

**LEE COUNTY WTE FIRE SUPPRESSION
PROJECT DESCRIPTION (LeeCountyPD_GIP_1)**

1. PROJECT PURPOSE AND PROPOSED ACTIVITY

Lee County proposes to harden the fire suppression system of the Lee County Waste to Energy Facility (WTE), which is the sole processing facility for solid waste generated in Lee and Hendry counties. Lee is a HUD-determined Most-Impacted and Distressed (MID) county; Hendry is a state-determined MID county. The plant processes more than 620,000 tons of solid waste per year from both Lee and Hendry counties. The facility generates 60 megawatts per hour of clean, renewable energy 24 hours a day, 365 days a year. It powers its own operations and provides enough renewable energy to the power grid to serve roughly 45,000 residences.

The proposed budget for this project is \$2,541,000.

The WTE plant is located on the Buckingham Campus of Lee County's Solid Waste Department, 10500 Buckingham Road, Fort Myers, 33905, located at 26 37' 55.21"N, 81 45' 37.76W.

The proposed fire protection system is essential to protect this critical asset from catastrophic loss from fire. The existing fire protection system consists of manual water cannons located around the WTE charging pit, traditional overhead sprinklers above the tipping floor area, and fire alarms to warn staff and to notify the fire department. These water cannons are designed to be operated by a person standing above a fire along the pit wall. These water cannons are rendered inoperable when the smoke becomes too thick to see or makes operation unsafe to the employee.

The proposed system would include the installation of infrared cameras that would identify hot spots and developing fires before they became uncontrollable. The replacement of the manual water cannons with automated water cannons would be interconnected with these infrared cameras and allow for the cannons to be operated automatically and remotely from the control room or via a Belly-Pack controller that would be operated from outside the facility and/or by the fire department directly. Additionally, this improved system would include the addition of a water wall between the waste storage pit and the tipping floor to help contain a fire to an isolated area where it could be managed without spreading it to other vulnerable areas of the facility.

In the waste industry, it is not uncommon to see small fires resulting from improper disposal of certain items such as fire place ashes or cell phone batteries. The Lee County WTE is no exception, and this facility experiences several small fires per year; all of which have been extinguished within minutes of discovery and in cooperation with the local Tice Fire Department. The existing fire suppression systems are designed to put out small fires and to help control the spread of larger fires until the fire department can arrive to fight the fire. In the event that a fire was to occur during the sheltering phase or following landfall of a hurricane or other disaster event where the fire department was unable to respond to a fire at the WTE facility, the risk of a fire exceeding the capabilities of the existing fire suppression systems is increased exponentially. The proposed system would help to mitigate these risks by providing improved fire suppression capabilities at the facility's most vulnerable points.

The budgetary cost estimates for this project in 2019 were approximately \$1.1 million. In June 2018, FEMA's Federal Insurance and Mitigation Administration reported that every dollar invested to harden facilities will return \$5 in future cost savings. Fires at other WTE plants in the US have caused from \$4 million to more than \$50 million in construction damages, replacement costs, and fees for hauling and landfilling waste.

The facility began operation in 1994 and was expanded in 2007. The capital investment in the construction of the Lee County WTE was roughly \$300 million.

All of the household garbage collected in Lee and Hendry counties eventually ends up at the Lee County Resource Recovery Campus. The WTE facility provides the opportunity to recover energy from trash in the Integrated System. More than 800 trucks a day bring garbage to the tipping floor for disposal. Operators use cranes outfitted with grapple claws to lift the garbage from the storage pit and lower it into combustion unit feed hoppers. This process is repeated 24 hours per day, seven days a week. And it's been happening for 25 years.

Utilizing the waste-to-energy process allows Lee County to reduce the volume of waste sent to the landfill by 90 percent. The facility processes 1,836 tons per day of solid waste while generating up to 60 megawatts of clean, renewable energy with approximately 45 megawatts sold on the open market. The entire Buckingham Campus in east Lee County is powered completely by this electricity and the remaining 85 percent is sold on the open market for the best price available each hour of each day. The electricity generated by burning Lee County waste is enough to continuously power 45,000 homes.

For the incineration process, a minimum temperature of 1,800 degrees Fahrenheit is used, assuring complete combustion and leaving little chance of releasing unburned pollutants.

2. RISK MITIGATION

Over the past several years, there have been at least two major fires at similar waste to energy facilities in the U.S. These fires caused extensive damages to the facilities and had long-range impacts on waste disposal and service disruptions for the communities they serve for many months.

The Fairfax Virginia facility fire closed the facility for more than 10 months at an estimated cost of more than \$38 million to repair and reopen. Revenue losses to the vendor are estimated to have exceeded \$20 million. The community that this facility served was forced to transfer its waste to an adjacent county's landfill for the 10-month period at significant costs for transfer and disposal.

The Montgomery County Maryland WTE fire took 11 days for the fire department to extinguish. The damages to this facility were far less severe than those suffered in the Fairfax fire. Fortunately, after the fire was finally extinguished, the facility was still able to process the waste it had accumulated in its storage pit and on the floor; unfortunately, they were not allowed to accept any new material and the waste on site had been so saturated with water from fighting the fire that it would not burn and the combustion units required the heavy use of natural gas to maintain a hot enough fire to process the waste. Industry assumptions estimate the costs to repair this facility to be roughly \$4 million, not including revenue losses or the costs for the use of natural gas to operate the facility.

A root-cause analysis performed by HDR Engineering was unable to determine the exact cause of the fire at the Montgomery facility. However, based on their investigation, they identified two contributing factors of increased severity and duration of the fire:

- The inability of the crane cab operator to see and view the tipping floor from his position made it virtually impossible for him to see or even identify that a fire had begun until it had escalated into a major blaze.
 - The Lee WTE proposed infrared camera systems would have quickly identified the heat from the fire, alerted the operator, and begun to extinguish the fire with the automated water cannons.
 - The lack of visibility and safety concerns from the smoke made it virtually impossible for the crane operator to assist with the fight by moving smoldering waste into the combustion units. This parapet mounted crane cab is the same configuration as the Lee facility and a major fire would likely force an early evacuation of this crane cab.
- Poor pit rotation practices and inability to fight the fire remotely.
 - The Lee WTE plant has safe and efficient rotation practices, however, the proposal includes the addition of a water wall to segregate the tipping floor from the waste storage pit. This separation would allow the crane operator to continue to manage waste. In the case of the Montgomery facility, it could have eliminated the ability for the fire to have jumped into the larger waste storage mass.
 - The remote capability to fight the fire would have provided the operator with the ability to move away from the danger and continue to fight the fire from a safe distance.

This proposal also mitigates economic and environmental risk. The WTE is the sole disposal location in Lee County for municipal solid waste. Loss of this critical facility would require that the waste be trucked out of county to other landfills in Hendry or Charlotte counties – a negative impact on the LMI and rural communities surrounding the landfills. The transfer 624,000 tons of waste to the closest landfill with enough capacity to accept Lee & Hendry County’s waste would cost more than \$23.4 million with an additional \$12.4 million in disposal fees. These transfer and disposal costs would be in addition to the minimum operations and maintenance fees, lost revenue from electrical sales, lost revenue from metals recovery, and the facility repair costs at the WTE. These costs would be passed along to the residents and businesses in Lee and Hendry Counties and the partnering municipalities and would ultimately impact 100% of the low- and moderate-income residents in the service areas.

The proposed critical facility hardening project would greatly reduce the risk of a catastrophic loss of use of this facility. Associated costs have the potential for long- term negative economic impacts on the most vulnerable residents and businesses in the region. An investment in these projects would help to protect the economic stability of the region and to ensure that this renewable resource continues to provide a benefit to the communities it serves.

In Lee County – a HUD-designated MID community – 276,873 people, nearly 42% of the population, qualify for HUD’s LMI category. In Hendry County, 45% of the population qualifies as LMI.

3. WORK PLAN

Grant-supported work to complete the hardening will be overseen by the Lee County Department of Solid Waste and Covanta Lee, Inc., the contracted facility operator since its construction in 1994. Lee County Procurement will select a Design Professional and General Contractor through established Lee County Competitive Negotiation protocols and in compliance with all federal guidelines outlined in the Federal Register Notice 84 FR 45838 and Florida DEO requirements.

When final design has been completed, the Design Professional will provide an Opinion of Probable Cost which will be the basis of review for the establishment of the construction bid from the selected General Contractor. The General Contractor is required to secure a minimum of three (3) bids for each component of the project and these bids are shared and reviewed by County Facilities' staff prior to approving the construction bid.

4. DETERMINATION OF PROJECT FUNDING REQUIREMENTS

Lee County Solid Waste and its engineers have worked closely with the Lee Facility's operator, COVANTA Energy, to design a fire protection system for this facility. The design of the proposed fire protection system was developed in cooperation with several fire system product manufacturers and service providers, and is based on fire protection systems being designed and installed in several Covanta Energy owned and operated facilities.

The budgetary cost estimates for this project in 2019 were approximately \$1.1 million. In June 2018, FEMA's Federal Insurance and Mitigation Administration reported that every dollar invested to harden facilities will return \$5 in future cost savings. Fires at other WTE plants in the US have caused from \$4 million to more than \$50 million in construction damages, replacement costs, and fees for hauling and landfilling waste.

Lee County has figured a 20% contingency for this project because business interruption and social distancing have complicated our ability to get updated quotes in this time frame.

Lee County will draw on its general reserves to provide the required early advance funding for the project. Lee County's reserves are not available to fund this project fully as we continue to recover from Hurricane Irma expenses and we are now in uncertainty over both the 2020 hurricane season and the global pandemic.

5. ANTICIPATED OUTCOMES

This fire suppression proposal to upgrade the WTE reduces the risk of the catastrophic loss of this critical facility. Its continued operation is vital to healthy and prosperous operation. Specific outcomes include:

- Protect the safe and continuous processing of more than 620,000 tons of solid waste per year from both Lee and Hendry counties, from all municipal residences and business;
- Protect the generation of electrical power that is provided daily to the power grid;
- Prevent the negative environmental impact resulting from increased landfilling that would result if clean-burning incineration and recycling operations were halted by hurricane or other damage;

- Protect low- and moderate-income residents – as well as all rate payers – from the increase in rates that would be necessary to compensate for the expense of repairing the facility and hauling and landfilling all debris.

6. MAINTENANCE

Because the Lee County WTE provides a critical, daily service to the Lee and Hendry communities, the County will continue maintaining the improvements as part of their normal facility upgrades and maintenance program. No significant increase in maintenance costs are anticipated.