

Smart Systems for Small Communities

ArcGIS and Cartegraph for Work Management

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Santa Rosa County, Florida

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After a decade of clustering into cities and large metropolitan areas, the US is experiencing a continued rise in both outer exurban areas and low-density emerging suburban counties. -William H. Frey, Brookings Institute

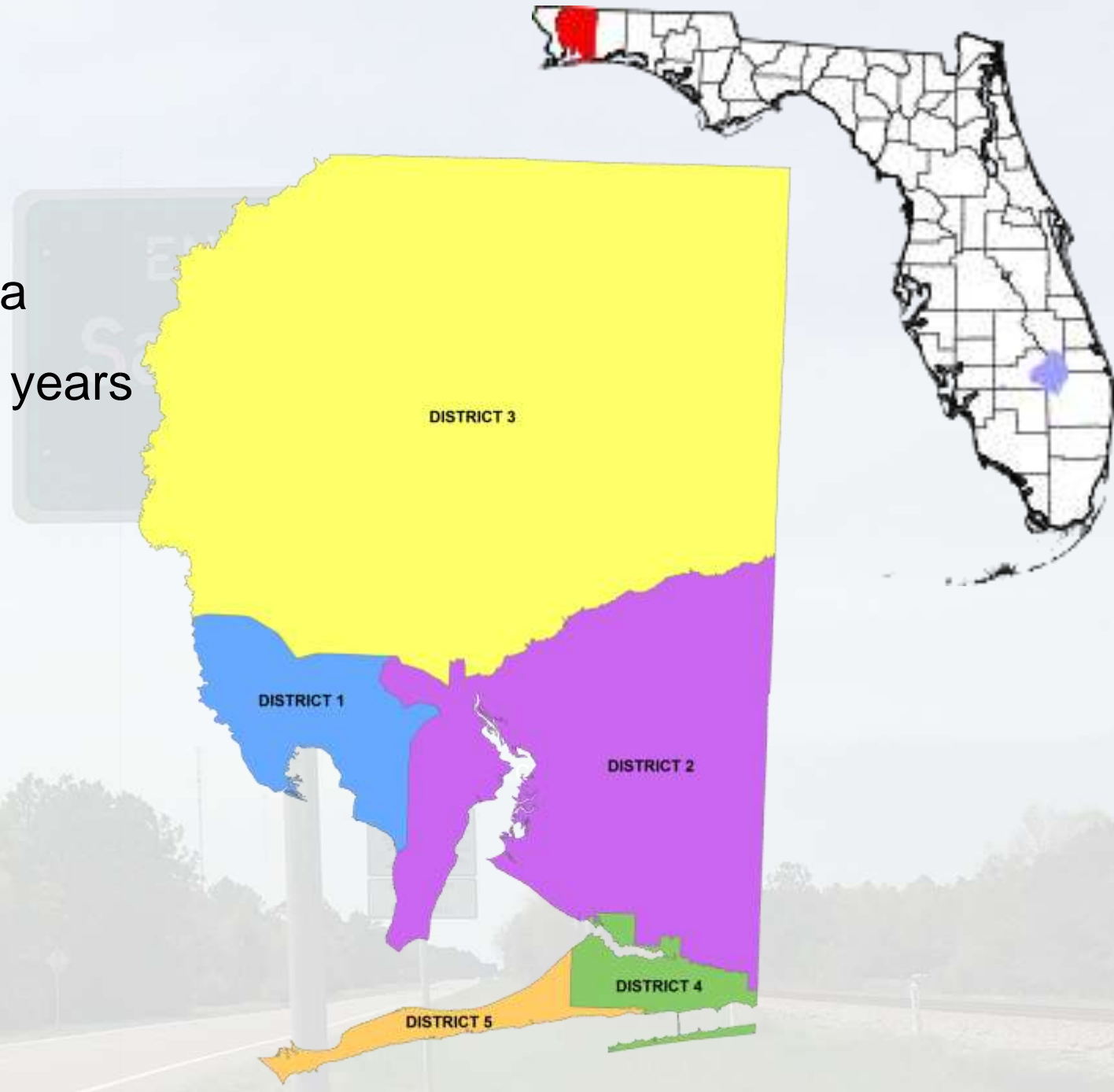
Increases in Population Presents Challenges for Local Governments

- Increases in construction and building
- Need for improved infrastructure
- Prioritization of projects
- Justification of time, materials, and dollars spent
- Limited resources – staffing, funding
- Need for improved technology



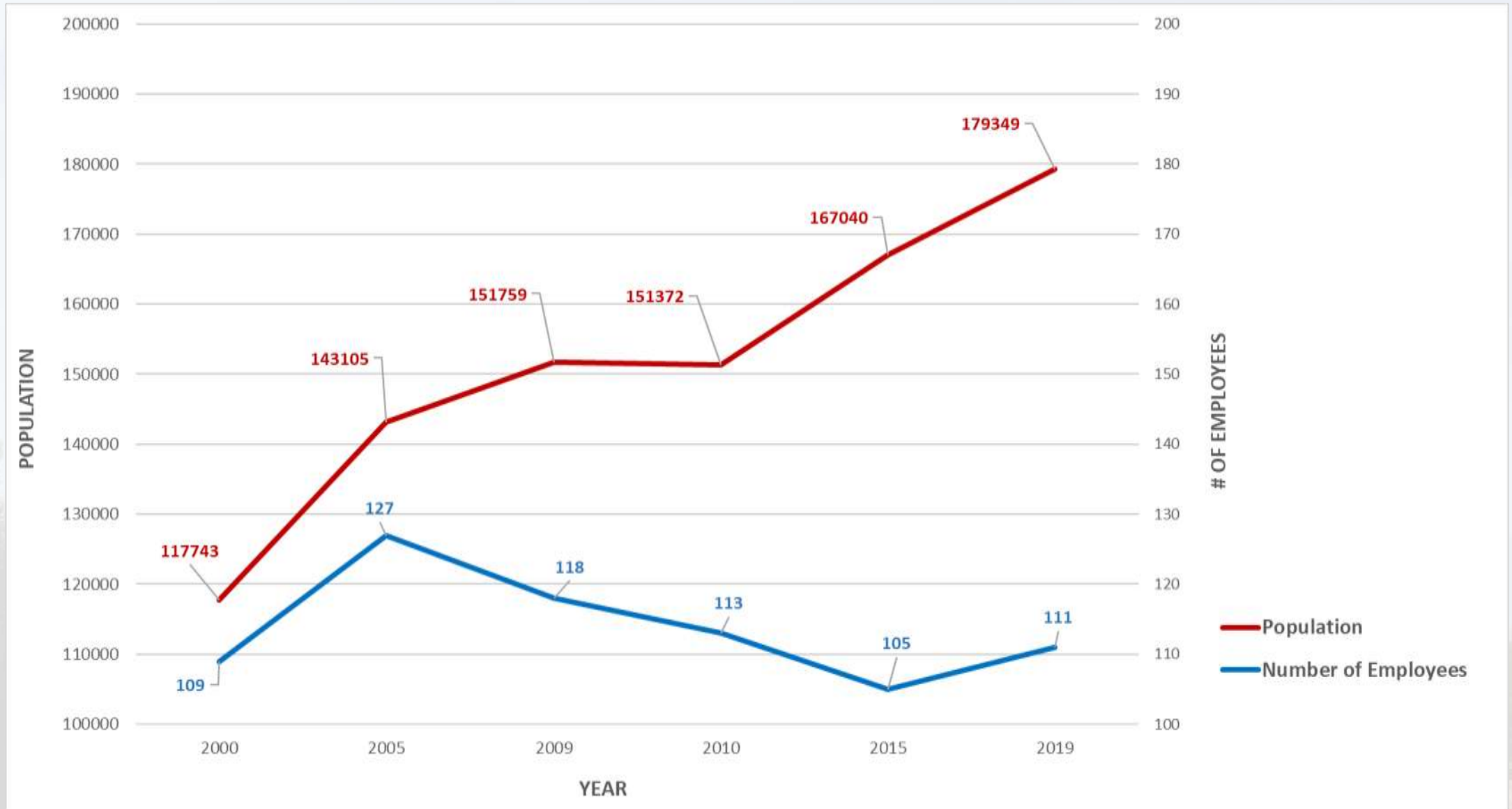
Santa Rosa County, Florida

- 1100 sq. miles
- 12th fastest growing county in Florida
- Population increased ~10% in last 5 years
- 160,421 in 2013 to 177,125 in 2018
- Jobs increased 14.5 %
- Increase in construction
- County resources stretched thin
- Public Works Division
 - Road and Bridge
 - Parks & Recreation
 - Building Maintenance



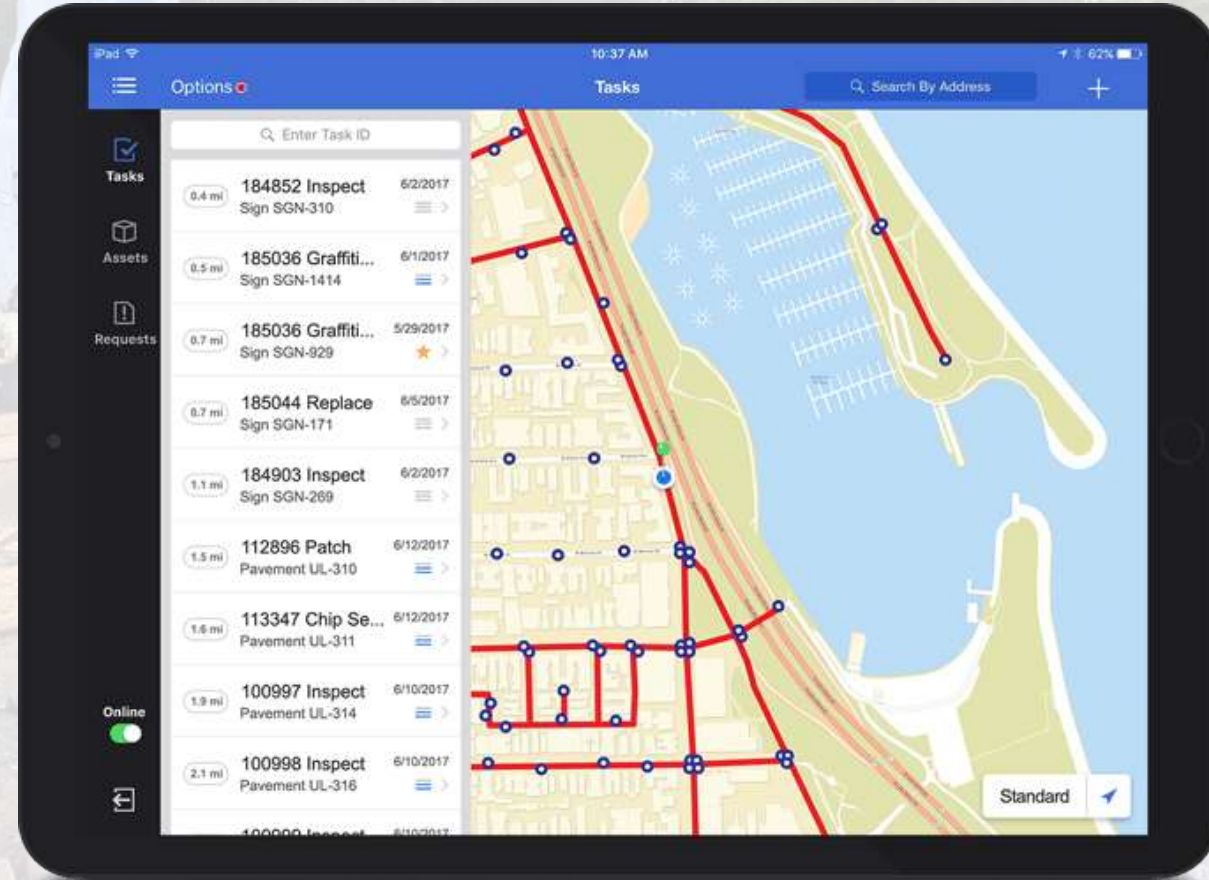
Santa Rosa County, Florida

Population Growth vs. # of Public Work Employees



Cartegraph was Implemented by Public Works Division as a Management Solution

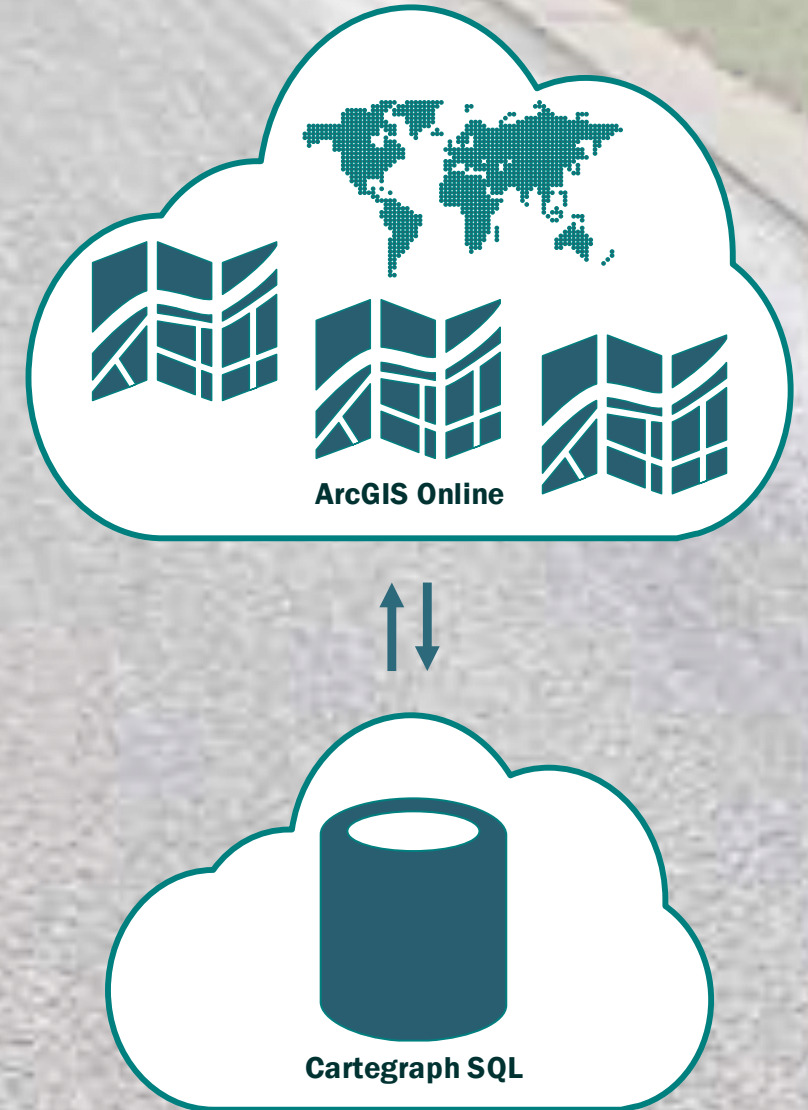
- Asset and Operations Management System (OMS)
- Cartegraph integrates with:
 - ArcGIS Enterprise
 - ArcGIS Online
 - Operations Dashboard
- Allows users to:
 - Tracks assets and resources
 - Map citizen requests and public works tasks
 - Document infrastructure maintenance



Cartegraph Implementation with Esri Tools

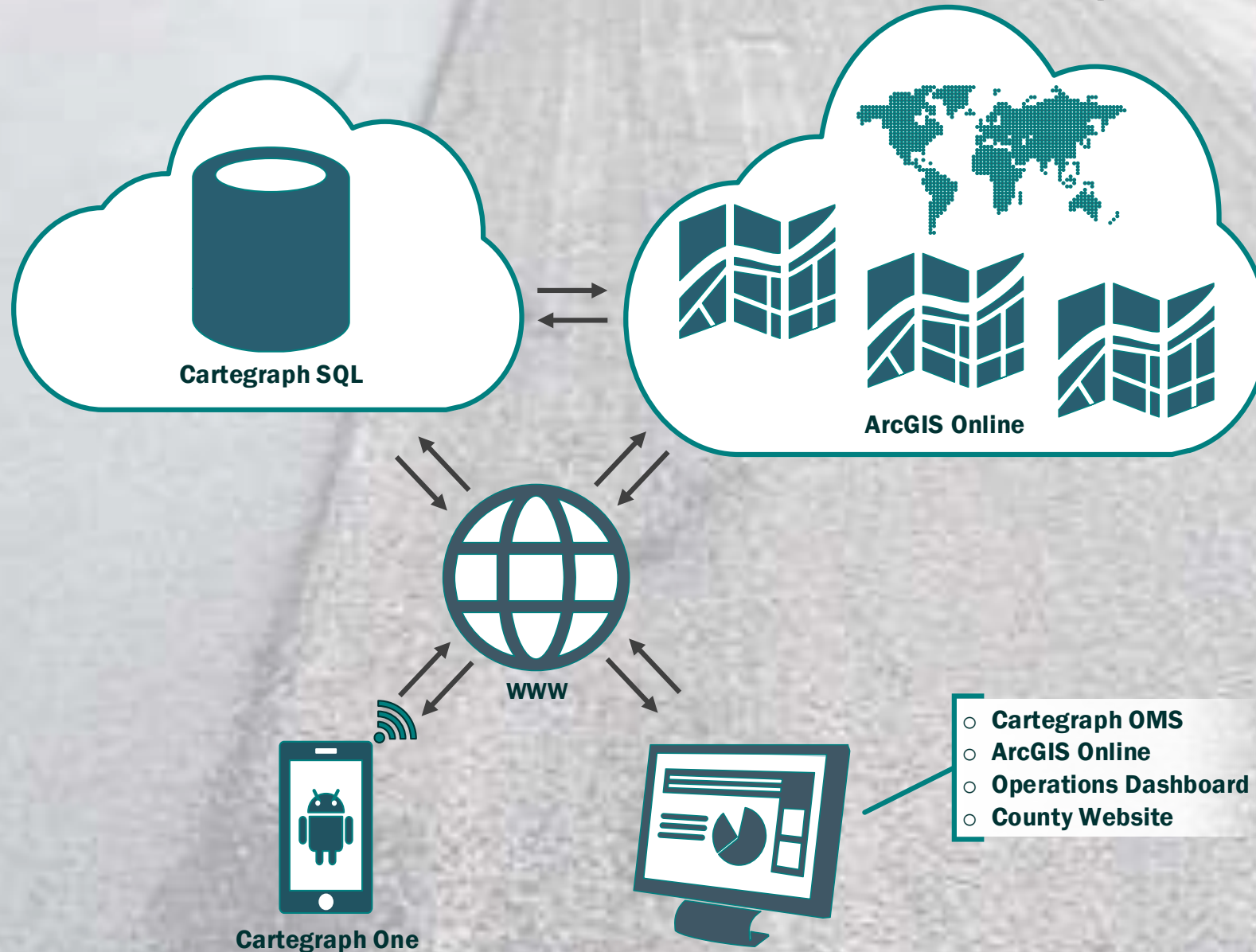
Blends GIS, IT, and Operations Management

- ArcGIS Online (AGOL) Hosted Feature Layers
- Continual two-way sync from SQL database to AGOL Hosted Feature Layer
- 26 Feature Classes of different asset types
- Feeds Operations Dashboard – real-time updates



Cartegraph Synchronization with Esri Tools

Blends GIS, IT, and Operations Management



Citizen Requests are Entered and Routed to Field Workers

- Online Form
- Phone Calls
- Work tickets created and sent to crews



Citizen Work Request [Sign in to Save Progress](#)

Name* Email* Daytime Phone*
(850) 999-9999

Street Number Street Name Today's Date
Numbers ONLY mm/dd/yyyy

Location of Issue

Please check all that apply:

- ☐ Animal, Tree, or Debris Removal From Roadway
- ☐ Brush / Tree Overgrowth
- ☐ Drainage Cleaning or Repair
- ☐ Flooding - Ditch
- ☐ Flooding - Street
- ☐ New Sign or Sign Repair
- ☐ Pothole / Roadway Damage
- ☐ Retention Pond Cleaning or Repair
- ☐ Right-of-Way Mowing
- ☐ Shoulder Repair
- ☐ Sidewalk Damage
- ☐ Traffic Signal Issue
- ☐ Park Repair
- ☐ Other

Please describe the problem:

File Attachment
 No file chosen

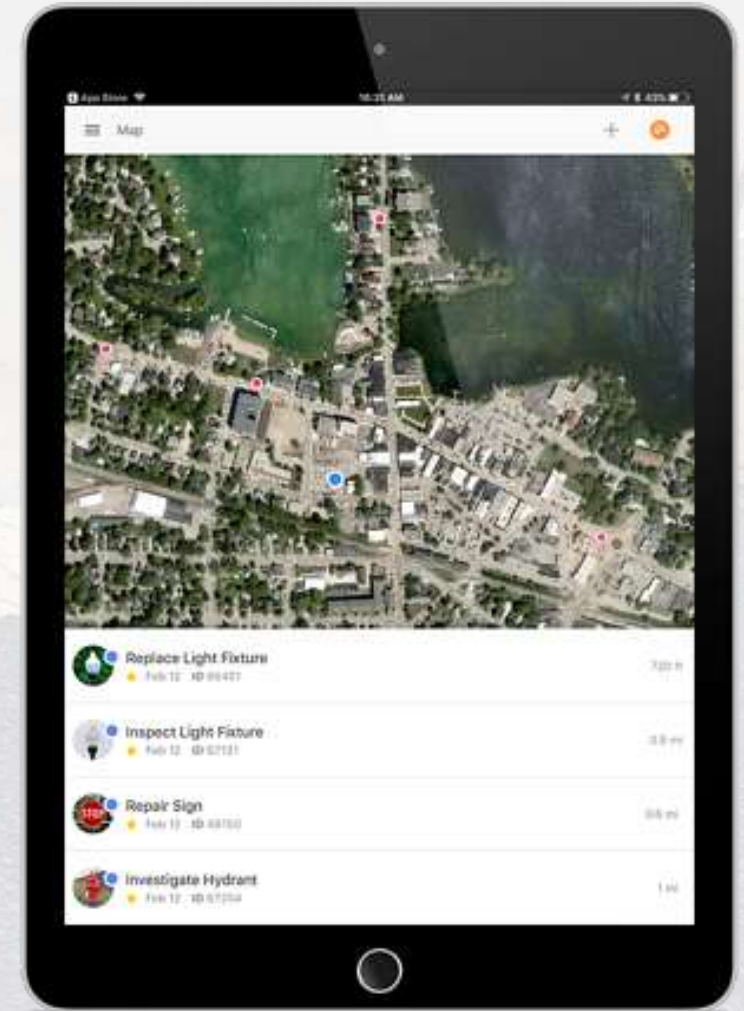
☒ Receive an email copy of this form.

Email address
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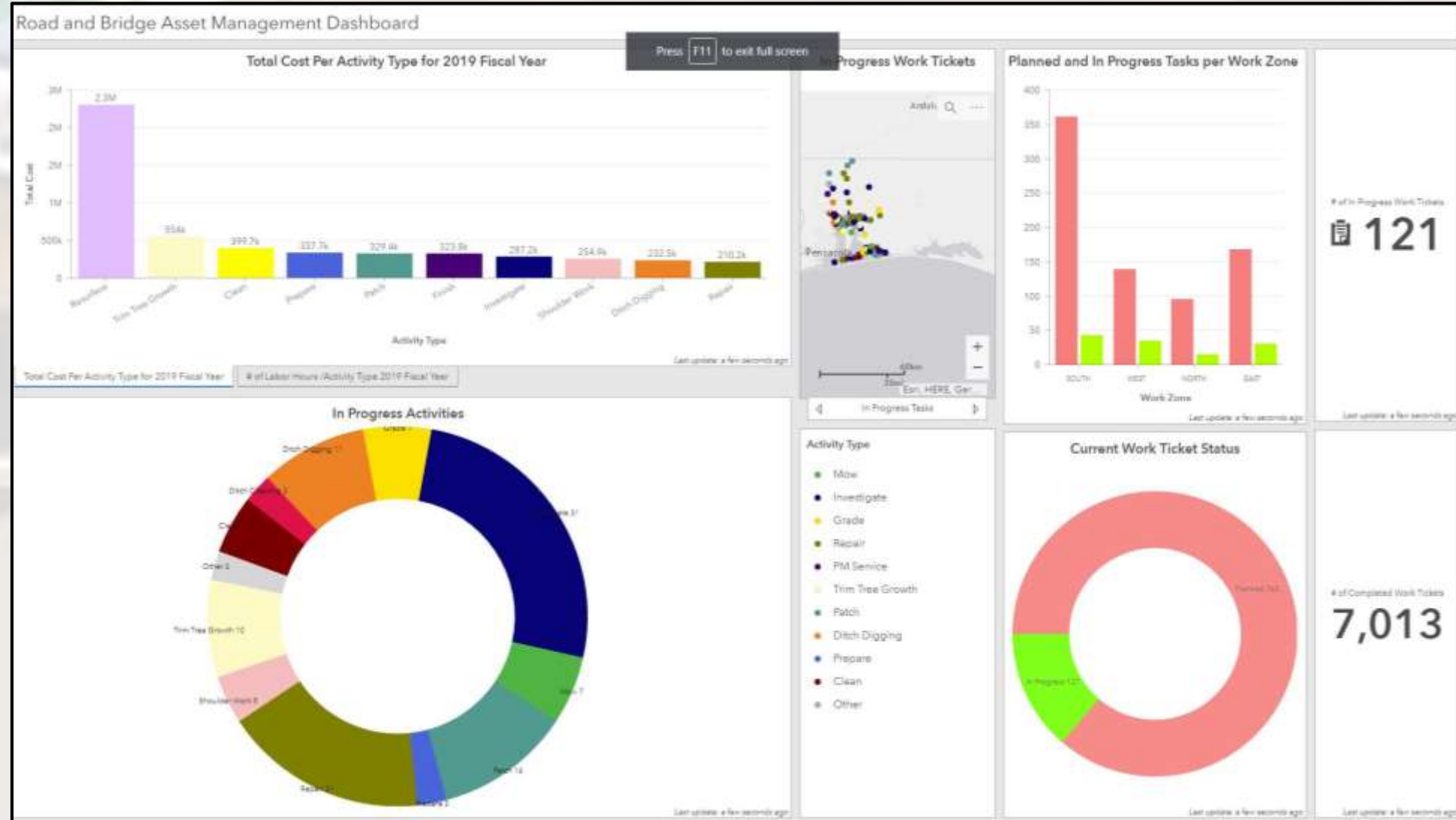
Workers Create and Complete Tasks in the Field

- Apple iPads
- Smart Phones (iPhone and Android)
- Route to Asset Locations with GPS
- Log Labor, Equipment, & Material Costs
- Attach Photo Documentation
- Real-Time Updates from Job Sites
- Reduce or Eliminate Paper
- Complete Pavement Inspections



Operations Dashboard Provides Real-Time Updates to Administration

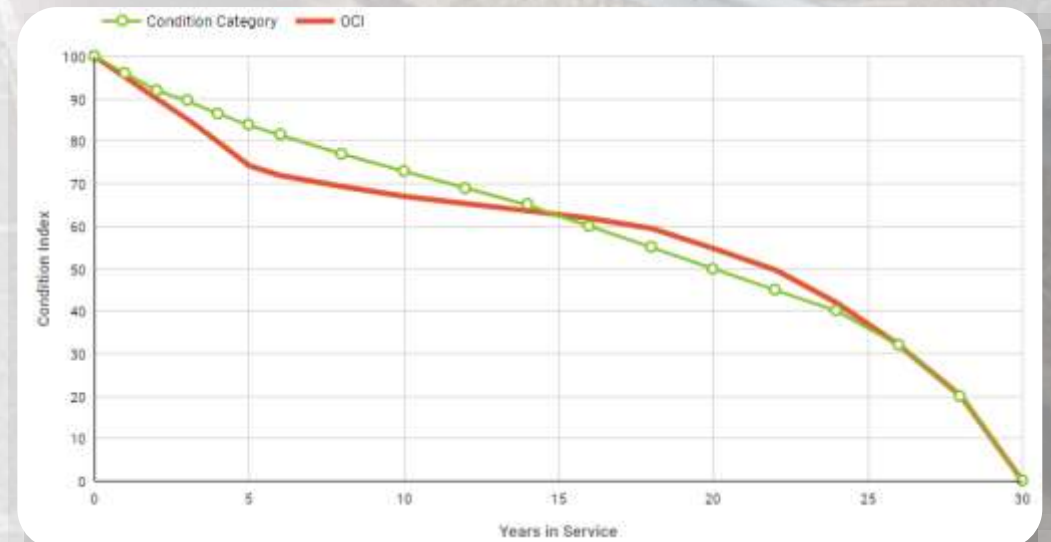
- Met need for better reporting
- Cartegraph AGOL layer provides real-time feed to Operations Dashboard
- Created Dashboard for Road & Bridge Department




Pavement Condition Calculator Helps Allocate Resources and Prioritize Paving Tasks Throughout County


- Need for maintaining pavement as county assets with limited resources
- 1,500 miles (35,000 sq. mi.) of pavement in over 8,600 segments
- Manage pavement asset condition over time
- Freshly paved – sets Condition Index = 100
- When work is done condition is adjusted and cost of labor/ equipment / materials tracked


Pavement Classification	19 Years and 1 Month Left	Estimated OCI
Asphalt	<div><div></div></div>	84.14
Functional Classification	Excellent	Total Cost To Date
Rural Local	— ★ ★ ★ ★ ★	\$588





Pavement Condition Calculator Helps Allocate Resources and Prioritize Paving Tasks Throughout County


← Inspect Pavement 

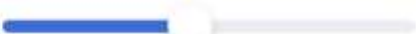
Transverse Cracks (5 pts)
5 


Longitudinal Cracks (5 pts)
4 

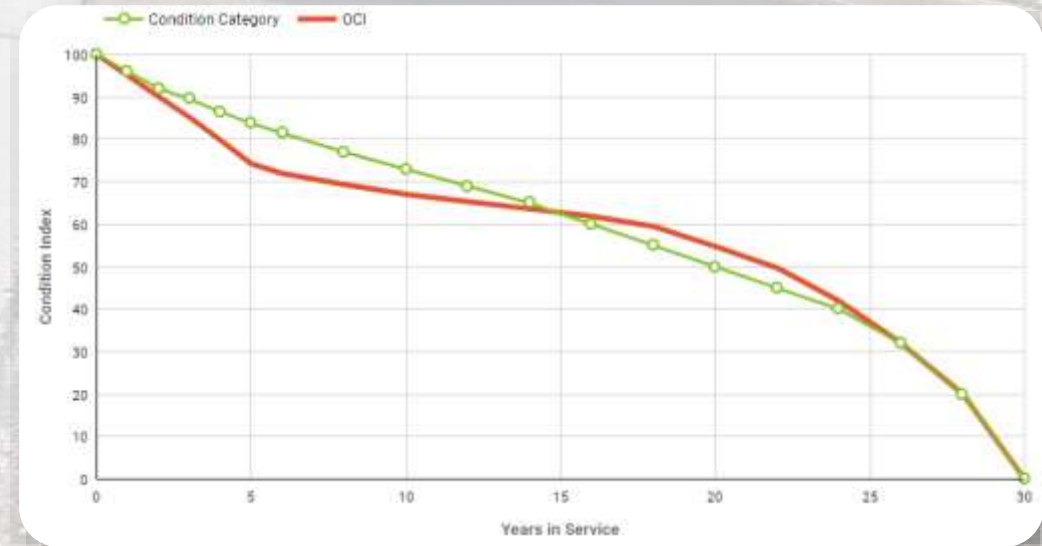
Alligator Cracks (10 pts)
4.5 

Shrinkage Cracks (5 pts)
3 

Rutting (10 pts)
3.5 

Corrugations (5 pts)
2 

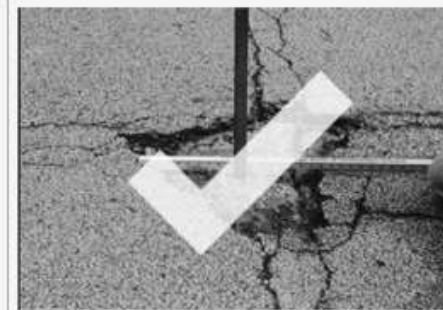
Raveling (5 pts)
1 



Select Severity of Distress



Low Severity



Moderate Severity



High Severity

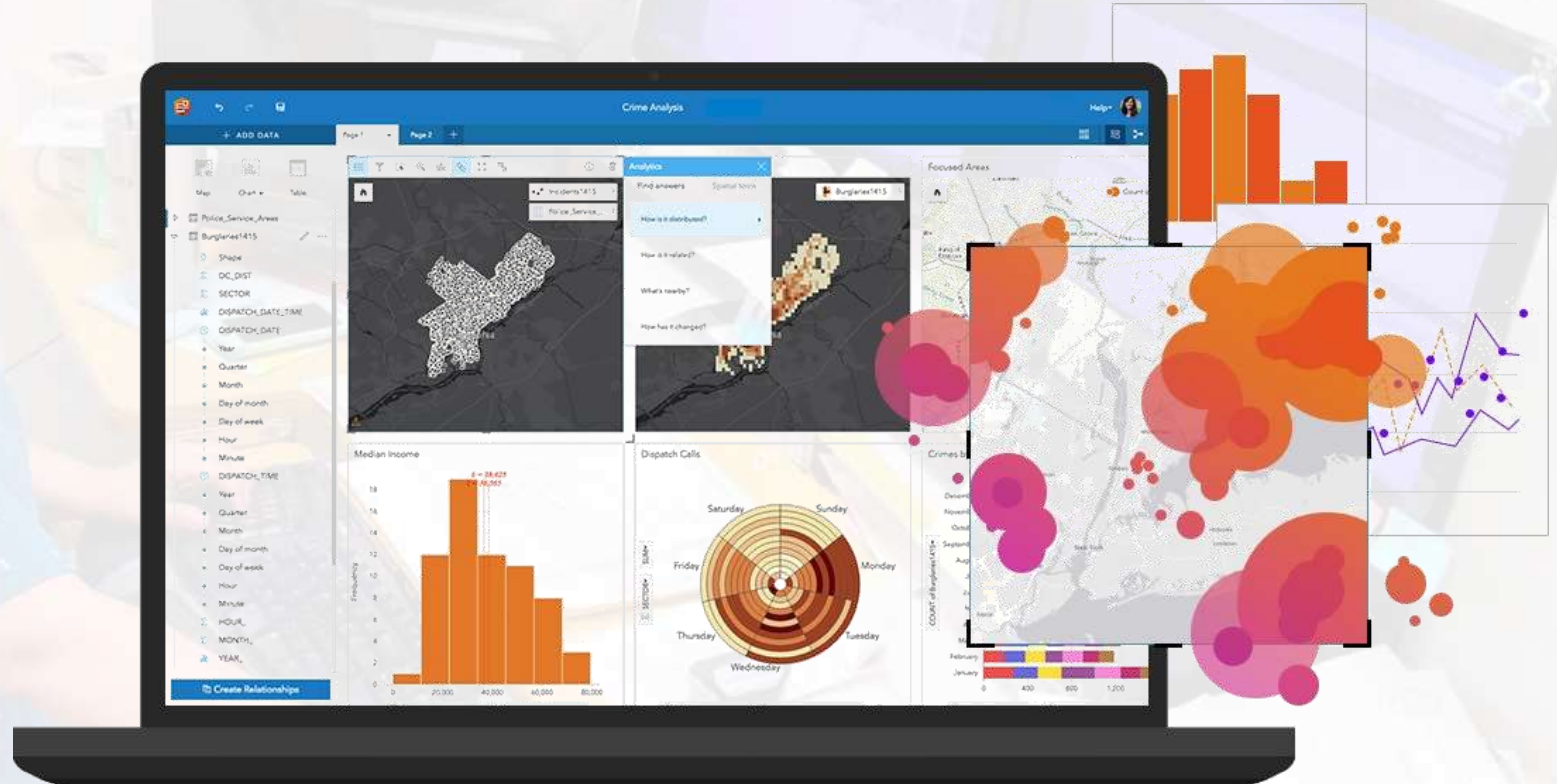
Moving from Reactive to Proactive Management



- Mowing was a reactive task
- We integrated Cartegraph with AGOL to build a custom solution

Next Steps: ArcGIS Insights and Portal to Further Explore Asset Management Capabilities

- Portal
- Insights Data Analytics
 - Cost breakdowns
 - Forecasting
 - Budget preparation
- Disaster response
- Mobile data collection



Special Thanks to:

Santa Rosa County Public Works Division

Santa Rosa County IT & GIS Team

Santa Rosa County PIO

Cartegraph Implementation Team

Will Meyer and Keith Cooke



A person wearing a light blue shirt, dark pants, and a cap is standing in a field of tall grass and brush. They are holding a long-handled tool, possibly a shovel or a surveying instrument. In the background, two long poles are leaning against a tree. Several yellow surveying flags are visible on the ground. The word "QUESTIONS?" is overlaid in the center of the image.

QUESTIONS?