RE-Powering America's Land Fact Sheet: Siting Renewable Energy Projects While Addressing Environmental Issues

EPA United States Environmental Protection Agency

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The U.S. Environmental Protection Agency's (EPA's) RE-Powering America's Land Initiative encourages renewable energy development on potentially contaminated land and mine sites, in accordance with the community's vision for the site. This fact sheet was developed to increase awareness among renewable energy developers and cleanup project managers of the benefits and feasibility of developing renewable energy at sites while environmental issues are being addressed. A more detailed handbook on this topic is being developed which will include considerations for integrating renewable energy development into cleanup processes and decision trees to evaluate solar and wind potential at sites.

Introduction

The EPA has mapped more than 11,000 potentially contaminated sites and screened them for the development of wind, solar, biomass and geothermal energy. Maps depicting the locations of these sites and their potential for supporting renewable energy production can be found at: www.epa.gov/renewableenergyland/. For more information on renewable energy technologies, please see: www.epa.gov/renewableenergyland/develop_potential_fs.htm. Many of these sites will undergo an environmental assessment and not require cleanup before the site can be reused. At the remaining sites, cleanup of contamination will be required and it may be feasible to build renewable energy infrastructure and generate power while environmental concerns are addressed through cleanup. For example, renewable energy development may be feasible on areas with no contamination, areas that have contamination but do not present unacceptable risk to human health and the environment, or areas previously remediated during a multi-phased cleanup project. Included in this fact sheet are three project examples where renewable energy was successfully located on contaminated sites while environmental issues were being addressed.

What are the Benefits?

Using potentially contaminated land and mine sites to develop renewable energy facilities can preserve greenfields; create jobs; provide developers with access to existing infrastructure; and enable potentially contaminated properties to return to a productive and sustainable use. In addition, renewable energy may provide a long-term source of energy at a stable cost. Developing renewable energy while environmental issues are being addressed at a site may also provide revenue to help cover cleanup costs, or help offset costs of long-term operation and maintenance.

Municipalities can also benefit from renewable energy development by gaining tax revenue that otherwise could not be realized from an underutilized site. For example, sites that

Molycorp Site, Questa, New Mexico

The 1,110-acre Molycorp, Inc. Superfund site in Questa, New Mexico has a long history of mining operations. Mining operations are still occurring in some areas of the site. In December 2010, EPA signed a Record of Decision (ROD) for the site that selected a cleanup remedy. Cleanup activities will include containment of waste rock and tailing source materials, groundwater extraction and treatment, groundwater usage restrictions, and a provision for an alternative water supply, if needed. During the remedial investigation phase, a 20-acre parcel of land covered in mine tailings was determined to be suitable for placement of a concentrating photovoltaic (CPV) system because it was not heavily contaminated, had a high solar potential, and was located on flat terrain. Installation of the 175-panel CPV system began in May 2010. Solar panels were positioned to not interfere with groundwater monitoring wells and to allow for future groundwater cleanup if needed. The CPV array is lightweight and distributed to minimize ground penetration. Financed by Chevron Mining Corporation (CMI), the 1 MW system became operational in February 2011 and generates enough electricity to power 500-600 homes—the entire village of Questa. Electricity produced by the system is sold to the Kit Carson Electric Cooperative under a 20-year purchase power agreement with CMI.

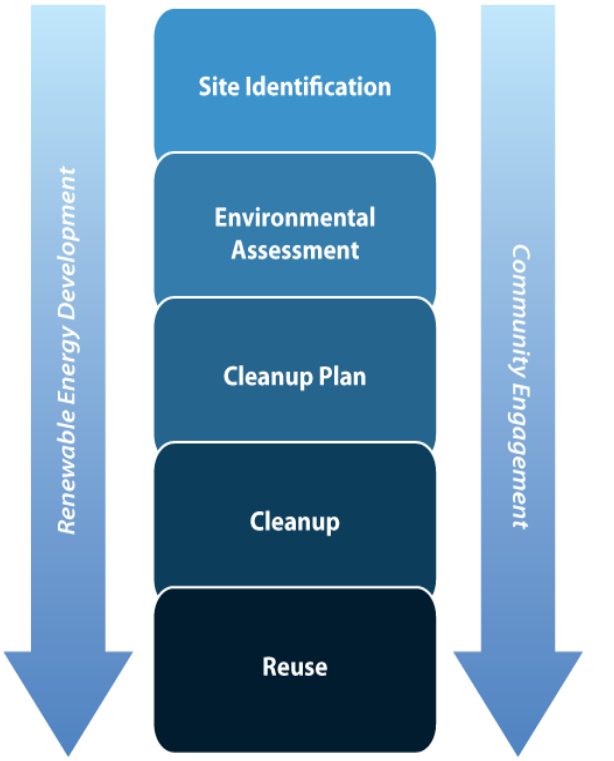
For more information about the Molycorp Inc. Superfund site, please visit: www.epa.gov/superfund/programs/recycle/live/region6_nm.html

have long-term cleanups (e.g., 10-30 years) can use renewable energy technologies to generate electricity to power cleanup, sell it back to the electrical grid, or a combination of both. Furthermore, developing a renewable energy facility on a site where environmental issues are being addressed has additional benefits; some renewable energy technologies (e.g., solar) require minimal intrusion into the ground, leaving contaminated groundwater or groundwater treatment systems undisturbed. This flexibility can make renewable energy a viable reuse scenario when other options (e.g. residential development, creating a soccer field or park, etc.) have been exhausted.

EPA's Land Cleanup Process

Environmental cleanup is the process used to respond to a hazardous material release or threat of a release that could adversely affect human health and/or the environment. EPA's land cleanup programs (e.g., Brownfields, Superfund, Resource Conservation and Recovery Act (RCRA) Corrective Action, and Underground Storage Tanks) have different cleanup processes and requirements; however, the basic steps of each program's process are similar. (The majority of potentially contaminated sites are most likely addressed under various state programs.) As part of the cleanup process, EPA's guidance requires early engagement with local communities to ensure that cleanup decisions are based on the local community's vision of future land uses. It is important that early consultation occur with the local community to ensure that the cleanup and reuse for renewable energy is aligned with the community's long term vision for the site.

Typical Steps in the Land Cleanup Process



- **Site Identification** – The site is characterized in terms of location, types of structures, and potential contamination.
- **Environmental Assessment** –The site is investigated to determine the nature and extent of contamination and whether it will require future cleanup activities. Results from the assessment may determine that cleanup is not necessary. If possible, future reuse of the site should be determined at this stage since it could significantly impact the cleanup process.
- **Cleanup Plan** – If the site was found to have contamination in the preceding step, a cleanup plan is designed based on the information gathered during the environmental assessment.
- **Cleanup** – The cleanup plan is implemented. Cleanup technologies such as groundwater pump-and-treat can take several years but often require little of a site's useable acreage.
- **Reuse** –The site is returned to safe and productive use without adversely affecting the cleanup plan or remedy. Some sites may require monitoring and Institutional Controls (ICs) to ensure protection of human health and the environment.

When Can Renewable Energy Be Developed During the Cleanup Process?

There are several different scenarios under which renewable energy development on sites where environmental contamination is being addressed may be consistent with ensuring a remedy and continued protectiveness such as:

- No cleanup necessary: Initially, the site may have been considered contaminated. However, after assessing the site, it is determined that levels of contamination do not pose unacceptable risk to human health and the environment.
- Before cleanup: There are areas of the site that have no contamination and/or it has been determined that there are areas available for renewable energy development that do not pose unacceptable risk to human health and the environment.
- Ongoing cleanup: While cleanup occurs on contaminated areas, areas that do not pose an unacceptable risk to human health and the environment have been identified where renewable energy could be developed.
- Groundwater treatment sites: There may be no risk to human health and the environment on the surface of a site where active groundwater treatment activities are ongoing. In many cases, renewable energy equipment can be installed without disturbing the groundwater treatment systems. If groundwater treatment is complete but monitoring is ongoing, renewable energy development can also occur as long as monitoring wells remain accessible and undisturbed.

In each of these instances, special attention should be paid to ICs—such as deed restrictions—developed on a site-specific basis to minimize the potential for exposure to contamination. If ICs have already been implemented, a cleanup technology must be carefully planned to ensure adherence to IC requirements, as illustrated by the WMECO project example. This is especially important when land is being returned to productive use prior to the completion of cleanup activities. For more information on ICs, please visit: http://www.epa.gov/superfund/policy/ic/.

Western Massachusetts Electric Company (WMECO), Pittsfield, Massachusetts

An eight-acre former Brownfield and an adjacent, two-acre former Superfund site in the City of Pittsfield, Massachusetts were used to build a 1.8 MW solar photovoltaic (PV) array. Cleanup of the Brownfield, owned by the Western Massachusetts Electric Company (WMECO) and the cleanup of PCB-contaminated soil and groundwater on the Superfund site—owned and managed by the Pittsfield Economic Development Authority (PEDA)—were already complete, but long-term institutional controls required that subsurface soils remained undisturbed. These requirements were met through WMECO's choice of the PV system installation: a ground mounted, ballasted rack specifically designed for locations where ground penetration isn't feasible. WMECO negotiated a surface right easement that defined liability limitations with PEDA, which retained site ownership. The surface right easement defined cost and terms which included clear limitations on subsurface liabilities. PEDA, the property owner, retained liability for all pre-existing contamination per the terms of the lease agreement. The rack design of this project's 6,500 solar panels not only ensures that soil will remain undisturbed where necessary, it also allows for continued access to the site's 53 groundwater monitoring wells—and can accommodate the installation of additional wells as needed. WMECO's PV system became fully operational in December 2010 and generates enough electricity to power over 300 homes annually throughout the utility's service area.

For more information about the Western Massachusetts Electric Company (WMECO) solar project, please visit:

www.wmeco.com/EnergyWise/LargeScaleSolar.aspx

What Are Institutional Controls?

Institutional controls (ICs) are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site. For instance, zoning restrictions prevent site land uses, like residential uses, that are not consistent with the level of cleanup. ICs are used when contamination is first discovered, when remedies are ongoing and when residual contamination remains onsite at a level that does not allow for unrestricted use and unlimited exposure after cleanup. It's important to ensure that ICs are used appropriately as a part of cleanup activities to facilitate safe renewable energy development projects.

Liability Considerations

When carefully planned, safe reuse of sites during cleanup can support longer term redevelopment goals and return underutilized lands to productive use while environmental issues are being addressed. EPA is aware that many prospective purchasers, developers, and lenders have hesitation about involvement with the reuse of potentially contaminated properties because of fear they might be held liable under federal or state cleanup laws. EPA has developed a variety of documents to help address these liability concerns which are designed to encourage cleanups and facilitate contaminated property transactions and revitalization. In addition, environmental insurance may be available to assist with addressing liability concerns. Given that most contaminated properties are addressed under state programs, EPA encourages renewable energy developers to consult with legal counsel and their appropriate state, tribal or local environmental protection agencies. Since 2008, all states have programs or policies to provide some level of liability protection to new owners or lessees in specific situations. Please see: www.epa.gov/renewableenergyland/tools.htm for more information on the tools and resources available to address liability concerns.

EPA's Rapid Response Team

A Rapid Response Team was developed to provide quick and accurate input on renewable energy development on potentially contaminated land. EPA's team of experts is from the Office of Enforcement and Compliance Assistance (OECA), Superfund, Brownfields, RCRA, etc. Their contact information is found at:

http://epa.gov/renewableenergyland/contacts.htm

Casper Winds, Evansville, Wyoming

Industrial operations on the 880-acre former Texaco Casper Refinery site in Evansville, Wyoming began in 1922 and lasted until the early 1980s. While sitting idle, the site underwent environmental assessments and was identified for Resource Conservation and Recovery Act Corrective Action (RCRA CA) by EPA in 1987. Subsequent cleanup activities were started by the Chevron Environmental Management Corporation, through the Wyoming Department of Environmental Quality's (WDEQ's) Voluntary Remediation Program. Cleanup included the treatment of petroleum-contaminated groundwater, engineering controls to prevent contaminant migration, and institutional controls. In this case, a Use Control Area (UCA) prohibited excavation of contaminated soils. Since the push for renewable energy had increased, a portion of the former refinery site was determined to be ideal for the installation of wind turbines. WDEQ concluded that the targeted area did not have soil contamination and was sufficiently isolated from ongoing cleanup activities. Thus, this area was exempted from the UCA. Eleven 1.5 MW wind turbines were constructed approximately two miles away from an area of the RCRA CA site where groundwater cleanup is ongoing. The turbines began operation in December 2008 and generate as much as 16.5 MW during peak times. They deliver energy to the grid through a power purchase agreement with Rocky Mountain Power.

For more information about the Casper Winds project, please visit: www.epa.gov/renewableenergyland/successstories.htm.