



From Data to Decisions: Artificial Intelligence in Winter Maintenance

Thursday, October 22, 2026

- 11:00 a.m. - 12:00 p.m. ET
- 10:00 a.m. - 11:00 p.m. CT
- 9:00 a.m. - 10:00 a.m. MT
- 8:00 a.m. - 9:00 a.m. PT

This program is sponsored by the APWA Winter Maintenance Committee

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Today's Program is eligible for .1 Continuing Education Unit (CEU) credits.





A link to the program evaluation will be emailed to you after the program.

To request CEU's - you must correctly answer 70% of the questions.



APWA has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275.



RESOURCE CENTER

ONE PLACE where a member can access:

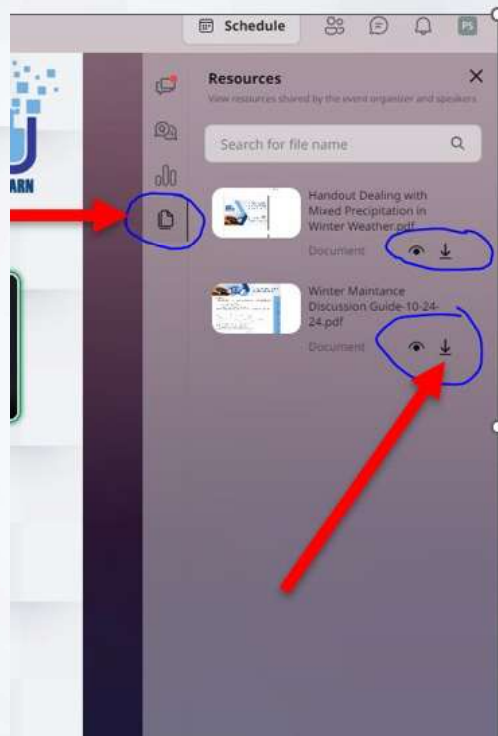
- Past Click, Listen & Learn (CLL) presentations
- Content from past conferences (PWX and Snow)

All searchable by topic. All without any extra fees beyond membership dues! No limits to how often you access or open the items in the Resource Center.

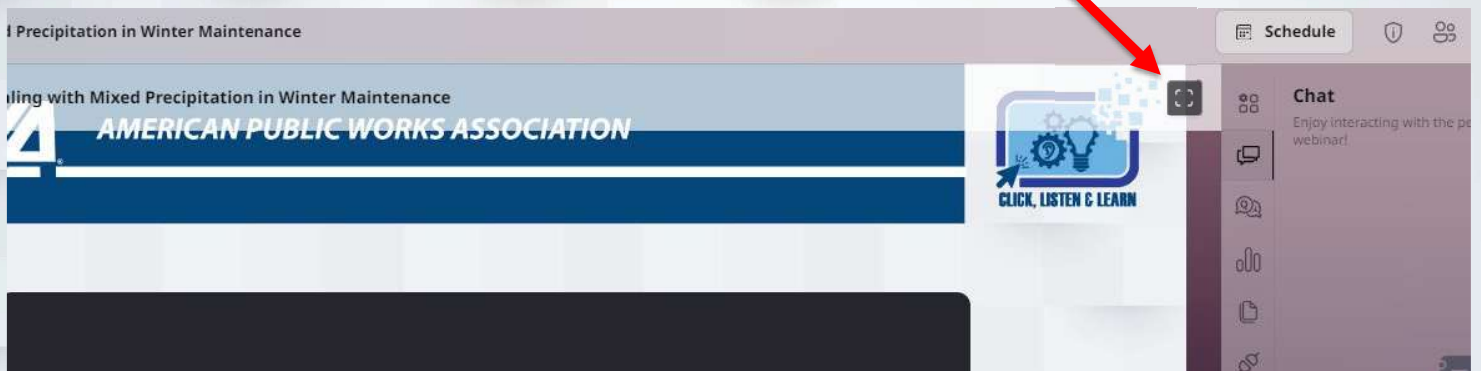
No travel. No scheduling hassles. No delays while waiting for someone else's approval. No waiting for registration payment to be processed.

For more information go online to
www.apwa.org/resources/resource-center.

Handout for Today's Program can be download from the right-hand chat panel.



Viewing the Presentation



Communication & Engagement Opportunities

Copy of Managing Public Art in the Right-of-Way



AMERICAN PUBLIC WORKS ASSOCIATION



Chat

Session will resume shortly
Session number 2



Chat

Enjoy interacting with the people in this webinar!

NT You just now

Good Morning everyone so glad to see you!



CLICK, LISTEN & LEARN



Reactions



HOST

Natalie Tucker

Education Specialist, APWA





CLICK, LISTEN & LEARN

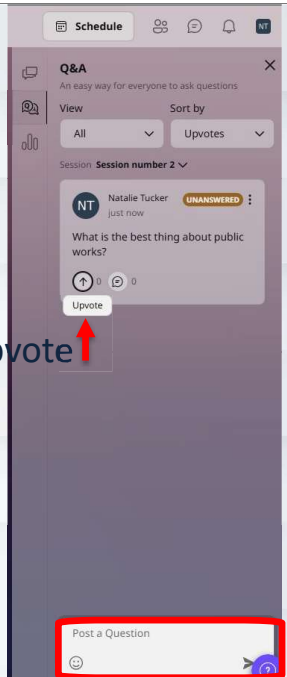


Program Questions

1. If you have questions for our speakers, you may ask them using the Q&A feature.
2. Choose to Upvote a question that is the same as your question.

Q & A →

Upvote ↑



Today's Moderator:



Keenan Boles
Civil Superintendent
Pioneer Construction

Nominations to join an APWA knowledge team or subcommittee are considered year-round. Share your interest via the QR code below.



Get Involved with APWA

Learning Objectives

After completing this course, participants will be better able to:

- Identify practical applications of artificial intelligence that can be utilized within winter maintenance operations.
- Evaluate opportunities to use AI-powered communication tools to improve public awareness, employee engagement, and recognition of frontline winter maintenance staff.
- Develop an implementation strategy for introducing AI tools within their organization.



Today's Speakers



Tom Milas
Superintendent of Operations
Village of Buffalo Grove



Kelly Maurer
Director of Public Works
Cranberry Township, Pennsylvania



Charles Newman
Assistant Director-Department of Public Service
City of Columbus , Ohio



Scott Tourville
Administrator-Division of Infrastructure Management
City of Columbus, Ohio



Polls





Tom Milas
Superintendent of Operations
Buffalo Grove Public Works

Because...
I am not an expert!



CLICK LISTEN & LEARN

Where Did I Start?



My First Experiments

“Rephrase the following in a professional and also empathetic manner: ...”



Ready to Give It a Real Problem

Routes 4–6 are now:

- Close together
- Near the yard
- 👉 During peak operations:
 - Truck congestion
 - Overlapping travel paths
 - Salt loading bottlenecks

🔧 Targeted Improvements (High ROI Tweaks)

1. Rebalance Route 5 Immediately

This is your biggest opportunity.

Recommendation:

- Move 10–15 courts from Route 5 to:
 - Route 6 (best candidate)
 - Or Route 4

👉 Ideal targets:

- Route 5 → ~55–58 courts
- Route 6 → ~45–50 courts



I Gave It Another Problem

1. First: your current model, clearly stated

Right now you have:

- Two weeks AM → two weeks PM (continuous on-call, just flipped windows)
- 12-hour callback windows
- 15 staff required for snow & ice (15 routes)
- 4 staff for utility breaks
- Backup pool assigned but increasingly unavailable
- “Off” crew still technically on the schedule, just not primary

The key reality:

People are *never truly off call for long*, only shifted to a different window.

That explains the surge in UNAVAILABLE time better than anything else.



What I Did Differently



Feeding AI Our History

ID	Type of Winter Storm Event	Accumulation.amt	Accumulation.unit	Total Cost	Tasks	Start Date	Stop Date	Ending Road Temperature	Salt Application Rate	Starting Liquid Application Rate	Liquid Blend	Starting Air Temperature	Starting Road Temperature	Ending Air Temperature	Total Material Cost	Total Labor Hours
25-26 Winter Event 01	Salt	1.97 in		33992.23	36	11/10/2025 0:00	11/10/2025 0:00	43.2		600 30 gallons per mile	30%	27.3	31.6	32	11899.4	160.35
25-26 Winter Event 02	Plow	8.27 in		126267.35	118	11/29/2025 0:00	11/30/2025 0:00	37.2		500 30 gallons per mile	30%	27.5	31.1	30.6	39075.28	669.33
25-26 Winter Event 03	Salt	1.18 in		38976.22	20	12/1/2025 0:00	12/2/2025 0:00	30		600 30 gallons per mile	30%	27.3	31.5	18	16716.19	149.5
25-26 Winter Event 04	Salt	0.39 in		21338.51	20	12/3/2025 0:00	12/4/2025 0:00	19.9		400 30 gallons per mile	30%	29.1	32.2	16.2	6952.99	147.25
25-26 Winter Event 05	Plow	7.09 in		84703.91	93	12/6/2025 0:00	12/9/2025 0:00	22.6		450 30 gallons per mile	30%	28.4	28	13.8	21673.39	472
25-26 Winter Event 06	Proactive - Full Crew	0 in		891.39	2	12/9/2025 0:00	12/10/2025 0:00								47.1	11
25-26 Winter Event 07	Salt	1.58 in		16164.77	20	12/9/2025 0:00	12/10/2025 0:00	36.1		350 30 gallons per mile	30%	29.3	35.2	29.3	4605.01	111
25-26 Winter Event 08	Proactive - Snow Command	0 in		208.14	1	12/11/2025 0:00	12/11/2025 0:00								0	1.75
25-26 Winter Event 09	Salt	0 in		16050.77	22	12/18/2025 0:00	12/18/2025 0:00	26.1		300 30 gallons per mile	30%	39	41.2	18.9	6026.52	69
25-26 Winter Event 11	Salt	0.7 in		38798.46	43	12/28/2025 0:00	12/29/2025 0:00	49.3		300 30 gallons per mile	30%	41.2	41.5	54.3	15107.21	204
25-26 Winter Event 12	Salt	0.39 in		24739.46	20	12/30/2025 0:00	12/31/2025 0:00	26.6		400 30 gallons per mile	30%	19.2	34.3	24.4	11156.95	115.5
25-26 Winter Event 13	Salt	0.79 in		14336.83	22	12/31/2025 0:00	12/31/2025 0:00	20.1		500 30 gallons per mile	30%	34.9	35.4	16.5	6844.79	62.75
25-26 Winter Event 14	Proactive - Full Crew	0 in		9734.43	19	1/1/2026 0:00	1/1/2026 0:00								0	107.75
25-26 Winter Event 15	Proactive - Snow Command	0 in		2109.58	1	1/10/2026 0:00	1/10/2026 0:00								0	14
25-26 Winter Event 16	Plow	2.36 in		55241.88	44	1/14/2026 0:00	1/14/2026 0:00	37.8		500 30 gallons per mile	30%	38.1	37.8	38.1	20951.27	291.78
25-26 Winter Event 17	Salt	1.18 in		38078.58	20	1/16/2026 0:00	1/16/2026 0:00	34		400 30 gallons per mile	50%	21.4	25.3	35.8	18094.59	152.25
25-26 Winter Event 18	Salt	0.39 in		38018.98	42	1/17/2026 0:00	1/18/2026 0:00	31.1		400 30 gallons per mile	50%	13.5	20.5	15.3	16420.46	148.5
25-26 Winter Event 19	Salt	0.78 in		17985.55	19	1/18/2026 0:00	1/18/2026 0:00	21.6		400 30 gallons per mile	50%	15.4	21.4	17.1	8118.18	61.5
25-26 Winter Event 20	Salt	0.2 in		40804.03	29	1/19/2026 0:00	1/19/2026 0:00	23.7		400 50 gallons per mile	50%	1.6	12.7	4.5	13307.74	217.25
25-26 Winter Event 21	Salt	0.25 in		14908.77	22	1/21/2026 0:00	1/21/2026 0:00	22.8		400 30 gallons per mile	50%	21.9	21.2	25.3	6780.5	59.75
25-26 Winter Event 22	Salt	0.25 in		29825.74	34	1/21/2026 0:00	1/21/2026 0:00	25.7		400 30 gallons per mile	30%	26.2	25.3	26.1	9908.52	142.75
25-26 Winter Event 23	Plow	2.76 in		74579.21	85	1/25/2026 0:00	1/25/2026 0:00	12.4		500 30 gallons per mile	50%	11.1	17.4	6.1	21958.09	384.75
25-26 Winter Event 24	Plow	1.57 in		30359.68	19	1/30/2026 0:00	1/30/2026 0:00	13.6		500 30 gallons per mile	50%	14.2	22.5	12	12625.71	124
25-26 Winter Event 25	Salt	0.01 in		18505.51	23	2/2/2026 0:00	2/2/2026 0:00	12.9		300 30 gallons per mile	30%	14	15.1	16	6629.13	113.5
25-26 Winter Event 26	Salt	0.4 in		14991.51	20	2/6/2026 0:00	2/6/2026 0:00	38.7		400 30 gallons per mile	30%	30.6	28.2	36.1	5916.34	65.5
25-26 Winter Event 27	Plow	1.18 in		33971.4	64	2/8/2026 0:00	2/8/2026 0:00	20.5		400 30 gallons per mile	30%	20.1	24.6	21	8064.7	193.25
25-26 Winter Event 28	Proactive - Snow Command	0 in		387.26	1	2/20/2026 0:00	2/20/2026 0:00								0	3
25-26 Winter Event 29	Proactive - Snow Command	0 in		522.12	1	2/28/2026 0:00	2/28/2026 0:00	37				30	38.7	31	0	3.75
25-26 Winter Event 30	Salt	0 in		9931.88	17	3/11/2026 0:00	3/11/2026 0:00	38		300 30 gallons per mile	30%	35	38.7	34	4242.71	37.25
25-26 Winter Event 31	Plow	3.15 in		50785.08	89	3/16/2026 0:00	3/16/2026 0:00			500 30 gallons per mile	30%				13019.37	317.25
25-26 Winter Event 32	Salt	0.39 in		12120.83	21	3/18/2026 0:00	3/18/2026 0:00			400 30 gallons per mile	30%				3798.34	77.75





AI as a Thought Partner



The 2-Crew vs. 3-Crew Conversation

2 Crew vs 3 Crew Callback Schedule

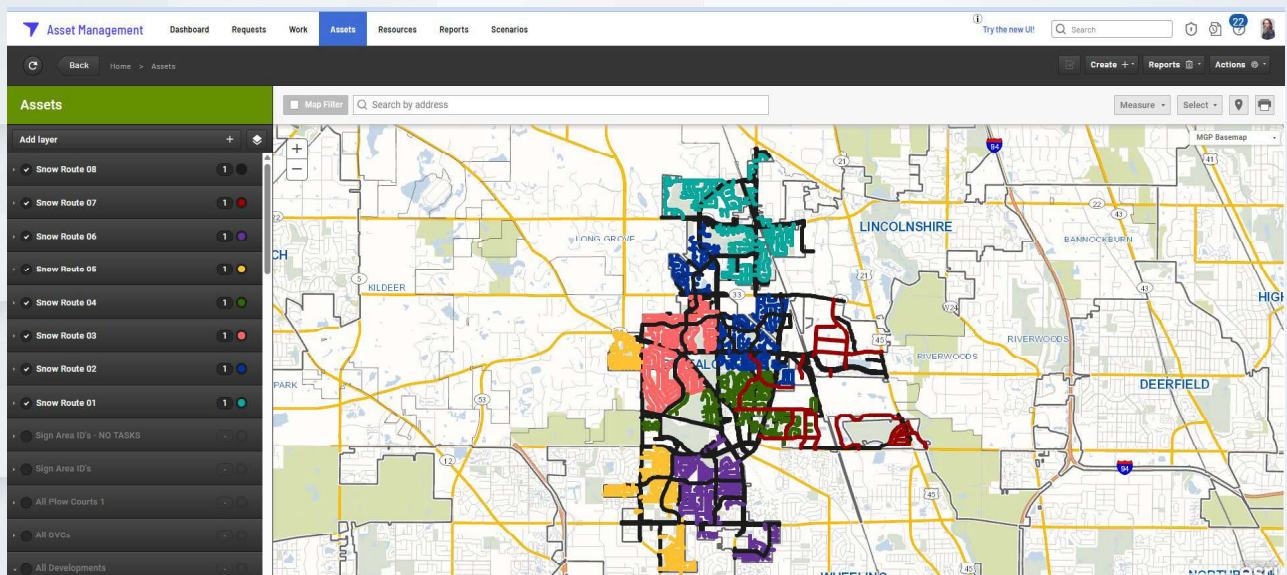
Metric	1-Week On / Off	3-Crew Rotation
True rest	Good	Excellent
Surge capacity	Limited	Built-in
Fatigue management	Moderate	Strong
Availability honesty	Improved	Very high
Supervisor flexibility	Medium	High



What AI Helped Me See



AI Plus Our Existing Data





A Human Still Has to Drive



What I Learned About Prompting



“Determine the cost per inch of snow accumulation, cost per mile of total center line miles, and the cost per inch per mile for the entire season.”

Metric	Value
Total Seasonal Cost	\$892,627.58
Cost per Inch of Snow	\$23,976.03
Cost per Center Line Mile	\$7,028.56
Cost per Inch per Mile	\$188.79



Where This Could Take Winter Maintenance



The Biggest Lesson



Tom Milas

Superintendent of Operations
Buffalo Grove Public Works

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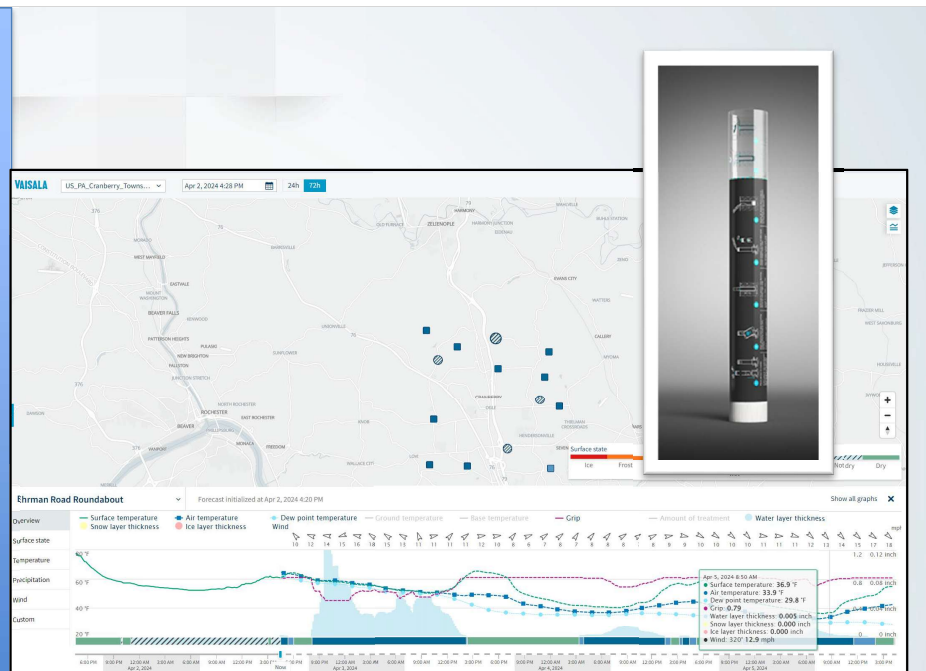


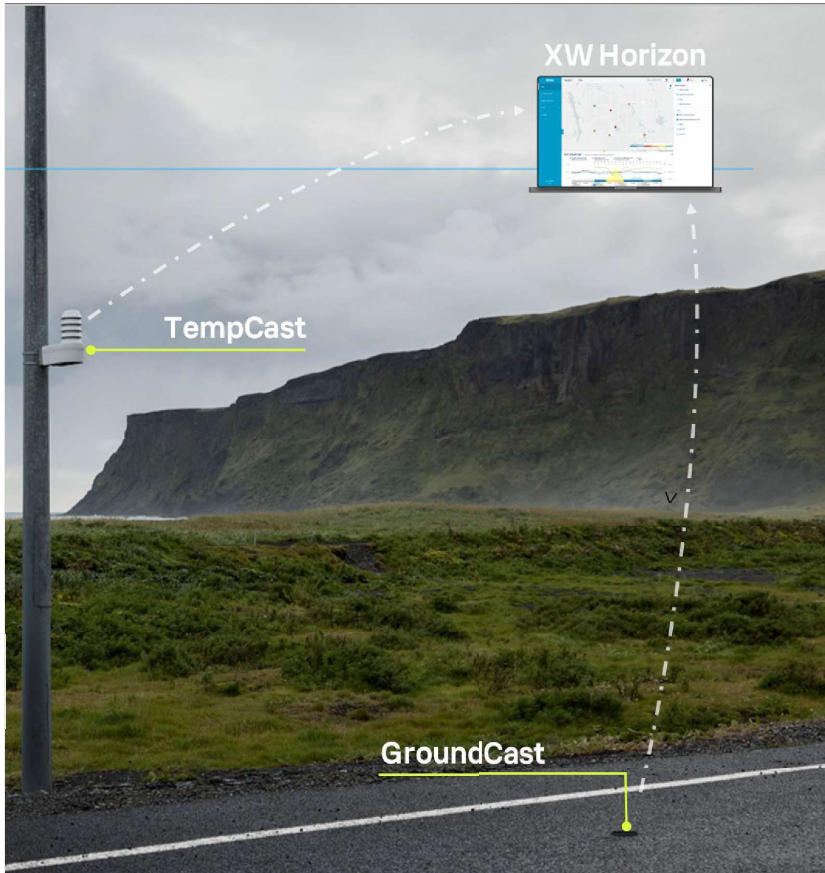
AI use in Winter Maintenance Ground Pavement Sensors



Ground Pavement Sensor Pilot Project

- Predicts Pavement Temp & Weather Forecast for 72-hours.
- Pilot Project in 2023-2024
 1. Estimated savings of \$170,000 (17 events) in Salt, Labor, & Fuel.
34:1 Benefit: Cost Ratio
 2. Environmental Savings
 3. Work/Life Balance with 24/7 Phone Access
- Deployment Partner





Data Collection

Install anywhere

- Wireless design
- Batteries that last for 3+ years
- Maintenance-free operation

Better data, better forecasts

- High-quality observations
- Good data in, good forecasts out

Low cost

- No data integration projects
- Communicates via cell



Application of AI



BEGINS with reliable and trusted sensing technology to collect data, filling in gaps from broader infrastructure.

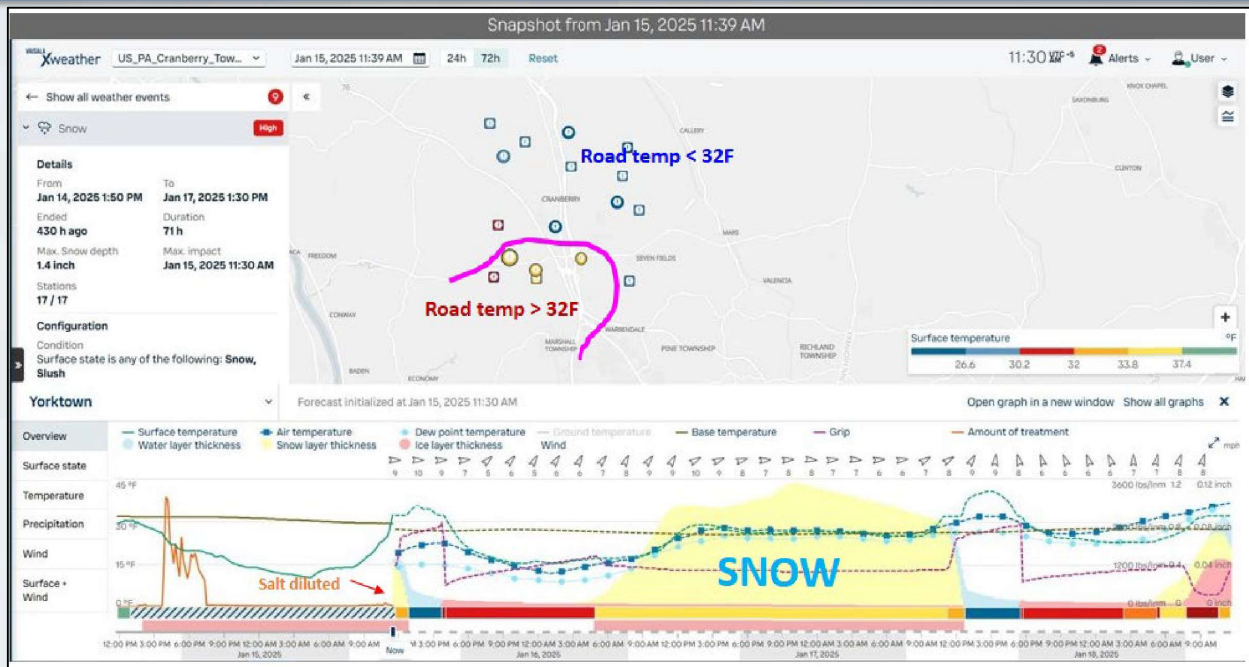


CONTINUES using a method called “deep learning,” the unique observation data is integrated with other datasets such as global models, measurements from satellites, and connected car data. The localized data is continuously fed into the model, helping it to “learn” the area and its surroundings.



RESULTS in highly localized and more accurate predictions.





Diversity of Temperatures

Station name	Timestamp	Surface state	Surface temperature	Amount of treatment	Ground temperature	Base temperature
218 Woodlawn Rd	Jan 15, 2025 11:37 AM	Not dry	25.2 °F	4591 lbs/lnm	22.1 °F	29.5 °F
Admin Lot	Jan 15, 2025 11:34 AM	Not dry	22.3 °F	2159 lbs/lnm	23.0 °F	28.8 °F
Ehrman Road Roundabout	Jan 15, 2025 11:31 AM	Not dry	25.5 °F	65 lbs/lnm	22.3 °F	25.3 °F
Freshcorn Road	Jan 15, 2025 11:36 AM	Not dry	29.8 °F	4301 lbs/lnm	23.9 °F	28.2 °F
MSA Thruway	Jan 15, 2025 11:37 AM	Not dry	34.9 °F	139 lbs/lnm	25.5 °F	
Thorn Hill Road	Jan 15, 2025 11:36 AM	Not dry	34.0 °F	37 lbs/lnm	26.1 °F	27.5 °F
Yorktown	Jan 15, 2025 11:28 AM	Not dry	32.2 °F	16 lbs/lnm	23.2 °F	29.1 °F



January 31, 2026

- 16" Snow Event
- Used minimal salt - begin & end
 - Mainly plowing event



"Most Likely" Snowfall Amounts

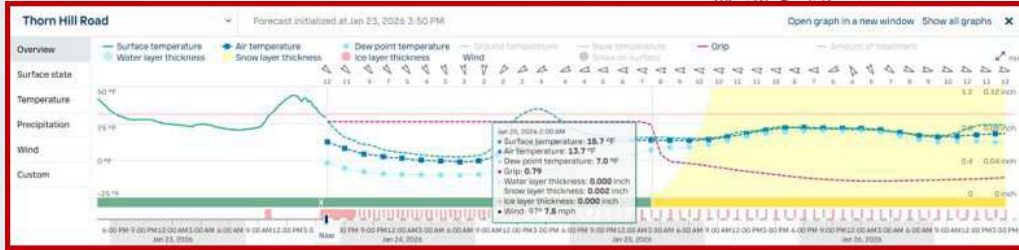
For Western Pennsylvania, Eastern Ohio, and Northern West Virginia

January 23, 2026
3:50 PM

What We Know:

- Precipitation Type: **Snow** areawide / **Wintry Mix** in the Mon Valley and southeastern ridges
- Timing:
 - Light snow starting Saturday evening
 - Heaviest snowfall :
 - South of I-70... **1am -11am Sunday**
 - North of I-70... **8am Sunday - 1am Monday**
- Accumulations:
 - Snowfall Total Range: 9"-16"
 - Change over to wet snow/sleet can reduce snowfall amounts for Mon Valley and southeastern ridges
- Snowfall Rates:
 - Less certain, but 0.5-1"/hr likely with shorter bursts of 1" to 1.5"/hr possible within snow bands

Expected Snowfall: Official NWS Forecast



- Tracks event start and duration

- Tracks rate of snow and total accumulation



Installation



SCAN ME



CRANBERRY
TOWNSHIP



Questions?

Kelly Maurer, P.E.

Kelly.maurer@cranberrytownship.org
724-776-4806 ext. 1164



The Plow Mode Experience

Charles Newman, MPA
Assistant Director
City of Columbus

Scott Tourville, PE MPA
Division of Infrastructure Management
City of Columbus



THE **PLOW** MODE EXPERIENCE

IT STARTED WITH OUR PEOPLE.

From an internal morale booster to a creative way for residents to meet the people behind snow removal using AI

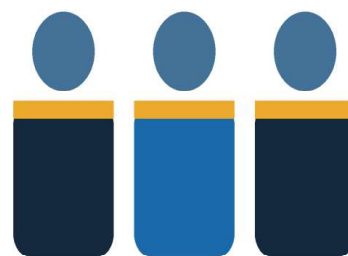


THE REALITY

Behind every cleared road is a person.

Snow events mean demanding shifts, tough conditions and time away from family. Residents often see the plow, not the people driving it.

THE HUMAN SIDE OF ESSENTIAL SERVICE.



THE SPARK

First, we wanted to lift morale.

The idea was simple: create something fun that celebrated our Snow Warriors and brought energy to the difficult winter work ahead.



INTERNAL ENGAGEMENT CAME FIRST.



THE CREATIVE TOOL

Then AI helped us find a beat.

We used generative AI program called SUNO to turn a playful concept into PLOW MODE, an original song with an upbeat message for the team. Staff provided the purpose and creative direction.



AI SIMPLIFIED THE IDEA. IT DID NOT INVENT THE MISSION

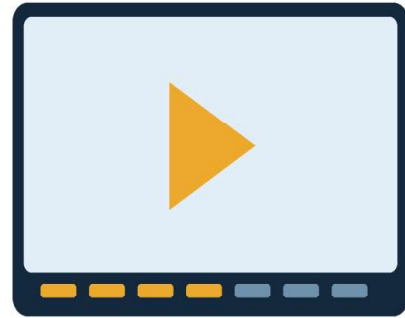


THE TURNING POINT

We gave the music a human face.

The song became a video opportunity: connect the energy of PLOW MODE with the real work and real people of DPS.

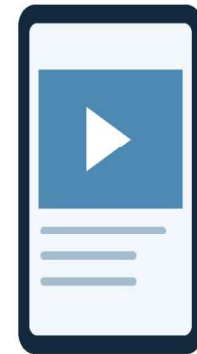
THE EMPLOYEES BECAME THE STORY.



THE UNEXPECTED REACH

From team morale to community connection.

Sharing the video on social media opened a more relatable window into snow operations, showing the residents the personalities and pride behind a demanding public service.

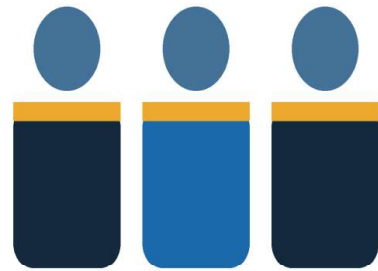


AN INTERNAL MOMENT BECAME EXTERNAL ENGAGEMENT

THE TAKEAWAY

Engagement starts within.

Creative technology can help government communicate differently. But the strongest connection comes from recognizing employees as people, not just service they deliver.



AI MADE THE MUSIC. OUR PEOPLE GAVE IT MEANING.



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