



Village of Downers Grove

2013-14 Snow & Ice Report

July 25, 2014



2013-14 Snow & Ice Control Overview

EXECUTIVE SUMMARY

Snow and ice control is essential for safe and continuous vehicular and pedestrian movement throughout the community and is one of the most visible services provided by the Village of Downers Grove. The Village's goal (target service level) is to clear snow and ice from heavily traveled streets within 12 hours after the conclusion of a winter storm, and within 18 hours after the end of the storm for lesser traveled streets. During the past ten years, the Village has achieved the target service level in approximately 97% of all events (an estimated 252 of 259 events). The seven events in which the target service levels were not achieved include the blizzard of February 2011, where 20 inches of snow fell in 24 hours and six events in the 2013-14 season.

The 2013-14 winter season presented many service delivery challenges for snow operations. The duration and magnitude of the season tested the limits of the Village's response system. After reviewing operations for the season, staff determined that the service delays could be attributed to the factors noted below and identified several operational changes that are being implemented for the 2014-15 season to improve services.

Contributing Factors

- The severity of the winter season including the number of snowfalls greater than four inches.
- The configuration of the snow routes.
- A shortage of snow plow drivers due to injuries.
- A shortage of fully functioning snow equipment .
- A regional salt shortage .

Operational Improvements for 2014-15 and Beyond

- Change the snow routes to reduce the total time to complete a pass through all 10 routes by balancing the time it takes to complete each route and reducing time spent going to and from routes.
- Increase the number of snow plow drivers by supplementing with existing Village personnel.
- Increase the number of vehicles capable of plowing snow 4" or greater by adding a 5-ton truck and wheel loader to the snow and ice control fleet without increasing the total vehicle count in the Village fleet.
- Increase the amount of road salt stored at Village facilities by constructing a larger salt storage dome, purchasing and receiving a full-season supply of salt prior to the start of the winter season and adding a second salt supplier.

OVERVIEW

The **Village's Snow Removal and Ice Control Policy** outlines the target level of service and the resources and methods that are used to achieve this result. The Village's roadway system includes 167 centerline miles of streets and 340 cul-de-sacs and dead-end street segments. Streets are prioritized under the following levels:

- **Priority 1** Primary roadways with the highest traffic volume (2,000 or more vehicles per day), roadways adjacent to schools, and roadways leading to Good Samaritan Hospital
- **Priority 2** All other secondary through-streets
- **Priority 3** Cul-de-sacs and dead-ends

In addition to roadways, the Village is also responsible for clearing ice and snow from downtown sidewalks, commuter station platforms and sidewalks and the parking lots and sidewalks of Village facilities.

Target Level of Service

The target level of service for each priority level is as follows:

Street Category	Target Condition	Target Response Time
Priority 1	Passable	During the storm
	Bare pavement	Within 12 hours of storm's end
Priority 2	Bare pavement	Within 12 hours of storm's end
Priority 3	Passable	Within 18 hours of storm's end

Snow Routes

The Village-owned and maintained streets are divided into 10 snow routes (**see attached map**) for the purpose of allocating equipment and resources. In addition to the 10 snow routes, snow and ice control also occurs in the downtown, the three commuter stations and within seven townhome developments.

- In the case of the sidewalks in the downtown and the commuter station train platforms, the work is contracted with Snow Systems. They have completed two years of a three year contract with the Village.
- In the case of the townhome developments, the Village contracts with the same, private snow services that contracts with each townhome development.

Snow Personnel

The Village has 36 snow plow drivers overseen by five snow managers operating on a rotating basis with one snow manager on duty at a time. The drivers are assigned to two, 12-hour operating shifts (18 drivers per shift). The 18 drivers are assigned as follows:

- 10 front line drivers plowing the snow routes
- 4 drivers plowing Village owned parking lots and assisting in snow routes as assigned by the snow managers
- 4 drivers that can be called in to cover vacancies and for larger snow events

Snow Vehicles

The Village uses 30 vehicles for snow and ice control operations. The snow manager assigns drivers to different vehicles based on the type of storm, condition of the streets and parking lots, number of staff members working, traffic volumes and the number of vehicles in Village owned parking lots. In the vast majority of events, 14 to 16 vehicles are used. A total of ten large trucks (10-ton and 5-ton) are used to plow the snow routes. Smaller trucks and speciality vehicles are used to perform other duties such as assisting with snow plowing in Priority 3 streets, plowing parking lots and hauling snow from the downtown.

Type of Vehicle	Number	Operations
	6	Plowing All Segments of Snow Routes
	5	Plowing All Segments of Snow Routes
	2	Plowing Priority 3 Segments of Routes and Parking Lots
	12	Plowing Priority 3 Segments of Routes & Parking Lots
	1	Plowing Parking Lots
	3	Hauling Snow from the Downtown Plowing Snow in Cul-De-Sacs in Large Events
	2	Hauling Snow from the Downtown

Road Salt and Liquid Deicing Material

The Village currently has a storage dome facility at the Public Works Facility that can hold approximately 2,500 tons of road salt, an amount well short of the amount used in an average snow season. Road salt is purchased through a State of Illinois Joint Purchasing contract with an annual Village commitment. An additional 800-1,000 tons can be stored under a roof with tarps next to the Fleet Services Facility. The Village has the capability to store about 20,000 gallons of liquid for pre-wetting of salt. This liquid, when added to salt, improves the melting of snow and ice at temperatures below 20 degrees Fahrenheit.

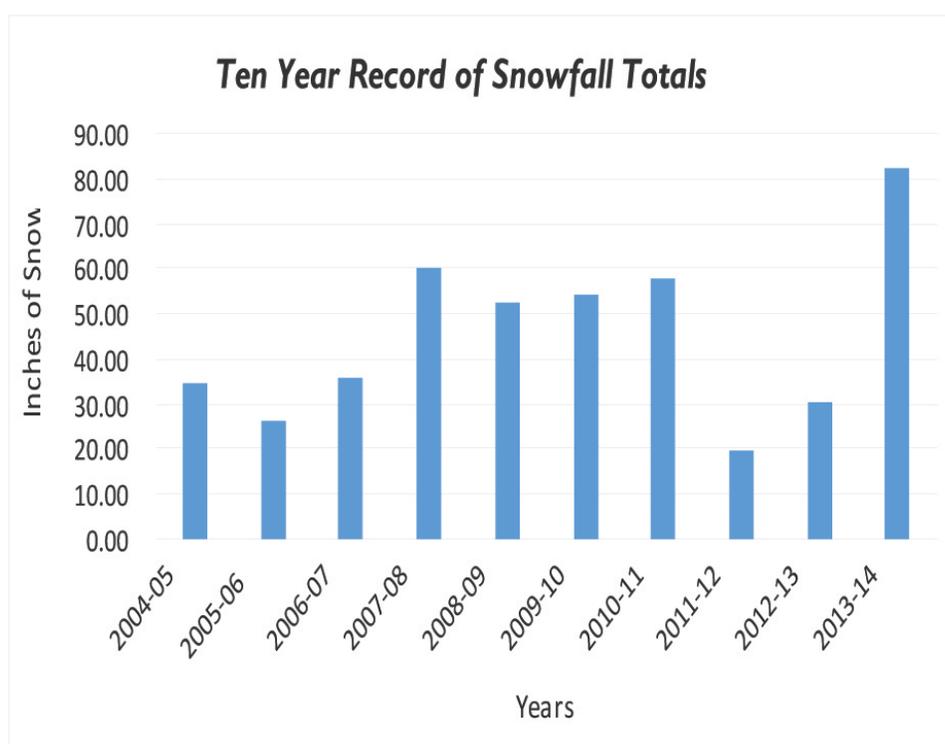
REVIEW OF THE 2013-14 WINTER SEASON WITH RECOMMENDED IMPROVEMENTS

In the winter of 2013-14, the target service level was not met for six of the 39 snow plowing and ice control events. Specifically, on four occasions Priority 2 and 3 streets were not brought to the targeted condition within the specified time period on two snow routes and on two occasions, the Village treated only certain targeted areas with salt during ice events. Following a thorough review of the operation with snow managers and drivers it was concluded that the service delays could be attributed to these contributing factors:

- The severity of the winter season as well as the number of snowfalls greater than 4"
- The configuration of the snow routes
- A shortage of front-line drivers due to injuries
- A shortage of fully functioning snow equipment
- A regional salt shortage

Severity of the 2013-14 Winter Season Weather

The total snowfall measured at Chicago O'Hare reached more than 80 inches for the season, which is more than double the seasonal average of 36.4 inches. Only two other seasons featured more snow, both occurred during the late 1970s. The record winter of 1978-79 (89.7 inches) featured the blizzard of 1979. In addition to that, 2013-14 was the third coldest winter on record with more than triple the average days of 0 degrees or colder temperatures (26 days).



The 80+ inches of snow for the season included a total of 39 snow or ice events of the following magnitudes:

2013-14 Snow Season Events	
Snow events less than 2"	18
Snow events 2" to 4"	8
Snow events 4" to 6"	5
Snow events over 6"	3
Freezing Rain	5
Total Events	39

Snow events over 4" present significantly more service challenges than smaller events. It takes longer to clear snow from the streets in these events. Multiple snow plow passes are required to fully clear snow from larger streets. Removing snow from cul-de-sacs, dead end streets and parking lots requires the use of large equipment.

During a snow event of less than 4", one-ton trucks are used to clear the parking lots in the Village and assist the larger trucks with the clearing of the 333 cul-de-sacs and dead-end streets. The weight of the snow when the depth is 4" or more requires the use of loaders and larger trucks for these facilities. The other challenge with these larger snow events is the need to haul away snow piles from the downtown, the upper level of the parking deck and parking lots. This work extends the operation by two or three days, depending on the amount of snow.

Staff estimates that the Village did meet target service levels in four of the eight snow events of 4" or more.

Another weather challenge during the 2013-14 season was the persistent, cold temperatures. With the lack of temperatures above freezing, the snow continued to accumulate and not all the equipment in our fleet could push snow over the increasing heights of roadside snowbanks.

Configuration of Snow Routes

The Village has established 10 snow routes. A review of the 2013-14 plowing operations revealed that the routes are not balanced in terms of length of miles and the time it takes to complete, including travel time to the route from the Public Works facility. Under the more extreme weather conditions of this past winter season, the Village experienced difficulty meeting the target service levels in Routes 7 and 9. Routes 1 and 3 also have challenges that may affect service levels.

Routes 7 and 9 each include extensive lengths of Fairview Avenue, which is typically cleared first. Route 9 is the furthest distance from the Public Works facility and Route 7 has a combination of a high number of lane miles and cul-de-sacs. Further, Routes 1 and 3 have challenges because many of these streets are disconnected by either the expressway or the railroad, which takes more time and miles to clear them.



Snow Route Improvements - Changes are being proposed for the 10 snow routes to improve efficiency and reduce the total amount of time it takes to make one complete pass through the Village. A map showing the proposed new routes is attached.

Shortage of Front-Line Drivers Due to Injuries

In the 2013-14 snow season, five snow plow drivers were unable to work for 30 days or more due to injury. Four employees assigned as front-line drivers missed the majority of the season. A fifth employee missed the last month of the season. As a result, four of the back-up drivers functioned as front-line drivers. Front-line drivers work in the same routes for every event, sometimes for many years, and become very familiar with their routes. Back-up drivers are not as familiar with routes, and generally not as efficient as the front-line drivers. Although back-up drivers performed admirably during this past winter season, there was an efficiency loss in the system overall.

In addition to a loss in efficiency, there was not an adequate reserve capacity of drivers. There was not a back-up for the back-up drivers in the event of injury or sickness and there was not reserve staff in the case of more extreme conditions. With up to five snow plow drivers unavailable due to injury, there were a few snow events where the Village operated with fewer than 14 snow plow drivers which slowed response times.



Staffing Improvements - The number of available snow plow drivers has been increased. Existing staff members currently assigned to other tasks will be used as drivers when needed. Back-up drivers will be used with greater frequency to improve their familiarity with the routes and improve efficiency. In the case of extended staffing reductions due to injuries, staff will evaluate the need to fill the vacancy with temporary employees.

Shortage of Fully Functioning Snow Equipment

During the 2013-14 snow season, the Village experienced a shortage of fully functioning snow equipment. The shortage was due to damage to equipment that occurred during the season and to operational limitations of the smaller snow plow vehicles.

A 10-ton truck, a 5-ton truck and a wheel loader were damaged during snow plowing operations and were taken out of service to be repaired. These vehicles were replaced by smaller vehicles that were not capable of effectively plowing in large snow falls and were not as efficient at plowing snow in all events (10-ton and 5-ton trucks work effectively in snows of 4" or more. The smaller trucks do not work effectively in these events). Response times were slowed by using the smaller vehicles.

The Village currently owns three wheel loaders. Two of them are equipped and used for snow plow operations. With the heavier than normal snowfall, it was determined that a third wheel loader would have added significant capacity to the system.

The table on the following page lists the previous and current vehicles used for snow and ice control.

2013-14 Snow Season	Vehicles	2014-15 Season
6	10-ton Trucks	6
5	5-ton Trucks	6
2	3-ton Trucks	2
12	1-ton Trucks	12
1	¾-ton Trucks	1
2	Wheel Loaders	3
2	Skid Steers	2

See page 3 for photos of vehicles



Vehicle Improvements - The number of vehicles capable of effectively plowing streets in large events has been increased. The Village recently purchased a 5-ton truck that will be used for snow operations. Further, the third wheel loader will most likely be equipped and used for snow operations.

Regional Salt Shortage

The Village has historically purchased salt under the State of Illinois contract and has a salt dome at Public Works that can store 2500 tons under cover and another 800 tons next to the fleet facility. The regional demand for salt during the 2013-14 snow season, along with frozen rivers precluding barge traffic, led to shortages. Salt distributors ran out of salt and were not delivering orders. The State of Illinois also commandeered salt supplies for use on larger state roadways and highways. The Village restricted salt use to Priority I streets during the last four to six weeks of the snow season. Staff estimates that the Village did not meet target service levels in two snow events due to the lack of available salt.



Salt Supply Improvements - A new, larger salt dome is being constructed. This allows the Village to purchase and receive a full-season supply of salt prior to the start of the winter season. Further, the Village secured a second salt supply contract, bidding with DuPage County and a group of additional municipalities and townships. Having two salt supply vendors will improve reliability and reduce the likelihood of not receiving salt deliveries in a timely manner.