

Renewable Energy Development: Seizing the potential, avoiding the pitfalls

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Renewable energy development on contaminated land is one of the fastest growing sectors of the U.S. economy because of its potential to reduce greenhouse gas emissions, decrease dependence on foreign oil, and create economic development opportunities in communities across the country. The Energy Information Administration is predicting 70 percent growth over the next two decades, as new sources of energy must be created to address the country's rapidly increasing demand for electricity. Renewable energy development has the support of the current Obama Administration which has expressed its goal in the U.S. to produce 25 percent of its energy needs with renewable resources by 2025. The wheels are in motion to identify thousands of contaminated landfills and abandoned mines that could someday house wind farms, solar arrays and geothermal power plants. States and local communities are behind renewable energy development projects, too, as citizen concern grows about the environmental effects of fossil fuels on our land, water and air. Additionally, developing contaminated sites helps relieve state and local tax burdens, critical in these economically challenging times.

The EPA estimates that there is up to 490,000 sites and 15 million acres of contaminated properties in the U.S. that could be redeveloped for these types of renewable energy projects. These sites include Superfund, Resource Conservation and Recovery Act (RCRA), brownfields, and abandoned mine lands. Brownfields, in particular, are considered ideal sites since they are typically connected to existing energy grids, have transmission capacity and are zoned for industrial uses. Many contaminated sites are also located in regions with great potential for the development of solar, wind and other types of renewable energy sources because of desirable latitude and weather conditions.

Technologies that offer the best prospects for renewable energy development include wind, solar, biomass, geothermal, and hydropower, among others. Some examples of recent renewable energy projects on formerly contaminated sites include:

- **Steel Winds Wind Farm, Lackawanna, New York**
Eight wind turbines were installed on an old slag pile at the Bethlehem Steel site, producing enough electricity to power 7,000 homes.

- **Fort Carson Landfill Solar Development, Fort Carson, Colorado**
This former landfill now uses solar energy to generate 3,200 megawatt hours a year for the U.S. Army.
- **Pemaco Superfund Site, Maywood, California**
A \$21,000 investment in rooftop solar panels will offset the power costs of water pumping and treatment by \$3,000 annually.
- **American Municipal Power of Ohio**
This utility is currently constructing three hydroelectric powerhouses along the Ohio River, which will use the river's current to turn two to three turbines to provide "green" energy to thousands of customers in the Ohio Valley area.

The EPA is encouraging renewable energy development with its initiative "RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites." This initiative is designed to help identify potential sites and provide useful resources for communities, developers, utilities, industry, state and local governments, tribal governments, and other public/private partnerships interested in developing these sites for renewable energy development. Some of the program features include low cost loans, loan guarantees, tax incentives, and technical assistance to aid in the financing and speed of renewable energy development.

Although renewable energy developments pose exciting possibilities, they also come with unique risks. Seasoned developers of brownfields and other contaminated sites may be familiar with the environmental exposures of these redevelopments. But for those venturing for the first time into contaminated site development, such as municipalities and public/private partnerships, it is critical to be aware of potential pitfalls that arise from brownfields development on contaminated sites. And for anyone new to renewable energy development, the technologies and processes used bring with them a whole new set of risks.

Examples of potential issues surrounding renewable energy development include:

- **Wind Farms**
Despite their ability to power tens of thousands of homes and generate millions in tax revenues for local governments, wind farm projects have come under attack by residents living nearby for noise and vibration issues. In DeKalb County, Illinois, a group of 36 people living near 150 turbines installed last year have filed a lawsuit against the county and landowners who leased the land for the turbines. They are claiming the turbines are detrimental to their health, causing sleep disruption, migraine headaches and vertigo from the strobe-like flashes produced by whirling blades in the sunshine. In addition, some claim that wind farms impact bird migration pathways, and also increase the rate of death from collision and electrocution.
- **Solar Systems**
The materials used in some solar systems, in particular photovoltaic cells, often include the use of hazardous materials such as arsenic and cadmium. Such

materials could be released in the event of damage to these systems, such as a fire.

- **Geothermic Energy**

Since geothermic energy involves the use of heat below the earth's surface, the use of this energy source could put back into play existing groundwater pollution issues, as well as introduce new pollution concerns associated with the release of the groundwater impacts into the air as part of the conversion of the geothermic steam into electricity. In addition, the safe handling and disposal of the hazardous waste extracted from the process would also have to be considered. There is also the concern with the creation of a new waste stream, geothermal, that may cause an impact to the surrounding environment if heated water is released from the operation.

- **Biomass**

Biomass involves generating power through the burning of plant matter. However, the combustion of such matter may produce air pollution, including carbon monoxide, nitrogen oxides and particulates such as soot and ash. The amount of such releases can vary significantly based on the technology.

- **Brownfields historical liabilities**

One of the biggest concerns is what the site was used for in the past, and how those exposures have been characterized, mitigated and/or remediated, as well as what assurances, regulatory or otherwise, have been obtained to limit future liabilities arising out of those past activities.

Some purchasers, developers and lenders believe the liability relief available from federal environmental laws such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA) is enough to cover renewable energy projects. This can be a dangerous assumption, however, as the wide scope of risks in a renewable energy project—including environmental, construction, and energy—requires consideration of more comprehensive protection including general liability and site liability pollution. Word to the wise: before getting caught up in the immense potential of a renewable energy project, be sure to perform a due diligence of potential risks and develop an enterprise risk management program in order to avoid major project disappointment--- and financial loss.

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