



GIS for Leaders: Seven Elements of a Successful Enterprise GIS

Adam Carnow

GIS
INSPIRING
WHAT'S
NEXT

This is an *interactive* presentation...

Please follow along and participate in the polls by either...

Opening this URL in the browser on your smart phone:

<https://swipe.to/1791mn>

Or scanning this QR Code with your smart phone:



Abstract

It takes more than technology for an enterprise GIS to be successful. It requires business and IT management skills. This session will review the seven elements of a successful enterprise GIS and provide strategies how GIS Managers can implement them. The seven elements are:

- Vision and Leadership
- Understand how GIS can contribute to your organization's success
- Develop and maintain a GIS Strategic Plan
- Implement effective governance
- Implement evolutionary approaches (change management)
- Deploy engaging apps
- Recruit, develop and maintain good staff



What makes an enterprise GIS successful?

Published on June 22, 2016

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Adam Carnow
Community Evangelist at Esri
[5 articles](#)



1,232



80



11



20

What makes an enterprise GIS successful?

- More than technology:
 - Motivated people committed to managing change
 - Effectively applying the technology in a sustainable manner
 - Following best practices

What makes an enterprise GIS successful?

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“...whether or not our GIS implementation is successful is not a technology problem, it's a people problem...”

- Assistant City Manager



Esri Case Study | Pinellas County, Florida



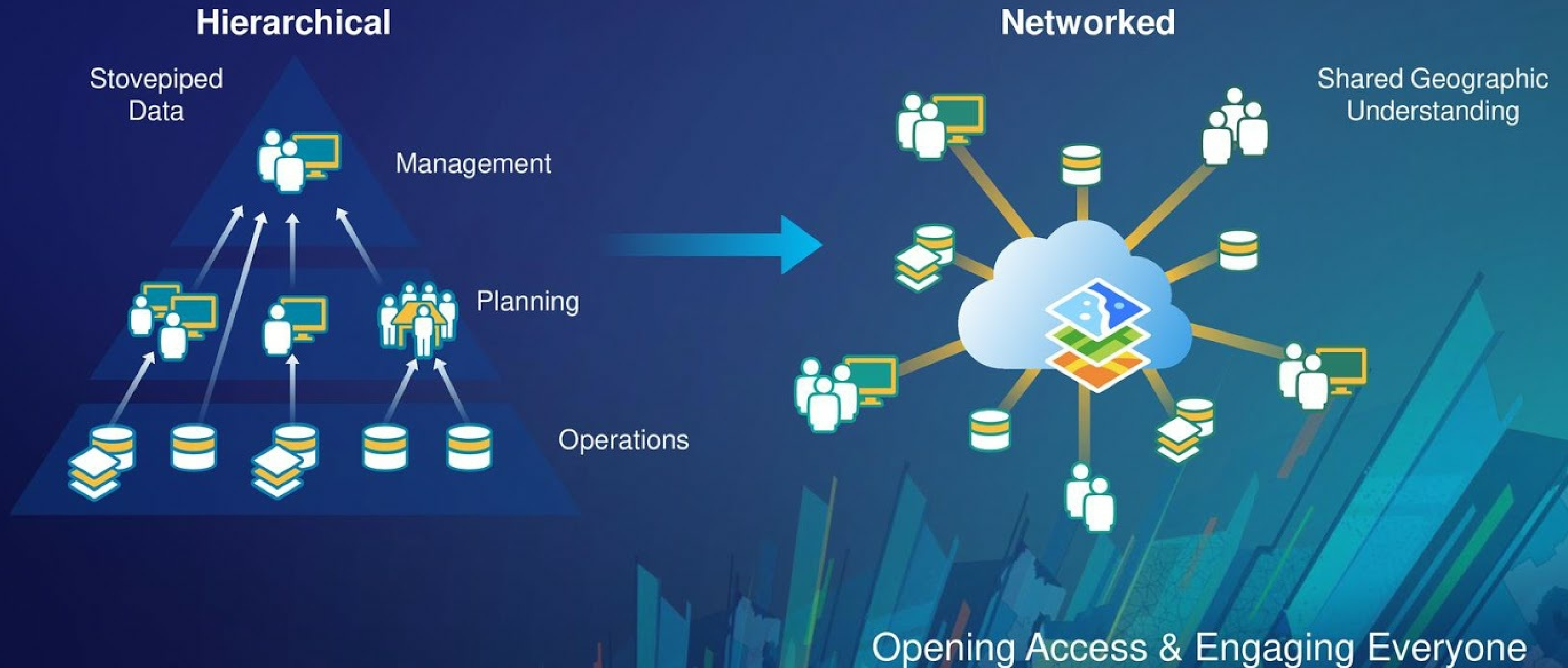
Are your leaders aware of the more advanced capabilities of GIS?

No votes

Two empty rounded rectangular input fields for voting. The top field has a blue circular button with the number '1' on the left. The bottom field has a purple circular button with the number '2' on the left.

ArcGIS Transforms Organizations

- ▶ Creating Shared Information & Facilitating Collaboration



How does your organization use GIS?

No votes

- 1
- 2
- 3

Elements of a Successful Enterprise GIS

- Vision and Leadership
- Understand how GIS can contribute to your organization's success
- Develop and maintain a GIS Strategic Plan
- Implement effective governance
- Implement evolutionary approaches (change management)
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Vision and Leadership

- There's a difference between being a manager and being a leader.
- Let everyone know the capabilities and benefits of GIS.
- They want your help. They need your help. They just don't know it.
- Document your vision, and create and maintain a plan to realize that vision.
- It's your job to extract as much value as possible from your GIS investment.
- It's your job to exceed the expectations of the people funding your operation.

Do you evangelize the power of GIS?

No votes

1

2

Three Differences Between Managers and Leaders

by Vinod Nayar

Leader vs. Manager

- **Creating Value vs. Counting Value**
- **Circles of Influence vs. Circles of Power**
- **Leading People vs. Managing Work**

...emented several ideas, and
...ing a manager to a leader?”

I didn't have a ready answer and it's a complicated issue, so we decided to talk the next day. I thought long and hard, and came up with three tests that will help you decide if you've made the shift from managing people to leading them.

Do you document and publicize your GIS ROI?

No votes

1

2

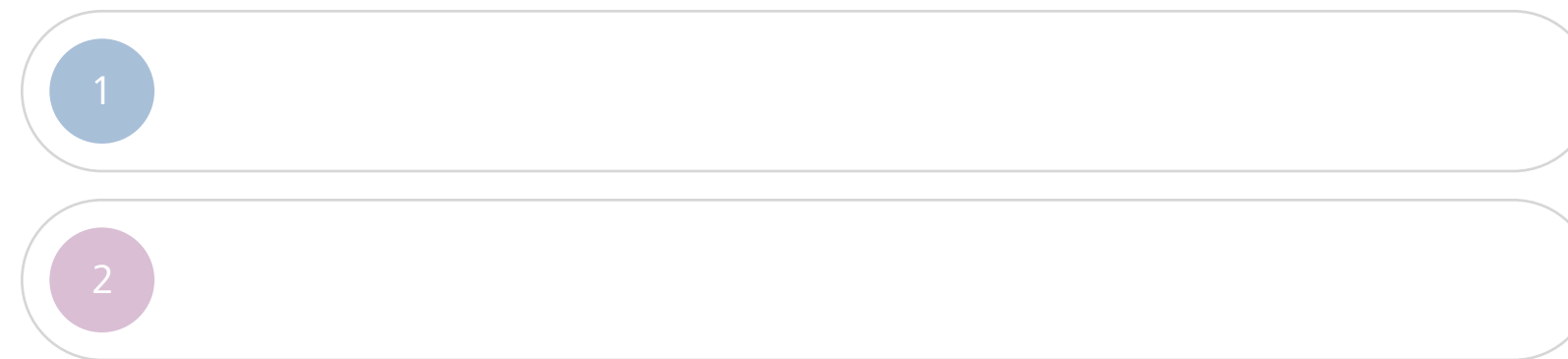
3

Understand how GIS can contribute to your organization's success

- How does your organization define success?
 - Strategic Plan
 - Initiatives
 - Goals, Objectives, Policies
 - Performance Management (Key Performance Indicators)
 - Smart Community
- Talk to leaders
 - Vision
 - Pain
 - Learn their business and deploy solutions that further vision and reduce pain
- Make executives GIS users (think dashboards...)

Do you actively seek out executive sponsorship of GIS?

No votes



Two empty rounded rectangular input fields for voting. The top field has a blue circular button with the number '1' on the left. The bottom field has a purple circular button with the number '2' on the left.

Develop and Maintain a GIS Strategic Plan

- Needs to align with organization's strategic plan
- Needs to align with organization's IT strategic plan
- Develop a GIS maturity assessment
- Identify where there is room for expansion of services
- Prioritize and execute in phases in a sustainable fashion

Do you have, and maintain, a GIS Strategic Plan?

No votes

1

2

DCSI Geospatial Strategy

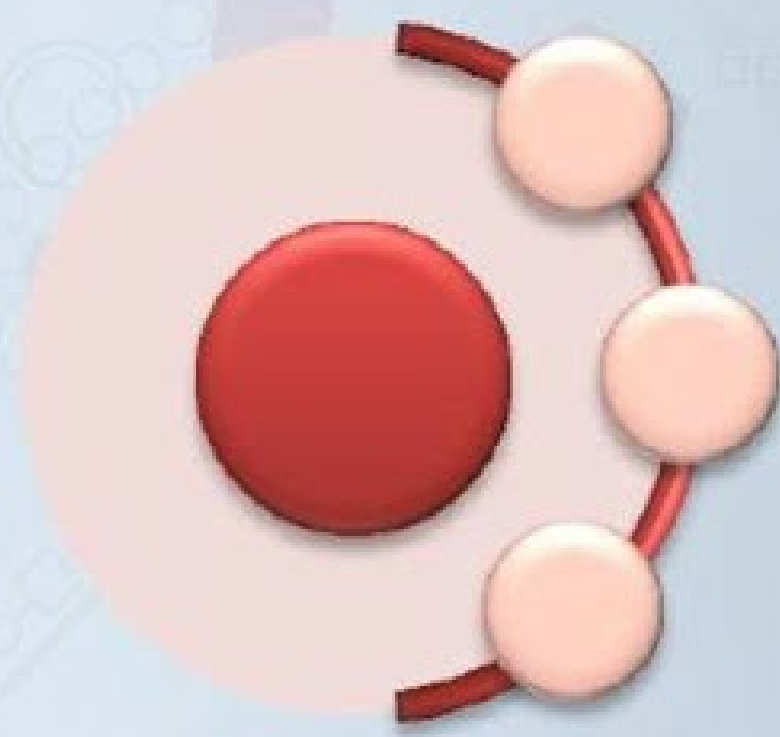
Coordinate

Facilitate collaboration



Simplify

Improve business practices



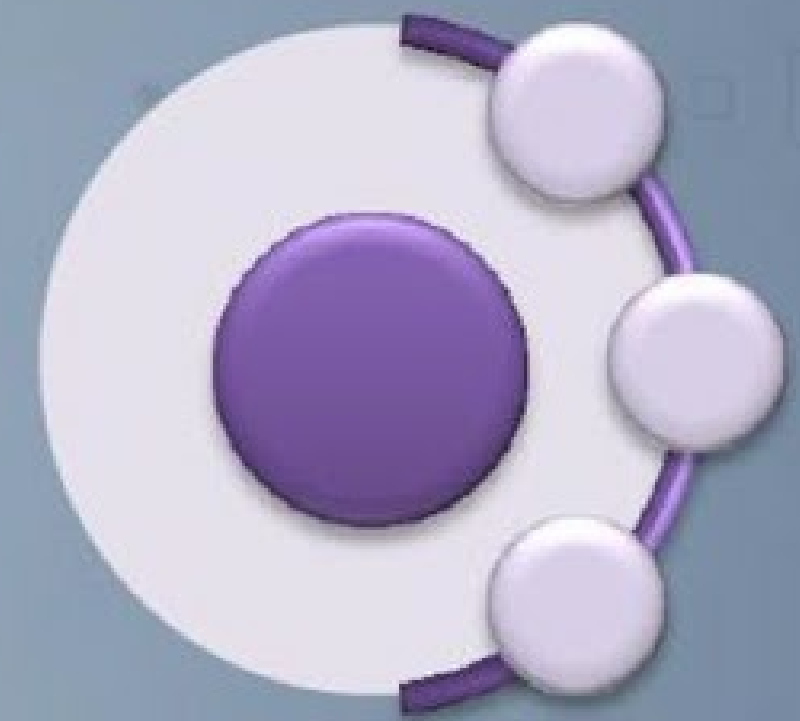
Innovate

Smarter service offerings



Enable

Informed decision makers



Do you regularly dedicate time to Research & Development?

No votes

1

2

Build a Strategy

ArcGIS supports all nine common business patterns

Mapping & Visualization



Understand locations and relationships with maps and visual representations

Data Management



Collect, organize, and maintain accurate locations and details about assets and resources

Field Mobility



Manage and enable a mobile workforce to collect and access information in the field

Monitoring



Track, manage, and monitor assets and resources in real-time

Analytics



Discover, quantify, and predict trends and patterns to improve outcomes

Design & Planning



Evaluate alternative solutions and create optimal designs

Decision Support



Gain situational awareness, and enable information-driven decision making

Constituent Engagement



Communicate and collaborate with citizens and external communities of interest

Sharing & Collaboration



Empower everyone to easily discover, use, make, and share geographic information

Build a Strategy

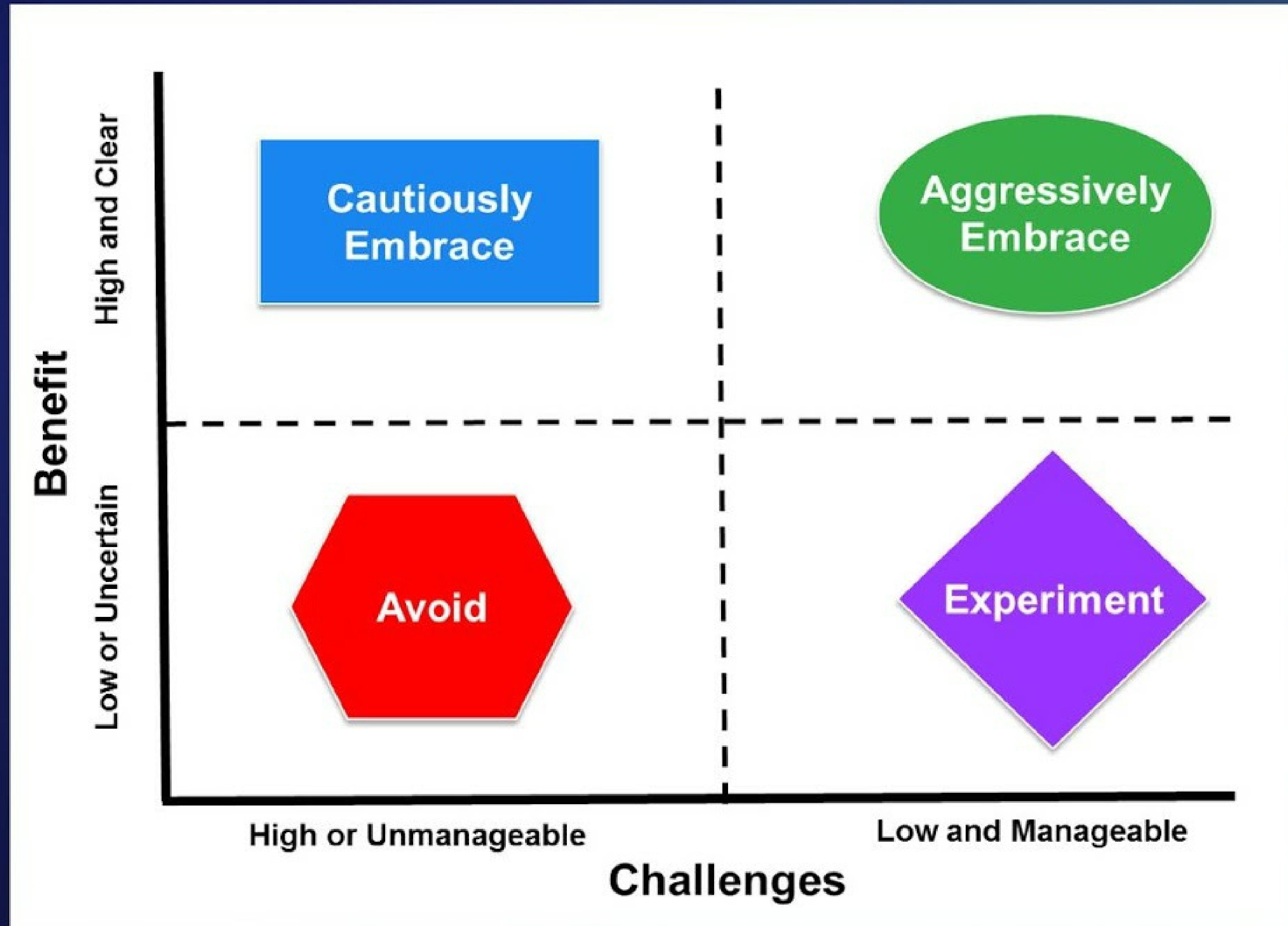
Define and Measure Success

	Mapping & Visualization	Data Management	Field Mobility	Monitoring	Analytics	Design & Planning	Decision Support	Constituent Engagement	Sharing & Collaboration
Elections	Green	Green	Red	Red	Red	Red	Red	Yellow	Red
Emergency Management	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Red
Fire	Green	Green	Red	Yellow	Yellow	Yellow	Red	Yellow	Red
Health & Human Services	Yellow	Yellow	Red	Red	Red	Red	Red	Yellow	Red
Land Records	Green	Green	Yellow	Yellow	Green	Red	Green	Green	Yellow
Law Enforcement	Green	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow
Parks & Recreation	Green	Green	Red	Red	Yellow	Red	Yellow	Yellow	Yellow
Planning & Development	Green	Green	Red	Yellow	Green	Yellow	Yellow	Green	Yellow
Public Works	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Yellow
Transportation	Green	Green	Red	Yellow	Yellow	Red	Red	Yellow	Red
Utilities	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Green

Green = Meeting Need, **Yellow** = Partially Meeting Need, **Red** = Not Meeting Need

Build a Strategy

Project Prioritization



Deliver Real Solutions

In a sustainable manner, enable others to use GIS...

Apps for Everyone

Main Field Office Community Build

Apps for Everyone

ArcGIS apps get the job done through their sheer focus, geographic awareness, and readiness to work. They are powered by the industry-leading ArcGIS mapping platform.

[Try ArcGIS](#)

<http://www.esri.com/software/apps>

See what ArcGIS Apps are available



Apps for the Field



Apps for the Office




Apps for the Community



App Builders

Deliver Real Solutions

Supported, Configurable, Included

ArcGIS Solutions ▾ GALLERY COMMUNITY SEARCH 

<http://solutions.arcgis.com>

ArcGIS Industry Specific Maps and Apps

ArcGIS Solutions deliver Ready-to-Use Maps and Apps to jumpstart your work

[FIND YOURS ↓](#)

Leverage hundreds of ready-to-use maps, apps, and platform configurations to meet your needs, delivering innovation and best practices for your organization.

Have you deployed any ArcGIS Solutions?

No votes

1

2

Deliver Real Solutions

Supported, Configurable, Included

Products

ArcGIS Open Data



Connecting Citizens and Businesses to Your Authoritative Data

Set up a public-facing website within minutes to share your open data. ArcGIS Open Data is an Esri hosted and managed solution that is included with ArcGIS Online.

Johns Creek DataHub

Open Data, Dashboards, and Mapping Apps



The "DataHub" is the City of Johns Creek's central location for open data, dashboards, and interactive mapping applications.

Through this Hub, you can visualize city data in maps, charts, and dashboards. Developers can even tie their own data services and applications into City data.

Visualize Data in Dashboards

Dashboards provide an interactive way of visualizing information in the Johns Creek DataHub.



Most Common Data

Explore the most commonly-accessed data in the DataHub



CreekView

Interact with property information through a map



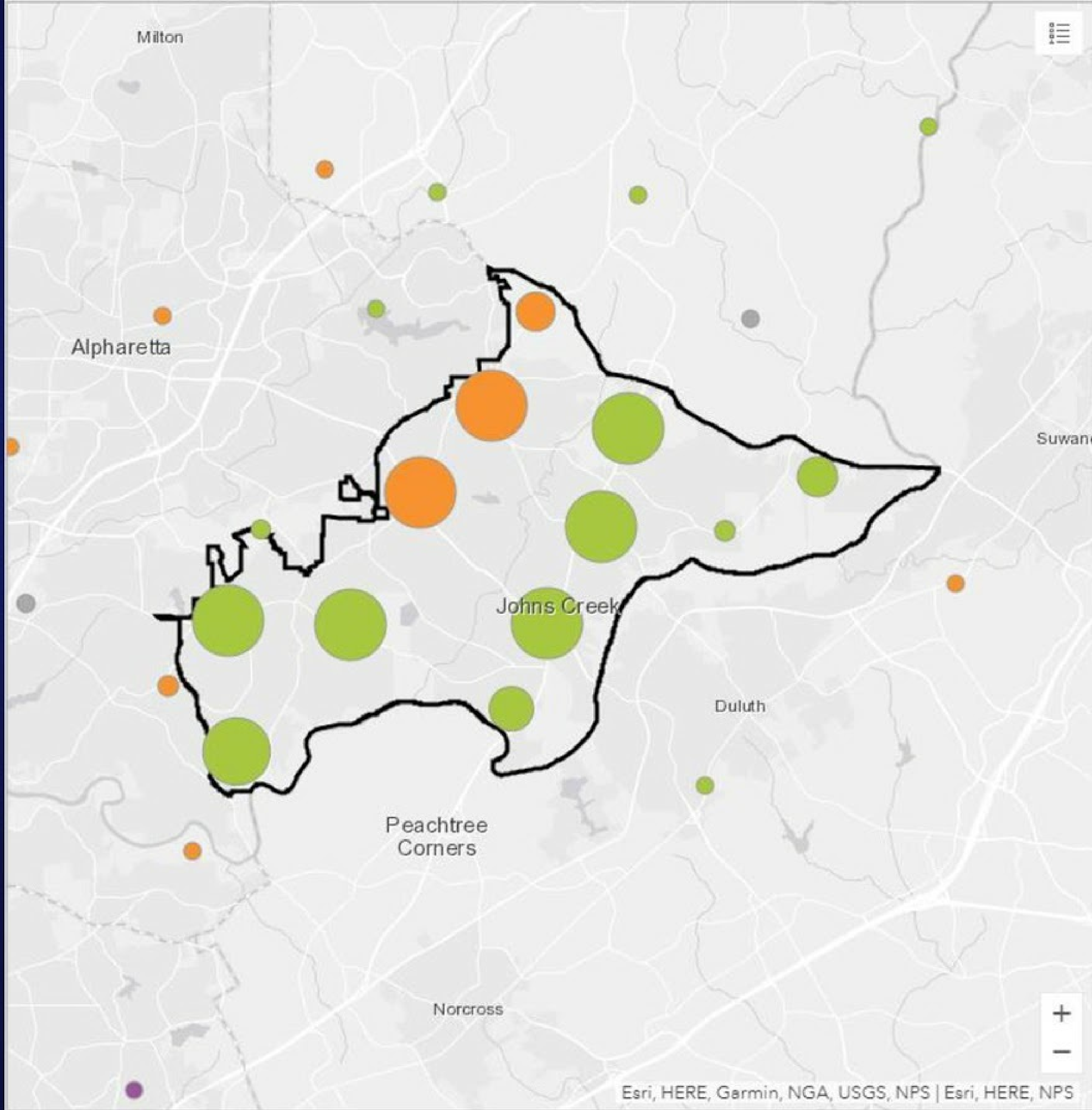
Business Locations

Find businesses and associated information



Building

Browse building permits and construction projects



878

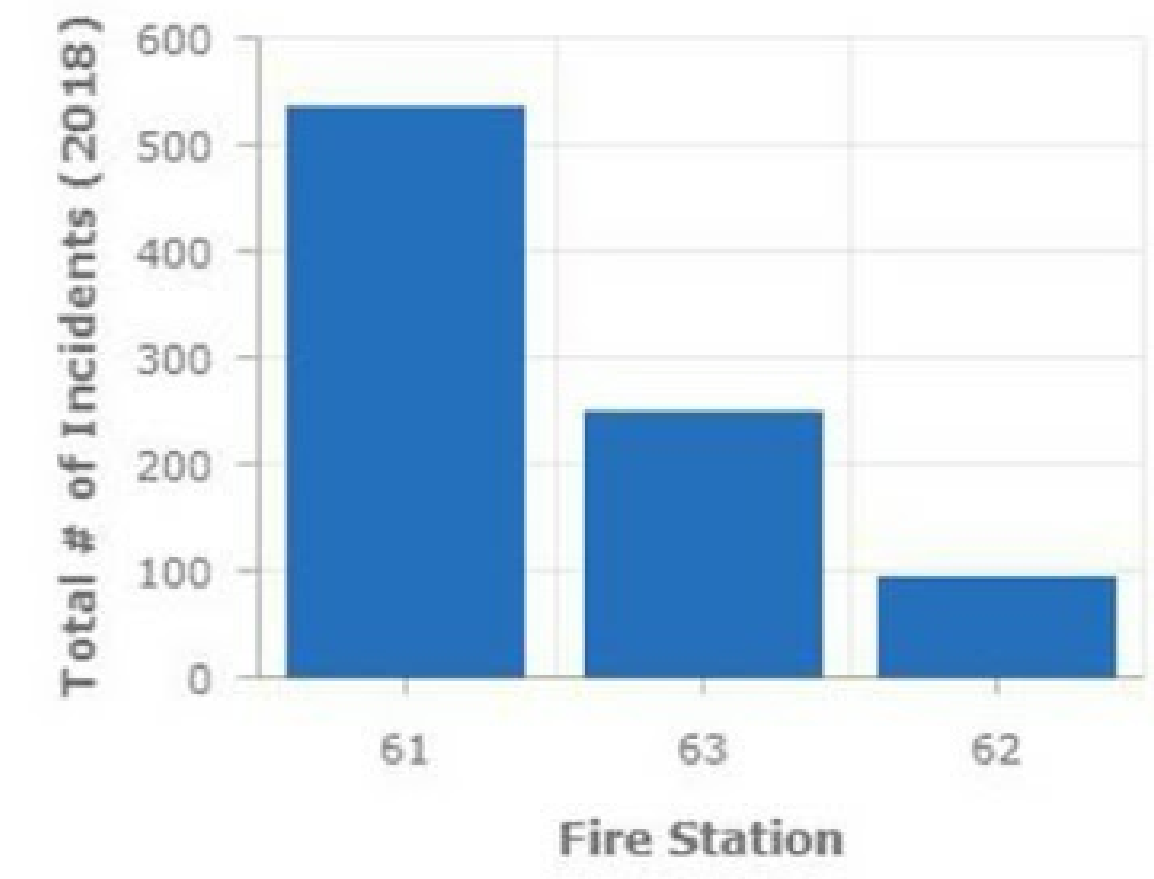
total fire incidents in 2018

Last update: a few seconds ago

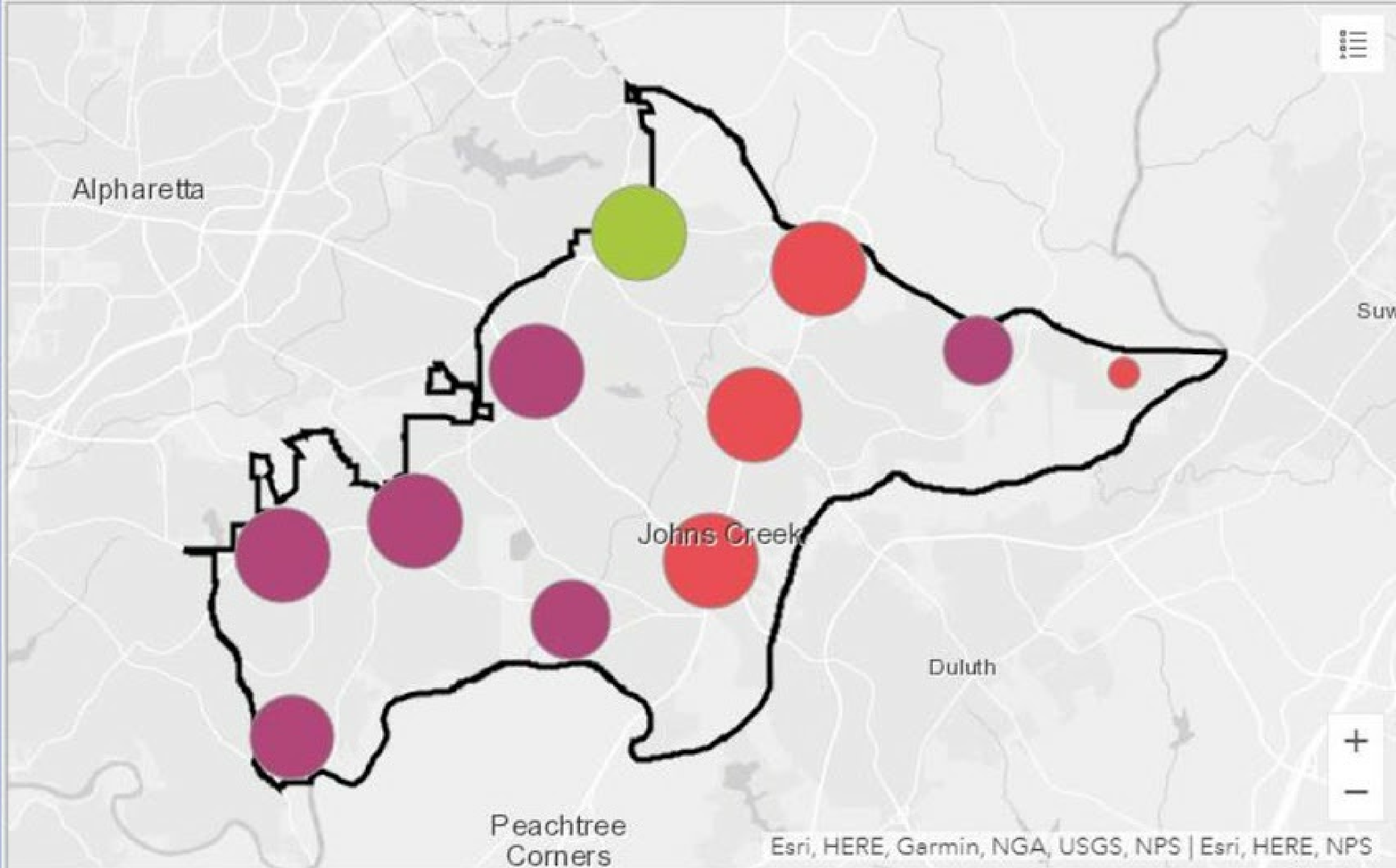


% of calls in 2018 where Fire Department has arrived within 10 minutes of call

Last update: a few seconds ago



Last update: a few seconds ago



53

new businesses opened and licensed this year

Last update: a few seconds ago

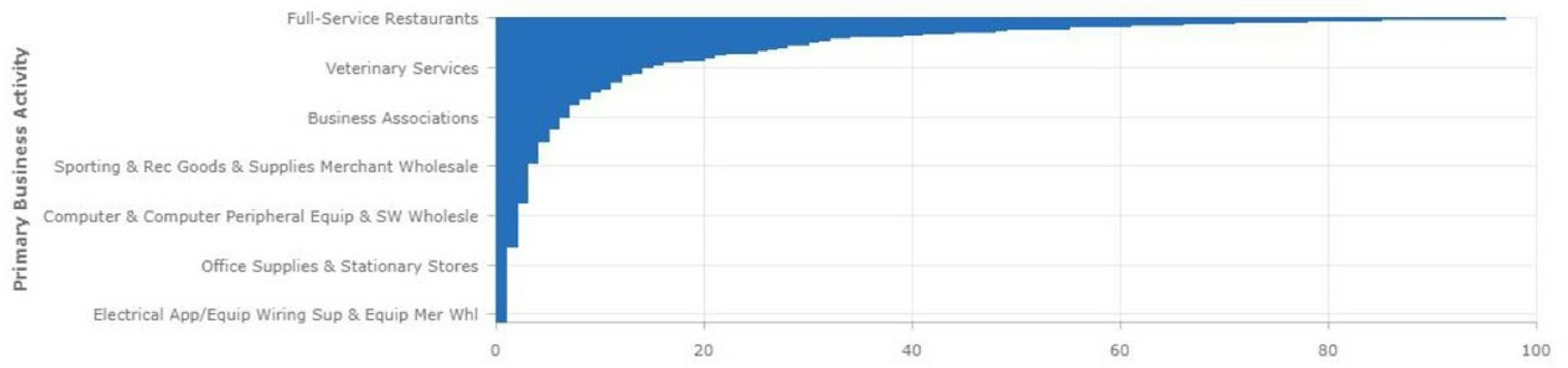


% of existing businesses have renewed their license from 2017

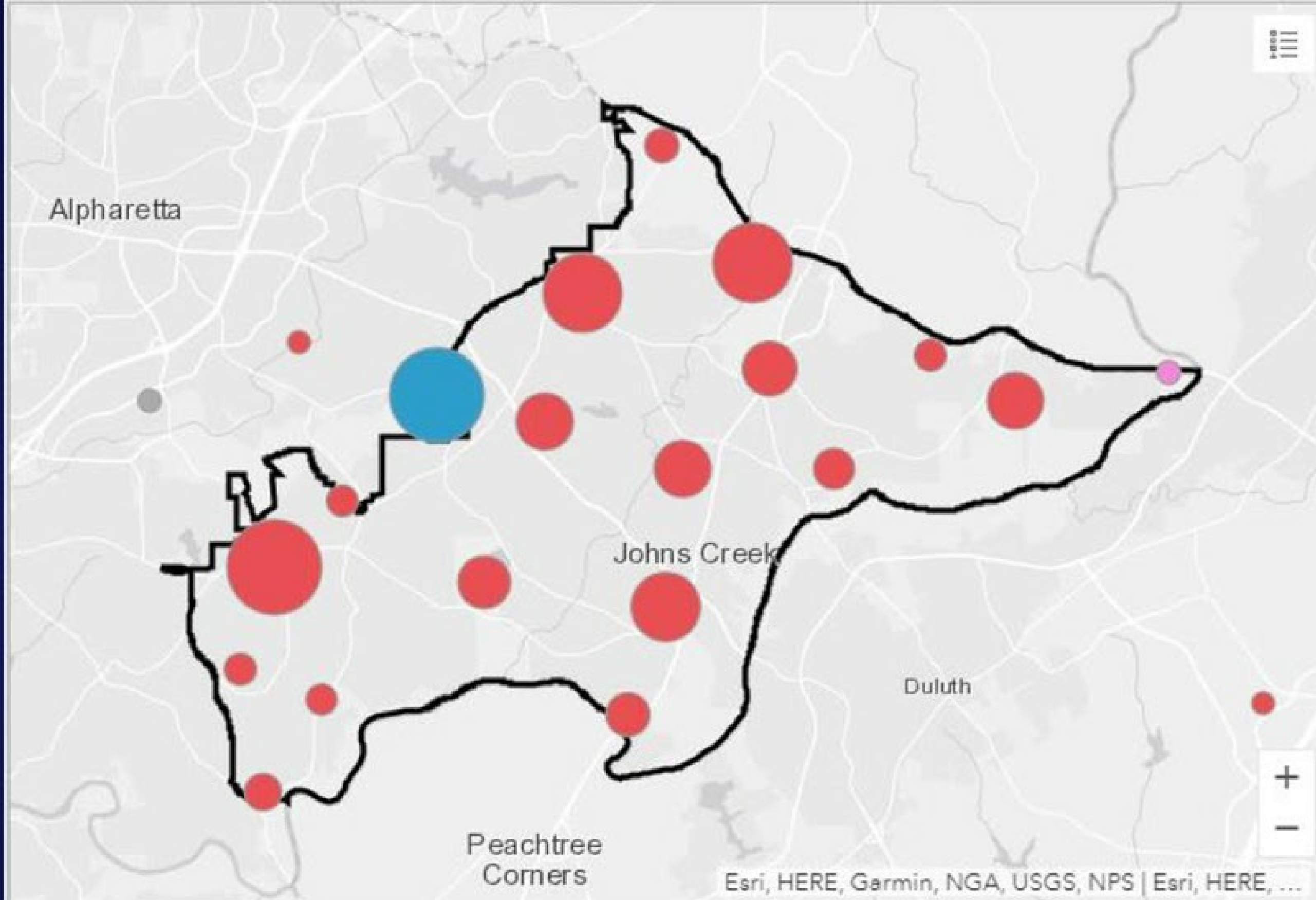
(Businesses have until March 31, 2018 to renew before incurring fines)

Last update: a few seconds ago

Businesses by Primary Activity



Last update: a few seconds ago

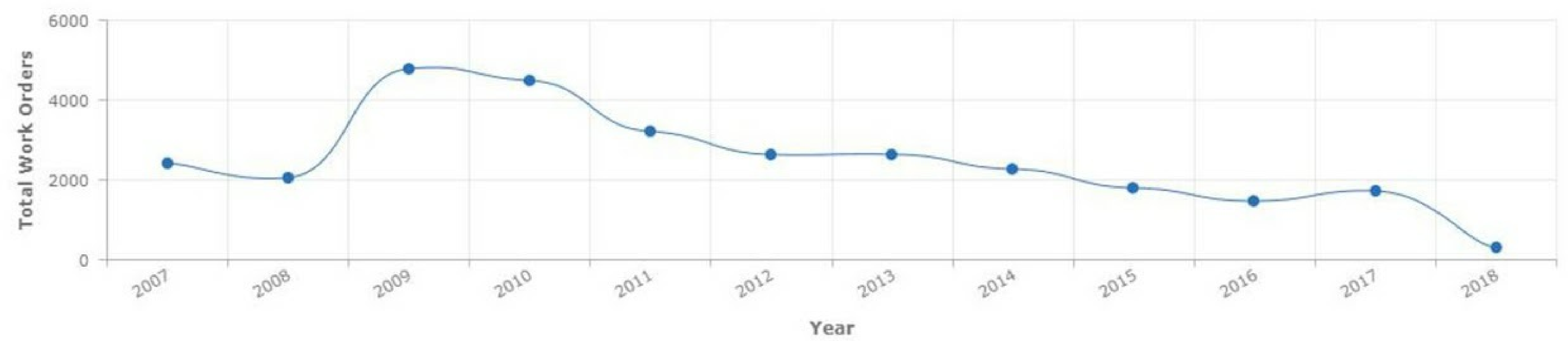


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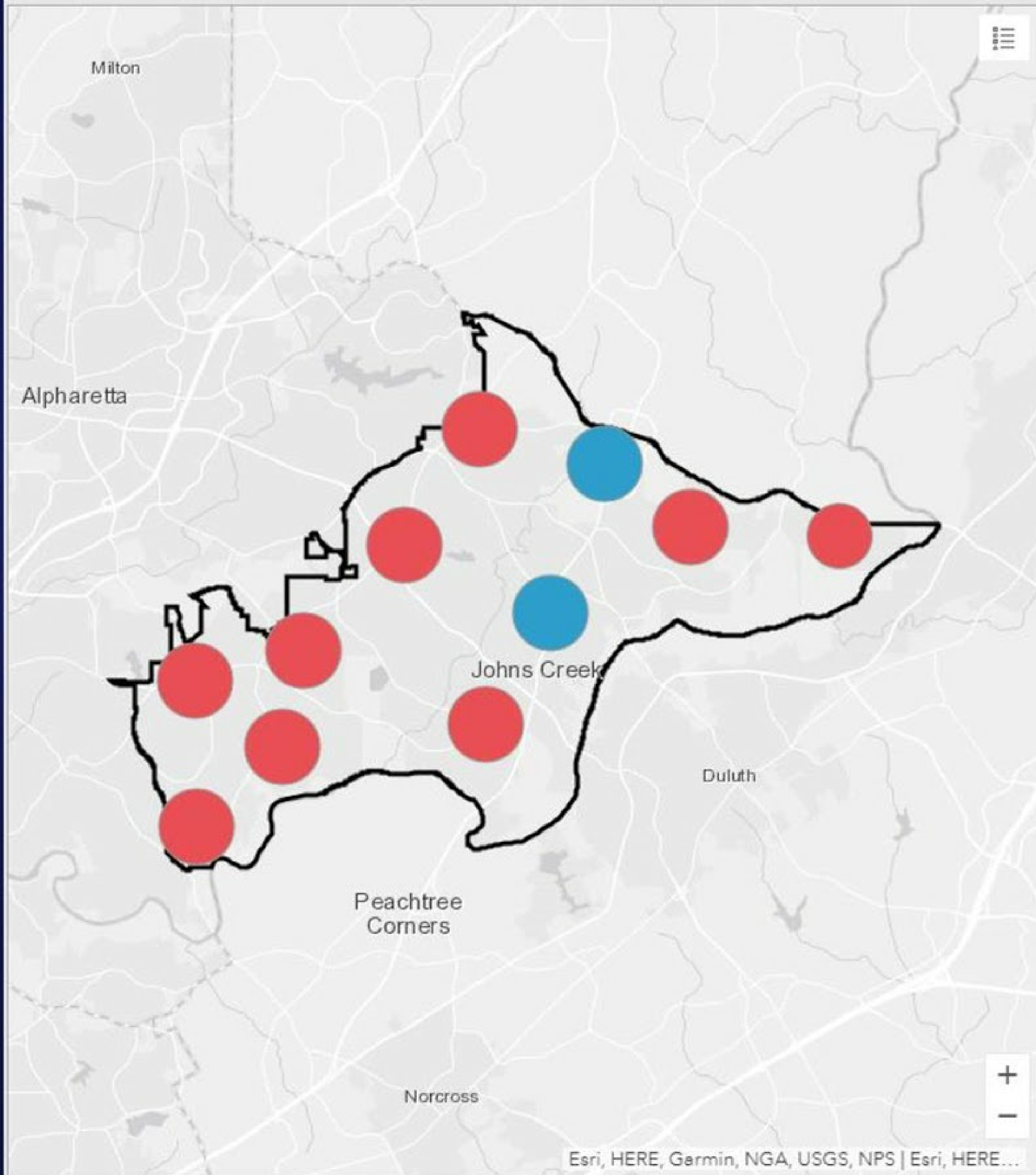


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Work Orders by Year Completed



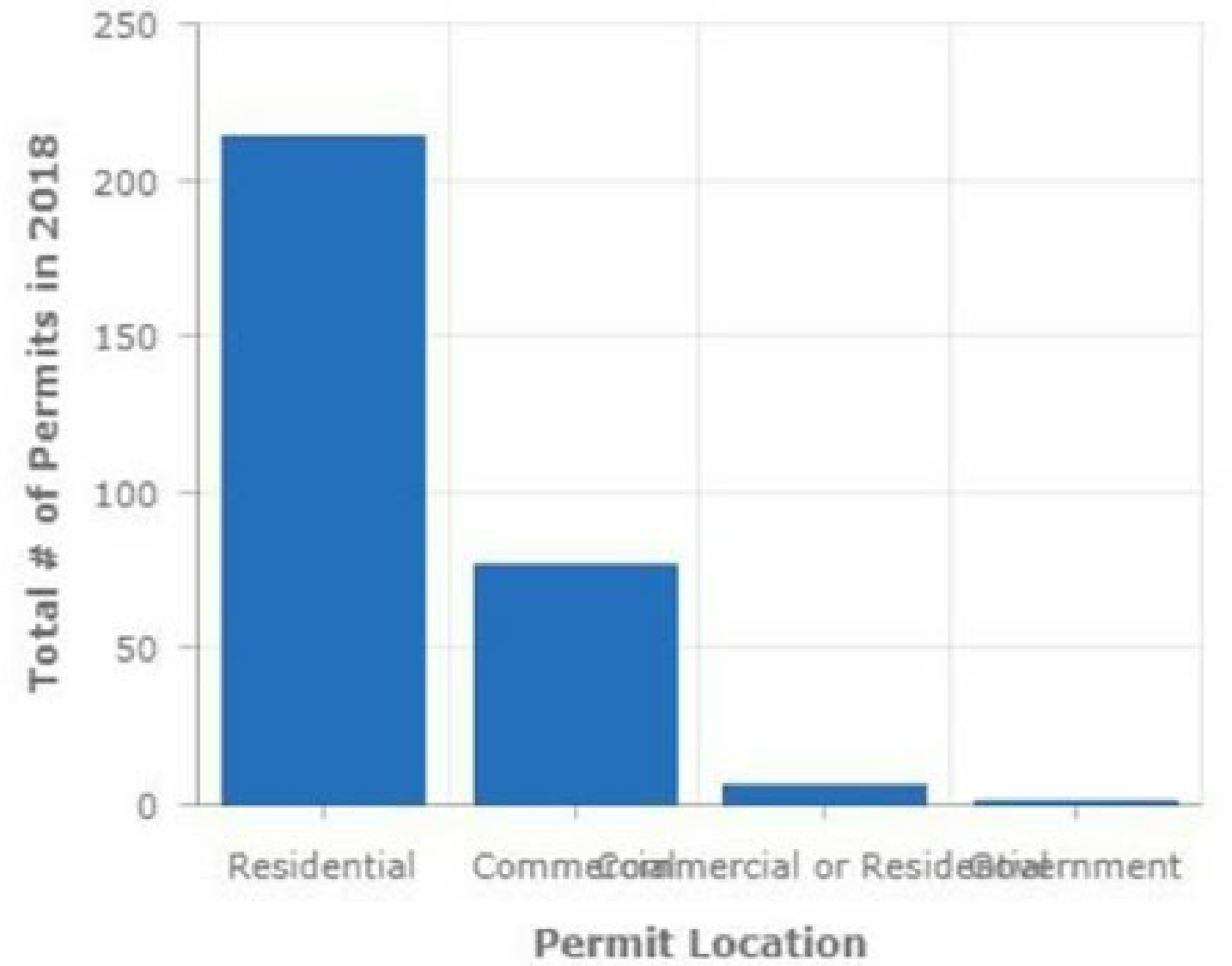
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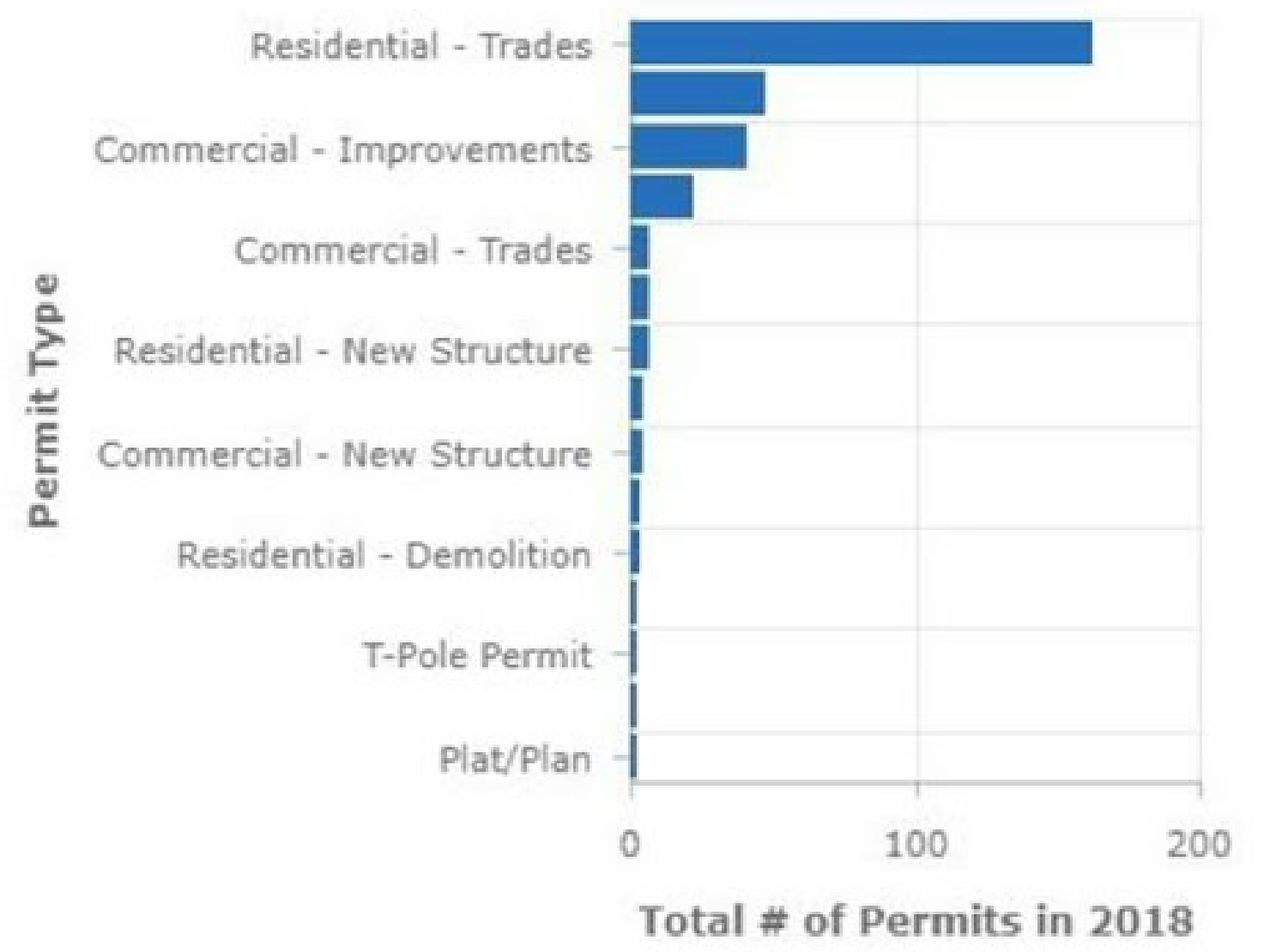
114

permits processed in the last 30 days

Last update: a few seconds ago



Last update: a few seconds ago



Last update: a few seconds ago

Have you deployed ArcGIS Open Data?

No votes

1

2

Loudoun GeoHub

County Initiatives

Vision of the Board of Supervisors - By honoring its rich heritage as well as embracing the robust opportunities of a new day, Loudoun County maintains the high quality of life it has achieved, shapes a future that represents the best of both worlds, and creates a place where its residents are proud to live, work, learn, and play.



County Initiatives

Vision of the Board of Supervisors - By honoring its rich heritage as well as embracing the robust opportunities of a new day, Loudoun County maintains the high quality of life it has achieved, shapes a future that represents the best of both worlds, and creates a place where its residents are proud to live, work, learn, and play.



Enjoy Loudoun
Get Out and Explore!



Improving Transportation
Getting You There Faster



Building Loudoun's Future
Loudoun 2040



Serving Our Community
Improving Your Quality of Life



Protecting Our Citizens
Public Safety



Business Success
is #LoudounPossible

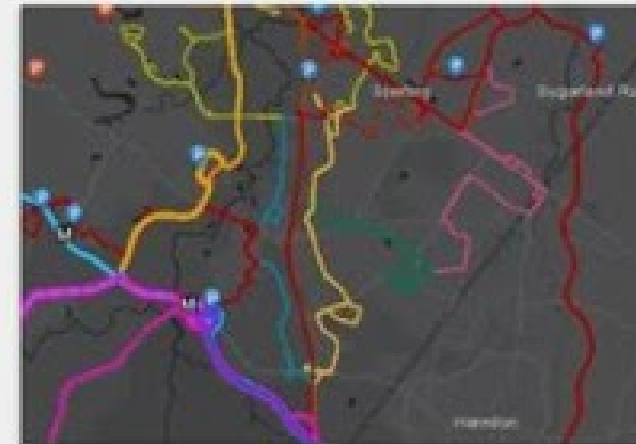
Improving Transportation

Optimize Your Commute



Find My Bus Stop

Local Riders
&
DC Commuters



Explore the Transit System

Search for Stops and Routes



LCT BusTime

DC Commuter Bus Arrival
Times and Locations



Waze & Loudoun

We're Connected!



What's Under Construction?

Capital Projects Active and
Planned in the County

[Explore More Apps](#)

ArcGIS Hub

provides a two-way engagement platform to connect government and citizens

ArcGIS Hub

Community Initiatives Open Data My Data Sign In

ArcGIS Hub

Transform how you engage and collaborate with your community.

Encourage people to take action and bring positive change in their own neighborhoods.

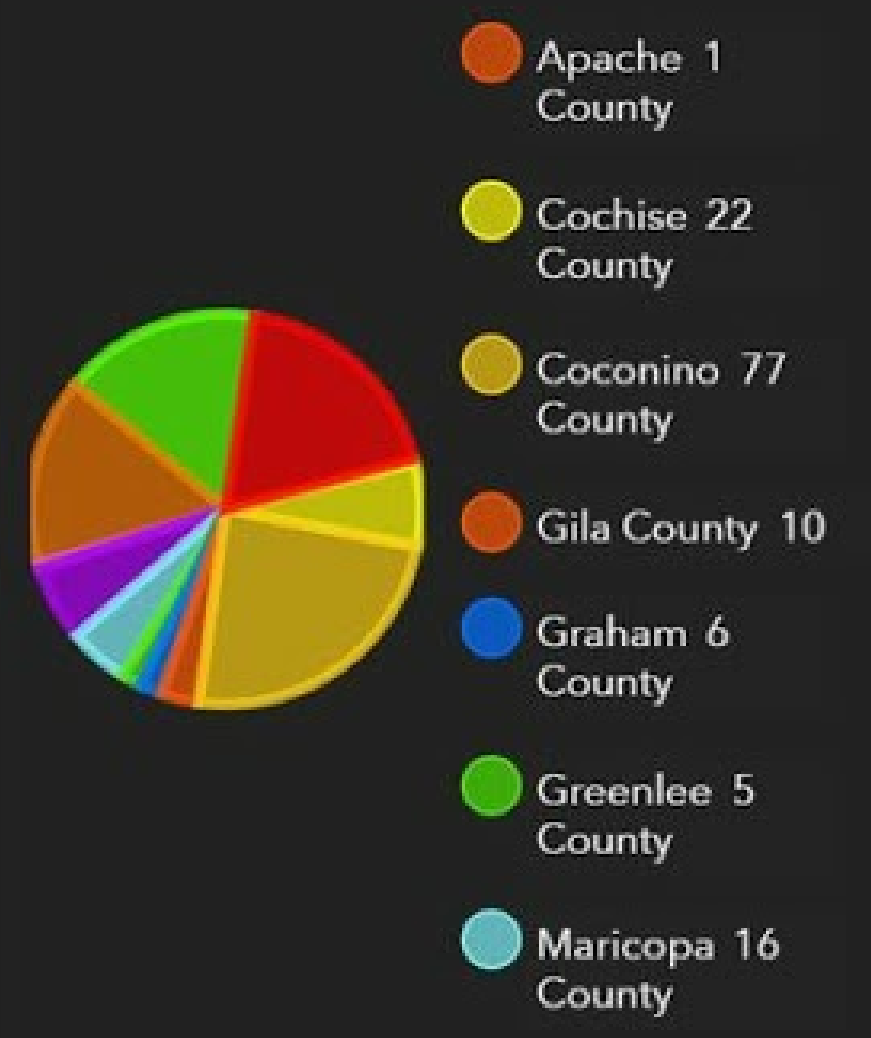
ArcGIS Hub provides a two-way engagement platform to connect government and citizens.

You get an interactive platform to organize people, processes, and technology. ArcGIS Hub comes with built-in event creation and sharing directly to Hub websites and your Hub mobile app. It also allows you to gather feedback from inside and outside your organization to find or create new solutions to existing problems.

Learn More

<https://hub.arcgis.com/>

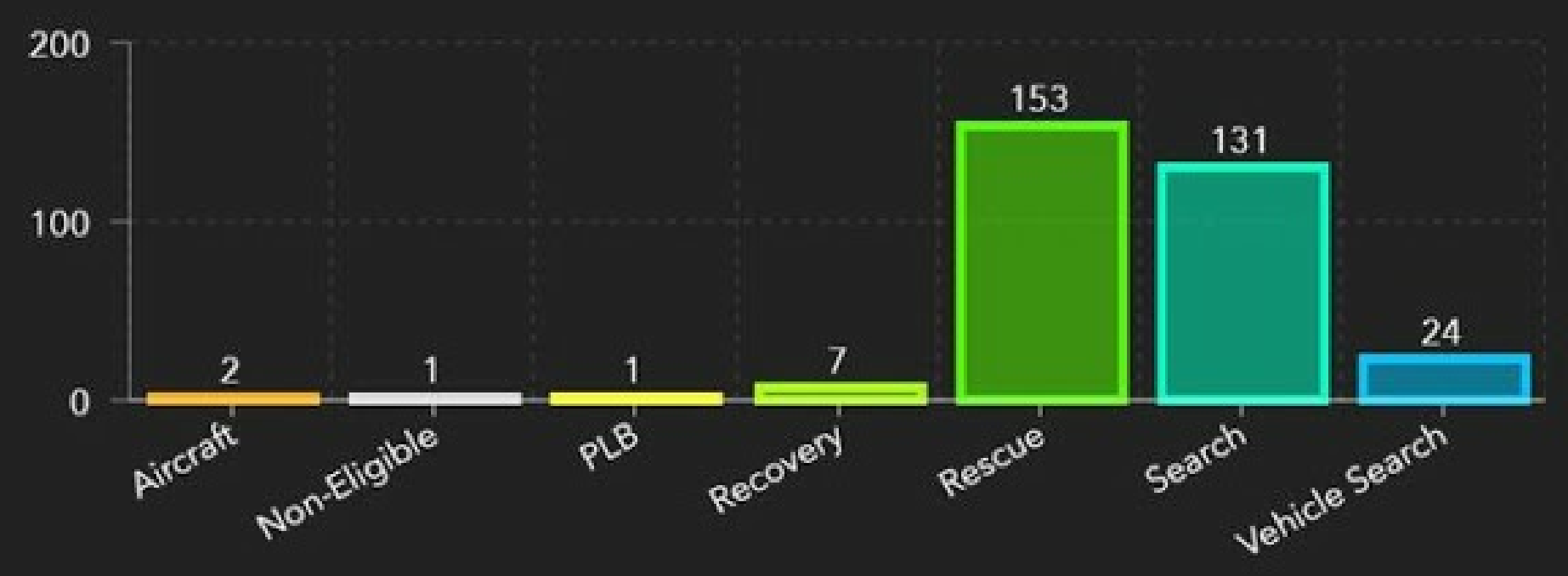
Individual County Count Summary



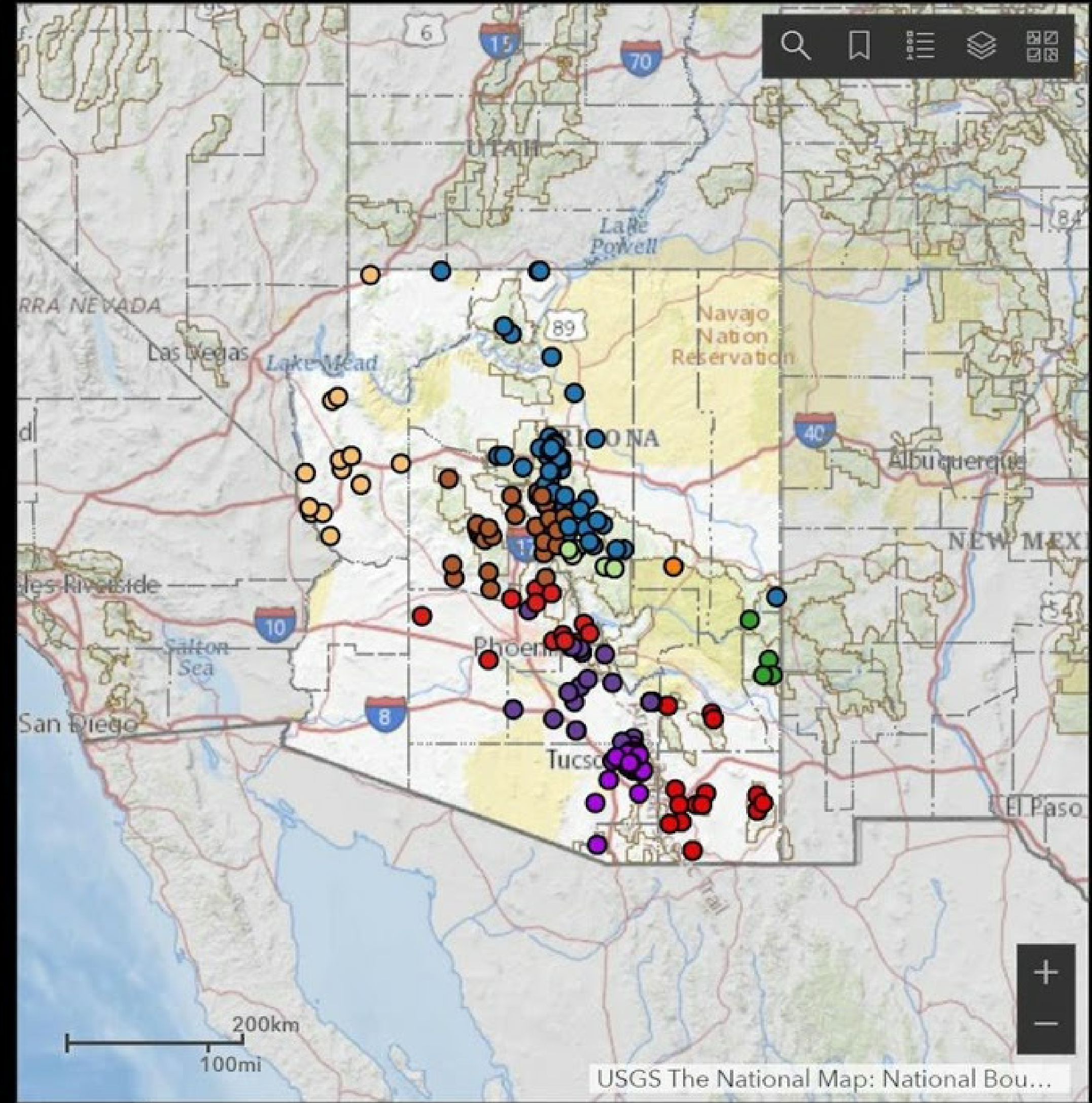
Total Operating Cost
\$50.038k FY 19
\$2.904M FY 18

Total Missions
319 Missions FY 19
476 Missions FY 18

Recovery Type Summary



Last update: a few seconds ago



SAR Missions in the last 24 Hours

0

SAR List Breakdown (Click to Zoom)

- Start Date: 11/14/2018
County: Pima County
- Start Date: 11/14/2018
County: Pima County
- Start Date: 11/12/2018
County: Maricopa County
- Start Date: 11/12/2018
County: Maricopa County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/11/2018
County: Pinal County

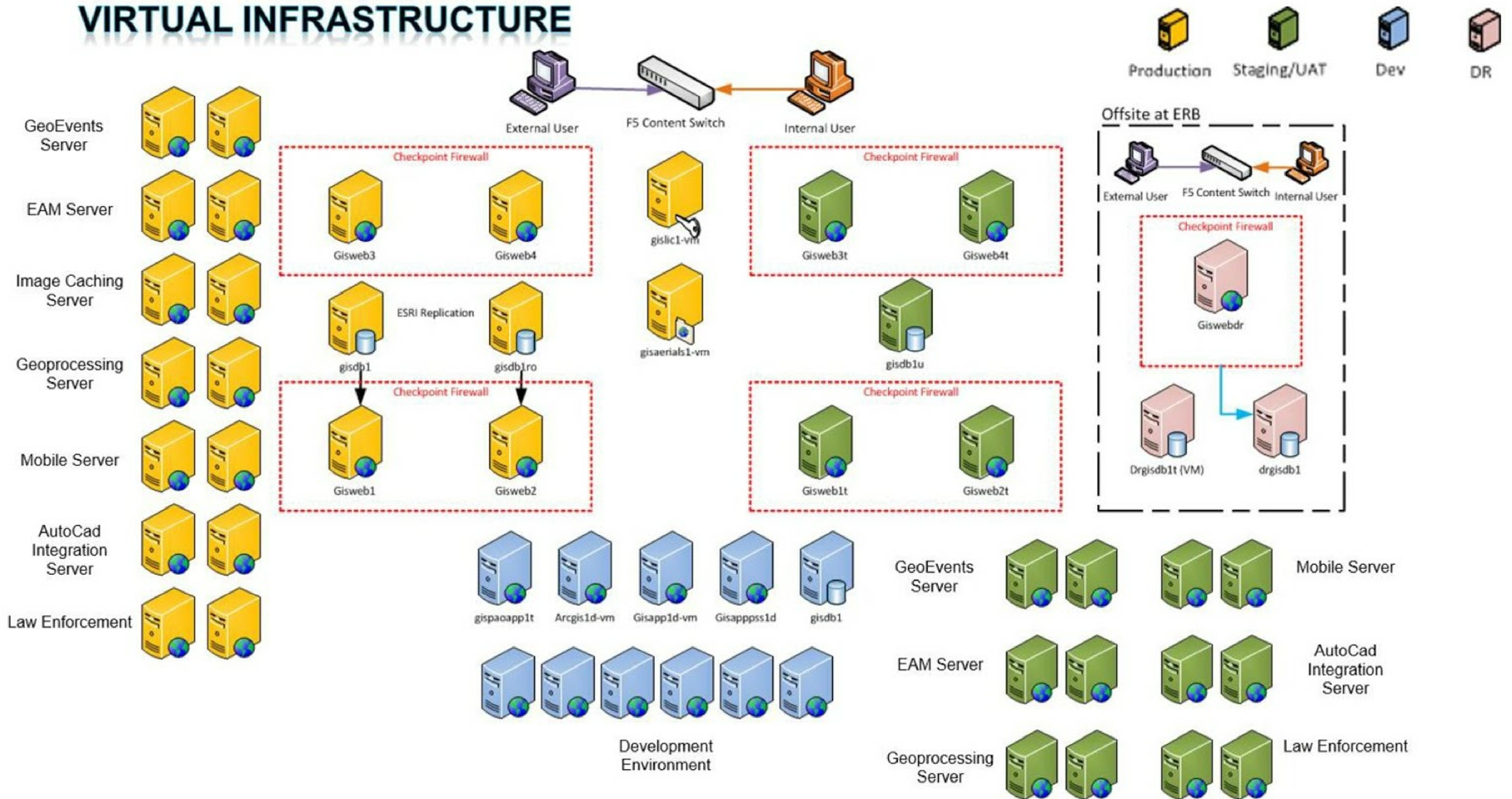
Have you deployed any ArcGIS dashboards?

No votes

1

2

VIRTUAL INFRASTRUCTURE



If you're going to raise your game, you need to upgrade your infrastructure...

Do you have, and maintain, a GIS architecture design?

No votes

1

2

Implement effective governance

- Do not want process to get in the way of progress
- Must obtain and cultivate executive sponsorship
- GIS Steering Committee
- Management review of COTS vs. Custom decisions
- Project prioritization



The screenshot shows the official website of Pinellas County, Florida. The header includes navigation links for PC HOME, ONLINE SERVICES, BUSINESS, GOVERNMENT, RESIDENTS, and VISIT, along with a search bar. The main banner features the Pinellas County logo and the slogan "Your County Connection" with three images: a winding road, a beach with a bird, and a classical building. Below the banner is a secondary navigation bar with links for Contact Us, Calendar, How Do I?, News, Media, and a share button, dated November 30, 2017.

The main content area is titled "Pinellas County Enterprise GIS (EGIS) Steering Committee". It includes a description of the committee's mission, a list of links for Resolution, Operating Guidelines, and eGIS Policies & Standards, and a meeting schedule for 2017.

Date	Time	Location
February 23	2:30 PM	Planning Large Conference Room
May 17	1:30 PM	Clerk's 4th Floor Conference Room
August 2	1:30 PM	Planning Large Conference Room
December 13	1:30 PM	Planning Large Conference Room

Additional links provided include "Planning Large Conference Room - Location Map" and "Clerk's 4th Floor Conference Room - Location Map". Meeting materials for 2017 are listed, including "12/13/17 - Agenda - Minutes".

Do you have formal GIS governance in place?

No votes

1

2

Implement evolutionary approaches (change management)

- Embrace change, make it part of your routine
- Participate in ArcGIS Early Adopter Community
- Participate in ArcGIS Developer Program
- Make Research and Development part of everyone's work
- Investigate the latest improvements and make plans to use them

The screenshot shows the top navigation bar with the Esri logo and links for ArcGIS, Industries, About, and Support. A search icon and a 'Sign In' link are on the right. Below the navigation is a 'Login' button. The main heading is 'Early Adopter Community' with the subtext 'Try the Latest Esri Technology before its Public Release'. The background features a city skyline with several white speech bubble icons. At the bottom, there is a call to action: 'Sign up and help shape the course of Esri product development' with a 'Sign Up!' button.

The screenshot shows the top navigation bar with 'ArcGIS for Developers' and links for Get Started, Documentation, Features, Pricing, and Support. A search icon and a 'Sign In' link are on the right. The main heading is 'A complete mapping and analytics platform for developers'. Below the heading are two buttons: 'Sign Up for Free →' and 'Start Building Your App'. The main content area is divided into four columns, each with an icon and a title: 'High performance' (Fast GPU accelerated drawing and client side analytics), 'Easy to use' (Integrate maps and geocoding into your app in just a few lines of code), 'Host your data' (Host and scale your data securely in the cloud or behind your firewall), and 'Affordable pricing' (Start for free and pay-as-you-go for additional services). At the bottom, there is a row of icons for various platforms and technologies: JS, Android, iOS, .NET, Qt, Python, ArcGIS, REST, and a document icon. The footer text reads 'Explore the capabilities of ArcGIS'.

Do you participate in the Early Adopter and/or Developer Program?

No votes

1

2

Do you have, and maintain, a Change Management Plan?

No votes

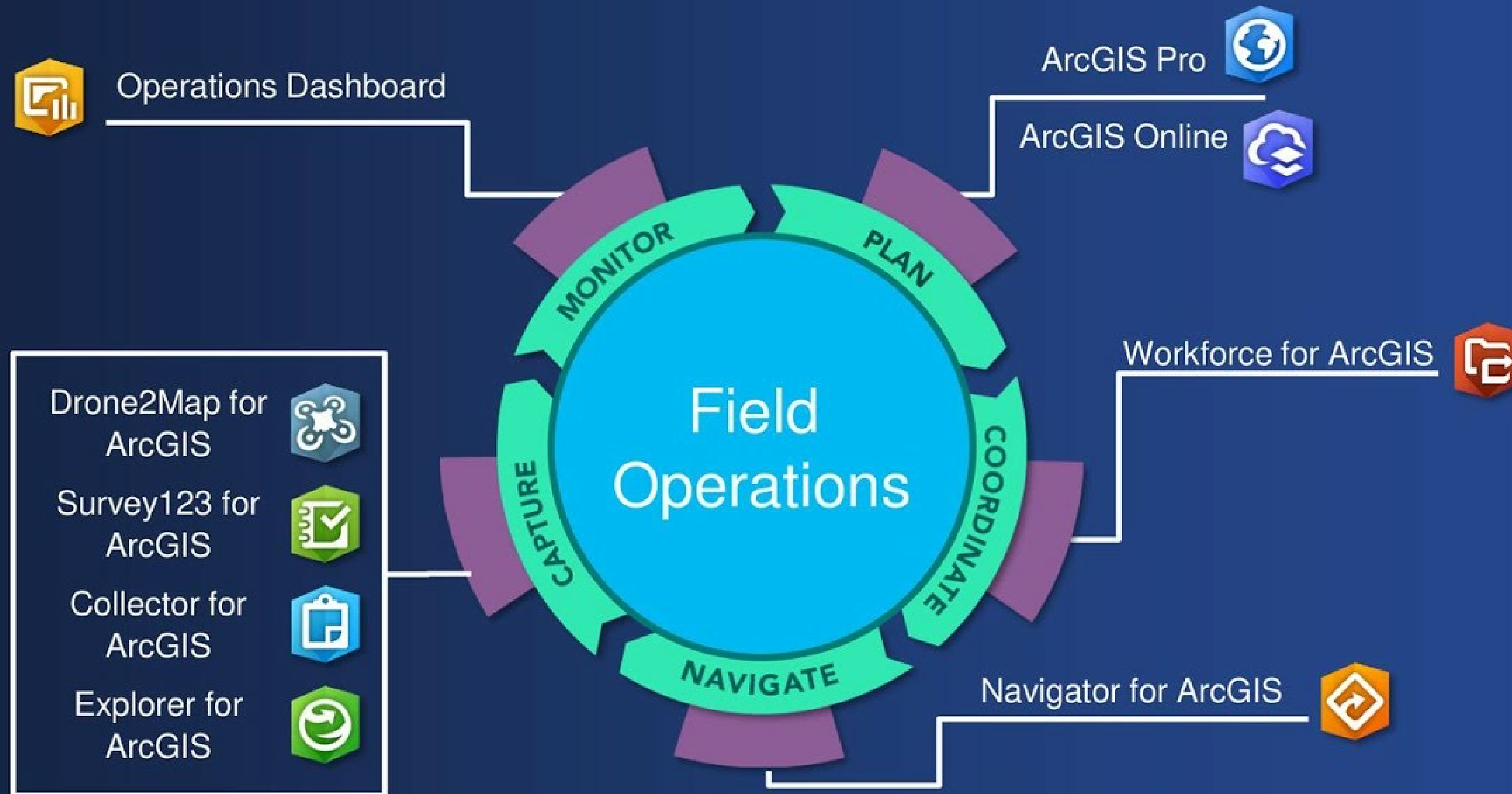
1

2

Deploy engaging apps

- People want to use apps like those on their smart phones and tablets
- Apps need to be focused and intuitive
- Apps need to work on any device, anywhere, anytime
- Focus on business drivers, not technology
- The goal is:
 - to give everyone alternatives (responsive)
 - but keep them in a known, controlled and secure environment (identity)
 - while using the latest and most authoritative data and processes (web services)

Understand the Need for a Mobile Workforce



Recruit, develop and maintain good staff

- Create and Maintain a Workforce Development Plan (Esri can help...)
- GIS Managers need IT management and business skills
 - Business Skills
 - Market and sell your team's capabilities to the leaders
 - Develop and maintain a business plan and change management plan
 - IT Management Skills
 - System Architecture Design
 - Service Level Agreements
 - Enterprise System Integration
 - Security
 - Project Management, etc.
- Get help (Esri and our Partners)

Do you have, and maintain, a Workforce Development Plan?

No votes

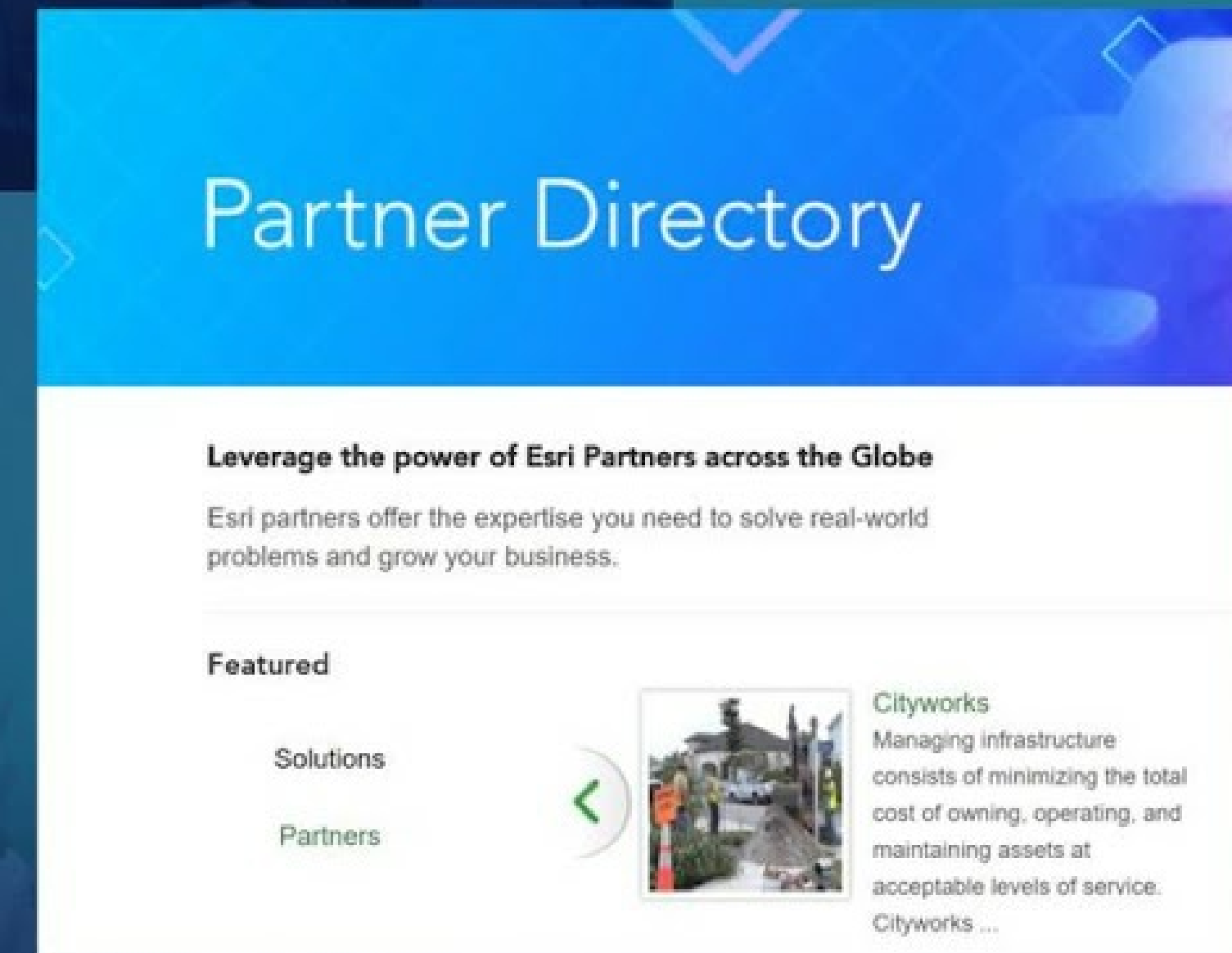
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Develop Strong Partnerships

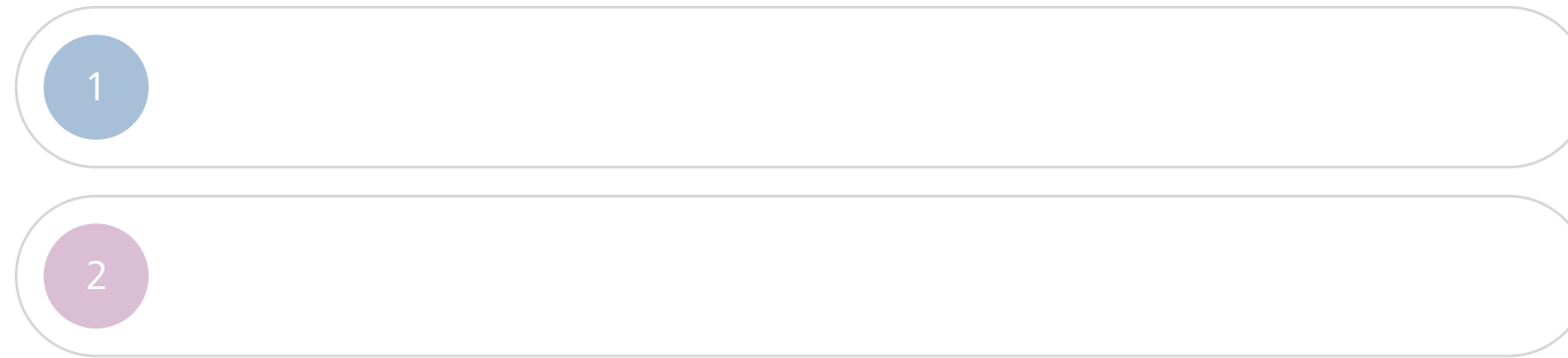
Esri Team and Esri Partners

- Esri Team
 - Account Team (Manager and Solution Engineer)
 - Subject Matter Experts
 - Training Consultant
 - Workforce Development Plan
 - Technical Support
 - Premium Support
 - Professional Services
 - Packages, Rent-a-Tech, Projects
 - Esri Enterprise Advantage Program (EEAP)
- Esri Partners
 - Specialties (ArcGIS Online, ArcGIS for Local Government)
 - ArcGIS Marketplace



Do you regularly get external assistance with implementing your GIS?

No votes



Two empty rounded rectangular input fields for voting. The top field has a blue circular button with the number '1' on the left. The bottom field has a purple circular button with the number '2' on the left.

Develop Strong Partnerships

Develop and Grow Your Internal Team

- Executive Champion(s)
- IT Leadership
- Enable collaboration and empower others
- Mindset of a GIS Consulting Firm
- Market Spatial Analysis
- Measure, document, and publicize the impact (ROI)

GIS Project ROI and Benefits Report		
Project Name:		
Department or Division:		
Project Manager/Sponsor:		
Project Completion Date:		
Executive Summary: (Concisely state the problem and its impact on the organization then describe the solution.)		
Describe current workflow or limitation: (Be as detailed as needed)		
Describe proposed enhancement: (Be as detailed as needed)		
Current Workflow Costs: (Enter values in left column (see wage notes below). Values in right column are current workflow costs.)		
Hours to complete current workflow	6.0	Current workflow cost
Hourly wage rate*	25.00	Current workflow cost
Annual occurrence of workflow	75	
Other workflow costs (consumables/travel exp., etc.)	\$50.00	
Enhanced Workflow Costs		
Hours to complete workflow after enhancement	2.0	Enhanced workflow cost
Hourly wage rate*	25.00	Enhanced workflow cost

THE LANGUAGE OF SPATIAL ANALYTICS

Using *The Science of Where* to understand our world—mapping where things are, how they relate, what it all means, and what actions to take.

- Understanding where**
 - 1. Understanding where things are (location maps).
 - 2. Understanding where the variations and patterns in values are (comparative maps).
 - 3. Understanding where and when locations and values change.
- Measuring size, shape, and distribution**
 - 4. Calculating individual feature geometries.
 - 5. Calculating geometries and distributions of feature collections.
- Determining how places are related**
 - 6. Determining what is nearby or coincident.
 - 7. Determining and summarizing what is within an areal.
 - 8. Determining what is closest.
 - 9. Determining what is visible from a given location(s).
 - 10. Determining overlapping relationships in space and time.
- Finding the best locations and paths**
 - 11. Finding the best locations that satisfy a set of criteria.
 - 12. Finding the best allocation of resources to geographic areas.
 - 13. Finding the best route, path, or flow along a network.
 - 14. Finding the best route, path, or corridor across open terrain.
 - 15. Finding the best supply locations given known demand and a travel network.
- Detecting and quantifying patterns**
 - 16. Where are the significant hot spots, anomalies, and outliers?
 - 17. What are the local, regional, and global spatial trends?
 - 18. Which features/pixels are similar, and how can they be clustered, classified, and identified?
 - 19. Are spatial patterns changing over time?
- Making predictions**
 - 20. Given a success case, identifying, ranking, and predicting similar locations.
 - 21. Finding the factors that explain observed spatial patterns and making predictions.
 - 22. Interpolating a continuous surface and trends from discrete sample observations.
 - 23. Predicting how and where objects spatially interact (attraction and decay).
 - 24. Predicting how and where objects affect wave propagation.
 - 25. Predicting where phenomena will move, flow, or spread.
 - 26. Predicting what if.

esri THE SCIENCE OF WHERE

Esri Resources

- Architecting the ArcGIS Platform: Best Practices
- Implementing ArcGIS on GeoNet
- Managers in GIS LinkedIn group
- Events
 - Esri Public Sector CIO Summit
 - Esri Developer Summit
 - Esri International User Conference
 - GIS Managers' Open Summit at Esri International User Conference
 - Meetups
 - GIS Manager Workshops
- Esri Account Team



AN ESRI
WHITE PAPER

DECEMBER 2018

Architecting the ArcGIS Platform: Best Practices

380 New York Street
Redlands, California 92373-8100 usa
909 793 2853
info@esri.com
esri.com



Have you read the
Architecting the ArcGIS
Platform: Best Practices
document?

No votes

1

2

Do you want more GIS
management content
like this?

No votes

1

2

2018 Esri International User Conference GIS Manager Track Videos

- Enterprise GIS: Strategic Planning for Success
- Communicating the Value of GIS
- Architecting the ArcGIS Platform: Best Practices
- Increase GIS Adoption by Integrating Change Management
- Governance for GIS
- Moving Beyond Anecdotal GIS Success: An ROI Conversation
- Workforce Development Planning: A People Strategy for Organizations
- Supporting Government Transformation & Innovation

<https://bit.ly/2OZgNSU>



It's time to seize the opportunity in front of you.



esri

THE
SCIENCE
OF
WHERE

Adam Carnow

acarnow@esri.com

GeoNet

The Esri Community



@SpatialAce

LinkedIn