PA State Geospatial Coordinating Board

2019 Annual Report
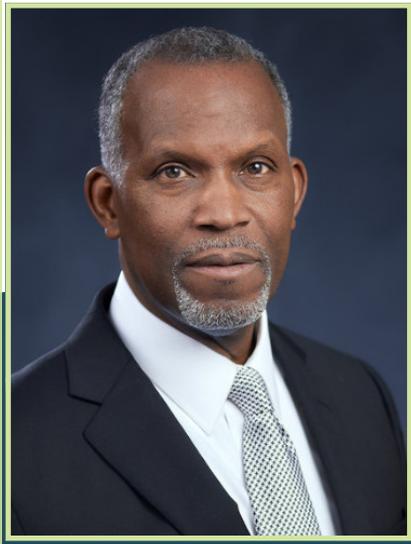
Pennsylvania Monument, Gettysburg, PA

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GIS in Action

Michael Newsome,
Secretary

I am pleased to present the State Geospatial Coordinating Board (GeoBoard) annual report for 2019.

The success of the GeoBoard continues to be defined by the pursuit of common goals for the benefit of the consumers of geo-enabled data. Members of the GeoBoard represent a variety of stakeholders and perspectives.

During the past calendar year, the GeoBoard's members promoted the goal of using a single data-sharing agreement across authors, approvers, publishers, and consumers of spatial data. Collectively, we are more than 50 percent complete toward attaining this goal.

GeoBoard members continued their outreach and education at a variety of stakeholder events to spread awareness and understanding of the value of spatial data to business programs.

Please read more about these and other accomplishments throughout the report.

In 2020, we are seeking support from the Legislature for the re-authorization of GeoBoard operations and the selection of an executive director. Through the goals in our strategic plan, we remain committed to:

- *Create a sustainable business model*

- *Facilitate the development of statewide authoritative data sets*

- *Ensure and promote public access to geospatial data and services*

- *Enhance collaboration, cooperation, and coordination*

I would like to thank the GeoBoard's members for their volunteer-based leadership, experience, and dedication to the mission of the group.

Michael Newsome
Pennsylvania Office of Administration

Mission

The GeoBoard shall provide advice and recommendations to the Governor, the General Assembly, and the public on geospatial issues; uniform data standards; coordination and efficiency in geospatial policy; and technology across different sectors.

Vision

Through the work of the GeoBoard and its partners, geospatial activities throughout the commonwealth will be enhanced through open communication, collaborative efforts, unified planning, and coordinated implementation, resulting in effective and efficient use of Pennsylvania's geospatial resources.

About the GeoBoard

The Pennsylvania State Geospatial Coordinating Board (GeoBoard) was established in 2014 under Act 178 to:

"Provide advice and recommendations to the Governor and the citizens of this Commonwealth on geospatial issues and provide uniform data standards, coordination and efficiency in geospatial policy and technology issues among Federal, State and local government agencies, academic institutions and the private sector."

According to Act 178, the GeoBoard has the following powers and duties:

1. Recommend data development priorities and interoperability standards for data sharing across agencies and different units of government across this Commonwealth.

2. Monitor national and state trends, identify issues of potential interest and concern to the Commonwealth, and submit annual reports to the Governor and the General Assembly and other reports as necessary.

3. Define and prioritize strategic opportunities where maps and spatial analysis activities could enhance the business of government and provide more cost-effective services to citizens. This may include recommendations of specific geospatial technology investments in the Commonwealth.

4. Develop task forces as needed to formulate recommended positions or actions. The task force membership may be comprised of board members or designees appointed by the board. The board shall consider any task force recommendations at its next meeting.

Leadership Team

The "leadership team" is an unofficial title given to the collective group comprised of the GeoBoard chair, vice chair, and all task force chairs. The leadership team strives to ensure GeoBoard operations comply with the intent of Act 178 and with commonwealth requirements for advisory boards. Additionally, the Leadership Team acts as a focused communication platform where they engage in open dialogue, debate, prioritization, and frequent interaction to advance the mission of the GeoBoard.

The GeoBoard continues to use a procedures framework to help guide governance, operations, and agenda topics.

In 2020, we are seeking support from the Legislature for the re-authorization of GeoBoard operations and the selection of an Executive Director.

Task Forces

As identified in Act 178, under official duties and responsibilities, the GeoBoard may develop task forces as needed to formulate recommendations and perform actions. At the board's initial meeting in March 2016, the GeoBoard created three task forces in accordance with the authority set out in the enabling legislation. The current task forces are: Service Delivery, Data Program, and Governance. The GeoBoard formally adopted charters that guide the task force activities. Task force meetings occur as needed, with certain task forces meeting as frequently as twice a month. Task force members are volunteers from within and outside of the GeoBoard, including members from local, county and state government agencies, academia, and the private sector. Task forces can choose to form one or more working groups to focus on key goals and objectives.

Smart Cities

3D/Data Visualization for Urban Design and Planning: A Collaborative Research Project Between Carnegie Mellon University and the City of Pittsburgh

In the coming decades, American cities will increasingly rely on computational systems to improve many aspects of urban life. Distributed networks of sensors and networked computation will be fundamental technologies for achieving important civic goals, such as increasing the efficiency of using and maintaining city infrastructure, streamlining city operations and decision making, improving public health and safety, and monitoring the environmental and social conditions of urban life. The term "Smart City" has emerged to describe these systems. Geographic Information System (GIS), Building Information Modeling (BIM), and 3D simulation programs are increasingly used by cities, urban designers, architects, and others to visualize and analyze changes to the built environment and cities.

In August of 2014, the City of Pittsburgh and Carnegie Mellon University (CMU) entered into a memorandum of understanding that outlined a City/CMU partnership ("Metro21: Smart Cities Institute") for research, development, and deployment of such technologies using Pittsburgh as an urban laboratory.

In 2015, the CMU Remaking Cities Institute (RCI), Environmental Systems Research Institute (Esri, Inc.), and Pittsburgh-based educational gaming company, Simcoach Games, teamed with the City of Pittsburgh Department of City Planning to produce a pilot 3D digital model of Smithfield Street in downtown Pittsburgh. The pilot model illustrated the potential for 3D simulation tied directly to building and infrastructure performance.

A significant challenge of the study was to demonstrate how to communicate design scenarios and abstract data to elected officials, private developers, academic institutes, and citizens using 3D visualization tools. The CMU research team faculty foresees that 3D software will soon improve its ability to document context by developing expanded and higher quality libraries of realistic objects and textures for importing into design models.

Virtual reality and real-time graphics are forecasted to be the next "new wave" of innovation with the ability of inserting models of buildings and public spaces into "real" contexts. This is now happening in gaming, the industry leader in these software advances. For city planning tasks, location-based geospatial platforms (GIS) currently offer the greatest potential for both geospatial and 3D modeling compatibility.
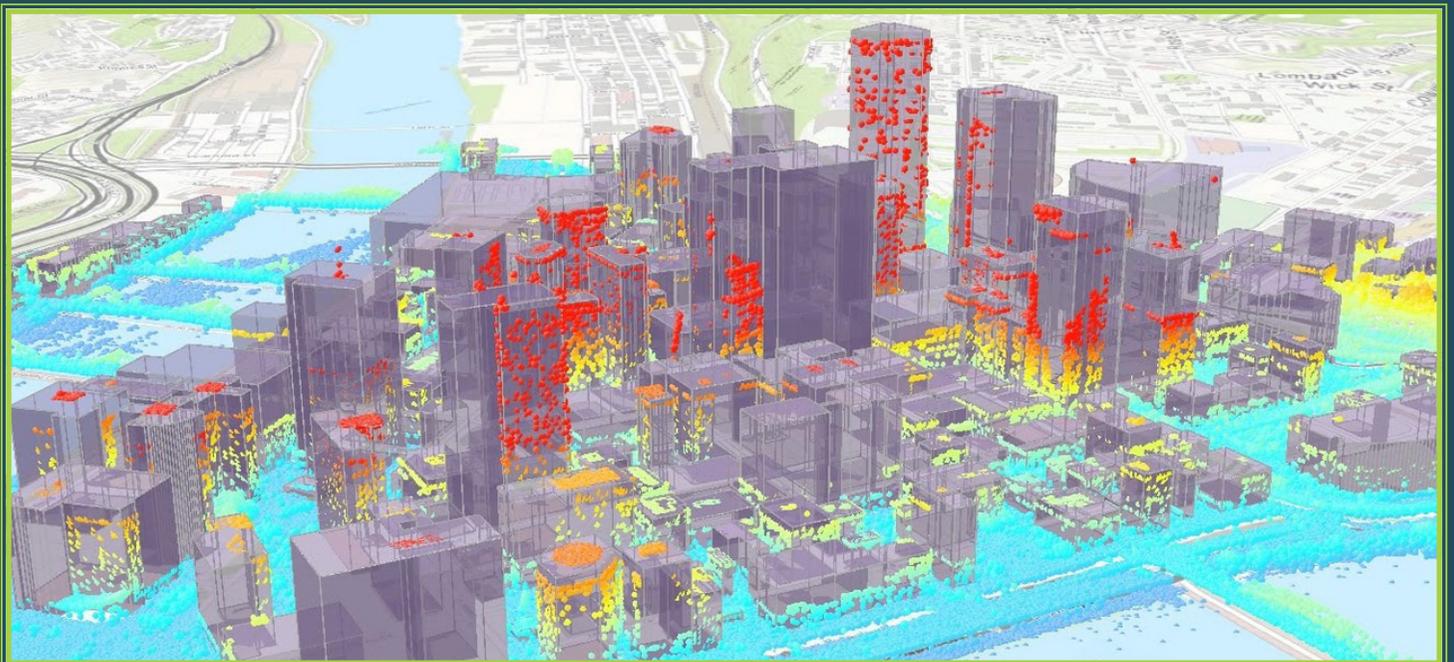
Accomplishments

The following represents the GeoBoard's important accomplishments in calendar year 2019. The dates that frame the list align with 2019 Board meetings that occurred on:

- March 27, 2019
- June 17, 2019
- August 28, 2019
- November 20, 2019

The following is a brief summary of the key agenda items and decisions made during the meetings.

March

- Agreed to approve and publish the 2018 State Geospatial Coordinating Board Annual Report
- Agreed to approve the position paper to reauthorize Act 178 of 2014
- Discussed updates from individual task force groups and from the Joint Task Force meeting

June

- Discussed updates from individual task force groups and from the Joint Task Force meeting

August

- Discussed updates from individual task force groups and from the Joint Task Force meeting
- Highlighted outreach activities and progress toward goal of broad use of a single data sharing agreement

November

- Agreed to revise the Task Force Charters based on the proposed changes
- Discussed updates from individual Task Force groups and from the Joint Task Force meeting

Additional details about the 2019 Board meetings and supplemental material are available on the website.

Task Force Activities

Service Delivery Task Force

The Service Delivery Task Force (SDTF) continued with activities that focused on outreach, collaboration to improve spatial data, and more.

Outreach to Counties who have Signed Data-Sharing Agreements — The Service Delivery Task Force (SDTF) initiated extensive outreach throughout the year to counties that signed the Commonwealth of Pennsylvania Multi-Party Geospatial Data-Sharing Agreement. Many counties shared data publicly for the first time, and several more counties that have signed the agreement plan to share in the near future. Data for the PA Base Map was shared in many formats, and the SDTF will continue to explore ways to make data sharing easier and more efficient while also focusing on eliminating barriers to effective data sharing. In addition, the SDTF took advantage of outreach opportunities by attending and presenting at the PA GIS Conference, the NW PA GIS Conference, and Central PA GIS Day to emphasize the importance of data sharing.

Collaboration with Open Data Pennsylvania — The SDTF initiated ongoing discussions with Open Data Pennsylvania and the Pennsylvania Spatial Data Access (PASDA) to ensure that data sharing

efforts in the commonwealth are not duplicated. All three entities hope to ensure that inquiries about data are getting to the right people so that questions can be answered in a timely and accurate fashion. These discussions also allowed for knowledge transfer regarding archiving of data and best management practices surrounding data sharing and storage.

Motivating Users to Create Metadata — Metadata is an important component of data, and much of the current data being shared for the PA Base Map includes very little metadata. The SDTF is working to define a minimum set of metadata requirements for counties and other entities that would like to share data. The goal is to motivate users to create and develop better metadata as well as to make the data existing in the PA Base Map more complete and comprehensive for those that use the data.

Additional Activities of the Task Force — The SDTF continues to be involved in ongoing efforts to distribute imagery data from the Pennsylvania Emergency Management Agency (PEMA) Imagery Acquisition Project as well as updated Quality Level 2 Light Detection and Ranging (QL2 LiDAR) elevation coverage for Pennsylvania. Efforts to explore new ways of collecting and distributing data as well as engaging new data providers are ongoing, and the SDTF will continue to work with the Data Program Task Force in assisting in the development of the PA Base Map data themes.

Data Program Task Force

The Data Program Task Force (DPTF) continued with activities around the promotion of a state-wide geospatial data sharing agreement and the ongoing development of the data layers that comprise the PA Base Map.

The DPTF held a special meeting in March to review the current PA Base Map organization and suggest improvements. The group decided to align the PA Base Map with the National Spatial Data Infrastructure (NSDI) data theme reference model and adopt the theme definitions of the NSDI model.
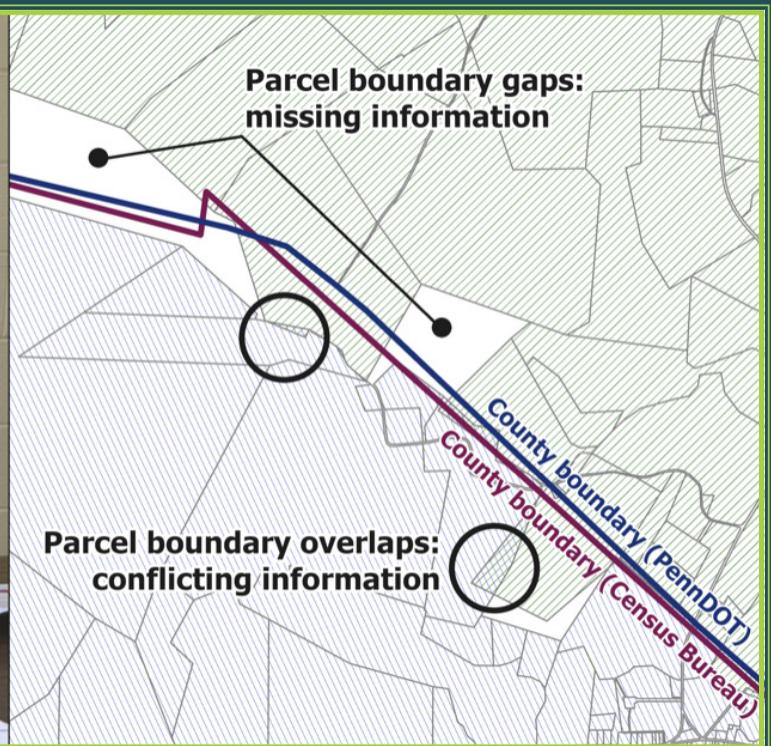
Sustainable Land Use

Center for Land Use and Sustainability (CLUS)

The Center for Land Use and Sustainability (CLUS) at Shippensburg University (SU) leverages the expertise of SU faculty, staff, and students to promote sustainable land use, economic development, resource management, and communities at local, regional, and global scales. Ongoing collaborations include local-scale projects that support the Cumberland County Food System Alliance and Shippensburg Borough; regional projects with the Kittatinny Ridge Coalition, South Mountain Partnership, and Delaware River Watershed Initiative; and larger projects with the U.S. National Park Service and Corporación de Estudios y Desarrolo Norte Grande in Chile. Pictured on the left is CLUS Director Claire Jantz working with a student to prepare a series of public presentations about future land use scenarios for stakeholders across the Delaware River watershed.

Much of the work at CLUS involves geospatial data and technology. Pennsylvania's geospatial data is aggregated, managed, and shared without reference to consistent statewide standards, proving to be a common challenge. For example, pictured on the right are county-boundary and land-parcel-ownership data for two adjacent counties in the Kittatinny Ridge region. The differences, gaps, and overlaps make it difficult to make some decisions because the "correct" data are not always obvious and missing data are just that. Differences between sets of county boundaries can be attributed to differences in source materials or map scales, but other kinds of gaps, overlaps, or misalignments cannot be explained easily. The CLUS usually spends a lot of project time meeting with clients and deciding how best to work around this common problem. Accordingly, CLUS very strongly supports the GeoBoard's efforts to remove barriers to sharing geospatial data across the Commonwealth of Pennsylvania and to promote cost-saving approaches by establishing statewide data standards.

You can learn more about these projects and the Center for Land Use and Sustainability at *www.centerforlanduse.org*.

Parcel boundary gaps: missing information

Parcel boundary overlaps: conflicting information

County boundary (PennDOT)

County boundary (Census Bureau)

In July 2019, the DPTF mailed a cover letter, the data sharing agreement, and a letter of support from the County Commissioners Association of Pennsylvania (CCAP) to 61 counties that had not yet signed the agreement asking them to do so. Since that mailing, 36 counties have signed the agreement. Another mailing to the counties that have not signed was sent in February 2020, encouraging their participation.

The DPTF is comprised of various workgroups that have helped to improve the coordination and cooperation of various data authors in increasing collaboration. This collaboration ultimately leads to reduced efforts, coordinated expenditures, and improved data quality.

Hydrography Workgroup — DCNR's Bureau of Geological Survey, with the support of a team of state, federal, private, and academic professionals, has initiated a program to create and maintain complete, modernized, authoritative surface water mapping for Pennsylvania. The new system will be integrated with high-precision elevation data derived from QL2 LiDAR, replacing the current 40-year-old hydrographic data. It will enable modeling of water flow, quantity, and quality for better public health, safety, and sustainable use of this rich resource. The hydrography team is working closely with the USGS to demonstrate the future of hydrographic mapping and data management.

Framework Themes
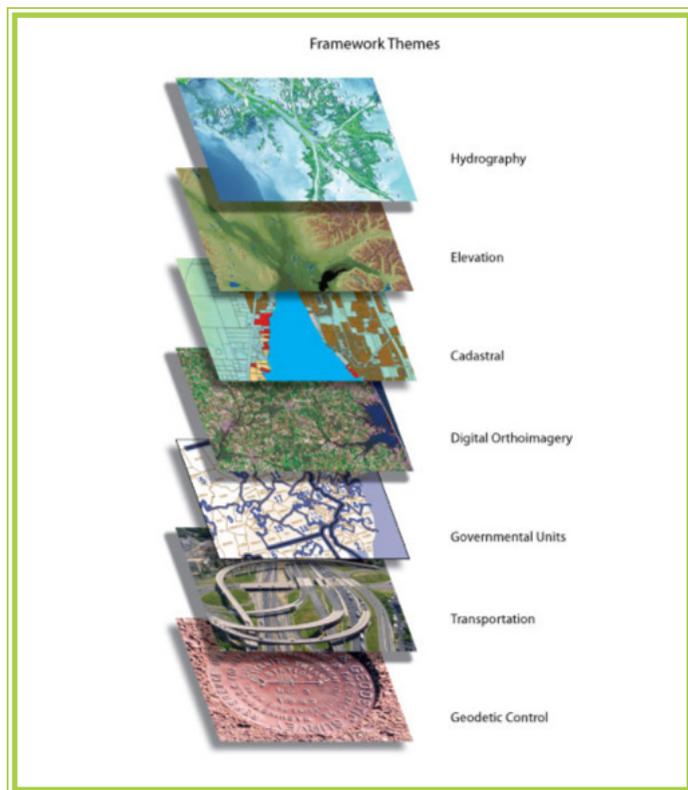
LiDAR Workgroup — In late 2018, PA DCNR assembled $2.15 million from PA sources which leveraged an additional $1.2 million from federal sources through a USGS competitive grant program to obtain new QL2 LiDAR for twenty-three counties. Collection and processing of LiDAR data obtained under the grant has proceeded on schedule through 2019. Continued collaboration this year yielded federal commitments approaching $3 million to complete QL2 coverage of the state. The total LiDAR update will enable better modeling of flood risk, assessment of landslides and other rapid surface change, measurement of development and natural resource trends, and analytics to increase efficiency in operations and public safety.

Boundary Workgroup — The US Census, PennDOT, Department of Community and Economic Development (DCED), and others are steadily uniting their separate boundary databases and workflows. A pending agreement will eliminate cumbersome and confusing annual reporting for each municipality in favor of more sensible event-based reporting and unified state/federal reporting and data management.

NextGen911 (NG911) GIS Workgroup — This past year PEMA, with assistance from its contracted supplier and the NG911 GIS workgroup, accomplished the following:

- Established the Pennsylvania NG911 GIS Data Model.

- Established the Pennsylvania NG911 GIS Standards and Best Practices document for Public Safety Answer Point (PSAP), Emergency Service and Provisioning Boundaries, and conducted two webinars in April 2019.

- Established the Pennsylvania NG911 GIS Standards and Best Practices document for Road Centerlines and Site Structure Address Points.

- Conducted seven in-person regional training sessions regarding NG911 GIS Data.

- Performed a gap analysis of all 67 counties' data to determine the current compliance with NG911.

- Conducted calls with each county to present a remediation report and required/recommended corrections in order to bring their data into NG911 compliance.

Overall, the 'as-is' accuracy of commonwealth data has an average accuracy of 88.52% with a benchmark accuracy of 98%. Once all mandatory fields are added and/or populated, the average accuracy goes up to 97.89%. Another initiative of the NG911 GIS Workgroup is new updated ortho-imagery for the commonwealth. To date, PEMA and the workgroup have delivered 28 counties, which can be downloaded from PASDA's website. To date, 60.3% of the commonwealth has been acquired, with 12.8% approved, and 47.4% PEMA accepted.

Cadastral Workgroup — This workgroup continued its collaboration with the Land Records group of the County GIS Professionals Association of PA. Efforts move forward on educating county assessment staff on the benefits of GIS and how geospatial technologies can improve land record data and processes. Looking ahead, focus will be on encouraging land record data sharing from all authoritative sources to build a more comprehensive state-wide land record dataset.

Governance Task Force

The Governance Delivery Task Force (GTF) continued to carry out its mission in 2019 with activities focusing on safeguarding and guiding the future of geospatial activity within the commonwealth through action driven, topic specific sub-groups. Within the Governance Task Force, the Legislative Review Subcommittee (LRS) continued forward with discussions regarding the proposed amendments to the Engineer, Land Surveyor, and Geologist Registration Law as presented in 2017 HB 1106 Printers Number 1931. Following the acceptance of an official position of the board opposing the amendments on August 20, 2018, the LRS focused on working with the key stakeholders to find language that would meet the needs of the stakeholders while simultaneously alleviating the concerns of the GeoBoard, an effort which extended throughout nearly all of 2019.

The LRS also prioritized review of Act 178 of 2014, the legislation that authorized the GeoBoard, as the sunset for the authorization is approaching. In this review, the LRS found several items which could use improvement based on the lessons learned by the board since its inception. A document detailing these areas for improvement,

2019 Central Pennsylvania GIS Day

2019 marked the eleventh year for Central Pennsylvania GIS Day. For the first time this event was held at Harrisburg University of Science and Technology. Central PA GIS Day is one of many similar events taking place across the state.

The event had over 350 attendees, and was a day filled with presentations, discussions, and demonstrations of the power and reach of GIS across the commonwealth. Speakers included representatives from Carnegie Mellon University, Pennsylvania Land Trust Association, Cumberland County, The Nature Conservancy, PennDOT, York County Planning Commission, Dickinson College, Pennsylvania Turnpike Commission, City of Philadelphia, Abington Heights High School students, and many more. Representatives of the PA GeoBoard also presented at the event.

Central Pennsylvania GIS Day was made possible through the efforts of a dedicated committee of volunteers representing state and local government agencies, educational institutions, non-profit organizations, and private industry. We are all united by our desire to share our enthusiasm for GIS and the importance of a sense of place in our communities with the next generation of GIS users and the community at large.

The PA Turnpike Commission GeoAnalytics Program

The Pennsylvania Turnpike Commission (PTC) is on the leading edge of geospatial innovations in the commonwealth. The Turnpike's GeoAnalytics Program supports multiple business units in the commission including: traffic engineering and operations, maintenance, facilities, engineering, environment, human resources, and public relations.

The integration of geospatial software and systems at the commission includes the development of multiple dashboards which support a wide array of functions across the units. These dashboards help visualize issues as diverse as winter storm activity and impacts to cashless tolling bandwidth readiness and even deer encounters.

In addition to dashboard development, the commission also developed and utilizes multiple thematic applications. One example of an integrated application was developed for Traffic Engineering and Operations that includes data feeds and layers related to current weather conditions, current accidents, and other traffic related incidences, including backlogs. It also includes telematics data, Waze data feed, social media feed, incident management layers, PTC assets, Intelligent Traffic Systems (ITS), and workzone locations. There are two versions of this application – a desktop application and one to display on a Barco video wall.

Another example is the Snowfall and Salt Usage application, created for Maintenance. It displays the snowfall and salt usage by salt shed for the 2017-18 snow season. The purple circles represent the PTC salt sheds with the size varying by the amount of salt used. Snowfall is shown via a graduated color image. The colors range from red (low) to blue (high). The snowfall image was interpolated from NOAA Northeast Regional Climate Center.
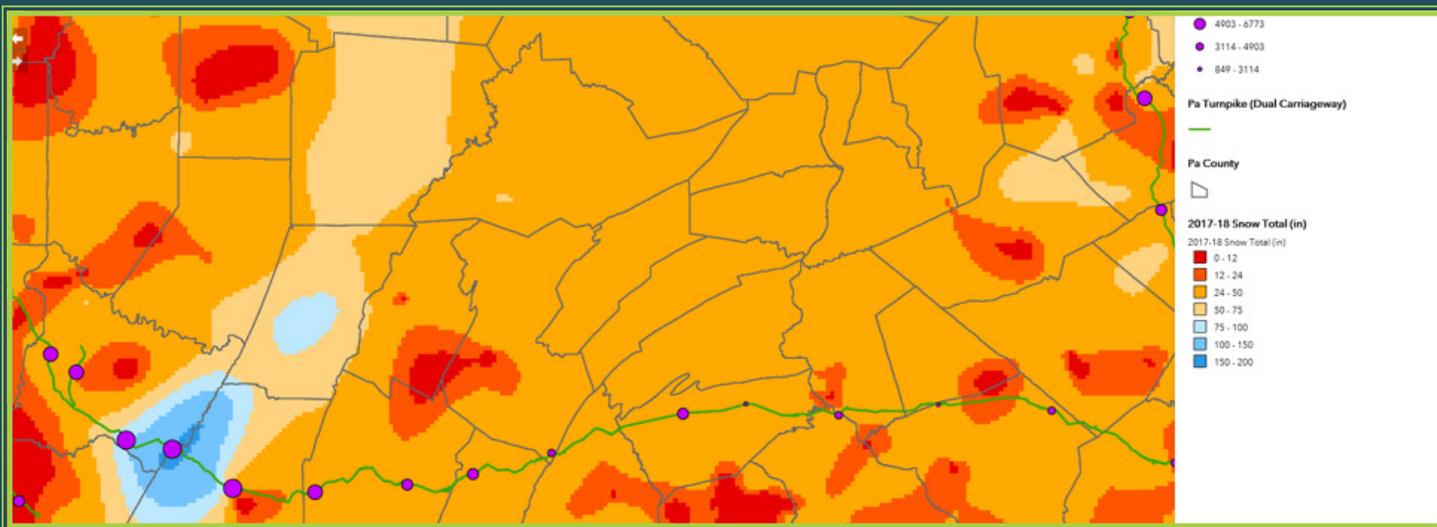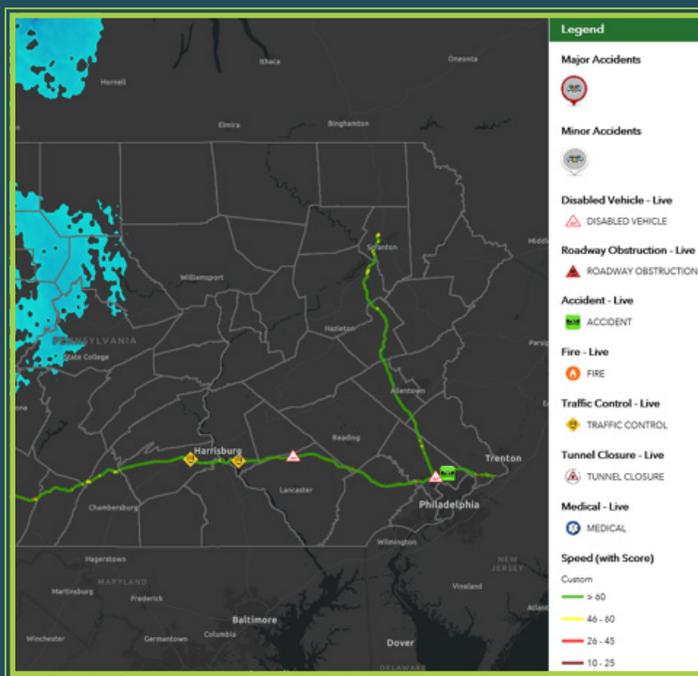
as well as draft alterations, was developed by the LRS and incorporated into draft language for future use in a reauthorization attempt.

A nationwide update to critical geospatial data standards is being developed. The National Geodetic Survey (NGS) is working on replacing the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88) in 2022. To provide input from the commonwealth, the Geodetic Work Group (GWG) was established within the Governance Task Force. The GWG conducted an exhaustive review of design options for new state plane coordinate system zones for recommendation to the NGS. Additionally, the GWG has reviewed the Pennsylvania Coordinate System Law and will be drafting model amendment language to ensure the new datum and coordinate systems are established as standard within the commonwealth.

Outreach

The GeoBoard vice chair presented at the Northwest GIS conference in November. Besides background on the GeoBoard, the presentation highlighted the benefits of adopting an open data approach and use of the data-sharing agreement created for such a purpose.

Meetings that included topics on the GeoBoard's re-authorization and legislation design were held with executives from the following commonwealth business lines:

1. Department of Agriculture
2. Department of Conservation and Natural Resources
3. Department of Environmental Protection
4. Department of Transportation
5. Pennsylvania Emergency Management Agency

Materials also include information about the GeoBoard's background, approach, coordination framework, task forces, strategic plan, and Phase 1 base map layers.

Members of the GeoBoard, including the task force chairs, presented at the annual PAGIS Conference in May.

In November, the GeoBoard vice chair and the director of PASDA presented at the annual Central PAGIS Day. The event was held in conjunction with Harrisburg University.

In 2020, we are seeking support from the Legislature for the re-authorization of GeoBoard operations through Senate Bill 1027 and the subsequent selection of an executive director.

Website

The GeoBoard website is located at the following link:

https://www.oa.pa.gov/Programs/ InformationTechnology/Pages/geoboard.aspx

APPENDIX: Membership

The designees, alternates, and volunteers make the GeoBoard possible and successful.

State Geospatial Coordinating Board Contact Sheet		
VOTING MEMBERS		
Organization Member	**Member Name**	**Formal Designee**
Secretary of Administration	Michael Newsome	John MacMillan
Secretary of Environmental Protection	Patrick McDonnell	Sean Crager
Secretary Conservation and Natural Resources	Cindy Dunn	Gail Blackmer
Director of Pennsylvania Emergency Management Agency	Randy Padfield	Jeff Thomas
Secretary of Transportation	Yassmin Gramian	Frank DeSendi
Secretary of General Services	Curtis Topper	Matt Bembenick
SENATE: Municipal Authority	—	—
SENATE: Elected Local Government Official - Rural Community	—	—
SENATE: Elected Local Government Official - Suburban Community	—	—
HOUSE: Elected Local Government Official - Urban Community	—	—
HOUSE: Employee of County Emergency Management Agency	Phil Colvin	Glenn Mohler *(ALTERNATE FOR PHIL COLVIN)*
HOUSE: Individual with Expertise in Geospatial Technology	—	—
County Commissioner	Kevin Boozel Butler County Commissioner	—
Pennsylvania Society of Land Surveyors	Matthew Warner Professional Land Surveyor Herbert, Rowland, & Grubic, Inc.	—
Individual with Expertise in Data Development and Sharing	Kenneth Juengling GeoAnalytics Information Officer PA Turnpike Commission	—
County GIS Professionals Association of Pennsylvania	Barry Hutchins, Senior Public Safety GIS Program Manager, County of Lycoming	Laura Simonetti *(ALTERNATE FOR BARRY HUTCHINS)*
Pennsylvania Mapping and Geographic Information Consortium	Dave Gilbert	—
County Commissioners Association of Pennsylvania	Erick Coolidge Tioga County Commissioner	Scott Zubek *(ALTERNATE FOR ERICK COOLIDGE)*
Pennsylvania Chapter of the Management Association for Private Photogrammetric Surveyors	Howard Hodder	—

State Geospatial Coordinating Board Contact Sheet

NON-VOTING EX OFFICIO MEMBERS

Organization Member	Member Name	Formal Designee
United States Geologic Survey Mapping Liaison	Eliza Gross	—
Pennsylvania One-Call System	Bill Kiger	—
Public Utility Commission - Chairman	Gladys Brown	Damon Anderson
Pennsylvania State System of Higher Education - GIS Consortium	Scott Drzyzga	—
Pennsylvania Municipal Authorities Association	Craig Thomas	—
American Planning Association, Pennsylvania Chapter	Brian Traylor	—
Pennsylvania Spatial Data Access - Director	Maurie Kelly	—
Pennsylvania State Police Commissioner	Colonel Robert Evanchick	Adam Repsher

State Geospatial Coordinating Board Contact Sheet

NON-VOTING MEMBERS

Task Force	Task Force Chair Name
Service Delivery Task Force	Laura Simonetti
Data Program Task Force	Sean Crager
Governance Task Force	Kevin Eaton

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