2016-2017

SNOW AND ICE CONTROL PLAN

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Department of Public Services

2016-2017

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Map of all snow routes can be provided upon request i
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Map of all snow routes can be provided upon request

City-wide Map Information on line at:

City of Cincinnati - Snow Priority Routes

Executive Summary

The Department of Public Services' (DPS) Snow and Ice Control Plan is designed to serve as an operational guide for the City of Cincinnati outlining the effective use of resources, identifying effective communication strategies and defining the levels of service residents can anticipate. This plan strives to maximize services while minimizing the impact to the environment as well as being cost efficient.

The goal of DPS is to remove snow and ice from our roadways as rapidly and practically as possible. This does not always mean pavement will be bare and dry, but it will be passable. While the severity of each winter storm is unpredictable, DPS will continue to work within its resources to maintain the highest level of customer service possible while balancing efficiency in snow and ice control.

A well planned and executed winter operations plan is imperative. Snow and ice control can account for more than 33% of Traffic and Road Operations Division's (TROD) budget. Preparation includes an analysis of previous year's issues and challenges, equipment readiness, manpower, emergency equipment rental, training, material inventory and current technology.

TROD is responsible for coordinating winter roadway safety for approximately 3,112 lane miles. These lane miles consist of thoroughfares, bridges, overpasses, side streets, cul-de-sacs and alleyways. Priority routes are determined by traffic volumes, access to emergency routes, access to public transportation and access to schools. The priority plan for snow removal divides streets into 67 primary routes, 97 residential routes and 54 (priority 3) pickup truck routes.

Individual snow events in Cincinnati vary in severity. During a typical winter, the City averages 20-25"of accumulation with temperatures of 20°F and above. A variety of factors are considered when preparing for a snow-and-ice event including:

- Rate and accumulation of snowfall
- Moisture content
- Presence of sleet and freezing rain
- Temperature during and after storm
- Wind velocity
- Time of day
- Storm duration
- Intervals between storms

These various factors are considered when establishing protocols. Depending on the response necessary for the event, snow removal operations will include primarily the DPS divisions of TROD, Facilities Management, Fleet and Neighborhood Operations; however, other City agencies and staff may be included depending on the magnitude of the weather event.

Making the City of Cincinnati's Snow and Ice Control Plan effective requires the cooperation of many partners including, but not limited to, DPS, emergency responders, and most importantly the citizens of Cincinnati. This document is divided into several categories containing practices DPS has developed, adopted and tested for the purposes of enhancing its snow and ice control plan.

Communications

The winter operation's communications program is designed to keep citizens informed of the department's efforts to ensure safe driving conditions whenever there is potential for significant weather.

Customer Service

DPS executes snow and ice control from the City's call center. During a snow event, the call center maintains various staffing levels of up to 24-hours per day to assist with operations, police, fire and customer service requests.

Phone-based Service Requests

- Customer service staff monitor the 591-6000 phone line and enter service requests into the Customer Service Request (CSR) system.

Customer Service Web based Service Requests

- The team dispatches crews to address complaints which are entered via 5916000.com.

Customer Service Phone App Service Requests

- Service requests can be entered in the "Fix It Cincy!" app for iPhones and Androids.

Dispatching

- Customer service works in conjunction with the operations staff to ensure crews are systematically treating routes.
- Customer service notifies crews of specific complaints and emergency conditions which need to be addressed by the operations crews.

Media Request Intake

- Media outlets contact the Customer Service Center at 591-6000 to request information or to schedule a phone/camera interview.
- The customer service representative receiving the request enters a service request which notifies the public information team, operations superintendent, and department director.

Public Information

Message Development

- On an ongoing basis, operations managers are responsible for providing operational and logistical information as well as road conditions to the public information staff. During larger events, formal planning meetings help facilitate information sharing.
- The public information staff is responsible for preparing and distributing communications.

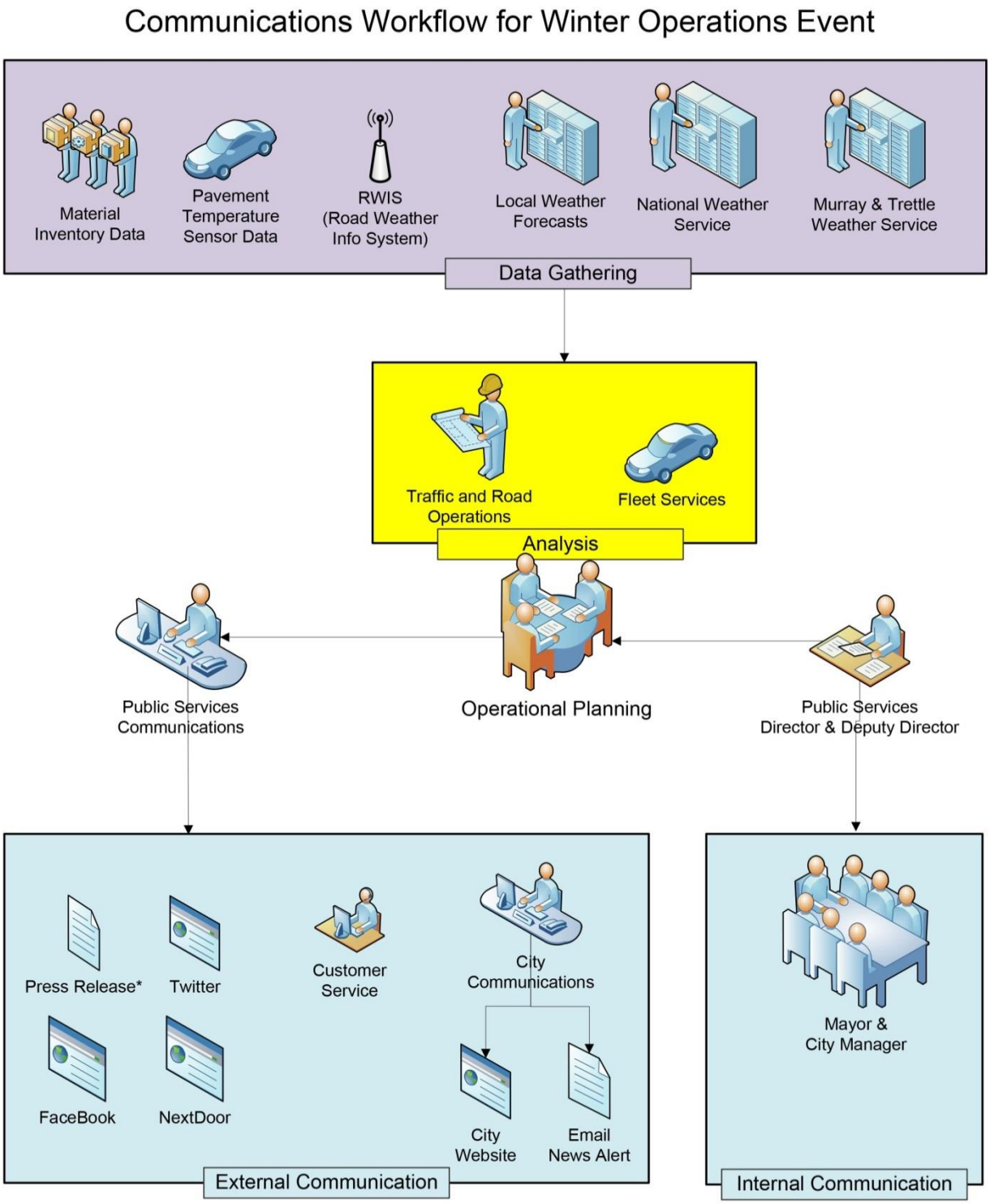
Message Distribution

- Media releases are published to coincide with broadcast media cycles. Typically, press releases are published at 3:00 a.m., 9:00 a.m., 3:00 p.m., and 9:00 p.m.

Social Media Responses

- The public information team monitors social media accounts and responds to questions/concerns as efficiently as possible.
- While DPS will be monitoring social media accounts, citizens are encouraged to submit service requests via the City's call center, website or mobile applications to ensure a rapid response.

Communications Workflow



*Press Releases are distributed via email to local media, City Council, City Administration, Community Councils and Neighborhood Partners

General Guidelines

Monitoring Snow/Ice Events

Beginning in November and continuing through March, DPS monitors the weather forecasts for any approaching winter storm. The weather monitoring service is vital to operations as it predicts local weather and road conditions. Daily forecasts include snow and ice warnings, as well as extended weather forecasts and predicted pavement temperatures. Pavement temperatures are also monitored by mounted temperature controls attached to vehicles and handheld devices carried by supervisors. This information assists the department in determining the type, timing and duration of snow and ice operations. Forecasts are sent electronically to DPS seven days a week at a minimum of two times per day. The department reviews these reports, as well as predictions from local media outlets and forecasts from the National Weather Service.

Planning for Snow/Ice Events

Staff continuously monitor weather conditions and will begin planning once a storm is forecasted. Each storm is **individually evaluated** during a pre-event planning meeting. This meeting is used to develop an operations plan. A traditional plan will examine the following:

- Type of event
- Expected accumulation
- Predicated pavement temperature
- Materials inventory
- Treatment types
- Usage strategy
    - Pretreating ahead of the event (anti-icing)
    - Treating during an event (deicing)
- Condition and availability of equipment
- Scheduling of crews
    - Depending on the expected size, duration and temperature of the event, crews may work 12-hour shifts (7 a.m.-7 p.m. /7 p.m.-7 a.m.) or smaller teams may be deployed.
- Scheduled public activities
    - Conventions, concerts and sporting events, etc. are all taken into consideration when developing a response plan.

Strategies

DPS deploys two strategies when pretreating and treating roadways: anti-icing and deicing. While both of these strategies make use of chemical freezing point depressants, they differ in its fundamental objective. Anti-icing techniques are used to prevent the formation or development of bonded snow and ice by timely applications of a chemical. This strategy is a proactive approach and used before or at the very beginning of a storm, typically on dry pavement. Deicing techniques are used as a bond-breaking method only after snow or ice has accumulated and bonded to the road.

Anti-icing begins with the use of dry, liquid or pre-wetted materials. Crews will proactively anti-ice bridges, hills and overpasses on a regular schedule during the winter season. Because of the increased danger to the public, these locations are given special attention. These locations remain on a regular schedule throughout the winter season as they're more susceptible to ice.

Other locations will receive pre-treatment based on predictions from the weather forecast. It's important to note streets not receiving anti-icing material before the snowfall **may not** receive material until the pavement temperature has dropped and pavement conditions are wet, slushy or light snow covered to avoid wasting material which could possibly be plowed away.

Deicing techniques begin with plowing, using dry or liquid materials, application of heat (friction) or a combination of these practices. Rock salt has generally been used as a deicing agent in the past as it was once the most economical option and available in large quantities. However, this is no longer practical as the cost of salt has increased.

The method of applying salt to the pavement is only effective when temperatures are above 20° to 25° F, there is sufficient precipitation or moisture on pavement, and traffic levels are appropriate. Salt, a dry deicing chemical, becomes effective once wet and dissolves into a brine solution. When pavement becomes wet, it uses moisture from water, snow or slush on the road surface to make brine.

During unusual circumstances, it may become necessary to implement certain measures to provide temporary traction or deicing material conservation through the use of abrasives. Sand, which is considered an abrasive, can be used when snow bonds are formed and rapid increased friction is required. If temperatures reach a level too cold for chemical deicers to work, the department will use sand to provide for better traction. Once the bond is broken and sufficient snow and ice are removed, DPS can return to preventive anti-icing operations.

Plowing is the most effective practice for removing compacted snow or loose ice before applying chemicals. If pavement and snow are cold and dry, and the snow in tire tracks is not adhering to the pavement, application of chemicals will have an insignificant affect. Plowing at this point is the appropriate operation.

Snow is hauled away when large amounts of accumulation occur where plowing is not possible. Crews haul the snow using backhoes and front-end loaders to fill trucks and haul the snow to an authorized snow dumping area.

Materials

The City has the capability to stockpile a maximum of 27,000 tons of rock salt (sodium chloride), 39,000 gallons of calcium chloride, 78,000 gallons of salt brine and 21,500 gallons of beet juice. These materials are strategically stationed throughout the City to allow for efficient operations (Appendix A). In addition, the City will contract for additional resources to ensure stockpiles are able to be replenished throughout the winter season.

<u>Liquid Calcium Chloride</u>

- Liquid calcium chloride is used in pre-wetting, anti-icing and solid blend applications. The benefits of liquid calcium chloride provide the moisture needed to form liquid brine and initiate melting action. Once melting begins, the bond between ice and pavement can be broken, allowing for mechanical removal.

<u>Beet Juice</u>

- Beet juice is a byproduct of the sugar beet and an organic compound that reduces the environmental effects associated with salt. Beet juice, in conjunction with salt, has many advantages. It is environmentally safe, has longer residual effects and is effective at much colder temperatures (-20°F).

When temperatures fall below 20°F, liquid calcium chloride and/or beet juice will be applied to every ton of salt to treat the pavement. This process of pre-wetting provides the moisture to make brine, allowing for faster melting action. Applying a pre-wetting material to salt minimizes scatter during application by as much as 40%, reducing the need for repeated applications and saving necessary resources.

Level of Service/Priorities

Street prioritizations were developed using the Cincinnati Area Geographic Information System (CAGIS), a division of Enterprise Technology Solutions (ETS) mapping systems. All major streets, arteries, feeders, alleys, etc. are included in the City's snow and ice control plan.

Streets are treated and plowed based on three categories of route priorities: primary, residential and pickup (Appendix B)

- Primary routes include major thoroughfares and hospital routes
- Residential routes are pathways off major thoroughfares and are still accessible with larger trucks
- Pick up routes are streets which can only be accessed with smaller trucks

All routes are treated by priority beginning with primary routes.

These routes are divided into four regions: North, South, East and West. Crews from these locations address the prioritized snow routes. Supervisors are responsible for directing and coordinating crews to complete snow and ice removal in accordance with the established priority routes. Close radio communication is maintained with all operators to keep abreast of progress on each route.

The following chart summarizes the snow removal actions for specific weather events:

Pavement Temperature Range and Trend	LIGHT SNOW FALL Less than 2 inch per hour						Comments
	Pavement Surface at Time of Initial Operation	Maintenance Action	Recommended Snow Removal Equipment	Pre-Treat 23% Solution of Salt Brine 23% (gal/mile)	Dry/Solid (#/mile)	Prewet Solid (#/mile)	
Above 32°F Steady or rising	Dry, wet, slush, or light snow cover	Monitor Road and Weather Conditions for drops in temperature		20-40			Treat as needed. Treat icy spots @ 100#/mile or 20gal/mile
Above 32°F or below is imminent	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks & Plow	20-40		50 to 100	
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks & Plow		50 to 100	50 to 100	
25°F to 32°F In Range	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks and Plow	20-40		50 to 100	
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks and Plow		100 to 200	50 to 100	
Below 20°F to 25°F In Range	Dry	Apply Liquid or prewetted solid		20-40		100 to 200	Appropriate de-icing liquid may be used in temperatures below 25
	Wet, slush or light snow cover	Apply Liquid or prewetted solid			200 to 300	100 to 200	
Below 15°F to 20°F In Range	Dry	Monitor Conditions					
	Wet, slush or light snow cover	Apply Solid Materials	Salt Spreader and Pre-wetting Tanks and Plow		300 to 400	300 to 400	Appropriate de-icing liquid may be used in temperatures below 25°. If sufficient moisture is present solid chemical can be applied
Below 15°F Steady or falling	Dry	Monitor Conditions					Do not apply chemicals and maintain dry pavement during windy conditions
	Wet, slush or light snow cover	Plow as needed Apply prewetted solid material	Salt Spreader and Pre-wetting Tanks and Plow			200 to 300	

Pavement Temperature Range and Trend	HEAVY SNOW FALL W/ PLOWING 2 inches or more per hour						Comments
	Pavement Surface at Time of Initial Operation	Maintenance Action	Recommended Snow Removal Equipment	Pre-Treat 23% Solution of Salt Brine 23% (gal/mile)	Dry/Solid (#/mile)	Prewet Solid (#/mile)	
Above 32°F Steady or rising	Dry, wet, slush, or light snow cover	Monitor Road and Weather Conditions for drops in temperature	Plow	20-40			Treat as needed. Treat icy spots @ 100#/mile or 20gal/mile
Above 32°F or below is imminent	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks	20-40		50 to 100	Do not apply liquid to heavy or packed snow
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader		200 to 300	100 to 200	Do not apply liquid to heavy or packed snow
25°F to 32°F In Range	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks	20-40		100 to 200	Do not apply liquid to heavy or packed snow
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader		300 to 400	300 to 400	Do not apply liquid to heavy or packed snow
Below 20°F to 25°F In Range	Dry	Apply Liquid or prewetted solid		20-40			
	Wet, slush or light snow cover	Apply Liquid or prewetted solid			Max 400	Max 400	Appropriate de-icing liquid may be used in temperatures below 25°
Below 15°F to 20°F In Range	Dry	Monitor Conditions					Do not apply chemicals and maintain dry pavement during windy conditions. If sufficient moisture is present solid chemical can be applied
	Wet, slush or light snow cover	Apply Solid Materials	Salt Spreader		Max 400	Max 400	
Below 15°F Steady or falling	Dry	Monitor Conditions					Do not apply chemicals and maintain dry pavement during windy conditions
	Wet, slush or light snow cover	Plow as needed Apply prewetted solid chemical	Plow			Max 400	

Pavement Temperature Range and Trend	FREEZING RAIN						Comments
	Pavement Surface at Time of Initial Operation	Maintenance Action	Recommended Snow Removal Equipment	Pre-Treat 23% Solution of Salt Brine 23% (gal/mile)	Dry/Solid (#/mile)	Prewet Solid (#/mile)	
Above 32°F Steady or rising	Dry, wet, slush, or light snow cover	Monitor Road and Weather Conditions, especially bridges and elevated roads	Plow	20-40			Treat as needed. Treat icy spots @ 100#/mile or 20 gal/mile
Above 32°F or below is imminent	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks	20-40			
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks		300 to 400	200 to 300	Heavy rain changing to freezing rain will wash chemicals from roads, load and pre-position trucks on routes to begin treatment as soon as practical
25°F to 32°F In Range	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks	20-40			
	Wet, slush or light snow cover	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks		300 to 400	300 to 400	
Below 20°F to 25°F In Range	Dry	Apply Liquid or prewetted solid	Anti-Icing System or Salt Spreader and Pre-wetting Tanks	20-40			
	Wet, slush or light snow cover	Apply Liquid or prewetted solid			Max 400	Max 400	Appropriate de-icing liquid may be used in temperatures below 25°
Below 15°F to 20°F In Range	Dry	Monitor Conditions					Do not apply chemicals and maintain dry pavement during windy conditions
	Wet, slush or light snow cover	Apply Solid Materials	Salt Spreader		Max 400	Max 400	Appropriate de-icing chemicals may be used in temperatures below 25.
Below 15°F Steady or falling	Dry	Monitor Conditions					Do not apply chemicals and maintain dry pavement during windy conditions
	Wet, slush or light snow cover	Plow as needed	Plow		Max 400	Max 400	As snow continues to fall plow accumulation

When conditions become too severe for traffic flow and parking must be restricted, the City Manager will declare a snow emergency. When a snow emergency is declared, parking is prohibited on snow emergency routes (Appendix C). Vehicles parked are moved to an area designated by the City of Cincinnati Division of Police. Car owners can retrieve their vehicles by calling the City's Call Center at (513) 591-6000.

Garbage Collection

Neighborhood Operations Division will provide garbage collection in most weather conditions. In emergency situations, such as heavy snow and ice, garbage collection may be suspended for the safety of DPS employees. When collections are temporarily suspended, local media outlets will be notified to provide information to the public. DPS will additionally utilize social media and its website to inform the community.

Equipment Maintenance Operating Procedure

A critical factor to an effective and efficient snow and ice removal program is equipment maintenance and availability. It has been established through past research that the benefits of a comprehensive equipment maintenance management program can yield positive results.

Due to the severe nature of the environment for snow and ice control, winter operations fleet requires the highest level of equipment maintenance. To keep equipment in top condition, a regular maintenance routine is followed throughout the winter.

Cleaning all equipment with truck wash and neutralizer is critical to control maintenance costs and reduce downtime. This includes pressure washing truck surfaces, undercarriages, plows and material spreaders. When the operator finishes cleaning the equipment, it is inspected to identify and report repairs that need to be made before the next event.

- <u>Pre-trip Checklist</u>
  - A pre-trip checklist is required for Commercial Driver License (CDL) compliance. Following the checklist will help prevent equipment failures. In addition to the pre-trip inspection, the following list should be used for the pre-trip inspection as well as the inspection performed when the event is over and the unit has been cleaned:
    - **Spreaders**: Inspect pumps, hoses, controls, and fittings. Check spinners, augers, and auxiliary engines.
    - **Hydraulic spreader controls:** The two major components are the pump and the controls, whether manual or automatic. Operators need to be familiar with spreader controls. Understand how the auger, or conveyor, and the spinner react at various settings.
    - **Snow plow blades:** Inspect blades thoroughly after each use. If blade wear is excessive, it may damage the moldboard. Since snow plow blades do not wear evenly, they need to be replaced when they are worn at any point. Operators should check blade wear throughout the storm.

Sidewalks and Snow

Ohio Revised Code 723.011 authorizes the City of Cincinnati to require property owners to remove snow and ice from abutting or adjoining sidewalks in a timely manner.

What does this mean?

A property owner is responsible for keeping his or her property safe. If a postal worker, delivery worker or a visitor falls because you didn't shovel and salt your walkway, you could be responsible for covering that person's injuries.

Am I liable if I shovel my sidewalk and it freezes again, then someone falls?

The Ohio Supreme Court has affirmed residents can comply with Municipal Code's requirement to shovel their sidewalks without assuming liability to others who may slip and fall. The only time a resident may become liable is when they permit or create a dangerous accumulation of snow that results in personal injury to another.

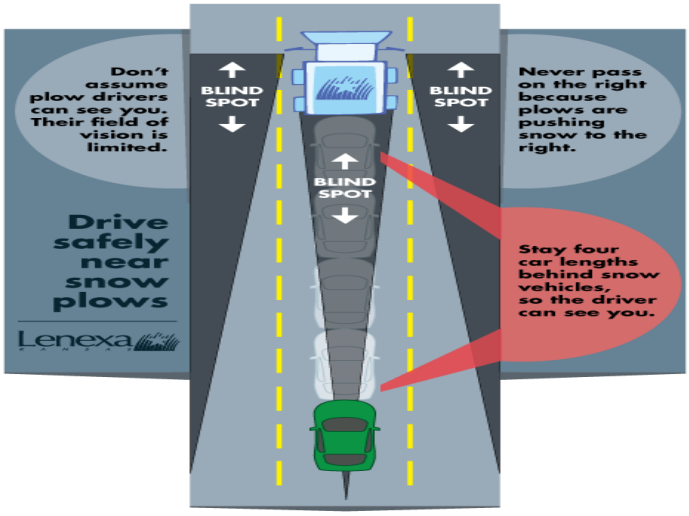
- Section 723-57 of the Cincinnati Municipal Code requires property owners to remove snow.
- Section 723-59 of the Cincinnati Municipal Code requires property owners to remove ice.
- ORC 723.011 (Ohio Revised Code) The penalty for violating these sections is a fine of $25.

Please be a Good Neighbor: Do your part in helping our citizens – especially our elderly neighbors and our neighbors with disabilities – navigate through the difficulties of winter.

Many elderly citizens and citizens with disabilities are stranded and unable to access some of the basic services they need.

What Residents Can Do To Help

- Shovel snow onto grassy area of your property when clearing driveways/sidewalks.
- Avoid shoveling snow from your driveway onto City roadways. This will help keep the City's streets from re-icing when already treated.
- Apply salt, sand and/or cat litter to icy steps and paths.
- Assist with clearing snow surrounding fire hydrants.
- Shovel around storm drains as necessary to minimize the risk of black ice as snow starts to melt.
- Adopt a storm drain near your residence to assist the City in keeping its approximately 30,000 storm drains properly draining.
- Use off street parking during snow events to allow crews to work safely, efficiently and quickly.
- Be observant of snow parking restrictions and emergency declarations when in effect.
- Drive with extra care and leave additional distance between you and the vehicle ahead.
- Maintain a distance of no less than 100 feet behind a City vehicle.
- Avoid passing snow trucks.



And, ultimately, exercise patience! Understand it takes time for the City to clear its 3112 miles of road following a snow event.

Winter Safety Tips

- Citizens can reduce risk and assist snow removal efforts by parking off-street where possible.
- Motorists should allow extra driving time and use extra caution.
- Reduce speed and leave plenty of room to stop. Citizens are encouraged to allow at least three times more space than usual between their vehicle and the car in front.
- Brake gently to avoid skidding. If your wheels start to lock up, ease off the brake.
- Turn on headlights to increase visibility.
- Keep headlights and windshield clean.
- Use low gears to maintain traction, especially on hills.
- Exercise caution while traveling on bridges, overpasses and infrequently traveled roads. Even at temperatures above freezing, if the conditions are wet, you might encounter ice on exposed roadways like bridges.
- Pour sand, cat litter, gravel or salt in the path of the wheels to help improve traction.

Winter Biking Tips

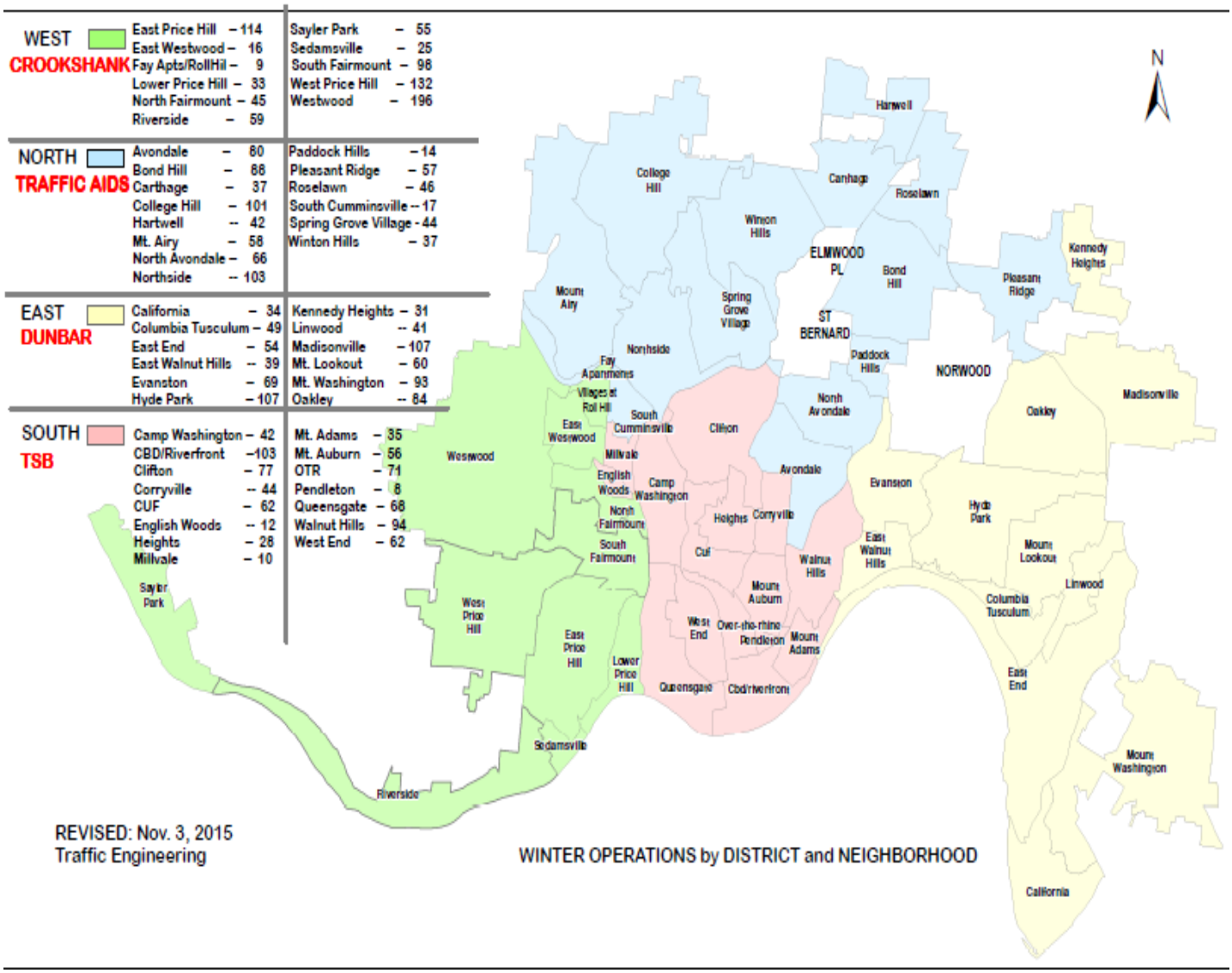
The City does not plow bike lanes. Winter conditions offer a unique set of challenges for the bicycle commuter. Follow these tips when commuting in the winter:

- Choose a route based on winter road priorities. Main thoroughfares have the least amount of snow and ice. Remember snow covered roads mean narrow thoroughfares.
- Beware of potholes, puddles and snow banks.
- Install knobby or studded tires.
- If losing control, move bike toward a snow bank.
- Pedal in a low gear during the winter. If pedal is frozen in low, bikers can still pedal in most terrains.
- Try not to make sudden emergency maneuvers. Wet, slushy roads mean reduced stopping power and extended braking distances.
- Wear well layered clothing to regulate body temperature and stay dry.
- Wear blade-style glasses or goggles to keep eyes from watering and keep flying road grit out of eyes.
- Wear warm, windproof gloves.

Source: Commute Options (www.commuteoptions.org)

Appendix A: Snow Regions

REGION	Primary Routes	Residential Routes	Priority 3 Routes	Lane Miles
EAST	23	25	14	768
NORTH	16	32	10	790
SOUTH	17	23	15	772
WEST	11	17	15	782
TOTAL	67	97	54	3112



Appendix B: Parking Snow Emergency Routes

Routes are designated by signs stating **"No Parking during Snow Emergency."**

Police District 1

- Reading Road: Central Parkway to Paddock Road
- Vine Street: Mitchell Avenue to Third Street
- Gilbert Avenue: Broadway to McMillan

Police District 2

- Eastern Avenue: Delta Avenue to Second Street
- Eastern Avenue: Delta Avenue to Columbia Parkway
- Madison Road: Woodburn Avenue to Plainville
- Marburg Avenue: Ridge Road to Erie Avenue
- Whetsel Avenue: Bramble Avenue to North Corporation Line
- Observatory Avenue: Edwards Avenue to Delta Avenue

Police District 3

- Glenway Avenue: West Corporation Line to West Eighth Street
- Queen City Avenue: Werk Road to Beekman Street
- Harrsion Avenue: West Corporation Line to State Avenue
- Warsaw Avenue: Glenway Avenue to State Avenue
- River Road: West Corporation Line to Evans Street
- Elberon Avenue: West Eighth Street to State Avenue
- Montana Avenue: West Fork Road to Glenmore Avenue
- Westwood Northern Boulevard: Hopple Street to Boudinot Avenue
- Boudinot Avenue: Glenway Avenue to Westwood Northern Boulevard

Police District 4

- Ridge Road: Amberly Village Corp. Line to Marburg Avenue
- Montgomery Road: Norwood Corporation Line to Silverton Corporation Line
- Woodburn Avenue: McMillan to Dana Avenue
- William Howard Taft Road: Columbia Parkway to Vine Street
- McMillan Street: Central Parkway to Hackberry Street
- Paddock Road: Reading Road to Vine Street
- Gilbert Avenue: Woodburn Avenue to McMillan Street
- Reading Road: Paddock Road to Sunnybrook Drive
- Dana Avenue: Reading Road to Duck Creek Road
- Burnet Avenue: Forest Avenue to Reading Road

Police District 5

- Martin Luther King Drive: Central Parkway to Woodburn Avenue
- Ludlow Avenue: Spring Grove Avenue to Jefferson
- Jefferson Avenue from Nixon to Ludlow
- Hamilton Avenue: Spring Grove Avenue to Hollywood
- Colerain Avenue: Spring Grove Avenue to Kipling Road
- Burnet Avenue: Forest Avenue to Reading Road
- Jefferson Avenue: McMillan Street to Martin Luther King
- Calhoun Street: Vine Street to Clifton Avenue
- North Bend Road: Vogel Road to Daly

Appendix C: Definitions

1. **Snow Season** – November 1 – March 31

2. **Dry Snow** – Occurs when the troposphere temperature (the lowest portion of the earth's Atmosphere) and the surface temperature fall below freezing causing snow to be less dense than average and not sticky.

3. **Wet Snow** – Occurs when surface temperatures are just above freezing, goes through repeated melt-freeze cycles, forming crust on the surface allowing it to stick together.

4. **Compacted Snow** – Snow which has been compressed into a solid mass that resists further compression and will hold together or break into lumps if picked up.

5. **Slush** – Mixture of small ice crystals and liquid water. Generally forming when snow and/or ice melts.

6. **Chemicals** – Used in conjunction with a solid to help depress the freezing point of water, turning ice or snow into liquid or slush.

7. **Deicing** – A reactive operation. Removal of existing snow, ice or frost from roadway or other surface. Spreading material after snow begins.

8. **Anti-icing** –A proactive operation. Treatment with an ice melting chemical before or during the beginning of a storm to prevent or delay the formation of ice or the adhesion of ice and snow to the surface.

9. **Salt** – Mineral substance composed primarily of sodium chloride. A primary tool for snow and ice control.

10. **Brine** – (i.e. wetted salt) solution of salt in water. Can be used to de-ice or reduce freezing temperatures on roads.

11. **Beet Juice –** Anti-icing fluid is a natural, agricultural product from the juice remaining after sugar beet extraction. Used in conjunction with rock salt.

12. **Calcium Chloride –** Used as anti-icing, pre-wetting solution to help improve the performance of rock salt.

13. **Plowing** – During and after precipitation, plows are utilized to remove higher accumulations of snow before using de-icing products. Plowing normally leaves ridges of snow along road edges in front of sidewalks, driveways and parking lanes.

14. **Passable** – Moderately good quality, but less than excellent, capable of being passed, traversed or crossed. (Roget's, 1988).

15. **Pre-wetted Salt** – Salt that has been treated with liquid, prior to being spread.

16. **Level 1 Snow Alert** - Roadways are hazardous with blowing and drifting snow.

17. **Level 2 Snow Advisory** – Roadways are hazardous with blowing and drifting snow. Only those who feel it is necessary to drive should be on the roadways. Contact your employer to see if you should report to work.

18. **Level 3 Snow Emergency –** All Municipal, Township, County and State roadways are closed to non-emergency personnel. No one should be out driving during these conditions unless it is absolutely necessary to travel. Those traveling on the roadways may subject themselves to arrest.

19. **City of Cincinnati Parking Snow Emergency** – The City may issue a parking snow emergency during severe snowstorms. A snow emergency declaration initiates parking restrictions on designated routes. Cars not moved are subject to ticketing and towing. This will assist with the full treatment of streets in order to make roads passable as soon as practical.

Appendix D - DPS Snow Plan Milestones

	Lead	End of Snow	April	May	June	July	August	September	October	November	December
Previous Season Debrief	Smith										
Salt Contract	Oser										
Salt Order	Oser										
Truck Readiness	Cavanaugh										
Training	A. Callahan										
Equipment Readiness	Cavanaugh										
Plan Update	Bolden										
Dry Run	Bolden										
Media Plan	Rajaiah										
1st Snow	Bolden										
1st Snow Debrief	Smith										

Appendix E – Private Streets

Appendix Provided Upon Request

Appendix F – Alphabetical Listing of Snow Routes

Appendix Provided Upon Request

Appendix G – Priority Snow Routes per Region

Appendix Provided Upon Request

Appendix H – Salt Conservation

Appendix Provided Upon Request