Fact Sheet: Road Weather on BasinWx

What We Know

Winter driving conditions across Utah's Uinta Basin are now on one live map: basinwx.com/roads. Built by research technician Michael J. Davies and the BasinWx team at Utah State University's Bingham Research Center, the page combines official Utah Department of Transportation (UDOT) road reports with 149 traffic cameras, 38 roadside weather stations, snowplows, and 16 mountain passes. It runs today as a public pilot, and a forecast layer in development aims to show not only the roads as they are, but as they are expected to become.

What is the Road Weather Page?

- basinwx.com/roads is a free, live map of driving conditions on 31 stretches of highway in and around the Uinta Basin, from the team that runs the rest of BasinWx.
- It covers the Basin's main routes — US-40 and US-191 each get their own route summary — and the passes that control access to the Basin, such as Daniels Summit on US-40 (8,020 feet) and Indian Canyon Summit on US-191 (9,114 feet).
- The page is a pilot: public and working today, but still being refined, and not yet linked from the BasinWx front page.

One Map, Several Sources

No single source sees every road; the diagram at right shows how four kinds of information meet.

1. **Official UDOT road reports.** Statewide reports — clear, wet, snowy, icy — filtered to the Basin and drawn on the map.
2. **Traffic cameras, read automatically.** Software checks images from 149 UDOT cameras for snow — and every image is there to view, so a driver can judge the road with their own eyes.
3. **Roadside weather stations.** 38 stations report air and road-surface temperature, wind, and visibility along the highways and passes.
4. **Plows, passes, and incidents.** Snowplow locations during storms, conditions and seasonal closures for 16 mountain passes, and UDOT traffic events such as crashes and road work.

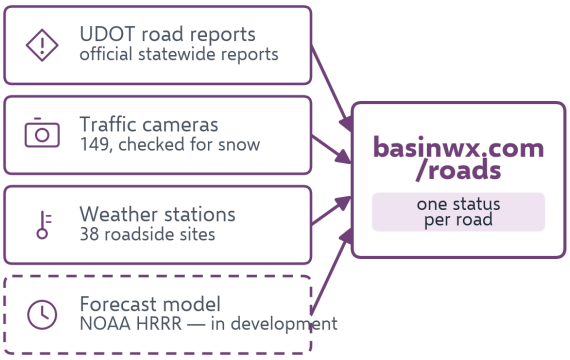


Figure 1 — where the map's information comes from: official UDOT reports, traffic cameras read automatically for snow, roadside weather stations — and, in development, forecasts from NOAA's HRRR weather model — meet in one color-coded status per road.

Snow Detection That States Its Confidence

The camera software examines each image pixel by pixel for the signature of snow — bright, nearly colorless, evenly balanced — with guards: no analysis when the air is warmer than 36°F (2°C), smoothing over odd frames, more trust when nearby cameras and stations agree, less as an image

ages. Every estimate carries one of the three confidence labels below rather than being presented as fact.



Figure 2 — the three confidence labels: gray a hint worth checking, green backed by agreement.

Why an Air Quality Center Watches the Roads

The snow cover and temperature inversions — lids of warm air trapping cold air in the Basin — that make winter driving dangerous also brew the Basin's unusual winter ozone: sunlight reflected off the snow turns volatile organic compounds (VOC) and nitrogen oxides (NO_x), emitted mostly by oil and gas operations, into the pollutant. The Center built Basin-wide weather observation and modeling to forecast those episodes; the road weather page turns the same infrastructure toward travel safety.

What is Coming: From Conditions Now to Conditions Ahead

In development is a forecast layer: predictions from HRRR — the High-Resolution Rapid Refresh, a NOAA weather model updated every hour at about 3-kilometer detail — blended with the UDOT reports, cameras, and stations into a single forward-looking status for each road. In the current test design, official UDOT reports keep the largest share of the blend (50%), with the forecast model at 25%, cameras at 15%, and stations at 10% — a mix that may change. Experimental features stay off until a visitor turns them on, behind a plain warning: "Highly experimental. Not for critical decisions."

What You Can Do

- ✓ **Check basinwx.com/roads before winter travel.** Reports, cameras, stations, plows, and passes for the Basin on one free page.
- ✓ **Treat automated estimates as a supplement.** Official UDOT guidance and closures always take precedence.
- ✓ **Tell us what would help.** Driver feedback shapes what we build next: michael.davies@usu.edu.

Limitations

Data feeds can lag, and no map replaces what a driver sees. The snow detection has been tested only against synthetic images, so this sheet makes no claims about its real-world accuracy. For closures and travel restrictions, UDOT and law enforcement are the authority.

More Information

BasinWx is developed at Utah State University's Bingham Research Center. Official statewide road conditions are at UDOT's https://udottraffic.utah.gov; a summary of all Uinta Basin air quality research is at https://www.usu.edu/binghamresearch/cumulative-research-summary. Contact us at michael.davies@usu.edu or visit binghamresearch.usu.edu for more information.