

Process Checklist

RCRA Renewable Energy Siting

The following checklist provides a flexible guide for integrating renewable energy development activities into the [Resource Conservation and Recovery Act](#) cleanup process. Conditions specific to each facility may lead to implementing some key considerations during steps that differ from those specified below.



Step 1: Screen Facility and Environmental Conditions

Is my facility large enough for renewable energy?

The [RE-Powering Mapper](#) is a useful resource to identify favorable conditions for renewable development on specific facilities. The [RE-Powering Tracking Matrix](#) has examples of renewable energy developed on RCRA facilities. While most renewable energy developments require at least 5 acres to generate 1 MW of power, smaller RCRA facilities where a portion of operations may continue during and after cleanup may accommodate smaller-scale renewable energy projects.

Are the local solar or other energy resources sufficient to support renewable energy?

All facilities under consideration should be screened for basic resource potential before they are considered for renewable development. Some renewable uses, such as biomass or geothermal energy projects, may require more in-depth and specific assessments. The National Renewable Energy Laboratory (NREL) maintains useful energy resource maps with national-scale data to evaluate [solar](#) and [wind](#) resources.

Is cleanup needed at the facility? Who is the lead cleanup agency?

While some RCRA Corrective Action facilities will undergo cleanup and continue operations, **other facilities or portions of facilities might not continue current operations and can offer opportunities for reuse. Certain parcels may not be contaminated or may be cleaned up on a shorter timeline than the entire facility.** Parcels can be cleaned up and reused even while other portions of the property continue to operate as a regulated facility or continue to undergo corrective actions. It is important to consider how ongoing operations may affect siting future renewable energy structures, including access and operations of the renewable energy development.

At the federal level, corrective action may take place under a RCRA permit or as an enforcement order under §3008 of RCRA. In authorized states, corrective actions may take place under a state issued RCRA permit, a state cleanup order, a state voluntary cleanup program, or another state cleanup authority. Since authorized states may use a combination of state authorities to compel or oversee corrective actions, facility owners and developers must work closely with their state agency at each step of the cleanup process to best determine integrating renewable energy development at RCRA Corrective Action facilities. The RE-Powering Mapper contains point-of-information contacts for many facilities.

☐ Have you confirmed the willingness of facility owners and the community to consider renewable energy development? Are there any local moratoriums on new renewable energy projects?

It is critical that the reuse of a facility matches both community priorities for redevelopment and remains protective of human health and the environment in the long-term. Discuss the potential development with facility managers or project officers, the community, and local government to confirm willingness to consider renewable energy at the facility and work to integrate renewable energy into local redevelopment planning efforts.

☐ Identify potential non-contaminated areas based on sampling results and confirm suitability of the facility for renewable energy.

The RCRA Facility Investigation (RFI) step provides a detailed site investigation to understand the nature, extent, and potential migration of the contaminant release, if any. Use site sampling and risk assessment results and from the RFI to identify the best potential locations for renewable energy development. Areas that have been sampled and are ready for reuse without interim measures or cleanup actions may be considered for renewable energy development immediately.

Consider the terrain conditions and climate concerns that may impact the long-term protectiveness of a remedy and the operations and maintenance of the renewable facility. Are there project preparation concerns, such as shading or leveling the ground, that could be considered during the corrective measures implementation phase that could improve renewable energy feasibility?



The RFI step occurs before remedial decisions are made and is an ideal time for stakeholders to begin planning for renewable energy development. If interim measures are used to control or abate ongoing risks, discuss the potential for renewable energy at the facility. There is no uniform timeframe for the investigation phase, and the process could take several years. Renewable energy developers should understand how long the remedial investigation is expected to take at their sites when establishing a site control strategy. This will help ensure that site control options or other contract mechanisms extend sufficiently long and will help avoid undue financial commitments by the developer before the investigation phase is complete.

☐ Have you evaluated the project economics of a renewable project at the facility? What are the approximate local wholesale and retail prices for electricity?

A renewable energy project's economic feasibility can depend on many factors, including permitting requirements, transmission or distribution interconnection locations, technology and complexity, and local electricity prices. The environmental conditions at the facility, cleanup necessary, and associated timeline for cleanup are also important factors impacting the economic feasibility of a development. Incorporate the findings of the RFI, any interim measures, Corrective Measures Study (CMS), and the Remedy Selection reports into the renewable energy development timeline and the impacts to the renewable energy cost analysis.

Step 2: Integrate Renewable Design, Cleanup, and Reuse Planning

Incorporate Renewable Energy into Cleanup and Reuse Planning

Conduct a detailed analysis on ways to incorporate renewable energy design requirements into the cleanup process in collaboration with appropriate state, Tribal, or local officials as needed (e.g., solar panel integrated landfill caps). Coordinate discussions about reuse of the facility with community members and local government staff to ensure renewable energy is a desired outcome and fits with the reuse plans for the facility.

Have you considered any Institutional Controls or other limitations required by cleanup into renewable design?

Take note of any engineering or institutional controls (ECs and ICs) required by CMS at the facility. Consider these controls in the renewable energy design, including soil grading/disturbance, slope, cap or cover design, stormwater management, soil stability, and anchoring.

Confirm that the design, operations, and maintenance of the renewable energy facility will not interfere with any remedial activities (e.g., groundwater monitoring sampling, extraction well operation, remedy operations and maintenance), ongoing operations at the facility, ICs, and/or ECs in place. Ensure that ECs and/or ICs comply with renewable energy leases or other agreements. Finally, work with regulators to consider renewable energy development along with permit changes, if needed.



Renewable energy could be discussed during the evaluation of remedy options, especially if renewables would be proposed as a part of the remedy. Once a remedy is selected, it becomes more difficult to incorporate into the cleanup. Additionally, there may be no cleanup required on parts of the facility, based on the RFI results. This step provides an opportunity to incorporate renewable energy reuse options in areas of the facility where cleanup is not taking place or as a future use for the property when the cleanup is complete.

Continue Stakeholder Engagement Activities

As the cleanup and reuse planning and design activities of the renewable energy project continues, invest time in community meetings and other public outreach with local governments to keep stakeholders informed and involved as appropriate. Many projects require land use review by local departments such as planning review boards or other permitting bodies, and projects should consider the necessary approval requirements when estimating project periods and associated risks.

Consider opportunities to participate, as appropriate, in public meetings held during the Corrective Action or local reuse planning process to respond to any community concerns as they arise on the integration of renewable energy into the cleanup.

Identify Renewable Energy Specific Budget and Process Approvals and Permits

With the final cleanup plan in hand, finalize the design for the renewable energy project. Gather final cost information on constructing a renewable energy facility separate from the cleanup budget. Determine long-term ownership with state, local, and EPA partners and decide the ownership structure for the renewable energy project.

Assist the renewable developer to determine what permits are necessary and what environmental, engineering, or other studies are recommended. Permits, such as land use, environmental, siting, building, or other permits, may be required. Review applications for interconnection and net-metering agreements to the appropriate local utility.

Step 3: Cleanup and Renewable Energy Project Implementation

Are you actively coordinating construction activities across the cleanup and renewable energy teams?

Hold regular meetings between the cleanup team (e.g., state regulators, EPA, other contractors) and the renewable energy development team to examine ways to coordinate construction activities. Consider including community or local government stakeholders to minimize the impacts of construction activities on communities.



Renewable energy development can begin progressively in areas where cleanup activities are complete or where cleanup is not required. During cleanup, renewable energy development should not interfere with the implementation and protectiveness of the Corrective Measures Implementation (CMI) process.

Have you confirmed that ECs and ICs are in place?

Inspect cleanup and renewable energy infrastructure to ensure the cleanup protectiveness is not compromised during any construction. Confirm that the ECs and ICs for the facility are in place and are being followed.

Step 4: Post-Cleanup and Operations

Ensure Remedy Protectiveness is Intact

Inspect cleanup infrastructure to ensure the protectiveness of the cleanup is not compromised by renewable energy development activities.

Negotiate a Site Access and Cooperation Agreement

Collaborate with the developers and the owner and/or permittee to negotiate and finalize various access and cooperation provisions into the lease agreement. The agreement will outline how access and land use for operations and maintenance of the energy facility and ongoing environmental monitoring activities will be managed by cooperating entities over the entire term of the lease. The lease term is often at least as long as any associated energy agreement (e.g., power purchase agreement).

Have you checked that ECs and ICs are in place and being adhered to?

Ensure that ECs and ICs are being adhered to as the renewable energy project operates and that the operations do not interfere with any other monitoring or operations and maintenance (O&M) activities.