

Evaluating Yardwaste

During much of 2015 and all of 2016, yardwaste was collected with garbage and landfilled. Co-collection was necessary because of a shortage of qualified drivers. The Mayor and Council determined yardwaste collection should be examined before the next contract.



The Public Works Department hired SCS Engineers to quantify the economic and environmental aspects of dealing with yardwaste collection and disposal in a variety of ways.

Economic Evaluation

For the economic part of the study, SCS Engineers examined five different scenarios of how to handle garbage and yardwaste.

Scenario 1 is comparable to the current contract terms. Yardwaste and garbage are separately collected. Yardwaste is composted. In this version, three trucks are used for route collections, one each for garbage, yardwaste, and recyclables. Composting is done at the City's Oma-Gro operation and the resulting compost sold through retail outlets.

Scenario 2 is how collection was done in 2015. Garbage and yardwaste are co-collected and taken to the Pheasant Point Landfill. At the landfill methane gas from decomposition powers the Omaha Public Power District's Elk City Station. Two trucks are used for route collection.

Scenario 3 is a variation of Scenario 1 but instead of Oma-Gro, an independent composting operation is used. Three trucks are used for route collections like Scenario 1.

Scenario 4 is a variation of Scenario 3. An independent composting operation runs a transfer station (a place where material is moved from a garbage truck to a semi truck)

within the city limits. Three trucks are used for route collections like Scenario 1. More efficient long haul trucks are used to take material to the composting facility outside the city.

Scenario 5 is a variation of Scenario 2. Yardwaste is allowed to be co-collected with garbage and taken to the landfill. Residents have the option to self haul their yardwaste to an independently run drop off location within the city to have their yardwaste composted. Two trucks are used for route collections like Scenario 2. Resident's vehicles are used for a portion of yardwaste collection.

Economic Analysis

The current contracted cost of collecting garbage, yardwaste, and recyclables is \$9.19 per household per month. The comparable modeled cost (Scenario 1) is \$18 per household per month. The least expensive modeled cost (Scenario 2 or 5) is \$13 per household per month.

The low cost of the current contract is a result of a contract bid more than 12 years ago at a very favorable price from the beginning.

From an economic perspective, the most cost-effective scenario is number

2. This reduces the number of trucks and employees needed for collection by approximately 30 percent. It also eliminates the net cost incurred to operate the City's compost operation.

Landfill Life

The impact of the various economic scenarios was applied to the projected life of the Pheasant Point Landfill. According to Waste Management — who owns and operates the landfill — it has an anticipated life of 122 years. In Scenario 2 the landfill's anticipated life would be shortened by four years, less than 4 percent of the landfill's total life if Omaha co-collected garbage and yardwaste until the landfill closed.



Scenario B is co-collection of garbage and yardwaste used in Scenarios 2 and 5. The purpose is to reduce the number of trucks needed to complete collections. Two trucks are used for route collections of two materials; garbage/yardwaste and recyclables.

Environmental Analysis

Methane gas emissions from landfills are the largest potential source of greenhouse gases in the solid waste industry. Methane from landfills can be effectively collected and used to generate electricity. When used for energy production most of the harmful greenhouse gas effects are eliminated.

To predict the greenhouse gas emissions, several models (formulas) were used. These models were developed by the U.S. Environmental Protection Agency. The models used include: Waste Reduction Model (WARM), Landfill gas-to-energy (LFGE) benefits calculator, and the Carbon-dioxide (CO₂) emission conversion factors.

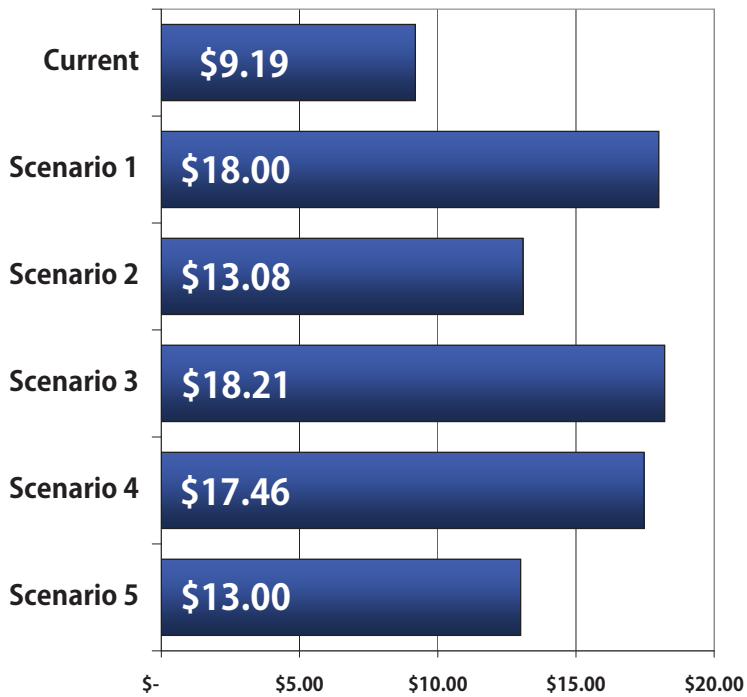
Under Scenario A the landfill-gas powered Elk City Station could grow from its present size of 6.2 megawatts to 9.6 megawatts by 2040.

Under Scenario B the Elk City Station would grow more rapidly. Yet in 2040 the total capacity would be only slightly larger than Scenario A. The potential capacity for Scenario B is projected to be 10.7 megawatts.

The collection vehicle's greenhouse gas emissions were included for both scenarios. Scenario B includes the emissions from the compost turning equipment. Scenario B also accounts for emission reductions from the use of compost.

Using the total lifecycle approach, Scenario B results in emission reductions equal to removing the tailpipe emissions of more than 3,500 passenger cars each year.

The complete report may be reviewed at <http://future.wasteline.org>. The report is 49 pages and has detailed data about all the highlights given here.



Environmental Evaluation

For the environmental assessment part of the study, SCS Engineers examined two different scenarios for collecting and disposing of garbage and yardwaste.

Scenario A is the separate collection of yardwaste and garbage used in Scenarios 1, 3 and 4. The purpose is diversion of material from the landfill. Three trucks are used for route collections of the three materials; garbage, yardwaste, and recyclables. This sets a baseline for diversion of 90 percent of the yardwaste to compost during the growing season. The remaining 10 percent is material not suitable for composting at Oma-Gro's facility.

