



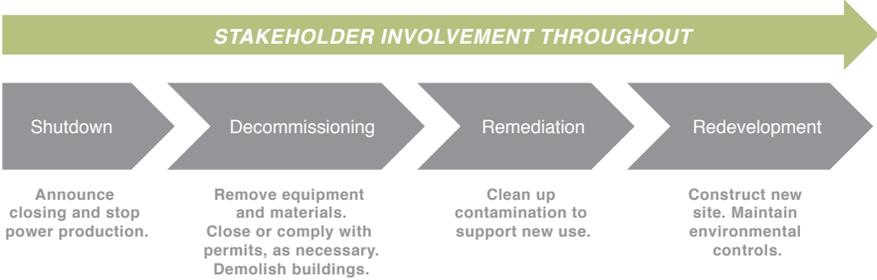
**COAL PLANT
DECOMMISSIONING
PLANT
DECOMMISSIONING,
REMEDICATION AND
REDEVELOPMENT**

Many coal-fired power plants are expected to close in coming years. Coal plant communities are faced with potentially long-term job and tax revenue loss, legacy environmental contamination and the need for new economic opportunities.

Site reuse options inform cleanup decisions and should be developed early in the process to determine the appropriate level of work needed for redevelopment. Understanding the range of reuse options will help in the development of realistic schedules and cost estimates.

Preparing a site for reuse often is a complex, multi-year process that includes decommissioning the existing power plant, cleaning up contamination (e.g., in materials, soil and ground water), and creating and implementing a redevelopment plan. Local leadership that is committed to public involvement and the establishment of a balanced and inclusive stakeholder group can guide the process by considering the many factors and unique conditions of a coal plant site, along with the community's redevelopment goals.

EPA prepared this fact sheet to help communities that may be affected by the closure of coal-fired power plants. Fact sheets covering stakeholder identification and facilitation, as well as financing options and incentives, are also available.



The Process

After a plant shuts down, the site will progress through decommissioning, remediation and redevelopment. Though it is not always possible, it helps to know site reuse options early in the process to inform cleanup decisions and determine the appropriate level of work needed in each stage of the assessment, cleanup and redevelopment process. Understanding the range of reuse options and needs associated with each will help in the development of realistic schedules and cost estimates. Time and costs associated with permits, approvals (of permits, plans, funding) and public involvement should be factored into redevelopment plans as well.

Typical Environmental Permits at Coal-Fired Power Plants

- Air pollution control
- Water withdrawal for cooling
- Water discharge
- Hazardous waste storage
- Fuel storage tanks
- Flue gas stack (Federal Aviation Administration)

Common Cleanup Methods at Coal-Fired Plants

Although the extent of the cleanup will depend on the final land use, many common methods are applied. For example:

- Asbestos, PCBs and other hazardous materials are removed from the buildings.
- Coal ash disposal areas are removed or capped with a protective cover of soil to ensure the waste is not accessible.
- Fuel tanks and any associated contaminated soil are removed.
- Concrete pads and soil around old transformers and hydraulic equipment are tested for PCBs and removed if necessary.
- Surface soil is tested for mercury and other airborne contaminants and removed if necessary.
- Soil around spills and leaks is tested and removed.
- Sites with old manufactured gas plants could contain coal tar and other hazardous materials, which require special methods for cleanup.

Environmental permits typically specify actions to take before, during and after closure. Plant owners must coordinate with public utility and environmental regulators to ensure compliance with permit requirements during the decommissioning, remediation and redevelopment process.

Decommissioning

Decommissioning begins with an announcement that the plant is closing and ends when operations completely cease. Unlike nuclear plant decommissioning, which the federal government strictly regulates, the process of decommissioning a coal-fired power plant is not always clear and may overlap with remediation and redevelopment.

Once the owner decides to close the plant, the owner should develop a strategy for managing the decommissioning process that serves his or her business needs. A wide range of management strategies may be considered, from the owner maintaining full control, to the selection of a third party to oversee the process. The owner also may sell the property to a developer or municipality early in the process.

During decommissioning, the electrical generating units are shut down and all operating permits are terminated. Any unused coal and hazardous materials associated with both the generation process and the buildings/structures (e.g., process chemicals, asbestos in the building or in equipment, polychlorinated biphenyls [PCBs], lead) are removed. Electrical generating equipment is cleaned and may be removed for use at other locations or sold as scrap. Some demolition of buildings/structures may be performed to facilitate cleaning or equipment removal. Power plants with onsite coal ash ponds or solid waste landfills must follow the federal and state permit requirements for closure of these facilities.

Remediation

Remediation involves the investigation and cleanup of hazardous materials to meet federal or state requirements. It also includes defining site-specific needs for redevelopment. The site owner is responsible for ensuring that the cleanup meets all regulatory requirements and works closely with stakeholders, environmental consultants and state environmental agencies to develop and execute the remediation plan.

The cost and extent of the cleanup will depend on the anticipated reuse of the site and the type and location of hazardous materials stored or disposed on the property. For example, if industrial use is planned, the cleanup requirements may be less stringent than what is required for residential use, because the likelihood of direct or prolonged human exposure to contaminants will be lower. Many power plants are adjacent to bodies of water that may contain contaminants due to power plant operations, which must also be addressed as part of the cleanup. The cost of remediation can vary greatly—from hundreds of thousands of dollars to several million dollars or more.¹

Remediation starts with collecting soil and ground water samples to investigate and document any contamination. Next, a plan for cleanup is developed and, once approved by state regulators, implemented.

¹Relatively few published studies discuss the costs of remediation at coal-fired power plants.

At most sites, the public is invited to comment on the cleanup plan that is proposed by the state environmental agency, who is responsible for reviewing and approving the plan.

Occasionally, low levels of contamination may be left in places. In such cases, future site activities and uses may be restricted. Any restrictions on the future use of the property (due to contamination being left onsite) is documented in legal notices (e.g., land use restrictions and institutional controls that often are filed with or attached to property titles and deeds). These may include restrictions on drilling drinking-water wells or building residential dwellings. In addition, requirements to notify local authorities before digging or excavating in contaminated areas may be imposed.

Redevelopment

To evaluate different reuse options and facilitate a shared vision of the end result among stakeholders, redevelopment planning should start early in the process. A shared stakeholder vision helps avoid major changes to the plan later on, which could cause delays and waste valuable resources.

In addition to meeting stakeholder needs, reuse must conform to practical and legal conditions at the site. The following table describes some common considerations in planning a redevelopment project.

Things to Consider	Examples	Opportunities and Challenges
Who will control the site during redevelopment?	<ul style="list-style-type: none"> • Utility • Public agency • Private owner 	<ul style="list-style-type: none"> • Utilities and private owners can control the reuse of the site within community regulations and to the extent that it is economically feasible. • Public agencies may have an opportunity to redevelop, using a combination of both public and private funds and partnerships.
What amenities are available at the site?	<ul style="list-style-type: none"> • Waterfront access and port facilities • Natural gas lines and electrical transmission stations • Technological infrastructure, including high-speed broadband access • Visual attractiveness, such as open fields, wooded areas, river and ocean views 	<ul style="list-style-type: none"> • Waterfront access can open new opportunities for recreation, transportation and tourism. • Waterfronts also offer a base for offshore power generation and staging. • Reuse of waterfront properties may require climate resiliency planning to reduce the potential impacts of extreme weather events. • Existing infrastructure may attract the clean energy industry; the owners could restart electric generation with natural gas or biomass. • Including walking trails, parks and event venues, when possible, helps accommodate community needs for open spaces.

Things to Consider	Examples	Opportunities and Challenges
Are there opportunities for economic development?	<ul style="list-style-type: none"> • Employment opportunities • Tax revenue 	<ul style="list-style-type: none"> • New commercial/industrial development can add direct and indirect jobs and can create tax revenues. • Commercial/industrial development can stimulate the expansion of nearby development projects.
Are there zoning issues?	<ul style="list-style-type: none"> • Local ordinances and overlay districts • Historic districts and historic building designations 	<ul style="list-style-type: none"> • Redevelopment must comply with local zoning regulations, which can limit options unless the zoning changes. • Some cities apply additional zoning requirements that overlay the existing base zone. • Historic buildings can offer unique development opportunities but may limit options. • Historic buildings may invoke the need to comply with the Historic Preservation Act.
Are there land use restrictions?	<ul style="list-style-type: none"> • Environmental • State waters and ports • Utility easements 	<ul style="list-style-type: none"> • Reuse options may be limited in areas with soil and ground water contamination. • Regulations may limit the redevelopment of land adjacent to water. • Utility companies may restrict access or use in areas with existing natural gas, electrical transmission and water utilities.
What's the property value?	<ul style="list-style-type: none"> • Cost of cleanup versus value of property after development • Market for redeveloped uses 	<ul style="list-style-type: none"> • The value of the property after redevelopment must be balanced against the cost of decommissioning, remediation and redevelopment. • The proposed use of the site must be realistic and address community needs. Communities should consider performing a market analysis to identify viable options for redevelopment and to inform reuse decisions.
What about vehicular traffic and site access?	<ul style="list-style-type: none"> • Regional and local access to site • Traffic and population density patterns 	<ul style="list-style-type: none"> • Industrial development will require transportation of raw materials and finished goods. Suitable roads, rail and ports must be available. • If reuse increases public access, adjacent neighborhoods must be able to accept increased traffic.

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