

RE-Powering America's Land Initiative encourages renewable energy development on current and formerly contaminated lands, landfills and mine sites when such development is aligned with the community's vision for the site. Since its inception in 2008, the Initiative has promoted renewable energy investments on contaminated properties through a combination of tailored redevelopment tools, outreach and technical assistance. RE-Powering seeks to facilitate opportunities for renewable energy installations during all stages of environmental remediation and reuse:

- by encouraging their use to power cleanups (i.e., greener remediation);
- by enabling future installations as part of the site cleanup and closure process;
- by identifying sites and screening for renewable energy potential; and
- by helping to overcome obstacles and facilitating the implementation of specific projects.

This action plan details specific activities for the Initiative over the next two years to support the development of renewable energy projects on contaminated lands, landfills, and mine sites. It is the second such plan developed for the Initiative to define goals and articulate activities, and make them transparent to our stakeholders. These activities are intended to be practical and relevant for public and private efforts to site and develop less polluting forms of energy, and to support such development on lands that have been historically contaminated, previously disturbed, or that may have limited other productive uses.

Such projects would displace development on more pristine, undeveloped land and help clean up contaminated areas. In addition, less polluting sources of energy reduce emissions that impact air quality and contribute to climate change. The promotion of renewable energy for contaminated properties creates value where development options are limited, and additional renewable energy increases the nation's energy security, provides additional jobs, and contributes to the nation's broader economic and sustainability goals. These projects should also help our communities and economy respond to the climate-related impacts already occurring.

The cleanup and revitalization of contaminated properties is integral to EPA's mission to ensure the protection of human health and the environment. Such efforts are supported by the various authorities used by the Agency's cleanup and land revitalization programs. In addition, they support the Administrator's theme to make a visible difference in communities, as well as Goal 3 of the Agency's Strategic Plan to clean up communities and advance sustainable development.

The RE-Powering America's Land Initiative brings together the benefits of cleaning up sites and promoting renewable energy. In its first five years, the Initiative has helped highlight and address environmental issues at sites while propelling renewable energy development on contaminated lands from merely an interesting idea to an ever-increasing portfolio of projects. The Initiative has:

- developed tools to identify and screen sites for suitability;
- identified success stories and installations around the country to share examples of promising practices;
- developed new guidance and supported other tools to clarify liability issues associated with reuse;
- completed handbooks and best practices guides to integrate renewable energy development into the cleanup process and solar photovoltaic installations on municipal solid waste landfills;
- collaborated with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) to provide communities with feasibility studies that evaluate specific sites; and
- established an internal team of experts to provide technical assistance and help resolve issues.

On May 1, 2013, the Initiative was honored to be recognized by Harvard University as a Top 25 Innovation in American Government. The increasing number of renewable energy developments on contaminated lands - more than 100 projects to date - speaks to positive trends for the revitalization of the nation's contaminated lands in pursuit of cleaner energy.

As the Initiative moves forward, the Agency expects to refine its activities to meet emerging needs of stakeholders involved in site cleanup and reuse. This action plan articulates the continuation of activities that have been impactful and suggests areas of new emphasis. It is structured along the Initiative's goals and objectives as follows:

RE-Powering America's Land Overview of Goals and Objectives	
Goal 1: Provide Technical and Programmatic Assistance	
Objective 1: Enhance and Disseminate Tools	
Objective 2: Expedite Projects	
Goal 2: Promote Policies and Best Practices That Encourage Renewable Energy on Contaminated Lands	
Objective 3: Highlight and Analyze Programs and Policies at the Federal, State, Local and Tribal Level	
Objective 4: Identify Successful Strategies, Articulate Impacts and Disseminate Lessons Learned	
Goal 3: Partner with Stakeholders and Leverage Agency Efforts	
Objective 5: Strengthen Networks and Facilitate Collaboration among Stakeholders	
Objective 6: Leverage Funding and Build Capacity	

These goals and objectives recognize the contribution of the many stakeholders involved in successful cleanup and revitalization efforts, and the various roles that the Agency can play. Stakeholders span the public, private and non-profit sectors and include site owners, communities, renewable energy developers, financiers, and government agencies at all levels (local, state, tribal, federal) and responsibilities (e.g. environmental protection, economic development, energy).

The action plan results from many conversations within the Agency and across the wide and diverse set of stakeholders. The plan communicates Agency efforts specifically, while retaining flexibility to take advantage of opportunities as they arise. In addition to the specified actions, the Agency will continue to place a high priority on working collaboratively with related programs and public, private and non-profit stakeholders.

Goal 1: Provide Technical and Programmatic Assistance

Objective 1: Enhance and Disseminate Tools

EPA has successfully developed tools, handbooks and other documents which aid stakeholders in identifying and considering contaminated lands for renewable energy development, and, once identified, in pursuing such development. Over the next two years, RE-Powering expects to refine its existing tools and make them better known and more accessible to practitioners.

While the Initiative is open to the development of additional tools to assist stakeholders in the pursuit of RE-Powering-type projects, EPA did not hear strong requests within the public comments for the development of new tools. As future demand warrants, the Initiative will pursue the development of new tools as resources and opportunities allow.

EPA will continue to enhance its mapping and screening tools, including its RE-Powering Mapper, to add more federal- and state-tracked sites. The Mapper makes it possible to view information about renewable energy potential on contaminated lands alongside other information contained in Google Earth. The Mapper currently contains data from a number of EPA's land cleanup programs (Superfund, RCRA Corrective Action, Brownfields, etc.) and data from a subset of states. RE-Powering plans to work with states, as it has in the past, to identify the next addition of sites considering state interest, favorable renewable energy policies, and data availability and consistency.

Because geographic analysis is pursued by many users on multiple platforms, RE-Powering also plans to improve the integration of this tool with other Agency geospatial efforts so that different programs can leverage the data and insight derived from their respective systems. In addition to formal integration of additional sites and capabilities into the RE-Powering Mapper, the Initiative plans to publicize the availability of additional site data and resources from federal, state and other sources on its website and in its outreach materials.

The Agency believes that the utility of its solar and wind decision trees can be enhanced by creating an electronic, interactive version. The decision trees walk users through a series of "Yes/No" questions to screen sites for development potential. These decision trees are currently in a static publication that allows the reader to learn about the characteristics that make a site more attractive for development. The interactive version will make the content in these documents easier to understand, and the user can enter and save site-specific information and produce a summary of the screening-level assessment.

EPA has successfully partnered with experts in renewable energy (e.g. NREL) to articulate and disseminate the characteristics associated with renewable energy on contaminated lands, particularly solar and wind technologies. EPA plans to continue such partnership efforts with respect to those two technologies, while continuing to explore opportunities for biomass - including biopower and biodigesters - on contaminated lands. Efforts could include exploring the characteristics of biomass conversion facilities in greater depth, as well as evaluating prospects for greater market penetration of standalone biodigesters in addition to more traditional agricultural and wastewater treatment applications. This inquiry will provide the Initiative insight on whether to enhance its efforts on biomass vis à vis other renewable technologies.

Actions	Timeframe
Enhance RE-Powering Mapper	Summer 2015
Create Electronic Version of Solar and Wind Decision Trees	Winter 2015
Explore Opportunities for Biomass On Contaminated Lands	Winter 2016

Objective 2: Expedite Projects

EPA seeks to be both proactive and responsive when it comes to addressing environmental concerns and promoting renewable energy development on contaminated lands. Towards this end, EPA has established a network across its headquarters and regional offices, known as the RE-Powering Response Team. Individuals on the RE-Powering Response Team have expertise related to relevant topics such as site cleanup practices, green remediation, environmental liability, renewable energy development, and available EPA tools, guidance and policies.

The goal of the RE-Powering Response Team is to address inquiries from stakeholders nationwide and from all perspectives, e.g. communities, developers, site owners, planners, financiers. The team provides technical assistance to stakeholders, helps facilitate process, and shares information, contacts and perspectives.

The types of assistance that RE-Powering Response Team members provide include:

- the identification of contaminated lands, landfills and mine sites within specific geographic regions, and an up-to-date status of remediation efforts and site readiness for renewable energy development;
- dissemination of best practices used by similar sites;
- available contacts and resources for developers, communities, and others to explore;
- clarification of liability guidance and policies associated with particular sites and particular jurisdictions;
- analysis and/or referral on the applicability of policies and incentives;
- referral to program and technical expertise; and
- exploration of ways to streamline process, overcome obstacles, and pursue productive next steps.

Coordination, networking and collaboration both internally and externally is essential. This includes engaging program managers within the various EPA and state cleanup and energy programs; linking various stakeholders with expertise and best practice; and advocating for the environmental benefits of renewable energy development on contaminated lands.

Members of the RE-Powering Response Team help champion ideas and facilitate the flow of information about renewable energy development on contaminated lands, landfills and mine sites. An effective RE-Powering Response Team depends upon continual learning and experience. The Agency, therefore, will support and train this team and explore ways for Agency programs and stakeholders to better utilize it. Such support could extend to the training of stakeholders in the tools, handbooks and other resources developed by the Initiative to date and extended by actions under Objective 1. Based on demand and available resources, the Initiative could support external training.

The Initiative has historically provided in-kind, site-specific technical assistance through its partnership with NREL. Such assistance has benefitted communities in their exploration of renewable energy projects on contaminated lands, landfills and mine sites. It has also benefitted the national program, keeping it attuned to the "on-the-ground" constraints and opportunities that only emerge from the details of such projects. Although resources are constrained, the Initiative plans to actively explore ways to provide site-specific technical assistance in the future. Such assistance may reach a smaller number of communities and may be scaled back relative to historic efforts. These future efforts will include some judgments of project potential but will also serve to guide next steps in a site-specific context.

EPA also seeks to more proactively target specific sites with community interest in renewable energy development on contaminated lands. As the federal government seeks to increase its use of energy generated by renewable sources, EPA has the opportunity to highlight contaminated lands within federal portfolios as locations for such installations. Consistent with observed trends, the Agency seeks to nurture the increasing trend of siting solar photovoltaics on landfills, extending the success and continued environmental protectiveness being achieved in a few states to date.

The Initiative expects to include and/or publicize such sites and apply the tools it has created (e.g. the RE-Powering Mapper) to help the Agency and stakeholders perform additional targeting.

Actions	Timeframe
Respond and Support Project Inquiries	On-Going
Support, Train and Utilize RE-Powering's Response Team	On-Going
Support Cleanup Project Managers in Their Consideration of Renewable Energy as a Reuse Option or within Green Remediation Approaches	On-Going
Explore Additional Opportunities for Site-Specific Technical Assistance	Spring 2015
Proactively Identify Sites, Particularly Opportunities on Federal Lands and Solar Photovoltaics on Landfills	On-Going

Goal 2: Promote Policies and Best Practices to Encourage Renewable Energy on Contaminated Lands

Objective 3: Highlight and Analyze Policies and Programs at the Federal, State, Local and Tribal Level

Policies and programs that affect renewable energy development on contaminated lands are created at many levels of government. While the Agency does not currently offer financial incentives directly, there are other organizations that do or could. Similarly, RE-Powering may not be the primary author of policies, regulations and studies that affect renewable energy development, but it is interested in identifying and highlighting best and innovative practices that could be utilized to address environmental concerns, protect human health and the environment, and promote site reuse. Through the sharing of information and the analysis of programs and policies, the RE-Powering Initiative can further enhance and leverage efforts towards the cleanup of sites and the greater siting of renewable energy on contaminated lands.

Policies and programs that could be explored might address:

- the integration of renewable energy development and on-going cleanup processes, or amid post-cleanup liability concerns;
- preferences and obstacles related to installations on contaminated lands, landfills and mine sites;
- technical and financial hurdles that create obstacles for renewable energy on contaminated lands;
- the regulatory review of such installations and opportunities to streamline processes; and
- other issues and obstacles that impact the cleanup and reuse of contaminated sites for renewable energy; for example, by working with our partners exploring:
 - the on-site use and the off-site purchase and marketing of power from contaminated lands;
 - the interconnection of renewable energy into a mix of power generation with different operating characteristics meeting a variety of load profiles; and
 - new and evolving models of ownership, leasing and power purchases.

Local government entities often acquire renewable energy installations through the use of formal solicitations (e.g. requests for proposal, or RFPs). Many municipalities do not have expertise in the complex legal, technical and financial issues that such mechanisms may involve and could benefit from having sample documents or other guidance related to solicitations for contaminated lands. The Agency, therefore, plans to facilitate the development of materials that clarify the use and development of solicitations and formal RFPs for renewable energy on contaminated lands. Such

materials could include a “model RFP” or an assemblage of best practices / key considerations, or could take some other form. EPA plans to build on other work in this area (e.g. guidance from other entities) and highlight aspects related to the use of contaminated lands.

Given the increasing damage and recovery from extreme weather events (e.g. hurricanes, superstorms) and the anticipated effects of climate change, RE-Powering is exploring the potential need and opportunities for renewable energy installations on contaminated lands near critical infrastructure to support continued operations. Such designs would need to consider on-going operations and evolving climatic conditions, as well as the more immediate response needs during and immediately after an emergency event. The analysis would consider opportunities in which contaminated lands are near identified infrastructure (e.g. hospitals, wastewater treatment facilities). It would also evaluate certain operational and technical challenges associated with such development on its own and coupled with other systems and technologies (e.g. storage and/or more traditional forms of backup power).

Actions	Timeframe
Analyze and Support Policy, Programs and Regulatory Approaches that Promote Renewable Energy on Contaminated Lands, Landfills and Mine Sites	On-Going
Facilitate Solicitations and Requests for Proposal on Contaminated Lands	Spring 2015
Analyze the Potential for RE-Powering Sites to Support Critical Infrastructure	Summer 2015

Objective 4: Identify Successful Strategies, Articulate Impacts and Disseminate Lessons Learned

To avoid “re-inventing the wheel,” stakeholders learn from the expertise and experience of others. Through RE-Powering, EPA has the opportunity to collect and disseminate “lessons learned” from successful projects, including what made them successful and how the current projects appeared when they were a less distinct opportunity. Communicating approaches that surmounted obstacles has always been of interest, particularly the technical, regulatory and financial aspects of such projects. The Initiative has and plans to continue to communicate such information through case studies (both site-specific and thematic). In addition, the Initiative plans to produce materials that highlight the ways successful projects have surmounted barriers, streamlined processes, and promoted and enhanced the environmental benefits of such development.

The Initiative plans to maintain and improve the means through which it communicates the opportunities, approaches and impacts associated with renewable energy development on contaminated lands, landfills and mine sites. The Initiative plans to revise its website and explore social media mechanisms to continue to be relevant and useful to its stakeholders.

The Initiative has lessons to learn and therefore plans to embark on a staged evaluation of its activities. Such an evaluation will articulate outcomes, examine the mechanisms used by the Initiative, and explore metrics to measure effort and impact. Such information will help the Agency guide its actions and better realize environmental and other benefits that RE-Powering investments have to offer.

Actions	Timeframe
Highlight Successful Projects and Ways to Address Barriers, Streamline Process and Promote Sustainability	On-Going
Revise RE-Powering America's Land Website	Fall 2015
Evaluate Effectiveness of RE-Powering	Winter 2015

Goal 3: Partner with Stakeholders and Leverage Agency Efforts

Objective 5: Strengthen Networks and Facilitate Collaboration among Stakeholders

The Initiative will continue to engage the many stakeholders involved in the redevelopment of contaminated lands and the development of renewable energy on such lands. Networking and collaborative efforts will continue to be central to the Initiative as it moves forward. This includes interaction with a wide variety of stakeholders, such as federal, state, local and tribal governments; communities; developers; industry; utilities; and utility commissions.

The federal government consists of numerous agencies, laboratories, commissions, and other organizations that directly or indirectly affect this type of investment. By facilitating greater coordination and collaboration across these entities, RE-Powering can reduce duplication of effort, enhance its impact through the cross-fertilization of approaches, and strategically leverage the cleanup and reuse of contaminated sites. Such collaboration would include engaging stakeholders on project reviews, as well as facilitating dialogue on policy and programmatic developments. For example, federal or state environmental reviews (e.g. reviews under the National Environmental Policy Act) that are triggered by renewable energy development efforts on contaminated lands, landfills or mine sites might be explored to acknowledge and consider the disturbed nature of the lands under review, provided that, as a threshold requirement, continued protection of human health and the environment is ensured.

Federal agencies are owners of contaminated lands. As they pursue cleanup and consider revitalization, there is an opportunity to develop renewable energy installations individually or in partnership with the private sector. RE-Powering believes it can, in cooperation with other federal agencies, collaborate on such investments. In light of the Administration's recent Climate Action Plan and the Presidential Memorandum on Federal Leadership on Energy Management, EPA has the opportunity to assist other Agencies and the Council on Environmental Quality in meeting higher goals for increased use of renewable energy, and to be an advocate for the siting of such capacity on contaminated lands, landfills and mine sites.

Local and state governments often provide the impetus and the context under which cleanups are conducted, revitalization efforts are pursued, and investments in renewable energy are made. Therefore, these entities are important partners for the RE-Powering Initiative and EPA seeks to enhance such partnerships under this revised action plan.

The examination of policies discussed under Objective 3, for example, would require close collaboration with states and localities to be helpful and effective. Such efforts could relate to the examination of site closure policies and the dissemination of favorable policies across the country, or could highlight renewable portfolio standards or certificate programs that provide preferential consideration for investments on contaminated lands. State and local governments own contaminated lands and have energy needs, providing additional opportunities for RE-Powering projects. In these many ways, the RE-Powering Initiative looks forward to enhanced dialogue and bringing together various government agencies on all levels to achieve the benefits of reusing contaminated lands, landfills and mine sites for renewable energy.

Effective partnerships will allow the Initiative to continue its collaborative approach, while continually connecting such activities to the Agency's mission. Through such partnerships, the Agency can help create additional markets for renewable energy investments while focusing on the protection of human health and the environment. For example, the Initiative can be a clearinghouse for information on effective financing arrangements or to articulate the pros and cons of various energy policies with respect to investments on contaminated lands.

The Initiative is at the crossroads between those thinking about resources for future electricity needs and those making land use decisions about particular sites and across communities. At this intersection, RE-Powering can cross-fertilize these multifaceted needs. Examples of this might include facilitating the selection of and enhancing the value associated with contaminated lands, landfills or mine sites for capacity planning; or reducing transmission and distribution needs by finding sites closer to electrical load. RE-Powering projects not only augment the investment in cleanup for the site, but transform community blight into productive assets. These are complex markets and regulatory processes, but their common consideration offers efficiency gains, enhanced environmental protection, and greater utilization of our land resources.

There are a host of organizations promoting clean energy and the reuse of contaminated sites. The Initiative will be most successful if it not only coordinates, but partners with such organizations. For example, EPA can partner with land cleanup programs at all levels of government (federal, state, local and tribal) and their associated reuse efforts (e.g. federal Superfund efforts, state brownfields programs); and with environmental, planning and land use organizations as well as regulatory and voluntary programs promoting the use of clean energy and greenhouse gas reductions (e.g. public utility commissions, EPA's Green Power Partnership). For a multitude of reasons including synergy, mutual learning, and the avoidance of duplication, EPA plans to identify and collaborate with such related programs and initiatives.

Actions	Timeframe
Engage Private, Non-Profit and Non-Government Stakeholders	On-Going
Coordinate and Collaborate with Other Federal Agencies (in particular, partner with CEQ and other federal agencies to meet renewable energy goals using contaminated lands, landfills and mine sites)	On-Going
Partner with States, Localities and Energy Supply Stakeholders to Highlight and Disseminate Effective Policies and Enhance the Context for Renewable Energy on Contaminated Lands, Landfills and Mine sites	On-Going
Identify and Partner with Programs Promoting Renewable Energy on Contaminated Lands and/or Investing in Reuse	On-Going

Objective 6: Leverage Funding and Build Capacity

While there are opportunities for public entities to host and support renewable energy on contaminated lands, the large majority of projects will occur because policy and economic markets provide incentives for the private sector to pursue such investments. In addition to encouraging a supportive policy and regulatory environment (Goal 2) and pursuing active partnerships (Objective 5), the Agency seeks to leverage available funding from across agencies to achieve community, economic and environmental goals.

There are numerous grant and technical assistance programs across the government that might assist the remediation of sites and the development of renewable energy on contaminated lands. Some of these programs and grants are explicitly directed towards such work, while others may broadly concern community development and be equally available. The Initiative seeks ways to incorporate and expand the consideration of contaminated sites as locations for renewable energy development in solicitations. The Agency hopes to facilitate such consideration by broadcasting grant, technical assistance, and other funding opportunities, and by working with offerers to have contaminated sites be part of grant criteria or less formal considerations.

While some stakeholders come to the table with the resources and expertise to explore renewable energy development on contaminated lands, others do not. The RE-Powering Initiative believes it has a role in supporting stakeholders who have intrinsic interests in such reuse, but not necessarily the experience or technical capacity to evaluate such projects or engage in such discussions. Therefore, the Agency plans to build capacity and facilitate peer-to-peer networks that can assist stakeholders. In particular, EPA is exploring ways to facilitate, support and utilize a network of communities in which those that have successfully installed renewable energy on contaminated lands can further inspire such development and share lessons learned.

EPA has prioritized engagement with tribal governments as they tackle various environmental challenges, pursue revitalization, and develop energy resources and energy infrastructure. The Initiative plans to work through existing tribal environmental networks and across Agency and governmental programs to support the pursuit of RE-Powering opportunities on tribal lands.

Actions	Timeframe
Leverage Available Funding and Coordinate Across Programs	On-Going
Support and Utilize Potential Community Networks	Spring 2015
Engage Tribes and Support Their RE-Powering Efforts	On-Going