

TRANSFORMING WASTE *into* A RESOURCE



[www.lcswma.org](http://www.lcswma.org)



Rethink.



Recover.



Renew.



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EMPLOYING AN INTEGRATED APPROACH TO MANAGING WASTE

RAPID URBANIZATION, SKY-ROCKETING **CONSUMPTION**  
& THROWAWAY *lifestyles* CONTRIBUTE TO  
APPROXIMATELY **254.1 MILLION TONS\*** OF MUNICIPAL  
**SOLID WASTE** GENERATED EACH YEAR  
IN THE UNITED STATES.

*\*U.S. Environmental Protection Agency*



 **Rethink.**

LCSWMA FOLLOWS A MOTTO OF RETHINKING HOW SOLID WASTE  
IS MANAGED IN THE COMMUNITIES WE SERVE.

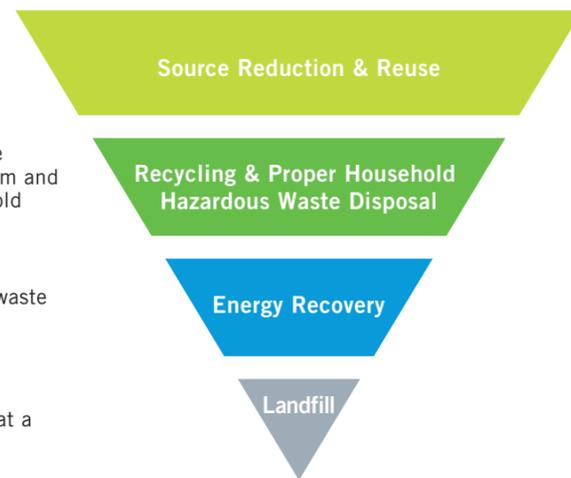
## The **INTEGRATED** SYSTEM: *Managing WASTE* as a RESOURCE

Many of us recognize that overconsumption and disposable lifestyles impact our natural resources and the environment. One consequence of our culture's throwaway tendencies is the significant volume of municipal solid waste (MSW), or trash, generated each year. In fact, each person generates about 4.40 pounds\* of waste every day. Combined with waste generated to support our standard of living in the United States, the average American produces about 1 ton of waste every year.

So, what happens after you throw something away? Whether placing it at the curb or disposing of it in a dumpster, waste never really goes "away." It ends up somewhere. For communities in Lancaster County and Dauphin County, Pennsylvania, that somewhere is under the management of the Lancaster County Solid Waste Management Authority (LCSWMA).

LCSWMA manages recyclable materials and MSW for Lancaster County and MSW for Dauphin County in an environmentally safe, reliable and efficient manner. We do so through an Integrated System that includes four essential components:

- 1** Educate the public on ways to reduce consumption of materials and production of waste;
- 2** Minimize the volume and toxicity of waste through a comprehensive recycling program and offer convenient, safe disposal of household hazardous waste;
- 3** Extract resources through combustion of waste and energy recovery; and
- 4** Safely dispose of non-combustible waste at a state-of-the-art, engineered landfill.



LCSWMA's Integrated System is primarily funded by tipping (disposal) fees and revenue from energy generation. We operate as an independent entity from county government, as no taxes are used to fund LCSWMA. Our nine-member Board of Directors, appointed by the Lancaster County Commissioners, govern the organization in the best interest of our entire service area.

\*U.S. Environmental Protection Agency

## **LCSWMA** FACILITY LOCATIONS



**1**  
Transfer Station Complex  
& Main Office  
LANCASTER, PA



**2**  
Frey Farm Landfill  
CONESTOGA, PA



**3**  
Lancaster  
Waste-to-Energy Facility  
BAINBRIDGE, PA



**4**  
Susquehanna Resource  
Management Complex  
HARRISBURG, PA



## ENVIRONMENTAL MANAGEMENT: Reducing Our **GARBAGE** Footprint

The purpose of the Integrated System is to protect the environment and this area's beautiful land. Thus, LCSWMA recognizes our immense responsibility for managing waste, while also reducing our own eco footprint. We operate our facilities with the utmost concern for the environment. The result is a record of excellence with meeting and exceeding all environmental compliance regulations.

Additionally, we implemented an Environmental Management System that fosters a comprehensive, proactive approach to reducing our impact on the local ecosystem, providing an optimum balance of environmental conservation and waste disposal.

LCSWMA's Environmental Management System is certified by **Lloyd's Register Quality Assurance 14001 Standard** and addresses such areas as:

- 1 Maintaining complete environmental compliance;
- 2 Dedicating necessary resources to meet and exceed permit requirements;
- 3 Continuously working to improve our environmental performance;
- 4 Preventing pollution; and
- 5 Providing environmentally-related education and opportunities to our employees.



Implementing this green, responsible approach to managing waste has reduced our demand on local, natural resources and impact on the environment; while also providing cost-effective, final disposal services to area residents, institutions and businesses. In addition, LCSWMA's commitment to sustainability sets an example for other businesses and organizations to discover how they too can reduce their garbage footprint.





PROTECTING NATURAL RESOURCES WHILE RECLAIMING OPPORTUNITIES

WE ARE ENGAGING  
IN THE ECOLOGICAL  
EQUIVALENT OF *RUNNING*  
UP A SUBSTANTIAL  
VERY CREDIT-CARD BILL, HOPING  
*Tomorrow* THAT  
WILL TAKE CARE OF ITSELF.

– Betsy Taylor and Dave Tilford



THROUGH OUR INTEGRATED SYSTEM AND ROBUST PORTFOLIO OF RENEWABLE ENERGY PROJECTS, LCSWMA RECOVERS VALUE FROM WASTE.



## COUNTY-WIDE *Recycling*

The role of recycling in the Integrated System is an important one, as it both reduces our community's consumption of raw materials and minimizes the volume of waste. Recycling provides the opportunity to recover commodities that still have value, repurposing them into new products. The result is cleaner air, water and land, less pollution, energy conservation, preservation of natural resources and a more sustainable economy.

While most people recognize the importance of recycling, it can be a confusing process. What exactly can you recycle? How should the materials be prepared for the recycling bin? Why can't everything be recycled? What happens once the materials are picked up? Putting together effective recycling programs and educating the community is key to answering these questions.

LCSWMA's role in the recycling process is to assist local municipalities in Lancaster County as they develop, implement and improve their specific recycling programs. We provide support by hosting informational seminars, offering grant writing services and providing administrative resources, such as example recycling contracts with haulers and model ordinances for curbside collection.

We also provide ongoing education to the community through learning workshops, presentations for schools, civic and business groups, as well as supplying materials for educational programs on reuse and recycling.

Finally, LCSWMA provides 24-hour recycling drop-off centers at each of its three Lancaster facilities. At these locations, residents can bring items such as: glass bottles and jars, aluminum and steel cans, plastic bottles and paper items like newsprint, magazines and office paper.

While our core mission includes support for Lancaster County municipalities, we also help businesses, industries and institutions with developing and maintaining recycling programs. We assist organizations and companies by providing education on what materials are recyclable, how to collect and market those materials and implementation of reduction practices for paper and other recyclable waste.





## Household **HAZARDOUS** Waste FACILITY

Of equal importance to the Integrated System is minimizing the toxicity of waste. This happens when residents use natural, environmentally-safe products in their home. However, generating household hazardous waste, also called "HHW," is unavoidable at times and LCSWMA recognizes that people need a safe method for disposing of these materials.

Household hazardous waste includes such materials as paint, cleaners, automotive fluids, cooking oils, pesticides, herbicides, computers, TVs, tablets, cell phones, fluorescent light bulbs, batteries and more.

For Lancaster County residents, LCSWMA offers free disposal of these materials at the HHW Facility, which is located at the Transfer Station Complex in Lancaster. This one-of-a-kind, drive-through facility is open 5 ½ days a week and offers a quick, convenient and easy way for residents to deliver their household hazardous waste, ensuring that the materials are either recycled or disposed of in an environmentally-safe manner.

LCSWMA consolidates the various items and contracts with recycling companies for much of the material delivered. For non-recyclable hazardous materials, those items are picked-up and managed by a green certified hazardous waste processing company that specializes in the disposal of this type of waste. In both instances, the material, if possible, is beneficially used and properly handled in a way that protects our environment.



HOUSEHOLD HAZARDOUS WASTE (HHW) FACILITY



PAINT IS ONE OF MANY ITEMS COLLECTED AT THE HHW FACILITY

VISIT US ONLINE AT  
[WWW.LCSWMA.ORG](http://WWW.LCSWMA.ORG)  
OR PICK UP OUR  
RESIDENT'S GUIDE  
FOR MORE  
INFORMATION ON  
DISPOSING OF HHW.



## TRANSFER STATION Complex

The Transfer Station Complex is a key component in LCSWMA's Integrated System, helping to reduce the amount of truck traffic on local highways by functioning as a waste delivery, consolidation and transfer hub.

Located on Harrisburg Pike in Lancaster County, the Transfer Station Complex serves as the central drop-off location for haulers and residents delivering trash, construction/demolition waste and certain recyclable material. Once delivered, the material is loaded into large transfer trailers and transported to the Lancaster Waste-to-Energy Facility, Frey Farm Landfill or a private recycling facility for final disposal or processing.

This award-winning facility operates 5 ½ days each week. It's permitted to take up to 2,200 tons of waste daily, with over 300 customers visiting on any given day.



SCALE HOUSE



SMALL VEHICLE DROP-OFF BUILDING



LCSWMA TRANSFER TRUCK & TRAILER



EQUIPMENT MAINTENANCE BUILDING

## TRANSFER STATION Operations

Vehicles begin their visit at the scale house, passing through radiation monitoring equipment before stopping briefly on a hydraulic scale to weigh-in.

Commercial customers continue to the 40,000 square foot main Transfer Building where drivers are directed by a Compliance Officer to one of 10 unloading positions to deposit their load on the concrete tipping floor.

Waste is deposited in one of three areas based on its category:

- 1 Trash, also called "refuse"
- 2 Construction/demolition waste
- 3 Single-stream recyclables

LCSWMA's staff then pushes the waste through one of three openings in the tipping floor. Waiting in the loading pit underneath are large transfer trailers, each positioned on a scale.

A digital read-out on the tipping floor lets equipment operators know when a transfer trailer has reached its 80,000 pound maximum payload. Each transfer trailer holds the equivalent of 5-6 customer deliveries of waste.

Meanwhile, residential customers and smaller commercial vehicles dump their waste in the Small Vehicle Drop-Off Building, an 18,000 square foot facility specifically designed for deliveries made in cars, vans and pickup trucks.

After dumping their waste, customers return to the scale house to weigh-out. Smaller residential vehicles pay a flat minimum fee, while larger commercial vehicles pay based on the total weight they deliver.

Once LCSWMA transfer trailers are loaded, they transport the trash (refuse) to LCSWMA's Lancaster Waste-to-Energy Facility in Bainbridge, while construction/demolition waste is transported to LCSWMA's Frey Farm Landfill in Conestoga. A third party hauler transports single-stream recyclables to a separate site for processing.

The Equipment Maintenance Building offers truck bays for repair work and vehicle inspections, a wash bay for cleaning vehicles and equipment and an outside fuel island where heavy equipment is powered by a 5% bio-diesel fuel blend. LCSWMA's main office is located on-site as well.



MAIN OFFICE

## Lancaster **WASTE**-to-**ENERGY** Facility

The next step in the Integrated System is to extract resources from waste by combusting the material. This not only saves significant landfill space by reducing the volume of waste, but creates electricity too. In fact, LCSWMA powers 1 in 5 area homes with trash.

Thus, the Lancaster Waste-to-Energy (WTE) Facility, located in Conoy Township along the Susquehanna River, is a critical component of the Integrated System for sustainable waste management. Burning waste provides a 90% volume reduction. Without combustion, the Frey Farm Landfill would have reached capacity in 2001.

The majority of municipal solid waste generated in Lancaster County is processed at the Lancaster WTE Facility. Built in 1991, the facility can process up to 1,200 tons of waste per day. LCSWMA contracts with Covanta Energy to operate the facility 24 hours a day, 7 days a week.

As with all of our sites, the Lancaster WTE Facility is subject to rigorous regulatory oversight and maintains an excellent environmental record.

Additional benefits of incorporating WTE in the Integrated System include:

- 1 Renewable energy generation that powers local homes.
- 2 Sale of electricity to offset the cost of operating the facility.
- 3 Reduction of greenhouse gas emissions by diverting waste from the landfill.
- 4 Recycling of ferrous and non-ferrous metals pulled from the ash.

**FACT:** For every ton of municipal solid waste directed to a WTE facility rather than landfilled, one ton of greenhouse gas is avoided.\*



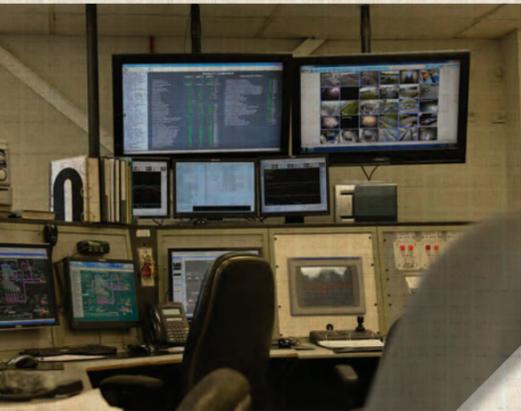
FERROUS METALS RECOVERED AFTER COMBUSTION

\*U.S. Environmental Protection Agency





STORAGE PIT



CONTROL ROOM



BOILER HALLWAY

**THE LANCASTER WASTE-TO-ENERGY FACILITY IS A MEMBER OF BUSINESSES FOR THE BAY, A VOLUNTARY POLLUTION PREVENTION PROGRAM.**



## Lancaster **WASTE-to-ENERGY** Facility Operations

### COMBUSTION

An overhead crane mixes waste in the storage pit to ensure even composition and foster complete burnout (combustion) before feeding it into one of the three independent boilers. Each boiler burns waste at a minimum of 1,800° F and processes up to 400 tons per day, for a total capacity of 1,200 tons per day.

### PRODUCTION OF ELECTRICITY

Tubes surrounding each boiler convert water into steam (excess of 800° F). The steam spins a turbine, which is connected to a generator that has the capacity to produce 36 megawatts of electricity. Approximately 6 megawatts is used to power the facility, while the remaining 30 megawatts is sold into the PJM Energy Market.

### WATER SOURCE

Effluent from the Elizabethtown Borough Wastewater Treatment Plant provides an average of 550,000 gallons of water every day for steam production, cooling and other operational uses. Extensive treatment of the effluent on-site is required, in order to generate boiler quality water. The wastewater from the WTE operations is also treated on-site and recycled within the system.

### EMISSIONS CONTROL

Emissions at the facility are significantly below levels set by the PADEP. Control systems include:

- 1 Aqueous ammonia and hydrated lime injected directly into the combustion chamber of each boiler to control nitrogen oxide and acid gas emissions;
- 2 Semi-dry scrubbers further lower acid gas emissions;
- 3 Activated carbon, injected directly into the gases leaving the boilers, controls mercury emissions;
- 4 A fabric filter baghouse removes suspended particulate matter; and
- 5 The cleansed air exits the stack at 305 feet above ground.

### ASH HANDLING

Reacted salts and fly ash (particulate matter) from the scrubber and baghouse are conditioned with water and combined with the bottom ash from the furnaces. Conveyors transport the ash to a storage building for metals recovery. The ferrous recovery system removes ferrous metals with a magnet. A non-ferrous recovery system removes aluminum, copper, brass and other precious metals. The metals are then sold to recycling markets. The remaining ash is transported to the Frey Farm Landfill and used as daily cover for waste.



CONVEYER BELT TRANSFERS ASH TO A WAREHOUSE FOR METAL RECOVERY AND TEMPORARY STORAGE



PANORAMIC VIEW

## FREY FARM Landfill

Solid waste that cannot be recycled or burned for energy represents the smallest portion of the waste generated by area residents and businesses. This waste is delivered to the Frey Farm Landfill where the best available environmental protection practices and technologies are employed in disposing of the waste.

Located along the Susquehanna River, near the village of Creswell in Manor Township, the 93-acre Frey Farm Landfill is situated in a mainly agricultural area. Opened in 1989, the site is currently permitted to receive up to 2,000 tons of waste per day and operates 5 ½ days a week. It is expected to reach capacity in 2019.

Plans for future landfill capacity include a vertical expansion of the current site using mechanically stabilized earthen (MSE) berms. Employing this new technology will add approximately 18-20 years of future landfill capacity to continue serving the local community.



LANDFILL COMPACTOR



AERIAL VIEW



### CAPPING SYSTEM

When a portion of the landfill (“cell”) reaches capacity, it is sealed with a series of impermeable capping materials that prevent precipitation from reaching the waste material, thus reducing leachate generation. Grass is planted on top of the closed cell to prevent erosion.

### MONITORING

As loads approach the inbound scales, waste is screened for radioactivity from either natural or man-made sources. Once the waste is deposited in the landfill, additional environmental probes ensure the environment remains protected:

- A series of groundwater monitoring wells that surround the landfill are tested quarterly.
- Surface water drainage facilities and sedimentation ponds that serve the entire landfill site are tested annually.
- A gas collection system captures landfill gas and transports it to a landfill gas plant, which combusts the gas to create electricity.

As with all of our sites, the Frey Farm Landfill is subject to rigorous regulatory oversight and maintains an excellent record of meeting and exceeding all state and federal environmental standards.



LANDFILL EQUIPMENT OPERATOR

## FREY FARM Landfill Operations

### COMPOSITION

Waste delivered to the landfill consists of mostly inorganic material like construction/demolition and residual (industrial) waste. This material produces less gas, odor and litter than a typical landfill. To further reduce litter and odor, waste is covered at the end of each day with ash from the Lancaster Waste-to-Energy Facility and the Susquehanna Resource Management Complex, instead of using valuable soil.

### LINER SYSTEM

The landfill is a state-of-the-art, engineered facility that features two sets of impervious composite liners and a network of leachate collection pipes. Leachate is water that filters through the landfill, picking up impurities as it travels. The landfill’s protective liner system collects the leachate, preventing it from contacting the surrounding environment. Once collected, the leachate is then pumped to the Lancaster Area Sewer Authority for treatment.



CELL LINER SYSTEM



CAPPED CELL





## *SUSQUEHANNA RESOURCE MANAGEMENT* Complex

Located in Harrisburg, Pennsylvania, the Susquehanna Resource Management Complex (SRMC) is home to the nation's first waste-to-energy facility. Owned by LCSWMA, the SRMC is part of the larger Integrated System that serves the solid waste management needs of both Dauphin County and Lancaster County. The SRMC plays an important role in this process, including generating renewable energy (electricity).

LCSWMA acquired the SRMC in December 2013 to secure future waste processing capacity and initiate a regionalized approach to managing municipal solid waste for Lancaster County and Dauphin County. This type of expansion is more cost-effective and less risky than expanding the Lancaster Waste-to-Energy Facility in Bainbridge. In addition, this acquisition allowed LCSWMA the opportunity to bring our expertise and excellence in waste management to neighboring Dauphin County, and together, work towards a better community.

## SRMC ACQUISITION & Operations

### PLANNING FOR GROWTH

Part of effective, responsible municipal waste management involves preparing for long-term growth. As the Lancaster Waste-to-Energy Facility reaches capacity, LCSWMA had three choices for increasing waste processing capability:

- 1 Landfill excess waste in the future;
- 2 Expand our facility by adding a fourth boiler; or
- 3 Regionalize municipal waste management services by acquiring a waste-to-energy (WTE) facility in Harrisburg.

LCSWMA made the decision to pursue regionalization and purchased the Harrisburg Resource Recovery Facility in 2013, renaming it the Susquehanna Resource Management Complex, or SRMC for short. This more cost-effective option also presented less risk, as the SRMC is already permitted, functioning well and offers the needed capacity for future growth.

Acquiring this waste-to-energy asset also supports LCSWMA's philosophy of minimizing landfill use for processing waste.

Plus, its close proximity is ideal, and the site adds flexibility to the Integrated System by offering a fourth option to manage waste. We can grow into the available capacity as the volume of Lancaster County's waste stream increases, while also bringing our proficiency in waste management to Dauphin County and positively impacting the local community.

### THE WASTE-TO-ENERGY PROCESS

Similar to the Lancaster Waste-to-Energy Facility in Bainbridge, the WTE process employed at the SRMC offers a safe and innovative means for disposing of waste while also generating clean, renewable energy. By combusting trash, instead of disposing in a landfill, greenhouse gas emissions are reduced and land is preserved. Additionally, the WTE process supports recycling through the recovery of ferrous metals.

As with all LCSWMA facilities, the SRMC is subject to stringent regulatory oversight and includes several environmental control measures, including emissions control at the WTE plant, to ensure the natural and social area is protected.

### OPERATIONS

The SRMC serves as the drop-off location for waste haulers who collect refuse in Dauphin County and the City of Harrisburg. LCSWMA also accepts construction/demolition waste from haulers and residents, as well as residual (industrial) waste from manufacturing customers.

Central to the SRMC is an 800 tons per day waste-to-energy (WTE) facility. Built in 1972, the power plant can generate about 23 megawatts of renewable energy (electricity). LCSWMA contracts with Covanta Energy to operate the plant 24 hours a day, 7 days a week. Through a power purchase agreement with the Commonwealth's Department of General Services, the majority of the electricity produced is used to power State Capitol buildings.

Ash from the combustion of waste at the plant is staged at the open monofill located on site. Once the staged ash is dry, LCSWMA transports it to our Frey Farm Landfill in Conestoga where it is used as alternative daily cover.

Also located at the SRMC is a 29,800 square foot facility that offers transfer, maintenance and administration (TMA) capacity. The TMA building is primarily used for construction/demolition waste loads and other small customer deliveries.



WTE STORAGE PIT & GRAPPLE



WTE TURBINE & GENERATOR



ASH MONOFILL



SRMC SCALEHOUSE



WTE PLANT



TRANSFER/MAINTENANCE/ADMIN BUILDING

BUILDING TOWARDS A MORE SUSTAINABLE FUTURE

WE MUST RETHINK

The Way **TRASH** WAS  
MANAGED IN THE PAST.

A new era

HAS EMERGED That No

LONGER VIEWS **TRASH**

AS "WASTE" BUT AS A

**RENEW**ABLE RESOURCE

FOR **SUSTAINABLE** *energy*

& **GREEN** INITIATIVES.



WASTE PROVIDES A SOURCE FOR RENEWABLE ENERGY, AS WELL AS RESOURCES FOR CREATING NEW OPPORTUNITIES TO POSITIVELY IMPACT OUR COMMUNITY.



## Creating *Energy* from *Everyday* **GARBAGE**

While many don't think of waste as a source of energy, it actually represents an excellent mixture of potential fuels which, when combusted, provide an alternative form of green power.

LCSWMA's two waste-to-energy (WTE) facilities generate clean, renewable energy (electricity) from burning common garbage. The stuff people no longer consider valuable, we regard as retaining great potential to provide the community with sustainable power.

We call it "renewable" because the fuel used in the combustion process (trash) is an inexhaustible, sustainable source of energy that is readily available. We call it "clean" because technological advancements have enabled WTE facilities to meet and exceed environmental and emission regulatory standards. In fact, the U.S. Environmental Protection Agency (EPA) recognizes waste-to-energy technology as a reliable and clean, renewable source of energy.

Our two WTE facilities create renewable energy when steam, generated during the combustion process, spins a turbine to create electricity. A small portion of the electricity powers each facility, while the remaining is sold to help offset operational costs of operating the facilities.

Collectively, these two WTE facilities generate enough electricity to power an equivalent of 45,000 area homes.



LANCASTER WTE FACILITY



SUSQUEHANNA RESOURCE MANAGEMENT COMPLEX

## GREEN Operations

Renewable energy is generated from a variety of sources, including sunlight, wind, waves, biomass, geothermal heat and more. Each source offers unique advantages that attend to our social concern over climate change, environmental distress and unpredictable energy prices. The challenge remains to implement the theory of alternative energy sources in practical ways that are both financially viable and beneficial to the local community.

LCSWMA believes this challenge is worth undertaking in order to model green business practices and contribute to a brighter future for our community. The compressed natural gas (CNG) and solar projects at the Transfer Station Complex in Lancaster exemplifies how LCSWMA is leading the way to a more sustainable future.

### GOING GREEN WITH CNG

LCSWMA's fleet of 14 transfer trucks and two ash dump trucks are powered by compressed natural gas (CNG). These clean, quiet vehicles fill-up overnight using the time-fill CNG fueling station on-site, while a fast-fill station provides quick CNG fueling for hauling customers and other select fleets. By using CNG rather than traditional diesel fuel, this project reduces over 10 million pounds of air pollutants each year. This cleaner technology means a cleaner community for all of us.

### POWERED BY THE SUN

Additionally, over 2,000 solar panels on top of four buildings at the Transfer Station Complex generate renewable energy from the sun. Solar radiation is captured by photovoltaic cells in the panels that convert the sun's energy into functional electricity used to power the complex. In fact, this project produces enough electricity to offset 80% of annual electric usage at the site.



SUN



TRANSFER STATION





## TURKEY POINT *RENEWABLE* ENERGY PARK

Recognizing opportunities for renewable energy generation is not always a simple course of action. It requires a creative eye to ascertain hidden potential within a portfolio of assets. LCSWMA excels at finding the nexus of established technologies and innovative business opportunities.

The Turkey Point Renewable Energy Park utilizes the unique characteristics of the Frey Farm Landfill to diversify our business, support local economic development, foster green power and incorporate opportunities for public education.



## RIEBER HOUSE WELCOME CENTER

From managing waste to generating diverse forms of renewable energy, LCSWMA operates a sophisticated system that proffers wonderful opportunities for learning. We believe that providing public education on topics such as responsible waste management and green practices is critical to the long-term sustainability of our community.

As such, LCSWMA opened the Rieber House Welcome Center in 2010. This historic farmhouse, located at the entrance to our Frey Farm Landfill site, was first constructed in 1770 by Ulrich Rieber. LCSWMA restored and renovated this beautiful piece of history to preserve the Rieber family heritage, while also serving as a welcome center for visitors and a professional meeting space for LCSWMA activities and the local community.



### LANDFILL GAS PLANT

The Landfill Gas (LFG) Plant, installed in 2005, converts methane gas emitted from landfill waste into renewable energy. Gas from our closed Creswell Landfill and active Frey Farm Landfill is sold to Energy Power Partners who owns, operates and maintains the plant.

The process of landfill gas conversion is relatively simple. During the natural progression of bacterial decomposition, landfill waste emits methane gas, which is collected through a series of pipes. Major particulates and water are removed and the clean gas is burned by two Caterpillar 3520 engines with a combined capacity of 3.2 megawatts. The LFG Plant has the capacity to power approximately 3,000 area homes with electricity generated from combusting landfill gas.

In addition to the benefits of generating renewable energy and preventing methane gas from polluting the air; the LFG Plant provides Turkey Hill Dairy, a neighboring manufacturing facility, with a green power source. Steam produced as a by-product of the combustion process is piped to Turkey Hill Dairy where they use the steam to sanitize food processing equipment, instead of using commercial boilers. This offsets more than 140,000 gallons of diesel fuel annually.



LANDFILL GAS PLANT PIPING SYSTEM



ENGINE INSIDE THE LANDFILL GAS PLANT



### TURKEY POINT WIND PROJECT

In 2010, the first commercial-scale wind project in south-central Pennsylvania was installed at Frey Farm Landfill. This 3.2 megawatt wind project is located on a non-operational portion of the landfill. Two General Electric turbines, overlooking the Susquehanna River, directly confront prevailing winds from the northwest.

The electricity generated by this project is sent by underground lines to neighboring Turkey Hill Dairy, where it is used to power their manufacturing operations. In fact, 21 - 25% of their annual electric needs are fulfilled using wind energy from this project.

Collectively, the two wind turbines generate about 6.18 million kilowatt hours of electricity each year. That is enough power to make about 5-6 million gallons of ice cream.

#### Project Facts:

- Two 1.6 megawatt wind turbines
- Each turbine base is 262 ft. tall
- Turbine blade size is 131 ft. long
- Turbine foundations are 52'w x 8'd
- Turbine foundations contain 291 cu yd of concrete and steel rebar
- Entire turbine weighs nearly 500,000 lbs
- Requires 8 mph minimum wind speed to begin turning
- Full power at 26 mph wind speed
- Breaking mechanism engages at 56 mph wind speed
- Turbines have lightning protection, a wind vane and anemometer (measures wind speed)



## THE *NOT-SO-Glamorous,* BUT VALUABLE LIFE OF **GARBAGE**

Garbage, trash, waste...whatever you call it...this not-so-glamorous word is woven throughout the tapestry of our everyday lives. Waste links us together in ways we never before considered. It is something we all produce and simply cannot ignore. Fortunately, residents of Lancaster and Dauphin Counties benefit from a sophisticated Integrated System that safely and effectively manages the “stuff” we tend to forget about.

### **WASTE IS OUR PASSION.**

LCSWMA is committed to, first and foremost, providing responsible and effective waste management services to the residents of Lancaster and Dauphin Counties. We operate our facilities with the utmost concern for the environment and care for our community.

### **WASTE IS POWER.**

Garbage is more than discarded waste; it is a resource for sustainable, green energy. It powers local homes and businesses, while also providing opportunities for economic development and community improvement.

### **WASTE IS OPPORTUNITY.**

LCSWMA invests in renewable energy projects that enhance our business and ensure stable, cost-effective tipping (disposal) fees for many years to come. We support local organizations, projects and initiatives throughout communities that are most impacted by our facilities and operations.

### **WASTE IS CHANGE.**

LCSWMA believes that change is possible when each of us recognize our social responsibility to care for the environment, support our local community and strive for a better tomorrow.

**WASTE** IS A *RESOURCE* FOR **MAKING**  
**GREAT THINGS HAPPEN IN OUR COMMUNITY!**



Attaining knowledge is a powerful first step towards improving your world. We hope this booklet challenged you to take a second look at the role waste plays in your life and how it is managed once you *throw it away*.

Yet, change only happens when you transform knowledge into action. By reducing your daily consumption and reusing materials, combined with LCSWMA's integrated approach to managing waste, we can build a better, more sustainable future together.

We invite you to learn more about our Integrated System and commitment to community sustainability by visiting:

[www.lcswma.org](http://www.lcswma.org)