

ACCESS FOR ALL: Maintaining Our Sidewalk Transportation Corridors in Winter

Roadmap Report
February 2021



Funded by: Ann Arbor Area Community Foundation Bold Ideas Grant

Letter to Ann Arbor

SnowBuddy sees sidewalks as transportation corridors that should be maintained in their entirety all year long. An uncleared sidewalk in front of a single property is like the broken link of a chain – it renders the corridor ineffective.

The climate is changing and Ann Arbor has experienced a 75% increase in winter precipitation from 1951 to 2014. While the number of days falling below 32°F per year dropped by 4.1 over this time period, those warmer temperatures are bringing more mixed winter precipitation (such as freezing rain), making the sidewalks even more difficult to navigate.

We've been studying this problem for the last seven years and think we have found a solution to many issues of wintertime mobility. Our solution ensures that:

- People with mobility issues will no longer be stuck inside their homes in the winter;
- The elderly will be able to walk in the winter without fear of falling;
- People pushing strollers will not have to walk in the street;
- Walking will be safer for all of Ann Arbor residents in the winter.

More walking commuters in winter will reduce our carbon footprint. Safe and equitable access to sidewalks in all conditions will increase bus ridership, youths walking to school and neighbors visiting neighbors. Our sidewalks really are a part of Ann Arbor's neighborhood transportation system.

Currently, the city requires property owners to clear sidewalks within twenty-four hours of a snowfall. Many residents comply with this rule, but many do not. They are physically unable, not present (i.e., out of town or at work), or simply don't have the interest. When this happens, it renders the entire pedestrian transportation corridor unusable. It's as if a tree has fallen across the path.

We have exhausted the very limited potential of our current passive approach to winter sidewalk maintenance. More time and money cannot make the current enforcement approach an effective remedy. We must move forward with a new solution that achieves the benefits we need.

We believe a city-wide winter sidewalk maintenance program is possible here in Ann Arbor and it is time to move forward. Besides the benefits already laid out, there are many other reasons why it is time to consider a new plan:

- The Americans with Disabilities Act requires there be access to sidewalks, but this access is still not available in Ann Arbor to all users in all conditions.
- 38% of all Ann Arbor workers (23,000 people) do not drive cars to jobs. These residents will benefit from improved access to sidewalks. Car commuters also benefit from clear sidewalks to destinations after they park.
- The A2Zero plan goal is that by 2030, 25% of in-city trips are conducted by walking or bicycling thanks to ubiquitous and safe infrastructure.
- A better approach to winter sidewalk maintenance will reduce salt use and improve water quality.
- Safe and equitable access will help our aging population remain in their homes even if they can't clear their own sidewalks.



- A citywide program ensures that residents can have clear sidewalks when they are away on vacations or business travel.
- A citywide program doesn't require help from neighbors or expending resources on enforcement.
- A citywide program recognizes that safe and equitable access is a public good and these costs should be shared by all.
- The cost of a citywide program might not exceed the current unorganized, woefully insufficient method.
- A citywide program should eventually reduce homeowner insurance costs, since slips and falls can be reduced.

Our report outlines a roadmap for making this happen. It provides details for a public-private partnership approach to delivering this program and funding options for operations and governance solutions for quality control and resident satisfaction.

The time to act is now.

Please join us in making Ann Arbor even better, with age- and ability-friendly neighborhoods year-round.

Sincerely,

SnowBuddy – Board of Directors: Lisa Brush, Tom Brush, Jim Frey, Amy Saalberg, Paul Tinkerhess



Acknowledgments

- Ann Arbor Area Community Foundation: From 2016 through 2019, SnowBuddy received innovation grants from the Ann Arbor Area Community Foundation to explore citywide solutions to sidewalk snow-removal. These grants supported an evaluation of the city's winter sidewalk maintenance program to identify practical citywide approaches to safe and equitable winter sidewalk maintenance.
- Community members from the city of Ann Arbor, Downtown Development Authority, Ann Arbor Area Transportation Authority, Center for Independent Living, Washtenaw Walking and Biking Coalition, Sierra Club, Huron River Watershed Council, Ann Arbor Public Schools, and others who shared their stories and thoughts on this issue.
- Communities in Delaware, Minnesota, and Vermont, whose members shared their research and stories. As we explored this problem in other places, we found several excellent sources of research and information. Some of the language in this report is taken directly from documents developed by other states or nationally. These sources are recognized in footnotes.
- The SnowBoard—the SnowBuddy board of directors — and SnowBuddy volunteers for tirelessly demonstrating that this work can and should be done.
- The residents of Water Hill for their support of the SnowBuddy program and their goodwill.
- This report builds on next steps outlined in the SnowBuddy report - *Access for All: Maintaining our Sidewalk Transportation Corridors in Winter Research and Evaluation Summary*, October 2018 produced by SnowBuddy founding board member and evaluator Robbin Pott, JD, MPP.

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Executive Summary

It is time for the City of Ann Arbor to move from the question of “Should the city be responsible for sidewalk snow-removal?” to “How should the city ensure safe and equitable winter sidewalk access for all?”²

- The City of Ann Arbor has been discussing how to improve walkability for at least a decade.
- There is a consensus that walkability can and should be improved.
- Keeping sidewalks safe in the winter is recognized as a high priority.
- This is a legal responsibility of the city whether or not it places the burden on property owners.
- There are significant portions of sidewalks that are impassable during much of the winter.
- There is a broad consensus that keeping sidewalks cleared in winter will benefit everyone.
- There is political leadership interested in finding a viable citywide solution.
- SnowBuddy’s model will not scale citywide given its reliance on volunteers.
- There are reasonable steps forward to achieve safe and equitable winter sidewalk access for all.

While automobile travel is the predominant transportation mode for most Americans, often overlooked is the fact that most trips start by walking. Slick and snowy sidewalks are problematic for all pedestrians. When driveway ramps and other pedestrian passageways are blocked by snow, that can pose mobility issues for the one-third of Americans who do not drive—including persons with disabilities, children walking to school, commuters walking to public transit stops, and older adults who no longer drive. Winter maintenance of pedestrian passageways is both a safety issue and an accessibility issue. Once a state or local government provides an “accessible feature” or “accessible route,” it is required by the Americans with Disabilities Act (ADA) to maintain those features “in working order.” A sidewalk or pedestrian passageway cannot be obstructed by snow or ice and must remain open for year-round use, even after a winter storm¹.

The purpose of this study is to present research and propose actionable options for the city of Ann Arbor to conduct winter maintenance of city sidewalks in a safe and professional manner in all neighborhoods.

This study expands on historical work in other states and communities and evaluations of SnowBuddy’s approach in providing safe and equitable winter sidewalk clearing in one Ann Arbor neighborhood over the past seven years.

This study outlines three basic approaches to municipal winter sidewalk maintenance—a municipal responsibility scenario, a property owner responsibility scenario like the city currently uses, and a shared responsibility scenario. The shared responsibility scenario is the solution that builds on Ann Arbor’s strengths to achieve safe and equitable winter sidewalk maintenance citywide.

This study outlines three governance and service delivery scenarios and five funding models for municipal winter sidewalk maintenance. The public-private service delivery scenario and either a voter-approved millage or utility funding model are practical and cost-effective solutions. All of this could be supported by a continued role for SnowBuddy in assuring quality service delivery and supportive resources.

This study also recommends an approach to citywide winter sidewalk maintenance, building on areas that already receive services (downtown, campus, school properties, AAATA bus stops, major developments, and the Water Hill neighborhood served by SnowBuddy) and extending from them to connect sidewalks to schools and bus stops, major transportation links, and other high-use areas. This approach recommends allocation of funds this next fiscal year to begin these initial service phases. In preparation, SnowBuddy is undertaking a mapping analysis of the city’s sidewalks, breaking them down into specific service zones, and developing draft specifications for the services required in those zones.

1. Winter Maintenance of Pedestrian Facilities in Delaware: A Guide for Local Governments, Marcia Scott and Brandon Rudd, Institute for Public Administration, University of Delaware, 2012; 2. ACCESS FOR ALL: Maintaining Our Sidewalk Transportation Corridors in Winter Research and Evaluation Summary, Robbin Pott, JD, MPP, Funded by Ann Arbor Area Community Foundation Innovation Grant, October 2018

Introduction

Purpose of this Study

The purpose of this study is to examine relevant data and analysis to inform a path forward. This includes past City of Ann Arbor planning efforts, research in other communities on possible solutions, interviews with key community partners, establishing key facts, and, finally, providing actionable options to maintain city sidewalks in a safe and professional manner in all city neighborhoods.

This analysis expands on work by other states and communities and uses a recent evaluation of SnowBuddy in the Water Hill neighborhood over the past three years. The evaluation by SnowBuddy board member Robbin Pott opens with this summary of twelve years of community discourse:

Improving Ann Arbor’s walkability has been in our public discourse for over a decade now. The issue began to get attention when the City of Ann Arbor used a “Complete Streets” evaluation framework for its 2007 Non-motorized Transportation Plan and its 2009 City Transportation Plan update. Complete Streets are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. In March 2011, the City of Ann Arbor further strengthened its commitment to pedestrians when the City Council adopted the “Resolution Proclaiming the City of Ann Arbor’s Commitment to Complete Streets” (R-11-088), in which it recognized that a significant percentage of Ann Arbor residents walk, bike or use public transit as their primary means of transportation and committed to including non-motorized transportation in its street planning. In 2013, the city updated its Non-motorized Transportation Plan, in which improving pedestrian access and use of sidewalks was identified as a critical need for the city and led to the Ann Arbor City Council establishing a Pedestrian Safety and Access Task Force (Task Force). This Task Force was charged with exploring strategies to improve pedestrian safety and access in the City and make recommendations to be considered in a Pedestrian Safety Action Plan. Two years later, in September 2015, they shared their findings.

HISTORY OF ANN ARBOR’S SIDEWALK SAFETY AND ACCESSIBILITY PLANNING

- Ann Arbor Transportation Master Plan update 2009
- City Council’s Complete Streets Resolution March 2011
- Ann Arbor’s Non-motorized Transportation Plan update 2013
- The Pedestrian Task Force report September 2015
- The Federal Highway Administration manual “How to Develop a Pedestrian and Bicycle Safety Action Plan.”



3. Winter Maintenance of Pedestrian Facilities in Delaware: A Guide for Local Governments, Marcia Scott and Brandon Rudd, Institute for Public Administration, University of Delaware, 2012

The Task Force findings concluded that,

“the walking environment in Ann Arbor can and should be improved, making the City safer, more accessible, and more friendly for people of all ages and abilities who use our public roadways, sidewalks, and pathways.”

Their conclusion was founded in their belief that,

“a safer and more accessible walking environment enhances overall community attractiveness as a place to visit, live, and work, all of which contribute to economic prosperity; improves local environmental quality; and positively impacts citizens’ personal health by broadening the opportunities to use non-motorized transportation.”

The Task Force listed recommendations for how the City could improve its walkability, which included several recommendations marked as high priority regarding the maintenance of safe sidewalks during the winter.

The Task Force further concluded that the City should embrace the challenge of making its transportation system fully accessible to persons of all abilities and should continue to engage the Commission on Disability Issues on the design of specific pedestrian improvements, ordinances and expand the use of best practices that promote safe, comfortable and convenient travel for individuals who rely on pedestrian networks for their daily transportation needs. More specifically, the Task Force encouraged the City to assess the financial, operational feasibility and level of community support of the City undertaking snow and ice removal on the City’s public sidewalk system. The Task Force recommended that the City improve its enforcement of this ordinance to improve wintertime sidewalk access. Four years later, the problem persists.

This document outlines a series of options based on information from a variety of sources to support our contention that winter sidewalk maintenance can be managed in a more systematic and sustainable manner. As a community, we need to decide how we want to solve this problem. We outline several options to govern, finance, and deliver safe and equitable winter sidewalk access across the city.



The Center for Independent Living surveyed their clients and families in 2019 as part of our SnowBuddy outreach. We are sharing a few of these with you throughout the document. The complete set of responses are included in the Appendix.



“My son would be able to move around using his walker without getting stuck in snow”

“I would be able to go to the library grocery stores and shopping centers also to doctor appointments by bus. When the sidewalks are cleared it is such a pleasure that the winter coldness is more endurable.”



Why Is Winter Sidewalk Maintenance Needed?

For many years, the Ann Arbor community has recognized the need to better maintain pedestrian facilities. This section outlines planning efforts undertaken by the city and highlights some relevant facts and findings. There are many obvious safety benefits to maintaining safe winter access to sidewalks, and there are many secondary benefits for the community.

Secondary Benefits of a Citywide Winter Sidewalk Maintenance Program

Depending on how winter sidewalk maintenance services are organized, funded, and delivered, many additional benefits can be achieved from a citywide program:

- An increase in AAATA ridership by providing better, more reliable access to bus stops.⁴
- An increase in the number of children walking to school, improved exercise options, and a decrease in driving trips and in cars idling in the winter.
- A citywide program could include bike path clearing to increase winter bike commuting.
- A reduction in salt use that would reduce tree mortality, increase the longevity of sidewalks, and reduce future maintenance costs. Reduced salt use could put the city in a leadership position if chloride is regulated as part of impaired water regulations.
- We could use Ann Arbor Housing Commission sites to store machinery and potentially employ AAHC residents.
- A possible reduction in homeowner insurance costs due to fewer accidents on sidewalks.
- A reduction in enforcement costs, freeing up resources for other important city services.
- Better maintenance of public school and university sidewalks.
- A city-wide program could leverage the AAPS school contracts with 7 zones to maintain key school corridors (with additional funding).

In 2013, the City of Ann Arbor updated the Non-motorized Transportation Plan, noting:

People who rely on non-motorized transportation as a means of travel are often at the mercy of the weather, especially in the winter. The current practices of snow-removal on sidewalks, curb cuts and crossing islands make the large portions of the City impassable to many mobility impaired pedestrians or those pushing strollers or pulling grocery carts. However, many northern cities around the globe maintain excellent facilities for non-motorized travel in the winter. For example, Boulder, Colorado and Madison, Wisconsin, cities that both have greater amounts of annual snowfall than Ann Arbor, (Boulder-60", Madison-42", Ann Arbor-39") have bicycle mode-shares significantly higher than Ann Arbor. Both Minneapolis and Madison have higher bicycle commuting rates than San Diego. City policy should treat the removal of snow from sidewalks and key off-road pathways with equal importance as the removal of snow from streets. The City already leads by example by clearing paths in parks, adjacent to public buildings and on bridges. Additional attention is needed to identify "orphan" areas, such as under railroad viaducts, over freeways or along other public rights-of-way to ensure that these areas are cleared by the appropriate agency. Through its involvement with the Ann Arbor Public School Safety Committee, the City should work with the public schools to identify walk routes for clearing and weekend and vacation contingency plans. In addition, the City should encourage private businesses and neighborhood groups to contract for shared snow-removal services and provide information to assist in this process. Areas of special concern are curb ramps at intersections and the growing number of pedestrian crossing islands. Curb ramps must be cleared by the adjacent property owner. However, even if this is done, snow is often pushed back into the curb ramp by passing street plows. Crossing islands are not the responsibility of an adjacent property owner, so they require clearing by City staff. To address both situations, City staff should explore the purchase of special equipment that can be used to clear these curb ramps quickly without the need to hand shovel.

4. Asked Julia Roberts about data on winter ridership – daily ridership and heavy snow or freezing rain

Why Is Winter Sidewalk Maintenance Needed? continued

The Ann Arbor Non-motorized Transportation Plan also made these recommendations:

Within Three Years:

- The City should have a clearly defined and consistent program to assure snow-removal from hard surfaced sidewalks and pathways that they own and/or are under their responsibility.
- The City should assess the effectiveness of the efforts of the code compliance staff to enforce the existing snow-removal ordinance on privately owned hard surfaced sidewalks and pathways. If necessary, the City should develop a program to assure snow-removal from privately owned sidewalks and pathways along Arterials and Collectors.
- The City should designate staff and assign responsibility for clearing crossing islands and key connector pathways of snow and ice.
- Staff from Forestry and Field Operations should identify street tree planting and maintenance strategies to reduce root impacts on sidewalks.
- The City should develop a program that monitors the condition of sidewalks along Arterials and Collectors on a yearly basis.

Within Five Years:

- The City should consider taking responsibility for maintenance on sidewalks and pathways along arterials and collectors.

A July 2019 memorandum from the City of Ann Arbor Public Works staff suggests that it is more economical to clear all sidewalks and curb ramps than just curb ramps. *Performing winter maintenance on just the ramps was determined to be more expensive than completing snow-removal on all sidewalks, due to the necessary start/stops and hand work required on the ramps*⁵. This report examines a comprehensive program that clears all sidewalks, curb ramps, and crosswalks.



5. July 12, 2019 Memo from the City of Ann Arbor Public Works to the Transportation Commission

Climate Change Is Making almost Everything Worse

The University of Michigan weather station has measured a 43 percent increase in annual precipitation and a 70 percent increase in winter precipitation over the past sixty years.

Changes in Average Precipitation, 1951-2017.

Maps of how seasonal precipitation totals are changing across the region are available here.

	in.	cm.	%
Annual total precipitation	13.0	33.0	42.90
Winter total precipitation	4.0	10.2	69.70
Spring total precipitation	2.9	7.4	34.90
Summer total precipitation	2.9	7.3	30.90
Fall total precipitation	2.9	7.4	41.90

Figure 1 - <http://glisa.umich.edu/station/C00200230>

The Ann Arbor Hazard Mitigation Plan was updated in 2017. It includes an extensive discussion of the potential for climate change impacts, including this evaluation; *"Generally, in Michigan, an ice storm is considered severe if there is an accumulation of ¼ inch or more of ice. As the climate changes, winter precipitation is also expected to change. With warmer temperatures, it is more likely than rain will fall in place of snow, and mixed winter precipitation (such as freezing rain) will become more likely."* The plan discusses climate impacts: *"Climate change impact could have mixed impacts on winter weather in the city. Generally, more winter precipitation is expected in the future. Winter precipitation in Michigan will increase between 5 percent and 20 percent by 2030, and between 5 percent and 25 percent by 2100. In addition, the frequency of heavy precipitation events (24-hour and multi-day) will continue to increase, which could lead to an increase in the number of severe winter weather events. The transition from snowfall to more freezing rain as temperatures warm could result in increased icy road conditions or refreezing of rain."* The plan also notes the potential for ice storms to cause tree damage that can impair sidewalk access.

Ann Arbor has recently begun a ten-year pruning cycle for the approximately 50,000 street trees maintained by the city⁷. More extreme storms and winter freezing rain events will likely cause damage to street trees near sidewalks. A citywide sidewalk maintenance program could help to clear obstructions from winter storms. Much of the urban forest is at risk from more extreme storms.

Ensuring Pedestrian Safety

Pedestrian safety is one of the most compelling reasons to establish a successful program for winter sidewalk maintenance. The City of Ann Arbor Transportation website highlights the city's commitment to pedestrian access and safety, noting that the city has over 430 miles of sidewalks and fifty-seven miles of shared-use path, and was named a Gold-level Walk Friendly Community by the Pedestrian and Bicycle Information Center. Prevention Magazine named Ann Arbor the third-best city in the United States for walking in 2008.

This memo (PDF) shows pedestrian improvements completed by the city in 2016-18⁸. A variety of crosswalk improvements were planned at thirteen new locations in 2019, demonstrating further commitment to the sidewalk infrastructure as a major component of the transportation system. However, there is no systematic program to address the winter pedestrian safety and access problem.

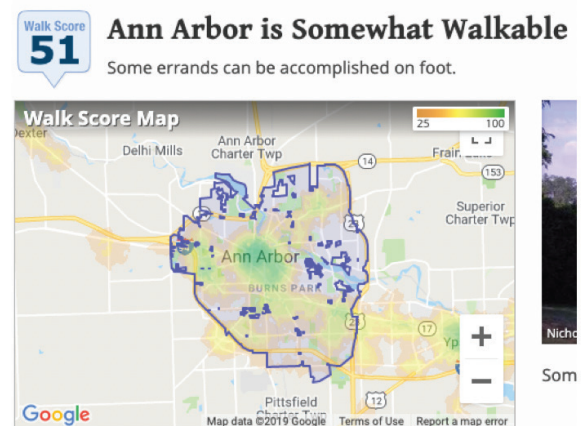


Figure 2 - https://www.walkscore.com/MI/Ann_Arbor

6. Ann Arbor Hazard Mitigation Plan Update, 2017 (https://www.a2gov.org/departments/emergency-management/SiteAssets/Pages/Hazard-Mitigation-Plan-/Ann_Arbor_Hazard_Mitigation_Plan_FINAL_20171205_REDACTED_reduced%20_size.pdf); 7. https://www.a2gov.org/departments/forestry/PublishingImages/RoutinePruningCycle_10YearCycleMap.pdf; 8. <https://www.a2gov.org/departments/systems-planning/planning-areas/transportation/Pages/Pedestrian-Safety-Scorecard.aspx>

Supporting Nonmotorized Commuters

A significant portion of Ann Arbor’s commuters would benefit from a citywide winter sidewalk maintenance program. The Census Bureau’s American Community Survey for 2017 data show approximately 23,000 commuters or 38 percent of all workers here walking, biking, taking public transit, or working from home. These underestimate the number of residents who would be served by improved winter sidewalk access because they do not include K-12 students walking to school or U-M students getting to and from school.

American Community Survey 2017	workers	59,882
Public transportation (excluding taxicab)	11.0%	6,587
Walked	15.3%	9,162
Bicycle	4.4%	2,635
Worked at home	7.4%	4,431
Total	38.1%	22,815

Supporting Senior and ADA Bus Riders

[The City of Ann Arbor website outlines disability resources for members of the community.](#)⁹

The City of Ann Arbor values all of its citizens, regardless of ability. Our mission statement reads, in part: “The City of Ann Arbor is committed to providing excellent municipal services that enhance the quality of life for all.”

The Ann Arbor Commission on Disability Issues has evolved from a commission created and convened by Mayor Robert Harris and City Council in 1969 and maintained through the years under various names.

[Ann Arbor Area Transportation Authority also provides disability resources](#)¹⁰

The Americans with Disabilities Act (ADA) requires transit agencies to provide service comparable to fixed-route service for individuals whose disabilities prevent them from being able to access a fixed-route bus. The ADA states that TheRide’s regular bus service should be the primary means of public transportation for everyone, including people with disabilities. Under the ADA, A-Ride serves as a safety net for only those persons who do not have the functional capability to ride TheRide’s regular buses.

Recent data from the Ann Arbor Area Transportation Authority show that:
 640,458 rides in fiscal year 2019 were by passengers with Senior or ADA cards (10 percent of all rides) .
 239,685 of those 640,458 rides occurred during colder months (October – March).
 Assuming that each rider walks to and from the bus, that equates to almost half a million walking trips in the winter months by Senior and ADA cardholders to and from their AAATA rides.

AAATA Ridership	Percent of all Rides	Fiscal Year 10/18-9/19	Colder Months Oct-Mar
Seniors	6%	397,565	146,202
People with Disabilities	4%	242,893	93,483
Total	10%	640,458	239,685

9. <https://www.a2gov.org/services/disability-resources/Pages/default.aspx>; 10. <https://www.theride.org/Services/A-Ride-ADA-Disability-Services>

Fulfilling the City Commitment to a Comprehensive Complete Streets Program

The city of Ann Arbor reconfirmed its commitment to “complete streets” in 2011. The National Complete Streets Coalition, a nonprofit, has identified ten elements such a policy:

1. A vision.
2. A comprehensive policy applying to all users of the roadway.
3. A complete network for all modes of travel.
4. Speaking to the many agencies responsible for transportation (In Ann Arbor that includes AATA and MDOT).
5. Addressing all transportation projects.
6. Containing only limited and clearly expressed exceptions, where any may exist (an example in the city’s nonmotorized plan indicates some elements may be too costly and disproportionate to the need or probable use of a facility).
7. Design standards to accommodate all modes of travel.
8. Recognition of the context in which the transportation system element is developed.
9. A broad look at system performance measures including elements beyond the traditional roadway capacity or vehicular level of service.
10. Incorporation of implementation mechanisms (such as the city’s commitment of resources to alternative transportation).

Resolved, The City of Ann Arbor proclaims its commitment to a Complete Streets Policy, including but not limited to the policies already adopted and embodied in the City’s 2009 Transportation Master Plan Update (R-09-165), the City’s 2007 Non-Motorized Transportation Plan (R 8-1-07), as elements of the City’s Master Plan, in resolutions setting aside 5% of the City’s Act 51 funds for non-motorized transportation and adopting a policy to build non-motorized elements as part of each road construction project (R-176-5-03 and R-217-5-04), and requirements in the City Public Services Department Standard Specifications; and City of Ann Arbor.

Resolved, This proclamation be provided to the Michigan Department of Transportation and the National Complete Streets Coalition for the purpose of allowing the City to be recognized for embracing Complete Streets policies and practices.

Supporting the City Sustainability Framework Goals

The City of Ann Arbor Sustainability Framework¹¹ codifies sixteen goals as elements of the city master plan. Several of the goals address improving equitable access and safety along sidewalks.

- Human Services - Provide services that meet basic human needs of impoverished and disenfranchised residents to maximize the health and well-being of the community
- Safe Community - Minimize risk to public health and property from manmade and natural hazards
- Active Living and Learning - Improve quality of life by providing diverse cultural, recreational, and educational opportunities for all members of our community
- Transportation Options - Establish a physical and cultural environment that supports and encourages safe, comfortable and efficient ways for pedestrians, bicyclists, and transit users to travel throughout the city and region
- Sustainable Systems - Plan for and manage constructed and natural infrastructure systems to meet the current and future needs of our community
- Clean Air and Water - Eliminate pollutants in our air and water systems

11. <https://www.a2gov.org/departments/systems-planning/planning-areas/climate-sustainability/sustainability/Pages/SustainabilityFramework.aspx>

Improving Safe Routes to School¹²

Any program to improve winter sidewalk access would enhance safe routes to school and likely increase opportunities for children to walk to school.

Safe Routes to School is an international movement—and now a federal program—to make it safe, convenient, and fun for children, including those with disabilities, to bicycle and walk to school. When routes are safe, walking or biking to and from school is an easy way to get some of the regular physical activity children need for good health. Safe Routes to School initiatives also help ease traffic jams and air pollution, unite neighborhoods, and contribute to students' readiness to learn in school.

These schools are collecting some data on safe routes to school: Angell, Ann Arbor STEAM, Carpenter, Clague, Eberwhite, Martin Luther King, and Thurston¹³.

The Ann Arbor Public Schools now uses contractors for snow-removal for their facilities. Three contractors (Superior Lawn Care, Great Lakes Environmental, and AM Services) clear school properties and sidewalks, clearing before school starts each day. The cost is approximately \$20,000 for each plowing and \$12,000 for each salting. AAPS personnel have suggested elementary school neighborhoods for SnowBuddy expansion because those have the most walkers. If additional outside funds could be identified¹⁴, the AAPS contractors might be able to clear major walkways to and from the elementary schools.

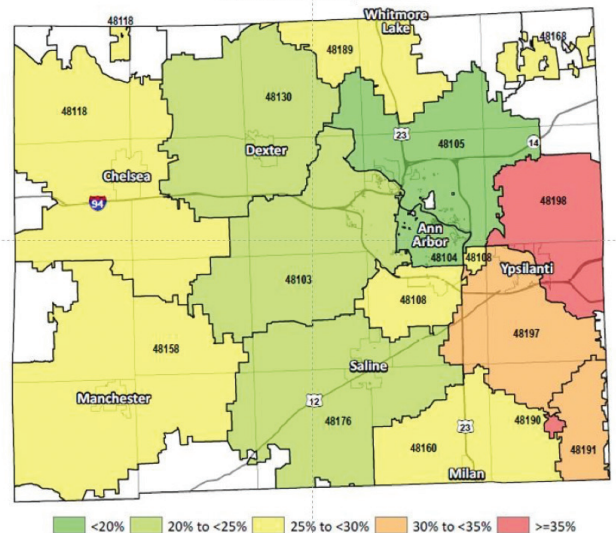
Improvement in safe walks to school would enable more exercise and help reduce childhood obesity. Being overweight in childhood puts individuals at risk of obesity and chronic diseases in adulthood. Childhood obesity rates in the United States have steadily increased over the past twenty years. However, in Washtenaw County, childhood overweight and obesity rates remained at 26 percent from 2013 to 2017.

Reducing Salt Use and Improving Water Quality

The Huron River Watershed Council (HRWC) has been monitoring local stream quality for many years. Their data show links between chloride and decreases in water quality as measured by fewer aquatic macroinvertebrates. Historically, there have been no state water quality standards for chloride. However, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) recently set water quality standards for chloride. Aquatic life values for chloride set 150 mg/l as “chronic” and 640 mg/l as “acute” concerns.

Chloride data from HRWC monitoring show that Mallett's Creek (400 mg/l), Millers Creek (454 mg/l), Swift Run Creek (381 mg/l), and some other tributaries exceed the “chronic” standard. This new regulatory standard is a reason to take a more diligent approach to reducing the use of salt to melt snow on sidewalks.

Overweight and Obesity by Zip Code
Children ages 2 to 17 years
Washtenaw County 2017



Reducing Childhood Obesity¹⁵

In 2017, 20 percent of children in Ann Arbor aged two to seventeen were overweight or obese.

12. <https://www.a2schools.org/domain/3352>; 13. <http://saferoutesdata.org>; 14. AAPS is not allowed to spend school funds on non-school property.; 15. <https://www.washtenaw.org/1786/Childhood-Obesity>

Safeguarding Public Assets¹⁶

A citywide winter sidewalk maintenance program would likely use less salt and more environmentally friendly products that would improve the longevity of sidewalks. The Delaware study notes:

Sidewalks are an essential component of a multimodal transportation system. Sidewalks, like other transportation infrastructure, are a major public investment. It is less costly to maintain sidewalks than to undertake major repair and reconstruction. Also, regular preventive maintenance of a sidewalk can extend the lifetime of the pedestrian facility and delay the need for more extensive repairs.

To safeguard these assets, routine maintenance, regular inspections, and scheduled repairs are required. In addition, care should be taken to keep a sidewalk, walkway, or trail ice-free once snow has been shoveled. The responsible party (including property owners of adjacent sidewalks) should avoid using rock salt to melt ice. Rock salt can damage concrete sidewalks, especially when it may not have been installed correctly or sufficiently cured. Instead, municipalities should advise property owners to use an environmentally friendly ice-melt pellet or de-icer.

Meeting Federal Americans with Disabilities Act (ADA) Standards¹⁷

Besides the above compelling rationales, cities are legally required to keep sidewalks accessible. The Delaware study explains:

For persons with disabilities and mobility impairments, unobstructed sidewalks are essential to carry out needs and activities of daily living. The Americans with Disabilities Act of 1990 (ADA) is a civil rights law that is intended to provide adequate accessibility to all persons. Title II of the ADA prohibits state and local governments from discriminating against persons with disabilities with respect to public accommodations and transportation (U.S. Department of Justice, 2005).

Under Title II of the ADA, state and local governments are required to ensure accessible design, construction, and maintenance of all transportation projects. In 28 Code of Federal Regulations (CFR), part 35, which implements subtitle A of ADA Title II, all new construction, reconstruction, and alterations to existing state and local government pedestrian facilities must meet with federal accessibility standards. Pedestrian facilities include public sidewalks, shared use paths, trails, curb ramps, crosswalks, pedestrian islands, or other public walkways.

State and local government facilities should follow requirements of the 2010 ADA Standards for Accessible Design, which combines ADA Title II regulations at 28 CFR, Part 35, §23.133 and the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAG) at 36, CFR 1191, Appendices B and D. In summary, the standards require that, to the maximum extent possible, state and local governments must (2010 ADA Standards for Accessible Design):

- Provide public facilities that are accessible to and usable by individuals with disabilities.
- Maintain “in operable working condition those features of facilities and equipment that are required to be readily accessible to and usable by persons with disabilities...”
- Keep walking surfaces cleared (of snow, debris, and obstructions) to a minimum width of 36 inches minimum.

Local governments operate under charters, which have powers and authorities granted to them by state statutes and the state constitution. Charters enable municipalities to govern local matters, as long as there are no conflicts with state or federal law and create a governing body such as a board or council. City/town councils have the power to pass ordinances—local laws. With respect to sidewalk maintenance, most municipalities require by ordinance that property owners maintain abutting sidewalks. It should be noted that while sidewalk maintenance may be required of property owners, it does not absolve municipalities of the ADA requirement to provide accessible, well-maintained pedestrian facilities. If a local government has a sidewalk-maintenance ordinance, that entity should assume responsibility for communicating requirements, inspecting conditions, addressing complaints, and ultimately enforcing regulations.

16. Winter Maintenance Of Pedestrian Facilities In Delaware: A Guide For Local Governments, 2012; 17. Winter Maintenance Of Pedestrian Facilities In Delaware: A Guide For Local Governments, 2012

Why Is Winter Sidewalk Maintenance Needed? continued

Previous Lawsuit¹⁸

Local disability advocates have gone to court to ensure that accessibility concerns are recognized. The Center for Independent Living sued the city of Ann Arbor in August 2004, claiming the city had failed to build curb ramps according to federal and state accessibility guidelines and standards. The lawsuit alleged that the city's failure has resulted in unsafe sidewalks and intersections for people using wheelchairs, who are thus sometimes forced to travel in the streets.

In March 2012, the Michigan legislature passed MCL 691.1402a which attempts to codify a municipality's liability for sidewalks. The statute says that "a municipal corporation in which a sidewalk is installed adjacent to a municipal, county, or state highway, shall maintain the sidewalk in reasonable repair."

Mitigating Risk

According to the Delaware study: "When snow and ice accumulate on walking surfaces, the potential for slip-and-fall accidents and the associated risk of liability greatly increases. ...In addition to the mandate for state and local governments to provide pedestrian facilities that meet ADA standards, maintenance of accessible features is also required. Responsible entities need to establish a snow-removal management plan that address how sidewalks, pedestrian walkways, curb ramps at street crossings, and other pedestrian facilities will be cleared after a winter storm.

"In recent years, states and local governments have been exposed to civil liability and precedent setting case law due to instances of non-compliance with ADA provisions. To reduce injuries and minimize exposure to liability, local governments must maintain accessible transportation facilities and features. To prevent and/or minimize lawsuits and exposure, good maintenance practices that include a plan for snow and ice removal—one that outlines responsibilities for clearing sidewalks—should be adopted and routinely updated."¹⁹

City of Ann Arbor Claims Information²⁰

City records on slip-and-fall insurance claims show there was only one snow-related claim in the past five years. In 2017, the claimant slipped and fell on ice in a parking lot; the claim was denied by the city's Insurance Board. In 2013, another claim by someone jogging in a city park who fell on black ice was also denied. There were seven other slip- and-fall claims from 2011 and prior years.



"It will provide safe travel and lessen the chance of a slip and fall. Also, it will help me in feeling and knowing where I am and which way to go by use of my cane."

"It would allow free movement and the snow would not get up on my wheels and on my hands."



18. Source: Ann Arbor News (Ann Arbor, MI), 4/11/05; 19. Winter Maintenance Of Pedestrian Facilities In Delaware: A Guide For Local Governments, 2012; 20. Email Communication with City of Ann Arbor

Ann Arbor Government Sidewalk Regulations (including snow-removal)

Ann Arbor regulations are included in the Appendix and are summarized below. In general, sidewalk installation is required in front of every property at the owner's cost. Any new sidewalk installations are likely funded by special assessments on property owners adjacent to the new sidewalks. Ongoing maintenance for new and existing sidewalks is performed by the city or its contractors through 2022.

With respect to snow and ice, the requirements are:

Non-residential property - All snow and ice which has accumulated prior to 6:00 a.m. on a sidewalk adjacent to property not zoned residential shall be removed by the owner or occupant by noon. The owner or occupant of the property shall also remove snow and ice from walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk. Provided that when ice has so formed upon any sidewalk, walk or ramp that it cannot be removed, then the owner or occupant shall keep the same effectively sprinkled with sand, salt or other suitable substance in such manner as to prevent the ice from being dangerous, until such time as it can be removed, and then it shall be promptly removed.

Residential property with snow - Within 24 hours after the end of each accumulation of snow greater than 1", the owner or occupant of every property zoned residential shall remove the accumulation from the adjacent sidewalk and from walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk.

Residential property with ice - Within 18 hours after any ice forms, the owner or occupant of every property zoned residential shall treat the ice on the adjacent sidewalk and on walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk with sand, salt or other substance to prevent it from being slippery.

Sidewalk Millage and Sidewalk Repair Program²¹

According to the City of Ann Arbor website:

- In November of 2011, voters approved a millage for the purpose of repairing sidewalks in the public right-of-way. Prior to the passage of this millage, property owners were required to repair or replace deficient sidewalks that adjoined their property.
- In November 2016, voters passed the Street, Bridge, and Sidewalk Millage, allowing the city to continue making sidewalk repairs.

Sidewalks within the public right-of-way adjoining properties that are on the tax roll are included in the program, and the necessary repairs will be made by the City. Sidewalks adjoining properties that are not on the City tax roll (such as schools, universities, churches, etc.) are responsible for repairing the sidewalks adjacent to their property.

Sidewalks on private property or adjacent to private streets are not included in this program.

Ann Arbor Municipal Emergency Operations Plan and Winter Maintenance

The city of Ann Arbor has an Emergency Management Coordinator and an Emergency Operations Plan (EOP), *The 2017 Ann Arbor Hazard Mitigation Plan*²², in accordance with the Michigan Emergency Management Act (MEMA) and the Federal Emergency Management Agency (FEMA). Ann Arbor's EOP must comply with MEMA and FEMA requirements, including criteria established by the Michigan State Police Division of Emergency Management and Homeland Security (EMHSD/MSP). Guidance and compliance criteria are outlined in the EMHSD/MSP publication 201, *Local Emergency Planning Workbook*²³.

21. <https://www.a2gov.org/departments/engineering/Pages/Sidewalk-and-Ramp-Repair-Program.aspx>; 22. 2017 City of Ann Arbor Hazard Mitigation Plan Update – Redacted, November 2017; 23. Michigan Local Emergency Planning Workbook, EMHSD/MSP

Ann Arbor's EOP ranks ten priority risk hazards. Three of the top five are directly related to winter hazards— Severe Winter Weather, Extreme Cold/Wind Chill, and Severe Wind²⁴. Severe Winter Weather includes winter storms, heavy snow, blizzards, frost/freeze and ice storms, sleet and freezing rain.

The EOP indicates that “Health hazards related to walking and snow-removal are frequent and life threatening. Falls, particularly to the elderly, can result in serious injury, including fractures, broken bones, and shattered hips. Middle aged and older adults are susceptible to heart attacks from shoveling snow”.²⁵

Ann Arbor's current policy of “property owner responsibility” requires residents to expose themselves to frostbite, hypothermia, fall, and heart attack risks to comply with the city's requirement for property owner responsibility in sidewalk snow clearing.

Winter Maintenance of Pedestrian Facilities in Ann Arbor: Field Observations and Standards of Care

A survey of local snow-removal practices over two winters and the issues they illuminate has shown:

Preparation, Clearing, and Timeliness: Excellent preparation activities were observed at all locations that have organized snow-removal programs – including the University of Michigan campus area, the Downtown Development Authority area, the fifty-four miles of sidewalk cleared by the City of Ann Arbor (out of a total of 427 miles citywide) that are adjacent to city properties, parks, and crosswalks, Ann Arbor Public Schools, AAATA bus stops, and the Water Hill neighborhood sidewalks cleared by SnowBuddy. These activities included spreading anti-icing materials as well as clearing sidewalks, walkways, access ramps, entrances/exits to buildings, and parking lots.

All other sidewalks observed at twenty-four hours and at three days after storms were, at best, in violation of city ordinance, and at worst, impassable. Specific problems observed included:

- Neighborhood streets had 50 percent to 75 percent of sidewalks not shoveled, even three days after storms.
- Vacant lots and some city park sidewalks were not shoveled.
- Parts of sidewalks along major corridors such as Packard and Miller were not cleared.
- Sidewalks where many students live were often impassable.
- Sidewalks were cleared but still had snow berms at crossings.
- Sidewalks had too much salting.

Comparison photos and other details of field observations are contained in the October 2018 SnowBuddy Report, *Access for All, Maintaining our Sidewalk Transportation Corridors in Winter*.

Width: To ensure ADA compliance for “accessible routes,” a cleared width of a walking surface should be at least thirty-six inches. Even if a sidewalk or walkway is maintained by a private property owner, the city of Ann Arbor may be liable in a civil lawsuit or ADA complaint if the local ordinance is not being enforced.²⁶

Connectivity: Connectivity is important to ensure that sidewalks/walkways provide safe passage and access to parking lots, bus stops/shelters, and other pedestrian features such as crosswalks and curb ramps. Gaps in connectivity can pose issues for individuals who rely on walking as a primary mode of transportation—including individuals in no-car households, transit-dependent populations, senior citizens, persons with disabilities, and children.³⁵

24. Table 4.34 Priority Risk Index Results, 2017 City of Ann Arbor Hazard Mitigation Plan Update – Redacted, November 2017; 25. Section 4.60 Risk Assessment, 2017 City of Ann Arbor Hazard Mitigation Plan Update – Redacted, November 2017; 26. Winter Maintenance of Pedestrian Facilities in Delaware – A Guide for Local Governments February 2012

Crosswalks: A common problem is access to crosswalks from sidewalks. In most cases, a crosswalk within a roadway is cleared by a snowplow, and typically not fully cleared to a curb ramp area. Often, snow is plowed onto curb ramps, rendering crosswalks useless, and pedestrians are forced to cross streets in the middle of an intersection.³⁵

Bus Stops/Shelters/Park-n-Ride Facilities: Frequently ignored in studies are nonmotorized portions of trips. According to the National Household Travel Survey, about 12 percent of trips are by nonmotorized modes. Nearly one-third of trips of three miles or less are by walking or biking (Litman, 2011). Because walking represents a large portion of shorter trips by car or public transit, it is essential that pedestrian routes to bus stops, shelters, and park-n-ride facilities be free from snow and ice. This includes parking areas, accessibility-designated parking spaces, walkways, adjacent sidewalks, staircases, and bus shelters. This requires coordination between AAATA, private-property owners, other entities responsible for snow plowing and, in some cases, even private residential property owners near these facilities.³⁵

Curb Ramps: Curb ramps must provide an accessible route that people with disabilities can use to safely get from a roadway to a sidewalk. Curb ramps are a vital part of making the public right-of-way accessible to people with disabilities. The ADA requires state and local governments to provide curb ramps at pedestrian crossings to allow persons using a wheelchair, scooter, walker, or other mobility device to cross a street safely. Curb ramps are also required at public transportation stops where walkways intersect a curb.³⁵

Pedestrian Accessibility and Mobility: Walking is a basic transportation mode for many people, including those who rely on transit and those who are unable to drive a car. In several instances, pedestrians were able to use a crosswalk but were blocked from access to a sidewalk because the curb cut was not cleared. After a significant snowstorm, it's common to see pedestrians walking along a roadway or through a parking lot to avoid an uncleared sidewalk and people walking in the street carrying grocery bags or pushing strollers because sidewalks are not cleared to an adequate width, using the middle of an intersection rather than a crosswalk to cross a street, and walking along roadways at dawn or dusk.³⁵

Safe Routes to Schools: Sidewalks provide the opportunity for children to walk to school, but they are unsafe if not cleared consistently, in a timely manner, or to an adequate width. Problem areas included areas with school-zone signs and pavement markings that denote a route where children walk to school.³⁵

Access to and From Other Modes: Although today's society is automobile dominated, walking or biking is often the first or last part of a motorized trip by car, commuter rail, or bus. Confusion often exists as to who is responsible for clearing pedestrian infrastructure adjacent or connecting to a public transportation facility.³⁵

Commercial Areas: Recent research shows a clear connection between walkable environments and a community's economic vitality. Well-designed and well-maintained pedestrian-friendly infrastructure can enhance walkability for shoppers and support a good local business climate. Commercial activity centers in walkable places. Snow-covered walkways, snow-blocked access points, or gaps in connectivity between commercial areas and access routes serve as a deterrent to prospective customers. The DDA contracts snow-removal services within the DDA business district, including clearing snow from curb ramps at crosswalks and accessibility-designated parking stalls.³⁵

ADA Compliance: Snow or ice on sidewalks, curb ramps, crosswalks, and pedestrian medians and islands are physical obstacles that limit the accessibility of facilities to persons with disabilities. The city of Ann Arbor legally must ensure that pedestrian pathways are open and usable for persons with disabilities throughout the year.³⁵

Bikeways: Snow-removal is a critical component of bicycle safety. Snow should not block on-road bikeways, sidewalks, or curb ramps. Snow should be cleared from curb to curb to allow bicyclists to travel as far as possible to the right side of the road and provide for the visibility of pavement markings.³⁵

Municipal Winter Sidewalk Maintenance: General Approaches²⁷

There are a wide variety of snow-clearing practices across the United States. In most cases, sidewalks are the legal responsibility of the municipality, but local ordinances often shift responsibility to adjacent property owners. In Ann Arbor, current policy is that property owners are responsible for maintaining safe access to sidewalks. For city properties, the responsibility is spread across services, with park staff clearing park areas and utility staff clearing sidewalks by lift stations and other utility property.

Municipality-Led Scenario

Municipality-led sidewalk snow and ice clearing policies use city staff or contractors to clear the entire public sidewalk network. Bloomington, MN clears 250 miles of sidewalks with five snow-removal units. It can take four days to clear a three-to-five-inch snowfall. Minneapolis clears all corridors citywide, with priority on pedestrian corridors with streetlights. Burlington, VT, and Buffalo clear all city sidewalks.

Property Owner Responsibility Scenario

In Ann Arbor, property owners are responsible for clearing snow and ice from sidewalks adjacent to their property within a defined time frame.

Shared-Responsibilities Scenario

In some communities, the city, businesses, or a neighborhood collaborate to do winter sidewalk maintenance. Examples of various shared-responsibility models include:

Partially Municipal-Led: In some places in Minnesota, the municipality clears snow and ice from priority sidewalks, but property owners are responsible for clearing the remaining sidewalks. In Duluth, the city clears snow from approximately eighty miles of select sidewalks, while the remaining 370 miles of sidewalks are the responsibility of property owners. It takes the city three to four days to clear its eighty miles of sidewalks.

Partially Business-Led: Businesses in the Ann Arbor Downtown Development Authority (DDA) have created a district where DDA manages snow-removal for select sidewalks. Property owners organize to collect funds to contract with a service provider to clear sidewalks in that area.

Partially Community Organization Led (SnowBuddy Study): The SnowBuddy program in Ann Arbor is a volunteer model where donations fund equipment purchases, and volunteers operate two snow-removal machines to clear twelve miles of sidewalks in four hours in one residential area.

SnowAngel Program

In all these scenarios, a volunteer program could help neighbors who need assistance in clearing paths from their homes to the cleared sidewalks. Such a “SnowAngel” program may also assist city emergency management staff in identifying and supporting vulnerable residents in other emergency situations. No citywide funding is required other than coordination, which could be supported by SnowBuddy or similar community-based organizations. For example, in 2005, AAATA staff established an Adopt-A-Stop program, through which local businesses, organizations, schools, residents, and other community members volunteer to clean, dispose of waste, and keep up with seasonal maintenance of some bus stops.



“While I can walk and typically do walk, I have difficulty with balance and dysautonomia, and snowy and icy sidewalks make it really difficult to do safely. Last winter I fell several times, not even walking far, just going to the corner of my street. It’s very difficult to get out and take care of my dog. Even if it’s not truly icy, the snow compacts into something just as slippery and dangerous when people walk on it and it can be really difficult to judge if it is unsafe just based on visuals.”

27. Sidewalk Snowclearing Guide, Minnesota Walks, May 2018

Municipal Winter Sidewalk Maintenance Options: Evaluating Citywide Governance, Service Delivery, and Funding

Is sidewalk maintenance at a high level of service a necessary public good that should be managed at the municipal level? Does ADA require local government to provide resources and oversight to ensure appropriate services for all residents? The city does not leave park maintenance to neighborhoods. It has recently taken on sidewalk repair and replacement duties that were in the 1990s experimentally assigned to homeowners. Street snow-removal is a service provided to residents who drive motor vehicles. Should this service be provided to those who use nonmotorized transportation modes? Those most vulnerable in the community are most dependent on public transportation and paratransit – and the city intends to increasingly rely on nonmotorized transportation modes as part of a broader sustainability and resiliency policy.

A range of governance and service delivery scenarios could be considered. Each has pros and cons.

Scenario A – Public Model: A local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) is responsible for clearing sidewalks in major transportation corridors and neighborhoods. The lead organization would own and operate equipment and hire staff.

Scenario B – SnowBuddy at Scale: The SnowBuddy model expands to more neighborhoods with little or no city involvement. A variation is that a government institution would clear sidewalks along major transportation corridors.

Scenario C – Public, Non-Profit, Private model (PNPP): In this scenario, a local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) would zone the city and contract with providers to clear sidewalks. Contracts would be run through the city of Ann Arbor procurement process. This scenario requires a citywide funding source. SnowBuddy or some other entity could operate customer service and coordination of contractors.

These scenarios fall along a continuum of full local government control to resident-driven and neighborhood control.

Scenario A: Public

In this scenario, the level of service is rapidly improved across the city. There is no role for SnowBuddy. The lead government organization performs the services with existing and new staff and equipment or contracts private service providers. A dedicated funding stream would be developed to support this city service and allocate costs to system users.

As an example of a comprehensive “all-in” program operation, the University of Michigan²⁸ covers 168 miles of sidewalks with fifty seasonal full-time employees and thirty student and temporary employees working mainly from 6 a.m. to 2:30 pm. The program reduces salt use by half.

The program also clears snow and ice from some city sidewalks adjacent to UM properties based on needs identified by the Office of Services for Students with Disabilities.²⁹



28. <https://cgs.fo.umich.edu/wp-content/uploads/2018/01/University-of-Michigan-Winter-Maintenance-Overview.pdf>; 29. <https://ssd.umich.edu/>

Scenario B: SnowBuddy at Scale

Many local residents interviewed for this project believe that there are several neighborhoods that could take up the SnowBuddy model (e.g., the Old West Side). One interviewee likened this model to the beginnings of recycling in Ann Arbor, with block captains and lots of bottom-up engagement. The city and/or philanthropy could invest some funds to assist SnowBuddy.org or a similar organization in expanding to other neighborhoods. Discussions with school staff suggest that elementary schools with high numbers of walkers could support a SnowBuddy team, and that the proximity of an expansion area to schools, downtown, the U-M campus, and major pedestrian transportation connectors could guide such expansion.

However, most interviewees believe that this scenario will not work citywide and would never adequately bring sidewalk snow maintenance up to the necessary level of service across the city. Concerns include long-term reliance on volunteers as drivers and operations support, the risk in turnover in neighborhood leadership, and the funding model, which is unlikely to work for a full citywide program. Plus, enforcement by the city would need to be increased to improve compliance with city code, and this would increase city costs and general fund expenses.

A variation of this scenario would maintain reliance on local sidewalk clearing with SnowBuddy capacity at the neighborhood level and have the local government (e.g., city of Ann Arbor, Ann Arbor Area Transportation Authority) take responsibility for major corridor sidewalks. This hybrid scenario prioritizes maintaining major corridors, leaving sidewalks along minor corridors to neighborhood programs. This scenario would significantly increase the level of service for approximately one-third of city sidewalks. City costs would increase, and a funding source would need to be identified. Enforcement would need to be increased, adding to city costs. Even with this variation, questions remain: Is there enough neighborhood cohesion to scale this across the city? What happens when neighborhood champions move or disengage, and what additional city funding and actions would be needed to address that vulnerability?

Scenario C: Public, Nonprofit, and Private (PNPP)

In this option, a local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) would zone the city and contract with providers to clear sidewalks. Contracts would be run through the city of Ann Arbor procurement process. This scenario requires a citywide funding source. SnowBuddy or some other entity could operate customer service and coordination of contractors.



“Greatly! I am a stroke survivor that has to use a cane and an ankle-foot orthosis (AFO). My boots do not fit me with an AFO on in the winter. So, I rely on my cane.”

“It makes travel difficult and anxiety provoking. Some days, you cannot leave the house.”



Funding and Financing Models

SnowBuddy uses a voluntary “public radio” funding model. It accepts donations from neighborhood residents to clear the sidewalks of both donors and non-donors. Under other scenarios, city payment systems such as voluntary or involuntary special assessments could be used. A sidewalk utility model allocates costs based on parcel type. For some perspective, in 2018 the city spent \$19,699,000 constructing streets and \$15,489,000 maintaining streets³⁰.

Model 1: Voluntary Contribution

Each SnowBuddy neighborhood could do its own marketing and fundraising, but it would be more practical to use a citywide approach to marketing and fundraising to reduce costs and increase overall response. SnowBuddy’s experience is that approximately a fourth of households are able to contribute funds. The contributions average about \$100 per household per year and range from \$10 to \$2,000 annually. Every one of the 1,200 addresses and the full twelve miles of sidewalk are serviced regardless of who contributes. No research has documented how contributions would vary in different neighborhoods, which is likely an issue with complete reliance on the voluntary contribution model as a sustainable and effective funding source.

Model 2: Voluntary Special Assessment³¹

Assuming sidewalk maintenance is a public good, special assessments could be used to obtain funds, using a voluntary approach similar to Michigan Pace legislation³² that deemed energy efficiency investments a public good and allowed for voluntary special assessments. A key issue is whether the special assessment could be used for infrastructure improvements and ongoing maintenance including winter sidewalk maintenance. Special assessments are usually one-time capital investments (such as installing sidewalks). The Michigan Municipal League (MML) website notes:

To impose a special assessment, a municipality must first have the statutory authority to make the improvement or provide the service for which the assessment will be imposed. Second, the municipality must have the statutory authority to assess for that type of improvement or service.

The lands proposed to be specifically assessed comprise a special assessment district. The assessments are apportioned among the landowners in the district. Assessments may be required to be paid in a single payment or in multiple installments. Interest may be charged on unpaid installments.

Procedural requirements vary widely depending on the particular statute, charter or ordinance involved. The following are key elements to any assessment process: 1. petitions, 2. hearings on necessity and the apportionment of the assessment, and 3. notice content nature, location, cost of improvements, apportionment of cost, opportunity to object and appeal dissemination publication, and mailing timing.

Model 3: Mandatory Special Assessment

This funding model is typically used for one-time capital investment, such as installation of new sidewalks. A city decides that a public improvement is necessary, establishes mandatory special assessment districts, and apportions the special assessment within that district. In Ann Arbor, such an assessment is paid on a bill separate from the summer and winter tax bills. It must be determined whether a special assessment may be used for ongoing winter sidewalk maintenance.

30. <https://www.a2gov.org/departments/finance-admin-services/accounting/Documents/Performance%20Dashboard-update%20for%20FY2018%20audit.pdf>; 31. https://www.mml.org/pdf/resources/publications/ebooks/GLV_Hamdbook_by_chapter/CH%2021%20Special%20Assessments%20and%20User%20Charges.pdf; 32. [http://www.legislature.mi.gov/\(S\(zv11u1hwevv44vq0n0xji0na\)\)/documents/mcl/pdf/mcl-Act-270-of-2010.pdf](http://www.legislature.mi.gov/(S(zv11u1hwevv44vq0n0xji0na))/documents/mcl/pdf/mcl-Act-270-of-2010.pdf)

Model 4: Property Tax Millage

In this approach to funding a citywide program, voters would be required to approve a new millage or change an existing millage to fund the services. Based on rough calculations, a new millage increase of 0.13 mills would generate approximately \$1,000,000 in new funding. The chart shows comparative existing millages.

Millage	2019	Revenue
Parks Maintenance and Repair	1.0903	\$8,386,923
Ann Arbor Area Transportation Authority	1.9627	\$15,097,692
AAATA Additional	0.6936	\$5,335,385
Streets	1.9981	\$15,370,00
Solid Waste	2.3549	\$18,114,615

Under this model, funds would come only from taxpaying entities. No funds would be generated from the city, the university, public schools, houses of worship, and other tax- exempt entities.

Model 5: Sidewalk Access and Safety Utility

This considers sidewalk maintenance as a utility service for the public good of nonmotorized transportation, similar to a drinking water or energy utility in that residents would use different shares of it. A flat fee per parcel would be seen as a tax. As a utility, costs would be allocated based on a calculation of projected use of the services. All developed parcels that use the service are required to fund the utility, not just taxpaying parcels. The Michigan Municipal League describes how this works in a report:

Municipalities impose user charges by adopting a rate ordinance governing a particular service or range of services³³. The ordinance should set forth the purpose of the ordinance, the service provided, the rates to be imposed and the various classifications of users, the timing and method of billing and payment, penalties for nonpayment and other enforcement provisions. To meet the Bolt standard described below, the ordinance should make a serious attempt, to relate the user charge to a regulatory scheme. Ordinances may also address a broader and more detailed range of subjects, including regulations governing the use or provision of the service and licensing issues. Various grant making and regulatory authorities may require the use of a particular form of rate ordinance as a condition for approval.

The Bolt Test - The Michigan Supreme Court's decision in Bolt turned ratemaking on its head. The court articulated a new three-part test for determining whether a charge is validly characterized as a fee:

1. *it must serve a regulatory purpose,*
2. *it must be proportionate to the necessary costs of the service, and*
3. *the user must be able to refuse or limit use of the commodity or the service for which the charge is imposed.*

The rates and charges for municipal services must be applied to similarly situated users in a similar way. It is appropriate to distinguish among different classes of users and to apply different rate schedules to each class.

To apply this utility model to winter sidewalk maintenance, the city would develop a model to allocate nonmotorized trips based on parcel type. AAATA has detailed ridership data for each bus stop which could be used to calculate the number

33. https://www.mml.org/pdf/resources/publications/ebooks/GLV_Hamdbook_by_chapter/CH%202021%20Special%20Assessments%20and%20User%20Charges.pdf

of walking trips in a neighborhood. The federal government has a resource to help with this: *a Guidebook on Methods to Estimate Non-motorized Travel*.

Table 4.4B Peer City Commute to Work Comparison

City	Year 2000 Population	% Bike	% Pedestrian	% Public Transit	% Total Non-Car
Ann Arbor, MI	114,100	2.4%	16.5%	6.9%	25.8%
Berkeley, CA	102,743	6.0%	16.0%	19.9%	41.9%
Bloomington, IN	69,229	2.8%	15%	3.0%	20.8%
Boulder, CO	94,510	7.4%	9.7%	8.9%	26%
Cambridge, MA	101,355	4.1%	25.8%	26.5%	56.3%
Eugene, OR	137,799	8.8%	6.4%	5.2%	17.4%
Iowa City, IO	62,381	2.6%	16.0%	7.9%	26.0%
Madison, WI	207,525	3.3%	11.0%	7.4%	21.7%

From the US 2000 Census commute to work data as compiled in the online Carfree Census Database found at Bikesatwork.com, compiled by Bikes At Work, Inc., Ames, IA.

The average U.S. household makes 9.5 trips a day by all modes, with 82 percent of them vehicle trips; the rest are mainly by public transit, bicycling, and walking³⁴.

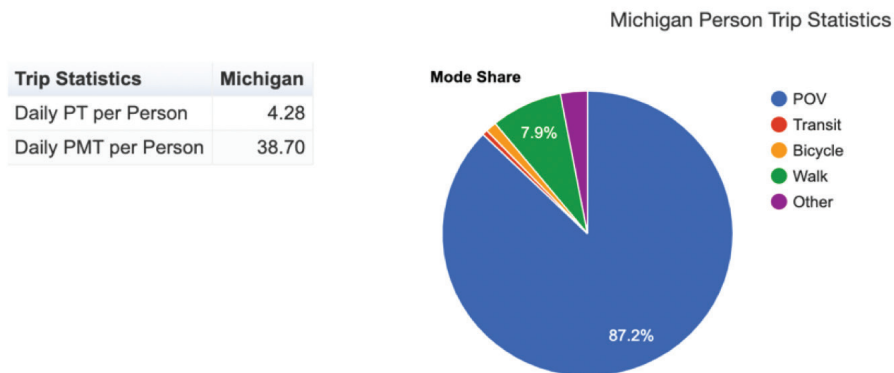


Figure 4 - <https://nhts.ornl.gov/tools/ptpp.shtml>

In Michigan, vehicle trips comprise 87 percent of all household trips. In Ann Arbor, 26 percent of all commuting trips are not by car.

Ann Arbor’s nonmotorized plan envisions even fewer vehicle trips. Based on data from similar cities, we might reasonably expect walking trips to comprise 20 percent of all trips and bicycling trips to reach 6 percent.

A single-family home with forty feet of sidewalk frontage generates fewer pedestrian, biking, and transit trips than a three-story multifamily unit with the same sidewalk length. The city’s rental housing database provides the number of rental units in Ann Arbor. Its assessor’s office database has information on buildings’ square footage that could be used to approximate the number of trips expected from office and retail units. All these data would be factored into the usage-based utility funding model.

34. <https://www.fhwa.dot.gov/policy/2010cpr/chap1.cfm>; 35. ORDINANCE NO. 08-1007

Funding and Financing Models continued

Oregon City, outside Portland, has adopted a transportation utility fee³⁵ ordinance³⁶ and enterprise fund to plan, manage, construct, and maintain its transportation system. Similar considerations could factor into nonmotorized utility here. Key components of the Oregon City model include:

- A permanent equitable funding mechanism and enterprise fund.
- Undeveloped parcels and city roads are not charged.
- Single-family residential and multifamily residential monthly service charges based on expected trips per household.
- Walking and bicycling trip rates for schools increase from elementary to middle school and high school.

Oregon City allocates costs based on trips associated with residential and nonresidential parcel uses. The city uses a detailed appendix to identify trips by parcel for a long list of nonresidential land uses.

Phoenix, OR has a similar transportation utility fee model, based on number of residential units and number of daily trips expected per unit. Whoever pays³⁷ the city's sewer bill for the building pays the transportation utility fee.

The Ann Arbor DDA Business Improvement Zone allocates some costs based on linear feet of sidewalk frontage and other costs based on buildings' square footage.

Under this option, the city could include other related nonmotorized transportation needs besides winter sidewalk maintenance, such as sidewalk replacement, bike path maintenance, bike path replacement, crosswalk installation and maintenance, and streetlights. The utility could include capital improvements and maintenance for infrastructure. It could cover related expenses such as sidewalk repairs, tree trimming and obstruction removal on sidewalks and bike paths, filling sidewalk gaps, and streetlights (which now use \$1.9 million a year from the city's general fund).

There is precedent for this kind of user fee locally. Ann Arbor is a leader in the use of a stormwater utility to provide sustainable funding for stormwater infrastructure and maintenance.

Allocating sidewalk costs based on nonmotorized trips is arguably more equitable because fees based on linear feet of frontage is a burden on homeowners with corner lots.



36. https://library.municode.com/or/oregon_city/codes/code_of_ordinances?nodeId=TIT13PUSE_CH13.30TRUTFE; 37. <https://www.codepublishing.com/OR/Phoenix/html/Phoenix13/Phoenix1328.html>

Example: Ann Arbor Utility Calculations Based on Oregon City Model

This calculation starts with a simple model based on some city housing and commercial property data³⁸:

The accompanying charts use housing and school data (not including university, NGO, and commercial properties) to calculate a usage-based utility funding source for Ann Arbor. The first chart applies a monthly charge rate of \$0.47 and the 9.57 “trips per day” factor (TPD) used by Oregon City. It would raise more than \$2.4 million.

Parcel Type	Count	TPD	Monthly Charge	Annual Charge	Total Monthly Charges	Total Annual Charges
					\$0.47	
Single Family Detached	20,416	9.57	\$4.50	\$53.97	\$91,829	\$1,101,950
duplex	2,535	9.57	\$4.50	\$53.97	\$11,402	\$136,826
Townhouse	4,779	9.57	\$4.50	\$53.97	\$21,495	\$257,946
Multiunit Apartment	22,043	6.72	\$3.16	\$37.90	\$69,621	\$835,447
AAPS Students	16,090	1.01		\$0.00	\$7,638	\$91,655
AAPS Staff	2,090	1.01		\$0.00	\$992	\$11,905
					\$202,977	\$2,435,729

Oregon City raised their rate from \$0.47 to \$1.17. Using the data in the chart above, this increase would raise more than \$6 million a year.

Ultimately, the unit rate is set by the level of service the community would want, and those costs are allocated for all users of the utility. The example charts do not include detailed trip estimates by parcel land use nor university offices and residence halls, commercial buildings, houses of worship, or other buildings that do not pay taxes.



“I’m in a scooter and can’t walk at all, the city snowplows push the snow up into the inclines that allow wheelchair access to cross roads. When they clear the roads, they neglect to go back and make sure the inclines at intersections, roads, city bus stops are clear of ice and snow. Wheelchairs can’t get through and this impacts the disabled from doing errands like shopping for groceries and getting to medical appointments.”



38. https://www.a2gov.org/departments/planning/Documents/Economic%20Health/Housing%20Layout_2014Update.pdf

Evaluation of Governance and Service Delivery Scenarios

What governance and service delivery approach do we want to pursue to get a much-improved level of winter sidewalk maintenance for residents, especially those with disabilities and those who rely on sidewalks to get to and from work and for shopping, medical care, and visits to friends and family?

The city has:

- 434 miles of sidewalks³⁹
- 149 miles of sidewalk gaps
- An estimated 290 miles of neighborhood sidewalks and 144 miles of major and minor sidewalk arteries
- 200 miles of residential streets
- 100 miles of major roads
- 13 bridges
- 79 miles of bike lanes
- 105 major mid-block crosswalks
- 89 registered neighborhood associations⁴⁰

Scenario A: Public Model

Summary: A local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) takes responsibility for clearing sidewalks in major transportation corridors and all neighborhoods. The lead organization would own and operate equipment and hire staff. SnowBuddy would continue as a support organization but not be involved in direct service delivery.

What we know: As part of its winter snow management programming, the city maintains a few small pieces of snow-clearing equipment for sidewalks and pathways and for major intersections. The city also has all the management, service, and customer call-center capacity needed to support of a citywide sidewalk clearing program. Many cities provide winter sidewalk snow and ice clearing as part of their municipally run snow-management programming. SnowBuddy personnel have met with city staff and discussed how the city could undertake these activities.

Scale Assumptions: The city would divide the city into service zones centered around major and minor nonmotorized transportation corridors that serve business districts, schools, churches, AAATA operations, and U-M campus facilities. The most recent estimate for the city doing sidewalk snow maintenance, from 2018, estimated start-up costs at \$2,043,276, including twenty-one new snow machines at \$80,000 each. Annual operating costs were estimated at \$2,770,528, assuming twenty-five events requiring four hours of overtime per event (based on historical data). These city estimates did not include salt, restoration costs, mechanical repairs, or repeat clearings. The most significant portion of the recurring costs is labor. It was estimated that twenty-four additional full-time employees would be needed (assuming twenty miles of clearing per shift)⁴¹. Overtime was estimated, based on previous years' winter maintenance labor costs. The estimate did not include additional fleet mechanics' time to maintain all the new equipment, nor did it include spring turf restoration that may be needed⁴². Performing winter maintenance only on ramps was more expensive than completing snow-removal on all sidewalks.

39. Communication with Ethan Miller – does not include UM or private/subdivision sidewalks; 40. <https://www.a2gov.org/departments/planning/Pages/Residential-Associations.aspx>; 41. Need background data – what would these employees do the rest of the year – how much of their time is estimated to be part of snow-removal.; 42. Winter Maintenance Update Memo July 12, 2019

If city service would cover all 434 city sidewalk miles, standards would be developed, and the city would provide and maintain equipment and personnel for all snow and ice events and work closely with all stakeholders to resolve service issues. An annual sidewalk audit would be completed in each zone to identify and remove obstructions. SnowBuddy operates at \$2,500 per mile. Burlington, VT runs its program at \$3,500 per mile. Toronto operates a citywide program at \$4,683 per mile⁴³. Based on this cost range and city staff estimates, \$2,750,000 to \$3,250,000 would be needed each year to service all 434 sidewalk miles.

Pros:

- Rapid improvement in major corridor and neighborhood sidewalk maintenance
- Could augment or eliminate BIZ district snow needs
- Could reduce U-M costs if level of service is similar to campus level of service
- Likely to save costs for residents who pay contractors to clear sidewalks
- May help to build some neighborhood cohesion
- May create opportunity to reduce homeowner insurance costs due to citywide reduction in slip-and-fall incidents
- More uniform application of salt should reduce runoff to the stormwater system and street tree mortality
- Likely increase in winter AAATA ridership with improved access to bus stops
- Significant reduction in enforcement resulting in cost savings to the city general fund enabling resources to be reallocated.
- Competitive bidding to reduce costs
- Could include additional funds for sidewalk gaps.

Cons:

- Some additional costs to the city in assisting with bid documents and procurement process
- No use of SnowBuddy.org

Opportunities:

- Scale allows for economies in purchasing new equipment. If a machine breaks down in one zone, resources from another zone can be used.
- A parallel “SnowAngel” program could assist neighbors getting from home to sidewalk.
- Ann Arbor Housing Commission has sixteen housing sites which could provide employment and worker training to operate and maintain equipment.
- Opportunity to clear bike paths in major corridors and neighborhoods

Scenario B: SnowBuddy at Scale

Summary: This scenario envisions a local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) taking on sidewalk clearance of major transportation corridors and the SnowBuddy model expanding to more neighborhoods.

What we know: SnowBuddy has operated for seven years in the Water Hill neighborhood. Neighborhoods with similar social cohesion could take on a SnowBuddy program. SnowBuddy operates with an annual budget of \$30,000, owns two snow machines, and can clear twelve miles of Water Hill sidewalks in four hours.

43. Communication from previous SnowBuddy research

Scale Assumptions: SnowBuddy could cover all 434 total city sidewalk miles at a cost of approximately \$1,500,000 for machinery, repair/replacement and operational supplies, with professional management and reliance on volunteer equipment operators. Or SnowBuddy could take responsibility for an estimated 290 miles of neighborhood city sidewalks at an estimated cost of \$1 million, and a city partner could do the major and minor interconnecting sidewalk corridors to take advantage of existing management, operational, and contracting capacity.

Pros:

- Encourages a resident-driven approach for at least some neighborhoods
- Potential for rapid adoption of major corridor winter sidewalk maintenance
- May help to build neighborhood cohesion
- Ann Arbor Housing Commission housing sites could provide employment and worker training to operate and maintain equipment
- More uniform education and application of salt should reduce runoff to the stormwater system and street tree mortality
- Lower cost to the city
- Some increase in winter AAATA ridership with improved access to bus stops

Cons:

- Increased costs to the city, depending on extent of city role
- Challenges to scale SnowBuddy quickly
- Challenges to find neighborhood champions across the city to start and maintain neighborhood-based service
- Reliance on SnowBuddy.org to help new neighborhoods develop and grow programs.
- Significant enforcement required without new funding
- Many neighborhoods will continue to have spotty sidewalk clearance
- No reduction in other enforcement (such as parking)
- City may be liable for failure to comply with ADA accessibility
- No additional funds for sidewalk gaps

Opportunities:

- SnowBuddy could seek grant funding to expand program to other neighborhoods
- Scale could allow for economies in purchasing new equipment
- Scale could allow for less redundancy: if a machine breaks down in one community, another SnowBuddy neighborhood could assist.
- A parallel “SnowAngel” program would assist neighbors needing help getting from home to sidewalk
- City could assist in maintaining information on the website, developing guidance for operating a SnowBuddy franchise, using its vehicle purchasing power to reduce capital costs, and tapping into Give 365 volunteer network platform.

Scenario C: Public, Nonprofit, Private Model

Summary: A local government institution (e.g., City of Ann Arbor, Ann Arbor Area Transportation Authority) would zone the city and contract with providers to clear sidewalks. Contracts would be run through the city of Ann Arbor procurement process. This scenario requires a citywide funding source. SnowBuddy or some other entity could operate customer service and coordination of contractors.

What we know: SnowBuddy has operated for seven years in the Water Hill neighborhood. With the support of the Ann Arbor Area Community Foundation, it has taken steps in recent years to increase the professionalism in the operation and financial management of SnowBuddy services, resulting in better standards of care, service specifications, operating procedures, equipment repair, renewal and replacement, and outsourcing of sidewalk obstruction clearing. Private snow-clearing contractors have operated in the city for decades for public agencies like AAATA, AAPS, the DDA, and large commercial properties. Some private contractors do winter sidewalk clearing under a subscription basis in certain Ann Arbor neighborhoods, providing services only to those residents that pay.

Scale Assumptions: The local government institution would divide the city up into service zones centered around major and minor nonmotorized transportation corridors that feed our business districts, schools, churches, AAATA operations, and U-M campus facilities. This would cover all 434 city sidewalk miles. Standards of care would be developed for each zone, and service agreements signed with a group of private sidewalk snow-clearing contractors with assigned zones. SnowBuddy or another entity committed to equitable non-motorized transportation could be responsible for coordinating customer service. An annual sidewalk audit would be completed in each zone to identify and remove obstructions. An estimated \$2,500,000 to \$3 million would be required.

Pros:

- Rapid improvement in major corridor and neighborhood sidewalk maintenance
- Competitive bidding in service zones should reduce costs
- Likely to save costs for property owners who currently pay contractors to clear sidewalks
- May help to build some neighborhood cohesion
- Citywide program may create opportunity to reduce homeowner insurance costs due to citywide reduction in slip-and-fall injuries.
- Significant reduction in enforcement saves costs in city general fund, allowing resources to be reallocated elsewhere.
- More uniform education and application of salt should reduce runoff to the stormwater system and street tree mortality
- Likely increase in winter AAATA ridership with improved access to bus stops

Cons:

- Community discussion of new funding model to support city-wide winter sidewalk maintenance through this public private partnership model

Opportunities:

- SnowBuddy can use its existing grant funding as well as additional philanthropic gifts and continue to raise citizen financial support to enhance service.
- Scale allows for economies in purchasing new equipment and for less redundancy: if a machine breaks down in one zone, resources from another zone can be used.
- Develop parallel “SnowAngel program” to assist neighbors who need help getting from home to sidewalk and clear sidewalk ramps after street plows come through.
- Ann Arbor Housing Commission has housing sites which could provide employment and worker training to operate and maintain equipment in partnership with contracted service providers.
- Opportunity to clear bike paths in major and neighborhood corridors

Evaluation of Funding and Financing Models

These criteria are used to evaluate these funding models:

- Comprehensive – covers full range of snow impact on nonmotorized transportation
- Connected – clear linkage between funding source and intended use of funds
- Equitable – fairly spreads cost to users without discrimination
- Proven – uses a mechanism that is widely accepted as an established funding system
- Reliable – produces consistent and predictable revenue

Each of the models was rated against the criteria on a scale of 1 (low performance) to 5 (high performance). The chart shows the millage and utility models ranking highest at 19 and 25 points.

Funding and Finance Models	Comprehensive	Connected	Equitable	Proven	Reliable	Total
Model 1	1	3	1	2	2	9
Model 2	2	3	2	3	3	13
Model 3	3	3	4	3	3	16
Model 4	4	3	3	5	4	19
Model 5	5	5	5	5	5	25

Conclusions and Recommendations for an Ann Arbor Winter Sidewalk Maintenance Solution

The city of Ann Arbor needs to develop a safe and equitable solution for clearing sidewalks of snow and ice. Several planning efforts have explored this problem and produced reports including the Pedestrian Safety and Access Task Force of 2015, which concluded: *“the walking environment in Ann Arbor can and should be improved, making the City safer, more accessible, and more friendly for people of all ages and abilities who use our public roadways, sidewalks, and pathways.”* The conclusion was based on the belief that *“a safer and more accessible walking environment enhances overall community attractiveness as a place to visit, live, and work, all of which contribute to economic prosperity; improves local environmental quality; and positively impacts citizens’ personal health by broadening the opportunities to use non-motorized transportation.”* The task force listed recommendations for how the City could improve its walkability, including several recommendations marked as high priority regarding the maintenance of safe sidewalks during the winter.

The task force concluded that the city should make its transportation system fully accessible to persons of all abilities and should continue to engage the Commission on Disability Issues on the design of specific pedestrian improvements and ordinances and promote safe, comfortable, and convenient travel for individuals who rely on pedestrian networks. It encouraged the city to assess the feasibility of and community support for the city undertaking snow and ice removal on sidewalks. The task force recommended that the city improve its wintertime sidewalk access. Four years later, the problem persists. Most recently, the A2Zero plan set a goal that by 2030, 25% of in-city trips are conducted by walking or bicycling thanks to ubiquitous and safe infrastructure.

Results from SnowBuddy Analysis

SnowBuddy explored three scenarios to organize and govern the service delivery and these are summarized below:

Local Government: A public institution (such as the municipal government or the Ann Arbor Area Transportation Authority) takes on all winter sidewalk maintenance as part of the city transportation system. This would be the most expensive scenario, but the city would have an important role in providing comprehensive, cost-effective, safe, and equitable winter sidewalk maintenance.



Conclusions and Recommendations for an Ann Arbor Winter Sidewalk Maintenance Solution *continued*

SnowBuddy at Scale: This is a variation on the volunteer fire department approach used in rural areas and small towns. SnowBuddy has demonstrated that it can successfully clear one neighborhood, and some other neighborhoods have the social cohesion required to fund, build, and maintain similar SnowBuddy efforts. But most do not, and additional resources would be needed to make this option a realistic solution.

Public-Private Partnership: We recommend that the city collaborate with both nonprofit and for-profit service providers. This scenario takes advantage of the city's contracting infrastructure and the city's capacity to provide some sidewalk snow-clearing services in selected areas, while supporting safe and equitable winter sidewalk access in neighborhoods through funded partnerships with contracted service providers.

We believe the Public-Private Partnership is most appropriate for further consideration.

Five models were identified and evaluated to fund a citywide program.

Model 1: Voluntary Contributions

Model 2: Voluntary Special Assessment

Model 3: Mandatory Special Assessment

Model 4: Property Tax Millage

Model 5: Sidewalk Access and Safety Utility

The last two models are most appropriate for further consideration.

In preparing this report, we have found that members of the community and staff from a wide variety of organizations support safe and equitable winter sidewalk access for all, including the Center for Independent Living, Washtenaw Walking and Biking Coalition, Ann Arbor Area Transportation Authority, Ann Arbor Public Schools, Huron River Watershed Council, Ann Arbor Housing Commission, Ann Arbor Public Schools, and the University of Michigan⁴⁴.

The strongest consensus is that the public-private service delivery scenario and either a voter-approved millage or a utility funding model forms a practical and cost-effective solution for delivering safe and equitable winter sidewalk maintenance. This could be supported by a continued role for SnowBuddy in assuring quality service delivery and sufficient funding.



44. The listed organizations have not made any official affirmations of support.

Next Steps

Road Map Work Streams

We recommend five key steps toward implementation.

1. Sessions with stakeholders to study the analysis and recommendations in this report.
2. Study sessions with city staff, the city manager, mayor, and city council as part of the budget development process to integrate these recommendations into the budget.
3. Further development of the recommended governance and service delivery approaches.
4. Implement a citywide winter sidewalk maintenance program – with bare pavement as the standard - building on the work in existing service areas (DDA area, campus, school properties, AAATA bus stops, major developments, and the Water Hill neighborhood).
5. Development of a Winter Sidewalk Maintenance Management Plan to prepare for the 2021-22 winter.

Funds for the next fiscal year could begin to support those initial service phases. In preparation for this step, SnowBuddy is mapping the city's sidewalks, dividing them into service zones, developing draft specifications for the services required in each zone, and starting discussions with potential subcontractors.

Winter Sidewalk Maintenance Management Plan

The City of Ann Arbor, AAPS, AAATA, DDA, business improvement districts, U-M, and major employers need to recognize the benefits of developing a comprehensive winter sidewalk maintenance management plan. The Delaware Guide for Winter Maintenance of Pedestrian Facilities is recommended as an outline for such a plan. Appended B contains details on a proposed similar plan for Ann Arbor.

A written plan would set forth policies, procedures, and responsibilities for a citywide response to winter snow and ice events. It would:

- Provide a systematic approach to keep the pedestrian transportation network safe and usable during the winter.
- Set forth standards for meeting responsibilities for snow and ice removal.
- Specify responsibilities of all partner agencies, entities, and emergency responders and how they would be coordinated during a winter storm to keep the pedestrian transportation network safe and usable.
- Serve as a communications tool to better inform the public, elected officials, municipal staff, partner agencies, volunteers, and other stakeholders about Ann Arbor's plan of action for efficient, effective, safe, and environmentally responsible snow-removal from the pedestrian transportation network.

A good winter sidewalk maintenance management plan would provide these benefits:

- A safe pedestrian transportation system
- Better mobility during a winter storm event.
- Clear expectations and procedures for sidewalk snow- removal personnel.
- A plan that includes year-round planning, preparation, implementation, and assessment.
- Greater public understanding of sidewalk snow-removal policies, procedures, and operations.
- Reducing liability and better risk management for sidewalk snow- removal operations.
- Ensuring that emergency responders can respond promptly to requests for service during winter weather.
- Promoting the coordination of emergency services during a winter storm among the state department of transportation, the city of Ann Arbor, emergency responders, and other responsible entities.
- Serving as a tool for training and continuous improvement.

Appendices

- Winter Maintenance of Pedestrian Facilities in Delaware: A Guide for Local Governments, February 2012, Marcia Scott and Brandon Rudd, Institute for Public Administration, School of Public Policy and Administration, University of Delaware, Funded by Delaware Department of Transportation
- Sidewalk Snow Clearing Guide, A Component of Minnesota Walks, May 2018. Minnesota Department of Health, Statewide Health Improvement Partnership
- Pedestrian Snow Removal Best Practices and Lessons Learned, Minnesota Department of Transportation, Office of Policy Analysis, Research and Innovation, July 2013
- Access for All: Maintaining Our Sidewalk Corridors in Winter, Research and Evaluation Summary, October 2018. Robbin Pott, JD, MPP, SnowBuddy, Inc.

APPENDIX A – ANN ARBOR SIDEWALK REGULATIONS

Chapter 49 - SIDEWALKS

4:51. - Definitions.

Unless the context specifically indicates otherwise, the meanings of terms used in this Chapter shall be as follows:

(1) “Sidewalk” shall mean any concrete or bituminous walkway, or walkway of other materials that is designed particularly for pedestrian, bicycle, or other non-motorized travel and that is constructed (a) in a public right-of-way that contains an improved street or in an easement adjacent and parallel to a public right-of-way that contains an improved street, (b) in a public right-of-way without an improved street, or (c) within or upon an easement or strip of land that is not adjacent and parallel to a public right-of-way, and that was taken or accepted by the city or dedicated to and accepted by the city for public use by pedestrians, bicycles, or other non-motorized travel. As used in this chapter, “sidewalk” includes walks and ramps leading to a crosswalk.

(2) “Administrator” shall mean the Public Services Area Administrator of the city or his or her designee.

(Ord. No. 46-77, 1-23-78; Ord. No. 85-92, § 1, 12-21-92; Ord. No. 49-01, § 1, 10-15-01; Ord. No. 43-04, § 20, 1-3-05; Ord. No. 13-15, § 1, 10-21-13)

4:52. - Specifications and permits.

No person shall construct, rebuild or repair any sidewalk except to the width specified by and in accordance with the line, grade, slope and specifications established by the Public Services Area Administrator, nor without first obtaining a written permit from the Public Services Area Administrator. The fee for such permit shall be \$0.06 per square foot up to 275 square feet and a minimum of \$6.00; \$0.045 per square foot from 275 square feet to 800 square feet and \$0.03 per square foot in excess of 800 square feet.

(Ord. No. 27-69, 6-9-69; Ord. No. 46-77, 1-23-78; Ord. No. 48-80, 8-4-80; Ord. No. 43-04, § 20, 1-3-05)

4:53. - Line and grade stakes.

The Public Services Area Administrator shall furnish line and grade stakes as may be necessary for proper control of the work, but this shall not relieve the owner of the responsibility for making careful and accurate measurements in constructing the work to the lines furnished by the Public Services Area Administrator. Where it is necessary to replace engineer’s stakes disturbed or destroyed without fault on the part of the city, or its employees, a charge of \$2.00 per stake shall be paid.

(Ord. No. 46-77, 1-23-78; Ord. No. 48-80, 8-4-80; Ord. No. 43-04, § 20, 1-3-05)

4:54. - Sidewalk specification.

Sidewalks shall be constructed of concrete not less than 4 inches in thickness. Expansion paper shall be placed in all joints. All concrete used in sidewalk construction shall, 28 days after placement, be capable of resisting a pressure of 2,500 pounds per square inch without failure. The Public Services Area Administrator may establish additional detailed specifications not inconsistent herewith, and no person shall fail to comply therewith. Every contractor building sidewalks shall stamp at each end of the walk constructed by him, his name and the year in which the said walk was constructed, such stamp to be in a form prescribed by the Public Services Area Administrator.

(Ord. No. 46-77, 1-23-78; Ord. No. 43-04, § 20, 1-3-05)

4:55. - Permit revocation.

The Public Services Area Administrator may issue a stop order to any permittee holding a permit issued under the terms of this chapter for failure to comply with this chapter, or the rules, regulations, plans and specifications established by the public services area for the construction, re-building or repair of any sidewalk, and the issuance of such stop order shall be deemed a suspension of such permit. Such stop order shall be effective until the next regular meeting of the City Council, and if confirmed by the Council, at its next regular meeting, such stop order shall be permanent, and shall constitute a revocation of the permit.

(Ord. No. 46-77, 1-23-78; Ord. No. 43-04, § 20, 1-3-05)

4:56. - Ordering construction.

The City Council may, by resolution require the owners of lots and premises to construct, rebuild or repair sidewalks in the public right-of-way adjacent to and abutting upon such lots and premises, and shall specify in said resolution the material to be used for said sidewalks. When any such resolution is adopted, it shall be the duty of the city clerk to cause a notice of the same to be published in a newspaper of general circulation within the city in at least 2 issues thereof and on successive publishing days, directed to the owner or owners of the lots and premises, without naming him or them, in front of and adjacent to which said sidewalk is to be constructed, rebuilt or repaired, requiring such owner or owners to construct, rebuild or repair, as the case may be, such sidewalk as is required by such resolution, within 10 days from the date of the last publication of the notice, unless a different time shall be specified in the resolution of the City Council, and, if specified by Council, requiring said owner or owners to notify the city by a given date as to whether said improvements will be made by said owner or owners.

(Ord. No. 11-72, 3-20-72)

4:57. - Construction by city.

If the owner of any lot or premises shall fail to construct, rebuild or repair any particular sidewalk as described in said notice, and within the time and in the manner required thereby, or, if Council has required notification by a given date that the improvements will be made and such notification has not been given, the Public Services Area Administrator is hereby authorized and required, immediately after the expiration of the time limited for the construction, rebuilding or repair by the said owner, to cause such sidewalk to be constructed, rebuilt or repaired and the expense thereof shall be charged to such premises and the owner thereof, and collected as a single lot assessment in the manner provided in section 1:292 of this Code.

(Ord. No. 11-72, 3-20-72; Ord. No. 46-77, 1-23-78; Ord. No. 43-04, § 20, 1-3-05)

4:58. - Sidewalk maintenance.

(A) Except as provided in subsections (B), (C), (D), and (E) of this section 4:58, all sidewalks within the city shall be kept and maintained in good repair by the owner of the land adjacent to and abutting upon the same, and if any owner shall neglect to keep and maintain the sidewalk along the front, rear, side of the land owned by her or him in good repair and safe for the use of the public, the said owner shall be liable to the city for any damages recovered against the city sustained by any person by reason of said sidewalk being unsafe and out of repair. If the Public Services Area Administrator determines that the condition of a sidewalk is such that repair is required and the owner of land abutting or adjacent to the sidewalk fails to make the repairs after notice from the city, the city may proceed to repair the same and the cost of such repairs shall be charged against the land which said sidewalk adjoins and the owner of said land, and shall be collected as a single lot assessment as provided in section 1:292 of this Code. As used in this subsection (A), "sidewalk" does not include curb ramps or any sidewalk flag that is both adjacent to the top edge of one or more curb ramps and at the corner of a property.

(B) From July 1, 2017 through June 30, 2022 all sidewalks within the city that are both outside the Downtown Development District's boundaries, as established by section 1:154 of Chapter 7, and adjacent to and abutting real property against which the city levies property taxes shall be exempt from the requirements of subsection (A), except that if covenants, restrictions, an agreement, easement, or other documents of a subdivision, condominium or development specifically make the property, lot or unit owners, a homeowners association, condominium owners association or similar entity, or the successor in interest of any of the foregoing, responsible for the care or maintenance of such sidewalks, then the exemption in this subsection (B) from the requirements of subsection (A) shall not apply. As used in this subsection (B), "sidewalk" shall have the same meaning as in subsection (A).

(C) During any period of time from July 1, 2017 through June 30, 2022 that the city and the Downtown Development Authority do not enter into an agreement as provided in subsection (D)(2), all sidewalks that are both within the Downtown Development District's boundaries, as established by section 1:154 of chapter 7, and adjacent to and abutting a property with a single- or two-family house against which the city levies property taxes shall be exempt from the requirements of subsection (A). As used in this subsection (C), "sidewalk" shall have the same meaning as in subsection (A).

(D) During the period July 1, 2017 through June 30, 2022 the city may enter into an agreement with the Downtown Development Authority under which the city and the Downtown Development Authority would agree to the provisions in either subsection (D)(1) or subsection (D)(2) for one or more one-year periods running from July 1 to June 30:

(1) Agreement for sidewalks within the Downtown Development District to be treated like sidewalks outside the Downtown Development District.

(a) That the sidewalks that are both within the Downtown Development District's boundaries, as established by section 1:154 of Chapter 7, and adjacent to and abutting real property against which the city levies property taxes, including property with a single- or two-family house, would be exempt from the requirements of subsection (A). As used in this subsection (D)(1), "sidewalk" shall have the same meaning as in subsection (A);

(b) That the Downtown Development Authority would transmit to the city in each year during which the agreement is in effect, 0.125 mill of the 2.125 mill streets, bridges, and sidewalks millage, as adjusted by any required millage roll backs, that is captured by the Downtown Development Authority, which the city may use to repair the sidewalks identified in subsection (D)(1)(a); and

(c) That the city may use the amount transmitted under subsection (D)(2)(b) only within the Downtown Development District's boundaries, as established by section 1:154 of chapter 7, but the agreement shall neither obligate the city to use the full amount transmitted under subsection (D)(2)(b) nor limit the city to using only the amount transmitted under subsection (D)(2)(b), for repairs of sidewalks identified in subsection (D)(1)(a).

(2) Agreement for Downtown Development Authority to be responsible for keeping and maintaining sidewalks in good repair.

(a) That the Downtown Development Authority would be responsible for keeping and maintaining in good repair, as required by subsection (A), the sidewalks that are both within the Downtown Development District's boundaries, as established by section 1:154 of Chapter 7, and adjacent to and abutting real property against which the city levies property taxes;

(b) That the city would transmit to the Downtown Development Authority in each year during which the agreement is in effect, 0.125 mill of the 2.125 mill streets, bridges, and sidewalks millage, as adjusted by any required millage roll backs, that is collected from property located within the Downtown Development District boundaries, as established by section 1:154 of Chapter 7, and that is not otherwise captured by the Downtown Development Authority, for the Downtown Development Authority to use to fulfill the requirements of subsection (A) for the sidewalks identified in subsection (D)(2)(a);

(c) That the city will notify the Downtown Development Authority of emergency repairs required under section 2:59 of any sidewalk described in subsection 2:58(D)(2) and the Downtown Development Authority will immediately proceed to perform those repairs. If the Downtown Development Authority does not immediately proceed to perform those repairs, the city will perform the repairs as provided in section 2:59. The city will bill the Downtown Development Authority and the Downtown Development Authority will pay the city for the city's cost for such emergency repairs;

(d) That if the Public Services Area Administrator determines that the condition of a sidewalk identified in subsection 2:58 (D)(2) is such that repair is required, and if the Downtown Development Authority fails to make the repairs after notice from the city, the city may proceed to repair the same and will bill the Downtown Development Authority, and the Downtown Development Authority will pay the city for the city's cost for such repairs;

(e) That if the Downtown Development Authority neglects to keep and maintain any of the sidewalks identified in subsection (D)(2) for the cost of repairs in good repair and safe for the use of the public, the Downtown Development Authority shall be liable to the city for any damages recovered against the city sustained by any person by reason of said sidewalk being unsafe and out of repair.

(E) Sidewalks as defined in section 4:51(1)(b) or (c) shall not be the responsibility of the owner of the land adjacent to and abutting upon the same.

(F) The sidewalk maintenance and repair required by this section 4:58 does not include the snow and ice removal required by section 4:60.

(Ord. No. 49-01, § 2, 10-15-01; Ord. No. 12-20, § 1, 6-4-12; Ord. No. 13-15, § 1, 10-21-13; Ord. No. 18-13, § 1, 5-21-18)

4:59. - Emergency repair.

(A) If the Public Services Area Administrator determines that the condition of any sidewalk is such that immediate repair is necessary to protect the public, he/she shall immediately proceed to repair the same without notice to the owner of the land abutting thereon or adjacent thereto. Except as provided in subsections (B) through (D), the cost of such emergency repairs shall be charged against the land which said sidewalk adjoins and the owner of said land, and shall be collected as a single lot assessment as provided in section 1:292 of this Code.

(B) Emergency repairs by the city from July 1, 2017 through June 30, 2022 of any sidewalk described in either subsection (B) or (C) of section 4:58 shall not be charged against the land which said sidewalk abuts or adjoins or its owner.

(C) Emergency repairs by the city of a sidewalk that is both within the Downtown Development District's boundaries, as established by section 1:154 of Chapter 7, and adjacent to and abutting real property against which the city levies property taxes, including property with a single- or two-family house, that are done from July 1, 2017 through June 30, 2022 during a year in which the city and the Downtown Development Authority have entered into an agreement in accordance with subsection (D)(1) of section 4:58 shall not be charged against the land which said sidewalk abuts or adjoins or its owner.

(D) Emergency repairs by the city of a sidewalk that is both within the Downtown Development District's boundaries, as established by section 1:154 of Chapter 7, and adjacent to and abutting real property against which the city levies property taxes, excluding property with a single- or two-family house, that are done from July 1, 2017 through June 30, 2022 during a year in which the city and the Downtown Development Authority have entered into an agreement in accordance with subsection (D)(2) of section 4:58 shall be charged to the Downtown Development Authority.

(Ord. No. 46-77, 1-23-76; Ord. No. 43-04, § 20, 1-3-05; Ord. No. 12-20, § 1, 6-4-12; Ord. No. 18-13, § 1, 5-21-18)

4:60. - Removal of snow and ice from sidewalks, walks, and ramps.

(1) Except for sidewalks defined by section 4:51(1)(b) and (c), all snow and ice which has accumulated prior to 6:00 a.m. on a sidewalk adjacent to property not zoned residential shall be removed by the owner or occupant by noon. The owner or occupant of the property shall also remove snow and ice from walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk. Provided that when ice has so formed upon any sidewalk, walk or ramp that it cannot be removed, then the owner or occupant shall keep the same effectively sprinkled with sand, salt or other suitable substance in such manner as to prevent the ice from being dangerous, until such time as it can be removed, and then it shall be promptly removed.

(2) Except for sidewalks defined by section 4:51(1)(b) and (c), within 24 hours after the end of each accumulation of snow greater than 1 inch, the owner or occupant of every property zoned residential shall remove the accumulation from the adjacent sidewalk and from walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk.

(3) Except for sidewalks defined by section 4:51(1)(b) and (c), within 18 hours after any ice forms, the owner or occupant of every property zoned residential shall treat the ice on the adjacent sidewalk and on walks and ramps that are at bus stops or that lead to a marked or unmarked crosswalk with sand, salt or other substance to prevent it from being slippery.

(4) Except for sidewalks defined by section 4:51(1)(b) and (c), all snow and ice that has accumulated on a sidewalk adjacent to property zoned PL (public land) shall be removed by the owner or occupant as follows:

(a) If the property that is zoned PL is adjacent to property not zoned residential, then the owner or occupant of the property zoned PL shall comply with the requirements of subsection (1).

(b) If the property that is zoned PL is adjacent to property zoned residential, then the owner or occupant of the property zoned PL shall comply with the requirements of subsection (2).

(c) If the property that is zoned PL is adjacent to property zoned residential and to property not zoned residential, then the owner or occupant of the property zoned PL shall comply with the requirements of subsection (1).

(5) The requirements in this section apply to the accumulation of snow and/or ice from any source, including, but not limited to, precipitation, drifting of snow, and drainage or spilling of water onto the sidewalk, walk or ramp.

(6) Compliance with this section requires making sidewalks, walks, and ramps free of snow and ice for their entire constructed width and length.

(7) Snow and/or ice that is removed as required by this section or that is removed from private property shall not be placed on a sidewalk or street.

(8) "Owner," for purposes of this section and section 4:61, means the owner as shown in the records of the City Assessor.

(9) "Season," for purposes of this section and section 4:61, means October 1 of each year through May 31 of the following year.

(10) "Walk," for purposes of this section means any walkway that is paved with sidewalk material and that is contiguous with the sidewalk adjacent to the owner or occupant's property regardless of whether or not it is parallel to the right-of-way.

(11) An owner of the property or an occupant who fails to comply with this section shall be responsible for a civil

infracton, which shall be punishable by a civil fine of not more than \$100.00 for the first citation issued in a season, not more than \$250.00 for the second citation issued in a season, and not less than \$500.00 and up to \$1,000.00 for each additional or subsequent citation issued

in a season, plus costs and all other remedies available by statute. The maximum fine for any offense shall not exceed \$1,000.00. If the penalty is not paid within 45 days, it may be assessed against the parcel under section 1:292 of this Code.

(Ord. No. 5-86, 2-20-86; Ord. No. 77-92, § 1, 12-21-92; Ord. No. 49-01, § 3, 10-15-01; Ord. No. 13-15, § 1, 10-21-13; Ord. No. 15-04, § 1, 10-5-15)

4:61. - Issuance of citation and removal by city.

(1) Each season, the first time snow or ice is not removed or treated by the owner or occupant as required in section 4:60, the city will give notice to the owner or occupant. The notice may be made in person, by telephone, by mail or by written notice left at the property. The notice will indicate that if the owner or occupant fails to remove the snow and/or ice within 24 hours of the notice, a citation may be issued and the city may cause such snow and/or ice to be removed at the owner's expense. For second or subsequent days on which snow or ice is not removed or treated as required in section 4:60, the city may issue a citation and remove the snow and/or ice at the owner's expense without further notice.

(2) Any time the city has snow and/or ice removed under this section, the actual cost of removal of snow and/or ice that is incurred by the city plus an administrative fee of \$50.00 will be charged to the owner of the property. If the owner fails to pay the charge within 45 days, then it may be assessed against the parcel as provided for in section 1:292 of this Code. The charges under this section are separate from any fine imposed under section 4:60 and are not waivable or alterable by the court in proceedings on a citation issued under section 4:60.

(Ord. No. 83-70, 10-13-70; Ord. No. 46-77, 1-23-78; Ord. No. 81-81, 12-7-81; Ord. No. 5-86, 2-20-86; Ord. No. 77-92, § 2, 12-21-92; Ord. No. 15-04, § 2, 10-5-15)

4:62. - Financial hardship.

Upon proof of financial hardship, the Administrator may authorize charges under section 4:61(2) to be paid in installments, to be reduced, or to be canceled.

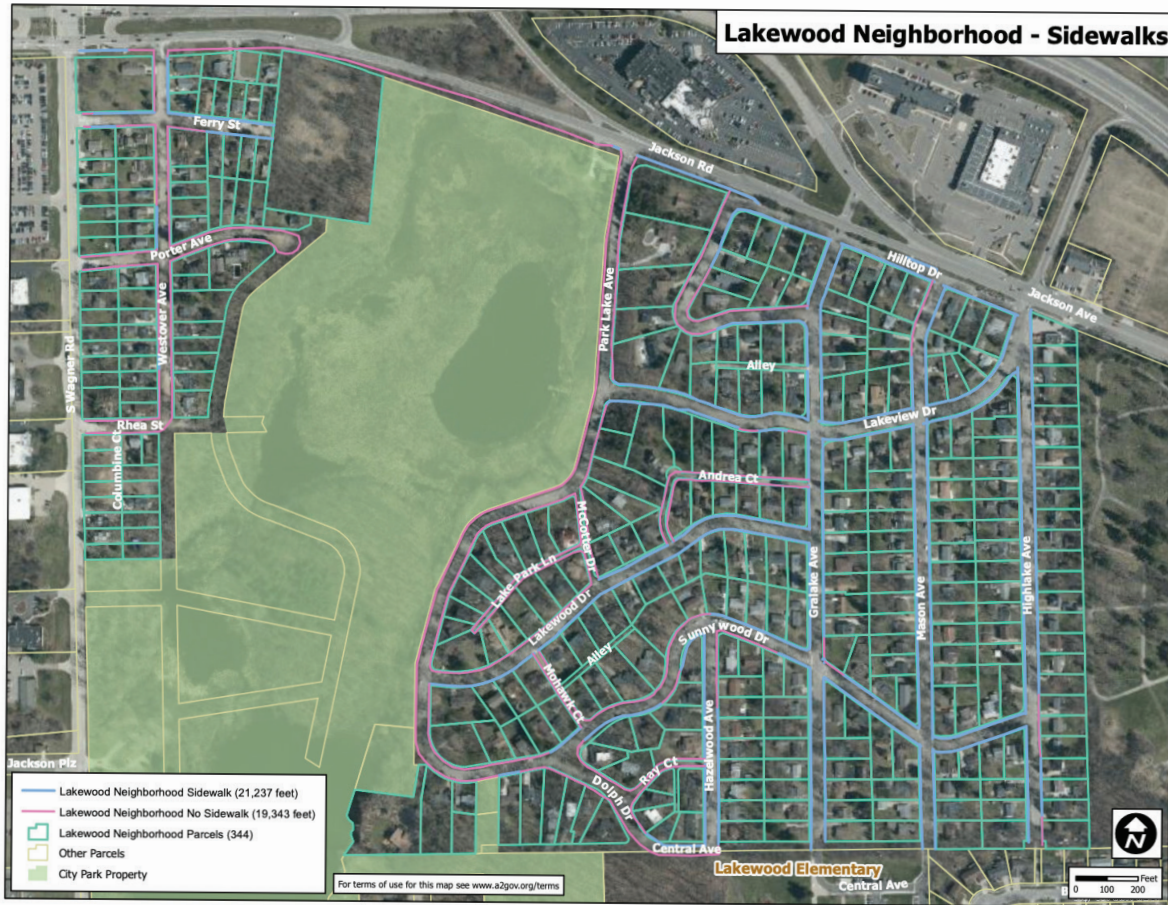
(Ord. No. 11-75, 2-10-75; Ord. No. 5-86, 2-20-86; Ord. No. 15-04, § 3, 10-5-15)

4:63. - Reserved.

Editor's note— Ord. No. 15-04, § 4, Oct. 5, 2015, repealed § 4:63, which pertained to penalty and derived from Ord. No. 5-86, 2-20-86; Ord. No. 77-92, § 3, 12-21-92; Ord. No. 25-04, § 4, 8-2-04.

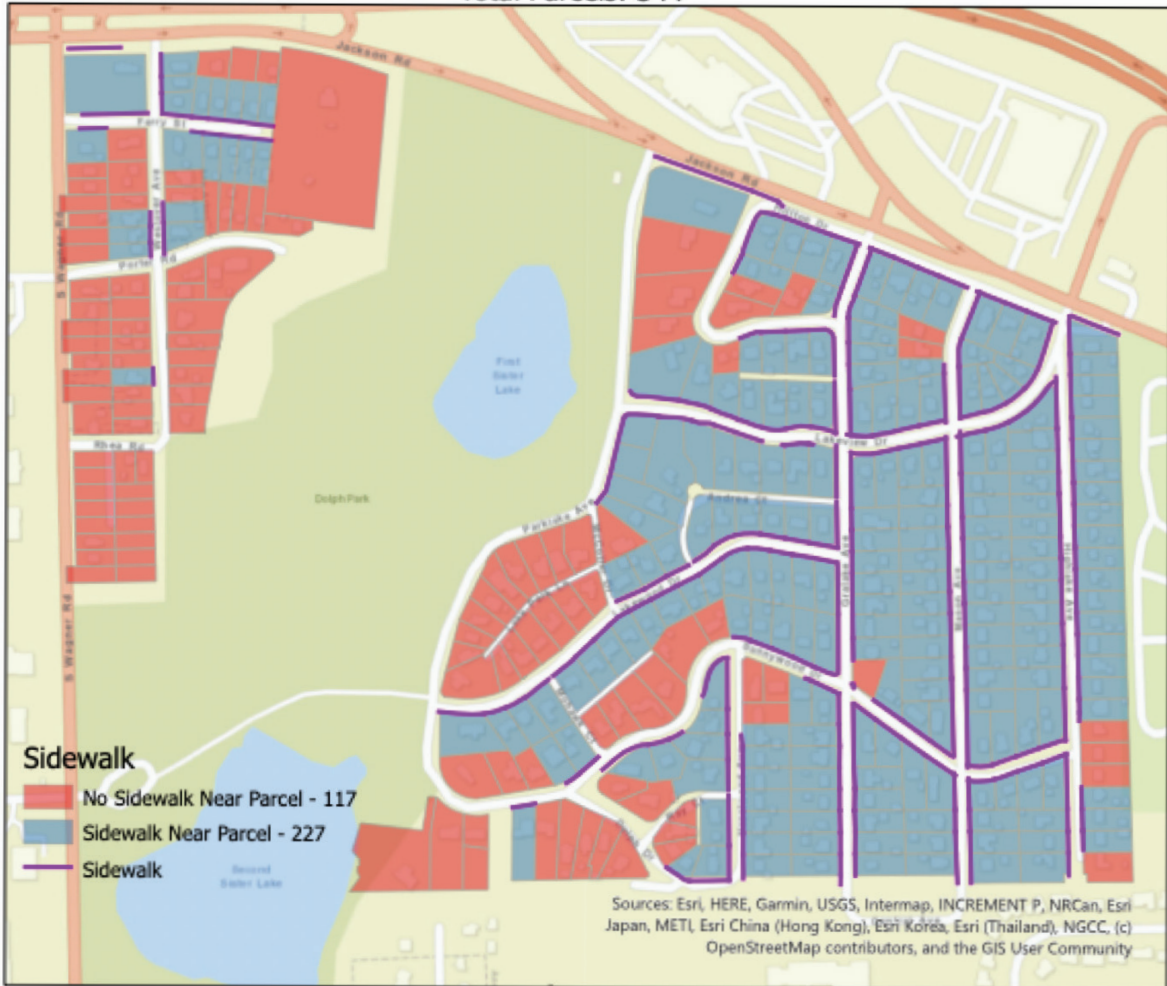
APPENDIX B – SISTER LAKES MAPPING

SnowBuddy used the Freedom of Information Act and purchased City of Ann Arbor Assessor data to create GIS layers linking parcels and sidewalk data to create a city-wide map that could be used to bid out operable sidewalk maintenance areas for the city.



Sister Lakes Neighborhood Sidewalk Clearing

Total Parcels: 344



Company A Bid:

Total Cost: \$23,700

Participation	Cost Per Parcel	# of Parcels
100%	\$68.90	344
75%	\$91.68	258
50%	\$137.79	172
30%	\$206.09	115
Sidewalk Adjacent Only	\$104.40	227

Optional Driveway Plowing on Individual Basis

Driveway Size	Per Plow	Seasonal Lump Sum
Small (320 sq ft)	\$30	\$360
Medium (640 sq ft)	\$35	\$420
Large (960 sq ft)	\$40	\$480

Company B Bid:

Total Cost: \$44,140

Participation	Cost Per Parcel	# of Parcels
100%	\$128.31	344
75%	\$171.29	258
50%	\$257.60	172
30%	\$383.46	115
Sidewalk Adjacent Only	\$163.81	227



Created By: Trey Snow 9/4/2020

APPENDIX C – CENTER FOR INDEPENDENT LIVING SURVEY RESPONSES

The following are quotes from survey participants in their own words.

I do not go out as often in the winter time because of the lack of or poor maintenance in neighborhoods and the city.

Impedes my mobility.

Hard to get to the bus stop or around town

It HUGELY impacts me. I have a physical disability and without proper shoveling, plowing and PM salting I am absolutely likely to fall or have a hard time getting around at least. When I fall, I can't get myself back up (made even hard if the pavement or sidewalk is slick as well). I fell hard 3 times in a row within a 2-day span of time around Haven Hall (where I Work). We need more support regarding this.

I have to be careful of where I'm walking and pay attention, looking for ice and snow. I could slip and get an injury due to the fact that I walk with crutches.

We have to be very careful. It is icy sometimes. I fall down when the sidewalk is covered in ice. I worry about falling. The bus stop has a lot of ice and snow. It makes it hard to be safe. sometimes have to stand in the road. It is not safe.

It makes navigating outside for the purposes of getting to work, shopping, medical appointments and other activities during the winter months significantly more difficult and unsafe.

I visit my family in Ann arbor often and also take care of walking the kids to school and back and around the area. I shop in Ann Arbor.

It keeps people in their houses and makes them more reliant on cars, both of which make the community more isolated and dangerous.

It makes getting around in my everyday wheelchair very difficult in winter weather if the sidewalks are not maintained.

I'm more likely to lose traction and fall.

I'm in a scooter and can't walk at all, the city snowplows push the snow up into the inclines that allow wheelchair access to cross roads. when they clear the roads, they neglect to go back and make sure the inclines at intersections, roads, city bus stops are clear of ice and snow wheelchairs can't get through and impacts disabled from doing errands like shopping for groceries, getting to medical appointments.

It's a pain to walk home when people don't clear their sidewalks within 24hrs of a snowfall.

As a disability justice advocate, I am concerned for impact this has due to the accessibility barriers it creates. As someone who does not drive, it also impacts my own ability to navigate around town.

Hard to get around on my sidewalk and driveway with the bad back that me and my wife both have

I work and utilize areas throughout Ann Arbor and Washtenaw County.

Cannot lift feet to clear the snow. Ice on sidewalk is slippery and dangerous

I am in my 70s and prefer to walk in order to get exercise. Walking in I-JM spaces is ok, student neighborhoods not so much.

crazy. I've fallen before already. I don't want to fall again. North Ingalls is never properly deiced.

Need to take more care on sidewalks when walking to locations in AA. I worked in AA with the disabled community so am aware of their issues.

it's difficult moving around

Slip and slide

Concern about falling and injuring my body parts

I am honestly frightened to walk from the parking garage to the building where I work in Ann Arbor (a 10-minute walk) because of the poor winter sidewalk maintenance. I know individuals who have broken legs/arms slipping and falling on Ann Arbor sidewalks, and since I already have knee related disabilities. I am afraid of further injury.

am 60 years old, and if I fall, I'm at high risk for injury. Therefore, there were many times last winter that I was unable to leave my house due to the accumulation of ice.

I am blind and often slip on ice. I find it hard to travel using my white cane on chunky ice sidewalks or where snow is piled high at a cross walk.

I am unable to walk to class or navigate outside my dorm even when the snow is not properly taken care of. This includes icy walkways and indoor wetness due to lack of rugs in entrances. The slippery surfaces make for a very difficult time to get to where I need to be in a timely manner.

Limits when I walk outside

I have mobility issues with my right leg, as well as nerve damage so I don't have 100% control of it. If there's ice/snow I couldn't catch myself from falling unable to get out of house at times.

It makes it much more difficult, if not impossible, to go out and go about my day in the community.

It's rather inconvenient, particularly when the piles/ridges from plow trucks push into curbs cuts, rendering them unnavigable.

I spend a lot of time in Ann Arbor and I appreciate when the ice is removed. I had a back injury and worry about slipping and re-injuring myself. I don't like walking on ice. Even snow can get slippery when everyone walks on it and packs it down.

I am visually impaired and, when snow is not cleared or piled up poorly, it becomes a trip hazard. Sidewalks that are not gritted also become unusable because I cannot find a path through icy patches.

Walking to the store is almost impossible, taking more time than usual.

I walk to work and find it treacherous to walk on sidewalks that aren't maintained. Sometimes it means slogging through a lot of snow and sometimes it means slipping on ice that's accumulated on freshly shoveled walks.

I do not have a disability, but have a son with one and it's very hard to get around with him in the winter

It keeps me confined in my home

I want to be out of Ann Arbor Jan. - Mar. because of snow and ice. Sidewalks are a part of it. I use a walker. Last winter I was going to the State Theater. It had snowed and clearing of street and

I can't drive and it prevents me from being able to walk to appointments, work, etc.

sidewalk had been done. My husband stopped to drop me off immediately in front of the theater. The grader had left a pile of snow against the curb. The sidewalk was cleaned except for a foot or two along the curb. The pile of snow in those few feet between the cleared part of the sidewalk and the cleared part of the street was high and had been stepped into numerous times it is making it a very uneven and a difficult pile to navigate. Businesses often clear down the center of the sidewalk and parking lot, but often leave the space where one must step outside the car or next to the curb unclear. It's enough to make me feel safer stuck inside at home for months. I realize it takes a lot of work to do this much, and it is enough to help most people, but it is difficult for me as I cannot risk falling again.

I am inconvenienced by it as it slows me down. I am more concerned about it as a person who cares about my neighbors with disabilities or who are aging and less sure footed. This limits their access to general community venues and friends/family.

Have fallen too many times, can't get out for practical items holes uneven ground underneath snow lack of handicap spaces especially downtown. They make you feel like you're a freak show until it happens in their families.

Makes it difficult to leave the home, go to the store, pharmacy, doctor's appointments and the bank. It is a fall hazard and also I risk my health if I have to clear the snow

Makes it very difficult to get to work or walk to where I need to go. I'm very afraid of slipping and falling.

riding the buses from Ypsilanti to Ann Arbor is very hard when the sidewalks are not maintained, and sometimes the roads have been shoveled so the ice is blocking all the curbs to get from the sidewalk to the bus

Because of visual impairment, (low vision), it can be difficult (especially at night) to see problems on the sidewalk, especially clear ice. Easy to slip on clear ice. This worries me as a senior citizen.

in some places, there's not enough room

since I am a resident of Delonis shelter, this does not matter me much

Struggling to get through anywhere not yet plowed. Sidewalks on major streets should be maintained, but often are not, unless they are downtown.

It makes difficult to navigate roads, curbs and sidewalks independently, and sometimes you miss curb cuts and obstacles if snow is blocking the way. This makes navigation is frustrating and can increase the likelihood of getting hurt while trying to navigate.

Removal alone can make sidewalks more dangerous if temps are dropping. So after shoveling, please sprinkle fine grained SALT or chemical snow melter. THAT WOULD BE GOOD! Otherwise, walk would be treacherous for me, Thanks!

Makes it hard to walk with my bad knees.

My daughter is in a wheelchair and you can't push a chair through the snow.

Icy steps, sidewalks and spaces near bus stops make walking on UM campus difficult for undergraduates with disabilities.

HORRIBLY. Lives me homebound! Am not able to provide service

We pay to have it done

I cannot walk on ice and snow because I cannot anticipate or control potential falls. I have no proprioception in my feet, and little feeling. Lack of balance also affects walking in icy, snowy conditions. using my wheelchair or scooter is impossible in areas that haven't been cleared well.

It makes me less confident about running errands or attending concerts or events in Ann Arbor

Inability to bike/walk

I have 2 bad knees that are very unstable, slipping on an icy sidewalk is a real possibility and one that would keep me from venturing out when the weather is bad.

It makes it challenging to navigate.

I use the a ride walk or use my walker I cannot use the sidewalks even the ones by a bus stop or I cannot get to a bus stop easily the county or city need to be aware of their portion of the cross walks, street crossings especially the path to the to where your suppose to cross at arborland whoever designed that crosswalk area around Arborland should be shot the crosswalk at Golfside and washtenaw st by the auto repair place comer never is cleared the whole strip to either golfside rd. bus stop9along side the repair shop or to the other bus stop on Washtenaw the city demands the business to be clear but they do not do their sidewalks/crossings that are their responsibility It is impossible to get around the area if your disabled I would love to know how hard it is for disabled with a scouter is!!

It is close to impossible to cross at cross walks because snow is not shoveled, or it is piled up from the snow plow.

A lot of times it's not safe for me to walk on the sidewalks or cross the streets because of the amount of snow on the sidewalks or the piles of snow where have to cross the road.

Because I walk a lot, I often slip on the ice that property owners do not remove from the sidewalks. 10/16/2019 11 AM Some places where I walk NEVER have snow and ice removed.

It impacts my son who is using a walker to ambulate and snow-packed sidewalks and driveways have always been one of the biggest challenges during the MI winter.

If the sidewalks are not cleared then I cannot get around to buy groceries or anything. If ten homes clear their sidewalks and one doesn't then I'm stuck. I cannot "tough R it out, for one house I simply cannot pass. This includes the entire width of the sidewalk; my wheelchair is wider than most snow shovel blades. This is extremely unfair and confining. I wait three days after a snowstorm hits which takes some planning, but after that time I hope the walks are cleared.

limits walking to bus stop, park, downtown

hard to balance when walking if not cleared and slipping and falling on sidewalks not salted

Snow and ice make sidewalks and crosswalks impassable for me.

I do work in Ann Arbor. Lack of winter sidewalk maintenance would reduce the likelihood that I would walk to nearby restaurants (on South State Street).

Makes commute dangerous and difficult even WITHOUT a disability!

It can make it difficult to get around

I have to cancel doctors appointments and going other places because I cannot get on the bus or get to a ride because of bad snow-removal.

Greatly! I am a stroke survivor that has to use a cane and an AFO. My boots do not fit me with an AFO on in the winter. So. I rely on my cane.

Inability to stay stable

It makes travel difficult and anxiety provoking. Some days, you cannot leave the house.

It makes it dangerous for my children to walk to school and for me to go running.

I slipped on the ice and broke my leg in January.

I am afraid of falling and when I use mobility equipment, I cannot navigate over ice and snow; especially when it is not promptly removed.

Hard to control

I could slip on ice and get severely injured.

While I can walk and typically do walk, I have difficulty with balance and dysautonomia, and snowy and icy sidewalks make it really difficult to do safely. Last winter I fell several times, not even walking far, just going to the corner of my street. It's very difficult to get out and take care of my dog. Even if it's not truly icy, the snow compacts into something just as slippery and dangerous when people walk on it and it can be really difficult to judge if it is unsafe just based on visuals.

Q4 How would cleared sidewalks - free of snow and ice - impact you?

Answered: 81 Skipped: 22

I would feel more comfortable going out in the winter time.

Allows me to do my daily business without needless worry about moving.

I could walk to the bus stop.

See Question 3 + it would create some much less anxiety and panic for me. Honestly, I had such a horrible experience last year that I was almost having a panic attack every time I was about to get out of my car in the Shapiro disability lot to walk to Haven Hall. I have even had to call into my boss to ask to work in the Undergrad library until tater in the day when maybe things improve a little and sidewalks are more clear of snow and ice.

It would make things much easier. I would not have to worry about falling.

I would be more safe, and not afraid to go into the community. Sometimes I miss appointments if it isn't clear. If they are clear, I can keep my appointments.

It would make navigating outside for the purposes of getting to work, shopping, medical appointments and other activities less difficult and safer. It would also increase the frequency with which I would be able to do "extra" non-essential activities.

I would be much safer without ice - less chance of slipping and falling. same for the snow - could turn slippery, has uneven surface etc.

It would allow free movement and the snow would not get up on my wheels and on my hands.

It would decrease risk of falling.

people in wheelchairs or other mobility aids could walk and or cross streets at cleared intersections bus stops and other roads in general more safety without ice and snow that s piled way up inclines and walkways that should be clear and salted for people to live more independently in doing errands and or getting out to catch a bus to a medical appointment or to get to work. if these aren't clear some people are stuck at home snowbound by unable to get out until a snowmelt day is clearer for mobility. carpenter road is worst in winter...the city doesn't plow the inclines. the snow and ice block access for electric scooters and or wheelchairs to safely cross a road or intersection. additionally, scooters and wheelchairs electric or manual can't get through the ice storm messes and large snow piling the plowing city trucks do to push the heavy snow up into inclines we can't cross. you can't get out and are left stuck in the snow needing somebody to push you out of the mess that should not be our responsibility when the city should clear snow ice better for all.

Get home safer and quicker, walk more too.

It would improve my ability to get around town safely.

Would be a big blessing to be cleared especially for the disabled people we wouldn't have to worry about trying to get out there ourselves and throwing our backs out in the freezing cold

It would make it easier to walk from place to place when working/ collaborating with providers and clients/consumers.

I would venture out more, and so be able to increase physical activity and fitness.

I wouldn't fall down as much.

less scared to walk on them. Also, I think that if you walk across a building that's not the University's property and there's a ton of ice -no one cares. I take the bus. I've seen what can happen when the areas are not de-iced. By the way, at the hospital, everyone is supposed to show up no matter how bad the weather or ice is. dealing with this issue will help everyone.

Make it safer and easier to use public transportation or walk to destinations.

less worry about falling and slipping

No falls

Remove my fear

It would improve my winter "quality of life" significantly and also make just walking to work so much safer. It's hard to be excited to work in downtown Ann Arbor when I know walking to work in the winter is so dangerous.

Allow me to get to work, shopping, etc.

It will provide safe travel and lessen the chance of a slip and fall. Also. it will help me in feeling and knowing where I am and which way to go by use of my cane.

It would allow me to walk around campus and would ensure t do not have to miss classes due to unsafe conditions for me to walk around in

Improve flexibility when I need to move around in winter

It would aid in my independence. I could move around freely & feel safe

able to leave home before 2 pm

It would be much safer and easier to go out and about.

They're great! i can go about my business without the possibility of a frozen or slushy mass of snow obstructing or eliminating my path.

I would feel a lot jess stressed when walking around downtown in the winter.

I would be able to move around the city more easily and with less fear of falling during winter months, e.g. to get to the bus stop to get to work, or to walk to the Coop to purchase groceries.

This would help with travel to and from places

Sometimes it makes my walk easier. especially if the snow is high and has hardened which makes it difficult to walk. Sometimes thought cleared sidewalks become slippery when there is presence of moisture and low temps to cause ice.

I would be able to get my son out and about during the winter.

it would make my life easier and help me get to work on time so i can keep my job

I would be able to go to the library grocery stores and shopping centers also to doctor appointments by bus. When the sidewalks are cleared it is such a pleasure that the winter coldness is more endurable.

The more snow and ice are off of walking areas the more I am able to get out and still feel safe.

ease of navigation without worry of slipping

Wouldn't have to constantly look down. ROD crew constantly leave behind sandbags metal signs and garbage on sidewalks

allow me to leave my home safely, and to be able to better take care of myself by being able to take care of my business, without putting my safety at risk.

I could get around more quickly and feel safer.

it would be easier to get around

Would feel safer walking outdoors, especially at night. I love going for long, aerobic walks in the spring, summer and fall

it would be safer for staff - who use a wheelchair safer access when she goes to the bus stop after work

free as a bird :-)

As long as not too icy, nor too salty, it'd make getting around almost as possible as Autumn

This would traveling smoother, and would decrease the stress and anxiety I feel traveling in Winter.

Cause less chance for falls and injuries. Also make travel and access to bus stop less dangerous.

It would make walking easier

Cleared sidewalks would increase safety, increase access to classes on campus, promote positive mental health because not frustrated/stressed by inaccessibility.

Access to world and independences. YET CURB CUTS MUST BE CLEARED

We would be glad to have this service

it would allow me to go to appointments, and provide opportunity to be less dependent on others to run errands because I cannot safely leave my house.

I would have a positive impact. I would be more likely to come downtown.

Improve access to work and recreation

It would make it possible for me to do errands, work. and access services.

It would save time if we didn't have to walk so gingerly on snowy or icy walkways. Plus it would prevent falls.

would make my life so much easier, I could get groceries to the bus stop with minimum impact everything would be easier

Giving the ability to cross the street

It would have a great deal I could then go about my day of being out in the community with the fear of falling down.

It would mean that Ann Arbor would be more accessible and less dangerous for me.

My son would be able to move around using his walker without getting stuck in snow

It would allow me to get out. After a while I develop "cabin fever" and getting out confident of the 10/16/2019 11:05 AM walks being cleared has wonderful results.

quite a bit - increased exercise and safer surface for walking - and for kids walking to school, too

I would feel much safer and would probably walk more places by where I

It would help to relieve the threat of falling or just being blocked and not able to move forward.

I'm be more likely to walk to restaurants, instead of driving. Having said this, I would still be concerned about crossing South State Street or Eisenhower.

Would relieve both falls and stress!

This would be helpful, but I do not want to have elderly or disabled community members be punished or have to leave their homes due to not being able to clear their walks.

I would be able to make it to places in winter with less struggle.

Safety. not feeling like I am going to fall constantly

Easier to gain access to the building

Would make all the difference to me.

Make it safer to get around the community.

I would go out more.

Allow more freedom.

Shover

I could walk outdoors, promoting my physical fitness. 2) I could avoid slipping anywhere in the city and avoid injury.

It would make it easier for me to get out of my house without risking hurting myself. It would allow me to take care of my dog myself and not have to hire someone to let him out which is a big expense on a fixed income from SSDI. It would generally let me be more of a part of the community and more independent.



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