

USA: Seneca Meadows Landfill



This award-winning project not only captures and converts methane from landfill gas (LFG) emitted by the 178-acre expansion to the Seneca Meadows landfill site, but has also created almost 420 acres of new wetlands, established an Environmental Education Center, and generates electricity from the LFG to power 18,000 homes. The project demonstrates that it is possible to make significant reductions in the greenhouse gas (GHG) impact of landfill projects, and showcases how carbon finance can be used to extend environmental stewardship.

Project type: Resource recovery

Region: North America



Standards:



Nature flourishing: The project has opened a 600 acre Seneca Meadows Wetland Preserve.



The project

The Seneca Meadows landfill site is New York's largest non-hazardous solid waste facility, managing around 6,500 tons of waste per day. The specific activity of the Seneca Meadows Landfill project consists of a 178-acre expansion of the landfill, which creates approximately 28.6 million tons of additional solid waste disposal capacity over 15 years. The expansion includes new and expanded leachate collection and active LFG collection.

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The project reduces emissions by capturing biogas, preventing it from being vented directly to the atmosphere, and instead either piping it to a Landfill Gas Recovery Facility where it is delivered to a gas-to-energy plant or sent to enclosed flares where the gas, made up primarily of methane and carbon dioxide, is converted to carbon dioxide only.

The project pipes biogas to a gas-to-energy plant.



Least Bittern at the Wetland Preserve.

However, the gas-to-energy plant is owned by a third party and the renewable electricity generation does not contribute to the verified emissions reductions; the project's emissions reductions are solely derived from the destruction of the methane, which has a global warming potential 21 times that of carbon dioxide. Globally, 60% of all methane emitted is from human activities, and in the United States methane is the second most common anthropogenic GHG. Methane is emitted from industry, agriculture, and waste management activities and landfills account for 18% of US methane emissions¹. The capture of this gas not only reduces GHG emissions, but also prevents the release of toxic, volatile organic compounds and odours.

The project, on average, prevents around 500,000 tons of carbon dioxide equivalent gases being emitted, demonstrating that it is possible to make significant reductions in the GHG impact of landfill projects. In addition it illustrates how carbon finance can be used as a mechanism to extend environmental stewardship and showcases the potential of private land conservation. The project's awards have included the 2012 Gold Excellence Award for Landfill Management by the Solid Waste Association of North America (SWANA) and Audubon New York's Donald G. Colvin Conservation Award for the company's preservation and advancement of the environment. Further accolades for Seneca Meadows include the "Seneca County Business of the Year", the Rochester Business Journal Environmental Leadership Award (2009), a U.S. Congressional Proclamation for its commitment to preserve and protect the environment, and Progressive Waste Solutions, Inc. 2011 Northeast Region "Best Year-Over-Year Performance" Award, largely due to the project's opening of the 600 acre Seneca Meadows Wetlands Preserve.



The Wetland Preserve included seeding over 400 acres with native plants and trees.

Contribution to sustainable development

The project contributes to sustainable development in several areas:

Biodiversity protection

In the United States there are state laws that require the mitigation of the loss of wetlands by restoring or creating three times that many acres of wetlands for those that a landfill builds on. However, Seneca Meadows has gone above and beyond the requirement by nearly threefold: the landfill expansion included development on 70 acres of low-grade wetlands, but the project then opened a 600 acre Seneca Meadows Wetlands Preserve. The Wetlands Reserve side project includes

The Wetlands Reserve side project creates almost 420 acres of new wetlands

enhancing nearly 160 acres of existing wooded wetlands and creating almost 420 acres of new wetlands with the help of the U.S. Corp of Engineers and the New York State Department of Environmental Conservation. The creation of new wetlands is a complex exercise requiring a variety of activities such as eliminating non-native and invasive species, reshaping the landscape formerly used for agricultural practices (e.g. digging ponds, creating new drainage channels), and seeding of over 400 acres with native plants and trees.

A popular spot with 220 validated species of birds, including endangered species

This new reserve has become a much more popular public wetlands site than the original 70 acres that were converted, and is popular with local people as an outdoor recreational area with wildlife observation points and a network of paths, as well as an educational tool for school and community programs. The Wetlands Reserve is a popular spot for local birding societies, with 220 validated species of birds, including a number of endangered and New York State threatened birds.

Seneca Meadows is also working with a number of environmental partners including the Audubon Society of New York and created an Environmental Education Center housed in a gold level Leadership in Energy and Environmental Design (LEED) certified building, which acts as environmental education tool for school and community programs.

Education & skills

The Environmental Education Center was built in 2008 and serves local children, high school students and adults. The Center has environmental education programs which include a fully equipped science laboratory (which students can use for field trips) and an environmental education exhibit room, which helps explain different flora and fauna the





Seneca Meadows Landfill, Seneca Falls, New York, United States.

project is trying to protect, as well as models to explain how the landfill project helps protect water supply from leachate. Tours are also given year round to school groups and other organizations. Many of the programs in the new Education Center are operated in partnership with Audubon Society of New York.

During expansion phases employment has ranged from 140-170 people

Water stewardship

The project site consists of storm water management activities, such as the creation of storm water retention ponds and surface runoff channels to prevent erosion. Importantly, the landfill's leachate management helps prevent groundwater contamination. The wetlands restoration activities also help maintain healthier ecosystems in contiguous wetland complexes.

Infrastructure development

The project consists of the expansion of the existing landfill in sequential phases and occurs as a lateral expansion into adjoining areas that were not previously used as a landfill area. Biogas wells are dug at various intervals at the sites to capture landfill gas and pipe it for combustion and/or utilization for power generation.

Also, in addition to the LEED-certified Environmental Education Center that was built on-site, an extensive trail system was created in the Reserve (which even hosts a 5K Race for Hunger to benefit a local food pantry).

Energy access

The primary activity of the project is in creating an expansion of a landfill gas and collection system that collects LFG and destroys it in engines to produce electricity; though the electricity generation does not contribute to verified emissions reductions, utilizing waste to create electricity is an important activity in diversifying energy supplies and increasing the share of sustainable energy resources.

Job creation

The project has created numerous jobs for construction and operation; during expansion phases employment has ranged from 140-170 people.

Location

Seneca Meadows Landfill, Seneca Falls, New York, United States.

¹ <http://epa.gov/climatechange/ghgemissions/gases/ch4.html>

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