
Common Council Work Group to Review Snow Policies & Procedures

FINAL REPORT

June 2010

Members of Work Group to Review Snow Policies & Procedures

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Appendix

Original documents and materials provided and used over the course of the Work Group’s tenure (compiled by Ald. Lauren Cnare/Lisa Veldran)

- CCOC Member Issues from January 5, 2010 Meeting
- Memo dated 2/26/10 from Al Schumacher to Work Group members entitled, “Common Council Work Group to Review Snow Policies & Procedures (Responses to Issues Identified by CCOC members from 1/5/10)”
- Table of Ideas and Costs/Notations Compiled by Al Schumacher, Madison Street Superintendent
- Memo from Ald. Chris Schmidt, dated 3/5/10 entitled “Notes and thoughts form 3 snow Work group meetings”
- Communications and Practices: Snow Emergency
- 2010/2011 Snow & Ice Notification/Outreach Methods & Tools (updated 5/10/10)
- Links to agendas and minutes of the Common Council Work Group to Review Snow Policies & Procedures meetings

Background

In the last several years, Madison has seen above-average snowfalls. While the overall time to plow all city streets has remained effectively steady, the early heavy snowfalls caused heavy rutting and other quality of life issues across the city. On December 8-9, 2009 a large storm dumped approximately 18” of snow across the City. The snow had a high water content and the resulting road conditions led Mayor Cieslewicz to order a top-to-bottom review of the City’s response. The report was available on December 24, 2009 and outlined several operational changes that could be implemented to improve the quality of response to snowstorms.

At its first meeting following the December 2010 storm, the Common Council Organizational Committee asked several questions of the Mayor’s Office and Streets Superintendent Al Schumacher. It was determined that a Council Work Group be formed to look at the issues in more detail, with the goal of formulating policy and budget adjustments that would improve the city’s response to snowstorms.

From the beginning, it was recognized that the record-breaking and near record-breaking snowfall seasons of recent years were remarkable in their magnitude and the stresses they had placed on the City’s resources. It was also recognized that the Streets Division had not been growing at a pace to match the City’s growth, and that several new technologies had recently become available that could be explored. Previous equipment improvements had made up some of the difference between the growth of the City and the growth of the Streets Division, but one of the main questions the Work Group set out to address was whether the Streets Division needed additional resources and employees in order to function optimally. The Work Group also examined new equipment options, changes to practices such as pre-wetting of pavement with a brine solution and exceeding salt policy limits in extreme cases, and improving dissemination of public information.

After a series of meetings attended by a group of Alders, City Staff, and a representative from the Mayor’s Office, the Work Group compiled the recommendations in this report. Additional background on the process is available in the Work Group agendas and minutes and other attachments to the report.

Recommendations

The efficacy and speed with which snow is removed is the largest wintertime challenge faced by the Streets Division. It requires a fleet of vehicles with specialized equipment and properly trained drivers, thorough knowledge of weather and pavement conditions, and substantial consumable supplies, specifically road salt. While recognizing that Madison is located in a northern climate and subject to severe snowstorms, the Work Group identified several steps that could be taken to improve the city's snow removal. The recommendations fall into three categories: personnel; equipment, operations, and data; and public communications.

Equipment, Operations, and Data:

The traditional snow removal and salting techniques have seen ongoing refinement over the last several decades, driven in part by a desire to provide better results as well as increasingly constrained budgets, increases in the prices of materials such as salt, and the recognition of the impact of salt on our lakes and our aquifer.

Increased uses of liquids as pre-wetting agents and anti-icing agents

The street ruts experienced in Madison in recent years were primarily due to early, wet, and heavy snowfalls that were compacted by traffic as they bonded to relatively clean pavement. Early snowstorms traditionally tend to be lighter than those seen in recent years, allowing for a layer of salt and sand to be placed on the roads before the heavier storms often seen later in the season. The salt and sand reduced formation of ruts by minimizing bonding of snow to pavement.

To combat the bonding of snow to pavement, it is suggested that the City increase the use of liquids as pre-wetting agents. In 2010 the Streets Division took delivery of four 1,035 gallon liquid brine tanks with spray bars that fit on 5-ton dump trucks in an effort to anti-ice salt routes prior to the beginning of storms. These units should be in service in time for the winter season of 2010-2011. In addition, the Streets Division is interested in piloting the use of organic liquids to blend with salt brine to bring the effectiveness of salt to a lower temperature than the 15 °F that salt alone is effective at. An 80/20 blend of salt and Geomelt, an organic compound, would lower salt use but at a slightly higher cost than salt alone. Two storage tanks (6000 gallons each) cost \$3700 for the tanks and \$1200 for pumps, plumbing, and power. Geomelt at 80/20 blend costs \$1/gallon, and 20,000 gallons would be needed. Reducing salt use is critical to the quality of our groundwater and lakes and the cost of Geomelt is a very modest investment in improving our environment.

Estimated cost: \$29,800 for Geomelt and storage tanks

Pavement temperature measurements and forecasts

Knowledge of pavement temperatures is important for planning the best snow removal and anti-icing strategy ahead of snowstorms. Currently there is one in-pavement temperature sensor in Madison, operated by WisDOT. Pavement conditions can vary widely throughout the City. It is recommended that the City install a series of pavement sensors and attach them to the City's data network to provide realtime measurements of pavement temperatures. Initially five (5) In-Ground Pavement Sensors would be installed to assist in determining when to effectively utilize salt and pre-wetting agents and to assist in determining the amount of salt that should be spread. Installation of sensors should be coordinated between Streets, Engineering, and Traffic

Engineering to take advantage of street working to lower installation costs. Additionally, pavement temperature forecasts are in the RFP for the new Weather Services Contract. The real-time data would provide important verification of the forecasts should they be obtained. Generating such forecasts is extremely difficult and should not be seen as a replacement for actual measured temperatures.

Estimated cost: ~\$26,000 for this project for purchase of the sensors, installation, software setup charges and maintenance charges.

Plow blade technology improvements

The traditional curved steel plow blade has seen refinements over time, but further improvements are possible. For example, steel blades do damage to pavement and curbs and blades with a hard rubber surface or edge that contacts pavement directly could provide improved performance for some types of snow. Other improvements including redesigned blades that more effectively clear snow and different styles of blades such as underbelly plows should be investigated. It is recommended that the Streets Division continue to investigate new blades and related technologies, with particular focus on the options that reduce damage to road surfaces while not sacrificing snow-clearing performance.

Estimated cost: New blades would be a capital cost; blades can be used as demonstration units for free in 2010/2011.

Increase salt routes from 30 to 34 routes

The number of simultaneous salt routes impacts how quickly and well the primary routes are cleared. Increasing the number of simultaneous salt routes without increasing the lane miles of streets that are being salted would increase snow-removal performance. It is recommended that four (4) additional trucks and four (4) additional operators be hired to achieve this improvement. Some additional funding for overtime would be required as well. Additional operators could also be utilized for brush collection, leaf collection, etc.

Estimated cost: ~\$840,000.

Plow at 2" instead of 3"

The current policy calls for all streets to be plowed when accumulations reach 3" or greater, resulting in more snowpack on side-streets than under previous policies that required earlier plowing of all streets. Plowing when accumulations reach 2" or greater would increase the number of full scale plowing operations from the current average of 5 times per year to an average of 9 times per year. To achieve this recommendation some additional overtime funding and additional funding in the Streets Division purchased services budget would be required to fund additional contractor hours. Cost breakdown:

4 SMO I's @ \$51,984	\$207,936 (operating)
4 5-Ton Dump Trucks @ \$148,000/each	\$592,000 (capital)
Additional Overtime Costs	\$ 36,012 (operating)
Total Cost:	\$835,948

Estimated cost: ~ \$836,000

Personnel

Snow plows need operators. The City relies on a combination of Streets Division staff and hired contractors for manage snow plowing operations. Over the last several years the city has relied increasingly on contractors and on improvements to technology to offset a lack of new Streets Division employees. As with any basic City service, balancing full time staff with hired contractors requires frequent review to ensure that the City's needs are met in the most efficient fashion possible.

Snow Plow Contractor RFQ

With an unpredictable workload and competition for snowplowing services from malls and other commercial business, the City is at a disadvantage when it comes to finding quality contractors to augment the paid Streets Division staff. Some parts of the city have chronic problems with plow contractors. It is recommended that the new RFQs for snow plow contractors, to be released in the summer of 2010, contain parameters that improve the quality of the type of equipment as well as to clarify City of Madison contractor expectations.

Estimated cost: Tighter requirements may result in slightly higher costs.

Additional Streets Division Staff

Staffing levels at the Streets Division have decreased by ten (10) over the last ten years, despite substantial growth in lane miles of city streets. The impact of this year-round has been somewhat mitigated by technology improvements such as plow blade extensions, automated refuse and recycling pickup, and so on. However, recent changes to Streets Division services such as changes to large-item pickup and brush pickup have highlighted the pressure the Division's staffing has been under. In order to improve snow removal performance as well as address other year-round needs, it is recommended that twenty (20) additional Streets Division employees be hired over the next 3 years to make up for the pressure on providing basic services in a timely and efficient manner.

Each City dump truck with plow costs about \$148,000 and each operator is about \$50,000 per year. New staff could be used year round for some or all of the following tasks:

1. Restore funding and schedule for monthly brush collection. Two (2) Street Machine Operator II's would have to be restored to the Streets Division budget to restore brush to the previous monthly collection service from April through October. Two seasonal/hourly employees would be needed as well. The budget impact would be *approximately \$150,000*.
2. Year round staffing of Self Help Drop Off Sites. Add Two (2) Street Machine Operator I's and staff the Self Help Drop Off sites 12 months per year. *Estimated cost: ~\$104,000*.
3. Leaf Collection. Due to growth in City forest, tonnages for leaf and yard waste collection are continuing to rise annually. The Streets Division feels that we will require two (2) additional complete crews of personnel and equipment to keep current levels of collection the same in the future. *Estimated cost: ~\$712,000*.
4. Increased Street Sweeping. Some streets in the City are swept weekly in the Clean Streets/Clean Lakes sweeping areas. The remainder of the City is swept on a 3-4 week cycle. This idea would increase the frequency of street sweeping in the areas of the City that are swept every 3-4 weeks by adding one additional sweeper each side of town and the corresponding additional operators. *Estimated cost: ~\$525,000*. Another option would be to

just hire the operators and scheduled them at night to sweep. While this would save on the cost of the sweeper, we will have to overcome the issue of noise during the overnight hours. *Estimated cost: ~\$215,000.*

5. Additional Stump Removal Crew. To ensure that all stumps on city-owned property could be removed on a timelier basis, a third stump grubbing crew could be added to work longer into the fall and begin earlier in the spring. *Staffing and equipment costs: ~\$400,000.*
6. Winter Weekend Staff at Self Help Drop Off Sites. If proposal #2 above isn't a viable option, Streets staff would like to open the Drop Off Sites for one to two weekends per month during the winter to assist our customers by creating some convenient hours to utilize the facilities. *This would be additional overtime costs of either \$2,425 or \$4,849 depending on one or two weekends per month. Hours may require flexibility if staff is also used for plowing operations.*

Estimated total cost: Twenty (20) additional Streets Division staff would cost ~\$1,000,000 per year, with additional capital equipment costs associated with those jobs, some examples are listed above.

Public Communications

While many of the potential and recommended changes to the way Madison responds to citizen expectations for winter storm management are technical or physical in nature, the Work Group recognized that communications efforts are also very important and can be effective in setting expectations and giving citizens strategies to avoid or minimize surprises or hassles, especially during declared snow emergencies, and on how to participate in efforts to get the city back to normal operation in winter.

Estimated cost: Staff time would be required.

Increase Overall Winter General Information

It is recommended that the city create a "Winter Wondering?" publication or web site document to remind residents of general winter safety and awareness tips.

This should include standard safety reminders, such as:

- Vehicle winter maintenance and safety strategies:
 - Tire maintenance (good tread, proper pressure)
 - The differences between front wheel drive, all wheel drive and four wheel drive driving and stopping capabilities.
 - Know your vehicle clearance and handling on snow and ice.
- Reference to Madison's winter parking and shoveling regulations: Highlight what's new and what's changed, specifically regulations, penalties and options.
- What does a snow emergency mean and what should you expect to happen?
- How to learn more: Offer the latest options to be on e-mail, text, RSS, social media or other real-time communications vehicles.
- How to ask questions, report complaint and get action.

Estimated cost: Staff time would be required.

Inform Neighbors How to Help Each Other During Snow Events

There are limits to what the City can be expected to accomplish following a snowstorm. The Work Group strongly suggests that methods be developed to encourage “Neighbors helping neighbors,” primarily by providing additional information through the City website and media outlets. This could include:

- Publicizing a listing of agencies that assist elderly/handicapped residents who need assistance in snow removal. These agencies are listed in our website and are: Independent Living, South Madison Coalition of the Elderly, W. Madison Senior Coalition, North/Eastside Senior Coalition and East Madison/Monona Coalition of the Aging.
- Encouraging neighbors to help each other, especially those less able, with clearing snow.
- Publicize the Dane County Timebank where residents can exchange snow clearing services between neighbors.

Estimated cost: Staff time would be required.

E-Communications

One way to use text messaging is to provide updated plowing information. Text-messaging notifications for people who sign up for them are sent when there is a declared Snow Emergency. More frequent updates from the Streets Superintendent could be made available to subscribers via text message with a link referring to the full update that is currently provided online. Updates could include information such as “residential streets are half plowed.”

Estimated cost: Staff time would be required.

Mass Media Recommendations

A text crawl could be provided on Madison City Channel with updated information. This requires a character generator, which would also be used by MCC for meetings, especially those held outside of room 201 in the City-County Building.

IT, Streets, and the Mayor’s Office are encouraged to coordinate with local media (radio, television, Madison.com, Isthmus, etc) to better distribute our information.

Estimated cost: \$8000 for the character generator, plus \$800 staff time with additional cost for overtime.

Continue to work with the UW, Edgewood and MATC to increase notice to students

It is recommended that the City’s Information Technology staff continue working with their counterparts at the UW, Edgewood, and MATC to explore and implement cost-effective methods to improve notification of students of snow-related news.

Estimated cost: Staff time would be required.

Tow Alert

The City of Madison currently issues a news release that lists the locations of streets that, due to becoming narrow, will be towed during a snow emergency. This is done every time the “tow package” is utilized during a declared Snow Emergency. In addition, the Streets Division receives reports from Streets staff, Madison Metro, the Fire Department and from Parking Enforcement on streets that are becoming too narrow and need to have snow removed from them. Finally, the Report a Problem website provides Streets staff with locations where streets are becoming narrow.

It is recommended that the City provide e-mail, text message, website, and social media alerts when the “tow package” is utilized. E-mail and text message signups for different geographic areas, such as near East, near West, and isthmus would provide specific information for subscribers.

Estimated cost: Staff time would be required.

APPENDIX

Original Documents and materials provided and used over the course of the Work Group's tenure
(Compiled by Ald. Lauren Cnare)

Common Council Organizational Committee Member Issues January 5, 2010

- Create some type of registry for elderly/handicapped assistance in snow removal from driveways. (Ald. Judy Compton)
- Notification of plowing time estimates for working residents (Ald. Shiva Bidar-Sielaff)
- Better use of media for public education and information during winter storms (Ald. Tim Bruer)
- Narrow street alert (Ald. Marsha Rummel)
- Work with UW to disseminate information to students/look at Seattle for ideas (Ald. Bryon Eagon)
- Review City budget in terms of investment in equipment, staffing levels
- More use of independent contractors to snowplow (possibly create a registry)
- Bus stops needing to be cleared - ADA issue (Ald. Chris Schmidt)
- Look at alternatives to salt/sand (e.g. organic products like starch)
- Look at sand/salting policy (Ald. Michael Schumacher)

Initial Response (Feb. 23, 2010) and Update (Feb, 26, 2010) Feb. 26, 2010 is the only copy provided here:

CITY OF MADISON INTER-DEPARTMENTAL CORRESPONDENCE

DATE: February 26, 2010

TO: Ald. Tim Bruer, District 14
Ald. Mark Clear, District 19
Ald. Chris Schmidt, District 11
Ald. Lauren Cnare, District 3
Ald. Paul Skidmore, District 9

FROM: Al Schumacher, Street Superintendent

SUBJECT: **Common Council Work Group to Review Snow Policies & Procedures
(Responses to Issues Identified by CCOC members from 1/5/10)**

I have been asked to provide written responses to the ten questions brought forward by members of the Common Council who were at the CCOC meeting on January 5, 2010.

1. *(Ald. Judy Compton) Create some type of registry for elderly/handicapped assistance in snow removal from driveways.*

There currently are a number of agencies that assist elderly/handicapped residents who need assistance in snow removal. These agencies are listed in our website and are: Independent Living, South Madison

Coalition of the Elderly, W. Madison Senior Coalition, North/Eastside Senior Coalition and East Madison/Monona Coalition of the Aging.

In addition, there could be neighborhood groups that could assist those in need that could be developed through neighborhood list serves and meetings.

Finally, the Streets Division could solicit some of the private snowplow companies that perform residential snow plow removal and see if they would be interested in providing a service on an on-call basis, when situations would become dire for the elderly/handicapped. The residents would be provided names and telephone numbers and the residents would deal directly with the private companies. I am not sure this will work because most of the residential snowplow companies have a full customer base and they could only assist the elderly/handicapped after their regular routes are complete.

2. *(Ald Shiva Bidar-Sielaff) Notification of plowing time estimates for working residents.*
3. *(Ald Tim Bruer) Better use of media for public education and information during winter storms.*

Since both of these issues revolve around the same theme of notifying residents when the City will be plowing their streets, I thought I would incorporate these together.

One method of informing people about snow emergencies and when all residential streets in the City will be plowed could come in the form of a rolling scroll across the bottom of City Channel. City Channel currently does not have the required character generator to make this happen. City Channel has informed me that the character generator would cost approximately \$8000 plus an additional \$800 annually for software license costs as well as. In addition, City Channel personnel would have to be involved as the Snow Emergency is declared and would have to be kept updated if regular plowing updates were part of this method in order to update the progress. City Channel staff time overtime would need to be accounted for as well.

The idea of offering interactive maps that portray real time or close to real time plowing progress information is a possibility but is GIS/GPS based. The trucks involved in the plowing need to be equipped with GPS systems in order for this to be viable. When we plow all residential streets in the City, we utilize about 90 City pieces of equipment that are GPS equipped but we also hire about 88 private contractors that do not have GPS systems installed. This would diminish the effectiveness of this type of technology at this time. Cities such as Anchorage, Alaska, Greensboro, NC, Louisville, Kentucky and Spokane, WA currently utilize this technology. Staff from IT and Streets will be looking into this technology further for applications and costs. Other Cities like Seattle, WA have very informative winter websites but do not have interactive maps.

We currently provide text-messaging notifications for people who sign up for them notifying them when there is a declared Snow Emergency. There is additional text technology available that could break the City down into geographical areas or quadrants where separate text messages could be sent out notifying people when plowing would commence and how long the plow is expected to take. These texts could be updated and sent at various times during the plowing effort. Information Technology has scheduled a demonstration of this type of text-messaging technology for the City to investigate further.

4. *(Ald. Marsha Rummel) Narrow street alert.*

The City of Madison currently puts out a press release that lists the locations of streets that, due to becoming narrow, will be towed during a snow emergency. This is done every time the "tow package" is utilized during a declared Snow Emergency. In addition, the Streets Division gets reports from our own staff, Madison Metro, the Fire Department and from Parking Enforcement on streets that are becoming

too narrow and need to have snow removed on them. Finally, the Report a Problem websites provides Streets staff with locations where streets are becoming narrow.

We certainly could provide email alerts, much like the Snow Emergency email alert, that would allow people to sign up receive an email as to which streets are becoming narrow and when the Streets Division will be removing the snow from those streets. This would also be another tool is notifying people so they don't get their cars towed when we do have to remove snow.

5. *Ald. Bryon Eagon) Work with UW to disseminate information to students. Look at Seattle for ideas.*

The winter of 2009-2010 saw the first piece of UW student plowing information dissemination. Sarah Edgerton, from IT worked out the details to get the Snow Emergency notification placed on the UW homepage when a City of Madison Snow Emergency has been declared. The City has been trying to get the University to assist in getting this information out in the past but until this season, has not been successful in getting their approvals. Sarah is continuing the effort to try to include this information to MATC and Edgewood College students as well.

6. *Review City budget in terms of investment in equipment, staffing levels.*

Employees:

In 2001, there were 142 Street Division employees that were available to operate snowplow equipment. In 2010, there are 141 Street Division employees that are available to operate snowplow equipment.

- The Street Division had 149 field employees in 2005 but budget cuts in 2006 (5 field employees were eliminated due to automated collection efficiencies) and in 2010 (4 additional field employees due to budget cuts surrounding elimination of the brush schedule and large item collection going from weekly to bi-weekly.)

There have been technological advancements to our scheduled services and the efficiencies seen in those services that have allowed the Division to eliminate positions without seeing a drastic, noticeable decrease in our basic services. What is not seen is the less visible types of services that we perform that are not scheduled services. With 8 fewer employees now than in 2005, there are less people to perform work such as crosswalk snow removal and brush collection in the winter. We schedule a couple of less leaf crews in the fall and there are fewer people to remove weeds from concrete islands in the summer and early fall. The graffiti crews are scheduled less often when winter weather is around, fewer staff is available to perform automated cart repair, exchanges and deliveries and fewer staff is available to fill the sand barrels and to restock the sand sites located in City parks. Finally there is less operator training that is being done, which in the long run will be a detriment to our organization. While none of these on their own are earth shattering, adding them all up does cause some erosion in the quality of life that is expected in Madison. City of Madison residents expect these services and expect them to be done in a timely fashion.

There have also been situations during the last 3 difficult winters where we have been unable to fully staff some of our snow and ice overtime shifts. As a result, some of our required snow and ice work took longer to complete than it should have. I am not inferring that our work force is at all to blame regarding this. Local 236 has been outstanding. We have historically seen overtime acceptance rates throughout the winter seasons in the neighborhood of 58%-59% from members of Local 236. Over the last 3 seasons, we have seen the rate well above the 60% acceptance rate with this winter being at about a 65% acceptance rate. The issues are fatigue, family responsibilities and of course the restrictions placed on our employees with regards to the Commercial Drivers License (CDL) regulations. Fatigue definitely plays a role when staff is working 16 hours a day for multiple days. There are only so many consecutive 16

hours shifts one can work without fatigue becoming an issue. Operators also have families and the responsibilities that come with having families and at times they must tend to those responsibilities. Finally, our operators all are required by Federal law to hold a valid CDL. There are a number of criteria that prohibit employees who hold CDL's from working for a period of time if these criteria are not met.

Miles of Streets:

In 2001 there were 710.04 miles of streets in the City of Madison.

In 2010 there are 765.73 miles of streets in the City of Madison.

- There has been a street mile increase of 7.8% during that time frame.

Equipment:

There are currently 132 pieces of equipment available for snowplowing on City streets between Streets, Engineering, Parks Construction and Forestry.

- 13 Streets Division units are equipped with wings to increase plowing efficiency
- 38 spreader units are equipped with liquid applicators
- Parks and Engineering have additional units equipped for snow removal for bike paths, ice rinks and sidewalks that cannot be utilized on the streets.

There have been 7 additional pieces of snow related vehicles or equipment added to the fleet since 2000.

- There have been 2 large dump trucks, an endloader, 3 small tractors for sidewalks and crosswalk snow removal and 2 snow blowers mounted on the endloaders.

Contractors:

Approximately the same number of private contractor snowplows are hired currently as there was 10 years ago.

7. More use of independent contractors to snowplow (possibly create a registry)

The City hires private contractors to assist the City's fleet of snowplows. In addition to the approximate 90 City pieces, 88 private snowplows are hired from 16 different contractors. The contractors are required to have a minimum of an 11' blade in order to plow for the City. The Street Division will be going out for RFP's for snow plow contractors during the summer of 2010 in order to improve the quality of the type of equipment that the private contractors are using as well as what the City's expectations and requirements are of them.

Many of the private contractors have expressed to us that they would work for the City of Madison if they could be given more opportunities to plow than the average 5 times per year that the City plows all residential streets. They state that they can currently put more employees to work by getting commercial parking lot contracts then they can by working for the City because the private parking lots want to be plowed for all snows and not just when accumulations reach 3" or more as is the City policy.

8. (Ald. Chris Schmidt) Bus Stops needing to be cleared – ADA issue

Currently City crews remove snow from bus stops for Madison Metro. This work is performed after the plowing is completed, the salt routes are in good winter driving condition, the residential streets are sanded, the alternate side plow backs are completed and there is no need for snow removal due to vision hazards at intersections and median crossovers. There are 2088 bus stops in the City, which are divided into 7 bus stop routes. Crews from Parks Construction, Engineering and Streets work in conjunction to complete the bus stop snow removal. Depending on the amount of snow to be removed, it usually takes from 5 to 10 days to complete all 2088 bus stops. At times, private contractors have been used to assist City crews when City crews aren't able to complete the bus stop snow removal on a timely basis due to other snow removal responsibilities.

There have been discussions of City ordinance revisions that would require property owners who own property where bus stops are located to be responsible for cleaning the snow from the bus shelters, pads and areas where the buses stop.

9. *Look at alternatives to salt/sand (e.g. organic products like starch)*

The City of Madison currently uses a 23% salt brine solution and applies the salt brine at a rate of 10-12 gallons per ton to the rock salt as it is applied to the street. This speeds up the melting process without diluting the effectiveness of the salt.

Calcium Chloride is effective at lower temperatures but is very corrosive to any metals, cars, bridges and plow equipment. Magnesium chloride is a yet another liquid chemical that can be applied that keeps snow and ice from bonding to pavement but is even more corrosive than Calcium Chloride not only to metals but to concrete as well. Potassium Acetate is yet another liquid deicing chemical. It offers the advantage of being less aggressive on soils and much less corrosive.

Agricultural byproducts such as Geomelt (beet juice) or other organic cornstarches have also shown some effectiveness and work at lower temperatures. These agricultural based products are more environmentally friendly than using chloride products but are extremely expensive. In addition to the increased cost, Geomelt has other issues to overcome as well. It is a very viscous, sticky material that will cause clogs in the spray nozzles of our liquid applicators. It also has an aroma of degrading vegetables and the spray from the roads will get on the undercarriages of vehicles and be carried into driveways, garages and homes by vehicles, pedestrians and pets.

All of the liquids, with the exception of salt brine are very expensive. For example, we currently purchase salt brine at \$.15 per gallon, while calcium chloride is selling for \$.52 per gallon and magnesium chloride is selling for \$1.34 per gallon. Geomelt is selling for close to \$2.00 per gallon and Potassium Acetate is selling for \$5.00 per gallon.

Liquid Material	Gallons Used	Cost Per Gallon	Cost Per Season
23% Salt Brine	29456 *	\$0.15	\$4,418
Calcium Chloride	29456*	\$0.52	\$15,317.12
Mag. Chloride	29456*	\$1.34	\$39,471.04
Geomelt	29456*	\$2.00	\$58,912.00
Potassium Acetate	29456*	\$5.00	\$147,280.00

* Gallons used in 2008-2009

Cities such as Beloit, WI use blends of liquids and are national leaders in the use of liquids to aid their snow and ice response. Beloit uses forecasts to determine which blend of liquids they should use per storm. Beloit blends salt brine, Geomelt and in extreme conditions some Calcium Chloride as well. They use blends that are 80/20 – salt brine/Geomelt, 50/50 – salt brine/Geomelt and 80/15/5 – salt brine/Geomelt/calcium chloride. Using blended liquids to pre-wet salt lowers the temperatures that the salt remains effective. The City of Madison needs to study the Beloit model more closely to determine how to best use liquids and whether it is fiscally responsible and environmentally sound to store and use blends as anti-icing or pre-wetting agents to be used with rock salt. The most common blending ratio that is used is an 80% salt brine and 20% Geomelt blend. Use of this blend when pre-wetting with rock salt lowers the temperature that salt remains effective to about 0 degrees F. An 80/20 blend of Geomelt and

salt brine costs about \$.57 per gallon to apply, which is quite expensive compared to pure salt brine at \$.15 per gallon.

An additional cost that has to be factored in, if any agricultural byproduct is used, is the adding of an anti-foaming material that keeps the agricultural based product from foaming and overflowing the holding tanks during the warm months. This anti-foaming liquid is about \$32 per gallon and 1 oz. is required for every 100 gallons of agricultural based anti-icing product.

The Streets Division will be meeting with representatives from a Geomelt dealer within the next few weeks and will be meeting with representatives from the City of Beloit as well in the near future to get a better grasp on how liquids and blends are utilized and the effectiveness that they see.

10. *(Ald. Michael Schumacher) Look at sand/salting policy.*

Through a Common Council Resolution from 1975, the Streets Division has restricted salt use to only main arterials, main connector streets, Madison Metro bus routes, streets around hospitals and schools and those with major hills and curves. Only about one-third of City streets have salt applied to them during snow events. The remaining streets have sand applied at the hills, intersections and curves with about 10% salt mixed in to prevent the sand from freezing. Salt is applied at 150 pounds per lane mile, while most municipalities in the area apply salt at about 300 pounds per lane mile.

The City currently is paying \$62.00 per ton for salt and around \$8.00 per ton for sand. The current snow and ice supply budget is \$807,100 for 2010. On an average winter where 49.9" of snow falls, approximately 9,000 tons of salt is used or \$558,000 worth of salt. There would be definite budgetary implications if the salt policy were changed.

Aside from budgetary impacts, there would be an environmental impact if the salt policy were changed to increase salt use. Chloride levels are continuing to rise in our ground water. There are currently a few wells in the City that are approaching chloride levels that are becoming alarming. Additional salt applications would definitely negatively impact the chloride levels in our ground water.

This is a policy decision that must be made by members of the Common Council after balancing constituent expectations for bare pavement roads in the winter with the negative impacts that salt has on the health of its residents and the effect on the environment. The Committee on the Environment will definitely be opposed to any salt use increase, as will the Dane County Lakes and Watershed Commission. These two groups, along with the Mayor, will want to focus more on getting the surrounding municipalities to bring their salt policies more in line with the Madison policy rather than increasing the salt use by the City.

Table of Ideas and Costs/Notations
Compiled by Al Schumacher, Madison Street Superintendent

List of Ideas, Suggestions, Service Enhancements:

Idea, Suggestion or Service Enhancement Idea	ROUGH COST ESTIMATES or Comments
I. Use of Liquids with Rock Salt as Pre-Wetting A. Salt Brine; Geomelt, Blends	Salt Brine @ \$.15 per gallon - 30,000 gallons - \$4500 Geomelt @ \$2.00 per gallon 30,000 gallons - \$60,000 Blends @ \$1.80 per gallon for 70%/30% salt brine/geomelt blend
II. Use of Liquids as Anti-Icing (Before storm begins) A. Salt Brine; Geomelt, Blends	4 replacement vehicles have been ordered with 1035 gallon liquid tanks mounted on them for use beginning winter of 2010-2011
III. Pavement Temperature	
A. Forecasting	\$1000 - \$1500 per year additional to the \$1000 per year current cost
B. Vehicle Mobile Sensors	\$600 each (currently have 5 units installed)
C. 5 In Ground Sensors	\$25,175 for 5 units
IV. Plow Blade Technology A. Continue to Study plow blade improvements	Will Continue to study plow blades for improvements and evaluate costs
V. 50/50 Salt/Sand Mix A. To be used in extreme cold as abrasive	Very little fiscal impact
VI. Elderly/Handicap Snow Removal Assistance	
A. Independent Agencies List	No Cost to Resident
B. Neighborhood Groups	Volunteer
C. Private Snow Plow Companies	Property Owner Cost
VII. Use of Media/Public Education During Snow Events	
A. Rolling Scroll at City Channel	\$8000 - character generator + \$800 annually + staff overtime
B. Text Messaging Updates	Looking into feasibility of using text messages to update plowing information
VIII. Narrow Street Alert	Work with PD Parking and Fire and put out press releases and email alerts and web site alerts
IX. Work with UW to get Snow info to Students	Work is ongoing with IT taking the lead
X. Bus Stop Clearing	Possible City Ordinance Revision requiring property owners to clear
XI. Interactive Mapping Using GPS during City Plowing	Staffing requirement of 650 hours to get set up Message/Information could be misleading 100 units @ \$757.70 each plus licensing and cell phone charges
XII. Snow Plowing Contractor RFP	City to send out RFP to contractors for improved contractor response
XIII. Decrease Plow Time from 9+ hours to around 7 hours	52 Additional pieces of equipment 52 SMO I's @ \$51,984/each + 52 plow trucks @ \$148,000/ ea. or; 52 additional private contractors (if they can be found) @ \$164 per hour per unit.

List of Ideas, Suggestions, Service Enhancements:

Idea, Suggestion or Service Enhancement Idea	ROUGH COST ESTIMATES or Comments
XIV. Increase Salt Routes from 30 to 34 Routes	4 SMO I's and 4 Vehicles for \$835,948
XV. Plow Residential Streets at 2" vs. Current 3"	4 additional citywide plowings (ave. from 5 to 9) \$200,000 to plow ave. storm - Cost of \$800,000
XVI. Increase Street Sweeping Frequency	Option #1 - Daytime Sweeping 2 SMO III's & 1 SMO II plus 2 sweepers for \$524,393
	Option #2 - Night Shift Sweeping SMO III and 1 SMO II for \$214,393
XVII. Leaf Collection - Keep at Current Levels	4 SMO I's and 4 Hourlies plus 2 Rear loader Packers for \$711,544
XVIII. Stump Removal Service Increase	3 SMO III's and 2 SMO I's plus Stump Grubber and Utility Locator for \$398,492
XIX. Brush Collection - Restore Monthly Schedule	2 SMO II's for \$124,848
XX. Staffing Self Help Drop Off Sites	2 SMO I's for \$103,968
XXI. Weekend Staffing of Drop Off Sites in Winter	1 Weekend per month - \$2,425
	2 Weekends per month - \$4,850
XXII. Creation of 10 Major Arterial Salt/Plowing Routes	Will be utilized in major storm events when we can't keep the 30 salt routes plowed and open due to extreme event

Memo from Alder Chris Schmidt: 15 March 2010

Notes and thoughts from the 3 snow working group meetings:

- 1) Additional Streets staff: While we've benefited from efficiencies in recent years, we are still growing and have various needs that could be better met. Our reliance on contractors for snow removal is bothersome and does not appear to be sustainable. Additional FTEs for the Streets Department is prudent and would directly benefit our plowing operations. Additional equipment would be needed as well. The report by Mr. Schumacher made it clear we had plenty for new staff to do aside from plowing.
- 2) Salt use: There is a balance between mechanical snow removal and salt use, and if we are to reduce reliance on salt we need to improve our plowing, both with additional staff and equipment and equipment upgrades. Otherwise, while we can find ways to improve our practices, our capacity to stop the damage caused by the chloride we've added to the environment is very small, and at best we can minimize making that worse. Regarding salt routes, there may be some that, despite annual reviews, are not necessary for us to continue.
- 3) Equipment upgrades: The "steel blade plus rubber squeegee" type of plow blade is very intriguing and if it works out for us might both reduce packing and damage to our streets.
- 4) Preventing snow packing is very important: To the extent possible, especially early in the season, doing what we can to reduce pavement bonding will help a lot.
- 5) Pavement temperature sensors: In-pavement temperature sensors are a good investment and should be deployed in a variety of locations and in different pavement types when the possibility presents itself with road work.
- 6) We need to expand public education and awareness about what the city does for snow.
- 7) Provide public with information about what they can do to make winter easier:
 - a. Maintain tires (good tread, proper pressure)
 - b. Front Wheel Drive versus All Wheel Drive type cars: FWD vehicles have a harder time driving in snow, at the least drivers should acknowledge what their vehicles can and cannot do.
 - c. Cars are getting lighter, makes gaining and retaining traction more difficult.
 - d. Neighbors helping neighbors: This already happens a lot, but encouraging it won't hurt. Keeping sidewalks, corners, and bus stops clear helps a great deal.
- 8) Acknowledge that we live in a cold climate: While this is justifiably part of item 7, a couple decades of relatively mild winters led to a sense of surprise at the last three, all of which started strong. Winter storms are inconvenient and often dangerous, and should be respected as such.

Actions:

- 1) Hire additional Streets staff and provide suitable equipment. Perhaps a target of 20 FTEs over the next three years.
- 2) Support equipment upgrades and pavement temperature sensors.
- 3) Improve aspects of public education.
- 4) Encourage improved salt management, including increasing number of salt routes to make application more efficient per Superintendent Schumacher's recommendation and potentially reducing miles of salt routes.

This list is not meant to be exhaustive, but it seems that the best service improvements with respect to snow and ice would come from boosting our staffing level and available equipment.

Communications and Practices: Snow Emergency

Changes in Snow Emergency Notification Methods

For 2008/2009 Winter:

- Implemented a Text Messaging System: 2400 subscriptions as of Sept. 15, 2009
- Created a Winter Parking Portal – centralized all information on Winter Parking:
<http://www.cityofmadison.com/residents/Winter/Parking/>
- Implemented the City of Madison Facebook page to notify residents of Declared Snow Emergencies and Winter Parking Policies
- Implemented the City of Madison Twitter account to notify residents of Declared Snow Emergencies
- Implemented RSS feeds on Declared Snow Emergencies and Snow Plowing Updates
- Created a Snow Plow Updates application that allows Al Schumacher to send out an email list and post snow plowing updates to the web site from one submission
- Declared Snow Emergency Automatic Icon: populates the City of Madison web site main page; Winter Parking portal; My account portal;
- Increased the distribution of Winter Parking printed materials
 - a. Hand out with UW Student Metro Bus passes
 - b. Hand out with MATC Student Metro Bus passes
- Re-Branding Campaign of all print materials
- When renewing their residential parking permits online, residents can sign-up to be notified of Declared Snow Emergencies via email
- Provided Madison.com (per their request) the XML code for notification of a Declared Snow Emergency

For 2009/2010 Winter:

- Continued Text Messaging System: 3414 subscriptions as of December 17, 2009
- Extended the Winter Portal to add more information:
 - Accessibility in the Winter:
<http://www.cityofmadison.com/residents/Winter/accessible.cfm>
 - Snow Safety Tips:
<http://www.cityofmadison.com/residents/winter/snowSafety.cfm>
 - Getting Around in Winter:
<http://www.cityofmadison.com/residents/Winter/gettingAround/index.cfm>
 - Keeping Informed:
- Report a Problem: For Snow & Ice Removal added three new reporting tools for residents:
 - Curb Ramp Needs Plowing
 - Bus Stop Needs Plowing
 - Crosswalk Needs Clearing
- If requested, added the ability for Mayor Cieslewicz's blog to automatically post to the main City site, and Winter portal with Snow Updates
- Added new alerts:
 - 12/3/09 Notice of Meeting Cancellation: 12 subscriptions as of Dec. 17, 2009
 - 12/3/09 Sidewalk Snow Removal Alert: 182 subscriptions as of Dec. 17, 2009

2010/2011 Snow & Ice Notification/Outreach Methods & Tools (Updated May 10, 2010)

- Facebook Campaign: Promote using Facebook to alert friends of a Snow Emergency. See <http://www.ci.minneapolis.mn.us/snow/snow-type.asp> as a prototype
- Salt Route Maps: Overlay them on Google Maps – easier viewing and downloading.
- Winter Parking Portal: Re-working winter parking content, <http://www.cityofmadison.com/residents/Winter/Parking/index.cfm>), making it more user friendly. Investigate having a focus group to review portal for usability & content.
- Address Lookup for Winter Parking Rules: Show what are the winter parking rules on any street in Madison.
- Create a “Snow Tow” campaign: See St. Louis Park, MN as a starting point: http://www.stlouispark.org/webfiles/File/Snow_Parking_Flyer.pdf
- Work with the University on including information on their UW Transportation portal: http://www2.fpm.wisc.edu/trans/winter_weather.asp and http://www2.fpm.wisc.edu/trans/winter_weather_commuting.asp
- MATC & Edgewood: Continue the discussion to see if they would include alerts on their web sites notifying students of Declared Snow Emergencies.
- Madison Metro Fall Ride Guide: Place a Winter Parking ad in the Ride Guide (80,000 printed).
- All of the City web site (portals & agency sites): Placing the “Declared Snow Emergency icon” on the main page of each site. We will need to get approval from the Mayor’s Office.

Example Communications follow.



WINTER IN MADISON PARKS

www.cityofmadison.com/residents/Winter/activities

Don't hibernate this winter, come out and play in Madison Parks! As the temperature drops, the fun just gets started! Check out the new Play Madison Parks Winter web site and keep updated on the ski trail and outdoor ice skating conditions. Keep informed at <https://my.cityofmadison.com>

You can sign up to receive updates on:

- Winter Activities
- Cross-Country Skiing Current Conditions
- Outdoor Ice Skating Current Conditions
- Madison Parks General News
- And many more!

Find us on Facebook: www.facebook.com/cityofmadison

Follow us on Twitter: www.twitter.com/madisonwinter

HELPFUL CONTACTS

www.cityofmadison.com/reportaproblem

Streets/City Sidewalks

East: (608) 246-4532

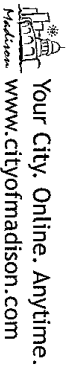
West: (608) 266-4681

TTY: (866) 704-2315

Residential Sidewalks

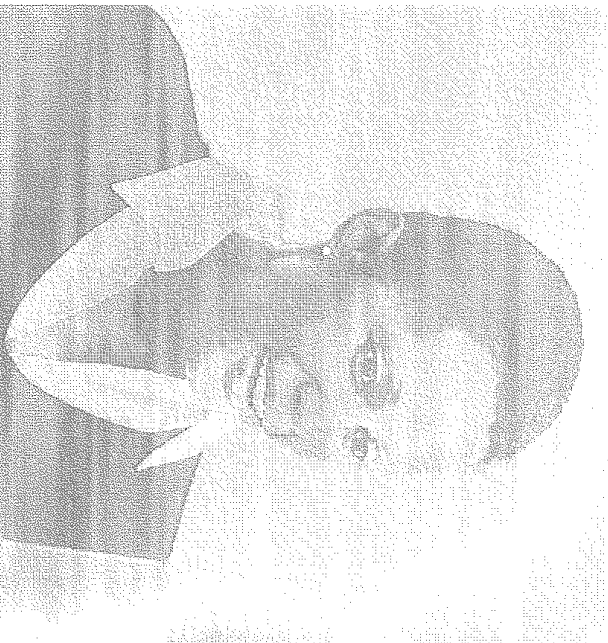
Call (608) 266-4551

TTY (866) 704-2314



Your City. Online. Anytime.

www.cityofmadison.com



KEEPING YOU INFORMED & KEEPING US INFORMED THIS WINTER



Your City. Online. Anytime.

www.cityofmadison.com



WINTER UPDATES

www.cityofmadison.com/winter

Keep informed about winter parking, snow plowing updates, and when sidewalks need to be cleared. Sign up at <https://my.cityofmadison.com>

Keep informed:

- Declared Snow Emergencies
- Snow Plowing Updates
- Cancelled Weekly Meetings
- Shoveling Walks Updates

Find us on Facebook: www.facebook.com/cityofmadison
Follow us on Twitter: www.twitter.com/madisonwinter



REPORT A PROBLEM

www.cityofmadison.com/reportaproblem

Each year we receive calls from residents with disabilities who experience difficulty moving about in the community due to the snow. Large snow falls combined with Madison's number of streets, crosswalks, curb cuts and bus stops make it virtually impossible to clear snow from every site on a timely basis. The City asks residents to assist in letting the City know of problem areas by reporting issues online to Report a Problem or by phone.

You can notify the city on problems such as:

- Street(s) need plowing or sanding
 - Curb ramp or crosswalk needs clearing
 - Bus stop needs clearing
 - Sidewalk needs clearing
- www.cityofmadison.com/reportaproblem

Streets/City Sidewalks

East: (608) 246-4532
West: (608) 266-4681
TTY: (866) 704-2315

Residential Sidewalks

Call (608) 266-4551
TTY (866) 704-2314



WINTER ACCESSIBILITY

I am elderly and/or disabled and I just received a ticket. Is there anything I can do?

Yes. Please call the Building Inspection Division at (608) 266-4551 or TTY (866) 704-2314 and ask to speak to a Property Maintenance Inspector to find out more.

www.cityofmadison.com/residents/Winter/accessible.cfm



WINTER PARKING

www.cityofmadison.com/residents/Winter/Parking

Call the Winter Parking Hotline at (608) 261-9111 or you can sign up to receive Declared Snow Emergency notifications at <https://my.cityofmadison.com>

Keep informed:

- Declared Snow Emergencies
 - Declared Snow Emergency Text Messages
- Find us on Facebook: www.facebook.com/cityofmadison
Follow us on Twitter: www.twitter.com/madisonwinter



METRO TRANSIT

www.mymetrobus.com

Receive service updates, and weekly detour updates as emails or text messages. Keep informed at <https://my.cityofmadison.com>

You can sign up to receive updates on:

- Rider Alerts - General
- Weather Alerts
- Detour Alerts
- And many more!

Find us on Facebook: www.facebook.com/cityofmadison
Follow us on Twitter: www.twitter.com/mymetrobus



MY CITY OF MADISON: STATISTICS

My City of Madison Accounts		Email Lists	
Total accounts:	11668	Total subscriptions:	26364
Active accounts:	10230	Number of unique subscribers (email addresses):	11212
Inactive accounts:	1438		
Locked accounts:	232		
Users that have agreed to AlertMadison terms:	3740		

EMAIL LISTS STATISTICS

What's New with My Account	
Email List Name	Subscribers
My Account Updates	465

City Employment	
Email List Name	Subscribers
Employment Opportunities	736

Winter	
Email List Name	Subscribers
Declared Snow Emergency	5082
Snow Plowing Updates	1634
Sidewalk Snow Removal Alert	278

Mayor's Office	
Email List Name	Subscribers
Mayor Dave's Blog	190

Metro Transit	
Email List Name	Subscribers
Rider Alert - General	2526
Detour Alert	673
Weather Alert	1405
Supplemental School Service Alert	170
Paratransit Alert	102
MATC Service Alert	30
UW Service Alert	446

Links to Common Council Work Group to Review Snow Policies & Procedures Agendas & Minutes

<u>Meeting Date</u>	<u>Agenda</u>	<u>Minutes</u>
February 9, 2010	Meeting cancelled	
February 17, 2010	Agenda	Minutes
February 25, 2010	Agenda	Minutes
March 8, 2010	Agenda	Minutes
March 17, 2010	Meeting cancelled	
April 22, 2010	Agenda	Minutes
June 23, 2010	Agenda	Minutes

