



CITY OF
TRAVERSE CITY

SALT USE REDUCTION

City Commission Update

March 10, 2025
Study Session

Department of Public Services

Frank Dituri, Department of Public Services Director

Chris Weber, Streets Superintendent (Operations)

Joel Tapio, Garage Superintendent (Equipment)

Christine Black, Asset Management/GIS Analyst (Data Management)



TODAY'S DISCUSSION

Objective: To reduce salt usage while maintaining effective winter road safety through tested and emerging alternatives.

- **Future Initiatives**
- **Background**
- **Road Type Classifications**
- **Salt Reduction Initiatives**
- **Salt Usage**
- **Salt Storage**
- **Municipal Comparisons**
- **Alternative Methods**
- **Next Steps**



FUTURE INITIATIVES

- **New Equipment & Technology**
 - Implement hybrid liquid/solid system on a new truck (Commission approval required).
 - Expand the use of wing plows to clear multiple lanes per truck (decreased emissions).
 - Ordered for next season's new truck
- **Operator Training & Application Adjustments**
 - Increase training awareness for operators & supervisors.
 - Provide more application rate options to encourage lower salt use when possible.
- **Brine & Storage Facility Upgrades**
 - Build a state-of-the-art brine making/storage facility (indented in CIP).
 - Expand capacity & explore different liquid options.
 - Upgrade the existing brine maker.
- **Public Education & Policy Considerations**
 - Increase public education & outreach.
 - Address potential chloride pollution from private property.
 - Align with new MS4 regulations requiring public outreach.





The dedicated staff at DPS are local residents and outdoor enthusiasts who take great pride in their work, ensuring safe roads while actively protecting the natural environment they call home.

BACKGROUND

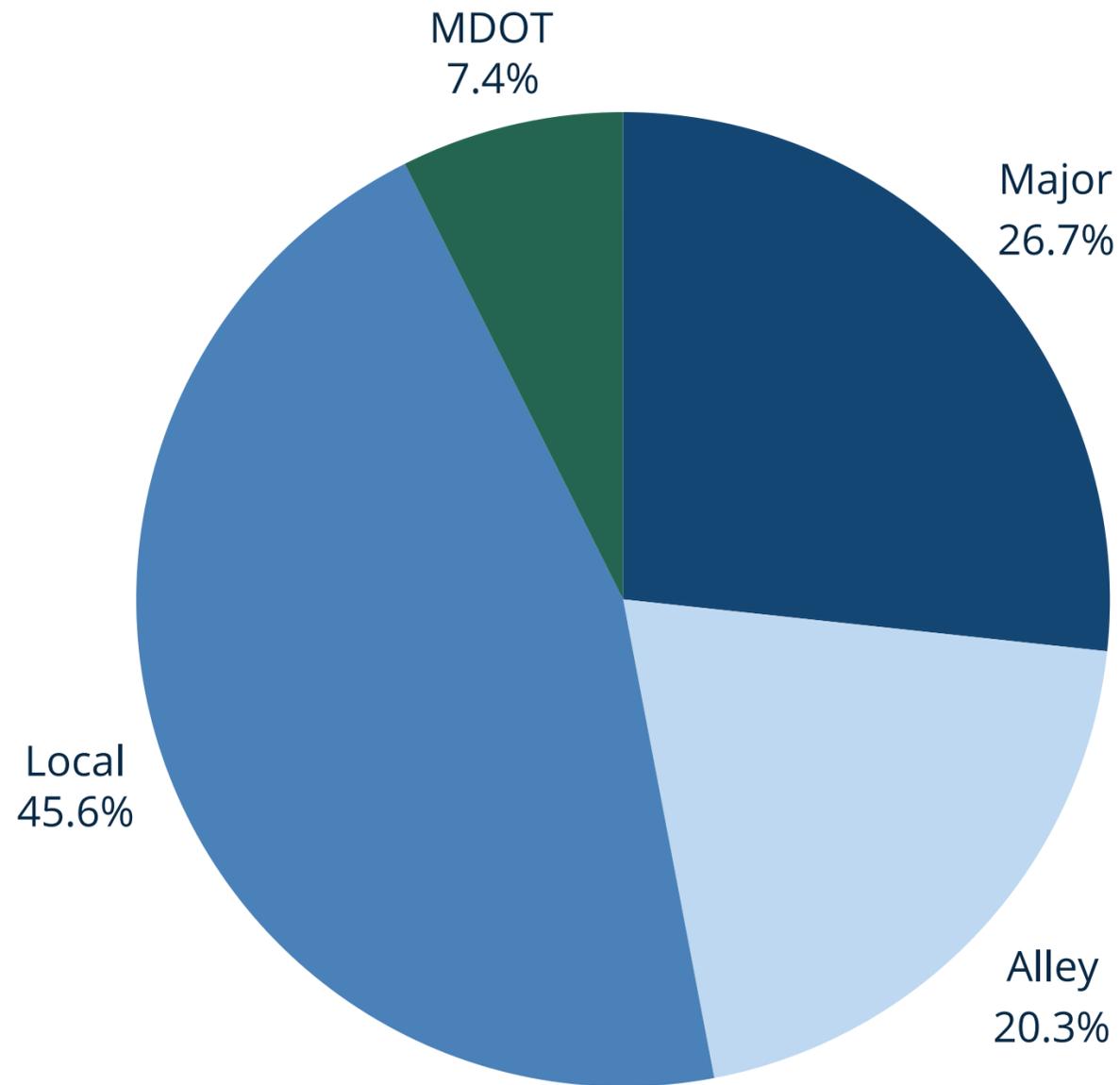
Traverse City has an average annual snowfall of 118 inches. We maintain a total of over 200 miles of motorized and non-motorized travel routes.

Motorized Routes	Miles	Non-Motorized Routes	Miles
MDOT Trunkline	7.2	Sidewalks	95.85
Major Streets	28.78	Shared-Use Pathways	12.06
Local Streets	49.62	Non-Motorized Routes Total	107.91
Alleys	22.5		
Motorized Routes Total	108.1		

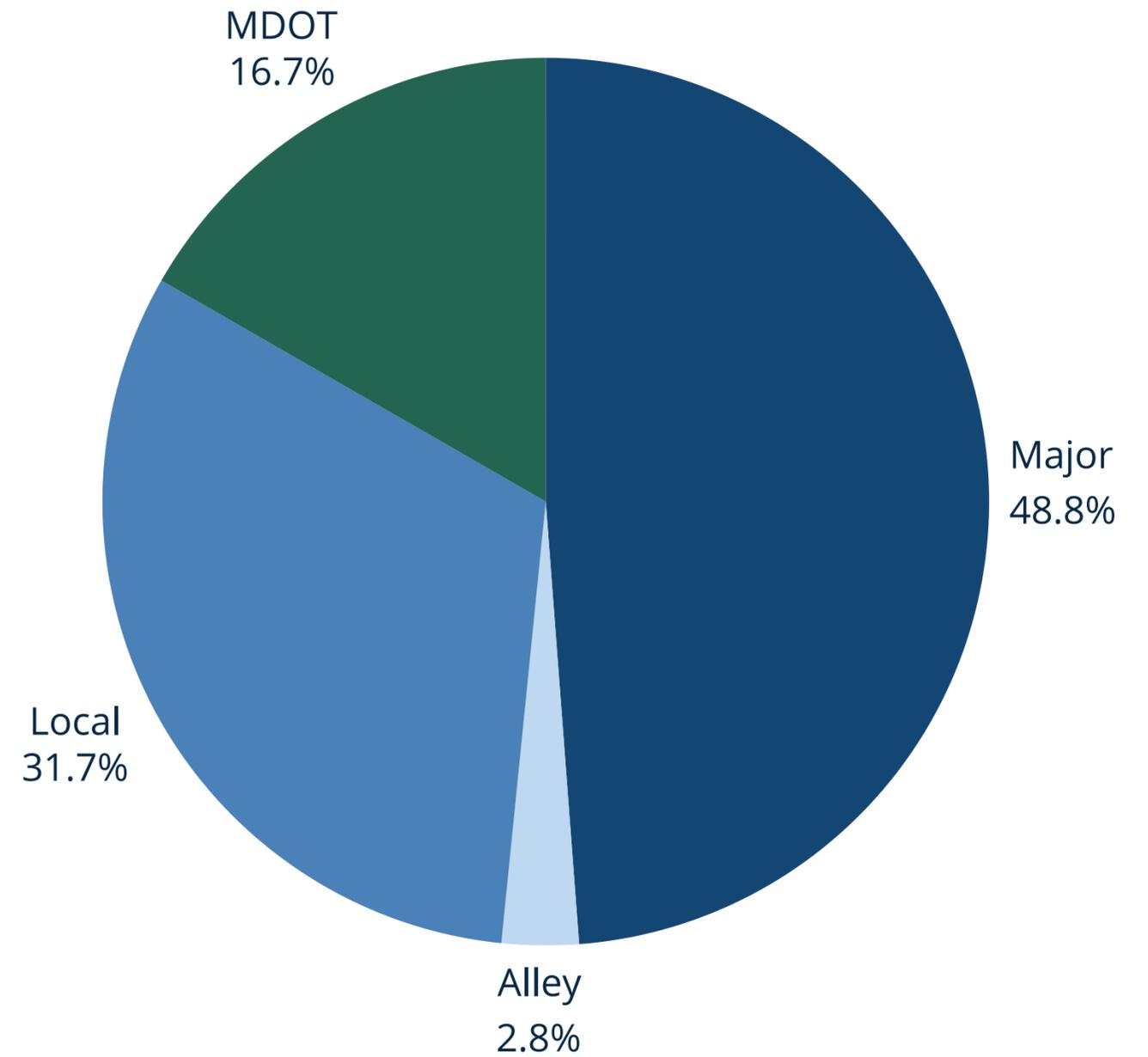
Grand Total: 216.01 miles

ROAD TYPE CLASSIFICATIONS

ROAD NETWORK CLASSIFICATION



TOTAL SALT USE BY ROAD CLASSIFICATION



SALT REDUCTION INITIATIVES

Maintaining the Same Level of Service

- **Pre-Wetting Salt (1990s):** Reduced salt loss from bounce/scatter.
- **Standard Operating Procedure (2013):** Salt/Sand Management for designated routes.
- **Sander Controller Optimization (2018):** Programmed additional failsafes to prevent unintended overuse.
- **Full Liquid Application Pilot (2019):** Used 23% salt brine; assessed feasibility and need for proper equipment.
- **Beet Heet Implementation (2020):** Reduced salt application from 350 lbs/lane mile to 200 lbs while maintaining service levels.
 - **Result:** 42% reduction, leading to a 35% cost savings per lane mile.
 - **Sand/Salt Mix Reduction:** Cut 50/50 application from 500 lbs/lane mile to 400 lbs.
 - **Expanded Pre-Wet Nozzles:** Potential to further reduce granular salt while increasing liquid use.



42%
Reduction
in 2020

CURRENT SALT USAGE

- **Estimated Annual Salt Use:** Approximately 2,000 tons
 - Target: 2,500 tons in supply
 - Allows for bulk purchasing agreements at lower rates
 - Ensures reliable supply for the duration of the season
- **Salt Application Rates:** 0, 100, or 200 lbs/lane mile.
- **50/50 Salt/Sand Mix Application Rates:** 400 lbs/lane mile.
 - 0, 100, 200, 300 lbs/lane mile: Two routes that are hills
- **Pre-Wetting:** 15 gal/ton (Beet Heet + 23% salt brine).



SALT STORAGE

Preserving & Conserving

Salt Storage & Protection

- Salt is stored in a salt shed with a 2,500-ton capacity
- 50/50 salt/sand is stored in separate storage shed
- Protected from the elements to prevent loss and maintain quality

Long-Term Storage Benefits

- Allows for bulk purchasing at lower rates
- Ensures a reliable supply throughout each season

Liquid Storage Tanks

- Two 9,000 gallon tanks located outside



MUNICIPAL COMPARISONS

Comparisons with 11 Municipalities

- **Comparative Salt Use**

- Compared to Northern Michigan municipalities, Traverse City maintains same or lower salt application rates
 - **City:** 0, 100, 200 lbs/lane mile.
 - **Other Agencies:** Some as high as 600 lbs/lane mile.

- **Alternative Approaches Observed**

- Full Liquid Application
 - 2 municipalities successfully using a full liquid system.

- **Salt Alternatives**

- Some municipalities/airports/bridge authorities using Calcium Magnesium Acetate (CMA) in sensitive areas.

- **Key Takeaway**

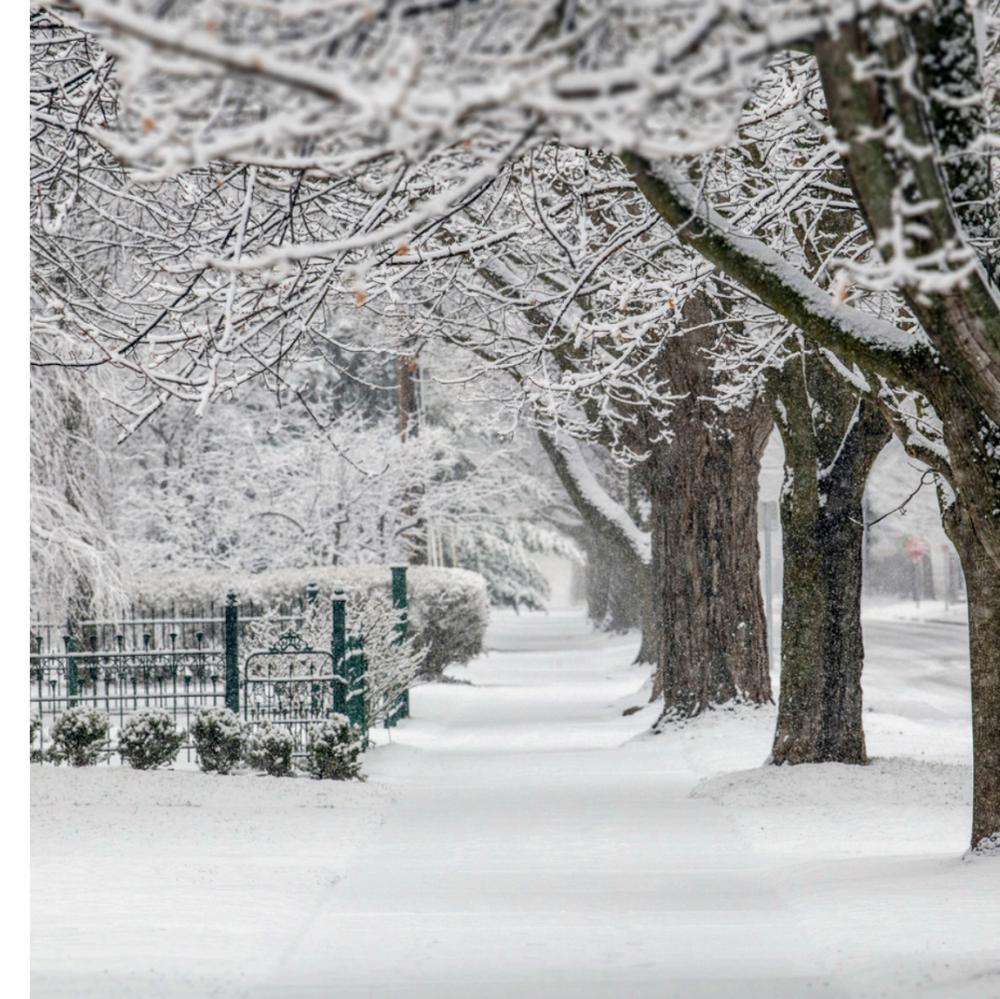
- Opportunities exist to explore full liquid applications and alternative deicers while maintaining safe winter road conditions.



***Amongst the lowest
when compared with
11 municipalities***

ALTERNATIVE METHODS

- **Salt Alternative:** Calcium Magnesium Acetate (CMA)
 - Used in sensitive areas (bridges, airports).
 - Less corrosive, but expensive (~\$2,400/ton vs. ~\$73/ton)
 - Mixed effectiveness; better with potassium acetate (\$9.80/gal).
- **Full Liquid Application**
 - Anti-ice pre-treatment before storms.
 - De-ice treatment during or after storms.
 - Municipal trials:
 - Kent County: 75 gal/lane mile mineral well brine; effective under optimal dew points.
 - Montcalm County: 90/10 blend of Calcium Chloride/Beet Heet; single applications lasting 12 hours.
- **Hybrid Liquid/Solid Systems**
 - Kalkaska County Pilot: V-Box spreader with spray bar and increased liquid storage: Application at intersections: 30 gal/lane mile (Beet Heet + De-ice Master Plus).
 - Results: Reduced salt use, promising performance.



CMA

2,500 Tons = \$6,000,000

SALT

2,500 Tons = \$182,500

NEXT STEPS

Future Discussions

- **Immediate Recommendations**

- March 17, 2025: Order 2,000 tons of salt.
- March 17, 2025: Approval V-box spreader with liquid applicator (outfitted for our use).
 - Compatible with new trucks: Ordered in 2023, arrived in 2025.
 - Selected for hydro-liquid application capability.

- **Future Recommendations Identified in CIP**

- Approval for the the state-of-the-art brine making/storage facility.

- **Policy Considerations**

- Securing an inventory of 2,500 tons for the entire winter season





THANK YOU



PUBLIC SAFETY: NUMBER ONE PRIORITY