



# Waste Management Electric Utility Solutions

Qualifications and Experience

# Providing certainty in an uncertain environment.

Waste Management (WM) is North America's leading provider of comprehensive waste management services. Our business is built on providing solutions that are customized to meet our client's business objectives. With 2014 annual revenues of \$14 billion and \$21.4 billion in assets, Waste Management has the resources to invest in developing long-term sustainable solutions that solve our clients' environmental, financial and regulatory problems related to waste management. With a team of over 38,900 employees whose core business is the collection, transport, recycling and disposal of residuals, we have the resources and experience to implement expeditious solutions to the toughest problems.

Impending federal regulations are imposing financial, regulatory and operational uncertainty around the beneficial reuse and disposal of coal combustion products.

At Waste Management, we understand the complexities you face and offer a host of regulatory-compliant solutions that enable the electric power industry to focus on their core business – generating electricity – while we deal with the uncertainties of CCP management. Our options can include any or all of the following elements:

- **Turnkey operations and management of CCP collection, storage and transport:** Waste Management knows how to cost-effectively collect, transport and store waste materials in a manner that is not disruptive to your core business of generating electricity.
- **Management of Beneficial Reuse of CCP:** include the recycling of approximately 954,000 tons in 2014. We not only collect and prepare the recyclable materials for sale, we actively participate in the commercial aspects of selling the materials to domestic and overseas buyers.
- **Engineering, design and construction of new CCP disposal facilities:** Waste Management has the financial resources and institutional experience to build, own and operate CCP disposal facilities. These facilities can be located on your site or off-site to take advantage of regional CCP disposal needs.
- **Operation of your facilities on a contract basis:** Waste Management operates a number of landfills for municipal and industrial clients on a contract basis. You can own the facilities while outsourcing their operation to us.
- **Closure of existing CCP facilities:** We are experts in closing waste disposal facilities in a cost-effective, environmentally sound manner.
- **Pit, pond and lagoon closure:** Waste Management's team of experts can close your open pits, ponds and lagoons and return the property to you for reuse or plant expansion. Our team of experts can dewater the existing CCP products using different techniques including centrifuges, hydrocyclones, belt presses, filter presses or physical dewatering using sumps and pumps. Dewatered CCP can then be placed into your landfill or Waste Management's landfill.
- **Plant decontamination and demolition:** Waste Management's team of experts can turn-key the demolition of your out-of-service facilities, including management of the recyclable material.

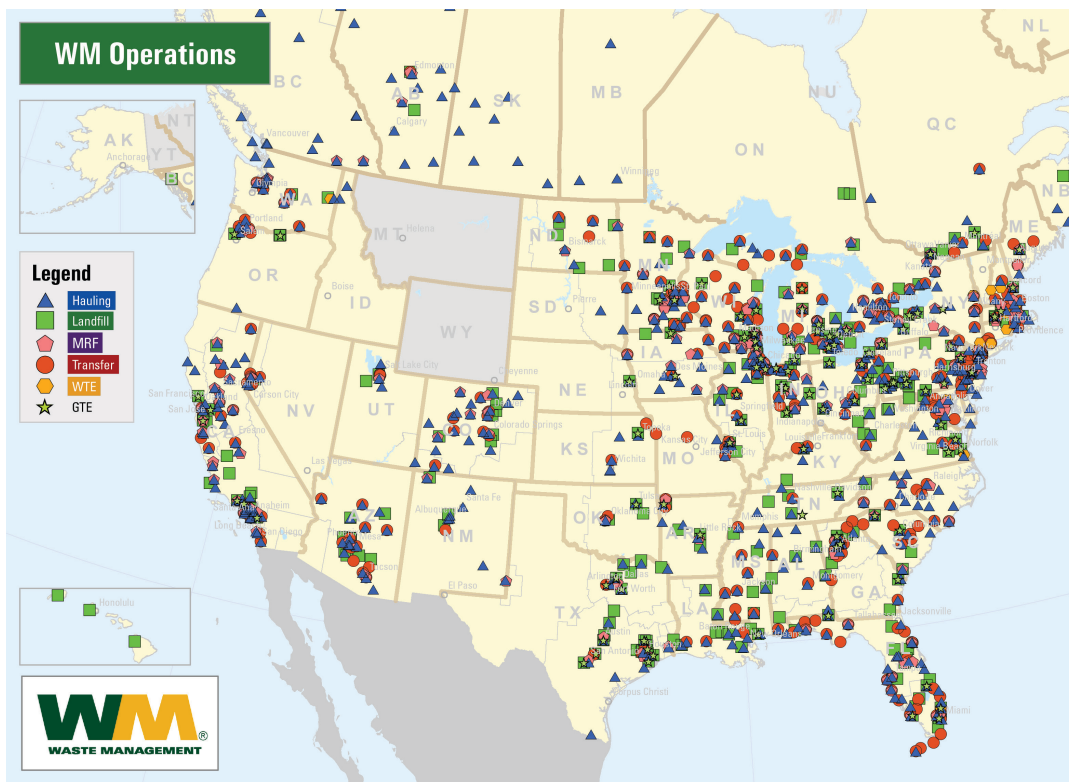
This document provides an overview of our company's capabilities in providing certainty in CCP management to the electric power industry in what is an uncertain regulatory and financial environment.



Recently, Forbes.com reported that Waste Management made it to the top of a field of more than 4,000 businesses to rank as one of the 20 Most Responsible Companies in the United States.

In a study conducted by governance ratings agency GovernanceMetrics International (GMI), companies were ranked by scores in six broad categories:

- Board accountability
- Financial disclosure and internal controls
- Shareholder rights
- Remuneration
- Market for control



## About Us

Waste Management is North America's leading provider of comprehensive waste management services. Using our vast network of assets and employees, we provide a comprehensive range of waste management services. Through our subsidiaries, we provide collection, transfer, recycling, disposal, on-site services and waste-to-energy services. In providing these services, we actively pursue projects and initiatives that we believe make a positive difference for our environment, including recovering and processing the methane gas produced naturally by landfills into a renewable energy source.

Our core business is explicitly defined by our name – Waste Management. Our employees share a common mission – to maximize resource value while minimizing environmental impact so that both our economy and our environment can thrive.

From the top down, Waste Management is focused on meeting the needs of our clients. Waste Management provides on-site services, collection, transfer, recycling and disposal services. Each of these entities maintains its own management structure to support the development of new landfills and the logistical operations of existing landfills.

### CORPORATE HIGHLIGHTS

Waste Management Operations as of 12/31/2014

#### Operating Areas

47 states, Washington, D.C. and Canada

#### Customers Served

More than 21 million

#### Active Landfills

247 solid waste landfills; 5 hazardous waste landfills

#### Collection Vehicles

19,000 transfer and collection vehicles

#### LNG- and CNG-Powered Vehicles

More than 4,200

#### Recycling

118 recycling facilities (46 are single stream and 8 are C&D recycling); 35 organics recycling facilities

#### Recycling Materials Managed

15 million tons

Relative to CCP management, Waste Management has a full complement of resources focused on land management facility operations at the ready. Each Group has a dedicated team of professionals focused on the following areas:

- Engineering, Permitting and Geotechnical Services
- Landfill Management
- Public and Community Relations
- Environmental Management
- Health and Safety
- Governmental and Regulatory Affairs
- Program Management and General Contracting Services
- Project Management

## Regulatory compliance

Our business is subject to extensive and evolving federal, state or provincial and local environmental, health, safety and transportation laws and regulations. These laws and regulations are administered by the U.S. EPA and various other federal, state and local environmental, zoning, transportation, land use, health and safety agencies in the United States and various agencies in Canada. Many of these agencies regularly examine our operations to monitor compliance with these laws and regulations and have the power to enforce compliance, obtain injunctions or impose civil or criminal penalties in case of violations.

Because the major component of our business is the collection and disposal of solid waste in an environmentally sound manner, a significant amount of our capital expenditures is related, either directly or indirectly, to environmental protection measures, including compliance with federal, state or provincial and local provisions that regulate the placement of materials into the environment. There are costs associated with siting, design, operations, monitoring, site maintenance, corrective actions, financial assurance, and facility closure and post-closure obligations. In connection with our acquisition, development or expansion of a disposal facility or transfer station, we must often spend considerable time, effort and money to obtain or maintain required permits and approvals.





## CCP Management

Waste Management has the financial and technical resources to provide customized CCP management options that meet the needs of your business. The options we can provide range from turnkey outsourcing of CCP management to retaining us to operate your facilities on a fee-for-service basis or utilize Waste Management's landfills for off-site CCP disposal.

Thousands of municipalities and industrial facilities outsource the logistics of waste and recyclables collection and/or landfill operation to Waste Management. The expertise we have gained through more than 40 years of experience in outsourcing the logistics of waste handling, recycling and disposal allow us to provide cost-effective outsourcing for all aspects of the logistics of CCP management.

If your existing CCP disposal facility will not meet the requirements of the pending CCP regulations, Waste Management can provide you with any and all of the following:

- **Evaluation of Existing Facilities:** Waste Management can work with you to determine whether upgrading your existing CCP disposal facility is a viable option. Our staff has extensive experience in making cost/benefit analyses of disposal sites and can easily focus their expertise on your site. Instead of speculation, we can provide you with the data you need to make the best financial decision for your business.
- **Site Selection:** Whether you are working with property you already control or are looking for new off-site options, Waste Management can help you determine the best choice for new facility development. Our experience in operating landfills and procuring new sites will allow you to avoid the pitfalls of purchasing and developing less-than-ideal sites.
- **Design and Permitting of Facilities:** Waste Management has directed the design of, and obtained permits for, hundreds of landfills. While landfill permitting and design is something your business deals with perhaps once every 5 to 10 years, it is part of our ongoing business processes. Our operational expertise allows us to design sites that are cost effective to build and operate. At any given time, Waste Management is in the process of negotiating 10 to 20 landfill permits with various state regulatory agencies across the United States. Our expertise in obtaining permits for new landfills and landfill expansions is a competency that is critical to the long-term viability of our business. We can assist you in obtaining permits for sites you will own and Waste Management will operate, or we can permit, develop and own the site.

- **Construction of Facilities:** Once the site is permitted, Waste Management can turn-key the construction of the facility – including the entire auxiliary operational controls needed for a complete operational landfill. These include scale housing, interior roads, stormwater control structures, leachate management facilities, groundwater-monitoring and air-monitoring systems. Waste Management has overseen the construction of hundreds of landfills and landfill expansions. Our staff of experienced landfill construction superintendents can help you avoid the pitfalls that can cause cost overruns and scheduling delays.
- **Facility Operation:** Once the facility is constructed, we can operate it on a fee-for-service basis or as the owner of the site where your CCP is being taken. We are experienced in the daily operations of landfills and can be proactive in making certain all operational requirements in permit terms are met.
- **Facility Closure:** Over the course of our more than 40-year history, Waste Management has closed in excess of 160 landfill sites. The negotiation and implementation of cost-effective site closure requires experience. In conjunction with development of new disposal facilities, Waste Management will work with you to achieve an effective closure of your existing CCP disposal facility. After the facility is closed, we can offer cost-effective, long-term care solutions.

In addition to developing new sites for your exclusive use, Waste Management can offer you the option of contracting for air space at one of our existing facilities. This space can be stand-alone cells (monofill), or we can take your residuals directly into our landfills, where permits allow. The operations of all of these facilities can be such that the different types of residuals can be separated into stand-alone cells (monofill), so that future recycle or reuse of the materials can be easily achieved through mining and other recovery actions. Again, we can finance and own any part of the facility you may not wish to own.

At Waste Management, our focus is on helping you run your business in a cost-effective manner with no disruption of power generation due to issues related to CCP management. Our expertise can help you determine the best options for your financial and operational situation.

## Sustainability

At Waste Management, we care about the planet. We feel a responsibility to leave it to future generations in better shape than we were given it. Every day, we work with our government, business and community partners to extract value from waste in ways that protect and enhance the environment.

In doing so, we are contributing to a more sustainable world by:

- Advancing technologies to reduce waste
- Increasing recycling and reuse
- Creating even safer treatment and disposal options
- Developing sources of renewable energy
- Sharing the benefits of our learning and innovation with our clients and collaborators

We intend to continue to focus on meeting the needs of a changing environment. As North America's leading provider of comprehensive waste management services, we believe we are well positioned to meet the needs of our customers.

Drawing on our resources and experience, we actively pursue projects and initiatives that benefit the communities we serve and the environment.

- As one of North America's largest residential recyclers, Waste Management managed 15 million tons of recyclables in 2014. By 2020, we expect to increase the amount of material we manage to more than 20 million tons per year.
- By the end of 2014, Waste Management had 137 landfill-gas-to-energy projects producing enough energy to power 470,000 homes every year.
- Today we have more than 4,200 natural gas-powered trucks in our fleet. For each diesel truck we replace with natural gas, we save 8,000 gallons of diesel and reduce greenhouse gas (GHG) emissions by 21 percent.
- Through a joint venture with the Linde Group, we have built the world's largest facility for generating landfill-gas-to-liquefied-natural-gas, and we use this cleaner-burning fuel in our trucks. The facility has a design capacity of 13,000 gallons per day.
- Waste Management set a goal to achieve a fourfold increase in the number of facilities certified by the Wildlife Habitat Council. As of 2014, we have exceeded that goal with more than 26,000 acres of our property for wildlife habitat.

## Beneficial reuse

Every day, we work with our government, business and community partners to extract value from waste in ways that protect and enhance the environment. To that end, let us help you beneficially reuse your CCPs. CCPs can be reused in two forms – encapsulated (bound into a product) and unencapsulated.

**Encapsulated:** There are important benefits to the environment and the economy from the use of coal ash and flue gas desulfurization (FGD) gypsum in encapsulated form, such as in wallboard, concrete, roofing materials and bricks, where the coal ash/FGD gypsum is bound into products. Environmental benefits from these types of uses include greenhouse-gas reduction, energy conservation, reduction in land disposal, and reduction in the need to mine/process virgin materials. Encapsulated reuse of CCPs has proven safe to both human health and the environment.

One of the most widely recognized beneficial applications of coal ash is the use of coal fly ash as a substitute for Portland cement in manufacturing concrete. The use of coal ash increases the durability of concrete and the process generates fewer greenhouse gas emissions. For each ton of fly ash that is substituted for Portland cement, approximately one ton of greenhouse emissions is avoided.

**Unencapsulated:** Unencapsulated uses are those where coal ash is in a loose or unbound particulate or sludge form. The USEPA has identified concerns with some land-based uses of unencapsulated coal ash, particularly when proper engineering standards have not been met. The Agency is currently soliciting comment on whether to regulate unencapsulated uses and, if so, the most appropriate regulatory approach to be taken. Waste Management has worked closely with the Edison Electric Institute in commenting to the EPA on sensible approaches to regulation of CCPs.

The EPA considers certain uses, such as coal ash as fill in sand and gravel pits, as well as other large-scale fill operations, as disposal and not as “beneficial use.”

Our recycling/reuse experts can work with you to customize programs that create operational improvements, meet regulatory requirements, increase diversion rates and serve the greater environment. As one of North America's largest recyclers, we have the resources and the know-how to make beneficial reuse of CCP happen. We're experts at matching generators of recyclable materials (e.g., CCPs) with the purchasers that make up the global market. We'll work with our myriad of global manufacturing contacts to find the best locations and prices for your materials. Depend on us to generate value from the recyclables you generate.

## Development of new sites

Waste Management is in the business of siting, developing and operating solid waste management facilities. As with any major project, the first step is to help determine the needs of the client. We can help you determine the optimal size landfill to meet the remaining site-life of your generating plant. Once this is defined, we can then start the site-selection process.

### Site selection

Waste Management has a rigorous program for the selection of new sites for landfill development. The first phase of a site evaluation is the identification of available properties. This phase includes such things as:

- A search of properties available for purchase near your existing generating plants.
- Review of properties held in an existing owner's portfolio.
- Discussions with land brokers who may know of property that could be made available.

Once potentially available properties are identified, they are subject to a thorough screening process that eliminates those not suitable for regulatory, economic or environmental reasons.

- The preliminary environmental review involves a desktop study to determine if there are significant environmental problems with the site that would render it unsuitable for development. Some of the issues to consider are proximity to public water sources, flooding problems, wetland and stream issues, as well as published endangered species problems.
- Community support is priceless, and Waste Management seeks to be an ongoing steward for environmental and community improvements. When evaluating a site, factors such as proximity to public facilities such as schools, parks and churches should be considered. Sensitivity to the views of those living near a facility goes a long way to establishing a good working relationship with the community.
- Finally, economic concerns are important in the evaluation of a site. Locating a site that is near transportation arteries such as a freeway or a railroad is important. Considering site conditions to evaluate construction costs is critical. Site physical conditions such as depth to rock, the presence of suitable clay for liner construction or the need for excessive excavation can significantly impact construction costs.

All of these concerns must be evaluated before a site is selected for development. Once a site has passed the preliminary screening process, it is deemed ready to start the site suitability phase.



The suitability phase, the first step in the permitting process, is used to prove the site is able to be developed and to develop detail design criteria.

- Waste Management's in-house staff understands the need for a thorough hydrogeologic evaluation of the property to be developed, as well as the need for a comprehensive geotechnical evaluation of the property during this phase of the work. Performing a comprehensive investigation at this time provides the required data needed later in the design phase.
- During this phase of the work, a comprehensive environmental study must be performed. One aspect of this is a full wetlands determination, which will be reviewed by the U.S. Army Corps of Engineers (COE) for concurrence. If it is found that any wetlands are to be impacted by the development, a wetlands mitigation plan must be developed. Said plan must then be approved by the COE before any landfilling permit can or will be issued.
- Also during this phase of the work, evaluations of the impacts on any endangered species must be performed. If endangered species are found to be impacted, a mitigation plan for those impacts must be developed and approved by the proper regulatory agency prior to any work being performed at the site.

Any of the issues identified above can result in substantial regulatory delays unless they are managed correctly. Waste Management's staff works with these issues every day and is adept at developing acceptable solutions expeditiously.

## Engineering design

After the site suitability phase of a project is complete, the detailed design and operation plans are developed for the permit. The design of a landfill and its operating program determine the capital cost of site development and the cost to operate the facility.

Waste Management offers expertise relative to minimizing construction and operating costs while developing a safe and environmentally suitable landfill. The detailed design and operation plans include the specifics of how the landfill will be operated and constructed. Site plans must address the proper safeguards for groundwater, surface water and air. Because of Waste Management's extensive knowledge of and experience with landfill operations, we can optimize how landfills are developed and operated while maintaining safeguards to the environment. Key components to landfill design are:

- The plans must include a groundwater-monitoring plan that is based on an evaluation of the existing groundwater quality, aquifer characteristics and groundwater flow direction. This plan will include monitoring wells located upgradient, side-gradient and downgradient of the landfill as part of the detection phase monitoring. The plan will include sampling procedures and analysis requirements.
- The site design has to include access roads, drainage control, sediment-control ponds and other auxiliary needs such as scales and equipment maintenance facilities.
- Groundwater protection at most facilities is maintained by the use of a liner system. Typical liner systems are composed of a leachate collection layer, a synthetic liner component such as HDPE, a plastic material and a clay component. The location and needs, as well as the availability of materials, can cause this system to be modified in different ways.

In addition to the landfill design elements listed above, other components of the design – such as final grades, landfill cap specification and the leachate handling and treatment facilities – can have major impacts on landfill construction and operating costs. Waste Management's holistic approach to landfill management optimizes available air space while minimizing construction costs and leachate generation.

A key aspect in designing and constructing a cost-efficient landfill is the sequencing of filling the landfill. Sequence of filling is important with regard to leachate management, cost of cell construction, and the cost of operational road construction during the life of the landfill. Another important design element related to filling sequencing is how interim slopes are used. The proper sequencing of interim slopes can drastically reduce the cost of maintenance during the life of the landfill.

Through years of experience working with regulatory agencies, Waste Management understands how expensive improperly designed monitoring programs can be. Our in-house staff of hydrogeologists is available to aid in the design of cost-effective monitoring programs.

## **Permit approval**

Waste Management has a long history of working with the U.S. EPA and state regulatory agencies to help develop regulations that are protective and economically feasible. Once the facility design and operations plans have been prepared, they are submitted for approval in the permit application. The permitting process can be arduous and contentious. In order to minimize the potential for schedule delays due to problems in permit approval, Waste Management takes a proactive approach with regulatory agencies in the development of the design and plan of operation. Issues are resolved as they occur in the design process, and delays are minimized by the time the final documents are submitted for approval. We have been involved in all types of permitting and know the best way to get the job done.

## **Construction**

Waste Management has constructed more landfills than any other entity in the United States. We know which suppliers are reliable and cost-effective. We know how to schedule the work to accomplish construction in a reasonable amount of time and on schedule. We know how to manage the construction to minimize open cells and optimize construction expenditures.

- Waste Management understands that all the construction work must be certified to verify that facilities are constructed in a manner that meets permit obligations.
- We understand that a clay liner must be placed and compacted to the proper degree or it will not meet its permeability requirements.
- We understand how to properly weld HDPE liners and properly place them.

If Waste Management is involved in the construction of your CCP disposal site, we can assure you it will be done correctly.

## **Operations**

At Waste Management, we are the leaders in landfill operations. We have more trained landfill operators than any other company in the United States and have a rigorous training program that keeps our operators up to date in all aspects of landfill operations. Our audit program mandates that we audit every site twice per year relative to compliance with all aspects of environmental management. This robust facility audit program helps us to verify that every site we manage is operated in an environmentally sound manner. Likewise, our safety audit program allows us to maintain one of the lowest reportable injury rates in our industry. Finally, the operations of all our sites are reviewed on a monthly basis for operational efficiency.

## **Site closure**

Once a site has reached landfill capacity, it must be closed. We have closed numerous sites in the past 10 years, using the most up-to-date procedures. We are experienced with a variety of vegetative and synthetic covers. After a site is closed, it often has beneficial-reuse potential. Our sites have been converted to a number of different uses, including golf courses, ski slopes, athletic fields and photoelectric facilities. If appropriate, CCP could be disposed of in a monofill so that material can be extracted later and recycled.



## Summary

Waste Management is North America's leading provider of comprehensive waste management services. Our business is built on providing solutions that are customized to meet our clients' business objectives. With 247 active solid waste and 5 active hazardous waste; 298 waste transfer stations; and 161 material reprocessing facilities (including 118 recycling, 8 C&D, 35 organics) in the United States, Waste Management knows how to manage the uncertainties of permitting and developing facilities for the recycling or disposal of wastes. With 2014 annual revenues of 14 billion and 21.412 billion in assets, Waste Management has the financial strength to tackle your CCP issues.

Developing and implementing sustainable solutions to waste collection, recycling and disposal problems is our core business. Our over 38,900 employees are focused on 21 million customers with exemplary service. Every day, we take on the tough permitting and construction issues related to development of disposal sites – issues that our clients see only once every ten years. Our facilities recycle nearly 13 million tons of materials and landfill an additional 93 million tons of materials each year. We know how to collect, process and manage residuals. Waste Management has the experience and resources to allow you to focus on your core business without worrying about the uncertainties of how your CCP will be handled.

## Qualifications overview

Waste Management provides the electric power industry flexibility in how you manage CCP. We can:

- Provide turnkey CCP management where we own and operate all aspects of CCP management for you.
- Help you find, permit, construct and/or operate appropriate CCP management facilities. We are flexible about which aspects of CCP management we can provide. This option allows you to use existing resources without having to provide the personnel and expertise to operate those assets.
- Provide you with airspace in one of our existing landfills or recycling facilities. This option allows you to continue your generating activities without worrying how your CCP is being managed.
- Close your existing CCP management facilities in an environmentally sound manner. This option provides the assurance that facilities are properly closed and provides continuity with new CCP management activities.

Waste Management's core business is the sustainable management of residuals. We are offering our expertise and assets to help the electric power industry obtain certainty in CCP management.

**For additional information  
see WM Sustainability at  
[wm.com/sustainability/index.jsp](http://wm.com/sustainability/index.jsp)**

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