

The Big Picture:

SWC Credit: Minimizing Emissions from **Transfer Stations**

(2 points, Reciprocal)

Credit Summary

SWC Credit: *Minimizing Emissions from Transfer Stations* aims to reduce the environmental footprint of Transfer Stations. These crucial components of the waste management process contribute to GHG emissions through mobile equipment, like transport vehicles, and processing equipment. The environmental impact of Transfer Stations has been found to disproportionately affect low-income communities and communities of color due to the sites in which they are located and the proximity to these affected communities.

Impact Summary

Transfer stations are integral to waste management, as they consolidate waste for transport to its final disposal site. Reducing the environmental footprint of transfer stations is important because they disproportionately affect low income and communities of color. If not managed properly, transfer stations can reduce the quality of life in the surrounding area through air pollution, odors, traffic, and general sanitation.

Submittal Summary

To achieve SWC Credit: Minimizing Emissions from Transfer Stations, local governments and industries must adhere to industry and [EPA guidelines](#) on transfer stations. Additionally, they must present a fleet list and processing equipment inventory with 50% or more that use low-emission fuels. A list of fleet models, manufacturer, fuel source, and gas efficiency measured in miles per gallon (mpg) must be provided. Additionally, include a list of vehicles utilizing low-sulfur diesel fuel, catalytic and particulate pollution control devices; and utilize diesel engines certified as Low NOx. Finally, a list of processing equipment fuel sources and particulate pollution control devices is necessary.

Case Study & Benefits

Starting in the late 1990's, DSNY has increased regulations surrounding privately operated Transfer Stations. The introduction of dust control and loading time limits have produced about [38% lower emissions](#).

The LEED Platinum Certified [Bow Lake](#) Recycling and Transfer Station is an exemplary facility that has dramatically reduced greenhouse gas emissions by 172.5 metric tons/year. Additionally, the facility experienced 63% energy savings and 59% water savings.

Why We Care

Transfer stations are a crucial aspect of a community's waste management system, consolidating waste for transport to its final disposal site. Waste unloaded from collection vehicles is compacted and transferred onto larger vehicles to increase the efficiency of waste transport. As a nationwide trend moves towards large, remote landfills, transfer stations are important for reducing the cost of shipping waste to these locations. Consolidation of waste onto fewer, larger vehicles reduces maintenance costs, fuel emissions, and traffic. Transfer stations also offer an opportunity to screen waste before it is sent to its final destination as recyclables and hazardous materials are often separated. Reducing the environmental footprint of transfer stations is important because they disproportionately affect certain communities. According to a [report](#) prepared by the National Environmental Justice Advisory Council (NEJAC), transfer stations are more likely to be situated in low-income communities and communities of color. If not managed properly, transfer stations can reduce the quality of life in the surrounding area through air pollution, odors, traffic, and general sanitation. SWC credit 5 seeks to regulate the environmental impact of transfer stations by outlining proper equipment and loading procedures.

How to Meet the Requirements

To achieve this credit, a facility must demonstrate that more than 50% of their mobile and processing equipment utilize low-emission fuels and install particulate pollution control devices onsite.

Case Studies

Starting in the late 1990's, DSNY has increased regulations surrounding privately operated Transfer Stations. The introduction of dust control and loading time limits have produced [noticeable results](#) in lower emissions and environmental impact. [Bow Lake](#), a LEED Platinum Certified Transfer Station, is an exemplary facility that has dramatically reduced emissions by utilizing sustainable infrastructure and procedures.

Definitions

Supporting Materials

Case Studies

DSNY Case Study

Definitions: *See putrescible waste, non-putrescible waste, fill material*

The following is a summary of a report prepared for the New York City Department of Sanitation in 2004 to evaluate the effectiveness of increased regulations for Transfer Stations that had occurred in the previous decade.

Privately operated Transfer Stations play a crucial role in New York City's waste management system. Transfer stations are regulated by both the New York City Department of Sanitation (DSNY) and the New York State Department of Environmental Protection (NYSDEP).

For this study, a total of 43 Stations were evaluated. Air quality, odor, noise, traffic, and water quality were analysed to gauge the effects of Transfer Stations on nearby areas.

Findings and Recommendations

Dust Control: Both DSNY and NYSDEC require procedures to control dust from Transfer Stations. The standardized procedures depend on the type of the facility. For non-putrescible and fill material facilities (which normally operate outside), a sprinkler system is installed to spray water on the working pile to reduce dust transport. For putrescible facilities (which normally operate indoors), a similar misting system is installed which can reduce as much as 90% of the dust generated, while also alleviating odors being produced.

Stormwater Control: The tracking of mud and debris outside of the facility is a sanitary issue that is addressed by washing the tires on the vehicles as they depart the Station. This can be accomplished by installing another misting system or manually operated hoses.

Air Quality: The New York Air Code (NYAC) includes a prohibition on "*visible air contaminants from an internal combustion engine of (a) a motor vehicle while the vehicle is stationary for longer than 10 consecutive second; or (b) a motor vehicle after the vehicle has moved more than 90 yards from a place where the vehicle was stationary*". For all facilities the onsite and offsite air quality was compliant with the Nation Ambient Air Quality Standards (NASSQS) for CO, SO₂, NO₂, and particulate matter. For particulate matter, the maximum predicted annual neighborhood average from Stations ranges from 1% to 6%.

Water Quality: Only a few of the facilities were adjacent to surface water. None of these facilities had adverse effects on the water quality in the studied areas.

Bow Lake LEED Case Study

Bow Lake is the busiest transfer station in King County and includes a waste transfer building and recycling areas. Certified LEED Platinum, Bow Lake is an example of a sustainable and energy efficient transfer station.

Energy-Efficiency: Bow Lake is designed to use 61 percent less energy than a normal transfer station through efficient equipment, waste heat capture, and natural day lighting. These factors will reduce greenhouse emissions by an estimated 172 metric tons annually.

Air quality: Bow Lake includes the following infrastructure to improve indoor and outdoor air quality: tire wash for delivery vehicles, truck wash station, dust extraction systems, misting system, and vehicle exhaust gas monitoring system.

While Bow Lake Transfer Station does not seem to focus on the energy efficiency in vehicles, its focus on onsite infrastructure, including the use of Energy Star appliances, has resulted in significant reduction of overall emissions.

Additional Resources

Intent and Requirements

Intent

To reduce the environmental footprint of transfer stations.

Local Government & Industry Requirements:

- Limit Idle Time to 10 minutes
 - Total time from which a vehicle arrives to when it leaves the facility
- Institute best practice dust control techniques
- Demonstrate that the transfer station has the capacity to store and/or treat 100 percent of onsite runoff, including any run-on from adjacent property, prior to discharge to the sewer system, street or any nearby waterway.

Mobile Equipment (1 point)

For 50 percent of mobile equipment utilized on site or 50 percent of total fuel consumption: Utilize low-sulfur diesel fuel; install catalytic and particulate pollution control devices; and/or utilize diesel engines certified as Low NOx (<0.02 g NOx/bhp-hr) by the California Air Resources Board (CARB).

Processing Equipment (1 point)

For 50 percent of Processing Equipment:

- Utilize electric equipment or use ultra low-sulfur diesel fuel; install catalytic and particulate pollution control devices

and/or

- Utilize ULEV diesel engines

Potential Strategies

Utilize low emission on-site mobile equipment.

How to Meet the Requirements

- Adhere to industry and [EPA guidelines](#) on transfer stations.
- Present a fleet list and processing equipment inventory with 50% or more that use low-emission fuels.

Required Documentation

- List of fleet models, manufacturer, fuel source, and gas efficiency measured in miles per gallon (mpg). Provide a list of vehicles utilizing low-sulfur diesel fuel, catalytic and particulate pollution control devices; and utilize diesel engines certified as Low NOx
- List of processing equipment fuel sources and particulate pollution control devices

Definitions

Best Practice Dust Control/Dust Control Procedures

[Washington Department of Ecology Definition](#): Dust emissions can be prevented or reduced in four basic ways:

- Limit the creation or presence of dust-sized particles.
- Reduce wind speed at ground level.
- Bind dust particles together.
- Capture and remove dust from its sources.

Catalytic and Particulate Pollution Control Devices

Catalytic pollution control...

<https://www.sciencedirect.com/science/article/pii/S2666916120300062#:~:text=A%20catalytic%20converter%20is%20an,and%20transition%20metal%20catalysts%20etc.>

Environmental Footprint

- The amount of greenhouse gases that are emitted during the creation of products or services
<https://www.epa.gov/ghgemissions/household-carbon-footprint-calculator>
- [Cambridge Dictionary Definition](#): the effect that a person, company, activity, etc. has on the environment, for example the amount of natural resources that they use and the amount of harmful gases that they produce

Idle Time

[EPA "idling" definition](#): the operation of an engine in the operating mode where the engine is not engaged in gear, where the engine operates at a speed at the revolutions per minute specified by the engine or vehicle manufacturer for when the accelerator is fully released and there is no load on the engine.

Low Nox Diesel Certification

[ARB Definition](#): In 2013, California established optional low NOx standards with the most aggressive being 0.02 g/bhp-hr, which is 90 percent below the current standard.

Runoff

[EPA Definition](#): Stormwater runoff is generated from rain and snowmelt that flows over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. Runoff can pick up and deposit harmful pollutants like trash, chemicals, and dirt/sediment into streams, lakes, and groundwater. Construction sites, lawns, improperly stored hazardous wastes, and illegal dumping are all potential sources of stormwater pollutants.

Run-on

[Wikipedia Definition](#): Run-on refers to surface runoff from an external area that flows on to an area of interest.

Transfer Station

[EPA Definition](#): Waste transfer stations are facilities where municipal solid waste is unloaded from collection vehicles and briefly held while it is reloaded onto larger long-distance transport vehicles for shipment to landfills or other treatment or disposal facilities.

ULEV Engines

[VCA Definition](#): ULEVs are currently defined as having less than 75 grams of CO₂ per kilometre (g/km) from the tailpipe.

Ultra Low Sulfur Diesel Fuel

[Fuel Economy Definition](#): ultra-low sulfur diesel (ULSD). ULSD is a cleaner-burning diesel fuel that contains 97% less sulfur than low-sulfur diesel (LSD). ULSD was developed to allow the use of improved pollution control devices that reduce diesel emissions more effectively but can be damaged by sulfur. It is also safe to use with older diesels.

Putrescible Waste

[DSNY Definition](#): Solid waste containing organic matter having the tendency to decompose with the formation of malodorous by-products.

Non-Putrescible

[DSNY Definition](#): Waste that does not contain organic matter having the tendency to decompose with the formation of malodorous by-products, including but not limited to dirt, earth, plaster, concrete, rock, rubble, etc.,.

Fill Material

[DSNY Definition](#): A subset of non-putrescible waste. Clean material consisting of earth, ashes, dirt, concrete, rock gravel, sand, etc.,.