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Brightfields: Sustainable Opportunities for Renewable Energy Projects on Environmentally Impaired Lands

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Today there is renewed hope that idle, unproductive contaminated sites and brownfields can be repurposed as productive renewable energy projects (brightfields). The increasing demand for renewable energy, innovative project financing structures, new insurance products, and the work of federal and state lawmakers and regulators to address uncertainty about environmental liability are together leading to exciting real estate opportunities. Indeed, the highest and best use of an environmentally impaired parcel could well be a brightfield. The US Environmental Protection Agency (EPA) is encouraging brightfields through its *RE-Powering America Initiative*, a unique effort of its enforcement and remediation programs. Working with the Department of Energy's National Renewable Energy Laboratory (NREL), its state environmental and energy counterparts, and external stakeholders in the financing, cleanup, redevelopment, and energy communities, EPA encourages brightfields when they align with the local communities' visions. As Harvard University's Ash Center for Democratic Governance and Innovation said of the *Initiative* in naming it one of the twenty-five best governmental innovations of 2011–12: "[It] revitalizes degraded land by building infrastructure for our clean energy future, while preserving green space. The program turns community liabilities into assets by fostering an unconventional, collaborative network among players in the energy and remediation sectors." www.ash.harvard.edu/Home/News-Events/Press-Releases/Innovations/Top-25-Innovations-in-Government-Announced2/Top-25-Programs.

This article surveys the public policies and market trends that are driving brightfields, including various revenue streams (power, Renewable Energy Credits (RECs), and capacity) that fill out the income side of a project pro forma. It then reviews some of the practical issues and opportunities in a successful brightfield project, including land acquisition, project permitting and construction, interconnection, and regulatory risk (including liability issues). Brightfields bring together two groups often not known to each other—renewable energy project developers and brownfield developers—affording opportunities for practitioners to bridge gaps between the two and assist the client who needs help learning about both.

Imagine that a new client just walked through your door, curious about redevelopment possibilities and challenges for a site that he or she controls. Perhaps she is a municipal official for a town that owns a closed landfill. Once placed on EPA's National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) because of wastes it received in the 1960s and 1970s, today the landfill is capped, groundwater is meeting required cleanup standards, and the site has been delisted from the NPL. But the site is not contributing any taxes to the town coffers, and keeping local teenagers on ATVs from sneaking in and turfing the cap is a constant headache.

Or perhaps he is the in-house counsel for an industrial products company, a portion of whose operating facility is subject to an EPA corrective action order under the Resource Conservation and Recovery Act (RCRA) or state equivalent under which a legacy waste unit is being addressed. He would like to find some use for the parcel to help his facility's financials; moreover, he has heard about being able to generate power on-site with solar panels to help reduce the plant's electric bill, taking advantage of something called "net metering." Or perhaps his operations head is talking up the advantages of replacing the facility's heating plant with a combined heat and power (CHP) unit. He thinks either project would fit perfectly within his company's new "Sustainability 2020" plan, but he is not sure how to make either happen.

Both of these clients ask the same question: can you help them figure out the advantages and overcome the hurdles of developing a renewable energy or CHP project on their environmentally impaired site? This question arises because the demand for energy that's renewable (or, in the case of CHP, more efficiently generated) is increasing in the United States, driven by various policy, market, and grid infrastructure drivers, including increasing regulation of emissions from fossil-fuel generation, increasing requirements under various states' renewable portfolio standards (RPSs), and recent dramatic drops in the price of renewable technologies, particularly solar photovoltaic (PV) panels. Finally, and contrary to the prediction of some, the tremendous increase in unconventional shale gas from fields such as the Marcellus has complicated, but not lessened, the demand for renewables, in part because of bottlenecks in existing gas and electricity transmission infrastructure. Indeed, the prospect of increased, readily dispatchable natural-gas-powered generation is expected to facilitate renewable projects using the most common resources—wind and sun—by bridging their inherent intermittency.

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But there is a problem. Utility-scale renewable energy facilities often require large amounts of land that can displace open space, agricultural lands, or other green space. Additionally, "NIMBYism" can be an issue, fueled by legitimate fears about aesthetic and ecological impacts from large-scale projects. Recall concerns about the Cape Wind project off Cape Cod and dead California condors at the early Altamont Pass wind farm in California.

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Meanwhile, across the country thousands of former industrial and mining sites comprising millions of acres of land lie fallow. Contaminated land may pose a threat to public health and the environment, the mere possibility of which can depress property values and lead to land underuse or abandonment. At locations where contamination is confirmed, the final remedy might allow for limited activities on the land while other uses, such as of groundwater, must be restricted until cleanup goals are met. At other sites, investigation is ongoing. Collectively, these properties are environmentally impaired. Activities that could exacerbate environmental impacts must be avoided. Yet many of these sites are located near urban centers and other areas of increasing electricity load. Placing solar or wind farms on them, where only their surface would be impacted, would seem to be a perfect fit.

But again, there is a problem. CERCLA, RCRA, and similar state statutes reflect that the cleanup of these sites should be done by those who created the problem. After years of litigation, courts confirmed that these statutes impose strict joint and several liability on current and prior property owners and others responsible for contamination. But the debate over the fairness of these liability regimes continues. One of the tougher conversations I had as a government attorney pursuing a CERCLA claim in the 1990s was explaining to the new landowner or lessee at the initial meeting of potentially responsible parties why he was liable, notwithstanding his arguments that he had not initially created the contamination or made it worse.

Market and Government Drivers for Brightfields Projects

With this background in mind, the first step with your new client is to review the specific drivers causing increased demand for renewable energy in the United States. For many years, voluntary demand for renewable energy supported individual projects. Indeed, until 2010 voluntary REC purchases in the United States exceeded those by utilities meeting their RPS mandates. (Typically, one REC represents the generation of one megawatt hour (MW) of electricity production from a renewable energy project.) In Pennsylvania, for example, the University of Pennsylvania has been the largest purchaser of RECs in the Commonwealth (including both the voluntary and compliance markets).

Many private businesses are also buying renewable energy to meet customer demand and achieve sustainability goals. Increasingly they are looking for specific projects to support rather than merely purchasing RECs. On July 11, 2014, a dozen of the country's largest corporations, including Bloomberg, Facebook, Intel, Proctor & Gamble, and Walmart, working with the World Wildlife Fund and the World Resources Institute, issued their "Renewable Energy Buyers' Principles." Recognizing that "sixty percent of the largest US businesses have set public climate and energy goals to increase their use of renewable energy," the consortium identified six principles that will guide their acquisition of renewable energy, several of which favor exactly the kind of brightfields project that your client is offering. The consortium seeks projects that offer energy as well as RECs; involve long-term financing to lower developers' cost of capital and yield stable income streams; and are located close to their operations to "benefit local economies and communities as well as enhance the resilience and security of the local grid." http://assets.worldwildlife.org/publications/705/files/original/Corporate_RE_buyers_principles_Final.pdf?1404842446.

The biggest consumers of energy—federal and state governments—similarly are putting their buying power behind renewable energy projects, particularly brightfields. In a December 5, 2013, Presidential Memorandum, *Federal Leadership on Energy Management*, President Obama directed that all federal agencies obtain 10 percent of their yearly electricity needs from renewable resources by 2015 (including CHP) and 20 percent by 2020, with the further directive that "[a]gencies shall consider opportunities, to the extent economically feasible and technically practical, to install or contract for energy installed on current or formerly contaminated lands, landfills, and mine sites." Similarly, Maryland requires that at least 6 percent of the electricity consumed by state-owned facilities must come from "green" energy sources including wind, solar, and landfill gas. In short, voluntary demand for renewable energy projects will likely grow, and many such purchasers likely will prefer generation from sites located on contaminated land over agricultural or other green spaces.

While voluntary purchases of renewable energy will remain significant, RPSs and other compliance markets are for now the principal source of demand for renewable energy projects. Twenty-nine states and the District of Columbia have enacted an RPS, requiring that a state's electricity suppliers obtain an escalating percentage of their generation from renewable resources, either directly or through their purchase of RECs.

An increasing number of states give preference to projects located on environmentally impaired land. In 2012, New Jersey revised its RPS in part by narrowing the types of sites that are solar REC-qualified, which now include (among others) those that are on a "brownfield" or a "properly closed landfill." *See* www.njleg.state.nj.us/2012/Bills/AL12/24_.PDF. As Governor Chris Christie stated in his 2011 Energy Master Plan:

> Brownfields and landfills, in particular, are well-suited for the development of large solar generation. Some of these properties cannot be developed for general commercial or residential purposes and may not provide adequate revenue to the towns and counties where they

are situated. However, solar development can offset the costs to cap and or remediate these sites and should be encouraged where local government has determined it to be the best use of the property.

New Jersey Energy Master Plan, Dec. 6, 2011, at 107, *available at* http://nj.gov/emp/docs/pdf/2011_Final_Energy_Master_Plan.pdf. Similarly, on April 24, 2014, Massachusetts amended its RPS to favor renewable energy projects on landfills and brownfields. 225 CMR §§ 14.02, 14.05(9)(l)2.c.ii.

A related category of policies that encourages brightfields is found in state directives that mandate or otherwise encourage their utilities to obtain power (renewable and otherwise) from power plants located on brownfields. For example, Delaware's Electric Utility Retail Customer Supply Act of 2006 requires the utility to give a preference to generation projects on brownfields as part of its Integrated Resource Planning process. Del. Code Ann. Tit. 26, § 1007(d)(1)(f). *See also* California Public Utility Commission Decision No. 04-12-048 (Dec. 20, 2004) (favoring brownfields for new power generation projects).

Finally, all states' RPSs include methane recovered from landfills as an REC-qualified energy source. But the fact that a combustible (albeit renewable) fuel is being burned (albeit trading emissions of greenhouse-gas-intensive methane for carbon dioxide) and co-contaminants are present makes the lifecycle sustainability analysis of these projects more complicated.

Net-Metered Projects

Thus far, the discussion with your new client has focused on the drivers for brightfield projects whose power (and RECs) serves anonymous consumers dispersed across the grid. Another type of renewable energy project (including brightfields) of potentially greater interest to your client is one that directly serves the client's own facility, through net metering. Forty-three states (plus Washington, D.C.) have adopted net metering policies under which the local utility is required to offset, typically at the retail rate, a customer's utility bill by the electricity generated by the customer's on-site, "behind-the-meter" renewable energy project. A net-metered project hedges volatile (and likely rising) energy costs, particularly when using solar PV whose peak time of production can shave off the most expensive peak energy from a user's load. A net-metered project must be sized to generate no more than the facility's own average electrical usage, typically up to an absolute cap of 1 to 5 MW.

Today, some states' regulations governing net metering are in flux, and a fight is underway between advocates of net metering (and policies that support distributed energy generally) and utilities. Several states are refining or expanding the scope of their net-metering regulations, particularly with respect to virtual aggregation (which ten states now offer). *See, e.g.*, California SB 43, *available at* www.energy.ca.gov/2010publications/CEC-300-2010-007/CEC-300-2010-007-CMF.PDF ("Solar Gardens law," enabling creation of community-owned solar projects). Meanwhile, many traditional utilities charge that net metering is bad policy, arguing that it can unfairly increase costs for non-net-metered customers.

Notwithstanding these issues, net metering and similar policies that encourage self- and distributed generation will undoubtedly be a key part of most states' energy policies and should be of particular interest to any energy-intensive industrial or commercial facility looking to stabilize and lower its energy costs, particularly in a time of increasingly unpredictable energy prices. *See* Hannah Northey & Rod Kuckro, *Deep Freeze Exposes Challenges for Gas-Dependent Grid Operator*, Greenwire, Jan. 23, 2014 (reporting on January 2014 record-setting price spikes in PJM Interconnection's wholesale Real Time Market, attributable to the Polar Vortex, high demand, gas transmission constraints and the unexpected unavailability of certain generation units), *available at* www.eenews.net/stories/1059993365.

Other Economic Drivers for Brightfields Projects

Besides the sale (or consumption) of power and RECs, you advise your client that other attributes of renewable energy projects, including brightfields projects, also have monetary value. For example, as with any power project, a brightfield's ability to commit to being available to the grid at specified times may make it eligible for compensation, apart from its hourly power production. Either as part of a regulated utility's Integrated Resource Planning program or in a capacity market operated by one of the wholesale electricity markets overseen by the Federal Energy Regulatory Commission, even intermittent renewable projects such as wind and solar can receive payments. For example, in the thirteen states covered by the PJM wholesale market, wind, and solar projects can bid into the capacity market (which focuses on summer peak hours) and are presumptively assigned a capacity factor of 13 percent and 38 percent, respectively.

Finally, apart from the direct financial incentives that come from generating RECs and/or creating capacity, and whether built on a landfill by a third-party developer or on a legacy waste site as a net-metered project on one's own grounds, a unique value of a brightfield is the fact that at the same time it restores a property to productive use it can help ensure performance of an existing cap, groundwater extraction, monitoring wells, and other engineered and institutional controls that are protecting the environment. A well-thought-out, multimillion-dollar investment in a brightfield, with the infrastructure and manpower to build and operate it, lessens the likelihood of inadvertent damage to remedial measures, consumption of groundwater, or inappropriate development. *See, e.g.*, Tina Kelley, *After Mercury Pollutes a Day Care Center, Everyone Points Elsewhere*, New York Times, Aug. 19, 2006 (day-care center, mistakenly allowed to operate in former mercury thermometer factory, shut down after mercury found in children).

Making the Financials of a Brightfields Project Work

Having reviewed some of the economic drivers and policy incentives for brightfields with your new client, you next drill down into some of the financing and expense items to ensure that the project pencils out. As with a renewable energy project generally, the financials for a third-party-financed brightfield project typically require a tighter analysis and more conservative assumptions than the net-metered project (often funded off a corporate balance sheet), and a structure that ensures income flows and ownership interests that meet the income and tax-credit needs of the various parties. However structured, the brightfield project will look to maximize the federal and

state loan, tax, and grant programs familiar to renewable energy developers. See www.dsireusa.org for up-to-date details.

Perhaps less familiar to renewable energy developers are similar programs available to brownfields developments. For example, EPA's Brownfields Program provides direct funding for brownfields assessment, cleanup, and revolving loans, as well as technical information on brownfields financing. *See* www.epa.gov/brownfields/grant_info/index.htm. Many states have similar programs. *See, e.g., State Brownfields and Voluntary Response Programs* (EPA 2013), *available at* www.epa.gov/brownfields/state_tribal/2013_brownfields_state_report_508_web_050913.pdf.

Turning to specific cost elements of a brightfield, a number of unique opportunities arise. Perhaps the most basic variable in developing a brightfield is the nature and value of the fuel source. Aside from capacity sales, a brightfield's income stream is from the sale of power and RECs, and it will be paid only for what is actually produced. While the cost of fuel is free (or cheap biomass), the resource must still be accurately quantified, particularly for intermittent resources such as the wind and sun. For this reason, the projected income stream in the *pro forma* must be based on site-specific, verified resource estimates.

An investment in a brightfield lessens the likelihood of inadvertent damage to remedial measures, consumption of groundwater, or inappropriate development.

EPA's *Re-Powering America Initiative* is tracking approximately 66,000 environmentally impaired sites across the United States comprising almost 35 million acres. To facilitate their potential for renewable energy projects, EPA has developed tools to help developers correlate specific parcels with their renewable energy potential and access to necessary infrastructure. EPA offers a Google-based Earth interactive mapping tool with data overlays showing federal- and state-tracked sites allowing prospecting for potential sites in a particular area or across the country, organized by renewable energy technology or type of contaminated site. For each site, the information includes the site's location, acreage, resource availability (e.g., wind and solar, based on NREL data), cleanup status, and EPA contact. *See* www.epa.gov/oswercpa/rd_mapping_tool.htm. Ultimately, your client's project will require a site-specific resource assessment, especially if third-party financing is required. For example, a wind project typically requires a year or more of data from one or more on-site meteorological towers, correlated with a nearby airport's longer-term data set; a solar project typically requires an 8760 evaluation (i.e., projected insolation for every hour in a year).

Besides using free or cheap fuel from renewable resources, another advantage of a brightfields project is the lower cost of interconnection. Preliminarily, a particular advantage of a smaller-sized, utility-scale renewable energy project (i.e., less than 6 MW) is its ability to interconnect on the distribution rather than transmission systems, thus lowering technical and administrative/legal costs. A brightfield can further lower interconnection costs because there is a much higher likelihood that a distribution line of sufficient capacity will be located nearby, if not on the property itself. The distribution line that once fed electricity to the former facility can now be used to send electricity to the grid. Even if upgrading or replacing the lines is required, the necessary infrastructure and utility easements are likely already in place. Similarly, such sites may be served by rail or road networks that can facilitate a project's construction and operation.

Finally, environmentally impaired lands, no matter how large, often have one site owner, easing required negotiations. Most importantly, they likely are already zoned commercial or industrial and may be located in areas where, whether because of remoteness or prior industrial use, the presence of a brightfield is less likely to face aesthetic opposition and indeed may be favored over the existing eyesore.

This brings us to what remains the biggest opportunity and challenge of a brightfield: the low costs of land control, due largely to the specter of liability that gave your client pause in the first place.

Dealing with Liability Concerns

Fear of uncertain, potentially unlimited liability under federal and state environmental laws has made brownfields particularly difficult to develop. In recent decades, Congress, EPA, and many states have sought to address these concerns. The 2002 federal Small Business Liability Relief and Brownfields Revitalization Act added several potential safe harbors from CERCLA liability. For example, one who purchased a parcel after January 2002 can be a bona fide prospective purchaser (BFPP) and therefore not liable under CERCLA, so long as he or she completes All Appropriate Inquiries (AAI) into the property's history and conditions before purchase and after acquisition undertakes "Reasonable Steps" and meets certain other requirements. *See* 42 U.S.C. §§ 9601(35)(B)(iii), 9601(40), 9607(r); 40 C.F.R. Part 312. CERCLA's BFPP provisions apply only to owners, not tenants, and thus exclude the typical utility-scale, non-net-metered renewable energy project that is sited on leased property. In part to encourage brightfields, on December 5, 2012, EPA issued its *Revised Enforcement Guidance Regarding the Treatment of Tenants Under the CERCLA Bona Fide Prospective Purchaser Provision* (2012 CERCLA Tenant Guidance), which extends to lessees the ability to undertake AAI and maintain Reasonable Steps to avoid liability, as a matter of EPA's enforcement discretion. *See* www2.epa.gov/enforcement/guidance-treatment-tenants-under-cerclas-bona-fide-prospective-purchaser-bfpp-provision.

An arguably more straightforward course to a CERCLA enforcement safe harbor is offered to one who takes an "eligible response site" through a "state response program." 42 U.S.C. §§ 9601(39), 9601(41) 9628(b). While close review of these terms is required since important conditions apply, essentially a site that is not already subject to an EPA enforcement action under CERCLA or RCRA or that is not eligible for inclusion on the NPL will be exempt from EPA CERCLA enforcement action if it is enrolled in a comprehensive state voluntary or similar cleanup program. *Id*. This second safe harbor is

particularly important because the vast majority of contaminated sites are supervised by state agencies, not EPA. Moreover, typical state cleanup programs include certification of completion by the state agency and a covenant not to sue and may even include contribution protection under state law. EPA, on the other hand, recognizes that CERCLA's BFPP provisions are self-executing and cannot give covenants or contribution protection outside of a site-specific settlement. *See Applicability of Policy Against "No Action" Assurances to CERCLA* (June 16, 2000), *available at* www2.epa.gov/sites/production/files/2013-10/documents/noact-assur-mem.pdf. However, EPA will consider issuing a comfort letter that sets forth information known to EPA about a site that may help a developer gain and maintain its BFPP status. *See* 2012 CERCLA Tenant Guidance, *supra* (including model comfort letters for brightfields projects).

In July, 2014 EPA issued its *Liability Reference Guide for Siting Renewable Energy on Contaminated Properties*, *available at* www2.epa.gov/enforcement/liability-reference-guide-siting-renewable-energy-contaminated-property, which addresses issues of federal and state liability and summarizes available resources and policy tools that can facilitate brightfields. Finally, EPA has issued several "best practices" documents to help brightfields developers coordinate construction of their projects with ongoing remediation, *see, e.g.*, EPA, *Handbook on Siting Renewable Energy Projects while Addressing Environmental Issues*, *available at* www.epa.gov/oswercpa/rd_tools.htm, as have several states. In sum, it is much easier today to quantify and manage the regulatory risk presented by brightfields.

An experience I had while serving as general counsel for a renewable energy developer may put the opportunities and challenges presented by brightfields into perspective. Our firm had learned that the township in which it had optioned a parcel of farmland for a possible solar project had amended its zoning ordinance, restricting solar projects to industrial areas. My arguments to convince the town council to change the zoning back were markedly unsuccessful. At the end of the evening, the mayor came up and said, "You know, we really do like your project, but we'd rather see it on the old landfill we own, instead of on farmland. What do you think?"

This is the question that is being asked at environmentally impaired sites across the country. Successfully completing a utility-scale brightfields project sometimes feels like a whack-a-mole arcade game. You think you have all the elements lined up: resources accurately predicted, land secured, power purchase agreement signed, project financing committed, and all necessary permits in place. And then suddenly new data comes in from your bat and bird study, and it turns out that the proposed turbines are not ideally located. Or the local utility decides that additional capacity upgrades will be required to the substation interconnect and the costs will increase by $500,000. Or your state public utility commission lowers the solar REC set-aside in certain out-years, thus changing your pro forma.

You and your client soldier on, heartened by the knowledge that across the country over 100 brightfields have already been built and are generating power and profits. Some technical, economic, and regulatory uncertainty is inevitable for these projects, but the opportunities, not to mention the broader societal stakes, suggest that the results will be well worth the challenges.