2023 Spring Conference at Rocky Gap Resort
Flintstone, Maryland

Frederick County Implementation of Enterprise Asset Management System

Dave Ennis, PE Frederick County
Beth Schrayshuen, PE EA Engineering, Science, and Technology Inc. PBC

May 11, 2023

Agenda

- Frederick County
- Cartegraph Selection
- Frederick County Enterprise Asset Management for DPW
- Department of Facility Maintenance
- Department of Highway Operations
- Department of Fleet Management
- Conclusions

Frederick County MD

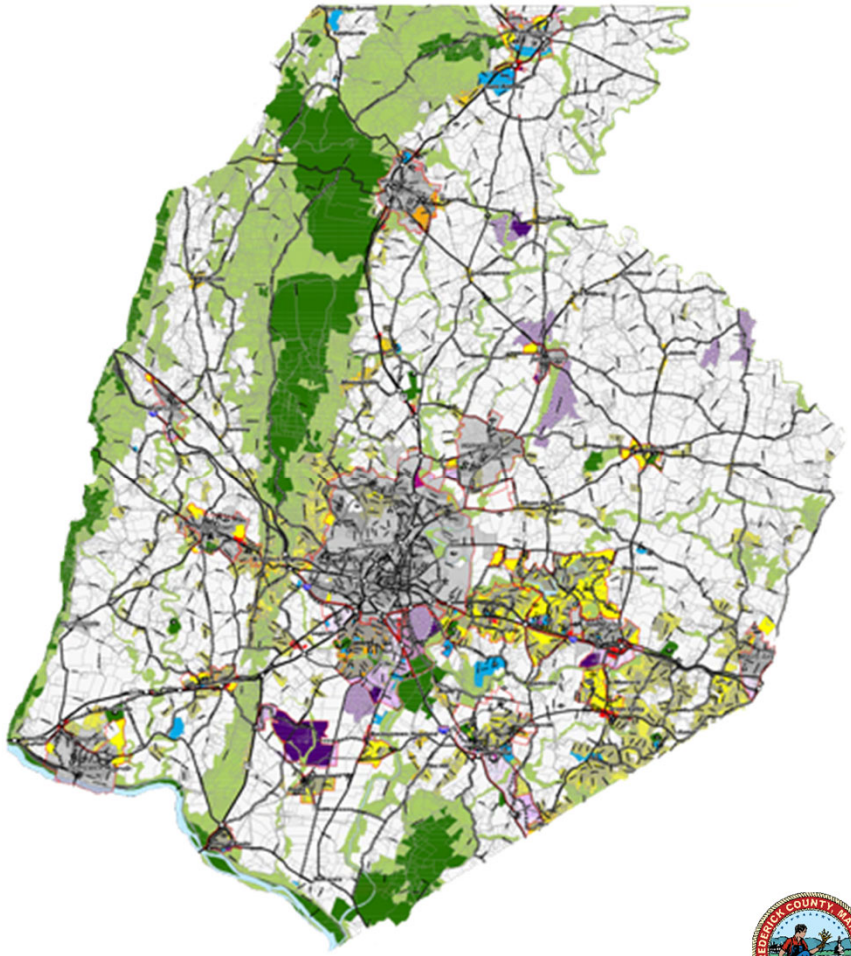
POPULATION
~272,000

2023 BUDGET
$792 M

AREA
668 mi²

EMPLOYEES
~2,500

FOUNDED
1748



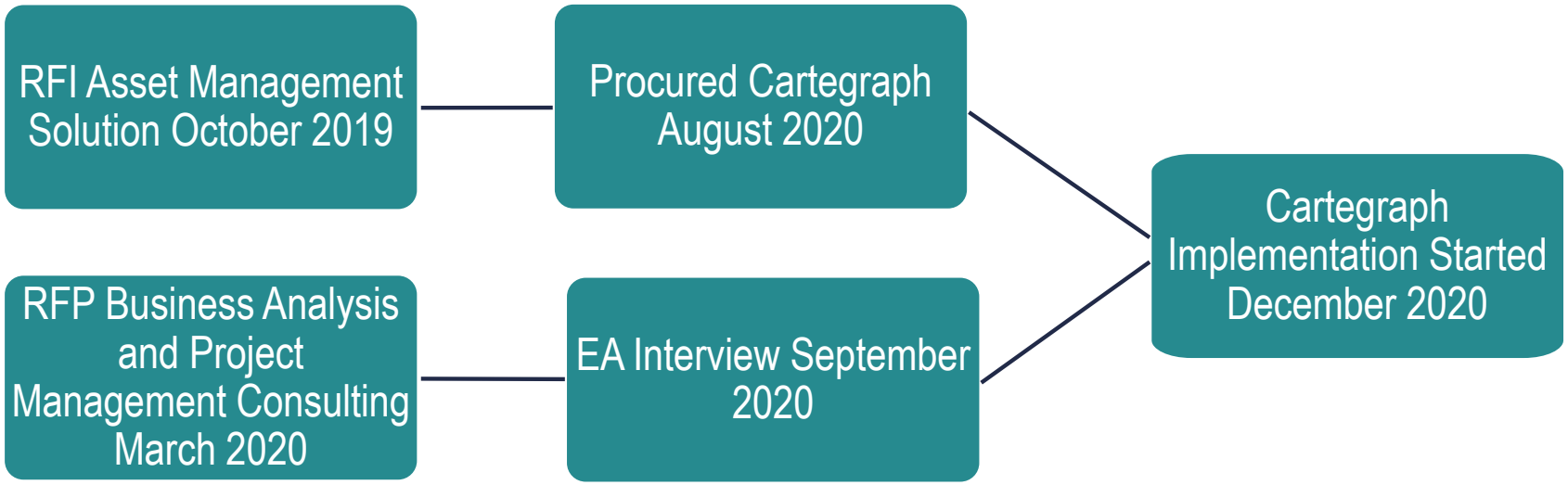
Frederick County's Need

	Need
	Inventory of Assets
	Condition of Assets
	Citizen and County staff request services
	Alert County staff to respond to request
	Track work completion
	Provide work history of asset including description
	Track effort/cost to do work include staff time and equipment used (manpower/ materials/ equipment)
	Provide summary of all work completed at specific location
	Schedule Preventative Maintenance Work Need
	Long Term Projection of Assets
	Reporting

"In order to invest in new assets, you must first invest in those you already own. If not, you are digging a deferred maintenance hole that you can't pull yourself out of."

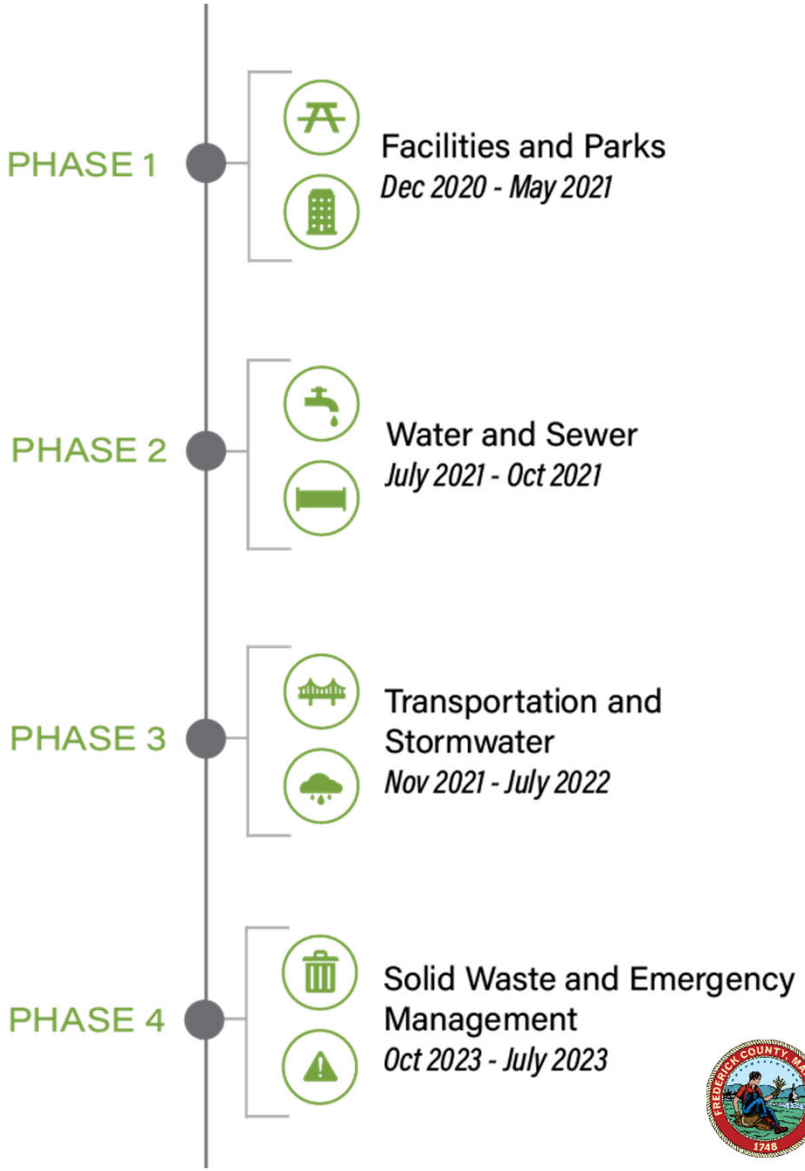
— Rick Harcum, Retired Frederick County Chief Administrative Officer

Cartegraph Selection



Cartegraph Schedule

Cartegraph



EA's Role

PLAN

STAKEHOLDER INVOLVEMENT

COMMUNICATION

DOCUMENT DECISIONS

EA's Role

DECISION MAKERS

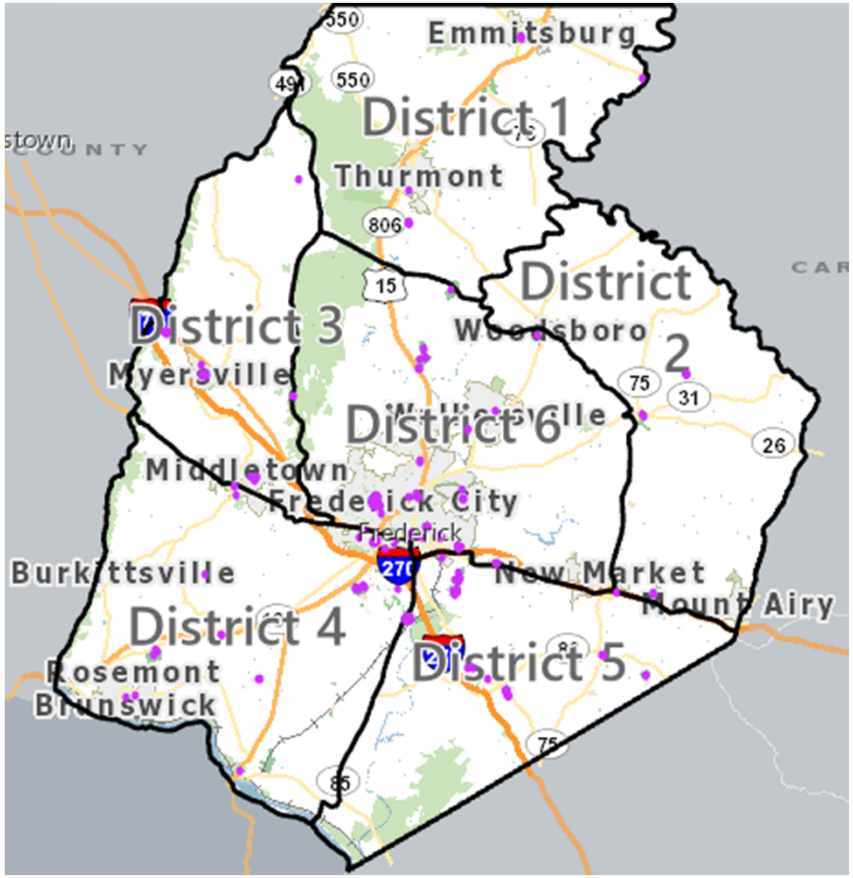
- BUDGET
- FINANCE
- TECHNOLOGY

OPERATIONAL UNITS

- WATER & SEWER
- PARKS & RECREATION
- SOLID WASTE
- PUBLIC WORKS (Highways)
- PUBLIC WORKS (Facilities)
- EMERGENCY MANAGEMENT

Division of Public Works

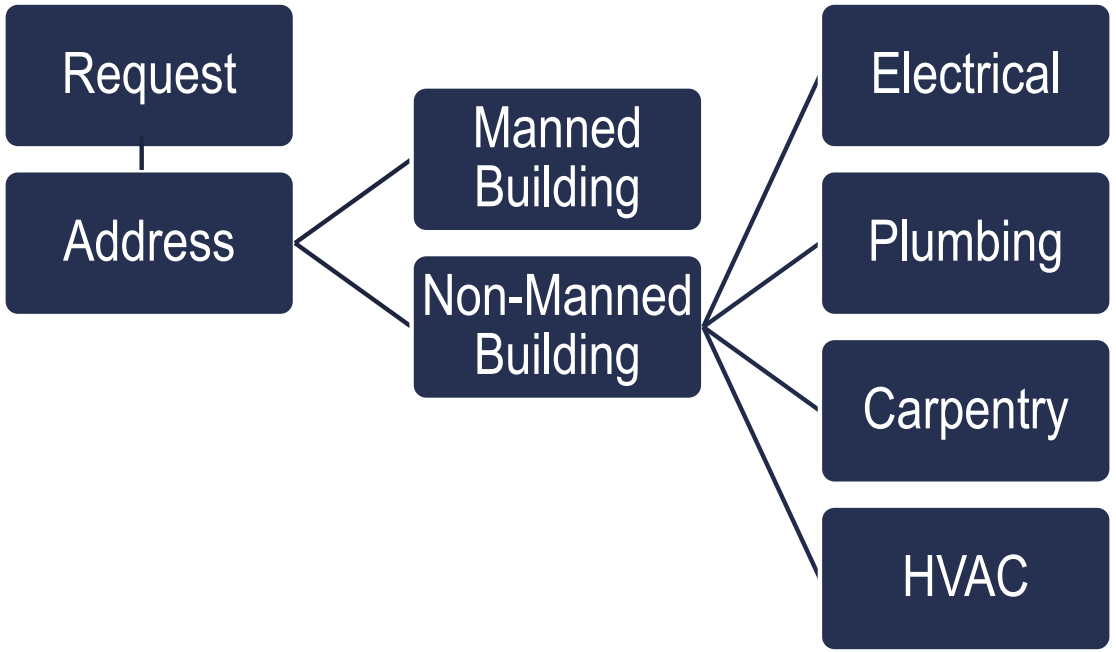
- Department of Highway Operations
- Department of Facilities Maintenance
- Department of Engineering and Construction Management
- Department of Fleet Services
- Department of Professional Services
- Department of Fiscal Services



DPW – Department of Facility Maintenance

	Need
	Inventory of Assets
	Condition of Assets
X	County staff request services
X	Alert County staff to respond to request
X	Track work completion
	Provide work history of asset including description
	Track effort/cost to do work include staff time, materials and equipment used or during an event
	Provide summary of all work completed at specific location
	Schedule Preventative Maintenance Work Need
	Long Term Projection of Assets
	Reporting

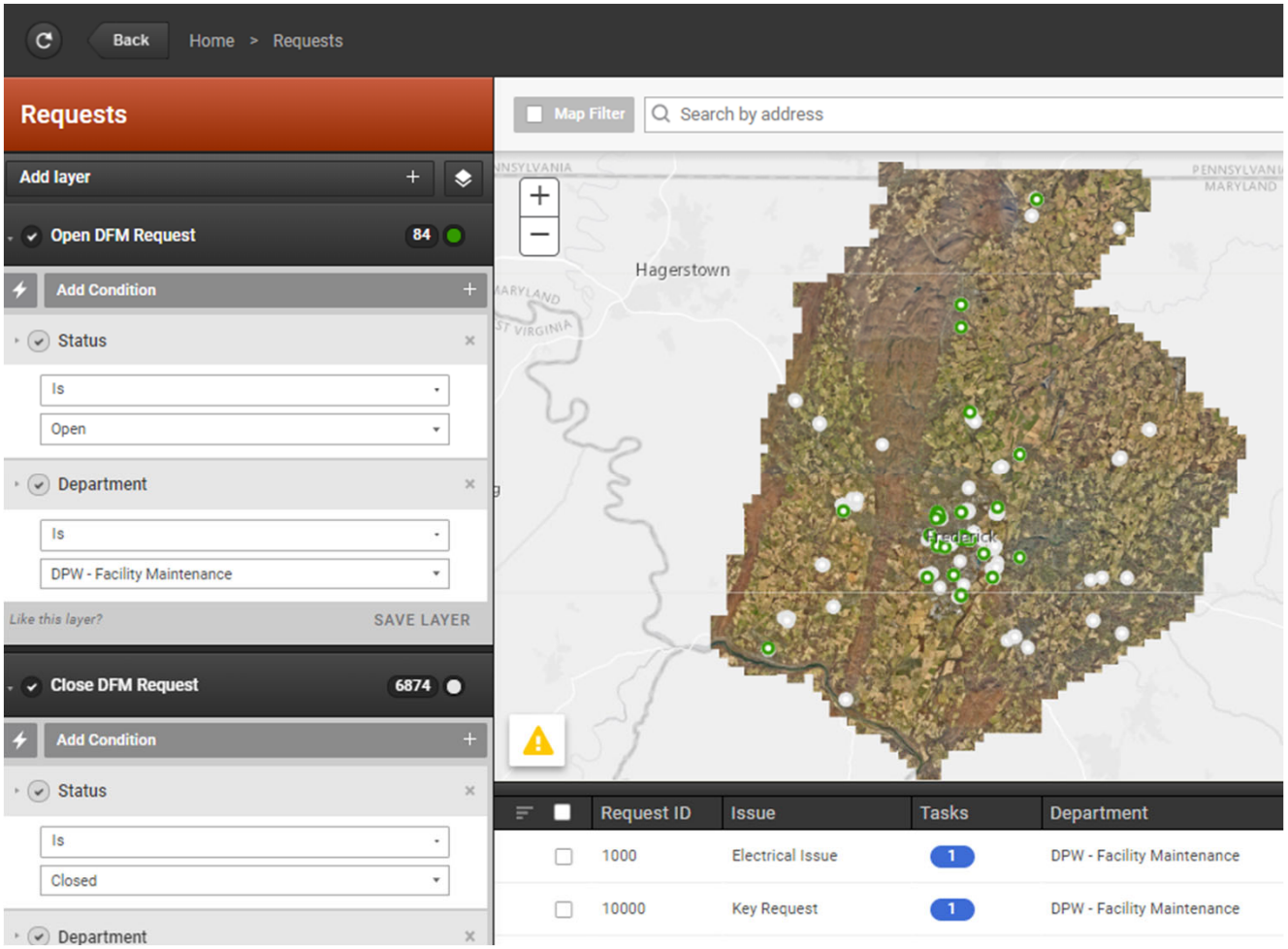
✓ **Landport – Web based request driven system**



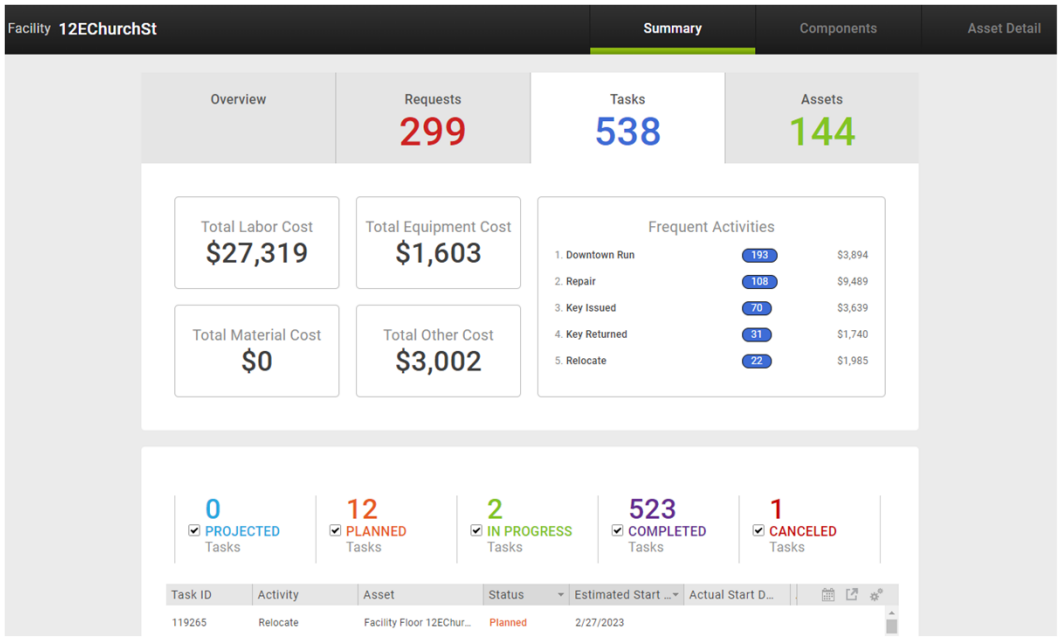
Requests

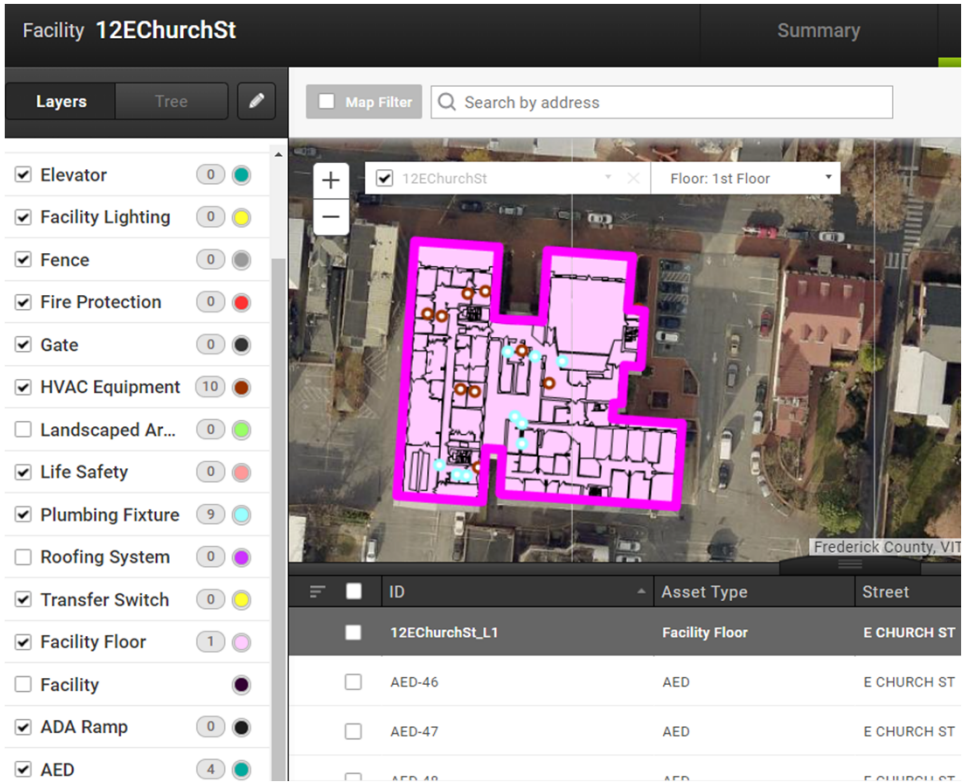
- **Building Managers (140) request services from Facilities Maintenance**
  - Specific Buildings – Specific Response
  - Only internal County users
- **Response based on location of Requests**
  - Trying to direct the building managers to the correct selection
- **Rebranded to FCG Fix It**
  - Internal Implementation Spring 2021
  - Public Implementation Fall 2021

Requests in Cartegraph



Department of Facility Maintenance





Custom Assets

Facility Floor 350MontevueLn_L1

AED **AED-17**

Address Number: **350**
Street: **MONTEVUE LN**
Locator Address: **350 Montevue Ln Frederick**

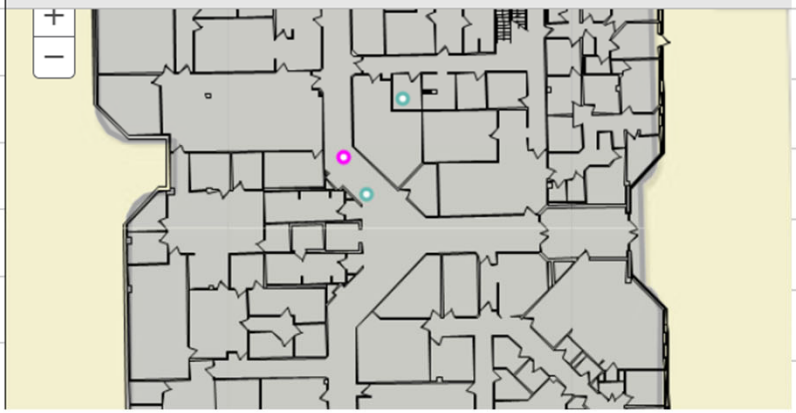
Installed:
Replaced:

Risk Score
-/25

1 25
Risk

- Map
- Location
- Details
- Risk
- Inspections
- Tasks
- Attached Files

Map



Address Number: **350**
Street: **MONTEVUE LN**
Locator Address: **350 Montevue Ln Frederick**

Installed:
Replaced:

- Map
- Location
- Details
- Risk
- Inspections
- Tasks
- Attached Files

Details

Basic Information

ID:	AED-17
DPW Site:	Health Department
Manufacturer:	LifePak
Serial Number:	38701576
Adult Pad Expiration Date:	
Child Pad Expiration Date:	
Notes:	

Replacement Plan

Scenarios — Life Safety

Scenario Name	Asset Type	Number of Y...	Scenario Type	Recommend Single Activ...	Run Status	Total Cost
DPW AED Replacement Plan Replaced when OCI is 1	Life Safety	10	Budget Limitation	Best Value	Completed	$261,431.04
DPW AED Replacement Plan Replaced when OCI is 10	Life Safety	10	Budget Limitation	Best Value	Completed	$305,002.88

Scenario **DPW AED Replacement Plan Replaced when OCI is 1** — Details | Results | Map

Scenario Type: Budget	Total Cost: $261,431	Total Surplus: $128,769	Cost Per Plan Year
Scenario Target: $390,200	Years: 10	Total Activities: 96	Avg. Activities Per Year: 10
Status: Completed	Last Run: 3/27/2023 8:51:29 PM	Assets Affected: 75	

Scenario	Network	Scenario
Ending Risk -/25	Ending OCI 32/100	Ending OCI 37/100
Beginning Risk -/25	Beginning OCI 29/100	Beginning OCI 28/100
Net Risk Reduction -	Net OCI Gain 3	Net OCI Gain 9

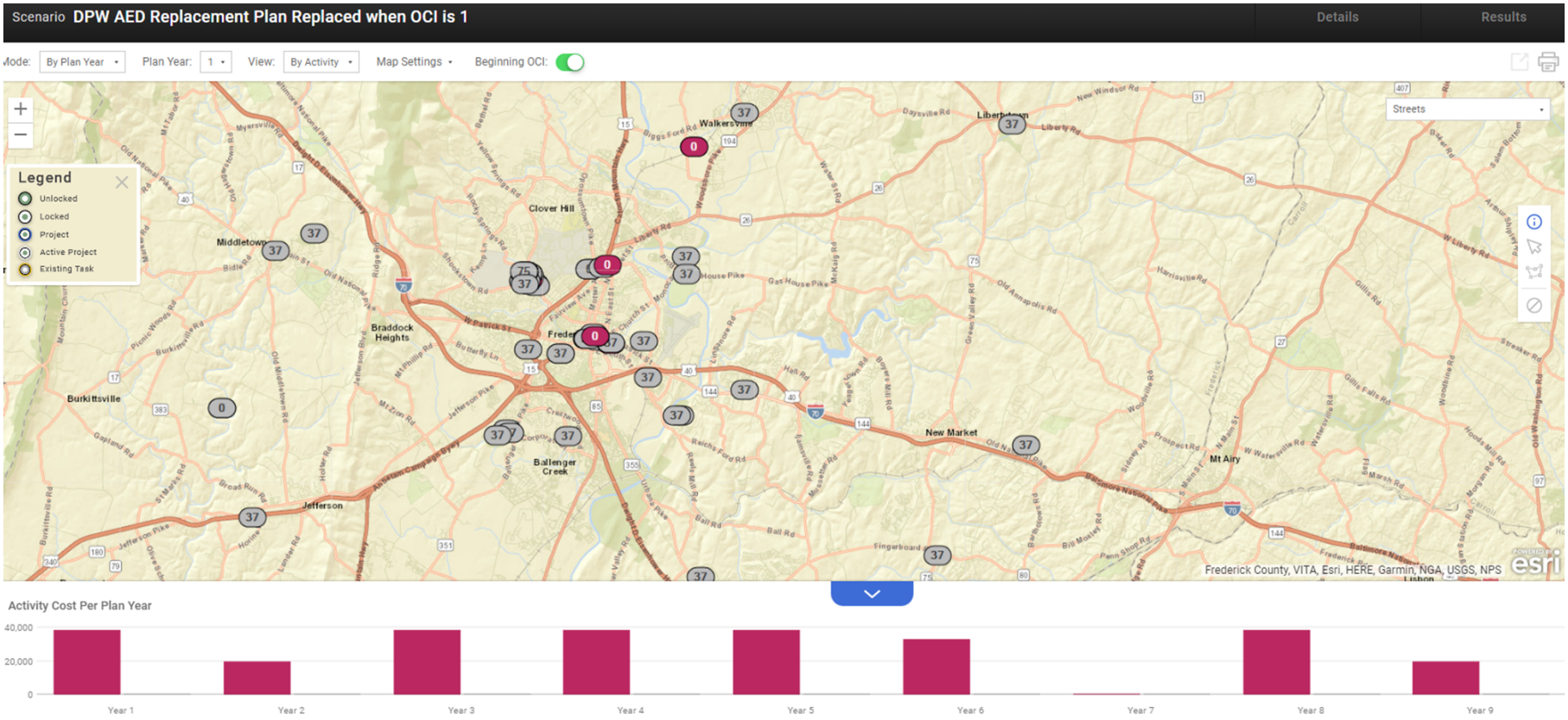
Overview | Plan Years | Activities | Projects

Activities

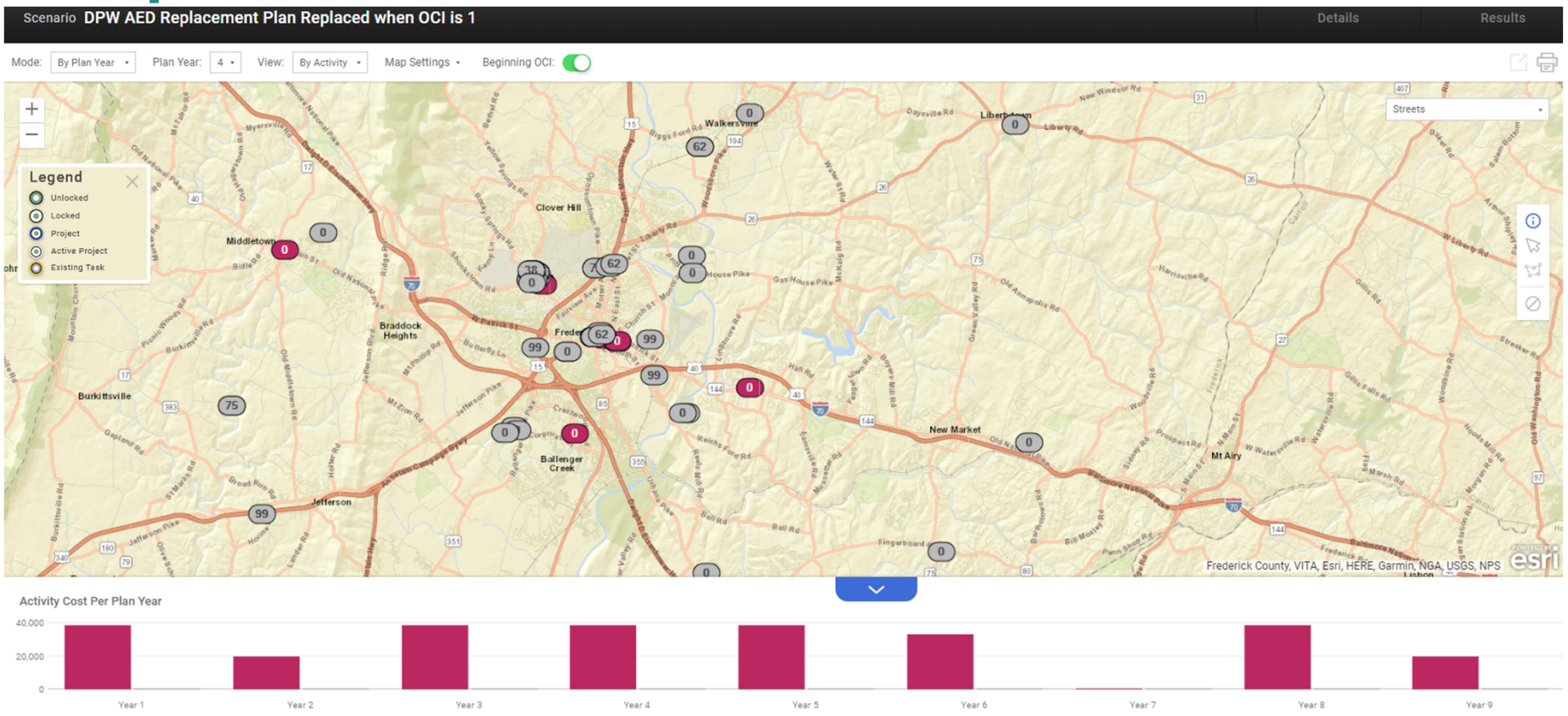
Activity List — Advanced Filter

Sequence Num...	Plan Year	Project Name	Projected Date	Asset ID	Activity	Locked	Activity Cost	Budget Category	Ir
1	1		7/1/2023	AED-93	Replace Asset		$2,723.24	DPW AED Budget	
2	1		7/1/2023	AED-65	Replace Asset		$2,723.24	DPW AED Budget	
3	1		7/1/2023	AED-88-PARK	Replace Asset		$2,723.24	DPW AED Budget	
4	1		7/1/2023	AED-79	Replace Asset		$2,723.24	DPW AED Budget	
5	1		7/1/2023	AED-66	Replace Asset		$2,723.24	DPW AED Budget	
6	1		7/1/2023	AED-51	Replace Asset		$2,723.24	DPW AED Budget	
7	1		7/1/2023	AED-47	Replace Asset		$2,723.24	DPW AED Budget	

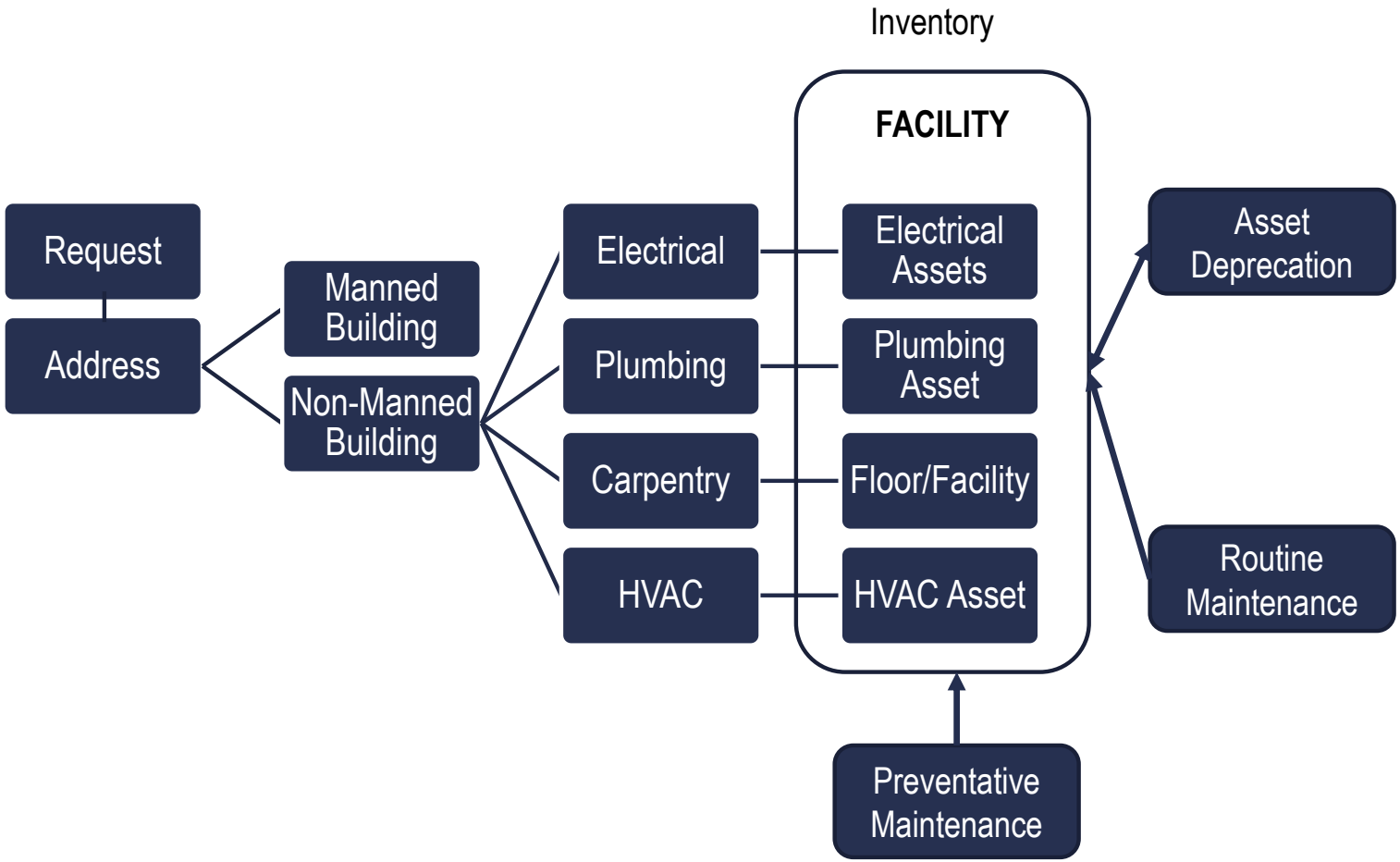
Replacement Plan Year 1



Replacement Plan Year 4



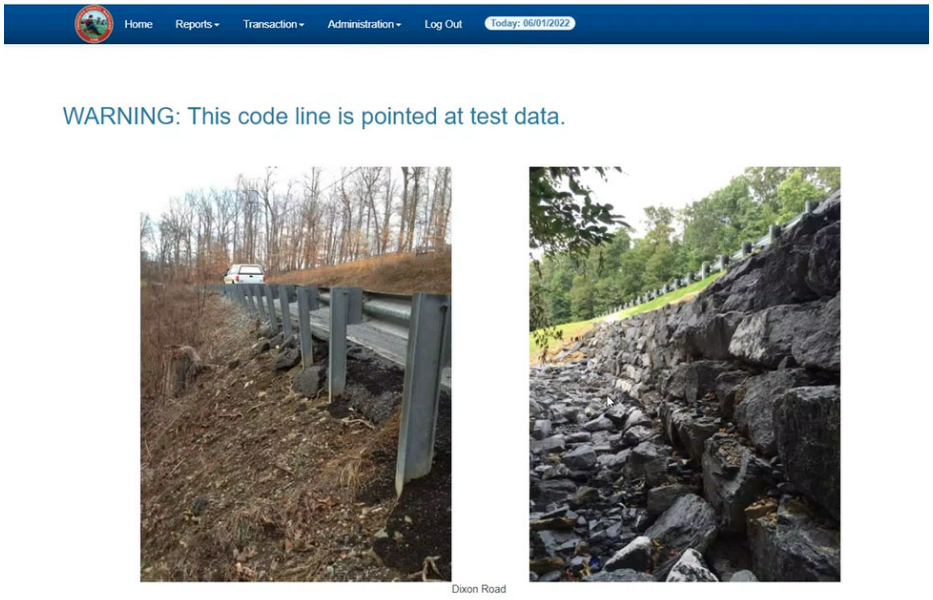
New Workflow and Data Capture



	Need
X	Inventory of Assets
X	Condition of Assets
X	County staff request services
X	Alert County staff to respond to request
X	Track work completion
X	Provide work history of asset including description
X	Track effort/cost to do work include staff time, materials and equipment used or during an event
X	Provide summary of all work completed at specific location
X	Schedule Preventative Maintenance Work Need
X	Long Term Projection of Assets
X	Reporting

DPW – Department of Highway Operations

- **Work Request System – IIT ArcGIS Application created in 2017**
- **Resource Tracking Application – IIT SQL Application created in 2006**



X	Need
	Inventory of Assets
	Condition of Assets
X	County staff request services
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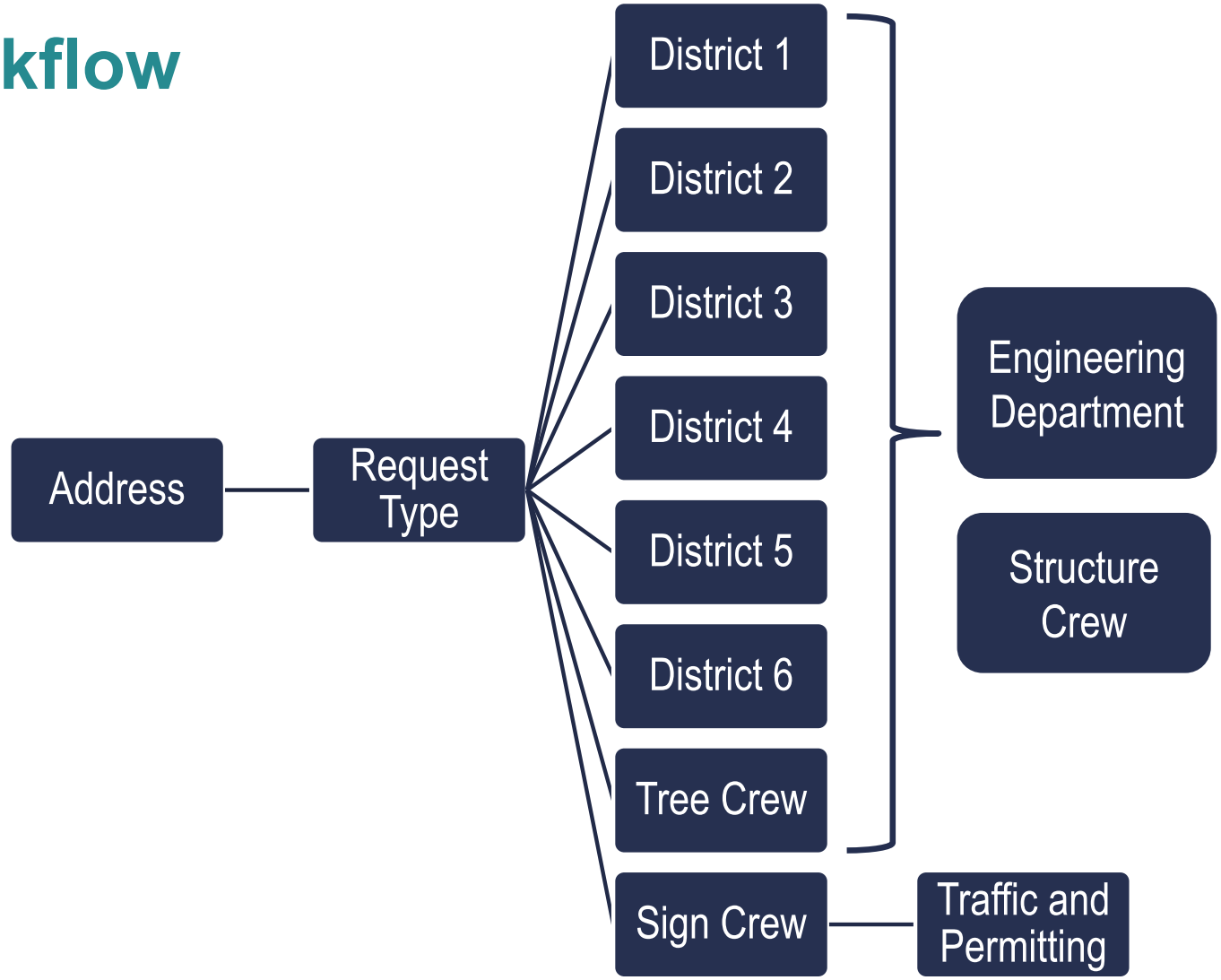
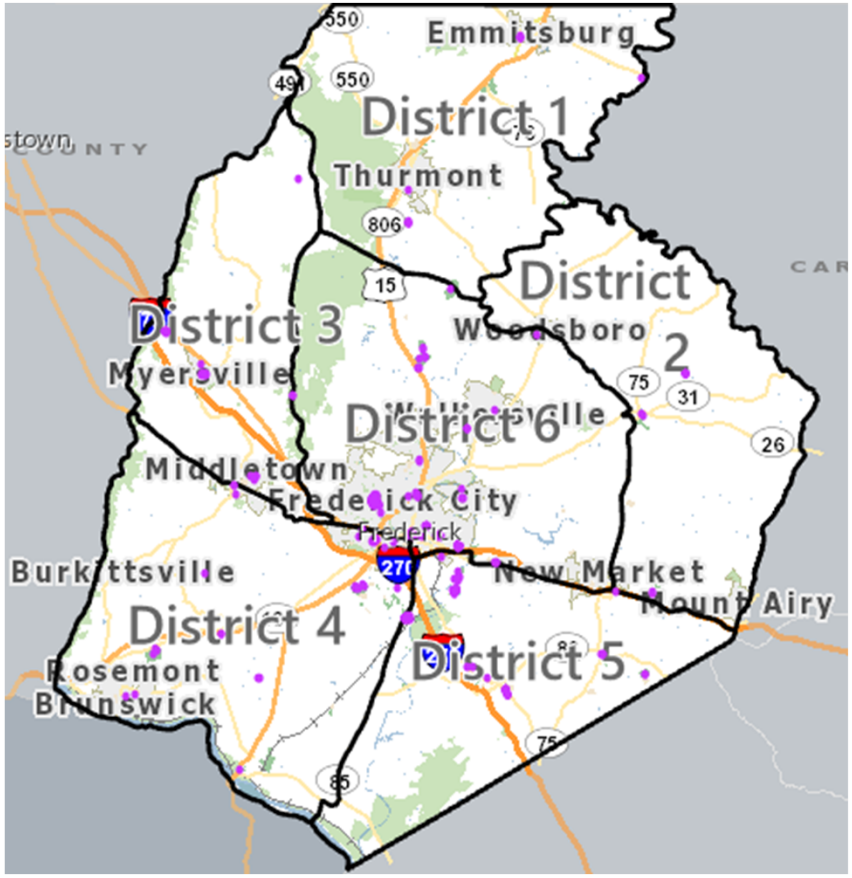
Workflow

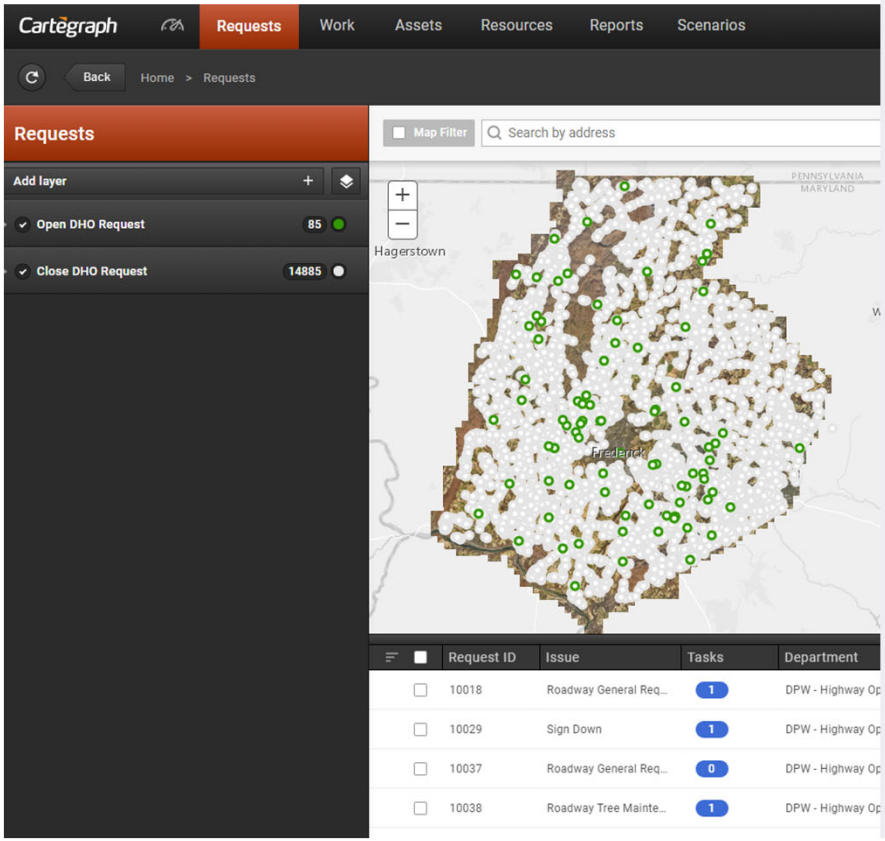

Address
Request Type
District 1
District 2
District 3
District 4
District 5
District 6
Tree Crew
Sign Crew
Traffic and Permitting
Engineering Department
Structure Crew

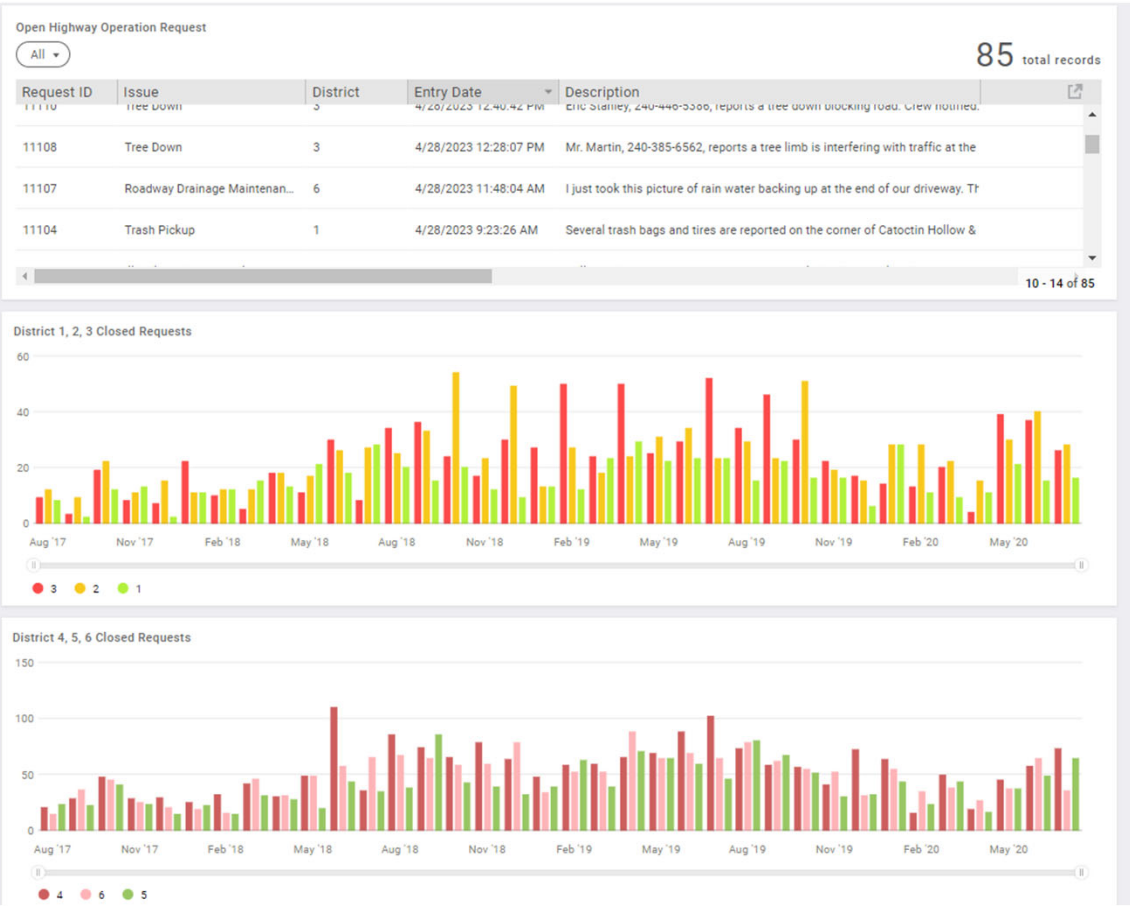
Requests

- **Rebranded to FCG Fix It**
  - Public Implementation Fall 2021
  - Automatically applies District Number based on location of request.
  - Feedback Loop from Cartegraph to FCG Fix It



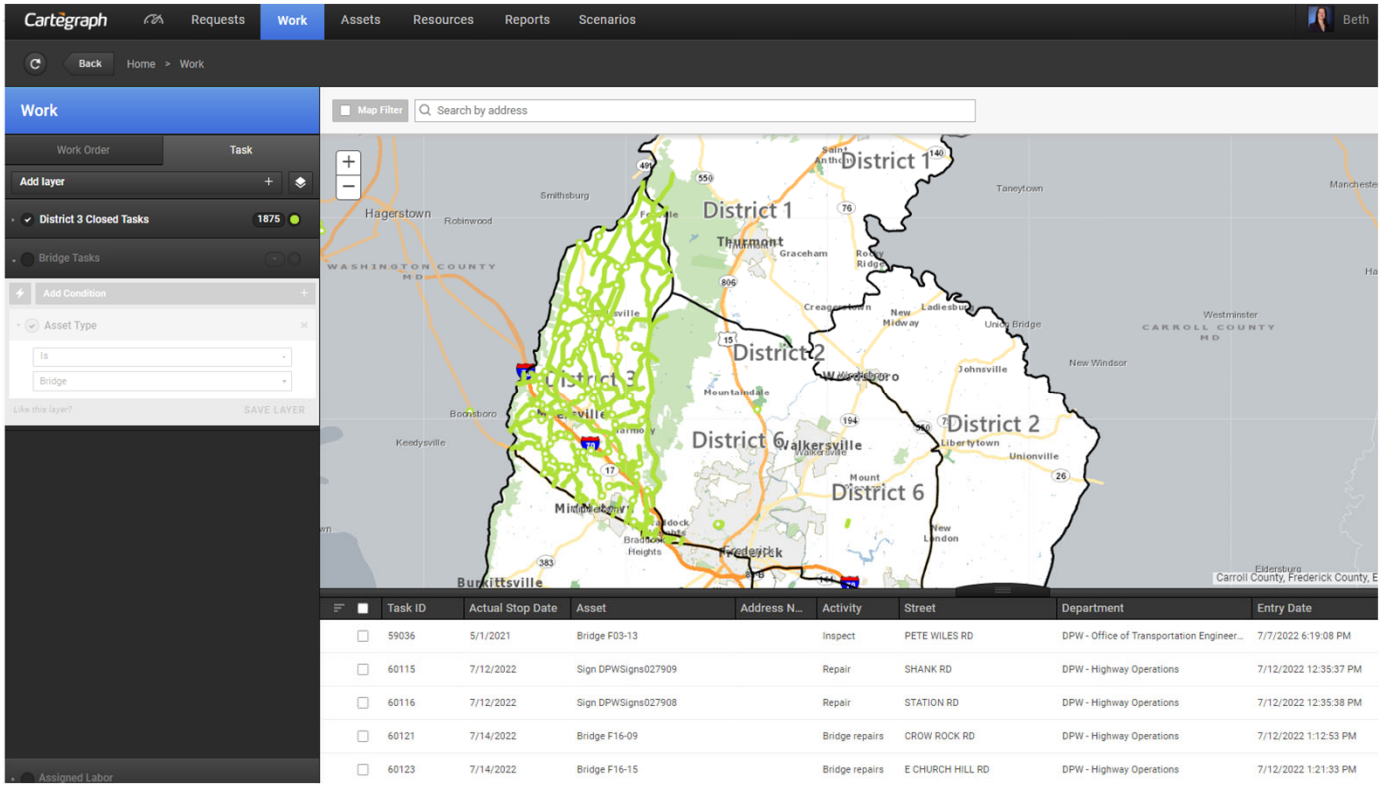
Cartegraph


Cartegraph
Requests
Work
Assets
Resources
Reports
Scenarios
Back
Home > Requests
Requests
Add layer
Open DHO Request 85
Close DHO Request 14885
Map Filter
Search by address
Hagerstown
Frederick
Request ID
Issue
Tasks
Department
10018 Roadway General Req... 1 DPW - Highway Op
10029 Sign Down 1 DPW - Highway Op
10037 Roadway General Req... 0 DPW - Highway Op
10038 Roadway Tree Mainte... 1 DPW - Highway Op

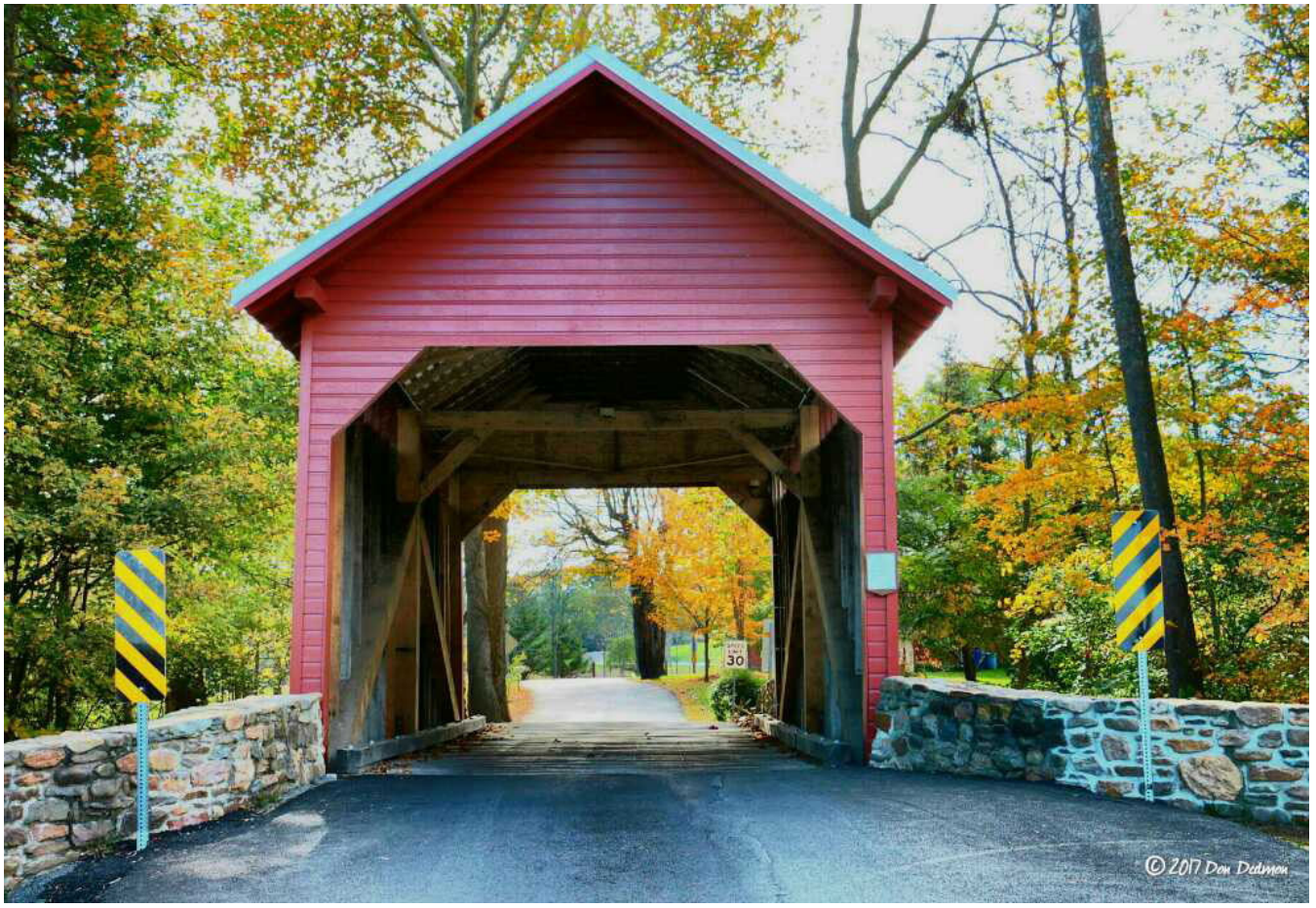

Open Highway Operation Request
All
85 total records
Request ID
Issue
District
Entry Date
Description
11108 Tree Down 3 4/28/2023 12:28:07 PM Mr. Martin, 240-385-6562, reports a tree limb is interfering with traffic at the
11107 Roadway Drainage Maintenan... 6 4/28/2023 11:48:04 AM I just took this picture of rain water backing up at the end of our driveway. Th
11104 Trash Pickup 1 4/28/2023 9:23:26 AM Several trash bags and tires are reported on the corner of Catoctin Hollow &
10 - 14 of 85
District 1, 2, 3 Closed Requests
60
40
20
0
Aug '17
Nov '17
Feb '18
May '18
Aug '18
Nov '18
Feb '19
May '19
Aug '19
Nov '19
Feb '20
May '20
3 2 1
District 4, 5, 6 Closed Requests
150
100
50
0
Aug '17
Nov '17
Feb '18
May '18
Aug '18
Nov '18
Feb '19
May '19
Aug '19
Nov '19
Feb '20
May '20
4 6 5

Work Tracking

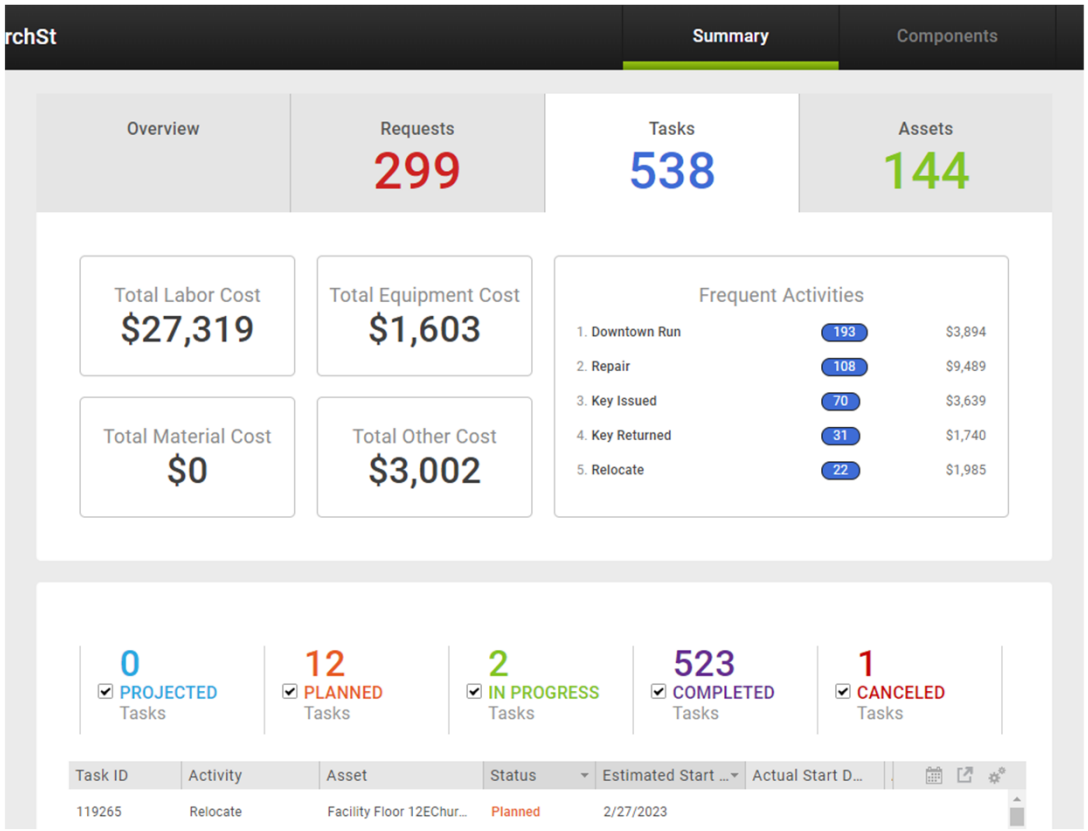
- Responding to Requests
- Capture work Preventative Maintenance
- Geospatial delegating work
- Whole Picture work in District



Container Component Relationship



Container Component Relationship



Facilities

Parks

Playground

Signalized Intersections

Water Treatment Plant

Wastewater Treatment Plant

Bridges

Landfill

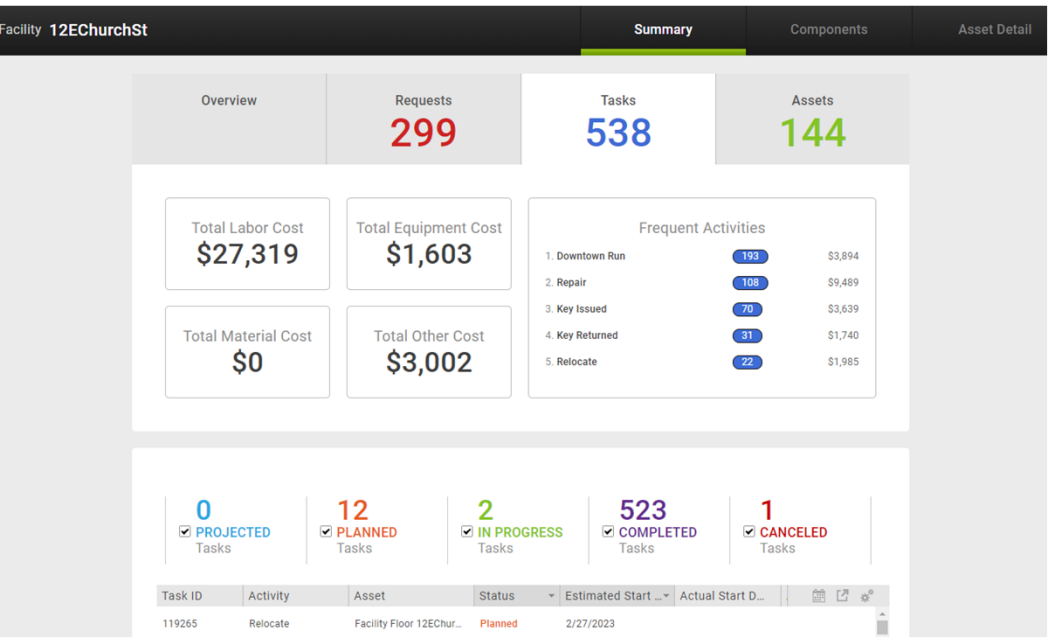
Container Component Relationship

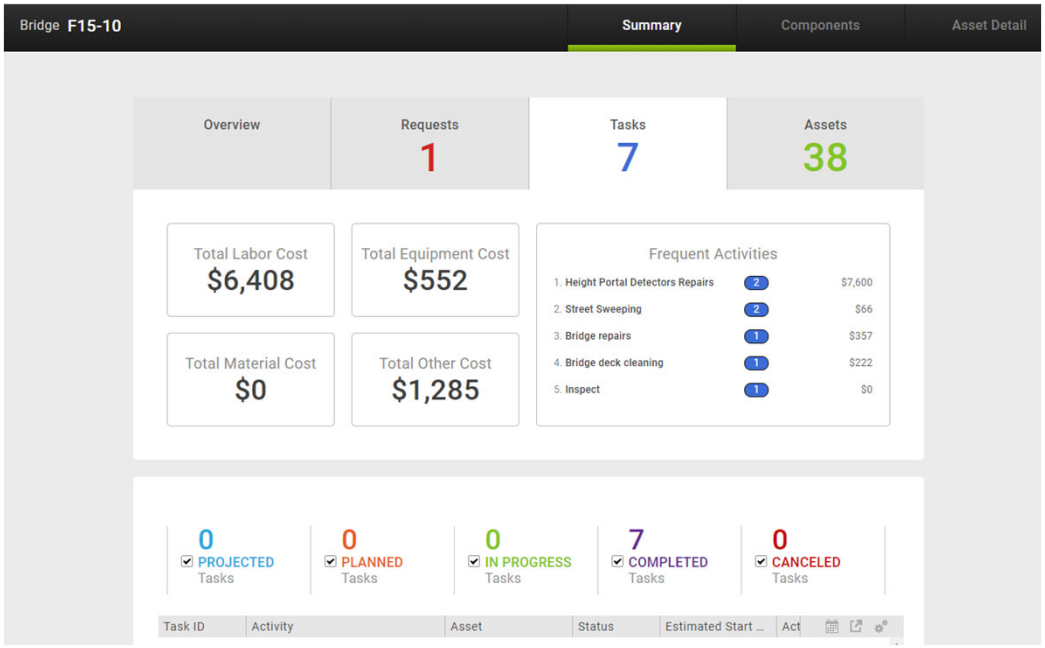
FACILITIES

- Instant Roll Up of Information

BRIDGES

- Applied to Bridges

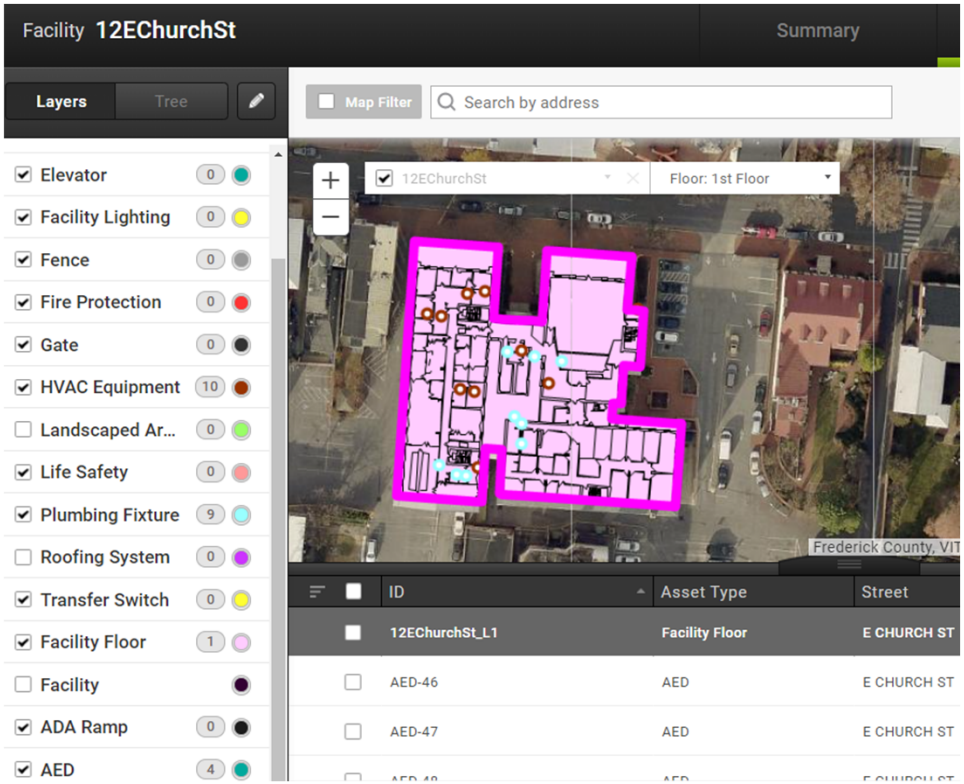




Container Component Relationship

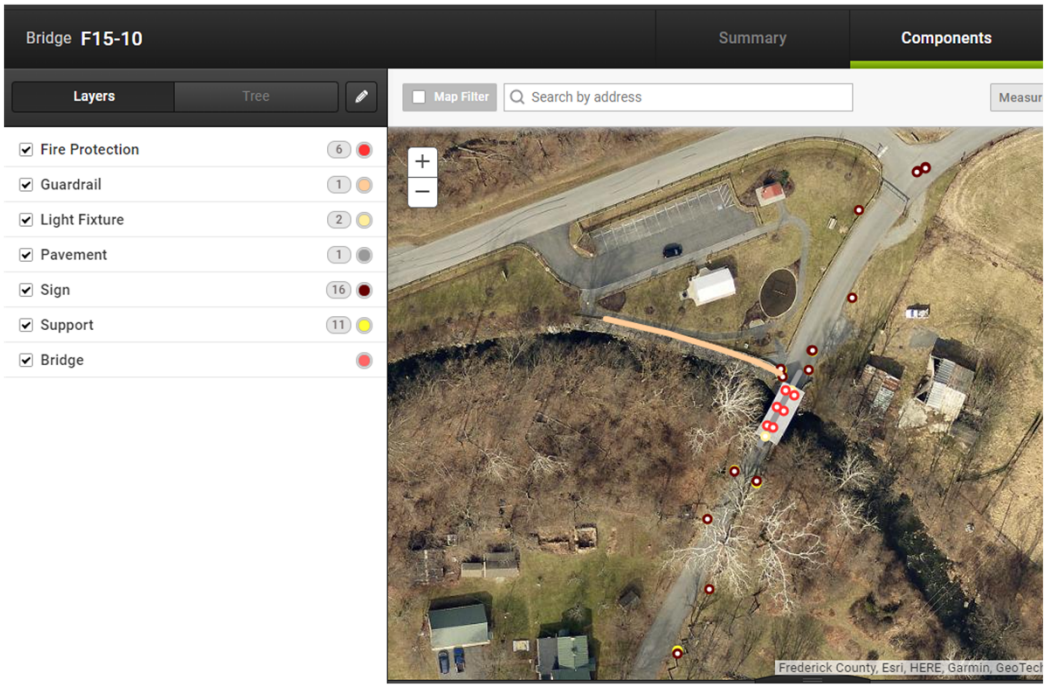
FACILITIES

- Facility Relationship Model

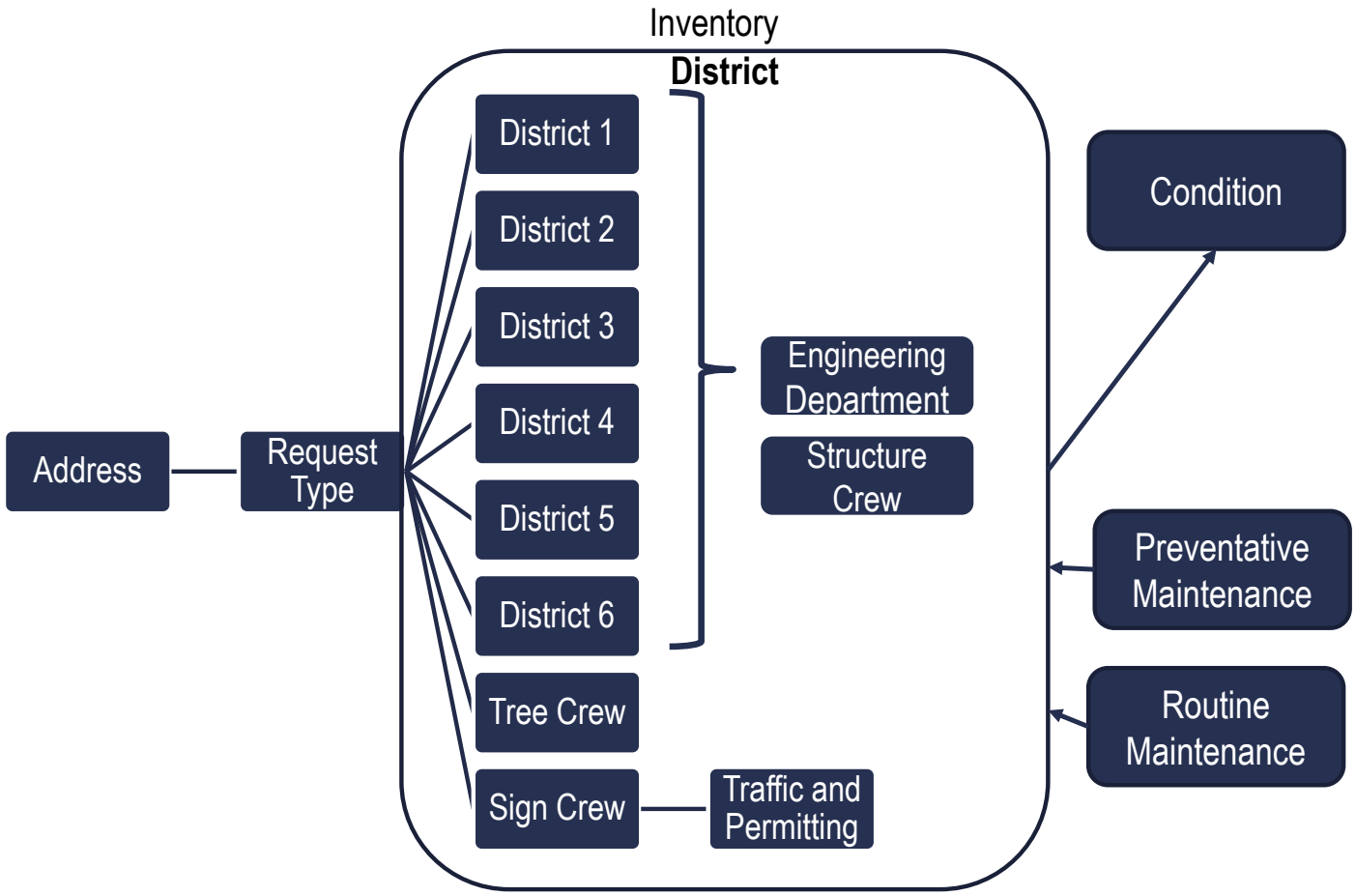


BRIDGES

- Bridges Relationship Model



New Workflow



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X	Long Term Projection of Assets
X	Reporting

Department of Fleet Service

- Equipment management in FASTER since
- For Over 20 years
- Integrated with Cartegraph in Summer 2023

Results | Outcome

- Overall Retired 4 Solutions – consolidation of custom internal created applications
- Easier re-assign of requests/tasks between Divisions within the County
- Cartegraph High Performance Award and Esri Special Achievement in GIS Award

Users
350+

Asset Types
133

Infrastructure Assets
270,000

Tasks
120,000

Results | Outcome

- Remote Implementation and Operations
- Geo-Referenced Data
- Efficiency in the Field
- New Operational Insight
- Accessible Information
- Constituent Service
- Out-of-the-Box Complete Suite
- Knowledge Transfer Despite Retirement/Turnover
- Guide for Moving Forward
- Rethinking Existing Processes
- Stakeholder Coordination

Closing

KNOWLEDGE
Derived from experiences, values and information in context
ASSET MANAGEMENT PROGRAM
Makes the knowledge and insight available for future decisions makers
INSIGHT
Reliant on key individuals to recall specific events or to know where information is stored

Thank You!

Dave Ennis, Department Head
Gary Shankle, Maintenance Supervisor
Mike Ramsburg, Superintendent
Tony Pellegrino, Department Head
Darrel (Buck) Buchanan, Superintendent
Tyler Muntz, Department Head
Amanda Radcliff, Chief

QUESTIONS?

Contact:

Tyler Muntz
Frederick County DPW
E-mail: tmuntz@frederickcountymd.gov

BIOGRAPHIES

Dave Ennis, PE

A registered professional engineer since 1986, Mr. Ennis has worked for Frederick County Public Works for almost 28 years in various positions from plan review to managing capital projects for buildings, parks and MS4 compliance.

During a major reorganization in 2012, his responsibilities transferred to the maintenance side of the operation, becoming responsible for the maintenance of over 170 County buildings. With a second reorganization the following year, the Office of Highway Operations was added to his job responsibilities. It was during this transition that he began to investigate the implementation of asset management to track and schedule maintenance and replacement of systems and components. When the County decided on a County wide, holistic approach to asset management in 2019, Mr. Ennis was part of the selection committee that evaluated various products on the market that ultimately led to the procurement of Cartegraph Asset Management in 2020. Mr. Ennis was involved with the phased implementation of Cartegraph for both Maintenance and Highway Operations.

Beth Schrayshuen, PE

As a Senior Project Manager at EA Engineering, Science, and Technology, Inc., PBC, Beth Schrayshuen is a Professional Engineer, International Society of Arboriculture Certified Arborist, and an Institute of Asset Management Certified Professional. She has over 15 years of experience in operations and support of utilities and has let numerous asset management projects.

Abstract

Frederick County Implementation of Cartegraph

List brief overview of presentation in bulletized format

- Frederick County purchased Cartegraph in August 2020 for the management and tracking of work against County owned assets. By July 2022, 4 divisions and 350 users were tracking work on 133 different asset types that covered over 270,000 assets owned by the County. This presentation will focus on the Division of Public's Work successful implementation and how this tool has helped streamline internal and regulatory reporting, its ability to track constituent requests, broken down by Facility or Highways Districts, the Division's responses, the swift distribution of interdepartmental requests, and the opportunities for growth and engagement with the next generation of Public Work employees.

1.0 PDH