COVANTA HEMPSTEAD COMPANY

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SWANA Excellence Award Application
Executive Summary

In its 25th year of operation, Covanta Hempstead, located in Westbury, Long Island is a leader in the Energy-from-Waste Industry. Covanta provides sustainable safe municipal solid waste disposal to the Town of Hempstead (America’s most populous town), the Town of Brookhaven and other municipalities, to generate enough clean energy to power close to 85,000 homes. It is owned and operated by Covanta of Morristown, NJ and primarily services the Town of Hempstead and the Town of Brookhaven. The plant expects to process 981,500 tons of municipal solid waste (MSW) per year and has receiving rates of up to 5,000 tons per day.

Facility Summary

Allowing for both planned and unplanned boiler outages, the plant is expected to process the full permitted amount at 95% availability. The plant consists of three individual boiler trains and has a design capacity of 2,505 TPD with all three trains operating. The margin built into the design would facilitate processing up to 2800 TPD. On the power side, the facility has a 10-year Power Purchase Agreement with LIPA (Long Island Power Authority). The facility has averaged 548,000 MWhrs (per annum) of net generation for the life of the plant.

The combustion technology employed at Covanta Hempstead was supplied by Deutche Babcock Anlagen of West Germany and the plant is classified as a mass burn incineration plant with energy recovery. All combustible materials are simply burned as they are received unlike a refuse-derived facility; there is no special preparation or mixing procedures required on the front-end. The only pre-processing operation is the removal of unacceptable materials. This is done through an extensive and documented “throw-down” inspection procedure that removes non-permitted waste prior to disposal in the refuse bunker.

The facility operates under a set of corporate core principles led by safety and environmental excellence. It proudly flies both the OSHA VPP Star and the EPA Performance Track flags. In 2013, Covanta Hempstead received its fourth recertification under the OSHA VPP Star Program. Furthermore the Facility Safety Coordinator has recently been accepted as an OSHA Special Government Employee, OSHA SGE. Also, Covanta Hempstead has been accepted into the New York State Department of Environmental Conservation’s Environmental Leaders program, which has similar entry criteria and goals.

Engineering Design Systems & Technologies

Waste Handling

The waste handling system at the facility includes the truck handling equipment, the tipping floor, refuse bunker, refuse cranes and refuse feed chutes. This waste handling area of the plant performs two vital functions: Adequate storage and handling capacity for peak delivery periods, and Environmental control

Refuse received at the plant comes from many sources: residential, commercial and industrial. Refuse trucks enter the facility and are weighed. Refuse trucks enter the tipping floor from the roadways and discharge materials through the tipping bays into the refuse bunker. The waste handling system is sized for up to 300 tons per hour. The refuse bunker is capable of providing adequate storage space to accept the daily input and sufficient fuel storage for long weekends when MSW deliveries do not occur. The refuse bunker provides over 70,000 cubic yards of storage estimated to be enough volume to hold approximately 21,000 tons, depending upon the density.

Environmental control for the plant begins at the scale house. Radiation monitors compare each incoming truck to background radiation levels. If a particular truck sets off the alarm, there is a contingency plan to prevent the truck from entering the tipping bay area. Tipping floor attendants and crane operators then visually screen incoming MSW for both unprocessable and hazardous wastes. Tipping floor attendants require refuse haulers to empty their loads directly on the tipping floor. Waste is then moved into the storage bunker where each grapple full of waste is “fluffed” to control density and once again checked for any bulky or non-permitted waste.
Combustion and Energy Recovery

The combustion and energy recovery system at the Hempstead Facility consists of the ram feeder, the roller grates, the boiler and economizer. The combustion and energy recovery system burns the waste efficiently and safely and converts the subsequent heat energy into steam. The second step of environmental control, following waste screening, is the efficient combustion of MSW. The refuse feed and boiler control systems operate together to ensure nearly complete (>99.9%) combustion of refuse at the proper temperatures.

Despite the unpredictable nature of the fuel, the plant is able to operate in an environmentally sound manner by providing back-up temperature control systems. The boiler is equipped with auxiliary burners that are designed to maintain the furnace temperature at a minimum of 1500 °F regardless of refuse quality. In 2013, the facility installed combustion air pre-heaters to assist in combusting poor quality fuel and to reduce the amount of fuel oil consumed by the auxiliary burners. The pre-heaters have been in operation for less than a year, but have already proven to be effective.

Environmental Controls

The environmental control equipment of the Hempstead Facility consists of the precyclone separator, the dry acid gas scrubber, the fabric filter, thermal DeNOx, and the continuous emissions monitoring system. The environmental control system ensures that the facility meets or exceeds all combustion emissions requirements of the NYSDEC, including the MACT (Maximum Achievable Control Technology) standards. To provide a permanent record, the continuous emissions monitoring system (CEMS) records the plant’s performance at all times.

The precyclone separator serves to remove particulate matter and reduces dust loads in the dry scrubber and fabric filter. The dry scrubber removes acid gases (HCl, SO₂, etc.) known to be the prime causes of acid rain. The fabric filter further removes the fine particulate matter generated within the process. The DeNOx system was a capital project that was completed in 2000 to achieve the Federal MACT standards for NOx emissions. It has since been enhanced on two of the three boilers by the installation of Covanta’s patented Low-NOx technology, which redistributed the overfire air to reduce NOx formation, and thereby limit the amount of urea reagent that must be used. Finally, the CEMS documents all occurrences and actions taken by the plant and its operating personnel.

Residue Handling/Metal Recovery

The residue handling/metal recovery system separates ferrous and non-ferrous metals from the plant’s residue stream for recycling and leaves the remaining ash for disposal. All of the ash from the boilers and the precyclone can be routed through the ferrous system where ferrous materials are separated and recovered. The Hempstead facility has averaged more than 25,000 tons of ferrous and 2,800 tons of non-ferrous material recovered per year for re-sale in the scrap market. Fly ash and salts formed are moistened in pug mills to suppress dusting, and sent to the residue bunker for disposal. In the residue bunker, the bottom ash, salts and fly ash are mixed and loaded into trucks by a crane. In compliance with NYSDEC requirements the ash residue is characterized every 7 months per the TCLP (toxicity characterization leaching procedure) to insure the ash can be disposed in a non-hazardous landfill. The ash from the Hempstead facility test results have never been deemed as hazardous. As part of our focus on continuous asset improvement, a capital investment was made in 2013 to increase ferrous and non-ferrous metals recovery from the ash stream.

Environmental Impacts and Regulatory Compliance

Covanta Hempstead employs an Environmental Management System (EMS) to help ensure continued environmental excellence. The EMS has various components that tie together to provide the framework for success. At Hempstead, the facility’s outstanding record of performance and commitment to continued improvement were rewarded in 2002 when we were accepted into the U.S. Environmental Protection Agency’s National Environmental Performance Track Program. We were only the second waste-to-energy facility to be accepted into the program and are honored to be recognized as an environmental leader. Unfortunately, USEPA decided to discontinue the program in 2009. However, the New York State Department of Environmental Conservation (NYSDEC) developed a similar program – New York Environmental Leaders – at the state level at about the same time. Covanta
Hempstead was accepted as a charter member of the program and continues to participate. The Hempstead Facility is staffed with a full-time Environmental Engineer, who is the primary interface on environmental compliance matters for the facility and is responsible for managing the administrative requirements to ensure compliance with all environmental permits and applicable regulations. This individual has a dual reporting function to both the Facility Manager and the Regional Environmental Manager, and is responsible for implementing facility-specific environmental programs.

In performing his duties, the Environmental Engineer is actively involved in the various activities at the facility to provide environmental and regulatory guidance when necessary. Periodic walkdowns and inspections of the facility are completed to identify where corrective actions or improvements are needed and any such needs are communicated to facility management and the general employee population. The Environmental Engineer has a thorough knowledge of all applicable regulations and facility permits and is responsible for educating the facility employees through initial and on-going training. He also has a good understanding of the facility’s operations to effectively relate environmental requirements to day-to-day operations. Finally, the Environmental Engineer is responsible for preparing and submitting the various environmental reports and regulatory correspondence required by the facility’s operating permits.

**Regulatory Affairs**

The Hempstead Facility is permitted under various local, state and federal laws and regulations. We are committed to operating in an environmentally compliant manner and to the satisfaction of our key stakeholders, namely, the community in which we operate and the regulators who oversee our activities. This commitment is achieved by minimizing the emissions and discharges from the facility and establishing facility-specific programs geared to compliant actions. We are committed to delivering such compliant operation, timely and complete reporting, and courteous cooperation.

**Community Relations**

Our main objectives as they relate to Community Relations are to play a positive role in the community in which we operate, to be compatible with the recycling and reuse of products, and to interact with citizens on environmental matters. In pursuing these objectives, we operate as Good Corporate Citizens. We become involved in our community by being knowledgeable in their areas of concern and take appropriate steps to understand and reduce, where possible, our impacts on the community. All reasonable efforts are taken to minimize emission upsets, noise propagation beyond the property line, odor migration, litter, and truck related impacts. Beyond that, we are proactive in our attempts to ensure that our operations are consistent with community objectives. To better understand the needs of the community, the Facility Manager, Business Manager and Environmental Engineer meet with the Town of Hempstead Solid Waste Advisory Committee (SWAC) bi-monthly to discuss facility operations. A plant status report is provided at the beginning of each meeting and a question and answer session follows. We have also made an effort to know our local elected officials to facilitate efficient communication. Finally, we have an open door policy and conduct numerous tours for local residents and schools to further educate the public on the benefits of our operation and to answer any questions or concerns they may have.

**Employee Training**

Covanta is committed to being an industry leader in environmental protection by achieving superior awareness and performance. In addition to routine communication at various meetings, formal training is essential to achieving the desired level of awareness in all employees. Upon hiring, every new employee receives instruction on the importance of regulatory compliance and other environmental aspects of our operations during new hire orientation training. Topics of discussion include the Company Environmental Philosophy, permit requirements, waste and ash management, emission controls and monitoring, and chemical storage and handling. Depending on the job function and level of the employee, this training is fairly general in nature to avoid overloading the individual with too much information. More specific environmental information is provided as the employee progresses through the organization and environmental sign-offs are required before a technician can become certified at most levels. In addition, we are required to provide annual refresher training on our Waste Control Plan and Title V Operating Manual.
Employee Participation & Incentives

Environmental performance is intertwined with all aspects of our business. Therefore, our environmental objectives cannot be achieved by the methods and practices of the Environmental Affairs personnel alone. All Covanta personnel must be involved in and committed to achieving our goals, regardless of functional department or employment level. For that reason, environmental compliance is a condition of employment for all employees and is a factor in all performance evaluations.

Employees are involved in environmental affairs on many levels, including shift turnover meetings, tailgate meetings, completion of the annual chemical inventory, and participation on the Environmental, Health and Safety Committee. Employees at all levels are encouraged to report environmental issues through “SHE Communication Forms,” which are reviewed by facility management and communicated to all. Action items from these reports are summarized and tracked to completion in a database. Employee participation in all of these areas is evaluated when considering salary increases and promotions.

In addition to regular compensation, each employee at Covanta is eligible to earn a bonus, a component of which is environmental performance. Targets are set at the beginning of each year and payments are made based on the degree to which these targets are met. At the facility level, employees are graded on CEMS exceedances and environmental compliance, with a facility walkdown conducted by the Regional Environmental Manager serving as an entry ticket to qualify for the environmental portion of the bonus (minimum score required). All hourly employees receive the same percentage bonus. At the Manager and Corporate level, bonuses are more subjective and are based on the performance of all Covanta facilities in meeting their stated goals. All targets are based on previous performance and the facility generally must achieve better results than the prior years to obtain the top bonus level. This helps to drive continuous improvement.

Site Inspections

We routinely perform various levels and types of inspections of our facilities to help ensure that we are abiding by our Environmental Philosophy, our permits and regulations, and our established best management practices (BMP). In this manner, we remain in compliance and ready for potential audits by regulatory entities at any time.

As discussed above, an agreed upon system for scoring facility walkdowns is used as a component of the bonus compensation for facility personnel. The Corporate Environmental Group periodically establishes terms for the environmental bonus criteria and resets the bonus targets as needed based on past performance, the goal being continuous improvement. Walkdowns consist of a number of environmental compliance aspects and best management practices. For example, the review may evaluate the status of ash monitoring, waste inspection logs, site cleanliness, proper chemical storage, continuous emission monitoring system exceedances, preventive maintenance programs, and other elements. Interviews with employees may be conducted to evaluate specific criteria or knowledge.

Environmental walkdowns are usually performed by the Regional Environmental Manager and the facility Environmental Engineer. Additional facility personnel are often included as a means to reinforce environmental requirements and provide additional training, especially to new hires. In addition, the management team at the facility, which includes the Operations and Maintenance Managers, is encouraged to perform facility walkdowns from an environmental perspective and to provide any feedback on issues that need attention to the plant Environmental Engineer.

Stack Testing & CEMS Performance

The Hempstead Facility is subjected to rigorous and comprehensive testing of stack emissions on an annual basis. An independent testing company is hired for each test event and all methods and procedures are conducted in conformance with approved US Environmental Protection Agency and/or local state agency requirements. These tests have consistently demonstrated performance that is well below regulatory limits, as discussed above. In many cases the facility has been in compliance with new regulations even before they became effective.

In addition to annual testing of stack emissions, the facility is equipped with continuous emissions monitors that measure and record emissions of certain parameters that are regulated by short-term emission limits. These
parameters include steam flow, carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen oxides (NOₓ), inlet temperature to the baghouse, and opacity. In addition, the facility measures oxygen (O₂) for combustion control and carbon dioxide (CO₂) to correct the data to a standard for comparison to the emission limits.

The highly regulated nature of the waste-to-energy industry and the complexities of the operations, the most significant of which being the use of municipal solid waste as a fuel, present challenges with respect to achieving and maintaining 100% compliance with these short-term emission limits. Despite our best efforts at properly operating and maintaining our facilities, occasional exceedances are expected and the regulations have provisions for conditionally excusing exceedances caused by startup, shutdown and malfunction events. We make every effort to minimize the potential for these events and to prevent reoccurrence. As discussed in the Incident Investigation section immediately below, all events are investigated to determine the root cause, action items are developed and implemented, and the results of the investigations are communicated. As a further means of continuous improvement, all CEMS events are reported and tracked, regardless of whether they are excused by regulation.

**Incident Investigation & Reporting**

At Covanta Hempstead, an environmental incident is any event that has an actual or potential impact on the environment. All incidents are communicated and depending on the severity of the event, a formal incident report may be developed and distributed. Environmental incidents are typically reported by employees through the SHE Communications Form (Safety, Health, Environmental) program, as discussed in the Employee Participation & Incentives section above. If an individual finds a situation that can put the facility, individuals or the environment at risk, a SHE form can be completed for distribution and review by facility personnel. This form is not considered a formal incident report, but is part of the incident reporting program since it seeks to communicate issues and prevent a more severe incident from occurring.

**Best Management Practices**

The term Best Management Practices (BMP) refers to those actions and programs that go above and beyond the regulatory requirements. In general, they can be viewed as “the right thing to do.” As part of our commitment to environmental excellence, Covanta Hempstead has adopted several of these programs, some of which are described below.

**Air Pollution Control Management**

Implementation of the APC Management Program is primarily the responsibility of the Maintenance Department, with the PM tasks being completed by both Operations and Maintenance personnel. Tasks are generally incorporated into the facility’s automated maintenance scheduling software to allow for automatic tracking along with other work orders that are submitted. The APC Management Program is periodically reviewed by environmental and facility personnel with direct knowledge of APC maintenance and deficiencies are noted and updated as needed.

**Facility Change Notice**

The Facility Change Notice (FCN) Program serves to ensure that any changes proposed to a facility are reviewed by all disciplines that may be affected. Relative to environmental issues, a review is conducted to understand if any emissions or other discharges may be impacted, if any regulatory notifications or amendments may be required, or if the changes need to be enhanced to be consistent with Covanta’s policies and BMP’s.

The FCN process is kicked off by the identification of a potential project. Upon review of a proposed project, the Facility Manager or his designee will determine if an FCN is required based on established criteria. If required, an FCN request form is completed and assigned to the FCN Administrator, who is responsible for ensuring that all required disciplines review and approve the project before it is scheduled for completion. The plant Environmental Engineer performs the initial environmental review and is responsible for determining the adequacy with which the FCN deals with potential environmental impacts, permitting requirements, or agency notifications. This includes changes specific to environmental systems within a facility, as well as work to be performed on other systems that may have an environmental impact. Depending on the complexity of the change or any time the Plant Engineer deems it necessary, the Regional Environmental Manager may also be required to review and approve the
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project.

**Environmental Meetings**

Quarterly meetings are conducted along with other facilities in the Region as part of our environmental practices to provide a forum for discussion of facility-specific and shared environmental issues and obligations. Several key individuals are expected to attend these meetings, including the Facility Manager, Regional Environmental Manager, Plant Environmental Engineer, Vice President – Regional Operations Manager, and the facility Operations and Maintenance Managers. The meetings are conducted in accordance with an outline or agenda containing the topics for discussion and minutes of the meetings are recorded and distributed.

These meetings are meant to serve as a tool to ensure alignment between facility management and environmental management personnel on key issues affecting the facility. In that regard, the types of topics that would normally be covered include environmental compliance matters, regulatory agency concerns, permit expiration and renewal activities, state or federal legislative or regulatory activities, and facility operational issues.

**Environmental Management Information System (EMIS)**

A web-based environmental tracking system has been developed for the Facility to track required submittal dates for regulatory documents, permit expiration dates, and testing and monitoring requirements. The EMIS system identifies pending requirements before each item is due and contains all known requirements for several years in advance, and can be set up to send automatic e-mail reminders to those responsible for completing each task. The facility Environmental Engineer is responsible for maintaining this system – signing off tasks as they are completed and adding new ones when needed. Maintenance and use of the system includes regular checks of pending requirements for the upcoming month and quarter, updates of any new or missing requirements, sign-off of completed items, and annual additions of known requirements for at least three years into the future. Key due dates that are identified from review of the database are discussed at the facility’s quarterly environmental meeting.
Performance and Performance Improvements

The Hempstead facility has been one of the finest performing facilities in the waste-to-energy industry throughout its existence and, entering the 25th year of operation, continues to set production records. This is a testament to good design, operation and management practice. The facility prides itself on its industry leading availability and maintenance practices. Some plant records set in recent years:

**Tons:**
- Refuse Tons Processed in a month: 92,314 (October `10)
- Refuse Tons Processed in a Calendar Year: 985,652 (2012)

**Steam:**
- Steam Generation in a month: 542,122 (July `11)
- Steam Generation in a Calendar Year: 5,878,409 (2007)

**Power:**
- Power Sold in a month: 56,628 (May `13)
- Power Sold in a Calendar Year: 575,416 (2007)

**Availability:**
- Consecutive months @ 100%: 3 (May `11 – July `11)

**Metals Recovery:**
- Ferrous recovered - Annual: 30,762 (2000)
- Ferrous recovered - Month: 3,141 (2000)
- Non-Fe recovered - Annual: 1,745.5 (2013)
- Non-Fe recovered - Month: 318.7 (August `13)

**Oil Usage:**
- Least amount of oil used in a month: 898 (August `06)

2013 Pre-heater installation
Net Power Sold is a clear measure of facility success. The Hempstead facility has not only averaged over 548,000 MWhrs per year, it set a calendar year record in 2003 with 557,460 MWhrs sold. This is a result of the previous slide (Net Power per On-Line Day) and availability improvements.

Net Power per On-Line Day is a critical measure of steam cycle efficiency. It is a measure of a facility’s commitment to operational excellence and focus on steam leaks, water rate, internal power draw, heat exchanger operation and ancillary steam usage.

Availability has averaged 94.64% per year over the life of the plant. Super heater tube life cycle replacements were completed in CY’s 2000-2002 and as a result, the plant recorded its best Calendar Year availability yet in 2003. Moving forward, plans for 3 scheduled major outages and 2 minor outages per year should continue to foster excellent boiler availability. This is further exemplified under the Plant Records section above.
Ash Management

Ash management at the Hempstead facility is governed by an Ash Residue Management Plan that has been submitted to, and approved by, the New York State Department of Environmental Conservation as a component of our Solid Waste Management permit to operate. The plan addresses the generation, handling, storage, testing, transportation and disposal of ash residue from the facility, with the ultimate goal of protecting the environment from any potential adverse impacts from the ash. At this time, bottom ash and fly ash are directed to a common storage bunker within the facility and sent off site for disposal as a combined stream. Neither portion of the ash residue is treated. Ash transportation and disposal are the responsibility of Covanta through a contract with the Town of Brookhaven to dispose of the ash at the Brookhaven Municipal Landfill in Yaphank, New York – a state-of-the-art double-lined landfill with leachate collection. A discussion of the methods, equipment and structures that are utilized to prevent the uncontrolled dispersion of ash residue into the environment are discussed below. These control measures reduce the possibility of human exposure via inhalation or direct contact, and minimize the potential for environmental impact from discharges to groundwater or surface water.

Generation of Ash Residue

The Facility generates between 525 to 650 tons of combined ash residue per day, based on an average throughput of 2,689 tons per day of refuse charged. This equates to 22-22.5% of the incoming waste. The volume of waste processed is reduced by approximately 90%, leaving only 10% of the incoming volume to be landfilled. The combined ash is approximately 70% bottom ash and 30% fly ash by weight. In addition, the ash residue contains 4-8% ferrous metal. This ferrous material is removed by magnetic separation, leaving a marketable product that is sold to off-site recyclers.

In June 2013, the facility began operation of an enhanced two stage, in-line non-ferrous metal recovery system to recover additional materials that had previously been landfilled. The system consists of three primary pieces of equipment, a double-deck horizontal ash sizing screen and two eddy current separators, which are discussed in more detail below. The system recovers approximately 2,896 tons of non-ferrous metal per year, which is sold to off-site recyclers. The make-up of the non-ferrous product is estimated to be 80% aluminum and 20% red metals, such as copper, brass and bronze. Through experimentation and optimization testing, facility personnel have determined that the non-ferrous recovery system is most effective when the bottom ash is processed prior to being combined with fly ash, which tends to stick to the belts and reduce removal efficiency.

Residue Handling

The fundamental approach to ash handling at the Facility is to minimize environmental impact while providing redundancy to ensure that plant operations are not disrupted due to failures of specific pieces of equipment. Ash is normally processed through the ferrous and non-ferrous recovery systems however, a bypass system is in place should there be a system malfunction or a repair need in the primary handling area.

The bulk of the ash is bottom ash, which comes off of the six roller grates and enters into the ash extractor, where it is quenched. The residence time in the ash extractor is such that resultant moisture content is in the range of 15-20%. From the ash extractor, the bottom ash goes to a bifurcated chute. At the bifurcated chute, the ash is either directed towards west during normal operation for metal separation or the east when by-pass operation is necessary.

When going to the west end, the bottom ash is conveyed to a large electro separation magnet. Here large metal items are pulled from the ash residue. The ash residue is then directed over a finger sizer. Items larger than 6 inches are redirected and are separated as not ferrous bulky items. A second electro magnet removes any remaining ferrous material from the residue that is less than 6 inches. The remaining residue, which also contains the non-ferrous metal, is conveyed to the vibrating screen that separates the residue into two streams, +3/8 inch and -3/8” fractions. These two streams are directed over their respective ECS (Eddy Current Separators) were the non-ferrous material is separated. After the non-ferrous removal stage both ash residue streams are recombined and conveyed to the ash storage bunker for subsequent processing, as described below. If this system is down for any reason, all ash materials can bypass this process and be sent directly to the ash bunker.

The fly ash and scrubber salts are directed from various plant conveyors to one of two storage silos, where the temperature is maintained to prevent moisture buildup and potential ash hardening. The ash from the silos is discharged into a pugmill, where water is added to the fly ash and salts to minimize dusting during further handling.
From the pugmill, the moistened fly ash material is conveyed directly to the ash bunker and is loaded into trailers with the bottom ash for disposal.

The ash is removed from the ash bunker by an overhead crane with a clamshell bucket and is loaded directly into trailers in the enclosed ash building. The ash taken from each area of the bunker to fill the trailers is monitored to ensure that each trailer contains a representative amount of bottom ash and fly ash. A chute directs the ash into the trucks while loading to reduce the amount of ash that may become dispersed. Following loading, the trucks are covered with a tarp to prevent uncontrolled dispersion of the ash during transportation. The entrance and exit of the ash loadout building are equipped with high cycle doors that are triggered to open by the weight of the trailer passing through and are closed automatically by a timer. Unless a truck is entering or exiting, the doors remain closed to minimize fugitive emissions.

Under the east end alternative, the ash bypasses metal separation and is conveyed directly to the residue bunker for transport to the landfill. All trailers are covered with tarps following loading.

The complete ash handling system is contained within conveyors or buildings to minimize fugitive dust from leaving the facility and to prevent migration of the ash due to rainfall. Methods to minimize the migration of ash from the facility, either via airborne fugitive dust or via water transport, are accomplished by routine mechanical sweeping of the area underneath the baghouses for any ash that may have dropped down from the baghouses; by monitoring of ash trucks to ensure that all trucks stored on site are properly covered with a waterproof tarp; and by monitoring ash trucks to ensure that they are not leaking. Should any trucks be identified with leaks, either due to rainwater having been in the truck prior to loading or due to process malfunctions, those trailers are directed to the tipping floor so that they may drain their excess liquids into the refuse bunker to prevent migration from the facility.

**Ash Storage**

The principal mechanism for ash storage is in the ash bunker, which has an approximate three-day capacity when running at full load. Supplemental storage capacity is available by storing ash in covered, leak resistant trailers and maintaining them on site in a covered condition until pickup by tractors for disposal at the landfill. In the event of a short-term interruption of ash residue transportation and/or disposal, additional storage capacity may be provided by storing the ash in a pile within the enclosed tipping hall building. Any free liquid that runs off the ash while stored in the tipping hall would be directed to the refuse pit by way of an internal trench drain system and contained within the concrete structure.

**Ash Sampling and Analysis**

The NYSDEC requires the facility to test a representative sample of ash residue for volatile matter on a weekly basis, unless an alternate period is authorized by the DEC. The facility performed weekly testing of the ash for a number of years, until requesting and receiving approval to reduce the testing to monthly, as long as the percentage of volatile matter remains below 10%. If the level ever goes above 10%, the facility must resume weekly testing until it drops below 10% again.

The ash is also tested semi-annually to ensure that it remains non-hazardous. The current testing procedures were developed based on quarterly testing that occurred following the 1994 Supreme Court decision which stated that ash generated from the combustion of non-hazardous waste is not automatically non-hazardous by definition, but must be tested to prove that it is non-hazardous. Covanta submitted an ash sampling protocol to the NYSDEC at that time and conducted four separate sampling events between August 1994 and January 1996, during which the facility tested the ash for the eight RCRA metals pursuant to the Toxicity Characteristic Leaching Procedure (TCLP). The test results for all four rounds of sampling indicated that the ash residue was non-hazardous and further, that the only metals detected at any significant levels were lead and cadmium. As a result, Covanta requested and received approval from the DEC to reduce the frequency of testing to every seven months (which has since been changed to semi-annually), and to limit the TCLP testing to lead and cadmium only. In addition, the number of samples required to be analyzed during each characterization event was reduced from fourteen to ten.

Over the years, the ash from Covanta’s Hempstead Resource Recovery Facility has always been characterized as non-hazardous. Based on extensive testing already completed, we believe the facility’s ash will continue to be characterized as non-hazardous. Should the characteristics of the facility’s ash ever exceed the threshold levels for hazardous determination according to the Resource Conservation and Recovery Act, we would
handle such waste in accordance with applicable laws. At that time, with the DEC’s approval, we would determine whether to treat or stabilize the ash, or dispose of it as a hazardous waste.

**Emission Control Design and Application**

This following describes the emission control system employed at the Facility to clean and monitor the flue gas exiting the boilers. Topics include the system flow paths, component descriptions, controls, system operation, and permit limitations for the facility. This information is important to plant operators and supervisors in order to safely and efficiently operate the environmental systems.

Environmental control is composed of several interrelated tasks and systems: control of refuse entering the facility, maintaining combustion within set parameters, pre-cyclone and acid gas scrubber operation, the fabric filter baghouse system, the urea-based selective non-catalytic NOx reduction system, and continuous emissions monitoring. All of these systems work together to reduce the amount of pollutants discharged to the atmosphere and comply with NYSDEC emission limits.

**Environmental Controls**

Environmental control at the facility begins with the control of waste entering the facility. Only municipal solid waste (MSW) from households, non-hazardous commercial waste, and certain pre-approved non-hazardous industrial wastes are permitted. Covanta Hempstead monitors compliance with these requirements by spot checking refuse trucks on a random basis. To minimize the potential for unwanted odors outside of the waste handling and storage areas, a slight negative draft is maintain by drawing the air into the boilers as primary combustion air.

As the flue gases leave the combustion zone in the first pass of the boilers, they are treated by injection of urea to reduce the concentration of nitrogen oxides. Once flue gases leave the boiler they enter the pre-cyclone separator. The pre-cyclone separator removes approximately 70% of the total particulate contained within the boiler flue gases. From the pre-cyclone separator, gases enter the wet/dry scrubbing system. The wet/dry scrubber removes acid gases (HCl and SO₂) by spraying a lime slurry, Ca(OH)₂, directly into the flue gas in the scrubber reactor vessel. The heat of the gases evaporates the water from the slurry, thus cooling the gas and improving the reaction of the calcium molecules with the acid gases. Once the reactions occur, insoluble calcium salts are formed, effectively neutralizing the acid component of the flue gas stream. Some of these larger salts fall into the bottom of the scrubber. The remainder is carried into the fabric filter baghouse, which is a 12 cell, reverse air design with 1056 bags per baghouse. Additional acid gas removal occurs on the inside surface of the fabric filter bags due to residual lime in the collected filter cake.

In order to evaluate the status of these pollution control parameters, a continuous emissions monitoring system (CEMS) has been installed. Continuous emissions monitoring has been provided for steam flow, carbon monoxide, oxygen, carbon dioxide, sulfur dioxide, baghouse inlet temperature, nitrogen oxide, and opacity. Some components are monitored before and after the appropriate air pollution control equipment to assess system performance. Note that oxygen is not a pollutant but is monitored to assist in combustion control.
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**Permit Conditions**

The Hempstead Facility permit conditions, as they relate to operating parameters, emission limits, and temperature requirements are as follows:

**Emission Limits**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Limit</th>
<th>Averaging period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide</td>
<td>100 ppm @ 7% O$_2$</td>
<td>4-hour block average</td>
</tr>
<tr>
<td></td>
<td>100 ppm @ 12% CO$_2$</td>
<td>8-hour rolling average</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>29 ppm @ 7% O$_2$</td>
<td>24-hour geometric block average</td>
</tr>
<tr>
<td></td>
<td>OR 75% reduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 ppm @ 12% CO$_2$</td>
<td>8-hour rolling average</td>
</tr>
<tr>
<td></td>
<td>OR 70% reduction</td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxide</td>
<td>185 ppm @ 7% O$_2$</td>
<td>24-hour arithmetic block average</td>
</tr>
<tr>
<td>Opacity</td>
<td>10%</td>
<td>6-minute block average</td>
</tr>
</tbody>
</table>

**Operating Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
<th>Averaging period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam Flow</td>
<td>110% of maximum steam flow measured during most recent dioxin test (245 – 260 klb/hr)</td>
<td>4-hour block average</td>
</tr>
<tr>
<td>Baghouse inlet temp.</td>
<td>30°F above temperature measured during most recent dioxin test (345 – 355°F)</td>
<td>4-hour block average</td>
</tr>
</tbody>
</table>

**Stack Test Limits**

In addition to the above continuous emission limits, the following limits apply to the annual stack test. All concentration limits are corrected to 7% O$_2$ and the mass emissions limits (lb/hr) are totals for all three units.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>25 mg/dscm</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>418 lb/hr</td>
</tr>
<tr>
<td>Nitrogen oxides</td>
<td>145 lb/hr per boiler</td>
</tr>
<tr>
<td>Total Hydrocarbons</td>
<td>21.5 lb/hr</td>
</tr>
<tr>
<td>Dioxins (Total)</td>
<td>30 ng/dscm</td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>29 ppm OR 95 % reduction</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.035 mg/dscm</td>
</tr>
<tr>
<td>Lead</td>
<td>0.40 mg/dscm</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.028 mg/dscm OR 85% reduction</td>
</tr>
</tbody>
</table>

**Flue Gas Scrubber**

The flue gas scrubber operating parameters are as follows:

| Quantity:          | 1 per boiler                  |
| Number of slurry nozzles: | 12 per scrubber               |
Flue Gas Inlet Temperature: 425-550°F
Flue Gas Outlet Temperature: 300-320°F
Flue Gas Flow: 70,000 SCFM
SO₂ Removal: 80%
HCl Removal: 95%

Baghouse

The flue gas flow path through the baghouse begins at the common flue gas inlet header. Flue gas is drawn from the scrubber to the baghouse by the low pressure created by the ID fan. Flue gas flows through a common inlet header and is admitted to the 12 filter modules through an inlet valve. Flue gas flows upwards through bag filters and fly ash in the flue gas is trapped on the inside of the bag. The baghouse removes over 99.67% of the particulate carried over from the scrubbers. Cleaned flue gas exits into the clean gas plenum and is discharged to the atmosphere by the ID fan.

Baghouse Data:
- Quantity: 12 modules per baghouse
- Baghouse Quantity: 1 per boiler
- Filter Bag Quantity: 88 per fabric filter assembly
- Total Bag filters: 1056 per baghouse
- Bag dimensions: 12” diameter, 34’ long (104 ft²)
- Baghouse Filter Area: 110,000 ft²
- Particulate Content:
  - Inlet: 3,724 lbs/hr
  - Outlet: 11.2 lbs/hr
- Efficiency: 99.8%

Selective Non-Catalytic Reduction System (De-NOx)

The facility utilizes the Fuel Tech NOxOUT Process in combination with Covanta’s patented Low-NOx technology to control NOx emissions. The NOxOUT Process is a post-combustion NOx reduction method that reduces NOx by the controlled injection of urea into the flue gas exiting the waste combustion section of the boilers. The NOxOUT system was installed in the spring and summer of 2000, then commissioned and started up in the fall of 2000. The Low-NOx technology redistributes the secondary air to prevent NOx formation, and therefore use less urea reagent.

The De-NOx system was designed to control NOx emissions at the stack to less than 180 ppm with all three units operating at full capacity. The system is operated with the philosophy of reliably meeting the NOx emission limit of 185 ppm @ 7% O₂ on a 24-hour block average, while not over injecting the urea reagent, which can have the negative affect of a visible ammonia chloride plume. The NOx operating setpoint provides a safety margin relative to the 24-hour permit limit that provides time to respond to process upsets if they occur.

Design Parameters:
- No. of Units: 3
- Fuel Fired: MSW
- Capacity per Unit: 835 TPD
- Heat Input per Unit: 370 MMBtu/hr
- Uncontrolled NOx: 260 ppmv (167 lb/hr per Unit)
- Controlled NOx *: 180 ppmv (112 lb/hr per Unit)
- NOx Reduction *: 31% (55 lb/hr per Unit)
- Reagent Flowrate: 20 gph Total
- Ammonia Slip at Stack: <10 ppm (7% O₂ dry)
- Furnace CO Limit: 100 ppm
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* These are design values. The system may be able to achieve lower NOx and higher reduction due to design safety margins.

**Continuous Emissions Monitoring System (CEMS)**

The Continuous Emissions Monitoring System is composed of the following monitors:

<table>
<thead>
<tr>
<th>Boiler exit / APC inlet</th>
<th>APC outlet / Stack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen</td>
<td>Nitrogen Oxides</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>Sulfur Dioxide</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Opacity</td>
</tr>
</tbody>
</table>

The CEMS monitors are positioned so that indications before and after the scrubber and baghouse can be monitored for carbon dioxide and sulfur dioxide. This gives an indication of how well each component is operating. The oxygen monitor is installed at the outlet of the economizer to give an accurate indication of the excess oxygen present. Nitrogen oxides are measured at the outlet of the baghouse. CEMS indications are monitored and printed out on a separate control board located in the control room. Particulate, measured as opacity, is determined in the stack flue for each boiler.

**Coordination and Cooperation with Waste Supply Organization**

Covanta Hempstead is the cornerstone of the Town of Hempstead’s integrated approach to solid waste management. The Town has adopted New York State’s hierarchy of recycle, compost, incinerate, landfill and our facility is a key to their success in achieving it. The Town provides weekly curbside collection of paper and cardboard products, metal, plastic and glass containers, and has consistently recorded recycling rates in excess of 30%. In addition, the Town has a resident drop-off center and hosts household hazardous waste collection days throughout the town to encourage proper handling of these materials. Covanta supports this program in a number of ways that includes providing gift cards in exchange for Mercury waste in order to keep this substance from entering the environment. We recently filmed a public service announcement with the Town Supervisor and Sanitation staff to promote the program and we collected almost 17 pounds of mercury last year. The Town also provides separate collection of yard waste to keep it out of the municipal waste stream, and therefore out of our facility, where it can contribute to emissions of nitrogen oxides. Yard waste is either composted at town facilities or transferred out of town for proper management. The remaining household and commercial waste is transported to our facility for volume reduction, heat recovery for power generation, and landfilling of the ash residue following recovery of ferrous and non-ferrous metals.

Routinely Covanta Hempstead has meetings with the Town of Hempstead Solid Waste Advisory Committee (SWAC) which consists of Town of Hempstead Sanitation, NYSDEC and town residents representing their local community. In these meetings we report on plant activities and environmental performance, discuss planned projects and answer and necessary questions. The Town also reports the activity of the current recycling programs and the NYSDEC states and comments and feedback that they have. We also participate greatly with the Association of Long Island Recycling Officials (ALIRO), which is a group of Long Island municipalities and recycling-related businesses.

In 2013 we also installed a new metals recovery building for enhanced ferrous and non-ferrous metal recycling which doubled non-ferrous recovery rate by collection of -3/8” material and reduced the volume of ash that must be landfilled. Over the years we have enhanced the recycling of internally generated waste such as boiler tubes, tires, etc. Lastly, we have recently obtained a beneficial use determination (BUD) from the NYSDEC for use of landfill leachate and excess low quality water as cooling water in the acid gas scrubbers.

Covanta Hempstead is the cornerstone of the Town of Hempstead’s solid waste management system. The Town collects source-separated recyclables, oversized items, yard waste, household hazardous waste (STOP) and electronic waste and the remainder is disposed at our facility.
Facility Planning

The Hempstead Facility has the ability to process Special Waste. As such, special precautions are made for personnel involved with the acceptance, unloading, and charging of special waste. Special waste is defined as non-hazardous industrial waste pre-approved for disposal at our facility by the New York State Department of Environmental Conservation and other wastes that require special handling, such as documents, confiscated goods, and narcotics. Finished pharmaceutical products, which do not require specific approval by NYSDEC, are also included in this program.

Personnel using this procedure must be qualified as a special waste handler through the Job Training Instruction process. The Hempstead facility has a dedicated Special Waste Coordinator whose task it is to schedule, receive, audit and inspect all special waste loads. The basis of this effort is Safe Operating Procedure (SOP) #19, Handling Special Waste Deliveries.

When handling special waste, precautions must be taken so that personnel do not directly contact the waste and appropriate respiratory protection (half-face respirator) must be used whenever handling pharmaceutical bulk powders. The tipping floor operators must notify the crane operators when bulk powders are present and must follow the procedures outlined in SOP #19 for modified direct feeding of these wastes. The crane operators must then inform the Control Room Operator (CRO) and receive permission prior to feeding this waste to the boilers. Bulk powders are not to be processed when personnel are on the charging deck and are not accepted in metal drums.

Many special waste deliveries require the unloading of trucks on the tipping floor. This necessitates precautions while normal waste deliveries are still entering the facility. Traffic flow is a concern, as well as safe and proper operation of the forklift. Loads are handled at the loading dock or on the far east/west ends whenever possible.

Whenever charging the furnace with special waste other than bulk powders, the crane operator must first thoroughly mix the waste stream to avoid potential impact to worker safety, air pollution control devices, and plant equipment operation. In addition, fiber drums and boxes must be broken up as much as possible by the crane grapple and then mixed thoroughly with MSW. Lastly, as with any plant incident, a full “root-cause” investigation results from any “near miss” associated with special waste. These are reviewed at both the plant management and corporate management level.

Community Concerns

A key part of the program is the ability to protect both the community and the environment. Covanta incorporates an extensive special waste screening and approval system that is centered in the corporate offices in Morristown, NJ. As an added step, prior to requesting approval from the NYS Department of Environmental Conservation, the facility must decide if the material is something the plant is capable of accepting. Once the facility is satisfied that all paperwork is in order and the approval is valid, the Special Waste Coordinator and Plant Environmental Engineer determine how the waste will be unloaded and inspected. In some cases, it may be necessary to unload part of the truck to determine whether the entire load is acceptable. If the products are not listed on the packing slip and approval list they will be rejected.

Witness of Destruction Drops

Occasionally witnesses accompany special waste deliveries to observe proper handling and disposal. These include various government agencies that use our facility for the destruction of seized narcotics and evidence and pharmaceutical companies with controlled substances or other concerns. These items are pushed into the pit and covered with MSW to make them irretrievable or are fed directly into one of the boilers.

All visiting personnel witnessing and handling these wastes must adhere to our PPE policy. In addition, any person leaving the tour route to accompany the waste to the boiler hopper or ram feeder table must wear long sleeved shirts, long pants and steel-toed shoes.

Covanta also works with local municipal law enforcement officers in secure destruction of unwanted pharmaceutical waste through its Rx4 Safety program. This program is administered as a public service at no charge to the communities.
Worker Health and Safety

Training

All new employees at the Covanta Energy Company of Hempstead facility receive safety orientation training prior to working in the plant. This is achieved through a stringent company-wide program that provides standardized training to all new employees. Lesson plans and exams have been developed to gauge the transfer of knowledge and to assure that all topics have been covered completely. This three day training course includes site specific training given by the Safety and Training Supervisor. Training topics include:

- Hazard Communication - General Awareness
- Hearing Conservation
- Respiratory Protection
- Policies & Philosophy
- Portable Fire Extinguishers & Fire Safety
- Lockout/Tag-out
- Hot Work Procedures
- Confined Space Entry
- Contingency Plan
- PPE
- Accident/Near Miss Reporting
- OSHA
- Ash Handling Safety
- Safe Handling of Tools
- Electrical Safety
- Pressure Hazards
- Facility Change Notice
- Back Safety
- Blood Borne Pathogens
- Ergonomics
- Ladder Safety

After 90 days the employee’s supervisor reviews key sections of the safety training process to determine how much information has been retained by the employee. Any weak areas are reviewed and documented. This information is maintained in the employee’s personal file. Employee knowledge is determined by exams with a passing grade of 70%. In addition, all new employees are placed into the guided Personal Safety training program (GPS). This is a mentorship program which allows new employees’ access to personnel to increase the situational awareness of any hazards present in the workplace. This is a 90 day program with a minimum monthly review. That focuses on employees’ safety; day to day job tasks and performance. While also address the employees way of thinking / focusing on safety, monitors behavior, and provides feedback both positive and negative.

Annual re-training is conducted as required by regulation and by Covanta Energy policy. This training is accomplished through read packages, stand-up training, and through ongoing feedback from the employees. All employees’ training is supported with lesson plans, videos, and power point presentations. Training records are maintained and reviewed by the Safety & Training Supervisor. This ensures that all employees receive the training required to work safely in the plant environment.

Employee awareness and knowledge is constantly reinforced through daily “tailgates” given by Supervisors and weekly tailgate topics issued from the corporate office. Tailgates provide an opportunity to review recent SHE forms submitted and often trigger remedial actions that re-emphasize specific topics or subject matter.

A safety permit system covers virtually all work that occurs within the facility. Many of these tasks are covered by a formal written procedure. The Safety permit system requires each work group to review each specific procedure prior to commencing work.

Specialty safety training is also provided in CPR / First Aid, and external automatic defibrillation. Re-training on these topics is given in accordance with the specific sponsoring organization. The facility also maintains a confined space rescue team. Team members take a 40 hour training course at the Nassau County Fire Service Academy. Re-training occurs on a quarterly basis.

Injury Rates

The 3-year Total Case Injury Rate (TCIR) and Days Away/Restricted/Transferred Work Activity Case Incident Rates (DART) are below the most recent published BLS rate for NAICS code 562213 (2012). This has been the continuing trend over the recent past at Covanta Energy Company of Hempstead. Occupational illness reporting has increased in recent years due to increased emphasis and awareness. The average number of total injuries (including first aid cases) has remained at a constant low rate. New programs continue to be developed and implemented to further drive down this rate. These programs are designed to increase focus on safe and at-risk behaviors and conditions which are the foundations of the behavior-based safety process.
The corner stone of the Hempstead facility’s safety system is the SHE Communication Program. The program operates under the presumption that if daily near misses are reported and addressed with aggressive remedial actions, more serious accidents will be prevented. The program enjoys strong employee enthusiasm and participation. In 2013 over 2900 near misses were reported. A system using an Access database has been developed to track and trend the large amount of information that is collected. Recent trending indicates the high probability of an injury occurring in the “Ferrous Recovery” area. In response to this trending, increased management attention has been brought to this area. In 2013 there were no accidents in the Ferrous Recovery area, a strong indication of the program’s success.

Economics and Cost Effectiveness

The Hempstead facility is one of the largest waste-to-energy plants in the United States and is located in the 5th highest cost of living area in the nation. Location, combined with the recent turmoil in the energy industry, changes in the waste industry and a weakened U.S. economy provide ongoing challenges from both an operational and financial perspective. Despite these issues, Covanta Hempstead has continued to maintain a record of ongoing operational reliability as well as positive financial results through 2013.

On the operating side, our strong commitment to continuous improvement in conjunction with operational alignment initiatives has helped foster predictable and repeatable performance.

The highly contracted nature of the facility’s revenues combines a 20-year service agreement with our host community, the Town of Hempstead, with a power purchase agreement with the Long Island Power Authority, a contract with the Town of Brookhaven to deliver Ash to the Landfill and in return process the Town’s MSW. Additional smaller contracts with neighboring communities add to the stability of the plant’s financial base. These long-term contracts, when combined with controllable and predictable Operating & Maintenance expenses, have led to better than planned for financial performance over the life of the facility. In general, the economics of the Hempstead plant would be considered to be above average for the industry. Concurrently, costs associated with the maintenance of the facility would be classed as appropriate in the waste-to-energy market and certainly within the parameters for maintaining plant availability.
Utilization of Equipment/Systems and Technologies

Balance of Plant Equipment (BOP)

The balance of plant equipment consists of all the auxiliary equipment and utilities required to support the main process operations. This includes circulating water systems, make-up water systems, fuel oil storage, electrical distribution, and instrument and plant air. Along with providing the necessary support to the process equipment, the BOP systems tie the entire plant water balance together. The result is a minimum impact to the surrounding community and its environment as a result of proper handling and minimization of waste materials. This is accomplished by basing the entire water balance on zero discharge. During normal plant operation, all wastewater generated within the process is collected and consumed.

A unique design feature of the Hempstead facility is the wet/dry cooling tower. This cooling tower has a controllable plume feature that is employed when atmospheric conditions cause the exhaust from the cooling tower to fog or ice. Under this condition, the unit is placed into a special plume abatement mode eliminating the vapor at its source with negligible impact to power efficiency.

Another critical design feature is the existence of a bypass condenser. The bypass condenser allows the boilers to run in the event the turbine-generator is out of service for extended periods of time or if a problem should arise on the main condenser. This allows the ability to process waste (and serve the customer) during overhauls or emergencies involving the turbine-generator.

One final noteworthy feature is the switchyard redundancy. In the event of emergency or maintenance on the main switchyard, the plant can import and export power through a reserve transformer. Once again, this feature provides the ability to continuously serve the customer under all conditions.

The Hempstead Facility is designed on an integrated basis. Each individual system supports both the plant and the systems directly connected to or dependent on it. This approach minimizes all environmental impacts and meets or exceeds all regulations set forth by the NYSDEC. The Hempstead Facility reflects an integrated design approach representing the best available technology available today. The plant provides a real solution to the growing solid waste disposal problem that is safe, environmentally sound and economical.

An interesting and unique system in the Hempstead facility is the reverse air baghouse. Each boiler train is outfitted with 12 modules, each consisting of 88 bags that are 34 feet in length and 12 inches in diameter. The filter media is a Teflon-coated fiberglass which filters the material from the inside-out. Each bag is fitted with seven anti-collapse rings and is suspended from shaker support bars at the top of the module.

While the facility was designed with a state-of-the art baghouse, many projects of an R & D nature have been performed to combat pressure drop, increase bag-life and reduce dew point corrosion. These items include: stainless steel doors (which quadruple the life of the carbon steel); epoxy coating the walls; stainless steel floor and lower wall installations; and most recently, installation of membrane bags designed to operate with increased environmental performance and decreased differential pressure. The plant believes these membrane bags will double the life of the bags and further the reliability of an already forgiving design.

Public Acceptance, Appearance & Aesthetics

Appearance and Aesthetics

The Hempstead facility is located in East Garden City, an affluent community with high visibility. The exterior design of the plant was created to give the appearance of an office building, consistent with surrounding structures. To maintain a positive appearance, an extensive landscaping program was developed to provide an esthetically pleasing image at the entrance to the property. The entrance provides a welcoming experience for those entering, driving by or walking past including flag poles that display the American flag, the EPA Performance Track and OSHA VPP flags. Permanent shrubs and seasonal flowers surround the entrance and are professionally maintained throughout the year.

A large parking lot is maintained at the front of the building for both employees and visitors. This area, along with all roadways within Covanta’s property line, is cleaned regularly with our street sweeper. The edges of the
parking area are landscaped with trees and shrubs to provide a pleasing backdrop. Merchants Concourse is also regularly monitored and handpicked by employees of Covanta Hempstead.

Public Education

Covanta maintains an open door policy, with over 50,000 visitors to the plant to date. Scheduled tours provide a means for diverse groups to learn about and see how a modern waste-to-energy facility works. Visiting groups range from school age children to college classes and civic groups. Programs have been developed to include special interest groups such as Boy Scouts and Girl Scouts and groups with special needs such as classes from BOCES, and various handicapped groups. In addition to information on energy from waste, presentations include discussion of recycling, composting and landfill as part of a community’s integrated waste-management program.

Good Neighbor Policy

Covanta Hempstead is an active member of the Long Island community. Since 1989, the Covanta Cup, East Meadow Soccer Club’s Tournament has been the largest annual soccer tournament on Long Island. This island-wide event, which runs over a 3-day weekend in August, draws over 5000 participants each year.

As part of an on-going educational program, Covanta Hempstead sponsors an annual poster contest for grade school children to encourage recycling in the community. This contest, now in its 24th year, has approximately 40 schools participate each year with over 1000 posters submitted annually. The plant manager is joined by a representative from the Town of Hempstead and members of the community to choose the winners. The winners, as well as their schools receive prizes at an awards ceremony attended by the Supervisor of the Town of Hempstead.

In addition to the above programs, Covanta Hempstead provides monetary and volunteering support to over 20 local charitable and educational organizations each year. This includes support for an annual food drive, community organizations, youth sports clubs, volunteer fire departments and various school groups.

Innovation & Creativity

An active, employee-driven Environmental Health & Safety Committee meets monthly to discuss topics of interest to the employees. This committee not only provides a forum for discussion but also drives many facility changes to improve working conditions as well as plant production.

Both the safety and environmental programs are enhanced by ongoing inspections, observations and reporting, followed by documented feed-back and follow-up. Attention to these programs provides continuous opportunities for communication and improvements within the plant.

Covanta Hempstead employees have taken their commitment to safety to a higher level. By mentoring other facilities through the OSHA VPP program, including competitors within the Energy-from-Waste industry, our employees continue to show their commitment to the overall improvement of worker safety.

As a participant in the NYS Environmental Leaders Program, the Hempstead Facility is seeking to reduce its environmental impact through innovative ideas, such as increased recycling, reduced emissions, use of recycled products, and land and habitat protection.

Each year, Safety & Environmental Days are held to target “low priority items” on the action item list. These days are planned in conjunction with a BBQ which creates an atmosphere of teamwork & comradery.