



Using Esri's ArcGIS Hub to Create a One-Stop GIS Resource Tool

August 2022

Presenters



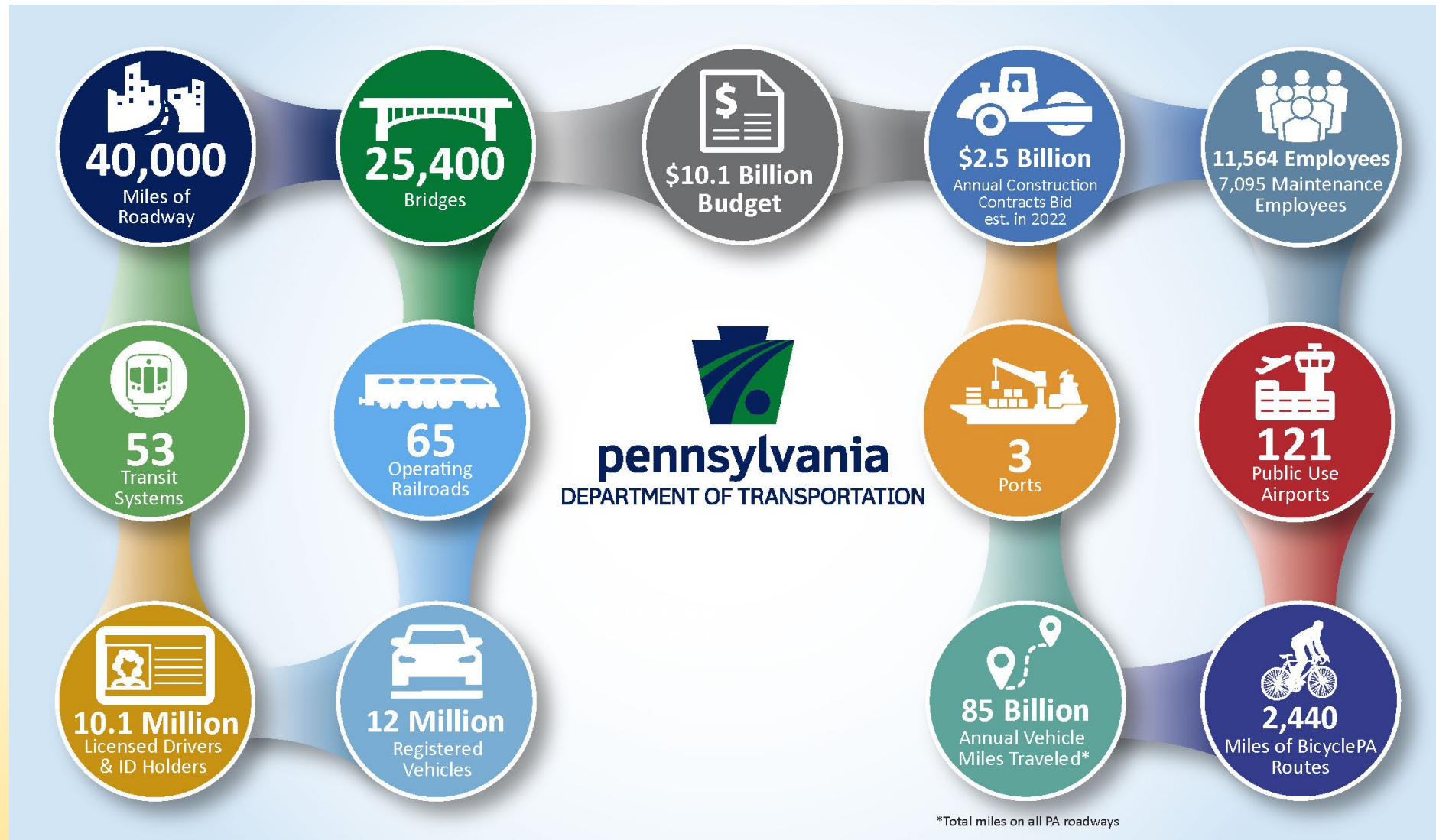
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PennDOT by the Numbers



Motivation/Reasons

- The PennDOT Bureau of Planning and Research's Geographic Information Division (GID) identified a need for a **one-stop** geospatial hub to act as the **core communication, support, and resource center** for PennDOT GIS data
- Many disconnected platforms; too many places to look for information
- Centralizing resources and accessibility to PennDOT's GIS assets, allows **better utilization** of data for:
 - ✓ Planning
 - ✓ Advanced analytics
 - ✓ Application development

Motivation/Reasons

The creation of the Geospatial Hub satisfied four themes from the PennDOT Strategic Plan:

- **Theme 1:** Safety at all levels
- ✓ **Theme 2:** Innovation
- **Theme 3:** Mobility and connectivity
- ✓ **Theme 4:** Customer service
- ✓ **Theme 5:** Communication that fosters relationships and encourages new ideas
- **Theme 6:** Recruiting, retaining and developing a diverse and inclusive workforce
- ✓ **Theme 7:** Effectively leveraging available resources by modernizing technology and assets

Motivation/Reasons

What is ESRI's ArcGIS Hub?

- Software as a Service (SaaS) - cloud-based, browser-accessible
- Majority of the content contained in the hub is publicly accessible data and apps with a small percentage that is only available to PennDOT staff
- No-code/low-code solution to web application development
- Leverages PennDOT's existing investment in and use of Esri's platforms:
 - ✓ Open Data portal
 - ✓ ArcGIS Online
 - ✓ Other ESRI tools
- Hub pages and content are responsive



Stakeholder Involvement

Identified groups that use PennDOT resources

- ✓ Geographic Information Division – creates, hosts, and maintains GIS data/applications for PennDOT
- ✓ PennDOT District personnel
- ✓ County GIS staff
- ✓ Planning Partners – PennDOT planning personnel & MPOs
- ✓ System Administrators



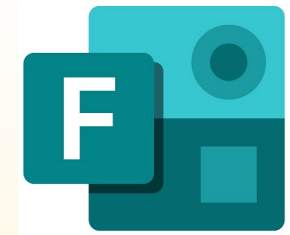
Stakeholder Involvement

Used Microsoft Forms for questionnaires

- Create questionnaires/monitor responses
- Core questions in addition to group-specific questions
- Emailed survey link prior to stakeholder meetings

Examples:

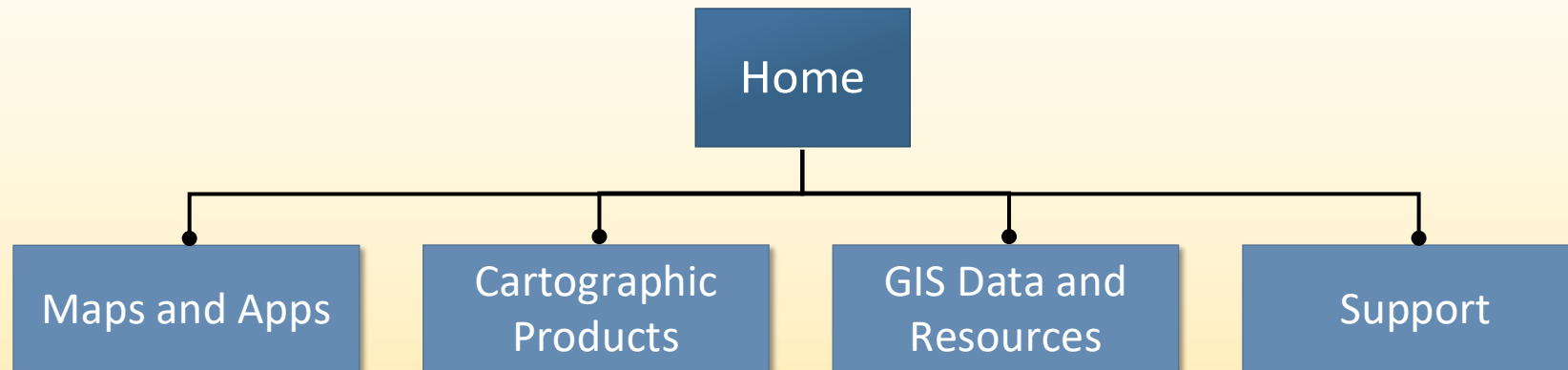
- 1) Do you currently use the (existing) GIS home page?
- 2) How do you currently interact with or seek out applications/data?
- 3) What BPR/GID-developed apps/data do you access most frequently?
- 4) Have you ever encountered any problems with accessing needed apps/data?
- 5) What would you like to be more easily accessible?
- 6) What type of support questions do you get that could be answered in the GIS Hub?



Stakeholder Involvement

Virtual stakeholder meetings (Microsoft Teams)

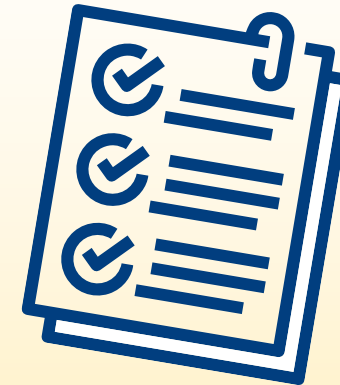
- Demonstrated other ArcGIS Hub examples
- Shared content inventory assembled so far
- Reviewed and clarified survey responses
- Discussed the Hub as the place to go to learn about GIS-related training opportunities and other support from GID



Development Process

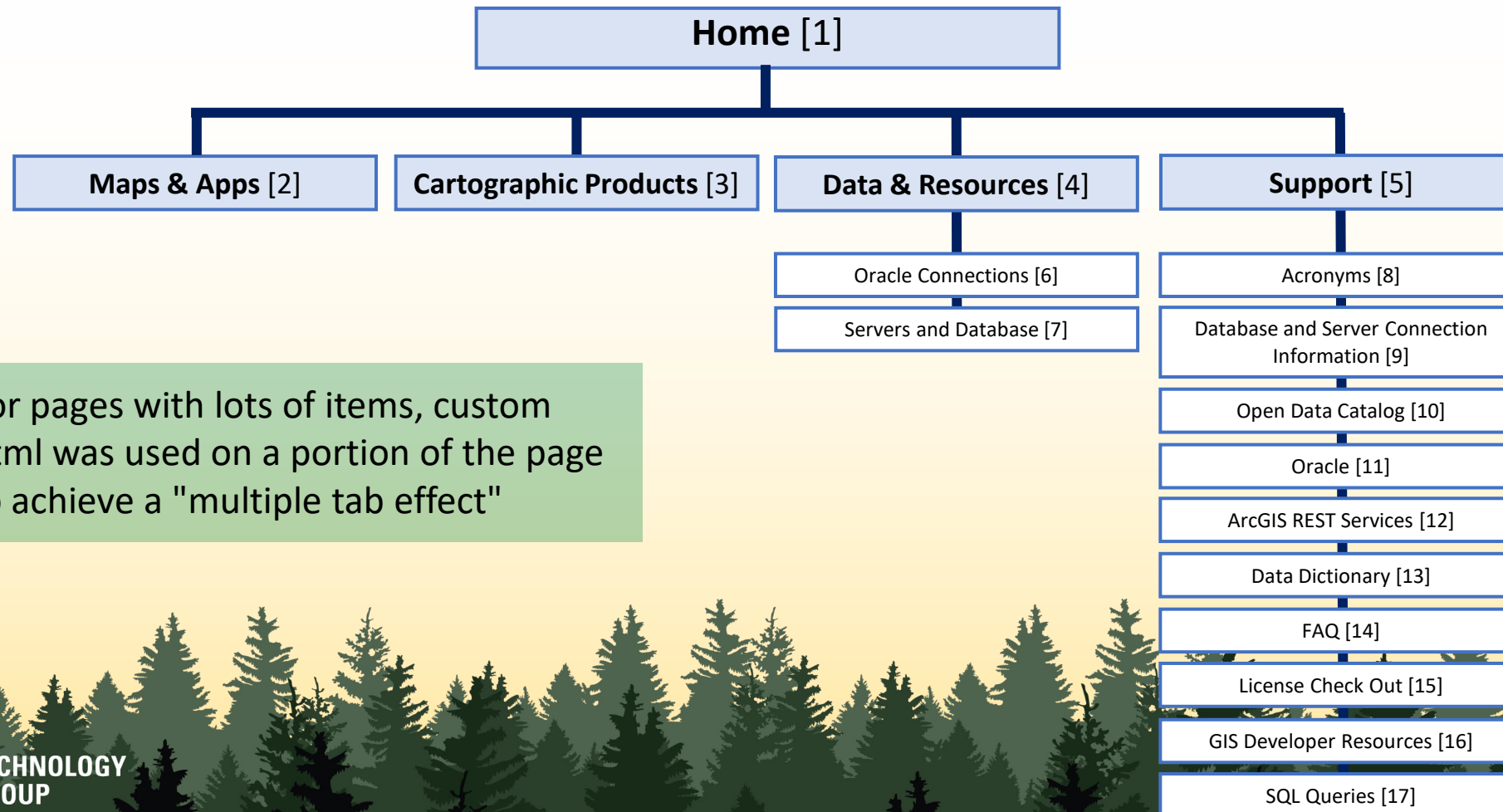
High-level requirements document

- Functional/Non-functional requirements:
 - Hub site/pages will be hosted in Penn Share (PennDOT's ArcGIS Online Organization)
 - Hub pages will comply with PennDOT style guide
 - Search utility functions appropriately against Hub content
- Content requirements (for each page):
 - Introduction text
 - List of items
 - Web URLs



Development Process


Organizing the Information




For pages with lots of items, custom html was used on a portion of the page to achieve a "multiple tab effect"

Development Process

Organizing the Information


[GIS Hub](#)
[Maps & Apps](#)
[Cartographic Products](#)
[Data & Resources](#)
[Support](#)




Travel Info To Go
Real-time traffic conditions and travel alerts.

511 can be accessed via website, mobile application or by calling 5-1-1; it is free, available 24 hours a day and provides information on traffic delay warnings, weather forecasts, traffic speed information and access to traffic cameras.


[Launch 511 PA](#)

Pennsylvania Department of Transportation


GIS Hub




Maps & Apps



Cartographic Products




Data & Resources




Support

Featured Applications




[OneMap](#)

[View](#)




[VideoLog](#)

[View](#)



[Active Construction Projects](#)

[View](#)



[Traffic Information \(TIRe\)](#)


[View](#)

[Explore More Apps](#)

PROJECT SPOTLIGHT

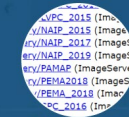
Over the past year, PennDOT's Geographic Information Division (GID) has taken on the task of completely overhauling our rail lines layer. This process included improving alignments, adding new tracks, updating attributes and archiving abandoned lines. To ensure our geometry and data were as accurate as possible, we used resources from the Federal Railroad Administration (FRA), Pennsylvania Department of Conservation and Natural Resources (DCNR), 2018 - 2020 - Pennsylvania Emergency Management Agency (PEMA) Orthoimagery, Delaware Valley Regional Planning Commission (DVRPC) and Southeastern Pennsylvania Transportation Authority (SEPTA). In addition to primary and secondary lines, our new rail layer now includes rail yards, connectors, abandoned tracks, industrial leads and rails-to-trails. To use this data in your own maps or apps, visit [PennShare](#) site or PennDOT's [Open Data Portal](#).

Featured Data



OpenData
Spatial Data Portal

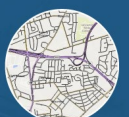
[View](#)



Imagery Resources
PennDOT Imagery Server

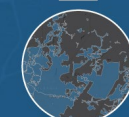
Internal login required

[View](#)



PASDA
Pennsylvania Spatial Data Access

[View](#)


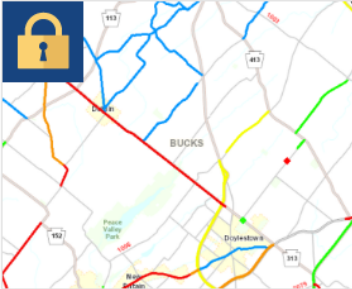



DEP OpenData
Department of Environmental Protection

[View](#)

Development Process


Organizing the Information – Maps & Apps

Featured Apps	PennDOT Apps	Traveler Information Services	Natural Recreation
	<h3>OneMap</h3> <p>The One Map application is a web-based GIS mapping application for highway and bridge projects on the Commonwealth's Twelve Year Transportation Program and Regional Transportation Improvement Plans (TIPs). This application allows users to map and obtain information for highway and bridge projects.</p> View		
	<h3>Maintenance IQ</h3> <p><i>Internal login required</i></p> <p>Interactive GIS application for PennDOT's Bureau of Maintenance and Operations (BOMO) that serves as GIS visualization portal for planned and completed maintenance activities across the state and gives end users the ability to query various datasets, visualize them on a map and share them between other users.</p> View		
	<h3>Pavement History</h3> <p>The Pavement History Straight-line application provides a quick solution for identifying approximate PennDOT highway segment locations and displaying the pavement history for that segment. It conveys location through integration with Google Maps and Streetview, PennDOT's Roadway Management System (RMS) and PennDOT's VideoLog application.</p> View		

Development Process

Organizing the Information – Cartographic Products


[Featured Maps](#)[County Maps](#)[Maintenance & Processes](#)



PennDOT Maps

This site provides links to PDF maps the department publishes as well as a link to order printed maps. Published maps include Tourism and Transportation, Metropolitan Areas, Engineering Districts, Railroads, Airports, Counties and Political Subdivisions.

[View](#)




[y/LVPC_2015](#) (ImageSe
[y/NAIP_2015](#) (ImageSe
[imagery/NAIP_2017](#) (ImageSe
[imagery/NAIP_2019](#) (ImageSe
[imagery/PAMAP](#) (ImageServer
[imagery/PEMA2018](#) (ImageSer
[imagery/PEMA_2018](#) (ImageSe
[imagery/SPC_2016](#) (ImageSer

Imagery Resources

Internal login required

PennDOT's internal imagery services; includes PEMA, NAIP and PAMAP.

[View](#)



PennDOT's Tourism and Transportation


This map provides a detailed view of Pennsylvania's road network, parks, forest, game lands, water features, boundaries, population centers and points of interest. This map also includes mileage charts, map index, advertisements and metropolitan enlargements. The Tourism and Transportation map is updated and published every year.

[View](#)

Development Process

Organizing the Information – Data & Resources


Data Services
State
Regional
Federal
Academic



Developer Resources

PennDOT website that makes real-time and static transportation-related data available to various groups for use in their applications and research efforts free of charge. Users can include the general public, commercial vendors, transportation agencies, researchers and the media.


[Developer Resources](#) [GIS Developer Resources](#)



Oracle Connections

Are you an internal user and want to connect to our Oracle Database? This section provides details and instructions to start using our spatial layers in Oracle.

[View](#)



Production ArcGIS Server


GID's ArcGIS Rest Services that support primary GIS maps and applications.

[View](#)

Development Process

Organizing the Information – Support

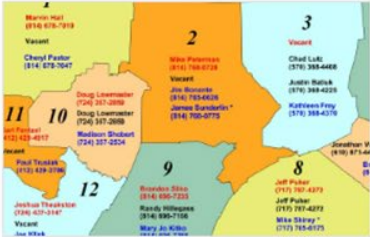
[Featured Resources](#)
[Training Resources](#)
[Contact Us](#)



Acronym Glossary

This list contains acronyms, abbreviations and terms that are associated with the Pennsylvania Department of Transportation, GIS, Federal Highway Administration (FHWA) and many others. While it is as extensive as possible, it may not contain all terms. Your comments and recommendations are welcome! Please direct your input or questions to chowardfol@pa.gov


[View](#)



District GIS Coordinators and Operators

Looking for assistance with maps or GIS support? District and county staff can reach out to your GIS Coordinators and Operators for assistance. This map provides contact information for each district.

[View Map](#)
[Download PDF](#)



PennDOT Planning Partners

Looking for information on regional planning initiatives or data? One of PennDOT's Planning Partner's may be able to assist you. This map provides links to planning organization's websites and open data pages.

[View Map](#)

Development Process

Public vs. Internal Content/Links

- Publicly accessible content (PennDOT OneMap, 511PA)

- Public URL
- No lock icon



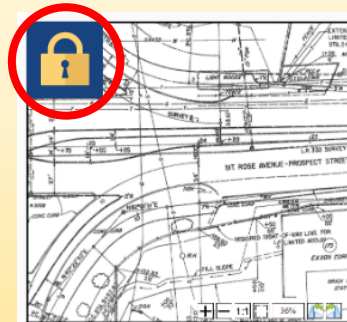
OneMap

The One Map application is a web-based GIS mapping application for highway and bridge projects on the Commonwealth's Twelve Year Transportation Program and Regional Transportation Improvement Plans (TIPs). This application allows users to map and obtain information for highway and bridge projects.

[View](#)

- Content available only to internal PennDOT staff (in-development apps, sensitive data)

- Internal URL – must be connected to the PennDOT network
- Lock icon



Right of Way

Internal login required

Interactive GIS application developed by PennDOT's Bureau of Planning and Research that allows District users quick access to Right of Way Plans, drawings and data. The application can be viewed using Google Chrome or Microsoft Edge with Chromium; Internet Explorer 11 is not supported. A detailed users guide is available to train and support users.

[View](#)

Development Process

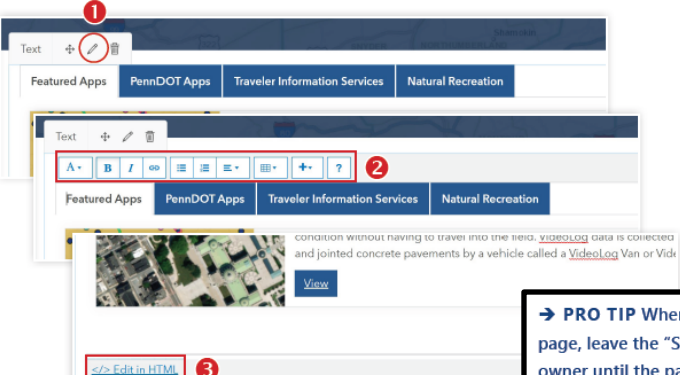
Test Plan Document and Testing

- Test all public and internal links
- Test search functionality
- Readability check (spelling/grammar)

Step	Go to page -->	Go to tab -->	Name on card -->	Click on -->	Expected result -->	Pass (Y/N)? -->	Describe issue/problem if not passed
1	Maps & Apps	Featured Apps	OneMap	View	Launches named app/resource in new browser tab		
2	Maps & Apps	Featured Apps	Maintenance IQ	View	1) Not connected to PennDOT network - "Site can't be reached" 2) Connected to PennDOT network - Launches named app/resource in new browser tab		

GIS Hub Administrator's Guide

1.7 EDITING CONTENT BLOCKS



- 1 Hover over the element and select the pencil
- 2 Basic editor tools become available
- 3 "Edit in HTML" will also become available at the bottom of the content block

→ **PRO TIP** When creating a new page, leave the "Sharing Level" as owner until the page is ready to go live. Change the page to "Public" to go live.

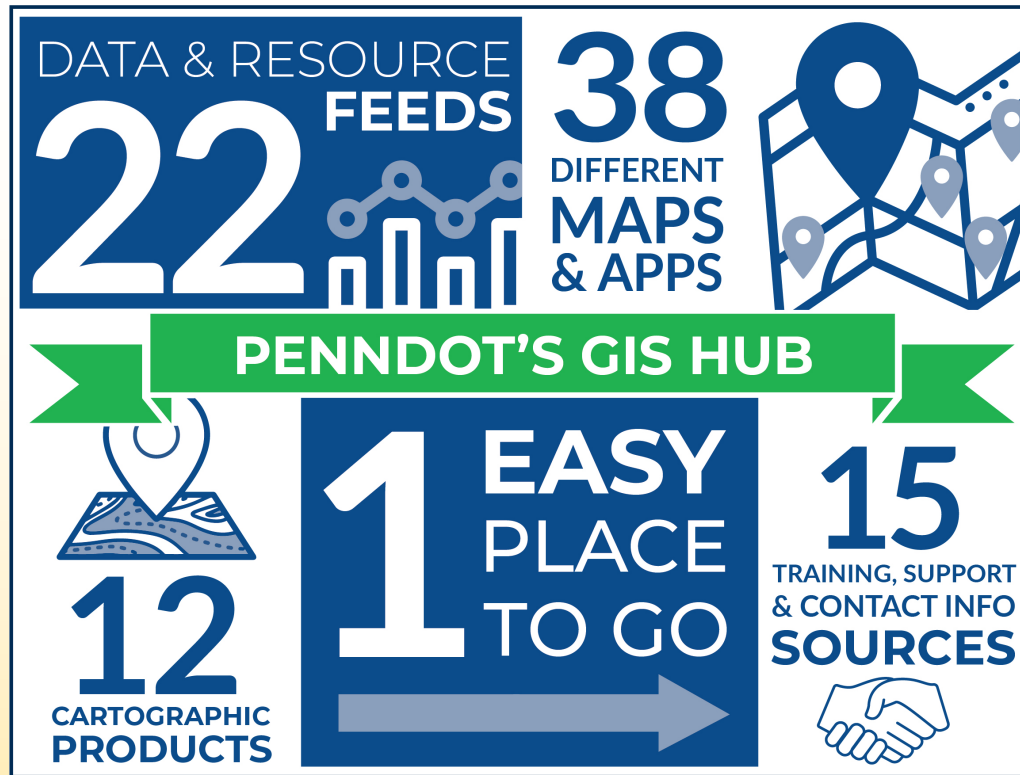
```

4 <div class="card-base card-wide">
5   <div class="card-wide-image-wrap"> IMAGE
6     
10    </div>
11    <div class="card-content"> TEXT
12      <h4><b>OneMap</b></h4>
13      <p>The One Map application is a web-based GIS mapping
14        application for highway and bridge projects on the
15        Commonwealth's Twelve Year Transportation Program and
16        Regional Transportation Improvement Plans (TIPs). This
17        application allows users to map and obtain information for
18        highway and bridge projects.</p>
19      <a class="btn btn-primary" href="https://gis.penndot.gov/
20        onemap/" target="_blank">View</a> LINK
21    </div>

```

Marketing/Outreach

Infographic



One-sheet flyer



QR Code

Boilerplate text

The PennDOT Bureau of Planning and Research's Geographic Information Division (GID) is delighted to announce the roll-out of their new GIS Hub that will act as your one-stop for all things GIS! Geographic information systems, or GIS, connect data to maps by integrating location data with descriptive information that allows the viewer to make better-informed decisions — PennDOT One Map is a great example of a geographic information system.

The new GIS Hub acts as the core communication, support, and resource center for PennDOT GIS data...

Marketing/Outreach

Promoted Through

- ✓ Internal emails to PennDOT staff
- ✓ Emails to external organizations and colleagues
- ✓ GIS Teams channels
- ✓ GIS user groups
- ✓ Geospatial steering committee
- ✓ Various presentations to these organizations
- ✓ PA GIS conference
- ✓ Social media through PennDOT's Press Office



Results

Statistic on the GIS Hub Site Since Go Live

Usage details for the period:

March 27, 2022 - August 1, 2022

Custom Date Range ▾

Item Views this Period

5,407

Avg Item Views Per Day

42.57

Logins this Period

13

Usage Time Series



Results

What People are Saying



pennsylvania
DEPARTMENT OF TRANSPORTATION

"Thank you very much for sharing this with me. I will pass it along to the other faculty who teach GIS courses at Dickinson College....The revised data portal is excellent!"



"This is especially helpful to students in our Remote Sensing course. Have you also contacted the folks at the WCU GIS lab in the Geography department?"

"Thank you for sharing this! We do use lots of PennDOT data in classes."

"Thank you for making us aware of this resource! It's beneficial to have everything in one spot. This will certainly aid us in our work."



GIS Hub

Maps & Apps

Cartographic Products

Data & Resources

Support



[Sign In](#)



Pennsylvania Department of Transportation

GIS Hub



Maps & Apps



Cartographic Products



Data & Resources



Support



<https://gis-hub-pennshare.hub.arcgis.com/>



Questions?

