. Energy Info. Admin., "Independent Statistics and Analysis: Nuclear Power & the Environment" ("Unlike fossil-fuel fired power plants, nuclear power plants produce no air pollution or carbon dioxide. However, a small amount of emissions result from processing the uranium that is used in nuclear reactors."), available at:

[http://tonto.eia.doe.gov/energyexplained/index/cfm?page+nuclear\\_environment](http://tonto.eia.doe.gov/energyexplained/index/cfm?page+nuclear_environment)  
(last visited Jan. 2010).

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energy portfolio, Florida's reliance on natural gas is expected to surge to 57 percent by 2018, with coal still accounting for 15 percent and nuclear and oil-fired plants providing 13 percent.<sup>45</sup>

During the 1990s, many states restructured their electric industries to increase retail competition and consumer choice in power supply – essentially “the breaking out of generation services into a separate, more competitive segment of the industry while the transmission and distribution parts of the service remain largely regulated monopoly services.”<sup>46</sup> Florida was not among those states, and retains the traditional market structure, in which utilities, regulated by the Public Service Commission (PSC), are granted franchise territories with the exclusive right to provide electric service.<sup>47</sup> The state market is dominated by four regulated investor-owned utilities— Florida Power and Light, Gulf Power, Progress Energy, Tampa Electric – and the public JEA, which together supply over 80 percent of the electricity consumed in Florida.<sup>48</sup> The rest of the state's power is supplied mostly by municipal electric utilities or rural electric cooperatives.<sup>49</sup> In all, the state has generating capacity for approximately 56,000 megawatts (MW) of electricity, with transmission capacity to import approximately 3,600 MW more from out of state.<sup>50</sup> This meets current demand while maintaining a 15-20 percent reserve margin.<sup>51</sup>

Recent years have seen energy consumption growing at a rapid rate in Florida. Thirty-three percent of Florida's generating capacity was developed in the last 10 years alone, and it is expected that demand will continue to increase.<sup>52</sup> Although 2008 forecasts were revised and lowered to reflect impacts of the economic downturn in 2009,<sup>53</sup> the Florida Reliability Coordinating Council still projects an increase of 6,697 MW for summer peak load and 7,496 MW for winter peak load by 2017.<sup>54</sup>

## **B. Renewable Energy Potential**

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<sup>45</sup> FLA. RELIABILITY COORDINATING COUNCIL, *supra* note 42, at 31.

<sup>46</sup> BRENDA BUCHAN, ET AL., FLA. PUB. SERV. COMM'N, KEY ASPECTS OF ELECTRIC RESTRUCTURING AND THEIR RELEVANCE FOR FLORIDA'S ENERGY MARKET 6 (2000), *available at*: <http://www.psc.state.fl.us/publications/reports.aspx>.

<sup>47</sup> See U.S. Energy Info. Admin, “Florida Electric Restructuring Not Active”, <http://www.eia.doe.gov/cneaf/electricity/page/restructuring/florida.html> (last visited Feb. 2010).

<sup>48</sup> U.S. Energy Info. Admin., *Florida Electricity Profile, 2007*, Table 3 (2007), *available at*: [http://www.eia.doe.gov/cneaf/electricity/st\\_profiles/florida.html](http://www.eia.doe.gov/cneaf/electricity/st_profiles/florida.html).

<sup>49</sup> FLA. PUB. SERV. COMM'N, FACTS AND FIGURES OF THE FLORIDA UTILITY INDUSTRY 15 (2009).

<sup>50</sup> GOVERNOR'S ACTION TEAM ON ENERGY AND CLIMATE CHANGE, *supra* note 30. See also FLA. PUB. SERV. COMM'N, FACTS AND FIGURES OF THE FLORIDA UTILITY INDUSTRY 1 (2009).

<sup>51</sup> FLA. RELIABILITY COORDINATING COUNCIL, *supra* note 42, at 5.

<sup>52</sup> GOVERNOR'S ACTION TEAM ON ENERGY AND CLIMATE CHANGE, PHASE 1 REPORT: FLORIDA'S ENERGY AND CLIMATE CHANGE ACTION PLAN 12 (2007). A map depicting the approximate locations of all of Florida's power plants is available on the Florida Department of Environmental Protection's website, <http://www.dep.state.fl.us/Air/emission/construction/power09.pdf> (last visited Jan. 2010).

<sup>53</sup> FLA. RELIABILITY COORDINATING COUNCIL, *supra* note 42, at 4, 17. See also individual utility Ten-Year Site Plans, <http://www.psc.state.fl.us/utilities/electricgas/10yrsiteplans.aspx> (last visited Dec. 2009).

<sup>54</sup> FLA. RELIABILITY COORDINATING COUNCIL, *supra* note 42, at 23. These 2009 forecasts represent an 8.6% lower estimate for summer peak and 12.8% lower estimate for winter peak than reflected 2008 load forecasts.

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Renewable energy potential varies state to state, and definitions of “renewable energy” vary as well.<sup>55</sup> Section 366.91(2)(d) of the Florida Statutes defines renewable energy broadly:

"Renewable energy" means electrical energy produced from a method that uses one or more of the following fuels or energy sources: hydrogen produced from sources other than fossil fuels, biomass, solar energy, geothermal energy, wind energy, ocean energy, and hydroelectric power. The term includes the alternative energy resource, waste heat, from sulfuric acid manufacturing operations.

Florida’s renewable resources are significant and largely untapped. A recent assessment of these resources determined that solar, biomass, and offshore wind have the highest technical potential for Florida, given a 2020 planning horizon.<sup>56</sup> The study, performed by Navigant Consulting and commissioned by the Florida PSC, the Governor’s Energy Office, and the Lawrence Berkeley National Laboratory concluded that, depending on the interplay of key economic and regulatory factors, between 1,800 and 16,000 megawatts (MW) of renewable capacity could be installed in the state by 2020.<sup>57</sup>

### **1. Solar Energy**

In Florida, solar energy has the highest near-term technical potential among renewable resources.<sup>58</sup> Photovoltaic (PV) panels convert sunlight directly into electricity. Panels can be installed on commercial or residential structures, producing energy onsite, or they can be utilized in a ground-mounted array for large-scale energy production. According to the Navigant study, there is significant potential from rooftop PV— an estimated 52,000 MW<sup>59</sup> – as well as 32,000

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<sup>55</sup> As one scholar recently noted, “the federal government has not been a model of clarity,” varying “the definition of renewable resources depending on the objective of each program.” Steven Ferrey, *Sustainable Energy, Environmental Policy, and States’ Rights: Discerning the Energy Future Through the Eye of the Dormant Commerce Clause*, 12 N.Y.U. ENV’T L.J. 507, 573-77, 645-71 (2004) (discussing variations in federal definitions of “renewable energy” and particular resources; see Appendix for deregulated state definitions).

<sup>56</sup> NAVIGANT CONSULTING, INC., FLA. PUB. SERV. COMM’N, FLORIDA RENEWABLE ENERGY POTENTIAL ASSESSMENT 180 (2008), available at: [http://www.psc.state.fl.us/utilities/electricgas/RenewableEnergy/FL\\_Final\\_Report\\_2008\\_12\\_29.pdf](http://www.psc.state.fl.us/utilities/electricgas/RenewableEnergy/FL_Final_Report_2008_12_29.pdf) (last visited Jan. 2010) (hereinafter referred to in footnotes as “NAVIGANT”). For additional useful (though in some places dated) information on renewable energy technologies and activities in Florida, see FLA. PUB. SERV. COMM’N, AN ASSESSMENT OF RENEWABLE ELECTRIC GENERATING TECHNOLOGIES FOR FLORIDA (2003), available at: [www.floridapsc.org/publications/pdf/electricgas/Renewable\\_Energy\\_Assessment.pdf](http://www.floridapsc.org/publications/pdf/electricgas/Renewable_Energy_Assessment.pdf).

<sup>57</sup> *Id.* at 23. The study projected technical potentials for each resource, which it then constrained in accordance with favorability scenarios. Key “drivers” used in the analyses included fossil fuel prices, cost of carbon under greenhouse gas emissions policies, federal and state renewable energy tax credits and other incentives, the availability and cost of debt and equity, and the rate cap established for the purchase of renewable energy credits. *Id.*

<sup>58</sup> *Id.* at 12. This and all subsequent Navigant estimates of technical potential are based on the 2020 timeframe unless otherwise stated.

<sup>59</sup> *Id.* at 40 (including residential and commercial, and assuming “combination of growing roof space and improved efficiency”).

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MW from ground-mounted PV arrays.<sup>60</sup> Nonetheless, although rooftop PV is available and in use across the state, market penetration remains low.<sup>61</sup> Florida's first large-scale solar array began operating in October 2009 – a 25 MW PV facility in DeSoto County.<sup>62</sup> Several other solar projects are in various stages of development, including a 110 MW PV installation at Kennedy Space Center<sup>63</sup> and a planned 400-acre array to supply 75 MW to the planned new town, Babcock Ranch.<sup>64</sup>

Potential for non-PV solar power is considered to be limited in Florida.<sup>65</sup> Large-scale solar thermal power plants that concentrate solar power to heat water and generate electricity using a steam turbine are not considered viable, and very modest potential exists for hybrid concentrated solar power systems, which combine solar energy with a non-renewable energy source.<sup>66</sup> One such project is currently underway – a 75 MW solar thermal steam generating facility sited at FPL's existing nuclear plant in Martin County. Apparently, it will be “the largest solar thermal facility in the world,”<sup>67</sup> but according to the Navigant study, potential for other such projects tops out at a low 360 MW statewide.<sup>68</sup>

## 2. **Biomass**

Biomass, traditionally conceived, is plant matter, typically from agricultural waste or timber waste.<sup>69</sup> Florida defines “biomass” much more broadly, however, to extend beyond forests and crops to include municipal solid waste, animal waste, and landfill gas. Under § 366.91(2)(a) of the Florida Statutes:

"Biomass" means a power source that is comprised of, but not limited to, combustible residues or gases from forest products manufacturing, waste, byproducts, or products from agricultural and orchard crops, waste or coproducts from livestock and poultry operations, waste or byproducts from food processing, urban wood waste, municipal solid waste, municipal liquid waste treatment operations, and landfill gas.

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<sup>60</sup> *Id.* at 41.

<sup>61</sup> See FLA. PUB. SERV. COMM'N, REVIEW OF 2009 TEN-YEAR SITE PLANS 3 (2009) (“Currently, Florida's utilities report approximately 600 residential interconnections with a total capacity of approximately 2.8 MW.”).

<sup>62</sup> Fla. Power & Light, “DeSoto Next Generation Solar Energy Center,” <http://www.fpl.com/environment/solar/desoto/shtml> (last visited Jan. 2010).

<sup>63</sup> See, Jim Waymer, *Florida Today*, “Solar energy plant at KSC generates jobs” (Nov. 20, 2009).

<sup>64</sup> See Kitson & Partners, “Babcock Ranch: Solar Energy Facility,” <http://www.babcockranchflorida.com/solar.asp> (last visited Jan. 2010).

<sup>65</sup> NAVIGANT, *supra* note 56, at 58.

<sup>66</sup> *Id.*

<sup>67</sup> FLA. PUB. SERV. COMM'N, ANNUAL REPORT ON ACTIVITIES PURSUANT TO THE FLORIDA ENERGY EFFICIENCY AND CONSERVATION ACT 21 (2009). This facility would not provide new generating capacity, but would “serve as a ‘fuel substitution’ resource.” *Id.*

<sup>68</sup> NAVIGANT, *supra* note 56, at 58.

<sup>69</sup> For a general overview of biomass as an energy resource, see National Renewable Energy Laboratory (NREL), Biomass Energy Basics, available at [http://www.nrel.gov/learning/re\\_biomass.html](http://www.nrel.gov/learning/re_biomass.html).

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There are a number of methods for producing power using biomass, the most common of which is burning plant matter to heat water, creating steam that drives a turbine to generate electricity. Other methods include co-firing, which mixes biomass with fossil fuels, and gasification, which converts biomass to gas that can be burned or used in place of natural gas in a gas turbine.<sup>70</sup> Methane, a greenhouse gas resulting from decay of organic materials in a landfill, can be captured and burned to produce electricity while reducing its release into the atmosphere.<sup>71</sup>

Forty-five states use biomass resources for electricity production, and 25 states (Florida not among them) increased biomass generation between 2006 and 2007.<sup>72</sup> Still, biomass, broadly defined, leads other renewable resources in terms of existing capacity in the state – most from municipal solid waste (520 MW), followed by wood products (380 MW), and agricultural byproducts (191 MW).<sup>73</sup> The Navigant study estimated solid biomass potential to be 5,960 – 13,750 MW of capacity.<sup>74</sup>

### 3. *Wind Energy*

Nationwide, wind energy is the fastest growing renewable energy source.<sup>75</sup> Large-scale energy production from wind can be achieved using a “farm” of two- or three-blade turbines with heights typically ranging “from 52.6 to 100 meters” aboveground or offshore.<sup>76</sup> Wind energy also has small onsite applications where suitable conditions exist.<sup>77</sup> There are already numerous wind facilities in the U.S., generating over 35,000 MW nationwide,<sup>78</sup> but the potential for wind energy onshore in Florida is miniscule at an estimated 186 MW.<sup>79</sup> The few viable onshore sites for wind development are along the coast.<sup>80</sup> One coastal wind facility has been

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<sup>70</sup> For a general overview of biopower generation methods, see NREL, “Biopower,” available at [http://www.nrel.gov/learning/re\\_biopower.html](http://www.nrel.gov/learning/re_biopower.html).

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

<sup>72</sup> DORIS, ET AL., *supra* note 5, at 42, 186.

<sup>73</sup> NAVIGANT, *supra* note 56, at 10. For a map depicting existing non-MSW biomass facilities, see Southeast Agricultural and Forestry Energy Resources Alliance, “Florida Factsheet”, [http://www.saferalliance.net/projects/downloads/data\\_pages/FL\\_roadmap\\_data.pdf](http://www.saferalliance.net/projects/downloads/data_pages/FL_roadmap_data.pdf).

<sup>74</sup> NAVIGANT, *supra* note 56, at 14.

<sup>75</sup> See U.S. DEP’T OF ENERGY, 20% WIND ENERGY BY 2030: INCREASING WIND ENERGY’S CONTRIBUTION TO U.S. ELECTRICITY SUPPLY 5-6 (2008), available at: <http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf>.

<sup>76</sup> AM. WIND ENERGY ASS’N, AWEA WIND POWER VALUE CHAIN 3 (undated), available at: [www.awea.org/pubs/factsheets/value\\_chain.pdf](http://www.awea.org/pubs/factsheets/value_chain.pdf).

<sup>77</sup> For an overview of power production using wind, see NREL, Wind Energy Basics, at [http://www.nrel.gov/learning/re\\_wind.html](http://www.nrel.gov/learning/re_wind.html).

<sup>78</sup> AM. WIND ENERGY ASS’N, AWEA YEAR END 2009 MARKET REPORT 2 (2010), available at: <http://www.awea.org/publications/reports/4Q09.pdf>.

<sup>79</sup> NAVIGANT, *supra* note 56, at 13. Even this low estimate is provided with a caveat that “a high resolution wind map is needed to confirm this assessment.” *Id.* at 65.

<sup>80</sup> *Id.*

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proposed by Florida Power & Light on Hutchinson Island in St. Lucie County, but the application has been stalled for some time in review.<sup>81</sup>

By contrast, the Navigant study identified over 40,000 MW in potential capacity for offshore wind energy in Florida.<sup>82</sup> The accuracy of this wind potential projection is now being tested through a pilot study by the Florida State University Center for Ocean-Atmospheric Prediction Studies (COAPS).<sup>83</sup> In any event, offshore wind is far behind onshore wind from a market standpoint, however. No offshore wind energy facilities are operational in U.S. waters to date, though this is likely to change soon in other states, none of the projects in development are off the coast of Florida.<sup>84</sup>

#### **4. Ocean Energy**

The ocean is a potential source of electricity based on wave energy, thermal energy, and ocean and tidal currents. The greatest potential for Florida appears to lie with ocean current energy from the Gulf Stream off the Atlantic coast using submerged water turbines.<sup>85</sup> The Navigant study estimates a theoretical capacity between 4,000 and 10,000 MW from ocean currents, but a technical potential of only 750 MW by 2020 (with the caveat that even this projection rests on a range of uncertainties).<sup>86</sup> Florida Atlantic University (FAU) is working on a pilot project<sup>87</sup> and Ocean Renewable Power Company, LLC has preliminary permits from the Federal Energy Regulatory Commission (FERC) to develop at six sites in the Gulf Stream off Florida's coast.<sup>88</sup> There are currently no operational commercial systems.<sup>89</sup>

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<sup>81</sup> See Fla. Power & Light, "Proposed St. Lucie County Wind Project," <http://www.fpl.com/environment/wind/psl.shtml> (last visited Jan. 2010).

<sup>82</sup> NAVIGANT, *supra* note 56, at 13.

<sup>83</sup> The pilot study, supported with funding from the Institute for Energy Systems, Economics and Sustainability (IESES), "will examine the climate data to compute the annual wind resource and its seasonal variability at selected stations." IESES Newsletter (Nov. 2009), <http://www.ieses.fsu.edu/Newsletters/November%20Newsletter.htm#LETTER.BLOCK15>.

<sup>84</sup> See U.S. OFFSHORE WIND COLLABORATIVE, STATUS OF U.S. OFFSHORE WIND DEVELOPMENT ACTIVITY BY STATE (2008) (finding no activity in Florida, but finding activity in nearly every other east coast state), available at: <http://www.usowc.org/odfs/Stateoffshorewind.pdf>. See also NAVIGANT, *supra* note 56, at 62.

<sup>85</sup> For an overview of ocean current energy, see OCS Alternative Energy and Alternate Use Programmatic EIS Information Center, Alternative Energy and Alternative Use Guide, Ocean Current Energy, <http://ocsenergy.anl.gov/guide/current/index.cfm> (last visited Nov. 2009).

<sup>86</sup> NAVIGANT, *supra* note 56, at 159. But see Fla. Atlantic Univ. (FAU), Center for Ocean Energy Technology, Ocean Energy Resources, available at <http://coet.fau.edu/?p=oceanres>. (projecting that Florida's ocean "resources can supply all of Florida's energy needs.")

<sup>87</sup> FAU, Center for Ocean Energy Technology, Pilot Project, at <http://coet.fau.edu/?p=pilot> (last visited Nov. 2009).

<sup>88</sup> NAVIGANT, *supra* note 56, at 156; Ocean Renewable Power Company, LLC – Florida, at [http://www.oceanrenewablepower.com/ocgenproject\\_florida.htm](http://www.oceanrenewablepower.com/ocgenproject_florida.htm). See also Minerals Mgmt Serv., U.S. Dep't of Interior, "State Activities" ("the MMS is working with three potential hydrokinetic (ocean current) energy generation developers"), at: <http://www.mms.gov/offshore/RenewableEnergy/stateactivities.htm> (last visited Jan. 2010).

<sup>89</sup> OCS Alternative Energy and Alternate Use Programmatic EIS Information Center, Alternative Energy and Alternative Use Guide, Ocean Current Energy, <http://ocsenergy.anl.gov/guide/current/index.cfm> (last

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Other methods for harnessing ocean energy are either unlikely to be operational in the near term or have low potential in Florida. Ocean thermal energy conversion, is a method for generating energy based on the temperature differential between cold and warmer ocean waters.<sup>90</sup> Although conversion systems can be located onshore or offshore, it is assumed that offshore is more viable in Florida.<sup>91</sup> This, too, is a developing technology – no operational commercial systems currently exist and none are expected to be available before 2020.<sup>92</sup> Wave energy is derived from the surface of waves or from pressure fluctuation beneath the surface.<sup>93</sup> Significant potential for wave energy exists only in certain parts of the world, where waves are especially strong. Domestically, only the northwest is considered “wave-power rich.”<sup>94</sup> Similarly, tidal current energy – which can be harnessed using a dam, tidal fence, or turbine – is not considered to have significant potential in Florida.<sup>95</sup>

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visited Jan. 2010). The Minerals Management Service (MMS) of the U.S. Department of Interior and the Federal Energy Regulatory Commission (FERC) recently released guidance on the regulation of hydrokinetic energy projects on the Outer Continental Shelf. Under a Memorandum of Understanding between the agencies, the MMS issues leases for such projects, while FERC has jurisdiction to issue construction and operational licenses. See Memorandum of Understanding Between MMS and FERC (Apr. 22, 2009); U.S. DEP’T OF INTERIOR, GUIDELINES FOR THE MINERALS MANAGEMENT SERVICE RENEWABLE ENERGY FRAMEWORK 31-43 (2009).

<sup>90</sup> For an overview of ocean thermal energy conversion, see NREL, “What is Ocean Thermal Energy Conversion?” at <http://www.nrel.gov/otec/what.html>. See also U.S. Dep’t of Energy, “Ocean Thermal Energy Conversion,” [http://www.energysavers.gov/renewable\\_energy/ocean/index.cfm/mytopic=50010](http://www.energysavers.gov/renewable_energy/ocean/index.cfm/mytopic=50010) (last visited Nov. 2009).

<sup>91</sup> NAVIGANT, *supra* note 56, at 164.

<sup>92</sup> *Id.* at 163-64.

<sup>93</sup> For an overview of wave energy, see OCS Alternative Energy and Alternate Use Programmatic EIS Information Center, Alternative Energy and Alternative Use Guide, Ocean Wave Energy, <http://ocsenergy.anl.gov/guide/wave/index.cfm> (last visited Nov. 2009).

<sup>94</sup> OCS Alternative Energy and Alternate Use Programmatic EIS Information Center, Alternative Energy and Alternative Use Guide, Ocean Wave Energy, at <http://ocsenergy.anl.gov/guide/wave/index.cfm>.

<sup>95</sup> *Id.* at 171. Because of their low potential for power generation, several other renewable energy sources were not assessed in detail in the Navigant study. Waste heat from “sulfuric acid manufacturing operations” is included in Florida’s definition of “renewable energy” and refers to the heat produced from machine operations that can be redirected and reused onsite in a number of ways, including to generate electricity. NAVIGANT, *supra* note 56, at 143. In Florida, sulfuric acid manufacturing is integral to the phosphate fertilizer industry. *Id.* at 144. According to the Navigant study, Florida has 20 sulfuric acid manufacturing operations with capacity to produce 370 MW already installed. *Id.* at 145. This accounts for approximately 75 percent of potential generation, with only another 140 MW of remaining potential available. *Id.* at 145-56. Geothermal energy, which derives from heat trapped underground, is not considered viable for large-scale use in Florida. *Id.* at 174. For a general overview of geothermal energy, see NREL, Geothermal Technologies, at <http://www.nrel.gov/geothermal/> (last visited Dec. 2009). Hydroelectric dams currently provide 55.7 MW of capacity in Florida, but the technical potential for new facilities of this kind is minimal, especially in light of the significant environmental harms associated with dam construction. *Id.* at 173. Renewable sourced hydrogen, from renewably generated electricity or biomass, has potential in the more distant future. One method for producing power from hydrogen – the use of fuel cells – is not yet commercially viable, and the second method – mixing hydrogen in gas turbines – is still in research and development. *Id.* at 175-76.

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## II. EXISTING LEGAL FRAMEWORK FOR SITING ENERGY FACILITIES

A number of federal agencies have regulatory jurisdiction affecting aspects of energy production and markets. The FERC, for example, regulates wholesale electricity rates and hydroelectric facilities, while the Department of Energy supports energy research and develops federal energy policy, among other things.<sup>96</sup> The Department of the Interior regulates natural resource extraction on and offshore, while the Environmental Protection Agency administers pollution control and other statutes that implicate energy generation.<sup>97</sup>

By contrast, siting energy infrastructure has traditionally been left to the states.<sup>98</sup> Although this is changing in some respects, with transmission line siting in particular,<sup>99</sup> the context for siting power plants largely remains a state and local one. This section provides an overview of the existing legal framework for land-based energy siting in Florida. Chapter 403, Part II of the Florida Statutes governs most large-scale power plant siting, while smaller facility siting is largely governed by Chapter 163, Part II of the Florida Statutes, which mandates the basic structure for local land use planning and decision-making.

### A. Energy Infrastructure Planning in Florida

The regulatory backdrop for siting energy facilities is the PSC process for determining whether a need for new projects exists. In the absence of statewide integrated resource planning, Florida's planning framework is essentially utility-driven.<sup>100</sup> Each year, the largest Florida

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<sup>96</sup> See generally Federal Energy Regulatory Commission (FERC) website, <http://www.ferc.gov>, and U.S. Department of Energy (U.S. DOE) website, <http://www.doe.gov> (last visited Dec. 2009).

<sup>97</sup> See generally U.S. Department of the Interior (U.S. DOI) website, <http://www.doi.gov>, and U.S. Environmental Protection Agency (U.S. EPA) website, <http://www.epa.gov> (last visited Dec. 2009).

<sup>98</sup> See *Tampa Elec. Co. v. Garcia*, 767 So. 2d 428, 436 (2000) (dismissing preemption claims on the basis that power-plant siting and need determination are areas that Congress has expressly left to the states). See also NAT'L COMM'N ON ENERGY POLICY, *supra* note 8, at 9 ("Primary authority to review and approve proposals for most other types of energy infrastructure – including power plants, electrical transmission lines, oil refiners, and other facilities—has, however generally resided with a variety of state agencies.")

<sup>99</sup> The 2005 Energy Policy Act expanded FERC's authority to include transmission siting decisions under certain circumstances in specified transmission-capacity constrained areas. 16 U.S.C. §824p(a)(2) (2009). For a discussion of shifting authority over transmission siting and implications, see, e.g., Jim Rossi, *The Trojan Horse of Electric Power Transmission Line Siting Authority*, 39 ENVTL. L. 1015 (2009) (arguing that recent debates over siting authority obscure more important considerations for energy policy).

<sup>100</sup> Integrated resource planning (IRP) has been defined as: "Planning for electric power needs that accomplishes specified social and environmental goals by considering both demand-side management (to reduce electricity demand) and supply-side management (to redistribute types of generation among fuel types, locations, etc.). A public planning process to evaluate the optimal mix of utility resources and options." Univ. of Fla., Body of Knowledge on Infrastructure Regulation: Glossary, <http://www.regulationbodyofknowledge.org/glossary/define/Integrated%20resource%20planning%20%28IRP%29/> (last visited Feb. 2010). See, e.g., NAVIGANT, *supra* note 56, at 4 (noting that the study can only be considered preliminary given that "statewide Integrated Resource Planning process would need to be undertaken to understand how RE would fit in with: Florida's current and planned generation assets; current transmission infrastructure and potential future"). Individual utilities, however, do engage in

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utilities submit Ten-Year Power Plant Site Plans that estimate “the utility’s power generating needs and the general location of its proposed power plant sites over the ten-year planning horizon.”<sup>101</sup> There are no formal constraints on utility choice in selecting the energy resource or general locations for proposed power plants identified in the Site Plans. The PSC performs a preliminary review of the Site Plans and classifies them simply as “suitable” or “unsuitable” for planning purposes.<sup>102</sup>

Proceeding from a “suitable” Site Plan, a utility proposes a new power plant through a petition for Determination of Need. Under § 403.519, *Florida Statutes*, the “need” to be determined is *utility* need—that is, demand of the utility’s particular customer base for more power.<sup>103</sup> With no RPS or similar instrument in place, there is no *utility* “need” for renewable versus nonrenewable energy. Nevertheless, although the state’s (and the nation’s) generalized need to derive energy from renewable resources does not frame the inquiry, the Legislature recently expanded the range of factors relevant to a need determination. In addition to “the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost,” and “whether the proposed plant is the most cost-effective alternative available,” the commission must also now consider “the need for fuel diversity and supply reliability” and “whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available.”<sup>104</sup> “Reasonably available” is by no means a stringent standard, but the commission interprets these directives as granting “broad authority to determine how each of these criteria may be weighted to address the continuous evolution of the electric industry” and “the discretion to determine the need for an electrical power plant based upon one or more of the

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integrated resource planning. *See, e.g.,* FLA. POWER & LIGHT, TEN YEAR POWER PLANT SITE PLAN 2009-2018 52 (2009), *available at:* [http://www.fpl.com/about/ten\\_year/pdf/plan.pdf](http://www.fpl.com/about/ten_year/pdf/plan.pdf).

<sup>101</sup> FLA. PUB. SERV. COMM’N, REVIEW OF 2009 TEN-YEAR SITE PLANS 1 (Oct. 2009) Chapter 186, *Florida Statutes*, requires that each electric utility in the State of Florida with a minimum existing generating capacity of 250 MW must annually submit a Ten-Year Power Plant Site Plan. *See* 186.801(1), F.S. (2009).

<sup>102</sup> § 186.801(2), F.S. (2009). The statute requires the commission to evaluate a range of issues when reviewing ten-year site plans for suitability. *See* § 186.801(2)(a)-(g), F.S. (2009).

<sup>103</sup> *Tampa Elec.*, 767 So. 2d 428 (Fla. 2000); *Nassau Power Corp. v. Beard*, 601 So. Ed 1175, 1178 (Fla. 1992) (rejecting argument that need determination should be based on projected statewide electric utility need).

<sup>104</sup> § 403.519(3), F.S. (2009) (the “fuel diversity” language was added in 2006, s. 43, ch. 2006-230, Laws of Fla., and the “renewable energy sources” language was added in 2007, s. 3, ch. 2007-117, Laws of Fla.). Albeit a bit repetitively given the 2007 additions, the section also requires the commission to “consider the conservation measures taken by or reasonably available to the applicant or its members which might mitigate the need for the proposed plant.” *Id.* Cost considerations are narrowly associated with the facility proposed, versus a broader cost analysis accounting for climate impacts. *See* Rule 25-22.082, F.A.C. (2009) (“Selection of Generating Capacity”; employing requests for proposals as prerequisite to petition for need determination as a “means to ensure that a public utility’s selection of a proposed generation addition is the most cost-effective alternative available.”). *See also* Rule 25-081, F.A.C. (2009) (“Contents of Petition”; requiring cost information related solely to construction and operation of the proposed plant. *See* 25-081(1)(b), asking for “general description of *the proposed electrical power plant, including the size, number of units, fuel type and supply modes, the approximate costs...*”).

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qualifications [in § 403.519(3)] so long as each has been considered as a component of the final decision.”<sup>105</sup>

A need determination does not entitle a utility to build at a particular site or any site at all, once a determination of need issues, but it creates a presumption of public need for the proposed plant that cannot be revisited and that carries over into the siting approval process discussed below.<sup>106</sup> In practice, then, the need determination functions as generic state approval to build a large power plant. At the siting stage, the question is not *whether* a facility will be built, but where.<sup>107</sup>

## **B. The Electrical Power Plant Siting Act**

Florida’s Electrical Power Plant Siting Act (“Siting Act”)<sup>108</sup> provides a centralized licensing process for large power plants. The Siting Act applies to steam or solar electrical generating facilities that generate 75 MW or more, and that were constructed after October 1, 1973.<sup>109</sup> State records of Siting Act applications show this capacity threshold is well suited for proposals to construct coal-fired plants, natural gas plants, and nuclear power plants – traditional, non-renewable power projects, which account for the vast majority of Siting Act applications to date.<sup>110</sup> Over 70 applications for certification or modification have been processed under the

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<sup>105</sup> Fla. Pub. Serv. Comm’n, Memorandum, Div. of Regulatory Analysis to Office of Comm’n Clerk, at 3, Docket No. 090451-EM (Jan. 28, 2010) (recommending petition for determination of need be granted to Gainesville Regional Utilities for 100 MW biomass power plant). *See also* In re: Petition for determination of need for Glades Power Park Units 1 and 2 electrical power plants in Glades County, by Fla. Power & Light Co., 260 P.U.R. 4<sup>th</sup> 158, 2007 Fla. PUC LEXIS 342, at 6 (“The Legislature did not assign the weight that this Commission is to give each of these factors”; denying petition for new coal plant). For examples of how the commission has implemented the new language in recent need determination proceedings, see, e.g., Fla. Pub. Serv. Comm’n, In re: Petition to determine need for Greenland Energy Center Combined Cycle Conversion in Duval County by JEA, Docket No. 080614-EM, 2009 Fla. PUC LEXIS 67 (2009) (granting petition for a natural gas power plant); Fla. Pub. Serv. Comm’n, In re: Petition to determine need for West County Energy Center Unit 3 electrical power plant, by Fla. Power & Light Co., 2008 Fla. PUC LEXIS 413 (Sept. 12, 2008) (granting petition for natural gas power plant and conversions of existing units for improved efficiency).

<sup>106</sup> § 403.519(3), F.S. (2009). The determination also serves as the Commission’s report required as part of the Siting Act review procedures.

<sup>107</sup> The Commission is the exclusive forum for need determination. § 403.519(3), F.S. (2009). In this sense, energy policy and siting policy are kept largely separate – assumptions underlying a need determination cannot be reexamined during Siting Act certification. This bifurcation of need and siting, right or wrong, has implications for public participation at the local level – by the time members of a community learn that a power plant is being sited there, the question of whether it is needed is no longer open for debate. Members of the public can participate in the need determination proceedings, but by divorcing need from siting, those who will be affected are typically not engaged at that early stage.

<sup>108</sup> §§ 403.501-518, F.S. (2009).

<sup>109</sup> § 403.503(14), F.S. (2009).

<sup>110</sup> Fla. Dep’t of Env’tl. Prot., “Certified Facilities – Power Plants Transmission Lines,” (Apr. 20, 2009), *available at*: [http://www.dep.state.fl.us/siting/power\\_plants.htm](http://www.dep.state.fl.us/siting/power_plants.htm) (last visited Aug. 2009).

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Siting Act, the majority of which have been certified.<sup>111</sup> Of over 70 applications for certification or modification, only two certifications were denied.<sup>112</sup>

Before seeking authorization to site a power plant, a utility must already have obtained its need determination from the PSC.<sup>113</sup> With this in hand, the Siting Act offers distinct benefits for qualifying utility-scale projects. First and most essentially, the Siting Act employs a single license –termed a “certification” – that supplants all local and state permits or approvals that would otherwise be required for a major industrial use.<sup>114</sup> The Florida Department of Environmental Protection (DEP), through a Siting Coordination Office, serves as a single point of contact for utility applicants during the permitting process.<sup>115</sup> This consolidation allows a single application encompassing what would otherwise be individual applications for each necessary state and local permit or approval, as well as state-administered federal permits.<sup>116</sup> The single license feature of the Siting Act affords potentially significant time and financial savings by eliminating duplication of effort and uncertainty about what permits are required. To further expedite the process, applicants can submit a notice of intent to file an application, which entitles them to enter into “binding written agreements” with the department and other state agencies as to the “scope, quantity, and level of information to be provided in the application, as well as the methods to be used in providing such information, and the nature of supporting documents to be included...”<sup>117</sup> This reduces time wasted on producing unnecessary information and limits the agency’s ability to prolong the process with requests for additional information not identified in the agreement.

Second, the Siting Act supplants the Growth Management Act’s procedural framework and shifts ultimate siting authority from the local government to the state. Typically, local governments control industrial facility siting within their jurisdictional boundaries. For power plants, the Siting Act provides a substitute procedure – the “land use consistency determination.”<sup>118</sup> Affected local governments participate by filing a short pleading stating whether or not a proposed power plant site is consistent with the local comprehensive plan and zoning ordinances. If the local government determined the project to be inconsistent, it must “include a statement of what would need to be done to make the proposed project consistent.”<sup>119</sup> If the local government issues an affirmative determination, a substantially affected party can challenge it and a preliminary hearing will be held on the isolated issue of land use consistency.<sup>120</sup> However, in the event of persistent local government objection, the Governor

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<sup>111</sup> *Id.*

<sup>112</sup> Nine applications have also been withdrawn from the SITING ACT process since its inception. *Id.*

<sup>113</sup> § 403.507(4), F.S. (2009).

<sup>114</sup> § 403.511, F.S. (2009).

<sup>115</sup> § 403.504, F.S. (2009).

<sup>116</sup> *See* § 403.503(16), F.S.; § 403.511(3), F.S. (2009).

<sup>117</sup> § 403.5063, F.S. (2009).

<sup>118</sup> *See* § 403.50665 and § 403.508, F.S. (2009).

<sup>119</sup> Rule 62-17.121(2), F.A.C. (2009).

<sup>120</sup> § 403.50665(4), F.S.; § 403.508(1), F.S. (2009). The land use consistency determination process is similar in many ways to the GMA process procedurally, and it is not uncommon for utilities to obtain land use changes prior to submitting a Site Certification Application to DEP under the GMA structure. For example, Gilchrist County, proposed a comprehensive plan amendment to change 520 acres in the agricultural land use category to the public land use category, amending text of the plan to allow electrical

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and Cabinet, sitting as the Power Plant Siting Board, nonetheless retain the power to approve the site if “it is in the public interest to authorize the use of the land for a site or associated facility” – a clear incentive for the local government to work with the utility in approving a site.<sup>121</sup>

Third, the Siting Act moves an application through the process quickly, considering the size and scope of utility-scale power plants. It establishes statutory deadlines that structure the review and requires the DEP to propose a schedule of pertinent dates for the application within seven days of its formal filing.<sup>122</sup> These deadlines offer a reasonably predictable timetable for process and review– applicants can expect to have a request for certification approved or denied within 13-18 months.<sup>123</sup>

Fourth, the review and approval process for certification is itself a legal proceeding that is docketed at the outset with the Division of Administrative Hearings (DOAH).<sup>124</sup> This feature creates a clear, enforceable, time-limited structure for the review process.<sup>125</sup> It also offers potentially significant time and financial savings by requiring agency review to be conducted in the forum where potential administrative challenges would otherwise be heard subsequent to final agency action.<sup>126</sup> Under the Siting Act, such challenges are incorporated into the review process itself, thereby reducing the bases for post-certification litigation.

Finally, the Siting Act allows the Governor and Cabinet unilateral authority to approve conditions in a certification that depart from “nonprocedural,” that is, substantive, “requirements of agencies” that would otherwise be applicable to the power plant.<sup>127</sup> For purposes of the Siting Act, “nonprocedural requirements of agencies” is defined very broadly to include “any agency’s regulatory requirements established by statute, rule, ordinance, zoning ordinance, land development code, or comprehensive plan, excluding any provisions prescribing forms, fees,

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generating facilities as a public land use. *See* FLA. DEP’T OF COMMUNITY AFF., OBJECTIONS, RECOMMENDATIONS, AND COMMENTS REPORT FOR THE GILCHREST COUNTY COMPREHENSIVE PLAN AMENDMENT 09-1 (raising a range of objections), *available at*: <http://www.dca.state.fl.us/fdcp/dcp/Procedures/ReturnNoiOrcReports.cfm?ORCSelectMunicipality=GILCHRIST+CO&OrcDocType=Yes&NoiDocType=Yes&Submit=Submit+Your+Request>.

<sup>121</sup> § 403.508(f), F.S. (2009).

<sup>122</sup> § 403.5064(4), F.S. (2009).

<sup>123</sup> Personal communication, Mike Halpin, Director, Siting Coordination Office, DEP. (Sept. 2009)

<sup>124</sup> § 403.5065, F.S. (2009) (within seven days of an application’s filing date, the DEP must request the to assign an administrative law judge and docket the application).

<sup>125</sup> § 403.5064(7), F.S. (2009). A schedule of deadlines is contained within an order of the administrative law judge based on the proposed schedule developed by the DEP.

<sup>126</sup> § 403.526-.527, F.S. (2009) (addressing agency reports and hearing participants, respectively).

<sup>127</sup> *See* § 403.511(1)(b), F.S. (2009) (providing that, as a general rule subject to specified exceptions, “certification may include conditions which constitute variances, exemptions, or exceptions from nonprocedural requirements of the department or any agency which were expressly considered during the proceeding, including, but not limited to, any site specific criteria, standards, or limitations under local land use and zoning approvals which affect the proposed electrical power plant or its site, unless waived by the agency and which otherwise would be applicable to the construction and operation of the proposed electrical power plant.”)

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procedures, or time limits for the review or processing of information submitted to demonstrate compliance with such regulatory requirements.”<sup>128</sup>

If all land use issues are resolved and certification is not otherwise challenged, the Secretary of the DEP has authority to issue the license.<sup>129</sup> For contested projects, final certification issues from the Siting Board, which approves or denies an application based on whether “the location, construction and operation of the electrical power plant” will serve a series of specified statutory goals.<sup>130</sup> Once issued, a power plant certification remains in effect for the life of the facility.<sup>131</sup>

### C. The Growth Management Act

Local land use planning and decision-making in Florida is governed by the Growth Management Act (GMA) and energy facilities smaller than 75 MW may require land use

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<sup>128</sup> § 403.503(21), F.S. (2009). There are also benefits that accrue from other provisions of state law when a facility qualifies as a “power plant” under the Siting Act. For example, exemptions for certain “associated facilities” from all land use plans or zoning ordinances may be relevant in the land use determination, based on the statutory definition of “development.” *See* § 380.04(3), F.S., incorporated into Chapter 163, governing land use regulation. A non-exhaustive list of exempt associated facilities provided by DEP includes electrical transmission lines, natural gas pipelines, wastewater pipelines, access roads, among others. *See* Siting Coordination Office, DEP, Overview of Land Use Consistency Determination, [http://www.dep.state.fl.us/siting/land\\_use\\_consistency.htm](http://www.dep.state.fl.us/siting/land_use_consistency.htm). Likewise, the statute governing Developments of Regional Impact (DRI), excludes “[a]ny proposed electrical transmission line or electrical power plant.” § 380.06(24)(b), F.S. (2009). The primacy of the Siting Act over all aspects of power plant siting is explicitly reinforced in other statutes as well. *See e.g.*, § 377.703, F.S. (2009) (“It is the specific intent of the Legislature that nothing in this act [pertaining to the Florida Energy and Climate Commission’s duties] shall in any way change the powers, duties, and responsibilities assigned by the Florida Electrical Power Plant Siting Act, part II of chapter 403, or the powers, duties, and responsibilities of the Florida Public Service Commission.”)

<sup>129</sup> § 403.508(6), F.S. (2009).

<sup>130</sup> The criteria are set out in § 403.509(3), F.S. (2009):

- (a) Provide reasonable assurance that operational safeguards are technically sufficient for the public welfare and protection.
- (b) Comply with applicable nonprocedural requirements of agencies.
- (c) Be consistent with applicable local government comprehensive plans and land development regulations.
- (d) Meet the electrical energy needs of the state in an orderly, reliable, and timely fashion.
- (e) Effect a reasonable balance between the need for the facility as established pursuant to s. 403.519 and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility.
- (f) Minimize, through the use of reasonable and available methods, the adverse effects on human health, the environment, and the ecology of the land and its wildlife and the ecology of state waters and their aquatic life.
- (g) Serve and protect the broad interests of the public.

The final order of the Siting Board is subject to appeal pursuant to § 403.513, F.S., which allows review by a district court of appeal, *see* § 120.68(2), F.S.

<sup>131</sup> § 403.511(1)-(3), F.S. (2009). Amendments or modifications to a certification order, however, will trigger further agency review. *See* § 403.5113 and § 403.516, F.S. (2009).

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changes pursuant to this Act.<sup>132</sup> Significantly, however, no determination of need from the PSC is required.<sup>133</sup>

Under the GMA, local governments adopt comprehensive plans to guide development. Each plan is comprised of mandatory elements addressing a broad range of planning issues, from transportation to schools to conservation, including a future land use map depicting areas appropriate for particular land uses.<sup>134</sup> Plans are implemented through land development regulations (LDRs), which more specifically describe how development should occur to further the goals and policies of the comprehensive plan.<sup>135</sup>

To site an energy facility smaller than 75 MW, a land use change will be needed if the comprehensive plan does not already contemplate that use for the parcel.<sup>136</sup> The process in this sense is no different from any other land use change – a residential subdivision on land designated agricultural, for example, would also require a land use change. Because all development must conform to the comprehensive plan, a land use change requires a plan amendment.<sup>137</sup> Plan amendments can be applicant-driven or adopted at the initiative of the local government as part of long-range planning or policymaking. As a general rule, comprehensive plans can be amended only twice a year.<sup>138</sup> If a proposed energy facility is consistent with the comprehensive plan, it may still require rezoning or a special exception or variance from the more specific LDRs applicable to the site.<sup>139</sup> For example, LDRs might specify height limitations or a narrow range of uses that preclude the proposed facility. Ultimately, a development order must be issued to authorize construction.<sup>140</sup>

The GMA sets out the procedural framework for changing a comprehensive plan to accommodate a new land use.<sup>141</sup> An application for a land use change is submitted to the local

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<sup>132</sup> §§ 163.3164-3217, F.S. (2009).

<sup>133</sup> § 403.506, F.S. (2009) (providing exemption from need determination requirement for power plants with capacity less than 75 MW).

<sup>134</sup> No energy element is required, see § 163.3177(3)(a) and (6), F.S. (2009), nor is it identified as one of the optional elements encouraged by the GMA, see § 163.3177(7), F.S. (2009). A local government could adopt an energy element voluntarily, however. See § 163.3177(7)(k), F.S. (2009), authorizing “other elements particular to, and necessary for, the area concerned.”

<sup>135</sup> §§ 163.3201-3202, F.S. (2009) (163.3201 describing relationship between LDRs and comprehensive plans; 163.3202 setting out minimum requirements for LDRs). LDRs take the form of zoning ordinances or other regulations controlling development. § 163.3164(23), F.S. (2009).

<sup>136</sup> Pursuant to § 163.3208(4), F.S. (2009), new electrical substations are treated as permitted uses in all land use categories in the applicable comprehensive plan or zoning district, except preservation, conservation, or historic preservation on the FLUM. The locality can apply siting standards, however.

<sup>137</sup> § 163.3194(1)(a), F.S. (2009).

<sup>138</sup> § 163.3187, F.S. (2009) (listing exceptions for amendments involving developments of regional impact, land use changes for 10 or fewer 10 acres, state correctional facilities, brownfields developments, among other things).

<sup>139</sup> See § 163.3213, F.S. (2009) (administrative review of LDRs for consistency with comprehensive plan)

<sup>140</sup> See § 163.3164, F.S. (2009).

<sup>141</sup> The overview provided here assumes a land use change involving more than 10 acres. If the parcel is 10 acres or fewer, it is treated as a small-scale amendment and receives a streamlined version of this

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government and assessed by the local planning agency, which makes a recommendation to approve or disapprove.<sup>142</sup> At a “transmittal hearing,” elected officials vote on whether or not to transmit the proposed amendment to the Department of Community Affairs (DCA).<sup>143</sup> The DCA solicits comments from relevant agencies<sup>144</sup> and reviews the plan amendment for consistency with the local plan, state law, and administrative rules.<sup>145</sup> A report is sent back to the local government, which must address any objections<sup>146</sup> but can adopt the amendment at a hearing, with or without changes.<sup>147</sup> The agency performs a final review and publishes a finding that the amendment is either “in” or “not in” compliance.<sup>148</sup> If the amendment is found not in compliance, or if an affected person with standing challenges a compliance finding, an administrative hearing will be held.<sup>149</sup> The final order can be appealed.<sup>150</sup> Similar procedures are provided for changes to LDRs (rezonings), but with notably less involvement by the state.<sup>151</sup>

This overview highlights several key differences between the GMA and the Siting Act land use consistency determination. Under the Siting Act, consistency with the local comprehensive plan is a central but not controlling consideration. Under the GMA, consistency with the plan and the GMA itself control whether a plan amendment is valid. The Siting Act provides for preemption of local authority if the Siting Board deems the proposed power plant and selected site to be in the public interest. Under the GMA, by contrast, the state has no authority to preempt a local government decision – it is either in conflict with the law, or it controls.<sup>152</sup> Indeed, the GMA does not even give “the state, either through the DCA or through the governor and cabinet, the authority to adopt, repeal, amend, or render ineffective, an adopted plan or plan amendment.”<sup>153</sup> Rather, “the ‘teeth’ of the Act is in the authority of the governor and cabinet to levy ‘sanctions’ ... levied against a local government” that adopts an amendment that is out of compliance.<sup>154</sup> The Siting Act moves a proposal through review according to a predictable schedule and minimizes litigation, while projects under the GMA can stall at

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process. *See* § 163.3187(1)(c), F.S. (2009) (exempting small-scale amendments from twice-a-year adoption limitation).

<sup>142</sup> § 163.3174, F.S. (2009).

<sup>143</sup> § 163.3184(3), F.S. (2009).

<sup>144</sup> § 163.3184(4), F.S. (2009).

<sup>145</sup> Technically the DCA has the option to forego this review unless it is formally requested, *see* § 163.3177(6), F.S., but this has not been the practice of the agency.

<sup>146</sup> § 163.3184(6)(c), F.S. and Rule 9J-11.009 and .010, F.A.C. (2009).

<sup>147</sup> § 163.3184(7), F.S. (2009).

<sup>148</sup> § 163.3184(8), F.S. (2009).

<sup>149</sup> An “affected person” may challenge an adopted plan amendment found in compliance, or may intervene when DCA initiates a challenge. *See* § 163.3184(1)(a), F.S. (2009).

<sup>150</sup> The forum and procedures for appeal depend on whether the amendment was determined in or not in compliance. For a useful overview of the public’s role in Florida growth management and opportunities for participation, *see* 1000 FRIENDS OF FLORIDA, COMMUNITY STEWARDSHIP: A CITIZEN’S GUIDE TO THE NUTS AND BOLTS OF FLORIDA’S GROWTH MANAGEMENT PROCESS, Vol. II (2004), *available at*: <http://www.1000friendsofflorida.org/Publications/main.asp>.

<sup>151</sup> *See id.* at 32-37.

<sup>152</sup> *See* Richard Grosso, *Florida’s Growth Management Act: How Far We Have Come and How Far We Have Yet to Go*, 20 NOVA L. REV. 589, 601 (1996).

<sup>153</sup> *Id.*

<sup>154</sup> *Id.*

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numerous points in the local process and subsequent litigation is common. Although expedited plan amendment review is available to developments meeting certain criteria,<sup>155</sup> the law currently makes ineligible any project for which the primary purpose is to produce electrical power.<sup>156</sup>

### III. SITING CONTEXT FOR RENEWABLE ENERGY RESOURCES

Florida law makes few distinctions between the individual resources defined as “renewable energy,” yet those resources vary substantially. One to the next, there are marked differences in technical and geographic potential, in technological and market development, in environmental impacts, and in the siting context as well.

Many of the pertinent considerations for siting a traditional power plant can also arise with renewable energy. Does the site allow for interconnection to the electrical grid and transmission of the energy generated? How suitable is the land where the facility will be physically located? What impacts should be expected on surrounding land, water, and wildlife? How will the facility affect the local community? A wide range of legitimate concerns give rise to local opposition to new energy infrastructure of whatever kind – from the local environmental and health effects of a facility, to environmental justice in site selection, to perceived impacts on surrounding property values and aesthetic considerations.<sup>157</sup> The answers to these questions are inevitably both resource and site specific.

Other considerations are particular to renewable resources. Most importantly, renewable energy facilities must be located where the resource is abundantly available. As a result, siting renewable energy often involves geographic constraints that do not apply to traditional power plants.<sup>158</sup> Ideal locations for harnessing a resource may lack easy access to transmission infrastructure – a problem in particular for wind farms in remote rural areas of Texas and the Midwestern states. Similarly, locating a biomass plant for ready access to a feedstock may involve transporting the energy produced over a longer distance to population centers.

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<sup>155</sup> § 403.973, F.S. (2009). The focus of the statute is permits or comprehensive plan amendments for businesses creating a specified number of full-time jobs, depending on characteristics of the location. *Id.*

<sup>156</sup> § 403.973(19), F.S. (2009). However, this section includes a caveat – “unless the production of electricity is incidental and not the project’s primary function” so a facility with onsite power generation that otherwise qualified could be eligible for the expedited process. For a discussion of this statute and its benefits from a developers’ perspective, see Carolyn Raepple, *Florida’s Expedited Permit Review Process: Streamlining the Development of Florida’s Economy*, 25 FLA. STATE U. L. REV. 301 (1998). A bill before the 2010 Legislature proposes to modify the exclusion to all expedited permitting for renewable energy facilities. HB 773, Fla. Legis., filed Jan. 21, 2010 (Rep. Kreegel).

<sup>157</sup> NAT’L COMM’N ON ENERGY POLICY, *supra* note 8, at 9 (listing most common local concerns to proposed energy facilities). A significant body of literature examines the siting of locally undesirable land uses. See, e.g., KENNETH A. MANASTER, ENVIRONMENTAL PROTECTION AND JUSTICE: READINGS ON THE PRACTICE AND PURPOSES OF ENVIRONMENTAL LAW, THIRD ED., 201-326 (2007) (chapter addressing siting of polluting facilities in depth); Richard Lazarus, *Pursuing “Environmental Justice”*: *The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787 (1993); Vicki Been, *What’s Fairness Got To Do With It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 CORNELL L. REV. 1001 (1993).

<sup>158</sup> VAJHALA, *supra* note 26, at 5-6.

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From a regulatory standpoint, it is helpful to recognize that barriers to siting renewable energy can take several forms. Most obvious are barriers that affirmatively prevent or hamper siting, like restrictions on the use of rooftop solar panels. Barriers can also consist of regulatory gaps – the absence of standards needed to support grid interconnection, for example – or regulatory weakness – standards that are poorly conceived or otherwise ineffective. Finally, and probably less obvious, are barriers in the form of siting-related incentives or benefits that are available only or predominantly for non-renewable generation. For example, as this section discusses at some length, the parameters for certification under the Siting Act inevitably exclude many renewable projects. The availability of statutory benefits for utility-scale projects may operate in the inverse as a measurable, if not insurmountable, barrier to smaller non-utility projects relative to their larger counterparts. Similarly, Florida law provides cost recovery for siting and related pre-construction costs for nuclear power plants, irrespective of whether the facility is in fact built.<sup>159</sup> This multi-million dollar benefit provides a significant incentive to build nuclear power plants.<sup>160</sup> Without the same provision for large-scale renewable projects, it may function as an inverse regulatory barrier relative to nuclear power.<sup>161</sup> Noting the potential for this disparity, the Governor’s Climate Action Team recommended that “[r]enewable energy sources should receive subsidies at least equal to nuclear energy sources to level the playing field.”<sup>162</sup>

This section takes up the regulatory context and key considerations for siting Florida’s most immediately promising renewable energy resources: solar energy and biomass. Solar PV alone has technical potential for 89,000 MW capacity by 2020.<sup>163</sup> If it were possible to fully harness this resource, it would exceed the total existing generating capacity in the state. PV technology is already available and in use in the state, onsite and utility-scale. Biomass has lower but still significant potential, between 6,000 and 13,750 MW capacity. Biomass facilities

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<sup>159</sup> § 366.93, F.S. (2009). Costs must have been prudently incurred. *See* Rule 25-6.0423(1), F.A.C. (2009).

<sup>160</sup> A thorough comparative analysis of incentives for renewable and non-renewable energy resources is outside the scope of this paper, as many do not deal so directly with siting, but some analyses are available. *See, e.g.*, U.S. ENERGY INFO. ADMIN., *supra* note 22; UNITED NATIONS ENVIRONMENT PROGRAMME, REFORMING ENERGY SUBSIDIES: OPPORTUNITIES TO CONTRIBUTE TO THE CLIMATE CHANGE AGENDA (2008) (showing that majority of subsidies worldwide are directed to fossil fuels), *available at*: [http://www.unep.org/pdf/PressReleases/Reforming\\_Energy\\_Subsidies.pdf](http://www.unep.org/pdf/PressReleases/Reforming_Energy_Subsidies.pdf); ENVTL. LAW INSTITUTE, ESTIMATING U.S. GOVERNMENT SUBSIDIES TO ENERGY SOURCES: 2002-2008 (2009) (showing that majority of subsidies in the U.S. are directed to fossil fuels), *available at*: [http://www.elistore.org/Data/products/d19\\_07.pdf](http://www.elistore.org/Data/products/d19_07.pdf).

<sup>161</sup> Florida Power & Light (FPL) obtained a similar cost-recovery for siting and pre-construction costs for three solar plants, though the statute was time-limited and is no longer available. *See* Section 366.92, F.S. (2009). One amendment allows full cost recovery under the environmental cost recovery clause for renewable energy projects that are zero greenhouse gas emitting at the point of generation up to a total of 110 MW. In 2008, the PSC approved FPL for cost recovery of three solar projects, totaling exactly 110 MW, thereby rendering the provision obsolete going forward. *But see* S.B. 1186, 112th Leg. (Fla. 2010) (proposing full cost recovery for certain renewable energy projects now available for other types of power plants).

<sup>162</sup> ACTION PLAN, *supra* note 4, at A-15 (“noting the current \$9/month per household fee for nuclear.”).

<sup>163</sup> NAVIGANT, *supra* note 56, at 180 (combining projections for ground-mounted and rooftop PV).

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are already operating in Florida and others are in various stages of development – like solar PV, the technology is available and in use, onsite and utility-scale. There is no meaningful wind potential onshore,<sup>164</sup> but offshore wind and ocean energy have high potential in the longer term.<sup>165</sup> At present, there are no active offshore wind or ocean energy projects in development off of Florida’s coasts and there is currently no regulatory framework designed to guide offshore siting in Florida waters. Other forms of renewable energy do not compare, either in technical potential or in stage of development. For all these reasons, solar energy and biomass are likely to be the dominant renewable energy resources in Florida for the foreseeable future.

### A. Siting Solar Energy

Legislative interest in solar energy has a long history in Florida– since the mid-seventies, it has been the intent of the Legislature “to encourage the development of an alternative energy capability in the form of incident solar energy.”<sup>166</sup> More broadly, it is “the policy of this state to promote, stimulate, develop, and advance the growth of the solar energy industry in this state.”<sup>167</sup> The Florida Solar Energy Center was established in 1975 to be a research center and testing and certification lab for solar PV systems.<sup>168</sup>

With increased interest in renewable energy over the last few years has come renewed attention to the possibilities for solar energy in Florida. In 2008, the Legislature directed the newly formed Florida Energy and Climate Commission to identify barriers to solar energy, develop goals and strategies to promote solar technology, and capitalize on opportunities in federal legislation to advance solar energy.<sup>169</sup> Armed with a broad mandate, the Commission has the authority and opportunity to lay the groundwork for significant policy reforms in support of solar energy.<sup>170</sup> This section focuses on siting solar PV, given its high potential in Florida compared with other forms of solar power generation.<sup>171</sup> Plainly, the siting context and concerns

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<sup>164</sup> At less than 200 MW, the potential amounts to about less than 1 percent of current generating capacity in Florida.

<sup>165</sup> NAVIGANT, *supra* note 56, at 180.

<sup>166</sup> § 377.705, F.S. (2009).

<sup>167</sup> § 288.041(2), F.S. (2009).

<sup>168</sup> § 377.705, F.S. (2009) (Solar Energy Standards Act, creating the Florida Solar Energy Center (FSEC)). FSEC also certifies solar thermal systems. For information about the FSEC and its work, see <http://www.fsec.ucf.edu>.

<sup>169</sup> § 377.703(2)(h), F.S. (2009) (listing these directives among others).

<sup>170</sup> As of this writing, the Commission is still quite new and has yet to complete all of the duties identified, for which no deadline is specified in statute. For details on its activities, see [http://myfloridaclimate.com/climate\\_quick\\_links/florida\\_energy\\_climate\\_commission](http://myfloridaclimate.com/climate_quick_links/florida_energy_climate_commission) (last visited Feb. 2010).

<sup>171</sup> In the interest of focus, this section does not address in any depth the financing barrier to widespread deployment of rooftop PV, which affects whether a system will be installed, but does not directly implicate siting considerations. Financing is, however, a significant non-regulatory barrier to individual property owners’ purchase of solar systems, to which a number of policy approaches are designed to respond -- from rebates, to tax credits, to feed-in tariffs, to property-assessed clean energy (PACE) financing and solar services agreements. See INTERSTATE RENEWABLE ENERGY COUNCIL, 2009 UPDATE AND TRENDS, 1-6, 30 (2009); see also DSIRE, *supra* note 5 (featuring state-by-state listing of adopted financing policies).

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for large-scale solar arrays compared with rooftop installations are quite different. This section discusses each in turn.

## ***1. Ground-Mounted Photovoltaic Arrays***

### ***a. Regulatory Context***

The legal framework for siting large-scale PV facilities depends on the size – for solar power plants with 75 MW of generation capacity or more, the Power Plant Siting Act structures the siting review process. As Section II detailed, the Siting Act provides utility-scale energy facilities with a number of benefits: a single point of contact for all state and local permitting requirements; the ability to compile pre-specified information in a single application; deadlines that structure the approval process and result in certification or denial within a predictable and reasonable period of time; containment and predictability of costs due to reduced time and money spent in the permitting process and legal challenges; certification for the life of the facility; and the possibility of preemption of local land use authority. Siting ground-mounted PV facilities smaller than 75 MW requires local land use approval pursuant to the GMA, with other permits obtained separately. It is a workable process, applicable to land use proposals of all kinds around the state, but it is not the “efficient, simplified, centrally coordinated, one-stop licensing process” of the Siting Act.<sup>172</sup> These differences beg the question of whether renewable energy projects are subject to regulatory disadvantage, when they so commonly generate less than 75 MW. It is important to note that any disparity only affects non-utility developers, because utilities can elect to proceed under the Siting Act.<sup>173</sup> Does exclusion from the Siting Act function as an inverse regulatory barrier to smaller non-utility renewable projects relative to large-scale projects that qualify?

There is no single answer to this question. On the one hand, permitting requirements for smaller, non-polluting renewable facilities may not be particularly onerous. If siting is considered appropriate locally – i.e., a site is selected with minimal environmental and community impacts and the facility itself is fairly small – the Siting Act might lead to process “overkill” for such a project. Arguably, for example, the need determination from the PSC would be an excessive prerequisite. For other projects, such as biomass plants with extensive permitting requirements, or greenfield projects which might face opposition or permitting hurdles based on environmental impacts, there is more potential for disadvantage in contrast to Siting Act projects. Every proposal is unique, but it is probably the case that the closer to 75 MW a project is, and the more it will pollute, the more likely it is that access to Siting Act benefits would be desirable. As a result, the seemingly “quick fix” of extending the Siting Act to smaller projects might help some but hinder other renewable projects. Still, the potential for regulatory disparity seems unfair and at odds with state policies favoring renewables. Viewed solely from the perspective of a goal to promote electricity from renewable resources, regulatory barriers to siting renewable energy should be removed. How to do so without harmful effects

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<sup>172</sup> §403.510(3), F.S. (2009).

<sup>173</sup> § 403.506(1), F.S. (2009) (the “applicant” can elect to apply for certification under the Siting Act, but the definition of “applicant” can only be an “electric utility.” § 403.503(5), F.S. (2009)).

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presents a challenge, however. Advocates of land conservation or environmental justice,<sup>174</sup> for example, will be wary of regulatory changes that could have the effect of authorizing greenfield or polluting projects more easily, even if existing law makes some renewable projects more difficult to site.<sup>175</sup> These concerns underscore the importance of careful design in any regulatory effort to facilitate siting. For present purposes, the point is simply to highlight how the regulatory advantages to one category of power plants – large, mostly fossil fuel and nuclear power plants – can operate as a regulatory disadvantage to renewable energy facilities, that are categorically less likely to trigger the Siting Act.<sup>176</sup>

While the size threshold excludes smaller projects, there is an imbedded regulatory barrier within the Siting Act that has particular importance for *large*-scale renewable energy siting. As noted in Section II, a determination of need from the PSC is a prerequisite to obtaining Siting Act certification. Only a Siting Act “applicant” can request a determination of need.<sup>177</sup> In *Tampa Electric Co. v. Garcia*, the Florida Supreme Court interpreted “applicant” narrowly to include only “Florida regulated utilities” that “provide electrical service to their Florida customers at retail rates.”<sup>178</sup> In that case, an out of state utility, Duke Energy, sought a need determination for 514 MW power plant jointly with the Utilities Commission of New Smyrna Beach.<sup>179</sup> New Smyrna had a contract for 30 MW of the electricity generated from the plant, and the rest was intended to be sold wholesale to serve a general need for power in the state. The Court held that the PSC lacked jurisdiction to grant a determination because the proposed power plant was not owned and operated by a Florida retail utility regulated by the

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<sup>174</sup> The U.S. EPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” <http://www.epa.gov/compliance/basics/ej.html> (last visited Feb. 2010).

<sup>175</sup> From these perspectives, many of the Siting Act’s “benefits” may be problematic, such as the provisions allowing local land use preemption; Siting Board authority to alter non-procedural permit requirements; and binding agreements on information to be provided in an application to the extent this hamstrings the DEP or other agencies from seeking important information subsequently in the review process. A full public interest critique of the Siting Act is outside the scope of this paper.

<sup>176</sup> For a useful visual aide providing perspective on the regulatory simplicity accorded to Siting Act plants compared with lower than 75 MW power plants, see DEP Siting Coordination Office, “General Overview of Regulations for Renewable Energy Facilities in Florida,” [http://www.dep.state.fl.us/siting/files/renew\\_resource\\_permitting.pdf](http://www.dep.state.fl.us/siting/files/renew_resource_permitting.pdf). See also TRC ET. AL, MASS. EXECUTIVE OFFICE OF ENERGY & ENVTL. AFFAIRS, RENEWABLE ENERGY SITING STUDY (2009) (observing in the context of onshore wind permitting that the Massachusetts Energy Facilities Siting Board “only has authority to review generation facilities larger than 100 MW,” which “has the effect of excluding most wind energy projects, as they are typically much smaller than 100 MW.” At ES-3. The report states that, “the results appear to show that small wind projects not eligible for [Siting Board] review can be subject to more delay than larger fossil fuel projects which can qualify for [Siting Board] review.” At ES-3.)

<sup>177</sup> See § 403.503(4), F.S. (2009).

<sup>178</sup> *Tampa Elec.*, 767 So. 2d 428, 435 (Fla. 2000) (citing § 403.503(13)(1991)).

<sup>179</sup> Duke Energy applied as an exempt wholesale generator, or independent power producer that generate and sell electricity in wholesale markets regulated by FERC, not the states. See Energy Policy Act of 1992, Pub. L. No. 102-486, § 711 (codified as amended in scattered sections of 15 U.S.C.).

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PSC, and the plant's MW capacity was not fully committed to be sold to a Florida retail utility regulated by the PSC.<sup>180</sup>

The *Tampa Electric* opinion has been criticized as a strained reading of the statute<sup>181</sup> and for constraining wholesale competition in electricity markets, potentially in violation of the Dormant Commerce Clause.<sup>182</sup> Nonetheless, the case is controlling and the legislative provisions at issue have not been amended in response to the holding.<sup>183</sup> The case implicates renewable energy because, as the renewable energy market changes and evolves, an increasing number of large-scale renewable energy developers are national firms that operate as independent power producers in multiple states.<sup>184</sup> The Siting Act bars such firms from siting large-scale projects in Florida without a Florida retail utility willing to jointly apply for a siting certification *and* commit to the full generation capacity of the proposed plant. By limiting who can *site* a facility in Florida, the Siting Act plays a role in insulating Florida utilities from out-of-state competition, including non-utility renewable energy firms.

### *b. Other Siting Considerations*

Power generation using solar PV offers three key benefits: no air pollution, no water consumption, no waste.<sup>185</sup> A ground-mounted array can require a fair amount of space, however – it can take five or more acres to produce one MW of electricity, with “[t]he actual land requirements...driven by both the solar resource and the configuration of the PV system.”<sup>186</sup> Although the National Renewable Energy Laboratory (NREL) estimates that “only 0.4% of the area of the United States” would be needed “to supply all of our nation’s electricity using [groundmounted] PV,” the obvious land use concern for large-scale solar arrays is consumption of natural land serving as wildlife habitat or providing other ecosystem services.<sup>187</sup> FPL’s newly operative solar PV facility in Desoto County, for example, used 180 previously undeveloped

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<sup>180</sup> *Tampa Elec.*, 767 So. 2d 428, 433-34 (Fla. 2000) (relying on *Nassau Power Corp. v. Beard*, 601 So. 2d 1175 (Fla. 1992), which held that a non-utility generator was not a proper applicant under the Siting Act)

<sup>181</sup> *Tampa Elec.*, 767 So. 3d 428, 436 (Anstead, J. dissenting)

<sup>182</sup> See, e.g., Jeffrey S. Dennis, *Federalism, Electric Industry Restructuring and the Dormant Commerce Clause: Tampa Electric Co. v. Garcia and State Restrictions on the Development of Merchant Power Plants*, 43 Nat. Res. J. 615 (2003).

<sup>183</sup> The U.S. Supreme Court denied certiorari. *Utilities Comm’n v. Tampa Elec. Co.*, 532 U.S. 905 (2001).

<sup>184</sup> To be clear, the limitation depends on the status of the generator, not the type of facility proposed. Duke and New Smyrna were proposing a natural gas-fired plant.

<sup>185</sup> These claims for solar power can only be made in connection with power *generation*. The manufacture of solar PV panels, by contrast, results in significant pollution, and disposal of out-of-service panels is no small waste concern. See SILICON VALLEY TOXICS COALITION, *supra* note 18 (raising concerns over toxic byproducts of PV manufacture and disposal).

<sup>186</sup> PAUL DENHOLM & ROBERT MARGOLIS, NAT’L RENEWABLE ENERGY LAB., IMPACTS OF ARRAY CONFIGURATION ON LAND-USE REQUIREMENTS FOR LARGE-SCALE PHOTOVOLTAIC DEPLOYMENT IN THE UNITED STATES 1 (2008) (conference paper), available at: <http://www.nrel.gov/docs/fy08osti/42971.pdf>.

<sup>187</sup> See NREL, “PV FAQs: How much land will PV need to supply our electricity?” available at: <http://www1.eere.energy.gov/solar/pdfs/35097.pdf>.

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acres for a 25 MW generation capacity.<sup>188</sup> The 100 MW facility planned for the Kennedy Space Center will use 500 acres of former citrus groves, and a 10 MW facility under construction requires 60 acres to be cleared.<sup>189</sup>

To determine land available for ground-mounted PV in Florida, the Navigant study relied on land use data from the Florida water management districts. The analysis identified five land use types – abandoned mining lands, open land, inactive land with street pattern but no structures, other open lands-rural, and barren land – then screened for wetlands, forests, developed land, urban areas, recreational and farm land, preserved areas and historic sink holes.<sup>190</sup> Under this framework, 389,000 acres, or approximately 600 square miles, was the resulting “available” land projection for ground-mounted PV.<sup>191</sup> The study concluded that siting solar PV on “available” land could support technical potential for 32,000 MW in 2009, increasing with efficiency improvements to 37,000 MW by 2020.<sup>192</sup>

There may be aspects of the study’s methodology that can be criticized – and certainly every proposed site is unique – but the analysis demonstrates how even local policy instruments based on targeted geographic screening can help guide renewable energy projects away from undeveloped natural areas. It is important to emphasize, of course, that the screening limitations used in the study may or may not actually exist on the ground – that is, many sites deemed theoretically “unavailable” may in fact be future power plant sites. It is never surprising in Florida for wetlands to be filled or farm land converted to other uses. Solar projects, however, can be excellent uses for despoiled or underused developed sites, even in close proximity to populated areas, because of their emissions- and waste-free power generation.

The U.S. Environmental Protection Agency (EPA) has recognized this potential and launched a RE-Powering America’s Land Initiative to promote abandoned mining sites, closed landfills, and other contaminated properties for siting renewable energy.<sup>193</sup> In a study commissioned by the EPA, the NREL conducted a geographic screening of so-called “limbo lands” as sites for renewable energy generating facilities – former Superfund sites, landfills, brownfields,<sup>194</sup> abandoned mine lands, former industrial sites, and certain government

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<sup>188</sup> See generally Fla. Power & Light, DeSoto Next Generation Solar Energy Center FAQs, [http://www.fpl.com/environment/solar/desoto\\_faq.shtml](http://www.fpl.com/environment/solar/desoto_faq.shtml) (last visited Nov. 2009).

<sup>189</sup> See, Jim Waymer, *Florida Today*, “Solar energy plant at KSC generates jobs” (Nov. 20, 2009).

<sup>190</sup> NAVIGANT, *supra* note 56, at 35.

<sup>191</sup> *Id.*

<sup>192</sup> *Id.*

<sup>193</sup> See U.S. EPA, “Siting Clean and Renewable Energy on Contaminated and Mining Sites: Fact Sheet,” (undated), <http://www.epa.gov/renewableenergyland/> (last visited Dec. 2009). The site provides interactive mapping tools and other resources for planners and project developers with an interest in siting on potentially contaminated properties. See also NREL, CONVERTING LIMBO LANDS TO ENERGY-GENERATING STATIONS: RENEWABLE ENERGY TECHNOLOGIES ON UNDERUSED, FORMERLY CONTAMINATED SITES (2007) (produced for U.S. EPA), available at: <http://www.nrel.gov/docs/fy08osti/41522.pdf>.

<sup>194</sup> The term “brownfield site” refers to “real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.” 42 U.S.C. 9601(39)(A) (2009). See also § 376.79(3), F.S. (2009) (defining “brownfield

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installations that are considered “ready for redevelopment” and feasible sites for solar, biomass, or wind energy.<sup>195</sup> In total nationwide, the study identified 737 “limbo land” sites with potential for renewable energy redevelopment.<sup>196</sup> PV solar arrays are considered suitable for any limbo land site because the ubiquitous resource is adequate across the U.S.<sup>197</sup> At the same time, limbo lands often offer close proximity to existing transmission infrastructure, so that the facility can supply power to the grid.<sup>198</sup> The NREL selected Florida as a case study on brownfields site screening and identified 119 sites suitable for PV, ranging from one acre to over 5,000 acres in size.<sup>199</sup>

The regulatory context for *permitting* a project at a closed landfill<sup>200</sup> or other brownfield site raises layers of complexity that will not be present at other sites. There are liability considerations for site owners, renewable energy developers, and regulators, and site work must ensure that known or potential contamination is not disturbed.<sup>201</sup> From a *siting* standpoint, however, the regulatory hurdles are likely to be few. A land use change via comprehensive plan amendment will not be necessary in many cases, given that landfills and brownfields are typically already designated for industrial uses. This would ease approval whether the project was reviewed via the land use consistency determination under the Siting Act or at the local level under GMA. If a land use change is required, it may qualify for an exception to the twice-a-year

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sites” as “real property, the expansion, redevelopment, or reuse of which may be complicated by actual or perceived environmental contamination.”)

<sup>195</sup> NREL, *supra* note 193, at 1-2.

<sup>196</sup> *Id.* at 7.

<sup>197</sup> *Id.* at 16.

<sup>198</sup> *Id.* at 3.

<sup>199</sup> *Id.* at 26. At least one closed landfill in Florida is already the site of a small 1,200 panel solar array, with the rest of the 450 acres-site developed as a recreational park. *See, e.g., Sarasota’s Solar Revolution*, Herald Tribune (Feb. 11, 2008). For information about other completed renewable energy projects at landfills, see e.g. Mass. DEP, “Examples of Completed Renewable Energy Projects at Landfills” (undated), <http://www.mass.gov/dep/energy/lflinks.htm> (last visited Nov. 2009).

<sup>200</sup> The administrative rule applicable to solid waste management facilities, Rule 62-701 *et seq.*, does not include language regarding potential land uses for closed landfills, *see* 62-701.610(7), F.A.C. (2009), but the DEP has provided permitting and construction guidance for redevelopment such sites. *See* FLA. DEP’T OF ENVTL. PROT., GUIDANCE FOR DISTURBANCE AND USE OF OLD CLOSED LANDFILLS OR WASTE DISPOSAL AREAS IN FLORIDA (2009).

<sup>201</sup> An in depth discussion of brownfields law is beyond the scope of this Article. In Florida, the Brownfields Redevelopment Act (BRA), § 376.77 *et seq.*, Fla. Stat., governs the reuse of brownfield sites. The BRA is administered by local governments, which designate brownfield areas, *see* § 376.80, Fla. Stat., with oversight from DEP, *see* § 376.79(7), Fla. Stat. The BRA provides financial, regulatory, and technical assistance to encourage voluntarily cleanup of contaminated sites by responsible parties, *see* § 376.84, Fla. Stat., and clarifies liability issues for future developers and lenders. For assessments of the BRA, see Carolyn Haslam, *Urban Redevelopment and Contaminated Land: Lessons from Florida’s Brownfield Redevelopment Program*, 11 ENVTL. PRACTICE 153 (2009); Tara Burns Koch, Comment: *Betting on Brownfields – Does Florida’s Brownfields Redevelopment Act Transform Liability into Opportunity?* 28 STETSON L. REV. 171 (1998) (discussing the BRA in the context of related federal law). *See also* Steven Ferrey, *Smart Brownfield Redevelopment for the 21<sup>st</sup> Century, Symposium Article: Converting Brownfield Environmental Negatives into Energy Positives*, 34 B.C. ENVTL. AFF. L. REV. 417, 436 (2007) (discussing reuse of brownfields for energy projects, with focus on landfill gas electrical plants).

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plan amendment limitation available for redevelopment of designated brownfield areas.<sup>202</sup> Roads and grid interconnection are likely to be more accessible than for greenfield sites, and clean solar projects can refresh a site that may have been vacant or otherwise abandoned, burdening the aesthetic and property values of the surrounding community.<sup>203</sup> Unless another use is environmentally viable and clearly preferable for community wellbeing, such as a badly needed recreational or commercial facility in proximity to residential neighborhoods, solar siting may serve environmental justice goals well by bringing a non-polluting enterprise to a brownfield site.

## **2. Rooftop Photovoltaic Panels**

### **a. Regulatory Context**

Rooftop PV is prototypical distributed generation (DG) – power generated at many geographically dispersed sites to serve mostly onsite electricity needs.<sup>204</sup> This model contrasts with centralized utility-scale facilities, which generate power for transmission and distribution to many consumers. Because rooftop systems operate on the “customer’s side” of the meter, and because their proliferation has been limited to date, they are typically regarded as conservation measures, simply reducing individual customers’ electricity bill. Still, these systems generate power – as capacity from DG increases, the conservation characterization may be less fitting.

Across the country, siting rooftop solar has been complicated by regulation in two primary respects: insufficient regulatory support for interconnection to the electrical grid – a basic siting prerequisite – and legal and regulatory barriers to the physical installation of solar power systems.

Interconnection is the interface between the electrical grid and a rooftop PV system, whether residential, commercial, or industrial.<sup>205</sup> Rooftop solar panels do not have to be connected to the grid, but this is typically how systems are installed.<sup>206</sup> Absent uniform and

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<sup>202</sup> § 163.3187(1)(g), F.S. (2009).

<sup>203</sup> See § 376.78(2), F.S. (2009) (legislative recognition that “[t]he abandonment or underuse of brownfield sites . . . results in the inefficient use of public facilities and services, as well as land and other natural resources, extends conditions of blight in local communities, and contributes to concerns about environmental equity and the distribution of environmental risks across population groups.”)

<sup>204</sup> Small-scale wind turbines and onsite combined heat and power systems are other common modes of distributed generation.

<sup>205</sup> See NETWORK FOR NEW ENERGY CHOICES, ET. AL., FREEING THE GRID: BEST AND WORST PRACTICES IN STATE NET METERING POLICIES AND INTERCONNECTION STANDARDS 19 (2009), *available at*: [http://www.newenergychoices.org/uploads/FreeingTheGrid2008\\_report.pdf](http://www.newenergychoices.org/uploads/FreeingTheGrid2008_report.pdf). Interconnection also refers to the grid interface with other forms of decentralized electricity generation, including independent power producers that sell electricity to utilities. For interconnection purposes, renewable energy facilities are treated like other small power producers under a separate administrative rule. See Rules 17.087 & 17.220, F.A.C. (2009).

<sup>206</sup> INTERSTATE RENEWABLE ENERGY COUNCIL, *supra* note 171, at 9-10 (identifying grid-connected installations as the largest growth sector for PV, with 86 percent of 2008 installed capacity connected to the grid, including rooftop and ground-mounted systems.) For an example of an off-grid, zero emissions

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simplified procedures, both technical and legal, “plugging in” to the grid can be so time-consuming, difficult, and expensive that it hinders siting new, and especially small, systems.<sup>207</sup>

In 2008, at the direction of the Legislature, the PSC adopted a rule to address this problem in Florida.<sup>208</sup> The rule requires investor-owned utilities to develop standardized interconnection agreements “for expedited interconnection of customer-owned renewable generation, up to 2 MW.”<sup>209</sup> In addition to requiring standardized agreements, the rule eases interconnection by specifying technical requirements and limiting utilities’ power to require extra equipment or charge fees to generating customers.<sup>210</sup>

Adopting the interconnection rule was an important step in supporting distributed solar energy, but the rule has weaknesses. First, the interconnection rule only applies to investor-owned utilities (e.g. Florida Power & Light, but not the City of Tallahassee Utilities). The Legislature directed municipal electric utilities and rural electric cooperatives to develop standardized agreements independently, but they are not subject to PSC review and approval.<sup>211</sup> There remains potential, then, for barriers to exist in areas served by these utilities, in the form of fees or onerous technical or administrative requirements.<sup>212</sup> Regulatory variation from jurisdiction to jurisdiction remains a potential time and cost barrier, as system installers find themselves navigating multiple application and interconnection requirements, even in a small geographic area.<sup>213</sup> The 2 MW cap is limiting in that it does not accommodate “systems that are sized to meet even large on-site loads for such applications as hospitals, office parks, and college campuses.”<sup>214</sup> For these reasons and others, the EPA has rated Florida “unfriendly” to distributed generation, compared with other states that have adopted interconnection standards.<sup>215</sup> Likewise,

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house, see <http://esc.fsu.edu/ogzeb.html>, detailing Florida State University’s Energy and Sustainability Center showcase model.

<sup>207</sup> See NETWORK FOR NEW ENERGY CHOICES, ET AL., *supra* note 205, at 5.

<sup>208</sup> Rule 25-6.065, F.A.C. (2009), Interconnection and Net Metering of Customer-Owned Renewable Generation. See § 366.91(5), F.S. (2009) (requiring the PSC to establish interconnection requirements for customer-owned renewable generation, including but not limited to solar, and authorizing rulemaking). Net metering, a measure designed to encourage distributed generation, allows customers’ electric meters to track the energy their system produces, adjusting the meter accordingly to offset part or all of their utility electric bill. See § 366.91(2)(c), F.S. (2009); Rule 25-6.025(2)(c), F.A.C. (2009).

<sup>209</sup> Rule 25-6.065(3), F.A.C. (2009).

<sup>210</sup> Rule 25-6.065(4)(d)-(f), F.A.C. (2009).

<sup>211</sup> § 366.91(5), F.S. (2009).

<sup>212</sup> It can probably be assumed that the risk of intentional barriers is lower given the public ownership status of these utilities. Municipal electric utilities and rural electric cooperatives are not-for-profit entities. There are 34 municipal utilities in Florida, serving 25 percent of the state’s population. They are typically governed by the local city or county commission or utility authority comprised of appointed or elected commissioners. There are 15 electric distribution cooperatives and two generation and transmission cooperatives in Florida, operating in 57 counties and serving over one million consumers. For information about Florida’s municipal utilities, see <http://www.publicpower.com>; for information about Florida rural electric cooperatives, see <http://www.feca.com>.

<sup>213</sup> Personal communications, Sustainable Tallahassee Solar Advocacy meeting (Jul. 2009) (roundtable discussion addressing barriers to local proliferation of rooftop solar PV).

<sup>214</sup> DORIS, ET AL., *supra* note 5, at 57.

<sup>215</sup> U.S. EPA, “Established State Interconnection Standards: Assessment for DG Friendliness” (map), <http://www.epa.gov/chp/state-policy/interconnection.html> (last visited Nov. 2009).

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Florida’s rule received the grade of “C” in a report surveying and grading interconnection standards across the 50 states.<sup>216</sup>

While interconnection is a state-level and utility-based barrier, constraints on the physical installation of rooftop panels historically have been local. Common regulatory barriers to siting solar include private property restrictions, such as homeowners’ association covenants or restrictions, and local governmental restrictions, such as building codes.<sup>217</sup> Moreover, access to sunlight is essential for a functioning rooftop solar energy system. It follows that siting rooftop PV depends not just on the right to install a system in the first place, but also the right to maintain access to sunlight once a system is installed.

In Florida, some of the most common legal and regulatory barriers to siting rooftop PV have been addressed by explicit statutory protections for solar access against public or private restriction. Florida law expressly prohibits a “governing body” from adopting *any* ordinance that limits “or which has the effect of prohibiting” the installation of on-site renewable energy devices.<sup>218</sup> This goes so far, it would seem, as to preclude even historic preservation ordinances from prohibiting the use of renewable energy devices – another common regulatory barrier to rooftop PV panels.<sup>219</sup> Private agreements, such as deed restrictions or covenants, may not be used in Florida to “prohibit or have the effect of prohibiting” the installation of renewable energy devices.<sup>220</sup> Likewise, homeowners associations and similar entities that would otherwise be in a position to review and approve or deny modifications to a property may not deny permission to install renewable energy devices.<sup>221</sup> If rights under these laws are litigated, the prevailing party is entitled to attorneys’ fees.<sup>222</sup> Solar easements are specifically authorized between private parties as a means of protecting access to sunlight against obstruction.<sup>223</sup>

While these provisions appear to protect the right to site rooftop PV fairly well, but it is unclear how effective they are in practice. There is no enforcement mechanism, and it can be

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<sup>216</sup> NETWORK FOR NEW ENERGY CHOICES, ET. AL., *supra* note 205, at 47. Florida received an “A” rating for its net metering rule. *Id.* at 47.

<sup>217</sup> See COLLEEN MCCANN KETTLES, FLA. SOLAR ENERGY RESEARCH AND EDUC., A COMPREHENSIVE REVIEW OF SOLAR ACCESS LAW IN THE UNITED STATES 1-6 (2008).

<sup>218</sup> §163.04(1), F.S. (2009)(“Notwithstanding any provision of this chapter or other provision of general or special law, the adoption of an ordinance by a governing body, as those terms are defined in this chapter, which prohibits or has the effect of prohibiting the installation of solar collectors, clotheslines, or other energy devices based on renewable resources is expressly prohibited.”) See §163.3163(9) and 163.3401(3), F.S. (2009) (definitions of “governing body” within chapter 163, F.S.).

<sup>219</sup> Cf. Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 Minn. L. Rev. 231, 251 (2008) (“solar panels seem to have retained their reputation for being undesirable aesthetically. Indeed, aesthetic review boards and historic preservation boards, which typically govern structures visible from a public way, regularly reject their installation. Unfortunately, to maximize sun exposure, panels must often be sited in locations at least partially visible from a public way. The solar panel example highlights the tension between the aesthetic concerns of design control boards and the energy-efficiency concerns of environmental advocates.”) (internal citations omitted).

<sup>220</sup> §163.04(2), F.S. (2009)

<sup>221</sup> § 163.04(2), F.S. (2009) (with respect to residential dwellings and condominiums).

<sup>222</sup> § 163.04(2), F.S. (2009). See also KETTLES, *supra* note 217, at 7.

<sup>223</sup> § 704.07, F.S. (2009).

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extremely costly for an individual to litigate to protect against illegal private restrictions.<sup>224</sup> The limits of the provisions make this a concern. Section 163.04, *Florida Statutes* simply forbids regulation from “prohibiting” the operation of a renewable energy device, but this does not prevent a maze of redundancies, inconsistencies, and delays in the electrical or other permitting processes at the local level.<sup>225</sup> Permitting barriers of this kind do not *prohibit* rooftop PV, but they are regulatory barriers that can persist without contravening the statutory protection of solar rights. Similarly, a close reading makes clear that it is possible for an ordinance or association rule to allow the renewable energy devices as required by state law, but with limitations that affect their functioning. Non-governmental entities like homeowners associations retain the right to determine the location of rooftop panels, but only so long as “such determination does not impair the effective operation of the solar collectors.”<sup>226</sup> This leaves a gray area in which a property owner may be unable to maximize the generation capacity of their system but have little recourse.<sup>227</sup> The provision of attorneys’ fees for a prevailing party in litigation under the solar rights statute will not necessarily relieve a homeowner who succeeds against a homeowner’s association, if association bylaws require expense-sharing among all members.<sup>228</sup>

Finally, of course, it is also important to recognize that the statute only goes so far – it does not, for example, ensure that access to sunlight for an installed system will be protected against shadows from new vegetation or structures on neighboring properties.<sup>229</sup> Although solar easements can address this, the voluntary nature of the instrument gives little assurance to a property owner, given that neighbors cannot be forced to provide the easement.<sup>230</sup> Like Florida, many states have explicitly authorized solar easements, but it is unclear how many such

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<sup>224</sup> See KETTLES, *supra* note 217, at 6. See also Sara C. Bronin, *Solar Rights*, 89 BOSTON U. L. REV. 1217, 125-65 (2009) (discussing possible common law claims for seeking recognition of solar rights in court, including nuisance, prescriptive easements, and implied easements).

<sup>225</sup> For a detailed discussion of local permitting barriers to siting distributed solar energy, see DAMIEN PITT, NETWORK FOR NEW ENERGY CHOICES, TAKING THE RED TAPE OUT OF GREEN POWER: HOW TO OVERCOME PERMITTING OBSTACLES TO SMALL-SCALE DISTRIBUTED ENERGY 15-29 (2008).

<sup>226</sup> § 163.04(2), F.S. (2009) (with respect to residential dwellings and condominiums).

<sup>227</sup> See *City of Ormond Beach v. State*, 426 So. 2d 1029, 1032 (5th DCA, 1983). The court reversed and remanded a case involving denial of a variance from local height restrictions for erection of a windmill on a residence, citing § 163.225(3)(a)5, F.S., which “requires a showing that the variance requested is the minimum variance that will make possible the reasonable use of the structure. ‘Reasonable use’ should neither be the very best nor the very worst.” The court reasoned that “‘optimum’ performance of the windmill... alone does not entitle petitioner to a variance. He may not be entitled to ‘optimum’ performance if something less than that produces satisfactory performance of the windmill.”

<sup>228</sup> § 163.04, F.S. (2009). See KETTLES, *supra* note 217, at 7. For a more detailed discussion of barriers to PV from homeowners associations, see THOMAS STARRS, ET AL, U.S. DEP’T OF ENERGY, BRINGING SOLAR ENERGY TO THE PLANNED COMMUNITY: A HANDBOOK ON ROOFTOP SOLAR SYSTEMS AND PRIVATE LAND USE RESTRICTIONS (2000), available at: [http://www.consumerenergycenter.org/.../CC+Rs\\_and\\_solar\\_rights.pdf](http://www.consumerenergycenter.org/.../CC+Rs_and_solar_rights.pdf) (especially chapter 4, describing legal options for homeowners seeking to install or keep solar panels).

<sup>229</sup> At least one city, however, the City of Gainesville, requires that removal or relocation of even regulated trees that prevent the installation of solar energy equipment. See *City of Gainesville Code of Ordinances* §30.251, et seq. (used as model ordinance in KETTLES, *supra* note 217).

<sup>230</sup> See KETTLES, *supra* note 217, at 6.

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agreements are actually in place.<sup>231</sup> As rooftop solar systems proliferate, we can expect to see the rights and liabilities associated with solar access be better defined by the legislature and the courts.<sup>232</sup>

### *b. Other Siting Considerations*

Most of the siting considerations for centralized energy projects are irrelevant for rooftop solar. Plainly, no terrestrial power generation can top it in terms of land use efficiency – the panels are incorporated into existing structures on already developed land, with few geographic restrictions. The systems do not require water, so proximity to water resources is unnecessary. They produce no air pollutants or waste when generating electricity, making it safe to site rooftop solar in and around populated areas.<sup>233</sup> Despite the regulatory inconsistencies and barriers discussed above, with no environmental review or land use change needed, siting rooftop solar takes little time by comparison to centralized energy projects.

As system installations increase nationwide, however, grid integration has emerged as a looming siting barrier for rooftop PV. This is not so much a site-by-site barrier, like interconnection can be, but a barrier to how *much* DG the grid can support. Solar (and wind) energy is variable, meaning these resources produce power intermittently. In 2007, the U.S. Department of Energy launched a Renewable Systems Interconnection study, noting “concerns about potential impacts on operation and stability of the electricity grid may create barriers to further expansion.”<sup>234</sup> The study found, among other things, that grid-related barriers are likely to inhibit distributed generation sooner than previously expected, based on market and policy advancements in support of onsite solar energy. Existing distribution systems were designed for centralized power transmission and have limited capacity for reverse flows of electricity from distributed sites.<sup>235</sup> The study concluded that it is “clearly time to begin planning for the integration of significant quantities of distributed renewable energy onto the electricity grid.”<sup>236</sup> It is still uncertain just how much variability existing infrastructure can absorb, but there seems

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<sup>231</sup> See Bronin, *supra* note 224, at 1229 (concluding that this “‘legislative cheerleading’ has not, however, borne much fruit” in light of the fact that not a single case could be found dealing with express solar easements, suggesting that they are rarely executed.)

<sup>232</sup> For an overview of solar access laws and assessment of options for refining the contours of legal rights to solar access, see Troy A. Rule, *Shadows on the Cathedral: Solar Access Laws in a Different Light*, 2010 U. Ill. L. Rev. \_\_ (forthcoming 2010), Univ. of Missouri School of Law Legal Studies Research Paper No. 2009-24, available at: <http://ssrn.com/abstract+1466224>; and, Adrian J. Bradbrook, *Future Directions in Solar Access Protection*, 19. ENVTL. L. 167 (1988) (evaluating solar access controls and attempting to formulate new direction for the law to take). For a proposal to modernize solar rights to match the need for onsite renewable energy generation, see Sara C. Bronin, *Modern Lights*, 80 U. COLO. L. REV. 881 (2009).

<sup>233</sup> Again, there are significant concerns about waste by-products in the PV manufacturing process, however, raising questions about life-cycle sustainability of solar energy. See generally SILICON VALLEY TOXICS COALITION, *supra* note 18.

<sup>234</sup> NREL, RENEWABLE SYSTEMS INTERCONNECTION 1 (2008).

<sup>235</sup> *Id.* at 8.

<sup>236</sup> *Id.* at 1.

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to be general agreement that significant potential for solar energy cannot be realized without modernizing the grid.<sup>237</sup>

Grid capacity is not yet a barrier to rooftop solar in Florida, but it is a technical problem that will become a policy problem and siting barrier if grid limitations begin to impede new system installations. According to the Florida Solar Energy Research and Education Foundation, solar electric and water heater system installations together increased more than 40 percent in response to the state rebate program,<sup>238</sup> but there is still significant room to grow – approximately 27 percent of residential and 60 percent of commercial roof space is considered “available” for PV installations.<sup>239</sup> It may well be that grid capacity will keep pace with solar growth, but it is too early to know – grid integration research is ongoing at the federal level, and Florida universities received a federal grant to support a five-year research plan directly concerning integration of solar energy into the grid.<sup>240</sup>

A second, more abstract consideration that implicates siting is *who* can own a rooftop solar system. Florida law recognizes “customer-owned renewable generation,” but there is presently no regulatory structure to facilitate *utility* ownership of customer-sited renewable energy.<sup>241</sup> Elsewhere, this is beginning to change. As Professor Michael Dworkin recently observed, “the relationship between the utility and distributed energy resources is evolving.”<sup>242</sup> The implication for renewable energy siting is the potential for a far greater supply of rooftop sites coming available for power generation. Utility ownership of these resources is a fairly new concept that addresses two issues – the financing barrier to installation by individual property owners,<sup>243</sup> and more importantly, regulated utilities’ profit imperative to obstruct widespread DG.<sup>244</sup> In Florida, as in most states, utility profits have not been decoupled from electricity sales.<sup>245</sup> Florida properties generating electricity onsite reduce consumption of utility-generated

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<sup>237</sup> See, e.g., PAUL KOMOR, PEW CENTER ON GLOBAL CLIMATE CHANGE, WIND AND SOLAR ELECTRICITY: CHALLENGES AND OPPORTUNITIES 24 (2009). For an in depth discussion of the legal and regulatory issues that pertain to grid modernization to accommodate renewable energy, see Steven Ferrey, *Restructuring a Green Grid: Legal Challenges to Accommodate New Renewable Energy Infrastructure*, 39 ENVTL. L. 977 (2009).

<sup>238</sup> See Fla. Solar Energy Research and Educ. Found., <http://www.flaseref.org/generalFactsInfo.html> (last visited Nov. 2009).

<sup>239</sup> NAVIGANT, *supra* note 56, at 32 (accounting for functional constraints from shading, structural adequacy, orientation, and roof pitch).

<sup>240</sup> Regarding federal research, see NREL, RENEWABLE SYSTEMS INTERCONNECTION (2008) (Executive Summary). Regarding Florida’s grant, see FSU News Release: \$3.6 Million Federal Grant to Address Integrating Solar Energy Into Electric Grid (Oct. 2009).

<sup>241</sup> Rule 25-6.065(2)(a), F.A.C. (2009).

<sup>242</sup> MICHAEL DWORKIN, SOLAR ELECT. POWER ASS’N, REPORT #04-09: DISTRIBUTED PHOTOVOLTAIC GENERATION FOR REGULATED UTILITIES 11 (2009).

<sup>243</sup> See DSIRE, *supra* note 5, for searchable database of financial incentives and benefits aimed at addressing this well-recognized barrier.

<sup>244</sup> See generally DWORKIN, *supra* note 242. This concept is one of several business models developed by SEPA to overcome utility resistance to distributed solar energy. See SEPA, UTILITY SOLAR BUSINESS MODELS (2008).

<sup>245</sup> Florida has studied but not acted upon the decoupling concept. See FLA. PUB. SERV. COM’N., REPORT TO THE LEGISLATURE ON UTILITY REVENUE DECOUPLING (2008) (as required by Ch. 2008-227, Sec. 114,

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electricity. For this reason, utilities have typically perceived DG “as a third-party-owned asset that cuts into the rate base and adds a complicated and unprofitable layer to the system.”<sup>246</sup>

According to Dworkin, policies that support utilities to own PV assets on customer property could reverse that disincentive and yield a number of benefits. This model could rapidly increase the number of “available” sites for PV installation, with utilities in a position to consider the most beneficial sites and system sizes in light of grid management concerns.<sup>247</sup> It would also provide a strong incentive for utilities to perfect and streamline interconnection and advance grid updates to accommodate variable and two-way flow.<sup>248</sup> The NREL is pursuing research into how best to assist state agencies and utilities with pilot programs for so-called “second-generation business models,” including utility shared or sole ownership of DG.<sup>249</sup>

Dworkin’s analysis concludes that there are “no major obstacles in the path of utilities when it comes to rate basing distributed PV.”<sup>250</sup> At present, though, utility ownership of customer-sited PV does not fit into most states’ existing regulatory frameworks for DG or utility cost recovery. Florida’s 2 MW-or-less interconnection rule is specifically designed “to promote the development of small *customer-owned* renewable generation.”<sup>251</sup> The rule defines this term to mean “an electric generation system located on a customer’s premises that is *primarily intended to offset part of all of the customer’s electricity requirements* with renewable energy.”<sup>252</sup> By contrast, under a utility ownership model, the electricity generated at the customer-owned site would simply feed back into the grid – net metering would not apply and the PV system “has no effect on the customer’s electricity consumption bill . . . the location becomes merely a site host.”<sup>253</sup> The rule defines “customer-owned renewable generation” expansively to include situations in which customers are “contracting for the purchase, lease, operation or maintenance of an on-site renewable generation system with a third-party under terms and conditions that do not include the retail purchase of electricity from the third party.”<sup>254</sup> The third-party non-utility ownership model is also fairly new and has provided a helpful financing option for some customers, particularly in the commercial and industrial sectors.<sup>255</sup> It is clear from the rule’s caveat, however, that third parties are not intended to be characterized (and regulated) as utilities, which are the only entities authorized to sell retail electricity in the

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Laws of Fla.) (House Bill 7135).

<sup>246</sup> Steven Andersen, *The future looks bright for distributed PV*, 147 No. 9 PUB. UTIL. FORT. 66, 68 (Sept. 1, 2009).

<sup>247</sup> DWORKIN, *supra* note 242, at 12.

<sup>248</sup> *Id.* at 12, 21. Other benefits, unrelated to siting, might include easier aggregation of renewable energy credits, for use in meeting an RPS, where applicable, or selling credits to another utility. *Id.*

<sup>249</sup> NREL, RENEWABLE SYSTEMS INTERCONNECTION 13 (2008).

<sup>250</sup> DWORKIN, *supra* note 242, at 23.

<sup>251</sup> Rule 25-6.065(1), F.A.C. (2009) (emphasis added). No distinction is made between residential and commercial or industrial customers, though the rule makes some distinctions based on generation capacity.

<sup>252</sup> Rule 25-6.065(2)(a), F.A.C. (2009) (emphasis added).

<sup>253</sup> DWORKIN, *supra* note 242 at 23. *See also* Steven Andersen, *The future looks bright for distributed PV*, 147 No. 9 PUB. UTIL. FORT. 66, 70 (Sept. 1, 2009).

<sup>254</sup> Rule 25-6.065(2)(a), F.A.C. (2009).

<sup>255</sup> NETWORK FOR NEW ENERGY CHOICES, ET. AL., *supra* note 205, at 89.

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state.<sup>256</sup> It follows that only customer or non-utility third party ownership is covered by the rule. A utility ownership model could complement the existing customer/third-party-owned model for distributed generation, but a separate or substantially modified rule would be needed to facilitate and structure utility siting of rooftop PV on customer property, including terms for a lease or siting fee.<sup>257</sup>

Even more important than a specialized rule, however, would be clear statutory validation of rate basing for customer-sited PV. Without this, it is an open question whether investment in rooftop systems would be treated as eligible for inclusion in rates or other cost recovery. In assessing utility requests for rate basing, Florida law employs a “prudence” and “used and useful” standard – that is, the PSC has authority to set “fair, just, and reasonable rates” for electric utilities based on “the actual legitimate costs” of utility property if they represent investments made “honestly and prudently” and is “actually used and useful in the public service.”<sup>258</sup> A utility promoting such a program would have to make a case to the PSC that investment in PV on leased rooftop space was a prudent expense, and that the component assets are “used and useful.”<sup>259</sup> Arguably rate-basing should apply to distributed energy assets according to the same principles that apply to centralized generation assets, with the analysis turning on details of the specific business model adopted.<sup>260</sup>

Approval for such programs is not unprecedented – in a recent determination, the North Carolina Utilities Commission approved an application for cost recovery of customer-sited PV using similar standards to Florida’s.<sup>261</sup> Duke Energy sought a blanket Certificate of Public Convenience and Need authorizing construction of 10 MW of solar PV generation, including rooftop installations on large commercial and industrial buildings ranging from 500 kW to 3 MW, as well as small-scale facilities on residential rooftops, ranging from 1.5 to 5 kW in

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<sup>256</sup> See *PW Ventures, Inc. v. Nicholas*, 533 So. 2d 281, 284 (Fla. 1988) (holding that retail sale of electricity to customers subjects the seller to regulation as a public utility under state law). See also Memorandum, PSC Office of General Counsel, Docket No. 070674-EI p proposed amendment of Rule 25.6065, F.A.C., Interconnection and Net Metering of Customer-Owned Renewable Generation, 7-8 (Dec. 7, 2007) (discussing the need to preserve non-utility status for third-party owners in drafting of the rule, pursuant to *PW Ventures*); INTERSTATE RENEWABLE ENERGY COUNCIL, 2009 UPDATE AND TRENDS 14 (2009) (in which the Interstate Renewable Energy Council cautions against defining third parties as utilities, to avoid problems with access to the federal investment tax credit for non-utility third party owners of solar systems).

<sup>257</sup> Duke Energy “will pay customers a monthly rental fee based on the size of the installation and the amount of energy generated.” Steven Andersen, *The future looks bright for distributed PV*, 147 No. 9 PUB. UTIL. FORT. 70 (Sept. 1, 2009).

<sup>258</sup> § 366.06(1), F.S. (2009).

<sup>259</sup> DWORKIN, *supra* note 242, at 18-19. See *Citizens of Florida v. Fla. Pub. Serv. Comm’n*, 425 So. 2d 534 (1982) (judicial review of used-and-useful analysis by PSC under § 366.06).

<sup>260</sup> See DWORKIN, *supra* note 242, at 19-22 (discussing potential benefits that justify rate basing utility ownership of customer-sited PV). The policy implications and incentives created by rate structures and cost recovery mechanisms are complex and critically important issues beyond the scope this Article.

<sup>261</sup> See N.C. Utilities Comm’n, Order on Reconsideration: In the Matter of Application of Duke energy Carolinas, LLC, for Approval of a Solar Photovoltaic Distributed Generation Program and for Approval of the Proposed Method of Recovery of Associated Costs, Docket No. E-7, SUB 856 (May 6, 2009).

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capacity.<sup>262</sup> Duke tied its argument for costs to the state’s Renewable Energy and Energy Efficiency Portfolio Standard, citing the new installations’ role in providing solar energy, but also the fact that ownership would enable Duke “to develop competency as an owner of solar renewable assets, to leverage volume purchases, to build relationships with solar PV developers, manufacturers and installers to gain experience with the installation and operation of various types of solar distributed generation facilities, and to evaluate the impact of such facilities on its electric system.”<sup>263</sup> More broadly, Duke argued that the program would “promote the commercialization of solar facilities” in the state, and “fill knowledge gaps so as to enable successful, widespread deployment of solar PV technologies.”<sup>264</sup> The Commission was unanimous in granting the certificate as “justified by the public convenience and necessity,” finding that Duke was “entitled to an opportunity to fully recover its Program costs.”<sup>265</sup> The Commission made clear that in granting the certificate, Duke was not at risk of an “imprudence disallowance in a future case” resulting from its decision to proceed with the program.<sup>266</sup> Still, any decisions Duke makes in the course of program implementation remain subject to question on the basis of “prudence or reasonableness.”<sup>267</sup> At present, of course, Florida does not have an RPS and North Carolina does – a fact that figured prominently in the Commission’s analysis. A similar if less compelling case for rate basing and cost recovery can still be made based on Florida’s statutory provisions and policy statements encouraging renewable and solar energy in particular,<sup>268</sup> but an applicable RPS would be helpful in this regard.

## B. Siting Biomass

Biomass generates most of Florida’s still small renewable energy supply.<sup>269</sup> With its reasonable technical potential, though smaller than solar energy, and its market readiness, in contrast with offshore wind and ocean energy, biomass is regarded as a promising near-term renewable resource for the state. Apart from “renewable energy” generally, the Legislature has shown support for biomass development most prominently by encouraging a Farm-to-Fuel Initiative within the Florida Department of Agriculture “to enhance the market for and promote the production and distribution of renewable energy from Florida-grown crops, agricultural

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<sup>262</sup> *Id.* at 1.

<sup>263</sup> *Id.*

<sup>264</sup> *Id.*

<sup>265</sup> *Id.* at 2 (Culpepper III, William T., concurring).

<sup>266</sup> *Id.* at 3.

<sup>267</sup> *Id.* at 3.

<sup>268</sup> See also FLA. ENERGY COMM’N, 2007 REPORT TO THE LEGISLATURE 107 (2007) (noting that under the PSC’s cost-of-service regulatory jurisprudence, “the general economic benefits of optimal DG location and active load controls accrue to all ratepayers, as do the costs for not optimally locating these resources” and suggesting that “[t]he PSC can, in coordination with the control area operators (i.e., utilities) and the FRCC, establish target zones for DG deployment and active load management and target appropriate subsidies that result in lower costs for all Florida ratepayers and are economically neutral to utilities.”)

<sup>269</sup> For a breakdown of biomass fuel consumption for electricity generation and combined heat and power plants in Florida, see SOUTHEAST AGRIC. & FORESTRY ENERGY RES. ALLIANCE, SOUTHERN BIOENERGY ROADMAP 33 (2009), available at:

[http://www.saferalliance.net/projects/downloads/reports/RoadmapBook\\_webres.pdf](http://www.saferalliance.net/projects/downloads/reports/RoadmapBook_webres.pdf).

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wastes and residues, and other biomass and to enhance the value of agricultural products or expand agribusiness in the state.”<sup>270</sup>

From the perspective of reducing greenhouse gas emissions, power plants that rely on renewable forest and crop-derived feedstocks are considered helpful because they can be, in theory, “carbon neutral.” According to the EPA, “although the burning of biomass also produces carbon dioxide, the primary greenhouse gas, it is considered to be part of the natural carbon cycle of the earth. The plants take up carbon dioxide from the air while they are growing and then return it to the air when they are burned, thereby causing no net increase.”<sup>271</sup> This claim, however, must be understood to be highly conditional. In the case of woody biomass, for example, it is understood that “[a]lthough carbon is released in the form of carbon dioxide when wood is burned, if the wood is harvested and burned *at the rate it grows in the forest*, no new carbon is added to the atmosphere. It is only if this condition of harvesting sustainably is met that the claim of carbon neutrality can be made.”<sup>272</sup>

The rationale for treating other forms of alternative (not technically renewable) energy resources as “biomass” differs.<sup>273</sup> A landfill gas plant, for example, can capture methane gas

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<sup>270</sup> § 570.954, F.S. (2009).

<sup>271</sup> See U.S. EPA, “Clean Energy: Biomass,” <http://www.epa.gov/RDEE/energy-and-you/affect/non-hydro.html#landfill> (last visited Feb. 2010). See also So. Alliance for Clean Energy, “What are the Benefits of Biopower?” [http://www.cleanenergy.org/index.php?Learn-About-Detail.html?form\\_id=52&item\\_id=28](http://www.cleanenergy.org/index.php?Learn-About-Detail.html?form_id=52&item_id=28) (last visited Feb. 2010) (“Burning biomass can be carbon neutral.”) But see, JOSHUA A. BLONZ, ET. AL., *supra* note 19 at 35-37 (assessing potential for GHG emissions reductions from biomass and biofuels, concluding that projections are too high considering broader range of factors); T. Searchinger, et al., *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions From Land Use Change*, SCIENCE, 1238-40 (2008) and US Dept. of Energy, *Response: DOE Actively Engaged in Investigating the Role of Biofuels in Greenhouse Gas Emissions from Indirect Land Use Change* (May 28, 2008), [http://www1.eere.energy.gov/biomass/news\\_detail.html?news\\_id=11794](http://www1.eere.energy.gov/biomass/news_detail.html?news_id=11794) (last visited Nov. 2009); Renewable Fuels Agency, *The Gallagher Review of the indirect effects of biofuels production* (2008) (with a focus on biofuels for transportation use) (available, with revision Addendum, at <http://www.renewablefuelsagency.org/reportsandpublications/reviewoftheindirecteffectsofbiofuels.cfm> (last visited Nov. 2009).

<sup>272</sup> See Biomass Energy Resource Center, “Frequently Asked Questions,” <http://www.biomasscenter.org/resources/faqs.html#22> (last visited Nov. 2009). The Biomass Energy Resource Center promotes the use of woody biomass for energy.

<sup>273</sup> It is certainly open to debate whether these non-renewable alternative energy sources should in fact be included in the definition of “biomass,” thereby garnering the benefits of status as a “renewable energy” resource. Power Scorecard, an electricity supply scoring resource endorsed by prominent NGOs including Environmental Defense, Natural Resources Defense Council, and the Union of Concerned Scientists, “does not consider MSW a renewable energy source, because the waste stream includes materials made from fossil resources; the sources of the plant material based content (e.g., paper and wood) are unpredictable; and the waste stream would be greatly reduced with environmentally preferable waste reduction and management practices.” Power Scorecard, *Electricity from Municipal Solid Waste* [http://www.powerscorecard.org/tech\\_detail.cfm?resource\\_id=10](http://www.powerscorecard.org/tech_detail.cfm?resource_id=10) (last visited Nov. 2009). See also ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT & INTERNATIONAL ENERGY AGENCY, *BENIGN ENERGY? THE ENVIRONMENTAL IMPLICATIONS OF RENEWABLES 99* (1998), available at: [http://www.iea.org/publications/free\\_new\\_Desc.asp?PUBS\\_ID=1139](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=1139) (last visited Nov. 2009)

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released in waste decomposition and redirect it from the atmosphere to generate electricity. Burning municipal solid waste for energy is typically rationalized as a productive reuse that is preferable to disposal in a landfill.<sup>274</sup> A common argument in support of all forms of biomass is that its use reduces reliance on fossil fuels for electricity.<sup>275</sup>

The siting context for biomass is complicated by this broad range of energy resources included in Florida's definition of "biomass" – forest and agricultural byproducts, but also animal waste, landfill gas, and trash.<sup>276</sup> Regardless of their common statutory category, these resources are not equivalent in land use needs, community impacts, emissions, waste, and water use. We see some of these differences acknowledged in environmental permitting requirements and process, but only minimally in relation to siting.

### *1. Regulatory Context*

As is the case with large-scale solar, the Siting Act provides the framework for siting typical biomass facilities above 75 MW. Likewise, smaller biomass facilities are subject to the standard land use approval process set out in the GMA. This dual regulatory context likely has greater implications for biomass projects (categorically) than for solar energy, namely because a biomass plant is a typical industrial land use. The procedural and substantive aspects of the Siting Act – the streamlined permitting, Siting Board land use authority, and the DOAH context – solve more problems for a biomass plant.<sup>277</sup> Compared with a PV solar array, which generates no waste, no emissions, and requires no water supply, a biomass facility will generally require a much longer list of environmental permits.<sup>278</sup> Likewise, although the vast majority of land use

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(observing that landfill gas and solid waste are "by-products of modern civilization and a waste, [therefore] they represent a non-sustainable source").

<sup>274</sup> See, e.g., Fla. Stat. § 377.709, F.S. (2009) ("The Legislature further declares that the combustion of refuse by solid waste facilities to supplement the electricity supply not only represents an effective conservation effort but also represents an environmentally preferred alternative to conventional solid waste disposal in this state.")

<sup>275</sup> This is not entirely true in the case of municipal solid waste. See also USEPA, *Electricity From Municipal Solid Waste*, available at <http://www.epa.gov/cleanenergy/energy-and-you/affect/municipal-sw.html> (last visited Nov. 2009) ("Although MSW consists mainly of renewable resources such as food, paper, and wood products, it also includes nonrenewable materials derived from fossil fuels, such as tires and plastics.")

<sup>276</sup> § 366.91(2)(a), F.S. (2009).

<sup>277</sup> The Florida DEP has provided some general permitting guidance for biomass facilities, see FLA. DEP'T OF ENVTL. PROT., *RECOMMENDATIONS FOR REGULATING FAT, OIL AND GREASE PROCESSING AND BIOFUEL PRODUCTION FACILITIES IN FLORIDA* (2009) (addressing air, solid waste, wastewater, and other considerations for biofuel facilities "that produce either fuel additives, such as biodiesel or ethanol, or produce electricity from burning biomass.").

<sup>278</sup> See Angela Morrison Umland, *Improving Regulations for Biomass-Based Electrical Generating Facilities*, 23-SUM NAT. RES. & ENVT. 15 (2008) (discussing uncertainty regarding environmental permitting requirements for biomass power plants and need for EPA to "issue guidance outlining all of the potentially applicable environmental standards for both construction and operation of biomass-based electrical generating facilities.") See also Umland, Angela Morrison, "Environmental and Land Use Approvals for Biopower and Biofuel Facilities," Presentation, Farm to Fuel Summit, 7 (July 30, 2009) [http://www.floridafarmtofuel.com/summit\\_2009.htm](http://www.floridafarmtofuel.com/summit_2009.htm) (last visited Feb. 2010) (listing zoning and land use

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approvals under the GMA are uncontested, the framework lacks the Siting Act's predictability in terms of likelihood of approval, length of time to receive approval, and cost for an industrial use, that may be opposed locally.<sup>279</sup>

The basic regulatory frameworks for siting biomass plants is supplemented by siting-related nuances for specific forms of biomass. At one end of the spectrum, forest and crop-derived biomass may be affected by a narrow modification of the GMA siting process for "rural agricultural industrial centers," which arguably can include biomass electrical plants.<sup>280</sup> The term is defined as "a developed parcel of land in an unincorporated area on which there exists an operating agricultural industrial facility" that processes "any farm product... or any biomass material that could be used, directly or indirectly, for the production of fuel, renewable energy, bioenergy, or alternative fuel as defined by law..."<sup>281</sup> Eligible parcels are narrowed further by requirements that the existing facility employ at least 200 full-time employees and be located in an unincorporated area "within, or within 10 miles of, a rural area of critical economic concern."<sup>282</sup> A landowner with a qualifying rural agricultural industrial center is authorized to apply for an amendment to the local comprehensive plan for the purpose of "expanding the existing center to include *industrial uses or facilities that are not dependent upon but are compatible with* agriculture and the existing uses and facilities."<sup>283</sup> If the application meets certain criteria,<sup>284</sup> the local government "shall" transmit to the state any plan amendments needed to facilitate expansion of such centers as intended in the statute.<sup>285</sup> In other words, the locality is required to amend its comprehensive plan to accommodate industrial uses compatible with agriculture at (what is probably a very limited number of) qualifying sites.

At the other end of the spectrum – municipal solid waste – the Legislature has encouraged siting so-called "waste to energy" (WTE) incinerators, "as an alternative" to constructing or expanding a landfill.<sup>286</sup> This encouragement is made tangible in the form of mandated funding by electric utilities of local governmental solid waste facilities that generate

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approval, consumptive water use permit, wastewater discharge permit, environmental resource permit, federal wetland permit, federal stormwater permit, and air quality permit as needed for biomass plants).<sup>279</sup> The highly contentious failed siting of a biomass facility in Tallahassee is a recent example in which local opposition, motivated in large part by environmental justice concerns, ultimately caused the developer to abandon its proposal. See Fla. Dep't of Env'tl. Prot., "Biomass Gas and Electric (BG&E) Tallahassee Renewable Energy Center, Permit Application Withdrawn, Updated 02/03/09", <http://www.dep.state.fl.us/air/emission/construction/tallahassee.htm> (last visited Feb. 2010) (providing links to state documents connected with the 42 MW facility proposed by BG&E).

<sup>280</sup> Ch. 2009-154, Laws of Fla., Council Substitute for HB 7053.

<sup>281</sup> § 163.3177(15)(b), F.S. (2009).

<sup>282</sup> *Id.* See also § 288.0656(7), F.S. (2009) (defining "rural area of critical concern").

<sup>283</sup> § 163.3177(15)(c)1, F.S. (2009) (emphasis added)

<sup>284</sup> *Id.* The plan amendment must not increase site by more than 50 percent or 320 acres, whichever is greater; must create at least 50 new full-time jobs; must be supported with sufficient infrastructure for the expansion; and must "contain goals, objectives, and policies that will ensure that any adverse environmental impacts of the expanded center will be adequately addressed and mitigation implemented or demonstrate that the local government comprehensive plan contains such provisions." *Id.*

<sup>285</sup> § 163.3177(15)(c)2, F.S. (2009).

<sup>286</sup> § 403.706.11, F.S. (2009). Each county in the state is obligated to meet the waste management and disposal needs "of all incorporated and unincorporated areas of the county." § 403.706(1), F.S. (2009).

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electricity.<sup>287</sup> WTE facilities are also favored with an exemption from the Determination of Need requirement for power plant expansions that would otherwise trigger the Siting Act (by bringing total capacity in excess of 75 MW).<sup>288</sup> Municipal solid waste is the only form of biomass that receives these regulatory advantages.<sup>289</sup> As a prerequisite to siting, however, a proposed WTE facility must be shown to satisfy criteria designed to address the inherent conflict between the state's interest in waste reduction and recycling and reliance on waste as an energy source.<sup>290</sup> For example, the applicant seeking approval to site and build a WTE facility must provide "reasonable assurance" that it is "a necessary part of the local government's integrated solid waste management program in the jurisdiction where the facility will be located and cannot be avoided through feasible and practical efforts to use recycling or waste reduction."<sup>291</sup> It must be shown to be economically infeasible to make use of capacity at existing WTE facilities "within reasonable transportation distance" from the proposed site.<sup>292</sup> The locality where the facility is sited must demonstrate that it maintains a solid waste management and recycling program meeting certain requirements,<sup>293</sup> and the facility must be in state and local land use compliance under the GMA.<sup>294</sup>

## 2. *Other Siting Considerations*

Community impact and land use compatibility are paramount siting considerations for biomass. Biomass power plants are industrial land uses – they generate air emissions, wastewater, as well as ash and other wastes.<sup>295</sup> Depending on the site selected, biomass plants can raise environmental justice concerns and general local opposition, similar to other polluting industrial land uses.<sup>296</sup> Even assuming "carbon neutrality," local air quality will still degraded as

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<sup>287</sup> See § 377.709, F.S. (2009).

<sup>288</sup> 377.709(6), F.S. (2009) (allowing exemption from § 403.519 for solid waste facility expansions not greater than 50 MW, regardless of resulting total capacity of the facility).

<sup>289</sup> Phosphate industry cogeneration plants, however, have a similar "expansion" exemption. See § 403.506(1), F.S. (2009).

<sup>290</sup> See § 403.7061, F.S. (2009) (explaining that "Waste-to-energy facilities will continue to be an integral part of the state's solid waste management practices. However, the state is committed to achieving its recycling and waste reduction goals and must ensure that waste-to-energy facilities are fully integrated with the state's waste management goals. Therefore, the Legislature finds that the department should evaluate applications for waste-to-energy facilities...to confirm that the facilities are part of an integrated waste management plan.")

<sup>291</sup> § 403.7061(3)(a) F.S. (2009).

<sup>292</sup> § 403.7061(3)(b) F.S. (2009).

<sup>293</sup> § 403.7061(3)(c)-(g) F.S. (2009).

<sup>294</sup> § 403.7061(3)(h) F.S. (2009).

<sup>295</sup> The results of chemical analysis of ash from Waste To Energy facilities located in Florida are documented to include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc. Fla. Dep't of Env'tl. Prot., "Waste to Energy Ash Evaluation Results" (current as of Mar. 24, 2009), [http://p2000.dep.state.fl.us/waste/ash/wte\\_about.htm](http://p2000.dep.state.fl.us/waste/ash/wte_about.htm) (last visited Nov. 2009) (searchable by facility and pollutant). See also FLA. DEP'T OF ENVTL. PROT., RECOMMENDATIONS FOR REGULATING FAT, OIL AND GREASE PROCESSING AND BIOFUEL PRODUCTION FACILITIES IN FLORIDA 6 (2009) (stating that "facilities burning biomass as fuel will be regulated in the same manner as other incinerators.).

<sup>296</sup> Local opposition to a polluting facility is often derided as stemming from a self-interested "not-in-my-backyard" or NIMBY mentality. That reductive view discounts the earnest public interest environmental

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carbon dioxide that would have been released slowly over time, over many square miles, is instead released from a single local site. For this reason, despite supporting biomass as an energy resource, the Union of Concerned Scientists insists on protection of public health as a core principle for biomass development, explaining that “some bioenergy applications can degrade air, water, or land quality, creating tradeoffs between the potential benefits and public health risks.”<sup>297</sup> Florida law affirms that “[t]he generation, transmission, and delivery of electricity should be accomplished with the least detriment to the environment and public health.”<sup>298</sup> Environmental and public health concerns are likely to be highest in connection with siting WTE “biomass” facilities.<sup>299</sup>

Land use efficiency is an even more critical consideration for biomass than for PV arrays. Of all renewable resources, “biofuels and biomass burning of energy crops for electricity take the most space per unit of power.”<sup>300</sup> Directing biomass plants to brownfields or other previously developed sites where feasible can minimize land-based environmental impacts.<sup>301</sup> The EPA lists 19 candidate landfills in Florida for landfill gas-to-energy projects,<sup>302</sup> for example, and the NREL “limbo lands” study identified 25 Florida brownfields as high-potential sites for biopower plants.<sup>303</sup> While these or similar sites may satisfy key logistical criteria, unlike PV, the air

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concerns that drive many local organizers to oppose a siting decision. Likewise, environmental justice advocates, even when focused on a particular site, are working toward larger distributive equity goals. This is not to say that NIMBY is not part of the equation, but the term NIMBY fails to capture the more nuanced and legitimate concerns that local opposition brings to the public debate.

<sup>297</sup> UNION OF CONCERNED SCIENTISTS, PRINCIPLES FOR BIOENERGY DEVELOPMENT 3 (2007), *available at*:

[http://www.ucsusa.org/clean\\_energy/technology\\_and\\_impacts/energy\\_technologies/smartbioenergy.html](http://www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/smartbioenergy.html).

<sup>298</sup> § 337.901(7)(c), F.S. (2009).

<sup>299</sup> The municipal solid waste that incinerated at WTE facilities may include, by definition, “sludge unregulated under the federal Clean Water Act or Clean Air Act, sludge from a waste treatment works, water supply treatment plant, or air pollution control facility, or garbage, rubbish, refuse, special waste, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from domestic, industrial, commercial, mining, agricultural, or governmental operations.” § 403.703(32), F.S. (2009) (defining “solid waste”). Burning municipal solid waste “produces nitrogen oxides and sulfur dioxide as well as trace amounts of toxic pollutants, such as mercury compounds and dioxins.” *See* U.S. EPA, “Electricity from Municipal Solid Waste: Air Emissions Impacts,”

<http://www.epa.gov/cleanenergy/energy-and-you/affect/municipal-sw.html> (last visited Nov. 2009).

<sup>300</sup> Robert McDonald, et al., *Energy Sprawl or Energy Efficiency: Climate Policy Impacts on Natural Habitat for the United States of America*, PLoS ONE 4(8): e6802 (2009).

<sup>301</sup> Another efficient siting approach, where feasible, is co-firing in existing coal plants, allowing biomass power plants to take advantage of existing infrastructure. This does not result in new electrical generation, but displaces a percentage of the plant’s coal-derived power. BLONZ, ET. AL., *supra* note 19, at 33.

<sup>302</sup> U.S. EPA, Landfill Methane Outreach Program, “Landfill Gas Energy Projects and Candidate Landfills” (map) (current as of July, 2009), <http://www.epa.gov/lmop/proj/index.htm> (last visited Nov. 2009). The map identifies 19 candidate sites and 16 operational projects in Florida.

<sup>303</sup> NREL, CONVERTING LIMBO LANDS TO ENERGY-GENERATING STATIONS: RENEWABLE ENERGY TECHNOLOGIES ON UNDERUSED, FORMERLY CONTAMINATED SITES, 28-29 (2007). All sites met the criteria of being located within 50 miles of major roads, 10 miles of major transmission lines, 50 acres or larger in size, and located in a county with requisite total biomass residues. *See also* U.S. EPA, “EPA Tracked Sites in Florida with Biopower Facility Siting Potential” (Map) (updated as of Aug. 24, 2009),

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emissions, noise, waste, and truck traffic associated with a biomass facility bring community impact to the fore. Will siting a biomass facility on a brownfield site exacerbate or prolong environmental injustices in the community? Florida's brownfields statute incorporates environmental justice into its public participation provisions, defining the term to mean "the fair treatment of all people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."<sup>304</sup> Is the site sufficiently insulated from residences and schools to make reuse of the site ideal? Early public involvement in the site selection process will help bring pertinent concerns to light early enough to expand the range of alternative sites for review.

Two additional opportunities exist for land use efficiency in siting biomass, neither of which are likely to raise new community impact concerns. The first, where feasible, is not to site a new facility at all but to convert or co-fire an existing coal-fired power plant with biomass to displace energy from coal. A full conversion, and co-firing to a lesser degree, reduces community impacts of an existing facility.<sup>305</sup> The second is to use biomass for onsite combined heat and power production, – a form of DG that makes use of already developed land.<sup>306</sup>

A third siting consideration for biomass is geographic constraints, which may limit the range of viable sites. Power plants using forest and crop-derived biomass need ready access to feedstocks, transmission lines, and water supply.<sup>307</sup> Biomass plants "require large areas of land

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available at <http://www.epa.gov/renewableenergyland/maps.htm> (last visited Nov. 2009). It is not clear whether there is overlap between EPA's landfill and brownfields lists.

<sup>304</sup> § 376.79(9), F.S. (2009). The Brownfields Rehabilitation Act defines the term and requires that, for each rehabilitation of a brownfield, "an advisory committee" must be formed "for the purpose of improving public participation and receiving public comments on rehabilitation and redevelopment of the brownfield area, future land use, local employment opportunities, community safety, and environmental justice." § 376.80(4), F.S. (2009). Environmental justice is not raised as an issue of concern in the Power Plant Siting Act, nor in the DEP's Power Plant Application Guide (requesting that applicants address a list of potential socio-economic factors, not including racial composition of affected population), available at: [http://www.dep.state.fl.us/siting/files/renew\\_resource\\_permitting.pdf](http://www.dep.state.fl.us/siting/files/renew_resource_permitting.pdf). It is also not raised in the Growth Management Act, so local comprehensive plans can but are not specifically encouraged or required to consider environmental justice in planning.

<sup>305</sup> See U.S. EPA & NREL, STATE BIOENERGY PRIMER 30 (2009) ("Biopower facilities using biomass feedstocks in certain types of direct combustion technologies (e.g., fluidized bed boilers) and gasification technologies (e.g., integrated gasification combined cycle, or IGCC) have reduced SO<sub>2</sub> and NO<sub>x</sub> emissions, compared to coal-only electricity production")(internal citations omitted).

<sup>306</sup> SOUTHEAST AGRIC. AND FORESTRY ENERGY RES. ALLIANCE, *supra* note 269, at 31. For general information on biomass CHP systems, see U.S. EPA, Combined Heat and Power Partnership: Biomass CHP, <http://www.epa.gov/chp/basic/renewable.html>; for information on assessing a site's potential for successful CHP, see "Combined Heat and Power Partnership: Streamlining Project Development," <http://www.epa.gov/chp/project-development/index.html> (last visited Nov. 2009).

<sup>307</sup> Siting should take into account, for example, the effect of proximity to a Water Resource Caution Area "a geographic area, officially designated by the Governing Board [of a water management district] by rule that is experiencing, or is anticipated to experience within the next 20 years, critical water resource problems as provided by the criteria identified in subsection 40A-2.801(1), F.A.C." 40A-2.021(58), F.A.C. (2009). See also 40A-2.802, F.A.C. (2009) (specifically addressing permitting in Water Resource Caution Areas).

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for equipment and fuel storage.”<sup>308</sup> Landfill gas plants must, by definition, be sited at existing landfills, and not every landfill has the same recovery potential.<sup>309</sup> WTE facilities are bound by the siting constraints in § 403.7061, *Florida Statutes*, discussed above, which sets out jurisdictional need and waste management policy-based siting criteria that have nothing to do with the land characteristics of any particular site.

For traditional biomass, a more generalized but still geographic constraint may emerge over time – competition in the use of agricultural land within the state. A long-term concern is the potential for biofuels biorefineries and power plants to compete for the same wood or crop feedstocks.<sup>310</sup> In the case of wood, “existing paper, pulp, fiber, and wood products industries are concerned that bioenergy may increase the price of their feedstocks.”<sup>311</sup> It is possible that “too much demand for wood concentrated in one geographic area may result in depletion of the biomass resource.”<sup>312</sup> Even if the transportation and electricity sectors ultimately compete “for the same biomass products, both sectors place demands on limited agricultural land resources” as well as “put stress on other sectors that require agricultural products, such as livestock and other grain markets.”<sup>313</sup>

Finally and most importantly, a fourth siting consideration with local and global implications is land use sustainability in the cultivation and harvest of forest or crop-derived biomass. Although there is general consensus that plant-based biomass has potential as a sustainable source of electricity and fuel, “a rapid global expansion of bioenergy development could have unwanted environmental and economic consequences, possibly including reduced global capacity to produce food, fiber, and industrial materials.”<sup>314</sup> A key concern for cultivated

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<sup>308</sup> U.S. EPA, “Electricity from Non-Hydroelectric Renewable Energy: Biomass Land Resource Use,” <http://www.epa.gov/cleanenergy/energy-and-you/affect/non-hydro.html#biomass> (last visited Nov. 2009).

<sup>309</sup> The EPA considers “strong candidates for LFGE projects [to] include landfills that: contain at least 1 million tons of MSW, have a depth of 50 feet or more, and are open or recently closed. In addition, the site should receive more than 25 inches of rainfall annually.” (internal citations omitted). U.S. EPA, Draft *Clean Energy Strategies for Local Governments*, 7.4.6 (Dec. 8, 2008), available at: <http://www.epa.gov/lmop/res/index.htm#ceguide> (last visited Nov. 2009). See also U.S. EPA, FLORIDA STATE PRIMER: A PRIMER ON DEVELOPING FLORIDA’S LANDFILL-GAS-TO-ENERGY POTENTIAL (2000) available at: <http://www.epa.gov/lmop/res/primers.htm> (last visited Nov. 2009).

<sup>310</sup> Southern Alliance for Clean Energy, “Biopower Overview,” [http://www.cleanenergy.org/index.php?/Learn-AboutDetail.html?form\\_id=52&item\\_id=28](http://www.cleanenergy.org/index.php?/Learn-AboutDetail.html?form_id=52&item_id=28) (last visited Nov. 2009). Although this is not currently a pressing concern in Florida, the Navigant study found potential for biomass power to compete for resources with biofuels applications. See NAVIGANT, *supra* note 56, at 221.

<sup>311</sup> *Id.*

<sup>312</sup> *Id.*

<sup>313</sup> BLONZ, ET. AL., *supra* note 19, at 2.

<sup>314</sup> See UNION OF CONCERNED SCIENTISTS, PRINCIPLES FOR BIOENERGY DEVELOPMENT 2 (2007), available at: [http://www.ucsusa.org/clean\\_energy/technology\\_and\\_impacts/energy\\_technologies/smartbioenergy.html](http://www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/smartbioenergy.html). See also USEPA & NREL, STATE BIOENERGY PRIMER 26 (2009) (“Potentially adverse environmental impacts could result if increased production is not handled sustainably, including air and water pollution, negative impacts of direct and indirect land use changes, and increased water consumption); BLONZ, ET. AL., *supra* note 269, at 35-38 (discussing environmental impacts of biomass/biofuel production); Erik Bluemel, *Biomass Energy: Ensuring Sustainability Through Conditioned Economic Incentives*, 19 GEO.

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biomass is that converting agricultural lands from food to fuel production will result in destruction of other ecologically valuable land elsewhere to make room for the displaced food crops.<sup>315</sup> Without assurance of sustainable practices, these risks of harm are the source of serious concern and cast doubt on the biomass “carbon neutrality” claim. There are numerous organizations working to develop guidance for sustainable biomass development, but to date there are no enforceable sustainability standards for biomass in Florida or at the federal level.<sup>316</sup> Florida has Best Management Practices for Silviculture,<sup>317</sup> which property owners can adopt voluntarily, but there is no specific guidance for biomass development.<sup>318</sup> As facilities are sited in the absence of such standards, careful site selection to avoid unwanted consequences is especially important. Sustainability considerations for a proposed site might include: How far is the facility from its feedstock? If biomass is carried in by truck from a distant source location,

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INT’L ENVTL. L. REV. 673 (2007) (discussing environmental impacts of biomass cultivation for biofuels and combustion, with an international scope); and Friends of the Earth & Institute for Agric. and Trade Pol’y, <http://www.sustainablebiomass.org> (last visited Feb. 2010) (asserting that “biomass production done wrong ... could actually decrease biodiversity, soil health, water quality and wildlife habitat, with minimal or negative greenhouse gas reduction benefits.”).

<sup>315</sup> Indirect land use changes are more directly linked to biofuel crops than biomass for electricity, but both are implicated to the extent that biomass for power production is derived from biofuel crop residues. See Bluemel, *supra* note 311. See also Union of Concerned Scientists, “Land Use Changes and Biofuels—Fact Sheet,” (Oct. 2008), *available at*:

[http://www.ucsusa.org/clean\\_vehicles/technologies\\_and\\_fuels/biofuels/Land-Use-Changes-and-Biofuels.html](http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/Land-Use-Changes-and-Biofuels.html) (last visited Nov. 2009).

<sup>316</sup> See e.g., Council on Sustainable Biomass Production, <http://www.csbp.org/> (last visited Feb. 2010) (developing a Sustainability Standard for Biomass Production) and Friends of the Earth & Inst. For Agric. and Trade Pol’y, [www.sustainablebiomass.org](http://www.sustainablebiomass.org) (last visited Feb. 2010) (developing principles to “serve as a basis for policy development, criteria for local development and commercialization of biomass projects, and as a framework for drafting more specific technical international standards and codes of practice for sustainable biomass production and use.”). The Department of Energy Biomass Program is also engaged in into the biomass sustainability research. See <http://www1.eere.energy.gov/biomass/> (last visited Jan. 2010). At least on state, New York, has considered requiring that sustainable practices be used for biomass-based projects for eligibility under its renewable portfolio standard. See Uhland, *supra* note 276, citing NEW YORK STATE ENERGY RESEARCH AND DEV. AUTH, NEW YORK STATE RENEWABLE PORTFOLIO STANDARD: BIOMASS GUIDEBOOK (2006). It is not clear that this was ever formally adopted as policy.

<sup>317</sup> See FLA. DEP’T OF AGRIC. & CONSUMER SERV., FLORIDA SILVICULTURE BEST MANAGEMENT PRACTICES (2003), *available at*:

[http://www.fl-dof.com/forest\\_management/bmp/index.html](http://www.fl-dof.com/forest_management/bmp/index.html) (last visited Nov. 2009). See also Fla. Dep’t of Agric. & Consumer Serv., “Best Management Practices for Silviculture and Notice of Intent to Implement,”

<http://www.doacs.state.fl.us/onestop/forms/11305.pdf> (information and form for landowner voluntary notice of intent to implement BMPs).

<sup>318</sup> See Alexander M. Evans & Robert T. Pershel, FOREST GUILD, AN ASSESSMENT OF BIOMASS HARVESTING GUIDELINES 5 (2009) (reviewing biomass harvesting guidelines or standards that cover biomass removals currently available from Maine, Minnesota, Missouri, Pennsylvania, Wisconsin, parts of Canada, and the Forest Stewardship Council (FSC). Other state forest practice laws cover woody biomass removals inasmuch as they are a type of forest management but not specific to biomass removals.”). Florida’s Division Forestry was directed to assess forest-derived biomass, with a Final Woody Biomass Economic Study to be delivered to the Governor and the Legislature by Mar. 1, 2010.

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how much tailpipe emissions will the hauling trucks produce? Is the site supporting a conversion of land from food production to biofuel production, and are there alternative sites that would avoid this conversion? When biomass power plants rely on biofuel or other crop residues, whether and how much can be sustainably removed is a “site-by-site” determination, as “these resources also have an important role in maintaining soil fertility and protecting cropland against erosion.”<sup>319</sup> Such questions underscore the need to measure perceived benefits of biomass energy projects against its full range impacts, including processing and ongoing operations.<sup>320</sup>

#### IV. OPPORTUNITIES TO GUIDE RENEWABLE ENERGY SITING

With Florida’s renewable energy development still in its early stages, a window of opportunity exists for the state and for local governments to actively guide siting. There are convincing reasons to craft siting policy now, at the state and local level, instead of responding project by project, or controversy by controversy, as they arise.

First, early planning can help avoid misguided and wasteful land use. Planning for renewable energy’s acreage demand will allow for a deliberate integration of conservation and wildlife protection objectives and renewable energy goals. Renewable energy projects can divide environmental advocates in ways that a fossil fuel plant does not – the sad irony is that this divisiveness can be self-defeating. With this dynamic at play, one commentator observed, it’s “[n]o wonder environmentalists are more effective opposing renewables than fossil fuel power projects.”<sup>321</sup> Of course, there is no inherent conflict in supporting renewable energy and opposing a particular site for development. Bringing the myriad environmental objectives together early may allow advocates and policymakers to avoid or reconcile potential conflicts between otherwise compatible aims.<sup>322</sup>

Second, guiding renewable energy siting can reduce community strife. The “smaller-capacity, more dispersed nature of renewable energy technologies necessitates a larger number of siting decisions, increasing the chances and likelihood of public opposition.”<sup>323</sup> Local governments and community organizations can determine what kind of energy projects are desirable, how to attract them, and where to site them – a task more easily done without a

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<sup>319</sup> SOUTHEAST AGRIC. AND FORESTRY ENERGY RES. ALLIANCE, *supra* note 269, at 43.

<sup>320</sup> See Friends of the Earth & Inst. For Agric. and Trade Pol’y, “Draft Principles,” [www.sustainablebiomass.org](http://www.sustainablebiomass.org) (last visited Feb. 2010) (“The full life cycle of biomass production (including processing for energy) must significantly reduce greenhouse gas emissions. As part of achieving this objective, the use of fossil fuels in the production and processing of biomass crops should be minimized, prevented whenever possible, and eventually phased out. Selection, production and use of biomass crops should also result in reduced greenhouse gas emissions.”).

<sup>321</sup> Robert D. Kahn, *Siting Struggles: The Unique Challenge of Permitting Renewable Energy Power Plants*, THE ELEC. J., 29 (Mar. 2000) (discussing the local context for siting a renewable energy facility from the perspective of project proponent).

<sup>322</sup> See, e.g., DEFENDERS OF WILDLIFE ET AL. KEY PRINCIPLES: BALANCING RENEWABLE ENERGY DEVELOPMENT AND LAND CONSERVATION IN A WARMING WORLD (2009), available at: [http://www.defendersofwildlife.org/resources/publications/policy\\_and\\_legislation/balancing\\_renewable\\_energy\\_development\\_and\\_land\\_conservation\\_in\\_a\\_warming\\_world.pdf](http://www.defendersofwildlife.org/resources/publications/policy_and_legislation/balancing_renewable_energy_development_and_land_conservation_in_a_warming_world.pdf) (representing effort of environmental NGOs to reach consensus on principles for avoiding such conflicts).

<sup>323</sup> DORIS ET AL., *supra* note 5, at 133.

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proposal on the table. Once a controversial project is under review, a win-or-lose dichotomy inevitably frames deliberations and the public exchange. Disagreements will be more divisive and emotions run high. In the context of generalized public approval of renewable energy, it should be possible to bypass some of the stereotypical siting fiascos that can turn friends against each other and waste time, money, and effort, usually on all sides. In this sense, planning ahead also helps developers of renewable energy projects. Smart developers will be looking for ways to steer clear of siting difficulties and focus on sites in communities that want their projects.<sup>324</sup> Planning can also avoid the risk that, “in the context of a dispute, the viewpoint of the party with more money to mount court battles or greater local political influence may prevail over sound policy.”<sup>325</sup> Building local consensus in advance may be the most effective form of “streamlining” for renewable energy.

Third, although there are numerous ways the state can assist with siting issues, local governments have a great deal of power in this arena. Often “action by local government can be determinative of whether a renewable energy resource is actually developed, since the local government generally controls the siting of the facilities.”<sup>326</sup> New state siting policies do not have to be in place for localities to take the lead in guiding renewable energy projects to the most appropriate sites. Indeed, it may be to their advantage to initiate local planning without waiting for state policies that may mandate how localities treat project proposals.

For all these reasons, now is the ideal time to make the most of opportunities to guide renewable energy siting. Key opportunities include the following:

*Facilitate siting for widespread distributed generation (DG).* The land use efficiency and conservation benefits of DG are unsurpassed, and the potential energy supply from rooftop PV warrants its expansion being a top priority, toe to toe with efforts to modernize the grid. As state and local governments anticipate and respond to effects of climate change, decentralized power will also take on greater importance for climate adaptation.<sup>327</sup> Coastal energy infrastructure is vulnerable to sea-level rise and the increase in severe weather expected to result from climate change. Florida and the other Gulf states are likely to suffer the greatest impacts from these phenomena.<sup>328</sup> Whether with rooftop solar panels or other onsite energy generators, expanding DG would have the effect of spreading “climate-related risk over a large geographic area,

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<sup>324</sup> See Energy Bar Assoc., *EBA Climate Change Primer: Financing a Renewable Project*, 29 ENERGY L. J. 195, 208 (2008); Kahn, *supra* note 317, at 29 (“Successful renewable developers exceed what regulators and the community expect. They wisely take their projects beyond compliance.”).

<sup>325</sup> Edna Sussman, *Reshaping Municipal and County Laws to Foster Green Building, Energy Efficiency, and Renewable Energy*, 16 N.Y.U. ENVTL. L.J. 1, 23 (2008).

<sup>326</sup> *Id.* at 23. See also Patricia E. Salkin, *Sustainability and Land Use Planning: Greening State and Local Land Use Plans and Regulations to Address Climate Change Challenges and Preserve Resources for Future Generations*, 34 WILLIAM & MARY ENVTL. L. & POL’Y REV. 1 (2009).

<sup>327</sup> RES. FOR THE FUTURE, ADAPTING TO CLIMATE CHANGE: THE PUBLIC POLICY RESPONSE – PUBLIC INFRASTRUCTURE 30-31 (2009). Climate adaptation is the “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” U.S. EPA, <http://www.epa.gov/climatechange/effects/adaptation.html#ref> (last visited Feb. 2010).

<sup>328</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 28, at 59.

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thereby reducing the impact of climate related events (eg, a hurricane) focused in a specific area.”<sup>329</sup>

The state has already eliminated a number of regulatory barriers to DG siting, but interconnection for rooftop systems can be improved to conform with best practices dictating a higher maximum MW threshold and standardization for all utilities.<sup>330</sup> In the interest of maximizing DG within grid constraints, the state is in a position to facilitate geographically strategic DG installation in response to “congestion costs on specific locations on the transmission and distribution system.”<sup>331</sup> The Florida Energy Commission (FEC) recommended in 2007 that the PSC coordinate with utilities and the Florida Reliability Coordinating Council to “establish target zones for DG deployment and active load management.”<sup>332</sup> This could be made even more effective combined with financial or other incentives to support PV and other DG modes in the high-need areas of the state. The state could explore a utility ownership model to facilitate a coherent deployment of PV in congested areas as the FEC proposed. To guide siting indirectly, the state could requiring “local governments, working in conjunction with their local electric and natural gas utilities, make provisions for siting small generation facilities close to demand centers.”<sup>333</sup> According to the FEC, this would reduce energy lost in transmission and minimize the need for substations and transmission lines.<sup>334</sup>

At the local level, now is the time to review existing solar access and related ordinances, if they exist, and conform them with best practices as closely as possible.<sup>335</sup> With local permitting so consistently cited as a barrier, local governments should reevaluate and simplify their processes if necessary. As part of this evaluation, local governments might revisit their comprehensive plans and propose amendments to support rooftop solar in appropriate elements. For example, under the GMA it is mandatory that all comprehensive plans include housing elements.<sup>336</sup> This would be an ideal place to add or strengthen the goals and policies for promoting and supporting customer-sited DG.<sup>337</sup> Finally, site guidance for new construction that accommodates renewable energy devices can assist with local DG siting in the future.<sup>338</sup>

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<sup>329</sup> *Id.*

<sup>330</sup> See NETWORK FOR NEW ENERGY CHOICES, ET. AL., *supra* note 205.

<sup>331</sup> FLA. ENERGY COMM’N, 2007 REPORT TO THE LEGISLATURE 107 (2007) (Recommendation 67: Distributed Energy), *available at*:

[http://myfloridaclimate.com/climate\\_quick\\_links/florida\\_energy\\_climate\\_commission/energy\\_climate\\_change\\_policy/florida\\_energy\\_commission\\_2006\\_2007](http://myfloridaclimate.com/climate_quick_links/florida_energy_climate_commission/energy_climate_change_policy/florida_energy_commission_2006_2007) (last visited Nov. 2009).

<sup>332</sup> *Id.*

<sup>333</sup> FLA. ENERGY COMM’N, 2007 REPORT TO THE LEGISLATURE 106 (2007) (Recommendation 66: Provide for Future Siting for Distributed Generation Systems), *available at*:

[http://myfloridaclimate.com/climate\\_quick\\_links/florida\\_energy\\_climate\\_commission/energy\\_climate\\_change\\_policy/florida\\_energy\\_commission\\_2006\\_2007](http://myfloridaclimate.com/climate_quick_links/florida_energy_climate_commission/energy_climate_change_policy/florida_energy_commission_2006_2007). The FEC was in existence in 2006 and 2007, and has since been dismantled and functionally replaced with the Florida Energy and Climate Commission.

<sup>334</sup> *Id.*

<sup>335</sup> See, e.g., PITT, *supra* note 225, at 47-52, 87.

<sup>336</sup> § 163.3177(6)(f), F.S. (2009).

<sup>337</sup> § 163.3177(f), F.S. (2009) (requiring policies on the “use of renewable energy resources.”).

<sup>338</sup> The NREL *State of the States 2009* Report highlights the EPA State Best Practices Web site and the International Council for Local Environmental Initiatives’ online information as good resources that can help state and local governments assist decision makers in weighing options and taking steps toward

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*Guide projects to sites that maximize land use efficiency and minimize environmental and community impacts.* A project that can fit into a preexisting industrial site is less likely to harm the landscape or impose new burdens on neighbors.<sup>339</sup> The state could support renewable energy developers and communities alike by supplementing the EPA/NREL analyses of potentially suitable brownfield and landfill sites in Florida with more local information and context.<sup>340</sup> Incentives for renewable energy projects should be tied to defined siting priorities, favoring reuse of contaminated sites or other developed land and disfavoring greenfield sites.

At the local level, facility siting can be guided by amendments to the future land use element, and related changes to LDRs, so that they identify desirable sites within the community for particular energy projects. This would be one way to comply with the 2008 amendment to Chapter 163 requiring that future land use element address “energy-efficient land use patterns accounting for existing and future electric power generation and transmission systems.”<sup>341</sup> Textual guidance and map designations of this kind could be useful in steering projects of all sizes to the right sites – even in the context of the Siting Act, it could be helpful to a community in the land use consistency determination process to have clearly spelled out the public preferences on the land use map.

Another planning tool is a renewable energy element in the local comprehensive plan.<sup>342</sup> An energy element is not mandatory under Chapter 163, and although the state could make it so,<sup>343</sup> there is no reason for local governments to wait for direction.<sup>344</sup> Developing an energy element is an opportunity for elected officials, planners, local interest groups and the public to

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renewable energy development. Another valuable resource is the online Database of State Incentives for Renewables and Efficiency (DSIRE), *supra* note 5, which compiles information on state and federal policies. DORIS, ET AL., *supra* note 5, at 132. *See also* Sussman, *supra* note 321, at 34-35 (discussing opportunities for localities to plan for integration of solar panels into new construction).

<sup>339</sup> Kahn, *supra* note 317, at 23 (discussing the local context for siting a renewable energy facility from the perspective of project proponent).

<sup>340</sup> EPA has developed a database includes GIS-based maps, a Google interactive map, and associated Excel data spreadsheets, that show the expected suitability of contaminated sites for renewable energy production. *See* <http://www.epa.gov/renewableenergyland>.

<sup>341</sup> § 163.3177(6)(a), F.S. (2009) (new language added by the 2009 Legislature’s HB 697. At the time of this writing, the Department of Community Affairs is engaged in rulemaking for the implementation of this and related new requirements from that bill).

<sup>342</sup> This opportunity was also highlighted by the FEC. *See* FLA. ENERGY COMM’N, 2007 REPORT TO THE LEGISLATURE 101 (2007) (Recommendation 61: Energy Element in Comprehensive Plans), available at: [http://myfloridaclimate.com/climate\\_quick\\_links/florida\\_energy\\_climate\\_commission/energy\\_climate\\_change\\_policy/florida\\_energy\\_commission\\_2006\\_2007](http://myfloridaclimate.com/climate_quick_links/florida_energy_climate_commission/energy_climate_change_policy/florida_energy_commission_2006_2007) (last visited Nov. 2009). For an overview of local efforts to address energy and related issues in using comprehensive plans, see Salkin, *supra* note 322.

<sup>343</sup> Apparently “there have been several unsuccessful attempts to include a ‘utility element as a required component in comprehensive plans.” FLA. ENERGY COMM’N, 2007 REPORT TO THE LEGISLATURE 101 (2007) (Recommendation 61: Energy Element in Comprehensive Plans), available at: [http://myfloridaclimate.com/climate\\_quick\\_links/florida\\_energy\\_climate\\_commission/energy\\_climate\\_change\\_policy/florida\\_energy\\_commission\\_2006\\_2007](http://myfloridaclimate.com/climate_quick_links/florida_energy_climate_commission/energy_climate_change_policy/florida_energy_commission_2006_2007) (last visited Nov. 2009).

<sup>344</sup> *See* § 163.3177(7)(k)(12), F.S. (2009)(12) (making option “other elements particular to, and necessary for, the area concerned).

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agree on what kind of projects they want to attract to the area and to identify acceptable sites for renewable energy facilities. For this purpose, local governments do not have to employ the state’s definition of “renewable energy” – they can encourage particular resources that are locally preferred. Likewise, localities should ensure that renewable energy sources, categorically or specifically, are included “as uses in the appropriate land use category of the future land use element and identify locations for such uses on the future land use map.”<sup>345</sup>

*Develop sustainability standards for biomass development.* The state should develop sustainability standards for all forms of biomass development to clarify how to select appropriate facility sites and ensure sustainable operations. Beyond the environmental benefits of ensuring biomass sustainability, trusted standards could ease much of the local opposition to biomass facilities in their communities. As the multi-stakeholder Council for Sustainable Biomass Production has emphasized, standards can benefit biomass developers by increasing access to new markets while attracting and maintaining local demand for biomass.<sup>346</sup> Even without state standards, local governments can develop sustainability plans for forest- or crop-based biomass plants, or at minimum press developers for commitments to explicit practices that will protect the local environment and ensure responsible harvesting.<sup>347</sup>

*Evaluate one-stop permitting for smaller renewable energy projects.* The state should evaluate options for one-stop permitting for smaller renewable energy projects. The potential benefit of such a measure would be to site renewable energy projects more expeditiously and efficiently and to eliminate the inverse regulatory barrier that may hinder projects to which the Siting Act does not apply. Possible approaches might include adopting a new statutory framework for small project siting to operate separately from the Siting Act, identifying ways to incorporate smaller projects into appropriate features of the Siting Act, or amending the expedited permitting statute,<sup>348</sup> which currently makes power-generating projects ineligible. There are risks with these approaches, however, that need to be considered with great care. For example, as this Article has taken care to emphasize, the context for siting renewable energy facilities is not identical for every resource included in Florida’s definition of “renewable energy.” Expedited permitting and siting may be desirable for a small solar PV array, but for a waste-to-energy facility? The fact that two “renewable energy” projects could have such different pollution profiles underscores the need to account for local health and environmental impacts through careful regulatory design. Other key considerations would be the interplay between state and local authority with respect to siting, where to house the “one-stop,” how to

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<sup>345</sup> Terrell K. Arline, *Renewable Energy: A Local Government Perspective*, 12.3 (CLE Materials, ELULS Annual Update, 2009). The future land use plan is based on surveys, studies, and data regarding the area, including energy-efficient land use patterns accounting for existing and future electric power generation and transmission systems. § 163.3177(6)(a), F.S. (2009).

<sup>346</sup> See COUNCIL ON SUSTAINABLE BIOMASS PRODUCTION, WHY A SUSTAINABILITY STANDARD WILL BE OF VALUE TO BIOMASS PRODUCERS (2009), available at: <http://www.csbp.org>.

<sup>347</sup> See, e.g., GAINESVILLE REGIONAL UTILITIES, STEWARDSHIP INCENTIVE PLAN FOR BIOMASS FUEL PROCUREMENT (2009), available at: <http://www.gru.com/Pdf/futurePower/ADOPTED%20April%202%202009%20Forest-Produced%20Biomass%20Fuel%20Plan.pdf>.

<sup>348</sup> § 403.703, F.S. (2009). See HB 773, 2010 session, which proposes this option.

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structure participation by third parties, whether an option of this kind could be used to promote some renewable resources over others, and if so, on what basis.

*Plan for siting the emerging resource of offshore wind and ocean energy.* Florida has no regulatory framework for offshore wind and ocean. This is not really surprising, given that no projects are on the immediate horizon; however, recent federal developments designed to facilitate offshore energy projects should spur Florida to begin actively preparing to address the range of issues an offshore proposal of either kind would present. Under the Energy Policy Act of 2005, the Minerals Management Service (MMS) within the U.S. Department of the Interior has authority over renewable energy projects on the Outer Continental Shelf.<sup>349</sup> In April 2009, the MMS promulgated a final rule providing a long-awaited regulatory framework for leasing federal submerged lands in ocean waters for offshore renewable projects.<sup>350</sup> This important step is likely to lead to an increased number of offshore proposals in the U.S.<sup>351</sup>

A key difference between siting onshore and offshore energy facilities is jurisdictional – state control over activities beyond state waters is limited. Even without jurisdiction over federal waters, however, Florida has important opportunities to influence energy project siting off its coasts. Capitalizing on these opportunities will take preparation, in advance of an actual project proposal. Most importantly, Florida can exert influence through the Coastal Zone Management Act (CZMA), which requires federally permitted offshore activities be consistent “to the maximum extent possible” with “enforceable policies” of the state’s own federally approved “coastal zone management plan” (CZMP).<sup>352</sup> Rather than taking the form of a single document, the Florida plan is a “network of 24 statutes administered by nine state agencies and five water management districts.”<sup>353</sup> To date, none of the statutes sets out policies specifically for siting offshore wind or ocean current facilities. This is problematic, given that in order “to maximize the opportunity afforded the state by the CZMA consistency requirement,” Florida’s own CZMP must “address proposals for wind [and ocean] energy projects proposed to be sited in state

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<sup>349</sup> This authority was granted to MMS in the Energy Policy Act of 2005, amending the Outer Continental Shelf Lands Act. 43 U.S.C. § 1337(p)(1) (2006). Through a Memorandum of Agreement between the MMS and FERC, FERC will retain jurisdiction over hydrokinetic projects offshore. See Memorandum of Understanding Between Department of the Interior and Federal Energy Regulatory Commission (Apr. 9, 2009).

<sup>350</sup> See Renewable Energy and Alternative Uses of Existing Facilities on the Outer Continental Shelf, 74 Fed. Reg. 19,638 (Apr. 29, 2009) (to be codified at 30 C.F.R. pts. 250, 285, 290). See ALSO U.S. DEP’T OF THE INTERIOR, GUIDELINES FOR THE MINERALS MANAGEMENT SERVICE RENEWABLE ENERGY FRAMEWORK (2009).

<sup>351</sup> For a detailed discussion of the MMS final rule, see Peter J. Schaumberg & Angela F. Colamaria, *Siting Renewable Energy Projects on the Outer Continental Shelf: Spin, Baby, Spin!* 14 ROGER WILLIAMS UNIV. L. REV. 624 (2009).

<sup>352</sup> See 16 U.S.C. § 1456(c)(1)(A), (C); 15 C.F.R. § 930.35. See also 15 C.F.R. § 930.11(h) (defining “enforceable policy”). See also §§ 380.23, F.S. (2009) (federal consistency).

<sup>353</sup> Fla. DEP, Federal Consistency in Florida, at <http://www.dep.state.fl.us/cmp/federal/index.htm>. For a complete list of the statutes, see Fla. DEP, “24 Florida Statutes of the Florida Coastal Management Program,” available at: [http://www.dep.state.fl.us/cmp/federal/23\\_statutes.htm](http://www.dep.state.fl.us/cmp/federal/23_statutes.htm) (last visited Dec. 6, 2009).

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coastal and ocean waters.”<sup>354</sup> With its own framework for offshore energy, the state could influence offshore projects in federal waters much more precisely than with existing CZMA policies because “state requirements applicable to such projects form the policies with which federal projects also must be consistent.”<sup>355</sup> Many coastal states are already beginning to develop state policies for offshore renewable energy development, and although states “vary tremendously in their readiness to differ with federal agency decisions” under the CZMA,<sup>356</sup> Florida is behind other states in terms of preparation.<sup>357</sup> Now is the time to carefully consider and attempt to reconcile the range of state interests that could be affected by offshore energy projects in federal water – from its coastal and aquatic preserves, to beach tourism, to fisheries. With these interests in mind, the state should determine if changes to existing statutes, or a new offshore renewable energy siting statute, are needed to ensure that federal consistency review for the CZMA provides maximum protection for state resources.<sup>358</sup>

Submerged transmission cables crossing through Florida waters and sovereign submerged lands bring the state back into the jurisdictional picture, as do associated facilities onshore. It is not clear, however, just how this jurisdiction will be asserted under existing law or what regulatory framework would apply to such lines. For instance, the Transmission Line Siting Act (TLSA) applies to transmission lines at least 15 miles in length and that “cross a county line” – a criterion that would arguably not be satisfied simply by means of crossing from state submerged lands onto shore. Even if the TLSA were amended to clarify its application to offshore transmission in state waters, the TLSA review is not an adequate substitute for state participation in federal siting of offshore energy projects through a CZMP that addresses offshore wind and ocean energy comprehensively.

The experience of coastal states already addressing offshore wind facilities shows that siting and permitting can be lengthy, complicated, and contentious.<sup>359</sup> Florida should expect no

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<sup>354</sup> Joseph J. Kalo & and Lisa C. Schiavinato, *Wind Over North Carolina Waters: The State’s Preparedness to Address Off-Shore Water-Based Wind Energy Projects*, 87 N.C. L. REV. 1819, 1824-25 (2009).

<sup>355</sup> Joseph J. Kalo & and Lisa C. Schiavinato, *Wind Over North Carolina Waters: The State’s Preparedness to Address Off-Shore Water-Based Wind Energy Projects*, 87 N.C. L. REV. 1819, 1825 (2009).

<sup>356</sup> Megan Higgins, *Is Marine Renewable Energy a Viable Industry in the United States? Lessons Learned from the 7<sup>th</sup> Marine Law Symposium*, 14 ROGER WILLIAMS UNIV. L. REV. 562, 575 (2009). See also *id.* at 579-583 (discussing emergent state level marine special planning with respect to wind projects).

<sup>357</sup> See U.S. OFFSHORE WIND COLLABORATIVE, STATUS OF U.S. OFFSHORE WIND DEVELOPMENT ACTIVITY BY STATE (2008) (finding no activity in Florida, but finding activity in nearly every other east coast state), available at: <http://www.usowc.org/odfs/Stateoffshorewind.pdf>.

<sup>358</sup> For a helpful overview of the range of issues that might be examined, see Joseph J. Kalo & and Lisa C. Schiavinato, *Wind Over North Carolina Waters: The State’s Preparedness to Address Off-Shore Water-Based Wind Energy Projects*, 87 N.C. L. REV. 1819, 1835-46 (2009) (relating the CZMA consistency requirement and the new MMS rule in the context of North Carolina).

<sup>359</sup> See Iva Ziza, Note, *Siting of Renewable Energy Facilities and Adversarial Legalism: Lessons from Cape Cod*, 42 NEW. ENG. L. REV. 591 (2008) (discussing at length the approval process and litigation surrounding the Cape Wind Energy Project off of Cape Cod, Massachusetts); Joseph J. Kalo & and Lisa C. Schiavinato, *Wind Over North Carolina Waters: The State’s Preparedness to Address Off-Shore*

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less of proposals that could affect some of its most populous and tourism-dependent communities. Clear, enforceable state policies should be developed to guide implementation of the new federal rule off Florida's coasts and to balance competing coastal uses with the state's need for renewable energy.

### CONCLUSION

Florida is well-positioned to dramatically alter the composition of its power supply by drawing increasingly from renewable resources for new electricity demand. A renewable portfolio standard, adopted in draft by the Public Service Commission, awaits adoption by the Legislature. Florida has access to significant renewable energy, with two of its most promising resources – solar and biomass – already being developed in the state. Rapid innovation and technological advancement in this arena will only make harnessing renewable energy more feasible.

Will this shift toward renewable energy dramatically alter the Florida landscape in the process? With careful planning, the impact from siting these new facilities can be minimized, but haphazard siting could lead to wasteful land consumption. First and foremost, Florida needs aggressive energy efficiency policies to reduce demand and the corresponding need for new facilities. Second, opportunities exist at the state and local level to guide renewable energy siting to locations that work for communities and protect natural areas. This would be a significant change from the utility-driven siting of power plants that has been the default policy in the state for so many years. In the effort to achieve energy sustainability from renewable resources, land use sustainability should be the guiding principle for siting renewable energy projects.

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*Water-Based Wind Energy Projects*, 87 N.C. L. REV. 1819, 1826-32 (2009) (providing overviews of projects in Massachusetts, New Jersey, and Rhode Island).