**Pennsylvania State Geospatial Coordinating Board**
**Governance Task Force**
**Broadband Subcommittee**

**Special Report on the Importance of Broadband Access to the Commonwealth's Geospatial Community**

**Sector(s)** Public Safety, General Government, Private Industry, Surveying, Academia

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Broadband availability, in the Commonwealth of Pennsylvania and across the nation, is consistently one of the most sought-after infrastructure upgrades identified by residents, the business community, and political leadership. The geospatial community is also heavily interested in the ongoing efforts to enhance broadband availability and quality due to the reliance of modern geospatial solutions on robust broadband access.

The geospatial community includes several distinct sectors, but largely centers around Geographic Information Systems (GIS) which pairs intense data analytics with mapping technology to understand geographic relationships, patterns, trends, and more. Modern geospatial solutions are heavily dependent on web-based services, applications, and solutions to reach customers. Unfortunately, as the geospatial community has seen rapid and robust technological advancements, broadband access has not kept pace. Further, in many locales throughout the state where broadband access is available, inadequate bandwidth hampers performance of geospatial solutions.

In today's geospatial ecosystem, nearly everything relies on broadband access in some way, so high bandwidth and reliable broadband access throughout the entirety of Pennsylvania is crucial. Specific instances of geospatial dependencies on broadband include:

> On-premise GIS - Practitioners of GIS primarily use on-premise GIS software and architecture to create, edit, analyze, and manage geospatial data. Broadband is vital in the use of on-premise GIS in many facets such as:
> 1. Remote access of on-premise GIS systems
> 2. Download, stream, and import data from external sources
> 3. Leverage pre-existing shared solutions and tools for analysis
> 4. Publish data, tools, and services for external consumption

> Online Mapping & Data Sharing – Nearly all GIS interaction with the public and external stakeholders occurs via web-based applications (maps, storymaps, dashboards, etc.) or directly shared data (open data). To customers without reliable, high bandwidth broadband access, these solutions are rendered inaccessible. Further, if the geospatial professional has unreliable broadband, the solution is unlikely to be published in a timely or consistent manner, and may not even be published at all, depriving the entire community of accessing vital information.

> Mobile GIS **-** Practicing GIS in the field, or what is often referred to as "mobile GIS", involves geospatial applications downloadable to mobile devices. These mobile applications have the capability of not only consuming GIS data services but can also sync data back to the main database (often in the cloud). Mobile GIS software applications and devices typically leverage a connection to broadband internet

service to effectively collect and manage data. Although offline data collection capabilities exist in mobile GIS, uploading/downloading, management, and sharing of data will ultimately rely on a sufficient internet connection. To summarize, widespread availability of broadband is crucial to support and utilize mobile GIS infrastructure.

Real-Time Data Streaming - Real-time data streaming is heavily reliant on broadband access as it seamlessly integrates the data stream from field measurements, transmission of measurements via broadband connection, consumption of the data via an online based platform, analysis, and reporting out to an end-user software product such as digital dashboards. Examples of real time data streaming includes everything from river gauges to air monitoring sensors to security cameras which can include both audio and video – data which require high bandwidth broadband connections.

Broadband is now fundamental to web-based GIS data sharing and mapping services, mobile data collection and management, and real-time data streaming. The modernized workflows and standardized data (structured address and high-precision topography in particular) that are goals of the PA State Geospatial Coordinating Board's PA BaseMap 2030 initiative will enable better decision making and prioritization in broadband expansion. The geospatial community will continue to inform, encourage, and support the efforts and investments being made to close the remaining gaps in broadband service coverage so that geospatial technology does not outpace this critical infrastructure it now relies upon.