

Winter Storm Transportation and Public Works Operations Gain Efficiencies through WeatherBug[®] Professional Services

Maryland Counties Optimize Storm Preparation Efforts with Detailed Views of Street-Level Weather Conditions
Enabling Strategic Resource Allocation

Despite its small size, Maryland has a wide array of climates that significantly affect the severity of weather conditions in different locations across the state. Numerous variables, such as proximity to water, elevation and protection from colder weather due to down-slope winds, all make Maryland's weather hard to accurately predict.

THE CHALLENGE

Winter weather in Maryland varies drastically. Some winters are a wonderland of snow and ice, while others are incredibly mild. Weather conditions are also often widely disparate during storms – one area can experience rain, while another area only a few miles away is accumulating ice and snow.

The Washington, D.C. area is consistently ranked as one of the top five metropolitan areas with the worst traffic congestion in the United States. The D.C. suburbs include the Maryland counties of Montgomery and Prince George's that surround the heavily traveled DC beltway. Combine the daily commuting bottlenecks with poor weather conditions, and D.C. area roads quickly become horrendous.

In addition, the varying conditions require different road treatments that incur significant costs for chemicals, fuel, equipment and manpower. During severe weather events, contractor crews and resources are allocated to cover the county. Often these additional crews and treatments prove unnecessary because the conditions are not severe countywide. Live, local weather intelligence is necessary to be able to accurately staff and treat roads specifically impacted by dangerous conditions.

"GIS gives you an actual picture of what is happening with the storm in real-time. We use the GIS data in conjunction with traffic cameras situated throughout the county to give us a true visual as to the effects of the storm."

- Steven Suprata, Community Outreach and Notification Manager and Storm Operations

MONTGOMERY COUNTY'S SOLUTION



Montgomery County's Storm Operations Center

The Montgomery County Department of Public Works and Transportation (DPWT) opened a new Storm Operations Center in December of 2007 to combat storms more effectively and efficiently. Operated by the DPWT's Highway Maintenance Section, the center is expected to improve storm response by providing a common operating picture with improved technology and storm managers in one location. The DPWT provides road services for more than 500 square miles spread throughout the county impacting one million residents, including:

DWPT Required to Clear Nearly 4,800 Lane Miles

- 540 lane miles of emergency routes
- 336 lane miles of salt routes
- 3,885 lane miles of neighborhood plow routes

County Resources

- 200-225 county personnel
- 174 pieces of equipment

Contract Resources

- 180 contract personnel
- 175 pieces of contract plowing/sanding equipment
- 50-75 additional contract pieces with operations

Montgomery County selected WeatherBug[®] Professional services and solutions to provide local weather forecasting to help target resources to areas most impacted by weather conditions. WeatherBug operates the largest network of weather stations in the world, and has more than 650 weather sensor stations and cameras in the greater Washington DC area, providing detailed, local information that is updated every few seconds. Specifically in Montgomery County, there are 174 WeatherBug[®] Tracking Stations. The DPWT is using WeatherBug[®] Professional Geographic Information System (GIS) Data Services to easily integrate and superimpose the snowplow routes over the WeatherBug maps that are displayed in the Storm Operations Center. This enables the DPWT to quickly move resources, staff and equipment to the areas of the county most impacted by conditions. With WeatherBug Professional GIS Data Services, transportation officials are able to see where freeze lines are across the county. Since many storms split the county, knowing the freeze line locations and movement patterns enables the DPWT to mobilize resources at the appropriate time. WeatherBug also provides two-, three- and four-hour forecasts, enabling county personnel the ability to anticipate and plan hours in advance of storms.

Two months after Montgomery County implemented WeatherBug Professional GIS Data Services, the DPWT achieved a return on investment during the very first winter storm in December of 2007. "Waiting to mobilize the contracted resources and phasing in mobilization saves the county tens of thousands of dollars each storm. More important, demobilization at the proper point has a greater effect on savings. Being able to see that the storm is over or that the remaining patch of snow coming our way can be handled by our own forces enables us to spot-tune our snow response," said Steven Suprata, Community Outreach and Notification Manager, Montgomery County, MD DPWT. Suprata functions as the Storm Operations Center Manager during and following weather events.

PRINCE GEORGE'S COUNTY'S SOLUTION

In analyzing its snow emergency plan, the Prince George's County Department of Public Works and Transportation (DPWT) realized the inefficiencies incurred when crews were dispatched throughout the county to treat roads when some areas were receiving snow and ice while other parts were receiving only rain. Since road treatment was not required in all areas, this resulted in valuable time and resources wasted due to an inadequacy of data needed to make accurate decisions. With more than 1,800 miles to cover in the county, the DPWT had been relying on pavement road sensors to provide street-level temperature data that provided information once every two hours. The DPWT knew more accurate, timely information on the various conditions would improve its snow removal operations and turned to WeatherBug Professional for help.

"WeatherBug Professional GIS Data Services saved our public works department between \$50,000 to \$100,000 in manpower and resources by only allocating resources to areas of our county that needed treatment."

- Patrick Callahan, GIS Manager, Prince George's County, MD

Upon implementing WeatherBug Professional GIS Data Services and Streamer solutions, the DPWT was able to visualize the live, local conditions across the county – down to the street level. Seventy-one WeatherBug Tracking Stations are located across Prince George's County tracking live temperature and radar data, temperature rates and freeze lines. In addition, radar predictions are available up to four hours out, enabling the DPWT's streamlined operations to plan the allocation of resources to the areas of the county where road treatment was needed most. The DPWT is now able to strategically deploy salt trucks and snow plows to only the areas of the county that are affected by snow and ice, saving valuable time and resources. The reduction in wasted deployment, including overtime, equipment costs and supplies, translates into significant savings for the county. For the two storm events last season, a ten percent reduction in shift hours and associated costs

was achieved versus similar storms the year prior. For smaller events, such as freezing rain or overnight road surface freezing, shift hours were reduced by up to three percent.

WeatherBug Professional GIS Data Services is used by other agencies in the county beyond Snow Operations and the DPWT including the Department of Environment Resources (DER), fire departments, Homeland Security and the Office of Central Services (OCS). An example is the use of the solutions by the Homeland Security agency to monitor weather conditions for the 2007 Melwood Open PGA Golf Tournament in which severe thunderstorms threatened the area. "Homeland Security was able to communicate to tournament officials exactly where the storms were and where they were coming from using the GIS Data Services and Streamer applications, resulting in no breaks during the tournament," said Patrick Callahan, GIS Manager, Prince George's, MD Office of Information Technology and Communications.

CONCLUSION

"The WeatherBug Professional GIS service provides ground truth and real-time surface weather information to help Montgomery County and Prince George's County optimize their response to difficult winter weather situations. Integrating live weather into their decision-making process helps them respond to emergencies better and provides efficiencies the counties would not otherwise achieve," said John Doherty, Senior Vice President of Sales and Marketing for WeatherBug Professional.

GIS asset management systems are used by thousands of organizations and agencies worldwide to manage information to make critical geographical location-based decisions. Integrating live, local weather data from WeatherBug Professional GIS Data Services is a key component in managing and solving a variety of weather-related issues, such as planning transportation routes and labor schedules, and dispatching utility crews when severe conditions can impact critical decisions.