



Edward M. Augustus, Jr.  
City Manager

CITY OF WORCESTER

cm2016sep15011517

Attachment for Item #

7.7 A

September 20, 2016

TO THE WORCESTER CITY COUNCIL

COUNCILORS:

The attached report from Paul J. Moosey, Commissioner of Public Works and Parks (DPW&P), which outlines the review of the DPW&P Winter Program and includes recommendations for improvements, is forwarded for the review and consideration by your Honorable Body.

As you know, the City's response to several storms last winter did not meet our expectations. After acknowledging that fact, our task was to do whatever it took to improve our performance in the upcoming winter, and in years to come. Over the past several months, we have engaged in a top-to-bottom review of our winter operations. The report includes detailed discussion, analysis and explanation of the changes required to modernize DPW&P's Winter Program to make it more effective and responsive to changing conditions and create more flexibility in the use of equipment and personnel resources which will allow the City the ability to get ahead of storms and shorten the timeline to clean up streets after a winter weather event. The highlights of the report's recommendations include:

- Institute Pretreatment Program using Brine on Main/Bus/Special Routes
- Increase Size of the Salter / Sander Fleet (both City and Hired Equipment)
- Reduce Threshold to Commence Plowing Operations
- Add Two Winter Operations Coordinators for Improved Quality Control
- Implement Integrated Communication Process
- Improve Reliability of Fleet by Increasing Capital Equipment Program



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Our top priority throughout this process was the desire to develop a plan that improves public safety. The attached recommendations will make the City safer. Some items require City Council action now to implement, including the approval of an increase to the hired equipment rates and an update to the salary ordinance to include a new rate category for Winter Operation Coordinator. In the coming weeks, I will be forwarding a recommendation for your approval of \$120,000 for four sander units as attachments to the new pretreatment trucks to make them more versatile, as well as a few other strategic pieces of equipment that will improve our snow operations. I will also look for City Council's support of a long term capital plan during the deliberation in the next Capital Budget.

This extensive review process included many DPW&P representatives and staff from other City departments to analyze current protocols, gather data, conduct surveys, identify vulnerabilities and make recommendations to improve the Winter Program. To ensure the review provided input from external industry experts and included interdepartmental coordination, a Winter Operations Committee was formed. In addition to Commissioner Moosey and Assistant Commissioner Matthew Labovites, the team included John K. Westerling, Director of Public Works, Hopkinton, MA, former DPW&P Commissioner Robert L. Moylan, Richard H. Fiske, Emergency Communications and Emergency Management Director, and Kathleen G. Johnson, Assistant City Manager and Human Resources Director. I would like to thank the staff and the Committee for all their work in this top-to-bottom review of our winter operations.

I have reviewed the new Winter Program plans and protocols with representatives from City departments including Police and Fire, the Worcester Public Schools, and the Worcester Regional Transit Authority. I appreciate their input and support of these recommendations.

Respectfully submitted,

A handwritten signature in black ink, reading "Edward M. Augustus, Jr." in a cursive script.

Edward M. Augustus, Jr.  
City Manager



**CITY OF WORCESTER, MASSACHUSETTS**  
Department of Public Works and Parks

Paul J. Moosey, P.E.  
Commissioner of Public  
Works and Parks

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**To:** Edward M. Augustus, Jr., City Manager  
**From:** Paul J. Moosey, P.E., Commissioner of Public Works and Parks  
**Date:** September 15, 2016  
**Re:** Communication Relative to Snow Operations Review

## **INTRODUCTION**

This report is a result of the difficult winter experienced recently. While this past winter was nowhere near as snowy as the previous winter, a number of vulnerabilities were made evident in the Winter Program. These difficulties, as well as our overarching goal to constantly review, evolve, and improve all of our major programs, have prompted a top-to-bottom review of all aspects of our Winter Program, leading us to identify all areas where improvement and updating are needed.

Worcester is the second-largest city in New England and is located in the heart of New England's "snow belt" where many winters see snowfall totals that are competitive with cities in upstate New York that have lake-effect snow. Having a surfeit of hilly and densely populated, three-decker neighborhoods, the City of Worcester is quite familiar with challenging winter conditions.

The Worcester DPW&P has always risen to the challenge to fight winter storms and conditions in a prompt, efficient, professional manner befitting one of the country's snowiest cities. The City has an award-winning program that is tailored to the specifics of our road system, topography, and neighborhoods. Over the years, there have been occasions where predicted and unpredicted circumstances led to difficulties in dealing with a particular storm and consequently resulted in less than satisfactory conditions for the motoring public. It has always been Standard Operating Procedure for DPW&P to analyze its performance at the end of the winter, as well as having a debriefing after difficult storm events, in order to learn and improve.

This year's review, however, is more comprehensive than a typical review. It is reflective of the fact that on at least two well-documented occasions, at the beginning and at the end of the winter season, the Program did not perform up to our usual standards leading to unacceptable delays in reaching satisfactory driving conditions. We are talking about winter in New England in a very hilly and snowy city, so there will indeed be periods of time during snow and ice events where driving is less than optimal. But all the issues identified and the subsequent

recommendations in this report are aimed at reducing and minimizing those periods of time to the extent that is practical and feasible.

## **EXISTING PROGRAM**

This section of the Winter Program Review is a brief description of the primary components of the Winter Program prior to this review. The Program is broken into three phases (pre-storm preparation and operations, storm operations, and post-storm operations), but there are many moving parts that require careful consideration and coordination. So as to not get into too lengthy a description of the components of each phase, straightforward, concise bullets will be utilized.

### **Pre-Storm Preparation and Operations:**

- Monitoring of multiple weather services (including contracted service) and miscellaneous weather media in lead-up to snowfall
- If major event/blizzard is forecast, contact hired equipment to assess readiness and consider need for pre-storm meeting with key City staff
- Upon narrowing of time window for start of snowfall, schedule outside team made up of 4 field snow inspectors and 1 supervisor and inside support staff to allow for necessary monitoring of salting operations upon start of snowfall
- Schedule necessary City equipment and hired equipment to accomplish anticipated pre-plowing salting
- If plowable event is likely, activate Winter Parking Ban for Declared Parking Ban streets 6-12 hours prior to anticipated plowing including all necessary public and private notifications

### **Storm Operations**

- Outside team monitors conditions upon commencement of snowfall to determine need to begin salting operations
- Inside supervisors monitor input from outside team and Road Weather Information System data that are in 4 strategically placed locations around the City that provide real time pavement condition data from City's quadrants to assist in determining timing for beginning salt operations on main lines. Salting typically commences just as conditions are beginning to transition to "slick"
- As storm event develops and main line salting is proceeding, all staff monitor conditions to determine need for plowing operations. Standard protocol for decades has been to typically start plowing operations as build-up / depth of snow on side streets approaches two (2) inches. This does vary for major snowstorms/blizzards and is dependent on time of day, temperature, anticipated traffic conditions, as well as other factors
- Upon the commencement of plowing operations (typical General Plowing operation), it is "all hands on deck" for duration of snowfall. Plowing operations usually encompasses 325-400 pieces of equipment (17% city and 83% hired) and includes a total of 425-475 people with support and supervisory staff. This effort typically lasts for 4 - 6 hours beyond the cessation of snowfall to ensure that all City streets are properly plowed full length and full width
- As completion of plowing operations comes into focus, a determination is made by winter operations management team as to type and scope of post-plowing salt and sand operations: necessary resources are scheduled to accomplish selected operation

Factors considered include time of day, day of week, commute and school timing, temperature (current and anticipated), status of equipment availability, and current availability of staff

**Post-Storm Operations**

- Scheduling and accomplishing clearing of the 23 miles of sidewalks DPW&P is responsible for
- Assessment of storm performance by winter operations management team
- Lifting of Declared Winter Parking Ban presuming sufficient time lag until next snow event
- Planning and assessment for next storm event including but not limited to: time duration until anticipated event and need for personnel rest and replenishment; equipment repair and readiness; and replenishment of material stocks (sand, salt, de-icing chemicals, plow edges, etc.)

**BENCHMARKING**

Below are 3 tables that show a comparison of statistics from Worcester and other New England cities that responded to our inquiry. All cities are unique and comparisons are difficult without some qualifiers but some general observations can be made. Boston is very high density and has a challenging street system that puts their costs multiples above the other cities. Worcester has the most challenging topography and combination of topography and density in and around the urban core. The other communities are relatively flat. Lowell, MA, Manchester NH, and Portland ME have declared parking bans that prohibit parking on any city street when in effect. The remaining cities have a combination of declared and permanent bans or declared bans. Only Manchester NH has GPS on all equipment. Worcester has GPS only on sanders, the remaining cities do not use this technology. Boston, Springfield, and Worcester are the most dependent on hired equipment with 74%, 89%, and 83% respectively. These cities also have the most lane miles to maintain.

TABLE 1

	Avg. Annual Snowfall (Inches)	Population	Land Area – Sq. miles	Center Lane Miles	Topography
<b>Boston, MA</b>	48"	639,600	48.3	850	Asphalt roadways, straightaways, hills, bridges, dead ends, alleyways
<b>Lowell, MA</b>	55"	108,500	13.6	250	Majority is flat with small sections of hills
<b>Manchester, NH</b>	67"	110,000	33.1	411	Elevations range from about 200 ft. along Merrimack River to 580 on Wellington Hill. Manchester is drained by the Merrimack River and Piscataquog River.

<b>New Bedford, MA</b>	33"	95,000	20.0	300	All asphalt roads
<b>Portland, ME</b>	70"	66,300	21.3	236	Coastal plain
<b>Springfield, MA</b>	61"	156,800	31.9	500	Rolling hills from the river then starts to flatten out
<b>Worcester, MA</b>	62"	182,500	37.4	515	Steep grades with a dense urban core surrounded by dense residential area with limited off-street parking.

**TABLE 2**

	# Plows & Sanding Equipment	# Plows & Sanding Equipment Owned	# Plows & Sanding Equipment Hired	% of Hired Equipment	Description of Prep/De-ice Methodology
<b>Boston, MA</b>	500	130	370	74%	Sodium chloride to pretreat hills, bridges, and all roadways 1 hour prior to event
<b>Lowell, MA</b>	175	105	70	40%	Salt distributed on routes prior to or as precipitation commences
<b>Manchester, NH</b>	46	46	0	0%	Brine major streets before most snow storms
<b>New Bedford, MA</b>	120	120	0	0%	We use magnesium chloride. Sanders have tanks on board that inject the salt as it is spread. We will pre-salt roads with the mixture. Usually results in black roads with no ice-pack afterwards.
<b>Portland, ME</b>	40	36	4	10%	Just prior to start of snowfall, we treat 23 critical intersections w/pre wetted salt at an application rate 300 lbs/lane mile. Start of storm, we field 8 salt units to treat 8 primary sand & salt routes, all major arterial roads, using different materials and different applications depending on type of precip.
<b>Springfield, MA</b>	196	21	175	89%	Use liquid calcium with salt and will pretreat as the precipitation starts
<b>Worcester, MA</b>	457	77	380	83%	Salt application at onset of snowfall. Calcium chloride used depending on temperature.

**TABLE 3**

	GPS	Description of Technologies/ Procedures	Snow Parking Ban	Annual Snow Removal Budget	How Budgets Are Established
<b>Boston, MA</b>	No	Looking into GPS Tracking System	Permanent and Declared Ban	\$23,000,000	Historical averaging
<b>Lowell, MA</b>	No		Declared Ban – no parking on any street in the city	\$1,200,000	N/A
<b>Manchester, NH</b>	Yes	Automatic vehicle locating systems to track mileages, routes, and efficacy of fleet.	Permanent and Declared Ban – No parking on all city streets during declared ban	\$1,200,000	They make an assumption of 11 storms
<b>New Bedford, MA</b>	No		Declared Ban	\$500,000	Budget \$500,000 per year, independent of any estimates
<b>Portland, ME</b>	No		Declared Ban – No parking on city streets	\$1,165,512	Base the budget on 8 full plowing storms
<b>Springfield, MA</b>	No		Declared Ban	\$1,591,250	N/A
<b>Worcester, MA</b>	Yes	GPS for sanders/salters.	Permanent and Declared Ban	\$4,000,000	Based on average winter

The following table shows a comparison of rates paid by Worcester, Springfield, Marlboro, Leominster, and MassDOT for hired equipment from last winter. These cities were chosen because they are closer to Worcester than other cities in the previous comparison and rates were available. Worcester's rates are slightly above Leominster and Springfield and slightly below Marlboro's for plows. MassDOT rates are above Worcester in most categories. Of note is Worcester rates for the two large sander categories are the lowest and significantly below DOT rates.

**HIRED EQUIPMENT RATES FOR 2015 - 2016 SEASON**

	<b>CITY OF WORCESTER HOURLY RATES</b>	<b>WORC PRE-DEC BONUS RATE</b>	<b>MASSDOT</b>	<b>EARLY OR EXTENDED SEASON<sup>1</sup></b>	<b>MASSDOT EARLY SIGNUP RATE<sup>2</sup></b>	<b>EARLY SIGNUP EXTENDED SEASON RATE<sup>2</sup></b>	<b>SPRINGFIELD</b>	<b>MARLBORO</b>	<b>LEOMINSTER</b>
<b><u>EQUIPMENT TYPE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>
<b><u>PLOWING</u></b>									
Pick-up 3/4 ton	\$ 60.00	\$ 70.00	\$ 72.10	\$ 72.10	\$ 72.10	\$ 72.10	\$ 55.00	\$ 58.00	\$ 70.00
Over 11,000 GVW 6 x 6	\$ 70.00	\$ 80.00	\$ 78.43	\$ 83.43	\$ 83.93	\$ 88.93	\$ 62.00		\$ 85.00
Over 11,000 GVW 6 x 6 S	\$ 75.00	\$ 85.00	\$ 89.43	\$ 94.43	\$ 94.93	\$ 99.93			
6 Wheel 34,999 GVW			\$ 91.56	\$ 96.56	\$ 97.06	\$ 102.06	\$ 75.00	\$ 100.00	\$ 90.00
Over 35,000 GVW 2 axle	\$ 87.00	\$ 97.00	\$ 107.94	\$ 112.94	\$ 113.44	\$ 118.44	\$ 85.00	\$ 110.00	
Over 35,000 GVW 2 axle Sander	\$ 92.00	\$ 102.00	\$ 138.94	\$ 143.94	\$ 144.44	\$ 149.44			
Backhoe 4 x 4	\$ 90.00	\$ 100.00	\$ 80.62	\$85.62	\$ 86.12	\$ 91.12		\$ 105.00	
Backhoe 4 x 4 reversible plow	\$ 95.00	\$ 105.00	\$ 86.12	\$ 91.12	\$ 91.62	\$ 96.62		\$ 110.50	
Loader Cat 920 equal	\$ 95.00	\$ 105.00	\$ 94.90	\$ 99.90	\$ 100.40	\$ 105.40	\$ 91.00		\$ 90.00
Loader Cat 930 equal	\$ 97.00	\$ 107.00	\$ 94.90	\$ 99.90	\$ 100.40	\$ 105.40	\$ 91.00		\$ 90.00
Over 35,000 GVW 3 axle	\$ 100.00	\$ 110.00	\$ 117.93	\$ 122.93	\$ 123.43	\$ 128.43	\$ 91.00	\$ 115.00	\$ 95.00
Loader Cat 944 equal	\$ 101.00	\$ 111.00	\$ 94.90	\$ 99.90	\$ 100.40	\$ 105.40			\$ 90.00
Grader over 20,000 GVW	\$ 102.00	\$ 112.00	\$ 122.64	\$ 127.64	\$ 128.14	\$ 133.14			\$ 100.00
Over 35,000 GVW 3 axle reversible plow	\$ 105.00	\$ 115.00	\$ 123.43	\$ 128.43	\$ 128.93	\$ 133.93	\$ 93.00	\$ 126.00	\$ 100.00
Over 35,000 GVW 3 axle Sander	\$ 105.00	\$ 115.00	\$ 153.93	\$ 158.93	\$ 159.43	\$ 164.43	\$ 91.00		
Grader over 28,000 GVW	\$ 106.00	\$ 116.00	\$ 122.64	\$ 127.64	\$ 128.14	\$ 133.14		\$ 125.00	\$ 100.00
Loader Cat 950 equal	\$ 110.00	\$ 120.00	\$ 117.22	\$ 122.22	\$ 123.22	\$ 128.22	\$ 96.00	\$ 117.00	\$ 105.00
Loader Cat 966 equal	\$ 112.00	\$ 122.00	\$ 117.22	\$ 122.22	\$ 123.22	\$ 128.22	\$ 96.00	\$ 117.00	\$ 105.00
<b><u>EQUIPMENT TYPE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>	<b><u>HOURLY RATE</u></b>
<b><u>SANDING</u></b>									
Small sander	\$ 55.00	\$ 65.00							
Medium sander	\$ 60.00	\$ 70.00						\$ 73.50	
Large sander	\$ 73.00	\$ 83.00	\$ 138.94	\$143.94	\$ 144.44	\$ 149.44	\$ 80.00	\$ 80.00	\$ 75.00
X large sander	\$ 80.00	\$ 90.00	\$153.93	\$158.93	\$ 159.43	\$ 164.43	\$ 85.00	\$ 92.00	\$ 105.00

<sup>1</sup>Early or Extended Season rates apply before Dec 1st and after March 31<sup>st</sup>.

<sup>2</sup>Mass DOT early sign-up rate applies to vehicles committed by Sept 30<sup>th</sup>.

## VULNERABILITIES AND RECOMMENDATIONS

This section of the report describes the Vulnerability Analysis that was performed as part of the assessment of the Winter Program. The intent is to identify all areas of the Program that can be improved and/or updated in order to meet the overarching goal and objective of the entire Winter Program that is **“to keep streets open and essential traffic moving, and return streets to normal condition as soon as is possible.”** Based on this analysis, DPW&P is recommending changes to the Snow & Ice Program that will result in shorter times to complete winter operations, increase quality control, short and long term fleet upgrades, and improved communications.

### **Identified Vulnerability #1: Sander / Salter Fleet Size**

The size of the sander and salter fleet available to DPW&P has held relatively steady over the course of the last 15-20 years. But the size of the fleet (made up of both City equipment and hired equipment, with the majority being hired) is no longer sufficient to reliably and dependably achieve the city's objectives and goals throughout long-duration events, or early and late season events. A number of factors have led to this conclusion with the single biggest factor being recent difficulties completing sanding and salting in a timely fashion during both early and late season snow events, when contractors could potentially be busy with more lucrative general construction. This was the major factor responsible for the problems in April of this past winter when, after 36 hours of on-and-off snow and salting and plowing operations during Sunday April 3<sup>rd</sup> and Monday April 4<sup>th</sup>, the intent was to sand and salt in the overnight hours of April 4<sup>th</sup> - 5<sup>th</sup>, and streets to be in “normal” condition for the morning commute on Tuesday, April 5<sup>th</sup>. A substantially reduced number of sanders as well as the need to transition back to main line salting during the overnight led to slippery conditions during the morning commute, which was 8-10 hours after the completion of plowing operations Monday evening. Unfortunately, due to warmer than normal temps in March, many contractors had already converted their equipment back to general construction configuration or had taken their dedicated sanders off the road due to significant insurance increases that begin April 1<sup>st</sup>. Additionally, the bar is constantly being raised to get streets back to normal condition more expeditiously. The motoring public is becoming less tolerant of any inconvenience (this is obviously not unique to Worcester) and the “window of time” necessary to accomplish salting and sanding must be reduced to the extent possible.

### **Recommendation**

Depending on conditions, DPW&P has historically needed 12 hours or more to salt main arteries and bus routes and sand local streets with grades. In the past, flat streets were only treated as needed such as after an ice event. In the most recent seasons, treating the entire city has become standard practice, further increasing the time required. The most important goal to improve the overall quality of the Snow & Ice Program is to reduce the time needed to complete this process, whether it's a sand and salt only event or following a plowing operation. In either case, a substantial time reduction will reduce the public's exposure to untreated roads. The method to achieve this most important goal is to increase the sander/salter fleet. This increase in fleet size will not only reduce the time it takes to treat roadways, it will add depth to equipment available for times when large percentages of the fleet are unavailable. Last winter, a total of 56 sanders were available, 36 of which are hired, which is a typical year. Of the 56 units of the average number available for an event was 28. This is also what we have seen over years of experience. The average number of truck hours to complete an operation is approximately 300. This number can vary widely based on conditions, time of day, and the application and is only presented for comparison. In order to make a substantial impact on the time involved in this process, a sander fleet between 75 and 80 vehicles is needed. All of the recommended

increases would be in the two large sander/salter categories. If the fleet grows to 80 and 50 are available on a given winter event, the average time to complete an operation based on the above number, would be 6 hours. It is recommended that no more than four sander/salters be added to the city fleet with the remaining number being hired equipment. It is unknown if the industry can produce this number of additional vehicles. If we do not offer hourly rates closer to MassDOT's paid rates, who advertised heavily in the last two years, we will likely lose equipment numbers. Therefore, DPW&P is recommending the two large sander classifications be raised from \$73.00 and \$80.00 per hour to \$110.00 and \$120.00 per hour. These numbers are still below MassDOT's rates of \$138.94 and \$153.93 but close enough to attract equipment owners who may prefer to work for Worcester. Worcester does have an advantage to offer hired sander/salters in that we give all equipment an opportunity at every event, as well as providing expeditious payment.

Below are recommended changes in rates for all equipment for the 2016-2017 snow season. In addition to the \$10.00 per hour bonus for equipment reporting before December 1st for snow events, an equal bonus for post March 31st is recommended. For early and late season events, when operators need to choose between snow preparedness and other demands on their equipment, leaves cities like Worcester most vulnerable because they rely on 83% hired equipment. DPW&P is also proposing a \$10.00 per hour rate increase for backhoes and loaders. This equipment, although a small portion of the fleet, is critical in winters with a lot of storms and resulting large snow piles or very large storms. The last rate increase for these classifications was in 2008.

#### PROPOSED 2016 - 2017 RATES

	CITY OF WORCESTER HOURLY RATE 2015-2016	WORCESTER PRE-DEC BONUS RATE <sup>1</sup>	2016 - 2017 PROPOSED RATE	PROPOSED BONUS SEASON RATE <sup>1</sup>	YEAR LAST CHANGED
EQUIPMENT TYPE PLOWING	HOURLY RATE	HOURLY RATE	HOURLY RATE	HOURLY RATE	
Pick-up 3/4 ton	\$ 60.00	\$ 70.00	No Change	No Change	2014
Over 11,000 GVW 6 x 6	\$ 70.00	\$ 80.00	No Change	No Change	2014
Over 11,000 GVW 6 x 6 S	\$ 75.00	\$ 85.00	No Change	No Change	2014
Over 35,000 GVW 2 axle	\$ 87.00	\$ 97.00	No Change	No Change	2014
Over 35,000 GVW 2 axle Sander	\$ 92.00	\$ 102.00	No Change	No Change	2014
Backhoe 4 x 4	\$ 90.00	\$ 100.00	\$ 100.00	\$ 110.00	2008
Backhoe 4 x 4 reversible plow	\$ 95.00	\$ 105.00	\$ 105.00	\$ 115.00	2008
Loader Cat 920 equal	\$ 95.00	\$ 105.00	\$ 105.00	\$ 115.00	2008
Loader Cat 930 equal	\$ 97.00	\$ 107.00	\$ 102.00	\$ 112.00	2008
Over 35,000 GVW 3 axle	\$ 100.00	\$ 110.00	No Change	No Change	2008
Loader Cat 944 equal	\$ 101.00	\$ 111.00	\$ 111.00	\$ 121.00	2008
Grader over 20,000 GVW	\$ 102.00	\$ 112.00	\$ 112.00	\$ 122.00	2008
Over 35,000 GVW 3 axle reversible plow	\$ 105.00	\$ 115.00	No Change	No Change	2008
Over 35,000 GVW 3 axle sander	\$ 105.00	\$ 115.00	No Change	No Change	2008
Over 35,000 GVW 3 axle reversible plow & sander			\$ 110.00	\$ 120.00	New Classification
Grader over 28,000 GVW	\$ 106.00	\$ 116.00	\$ 116.00	\$ 126.00	2008
Loader Cat 950 equal	\$ 110.00	\$ 120.00	\$ 120.00	\$ 130.00	2008
Loader Cat 966 equal	\$ 112.00	\$ 122.00	\$ 122.00	\$ 132.00	2008

EQUIPMENT TYPE SANDING	HOURLY RATE	HOURLY RATE	HOURLY RATE	HOURLY RATE	YEAR LAST CHANGED
Small sander	\$ 55.00	\$ 65.00	\$ 60.00	\$ 70.00	2014
Medium sander	\$ 60.00	\$ 70.00	\$ 75.00	\$ 85.00	2014
Large sander	\$ 73.00	\$ 83.00	\$ 110.00	\$ 120.00	2014
X large sander	\$ 80.00	\$ 90.00	\$ 120.00	\$ 130.00	2014

<sup>1</sup>Bonus rate would apply before Dec 1st and after March 1st.

The DPW&P Street Division has added four new vehicles this year for the purpose of pretreating roadways. Three of these were purchased with FY16 snow money and one with FY17 capital equipment funds. These trucks are also equipped with plows and under-body scrapers. The chassis of these trucks have a quick change hook system that allows the tanker to be removed and replaced with a sander. DPW&P has recommended to the Administration that, if funds are available, the purchase of up to four sander units for these trucks be a priority. The DPW&P also recommends that a long-term capital equipment plan be put in place to address the other 40 pieces of Street Division snow equipment. The Public Works industry has recognized 10 years as the useful life for this type of equipment, as has the DPW&P in its utility inventory. Currently, 21 or 52% of this fleet is over 10 years old and 14 or 35% of the fleet is over 15 years old. The spending level of the current 5-year capital equipment budget allows for the replacement of approximately two large vehicles (which does not always include winter equipment) per fiscal year. Replacing only two vehicles per year simply does not adequately replenish the fleet and we will only fall further behind. To ensure that all DPW&P snow equipment is available for all snow events, it will be necessary to embark on a more ambitious replacement schedule. Therefore, DPW&P recommends the Administration put in place a long-term capital equipment budget that allows approximately 5 large pieces of equipment per year to be replaced, which would equate to increasing the Tax Levy Capital Equipment budget by approximately \$500,000 to \$550,000 annually over the course of 10 years. This proposed increase would allow for significant “catch-up” in the next 10 years and significantly reduce the percentage of the fleet beyond its useful life.

### ***Identified Vulnerability #2: Personnel Resources***

Ensuring proper staffing levels and managing personnel resources is critical during a winter storm event. This past winter, DPW&P had an unprecedented number of vacant laborer/motor equipment operator (MEO) positions. This meant that we were not able to mobilize all equipment for the full duration of every storm event. There has been a gradual erosion over the course of many years and is not a one-time phenomenon. Over the last 10 years the number of Public Works employees fell from 189 in FY06 to 169 in FY16. In addition to budgetary constraints, there is difficulty in finding qualified candidates, which is an industry issue not unique to Worcester DPW&P. A polling of many of our hired contractors has shown a similar difficulty in recruiting drivers for their own equipment. There is always a natural cycle of retirements, resignations, and re-hiring but the difficulty in attracting and retaining suitable candidates has most definitely intensified in the last 5 - 10 years. With the need in today’s society for both parents or spouses to be employed, the desire to work many exhausting consecutive shifts during snowstorms has diminished over time. This reduces the overall size of the available pool of drivers for both City and hired equipment. Additionally, the average age of DPW&P’s workforce has increased. With an average age of DPW&P employees over the last three years ranging from 50 to 52, we must monitor endurance levels and allow for periods of rest to ensure safety of our equipment operators.

### ***Recommendation***

Our goal is to fill all open positions in the Street Division and to prioritize the filling of other DPW&P positions with an emphasis on those involved in winter operations. Over the last 9 months, the City has enhanced efforts to increase the pool of candidates for DPW&P positions through advertising, working with partners, and recruitment including Opportunity Fairs, Career Fairs and visits to area schools. Five (5) large career fairs were hosted by the City to educate potential candidates on civil service requirements and job prerequisites for employment in DPW&P. Three of the fairs were held specifically for DPW&P labor service roles. These events also featured Workforce Development's new program developed to help interested candidates receive training and obtain a Commercial Drivers License (CDL), which is a requirement for a Laborer/MEO position. The CDL was identified as a barrier to recruitment and employment, as the training required is expensive and not easily available. This new program is funded through grants and Job Funds and is available to unemployed/underemployed residents.

Our recruitment efforts also included a review of the entry level hiring rates and approval of the Administration to hire up to a Step 1 (vs. Step 1C), a 12% rate differential. These efforts have resulted in a larger number of job applicants and a more qualified pool of candidates. Upon the approved FY17 budget, the hiring process was initiated for thirty-four (34) Laborer/MEOs. We have identified top candidates and conducted interviews, which will result in filling the positions in the next few weeks and before the winter season. We will continue our extensive recruitment efforts in order to fill open positions as they arise to ensure optimum efficiency in all DPW&P divisions. The next Opportunity Fair specific to DPW&P positions will be held on October 1, 2016.

### ***Identified Vulnerability #3: Program Needs to Remain Current***

The current system of overseeing both plowing and sanding operations has been in place for many decades. Over the years, we have made a significant effort to update many facets of the Program and have successfully incorporated new technologies into the Winter Program such as the use of the Customer Service Center, Road Weather Information System integration, the use of tablets by snow inspectors on the road with a major reduction of time-consuming paperwork. However, the reality is that the command structure of the Winter Program has been unchanged for at least 35 years. In the meantime, the bar has been understandably raised and expectations increased by the motoring public. Winter has been and always will be a challenge due to the unpredictability of Mother Nature and we will always stress the need to realistically manage those expectations.

### ***Recommendation***

One goal of the proposed revisions to the Snow Program is to reduce the time to complete operations after a winter weather event. This goal needs to be accomplished without affecting the competing goal of improved quality. To ensure that winter operations are both efficient and of the desired quality, two new winter operations coordinators will be assigned as needed to the Snow Program. The two coordinators will report directly to the commissioner and assistant commissioner and will be on the streets during events assessing the inspection and supervision teams. They will have direct control over resources and manpower in order to provide needed coverage of all streets in the city. The winter operation coordinators will be responsible for follow-up on complaints and will put procedures in place where needed to prevent future complaints for the same issue. The two winter operation coordinators will also assist with the implementation of the new pretreatment system along with sanding and salting operations. As with plowing operations, their functions will be deployment of resources and complaint resolution. The new coordinators will assist the commissioner and assistant commissioner in determining when plowing will begin at 1 inch of snowfall, which has been 2 inches in the past.

DPW&P will be implementing a pretreating system to be used on main arteries, bus routes, and special hill conditions. This treatment will be a liquid brine that can be applied well in advance of

a snow event and remain effective. In the past, DPW&P has applied salt at the start of a snowfall to act as a pretreatment. The purpose of any pretreatment is to melt the initial portion of a snowfall thereby extending the time road conditions remain unaffected. It also acts as bond breaker to reduce the chance of ice pack as snow is plowed. Although only one city on the comparison table above currently uses brine pretreatment, it is used by MassDOT and other local communities and cities across the country. Brine pretreatment has proven to be more effective and less costly to apply than salt pretreatment. Because it can be applied in advance, a larger amount of street miles can be treated than could be accomplished with salt that has to be spread as snow starts to fall.

#### ***Identified Vulnerability #4: Communicating Winter Program Status to the Public***

DPW&P and Worcester Public Schools (WPS) have historically reviewed existing and anticipated road conditions in advance of WPS deciding to cancel, delay, or stay on schedule with school start times. This decision needs to be made by 4:30 a.m. DPW&P also communicates with Emergency Management, Police, and Fire Departments as needed during winter weather events. DPW&P has significantly enhanced its efforts over the years to find and utilize effective methods and platforms to keep the motoring public informed as to the status of our snow fighting efforts. But undoubtedly there is room for improvement. After analyzing the majority of complaints called into DPW&P Customer Service during a snow event, it is clear to us that the majority of calls may have been avoided if callers knew exactly which phase of the snow event City forces were engaged in.

#### ***Recommendation***

This year, DPW&P and the city administration are working to formalize communication with WPS, Emergency Management, Police, & Fire Departments. This will include regular updates as a storm approaches and changing conditions during a storm with the goal of more informed decisions on how to approach road conditions. The Administration and DPW&P will work with large employers, colleges, and hospitals to advance communication regarding storm events.

DPW&P also recognizes the need to keep the public informed about road conditions, ongoing operations, and expected times to complete a phase of snow response. To accomplish this goal, DPW&P Customer Service Center will provide ongoing communications to the public. DPW&P Customer Service will release a Public Service Announcement (PSA) when a Parking Ban will go into effect. This PSA will include if city parking garages are available and will be sent to media contacts, colleges, hospitals, and major institutions and distributed on Alert Worcester, posted on Facebook, Twitter, and the city's website. During winter storms, DPW&P Customer Service will provide regular updates on social media and the city's website on ongoing operations, expected time to complete an operation, and if needed, report accidents, road closures, downed power lines, ice conditions, or shelter openings. Updates will also be added including the Customer Service phones, when decisions are made regarding school closing or delays, trash and recycling collection, and other changes in city services.

#### ***RECENT CHANGES TO THE PROGRAM***

The changes recommended in this report will modernize DPW&P's Winter Program to make it a more effective program as well as more responsive to changing conditions. To implement this new program, DPW&P has created a Winter 2016-2017 Protocol on which all DPW&P staff with oversight of the snow and ice program will be trained. A copy of this protocol is attached to this report.

In addition to the four pretreatment trucks mentioned, DPW&P repurposed four older trucks to be used for liquid applicators. A 6,000 gallon per hour brine machine was also purchased and is now being installed. Sixteen pretreatment routes were developed to match the capabilities of the new equipment. Additionally, two new sidewalk plows were purchased to reduce the time and

manpower needed to complete sidewalk snow removal. This is a critical function that requires human resources after a plowing event when they are often least available. With the assistance of Worcester Public Schools Director of Transportation, all new bus salt routes were developed to meet the current needs of their transportation system. All sanding routes were updated with new maps and barcodes for scanning directly into our customer service system. The Selective Arterial Plowing routes were also revised to optimize efficiency. As is done every summer, DPW&P Central Garage has performed a thorough evaluation and completed maintenance on winter equipment. The age of the fleet requires larger and more costly repairs each year so that these trucks are deemed reliable for the next winter. This year, several trucks required sandblasting and painting of wheels and frames to remove the corrosion that will ultimately end their service.

This year, DPW&P has sent additional staff to the American Public Works Associations Winter Maintenance Training. As with many areas of public works, training and familiarization with current tools and equipment will help determine the applicability to Worcester's needs.

Sincerely,

A handwritten signature in black ink that reads "Paul Moosey". The signature is written in a cursive, flowing style.

Paul J. Moosey, P.E.  
Commissioner of Public Works and Parks  
[#3464 Snow Operations Review]

Attachment

# WINTER 2016 – 2017 PROTOCOL

## I. FORECAST WINTER CONDITIONS

The Department of Public Works & Parks will closely monitor winter conditions forecasts and will review our anticipated response with Emergency Management and Worcester Public Schools as forecasts change. The details of the response plan will vary based on the time of day, temperatures, forecast amounts, potential icing, and duration of the storm. When larger storms or an early or late season storm are forecast, DPW&P will contact hired equipment to determine availability. A determination will be made if a parking ban is needed and the time it will go into effect. A Public Service Announcement (PSA) will be issued in advance to give the public as much time as possible to comply.

## II. STREET DIVISION STAFFING

From December 1<sup>st</sup> through April 1<sup>st</sup>, 3 crews (each consisting of 1 foreman and 3 motor equipment operators along with the regularly assigned day shift) will provide continuous 24 hour-per-day coverage. The foreman will have full authority to call in as many additional city or hired sanders as needed. Should unforeseen winter weather conditions begin, he will also call in a snow supervisor and additional foreman and notify the Commissioner or Assistant Commissioner of Operations whenever there are more than 5 sanders on duty. He remains as the person-in-charge of the overall operation until a snow supervisor reports for duty. One of the primary responsibilities of the on-duty foreman or snow supervisor is to monitor road conditions and report to the Commissioner or his assigned delegate.

## III. SANDING, SALTING, AND PRETREATING OPERATIONS

If forecast conditions warrant, main lines and bus routes will receive liquid pretreatment up to 10 hours before the anticipated start time of a storm. Both sanding and salting operations are headquartered and managed from the Street Operations office on Albany Street. The Clark Street salt shed is used for sanding and salting the north quadrant of the city. A third salt facility, located at the Millbury Street yard, is used as a back-up supply.

### A. *Pretreatment*

Approximately 10 hours before a forecast snow event is predicted to start, a decision will be made whether to pretreat main lines, bus routes, and special salt routes with a liquid salt solution. The purpose of this pretreatment is to reduce the chance of ice pack and provide melting during the early stages of the snow fall.

### B. *Salting Operations*

The objective of salting, either before or after plowing, is to prevent winter precipitation from bonding to the pavement and to improve road conditions. The goal of this Snow and Ice Program is to always be one step ahead of storm or post-storm conditions. The DPW&P official must anticipate a storm at all phases. Steps that may be taken or considered by the DPW&P official include but are not limited to the following:

- Call as many sand spreaders (hired and city) into duty as are needed.
- Call an outside inspection team of 1 snow supervisor and 4 snow inspectors into duty.
- Prepare for Selective Arterial Plowing operation if warranted.

As soon as enough snow has fallen to lightly cover streets so the salt will be held on the pavement, the salting operation will be put into effect by the DPW&P official on duty if pretreatment was not applied or snow intensity warrants.

When weather forecasts indicate the potential for adverse road conditions to develop near or during rush hour (6:00 a.m. to 9:00 a.m. and/or 3:00 p.m. to 7:00 p.m.), loaded salt spreaders may be dispatched to pre-designated locations and will begin salting at the driver's discretion or as directed. A snow supervisor and a second foreman, however, will be called into duty whenever the total number of sanders on duty exceeds five. This staffing level will be used primarily when waiting for a storm to arrive or when responding to sanding complaints post-storm.

### ***C. Sanding Operations***

The objective of the sanding operation is to spread sufficient sand on the snow or iced roadway surface to provide traction to make it safe for vehicle travel. Sanding of the city streets begins only when plowing finishes or as warranted.

### ***D. Equipment***

Equipment includes all city sanders, city loaders, hired calibrated sanders for salting, and a sufficient number of small sanders for special routes. Each sander is required to report in good operating condition and with a full tank of fuel. Drivers must be familiar with City of Worcester streets and should have an up-to-date street database in their possession. The operators have the inherent responsibility to dispense enough salt or sand to be effective but not so much as to be wasteful. One snow supervisor and 4 inspectors will monitor sanding and salting operations. They will have the full authority to direct and divert a sand truck in the field but should notify the inside supervisor of any such change. They are to ensure that operators are sanding or salting on their assigned routes and that they are doing so efficiently and effectively.

## **IV. SNOW PLOWING OPERATIONS**

The commissioner or assistant commissioner will determine when a plowing operation will begin. The objective of the snow plowing operation is to plow snow from curb to curb and as close to the surface of the road as possible as quickly as possible. The snow plowing operation headquarters is at the Street Operations office at 29 Albany Street.

A representative of the Police Department will be called when plowing operations begin and remains on duty until plowing operations are completed or as directed by the Department of Public Works and Parks official in charge. A representative of the Fire Department may be called if needed. The Police official will aid the snow supervisor or winter operation coordinators in removing cars interfering with snowplowing operations and those in violation of the winter snow ban. During all plowing operations, the following people will be on duty: a radio dispatcher at the Streets Division, the Customer Service Center manager or senior customer service

representative, director or assistant director of Streets, and at least one winter operations coordinator.

**A. *Pre-storm Readiness***

When an accumulating snowstorm is forecast, the department will call into service: 1 inside supervisor for the office, 2 foremen to staff the two sand/salt depots, 3 loader operators, and MEO operators to operate all city sand/salt equipment. A winter operation coordinator will assign an inspection team of 1 outside snow supervisor and 4 outside snow inspectors. In the event of a plowable forecasted snowstorm, additional personnel will be called in to mount snowplows and prepare equipment.

**B. *Selective Arterial Plowing***

The objective of selective arterial plowing (SAP) is to provide bare pavement or the most favorable road conditions possible during early storm conditions. The DPW&P has established 13 selective arterial plow routes consisting of 144 linear miles of key critical main line/arterial streets prone to traffic tie-ups particularly at the onset of a snowstorm. This option of selective arterial plowing may be used in advance of general plowing under conditions that do not warrant a full plowing operation (at a given time) but require attention due to traffic conditions.

**C. *Mobilization Procedures for Calling Out Snowplows***

It will be the responsibility of the inside supervisor on duty to carry out the following:

1. Notify each of the 4 quadrant supervisors and the 2 main line supervisors to call their inspection team. The inspection team will call their hired equipment to report to duty. If a supervisor is not available, Snow Headquarters will call the inspection team for that area and then call in an alternate supervisor.
2. Notify the following divisions: Water, Sewers, Sanitation, Parks, and Central Garage. The Sewer Division will be responsible for the operation at Millbury Street.
3. Notify the Street Operations equipment supervisor who will call in drivers, loader operators, and laborers to work on plows, chains, etc.
4. Notify the Police Department that city plows have been called out and request that a police official report to duty at Snow Headquarters.
5. Notify the Fire Department that city plows have been put into operation. Request a fire official if needed.
6. Notify the Customer Service Manager to open the Customer Service Center. The Customer Service Center will notify the media and post on social media and the city website.

**D. *General Description of Plowing Operations***

All of the approximately 500 public and private streets within the city limits are contained in the city's Snow Plow Program. The city is divided into four area quadrants for plowing purposes. The major arterial streets are divided into two sections; north and south. Each of the area quadrants are under the control of a snow supervisor. Six snow supervisors manage the city's plowing operations in the field. Each of the area supervisors has 4 teams consisting of 2 snow inspectors. Each main arterial supervisor has 2 two-person teams. Each of the 20 inspection teams is assigned plow equipment that is directed and controlled by the inspection team so

plowing within the designated route can be completed efficiently and effectively. A typical snowplow route is 25 linear miles and is assigned 15 pieces of snowplow equipment.

- **Chain of Command** - The snow inspectors and alternates are responsible for keeping their area supervisor informed of their progress. The area supervisors then report to Snow Headquarters where the operation is monitored.
- **Cars Blocking Plowing Operations** - If a vehicle blocks plowing operations, a police officer will ticket the vehicle and a tow truck will be sent to the area to tow the ticketed vehicle. Cars illegally parked on private streets generally can't be ticketed or towed unless they obstruct the safe passage of an emergency vehicle.
- **Plowing of Intersection** - Main line inspectors should be aware that some signalized intersections are controlled by detectors embedded in the pavement within the intersection itself. In the case of turn lane controls, it is necessary to plow close to the curb so vehicles using the turn lane are able to activate the signal.
- **Deep Snow Plowing** - In the event of a deep or heavy snowfall, the snow inspector will instruct his drivers to plow each side of the street adjacent to the gutter before plowing the middle section of the street. This creates room for snow pushed from the middle section of the roadway towards the gutter.
- **Cars Parked on One Side of Street** - In general, snowplows should plow away from parked cars particularly on streets where parking is allowed on one side only.
- **Bus Routes** - The snow inspector should be familiar with bus routes in his area and give priority to these streets.
- **Discharging Sanders for Snow Plowing Operation** - At the conclusion of a plowing operation, sanding and salting of certain streets in the city begins.
- **End of Plowing Operation** - At the conclusion of each plowing operation and before any inspectors and supervisors are dismissed, all equipment must be taken off the clock and signed out via the mobile application either by the equipment operator or the inspector to ensure proper payment to hired equipment and proper accounting of the cost of the storm.

#### ***E. Limited Snow Plowing Operations***

Occasionally snow storms occur that do not call for the mobilization of the entire snow fighting fleet. During these storms a limited number of city and hired plowing equipment may be able to effectively remove the snow from all streets. When the decision is made to perform the Limited Snow Plowing Operation, a notification process similar to that used for General Snow Plowing will occur. Each route inspector calls pre-determined hired equipment from the plowing equipment list. At no point will the safety or quality of the plowing operation be sacrificed for fiscal economy. If a supervisor or inspector determines there are not enough plowing vehicles to properly and efficiently complete their route then more snow plows will be hired for that event.

#### ***F. Snow Pack Control***

Conditions that lead to the development of snow pack include intense snowfall, wet heavy snow, rain during or after snowfall, traffic, and falling temperatures. Typically, snow pack will most likely develop on flat streets. In addition to pretreating arterial streets, DPW&P will employ two strategies to prevent or minimize the occurrence of snow pack. The first strategy is to conduct **interim salting** on streets that are prone to snow pack when conditions warrant. Careful attention

will be given to actual road conditions for the presence of pack during plow operations and relayed to Snow Headquarters. If snow pack does develop, a second strategy will be as follows:

- During post-storm salting operations, the outside supervisor immediately reports the presence of snow pack to Snow Headquarters.
- An immediate inventory of the main arterials of the city will be made to determine the presence and extent of snow pack.
- Streets where snow pack has developed will be **immediately** re-salted. Supervisors will determine the most effective method of treating snow packed streets. The specific materials used to treat snow pack often depend on factors such as weather conditions or temperature, thus salting could be enhanced with liquid calcium chloride or other snow melting chemicals.
- Immediately determine the number of crews needed to remove the snow pack.

#### **G. *Emergency Calls Policy***

1. Calls from private citizens for emergency service to sand, salt, or plow will be dealt with as follows:
  - a. Request for service for impending future purposes (e.g., medical appointment in several hours). Calls of this nature received at the Customer Service Center are logged in with the resident's name, address, and telephone number and a description of the reason for their request.
  - b. Request for immediate service such as heart attack or fire. Calls of this nature received at the Customer Service Center are immediately reported to the inside supervisor at Street Operations and a work order is logged with the resident's name, address, and telephone number. The Customer Service Representative will notify Emergency Management if the caller did not call in advance. In either case above, if there is any doubt, the requested emergency service will be provided with verification to follow.
2. Calls from Police or Fire  
Emergency calls from Police or Fire will come with the introduction that "this is an emergency." The DPW&P will treat all such calls as emergencies and respond accordingly. The call taker should immediately notify the ranking on-duty official after obtaining all necessary information including the name of the person making the call. The official will take steps to provide, without delay, the emergency service requested including diverting on-route equipment to the requested location. A snow inspector or foreman will check conditions in the field. If the service requested is not an emergency, then it will be attended to in the normal schedule of operations.

### **V. SPECIAL AND MISCELLANEOUS ASSIGNMENTS**

#### **A. *Snow Removal***

Snow plowed from the area in front of City Hall will be removed as soon after the storm as is practical.

**B. Public Sidewalks**

As soon as possible after the end of a plowable storm, the 23 miles of sidewalks under the responsibility of the Department of Public Works and Parks will be cleared.

**VI. SNOW COMPLAINT & RESOLUTION SYSTEM POLICY**

**A. Customer Service Request System**

When the DPW&P Customer Service Center (located at 76 East Worcester Street, telephone number is **508-929-1300**) is opened, the Director of Street Operations and the Customer Service Manager will decide when to begin logging all complaints received at the Customer Service Center

**B. Protocol for Handling Citizen (Customer) Complaints**

The Customer Service Center is equipped with an automated telephone system. The greeting will inform the resident of the current operation during a snow event. After the resident listens to the greeting, the call will then be answered by a trained customer service representative. The representatives enter pertinent information including the caller's phone number and answers questions in a courteous manner. The customer service manager will be in constant contact with the inside supervisor during a storm event and will keep the customer service representatives up-to-date with information to assist them with answering citizen questions. Under no circumstances will a customer service representative deviate from these procedures. "Difficult" calls can be transferred to the senior representative or to the customer service manager.

**C. Stage One Complaints/Pre-General Plowing**

In the early stages of a predicted plowable storm, DPW&P forces will be salting main lines and bus routes. During this time period, only emergency complaints are reacted to immediately in accordance with the Emergency Calls Policy. The Customer Service Center will open during non-business hours (before 7:30 a.m. or after 5:00 p.m.) at predetermined times based on forecast or when conditions warrant.

**D. Stage Two Complaints/General Plowing**

In the early stages of general plowing, only emergency complaints will be addressed immediately. Complaints will be sent via mobile app to the inspector and supervisor assigned to the area. The inspector will check complaints and take appropriate action if needed. All complaints received before general plowing is completed will be reviewed by the area inspector.

**E. Stage Three Complaints/Post General Plowing**

At the completion of general plowing and after the contractor's equipment has been released, the Customer Snow Request System will print all plowing complaints received after the final stage of plowing has occurred. A crew will be retained to respond to post storm plowing customer complaints. The inside shift supervisor oversees the continued plow operations. The supervisor then determines the period of time (no longer than 2 hours) between snow complaint and resolution system printouts. An outside team inspects the complaints and reports back to the inside supervisor for appropriate corrective action.

***F. Stage Four Complaints/Sand/Salt***

For post-storm sanding/salting, the customer service representatives receive and input all customer complaints. The customer complaints are logged in by locations, nature of complaint, and call time. Only **emergency** complaints will be immediately addressed. At the conclusion of sanding/salting operations but prior to the release of any equipment, customer complaints will be given to the outside supervisor for resolution. Please note that Stage Three and Stage Four occur simultaneously.

***G. Shift Transition***

During shift transitions, there will be a 30 minute overlap so the incoming supervisor can become fully acquainted with operations status. The closing of the Customer Service Center will be based on call volume and after discussions between the customer service manager and the individual in charge at the Street Division.

***H. Storm Reports/Evaluation***

A storm report will be initiated by the supervisor in charge upon commencement of any winter operations and will continue through the duration of the event including all sanding/salting and plowing operations. After each severe winter storm, a review meeting will be scheduled by the assistant commissioner to critique the department's response to the storm.

***I. Training***

All snow supervisors and snow inspectors will participate in a session prior to the winter season to review this protocol. Training will include hired equipment requirements and payment, proper plowing techniques, new policies and/or procedures, as well as a roundtable discussion of issues that arose during the previous winter. Customer service representatives will be required to attend a mandatory in-house customer service-training course.

# Worcester Winter Operations

A series of horizontal lines of varying lengths and colors (teal, white, teal) extending from the right side of the slide towards the center.

Department of Public  
Works & Parks  
September 20, 2016

# Current Winter Operations

- Pre-Storm Prep
- Operations
- Post Storm Operations

# Vulnerability #1: Fleet Size

- Recommendations
  - Four new vehicles added this year
  - Long term capital plan for further additions
  - Raise hourly rates

# Reliance on Hired Equipment

City	Avg. Snowfall	Snow budget	Equipment Owned	Equipment Hired	Percentage Hired
Worcester	62	\$4M	77	380	83%
Boston	48	\$23M	130	370	74%
Lowell	55	\$1.2M	105	70	40%
Manchester, NH	67	\$1.2M	46	0	0
New Bedford	33	\$500,000	120	0	0
Portland, ME	70	\$1.2M	36	4	10%
Springfield	61	\$1.6M	21	175	89%

# Hired Equipment Rates 2015-2016

<b>Equipment Type</b>	<b>Worcester</b>	<b>MassDOT</b>
Pickup/ 3/4 Ton	\$60.00	\$72.00
Over 35,000 GVW 3 axle	\$100.00	\$117.93
Large Sander	\$73.00	\$138.94
XL Sander	\$80.00	\$153.93

# Vulnerability #2: Vacant Positions

- Recommendations
  - Prioritize Hiring
  - Continue Recruitment/Training Efforts
  - Adjust Starting Pay Step

## Vulnerability #3: Reliance on Old Methods

- Recommendations
  - Two new snow operations coordinators
  - Pre-treatment of main arteries
  - Additional staff attended training

# Vulnerability #4: Communication

- Recommendations
  - Formalize communications process between DPW and Worcester Public Schools, WRTA, Fire, Police, and Emergency Management
  - Up to the minute information to the public through press, social media, text alerts