

# **UC1319 - Sharing Telecommunication Maps throughout the Company with Portal for ArcGIS**

Edward Gause

# Edward Gause, GISP



- Worked at HTC for 17 years!
- Started in Programming and moved up to Director of Information Services.
- In charge of Engineering Application Development, Database Administration and GIS Infrastructures and System Development





## Horry Telephone Cooperative



- **Founded in 1952**
- **HTC is the largest Telephone Cooperative in the US**
- **18<sup>th</sup> Largest Telephone Company**
- **HTC offers Telephone, Data, CATV, Home Security, Long Distance, Mobile Phone/Data Service, Computer Repair, and other advance telecommunication services.**
- **ILEC & CLEC**
- **Last Mile Carrier and Long Distance Carrier**



Where are we located?

**Like most companies, communication within the company is a problem.**

- **One of our goals for installing the Portal locally was to help with internal communication by being able to share maps.**
- **Another goal was to provide an easy way for users to find map content, and be able to put together their own maps with this content.**
- **Another requirement was we needed to have this sharing of map data be secured, so we wanted to install it locally rather than use the ArcGIS Online version.**



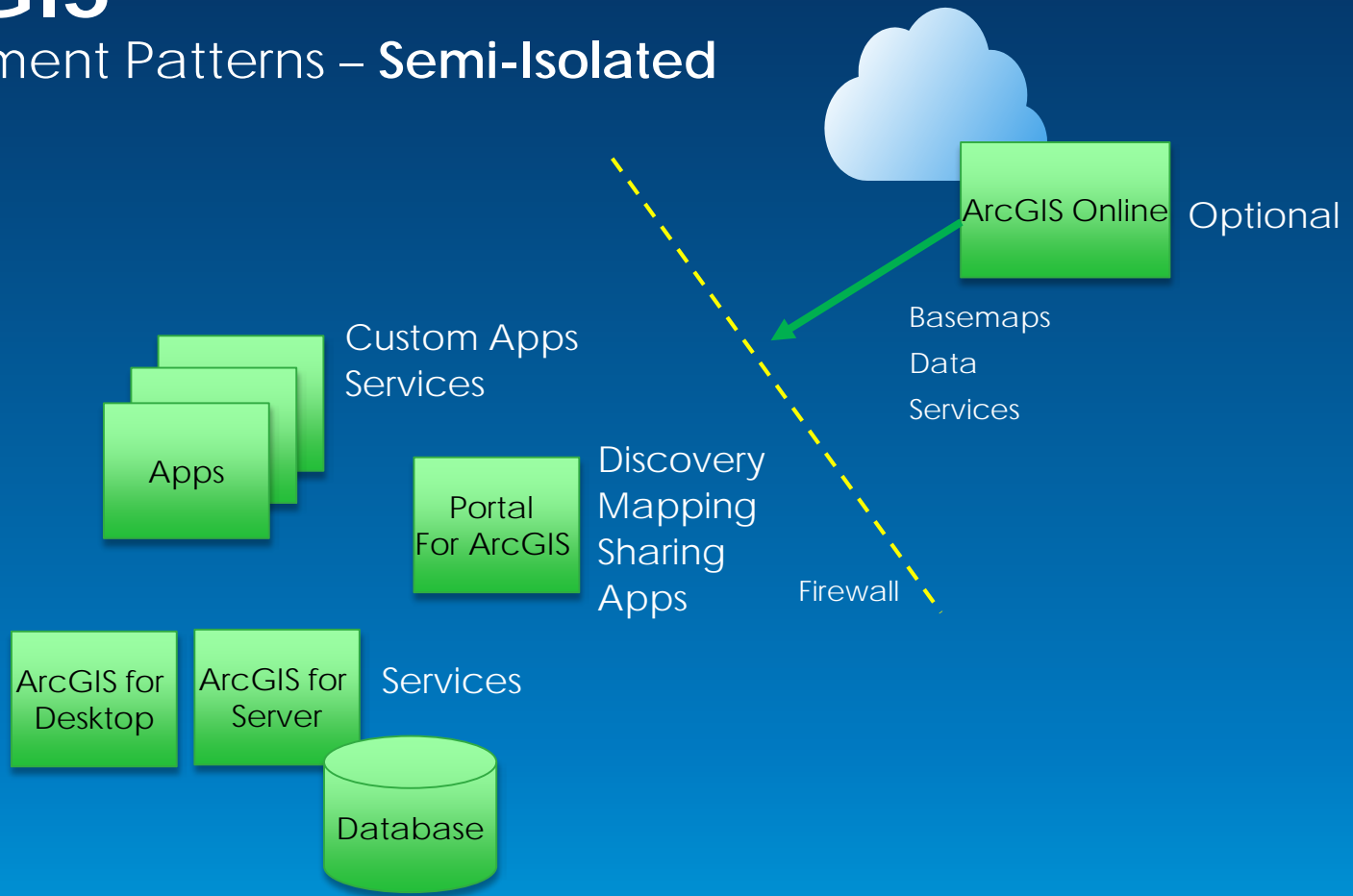
# What does our install look like?

- We have over 250 objects in the portal.
- Some point to live data sources, others point to a static source that was upload at a given point of time.
- We have a count of 61 users.
- We have 15 user groups setup currently. Examples: Business Development, Door to Door Sales, Chief Executives, Emergency Operation Center, ...



# ArcGIS

## Deployment Patterns – Semi-Isolated



*...Supporting data isolation with optional cloud data and service access*





# ArcGIS Portal

Bad Cable Footage Basic Viewer

SO History 3 Months Operation View

SRSCaseOperationView

Cellular Market Area

Welcome to HTC ArcGIS Portal.



# HTC Portal for ArcGIS Featured Content

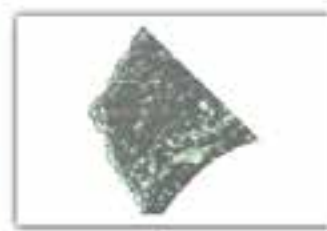
Maps Web Apps Mobile Apps



QueryStandard



Customer Services



ParcelService



Towers



HTCCustomerServicesParcels



Door2Door



Cellular Market Area



Door2Door Sales Basic Web Editing Map



Wireless Viewer-CMA

## Find...

- The most viewed items
- Recently added items
- Groups

# User Acceptance

- Currently our CEO uses the Portal for simple presentations where he needs to mark out a set of Counties, Census Blocks, Cellular Market Areas, and etc.
- He mainly does this when he is presenting to other companies and organizations, or when he presents to the Board and Executive Staff.
- He is not creating Map Content to share, but he is creating his own Maps for Presentations.
- Marketing, Information Services and the GIS department are creating content together that the CEO and other groups use.

# User Acceptance

- **Outside Plant Design and the GIS Department have created and maintain our Wireless, Fiber, Coax, and Copper Network Infrastructure in the GIS System. The Portal has a live feed of these networks.**



# HOME - QueryStandard

NEW M

Details
Add
Basemap
Save
Share
Print
Measure
Bookmarks

## Legend

### QueryStandard

#### Query Standard

##### Copper Plant

REMOTECENTRALOFFICE



CENTRALOFFICE



COPPERSERVICEPOINT



CROSSCONNECT



DLCADVANCED



LOADPOINT



PEDESTALCOPPER



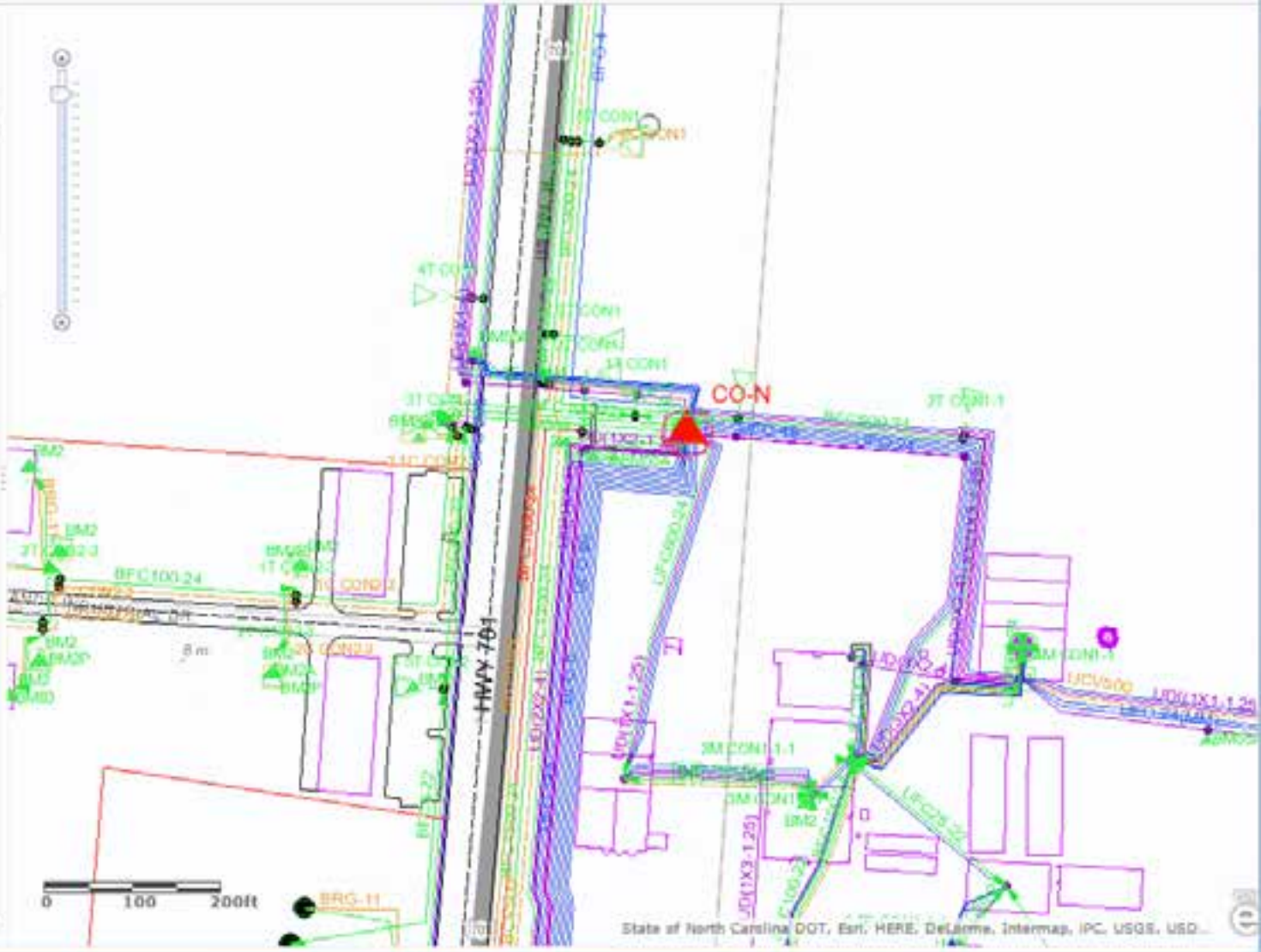
REPEATER



SPLICEBURIED



SPLICESTRAIGHT



# User Acceptance

- **Information Services has created several geoprocesses to build Feature Layers nightly that analyze data from our non-GIS systems and puts them into a form that can be mapped. The Portal has a live feed of this nightly data.**





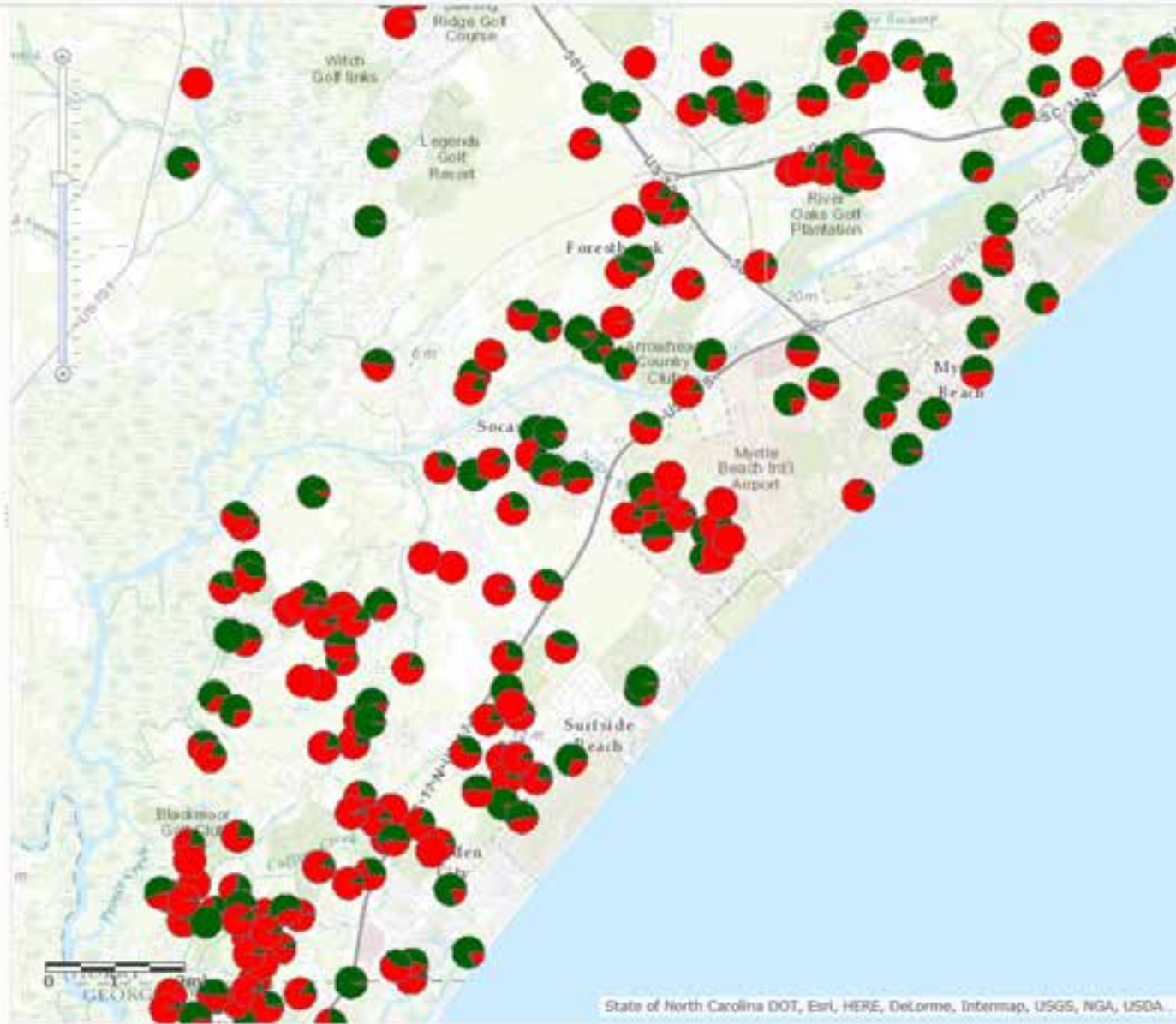
# Examples of nightly geoprocessed features

- **CATV Node Summary**
- **Customer Services**
- **Capacity Summary for Serving Stations, Remotes & Central Offices, Repeaters and Fiber Distribution Hubs.**
- **Internet Summary Statistics for DSL, Cable Modems and ONT's**
- **Subdivision Summary of Services**
- **Payment Location History**
- **Audit of distance between Premise Address and Serving Station (used to find data issues).**
- **Service Order Activity for the last 3 months**
- **Trouble Ticket Activity for the last 3 months**



Legend

- SplitterPortDepletion**
- FDHDepletion
- BVac
  - BVacOnGr
  - BAct
  - GVac
  - GVacOnGr
  - GAct





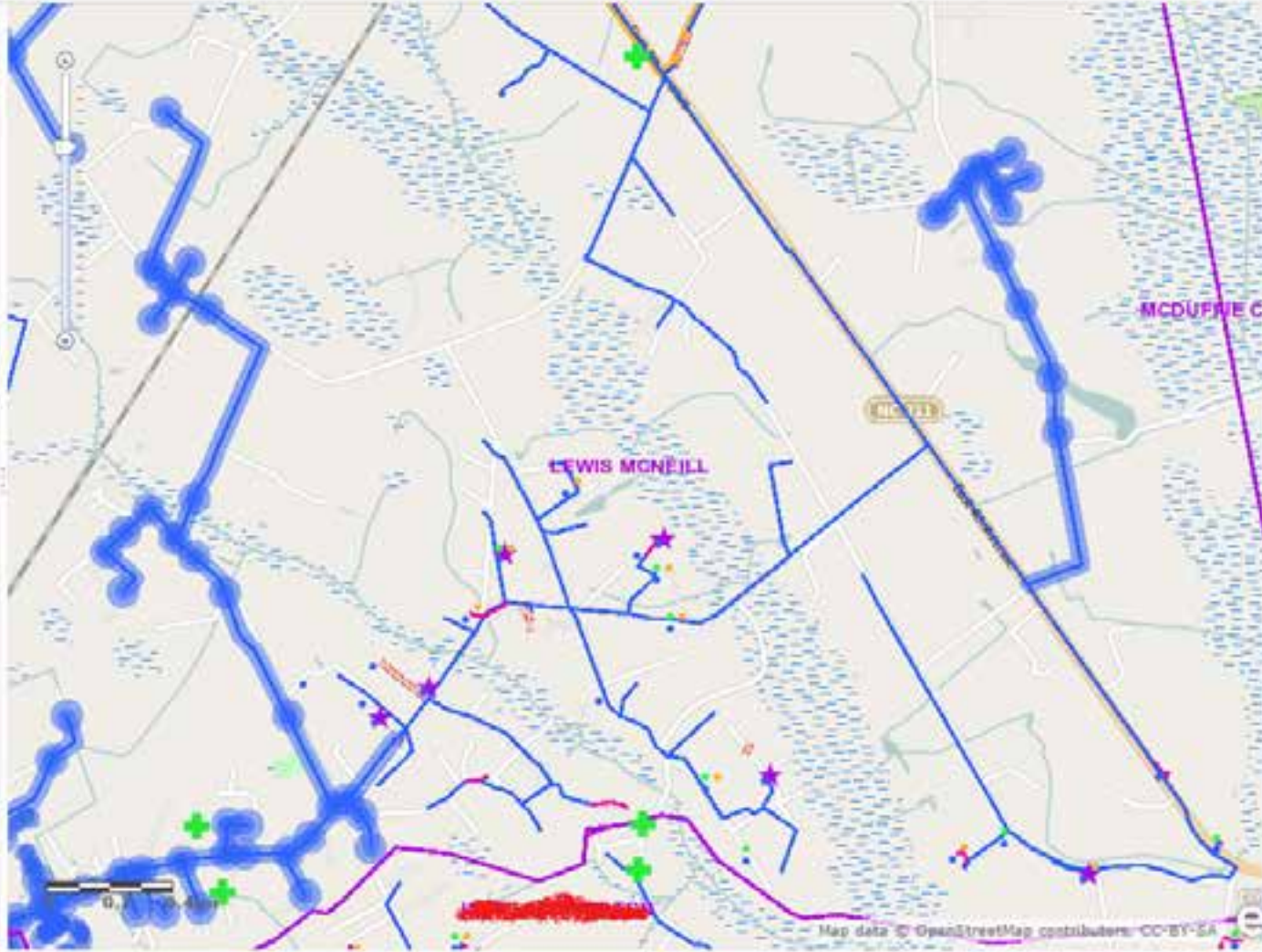
# User Acceptance

- Marketing, Outside Plant Design and our Engineering Clerks use the Portal maps to track progress of a new service area our company has.
- Marketing and Door to Door Sales Team uses maps Information Services has generated to know where to target their Sales Campaigns.



### Legend

- [Redacted]\_Map
  - BluewaveNC Customer
    - BluewaveNC Customer TELE
    - BluewaveNC Customer INET
    - BluewaveNC Customer CATV
  - New Install Service Order
  - Facility SRS
  - Service Area
  - Proposed and Future
    - Proposed and Future Splice Points
    - Proposed and Future Path
    - Proposed and Future Cable



# User Acceptance

- Professional Services used the Portal during their sales to a local community organization.
- They needed to show the organization:
  - Where the cameras would be placed
  - In what phase they would be placed
  - What is the coverage area of those cameras being places



# HOME - Camera View Angle

NEW MAP

Details Add Basemap Save Share Print Measure Bookmarks Find address or place

## Legend

Phase4CameraViewAngle - CameraView4



Phase3CameraViewAngle - CameraView3



Phase2CameraViewAngle - CameraView2



Phase1CameraViewAngle - CameraView1



# HTC needed to manage Active Work Orders

- So HTC needed a map that showed the active work orders.
- We needed the work order to indicated their state with a color.
- Several groups need to know where the work is located.  
(Customer Service Representatives, Engineering, Operations,  
etc...)





# HOME ▾ Active Work Orders Map

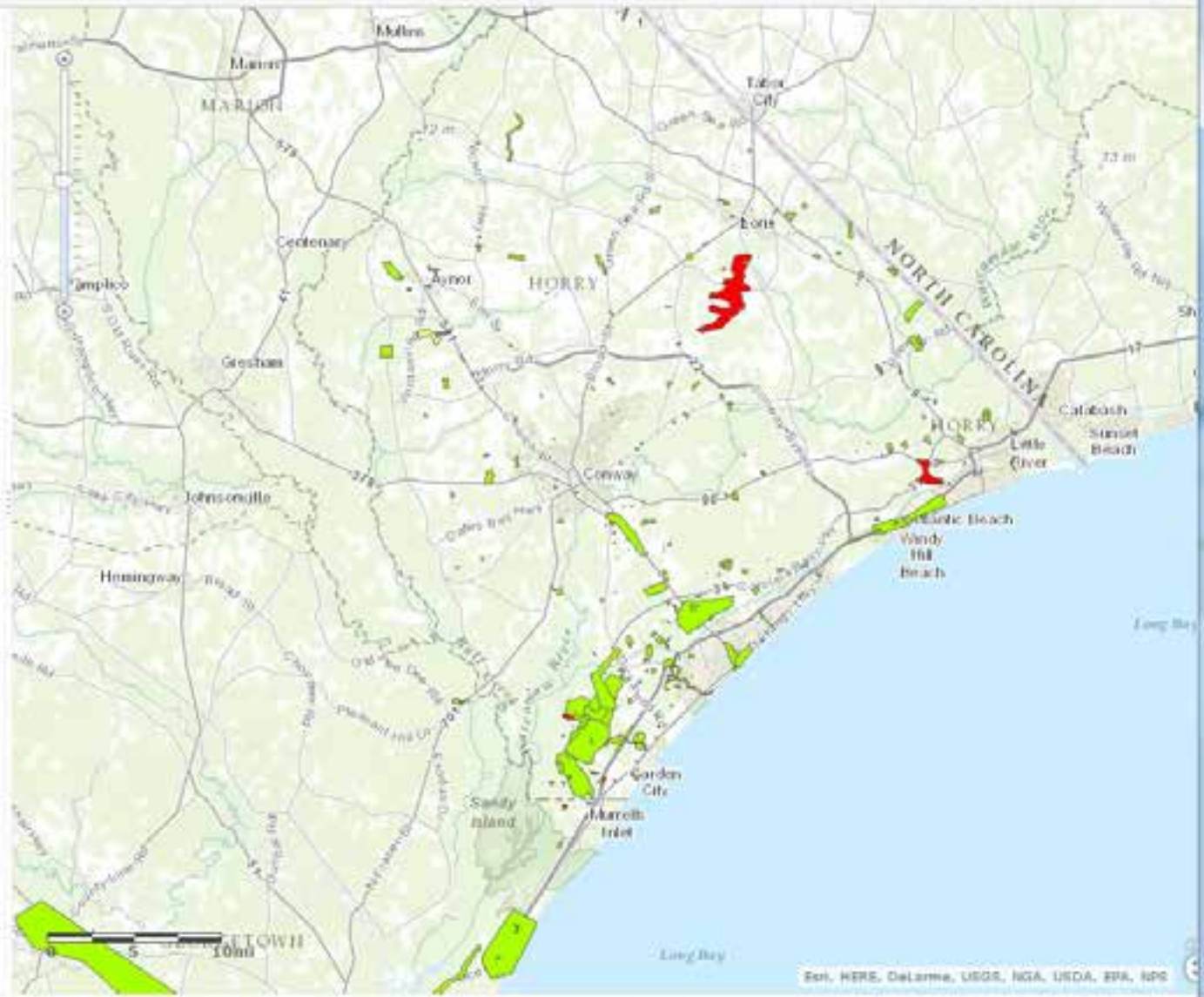
NEW

[Details] [Add ▾] [Basemap] [Save ▾] [Share] [Print] [Measure] [Bookmarks]

[Home Icon] [Layers Icon] [List Icon]

### Legend

- ActiveWorkOrders**
- SDE.WORKORDER
- <Null>
  - AS STAKED
  - CANCELLED
  - CONSTRUCTION
  - ENGINEERING
  - IN PROGRESS



# Need Maps to show how well HTC is doing!

- Needed a map with Service Order Activity.
- Needed to analyze the Hot Spots of that Activity.
- We also wanted to validate the Hot Spot Analysis, so we aggregated that Service Order Activity into Census Block Group Polygons.
- After comparing how well they matched, we felt confident enough to share this map out with Marketing and Sales.





# HOME ▾ SO Activity HotSpot (Not Normalized Against Pop) NEW MAP

[Details](#) [Add](#) [Basemap](#) [Save](#) [Share](#) [Print](#) [Measure](#) [Bookmarks](#)

[Layers](#) [Full Screen](#) [List](#)

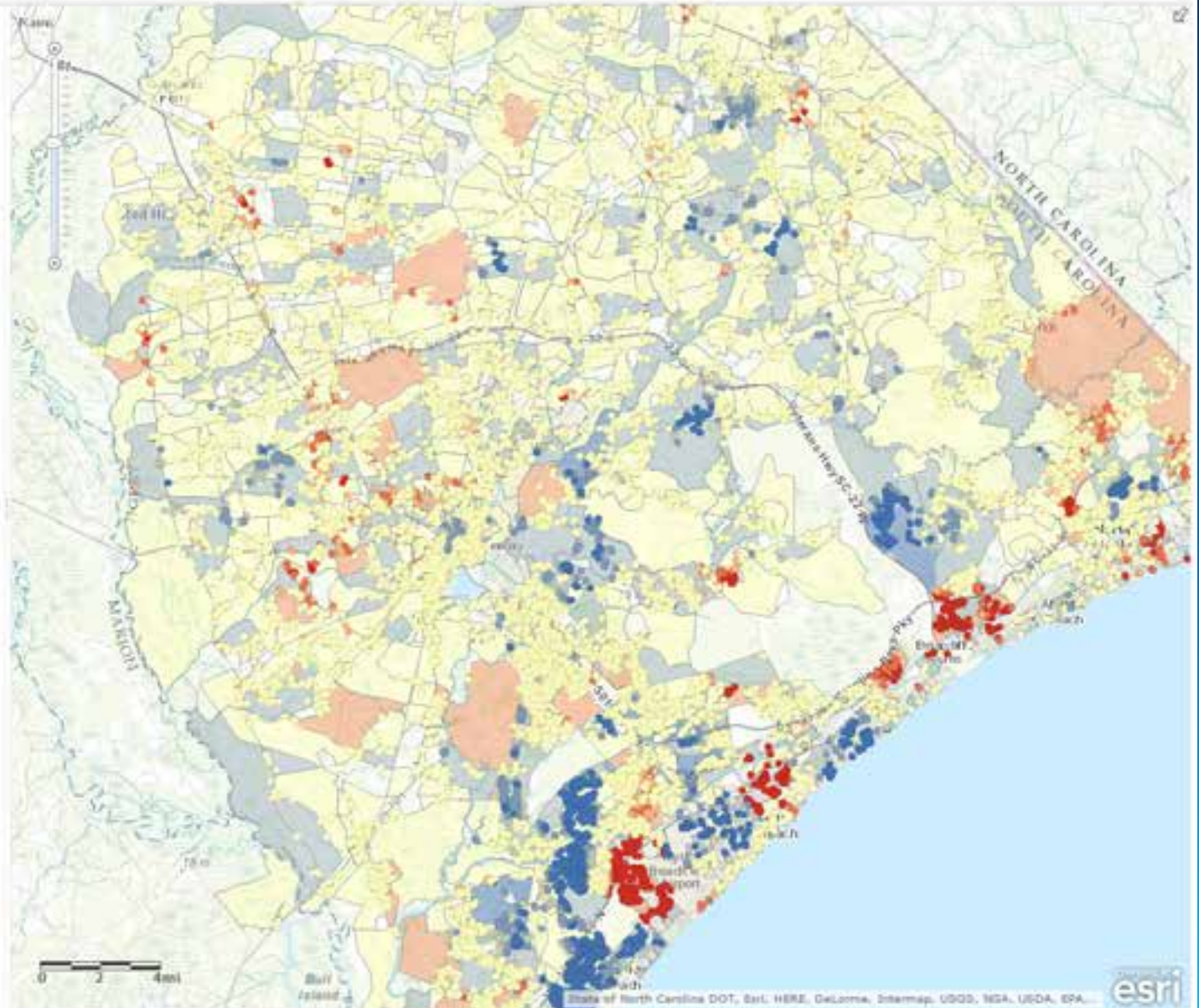
## Legend

### SOHistoryHotSpot201412

- SOHistoryHotSpot
- Cold Spot - 99% Confidence
  - Cold Spot - 95% Confidence
  - Cold Spot - 90% Confidence
  - Not Significant
  - Hot Spot - 90% Confidence
  - Hot Spot - 95% Confidence
  - Hot Spot - 99% Confidence

### SOCensusBlkNetGainMapTile

- SOCensusBlock
- -44 - -12
  - -11 - -2
  - -1 - 4
  - 5 - 38
  - 39 - 94



# How much does population density impact the Service Order Activity?

- So we needed to normalize the Service Order data by the Population.
- Since we used Census Block Groups, we have population as one of the data fields.
- Unlike the previous slide the number in the polygon will no longer represent actual orders, but will just indicate the Hot or Cold spots based off of the fact it was normalized against population.



# HOME - SO Activity Net Gain Normalized

NEW MAP

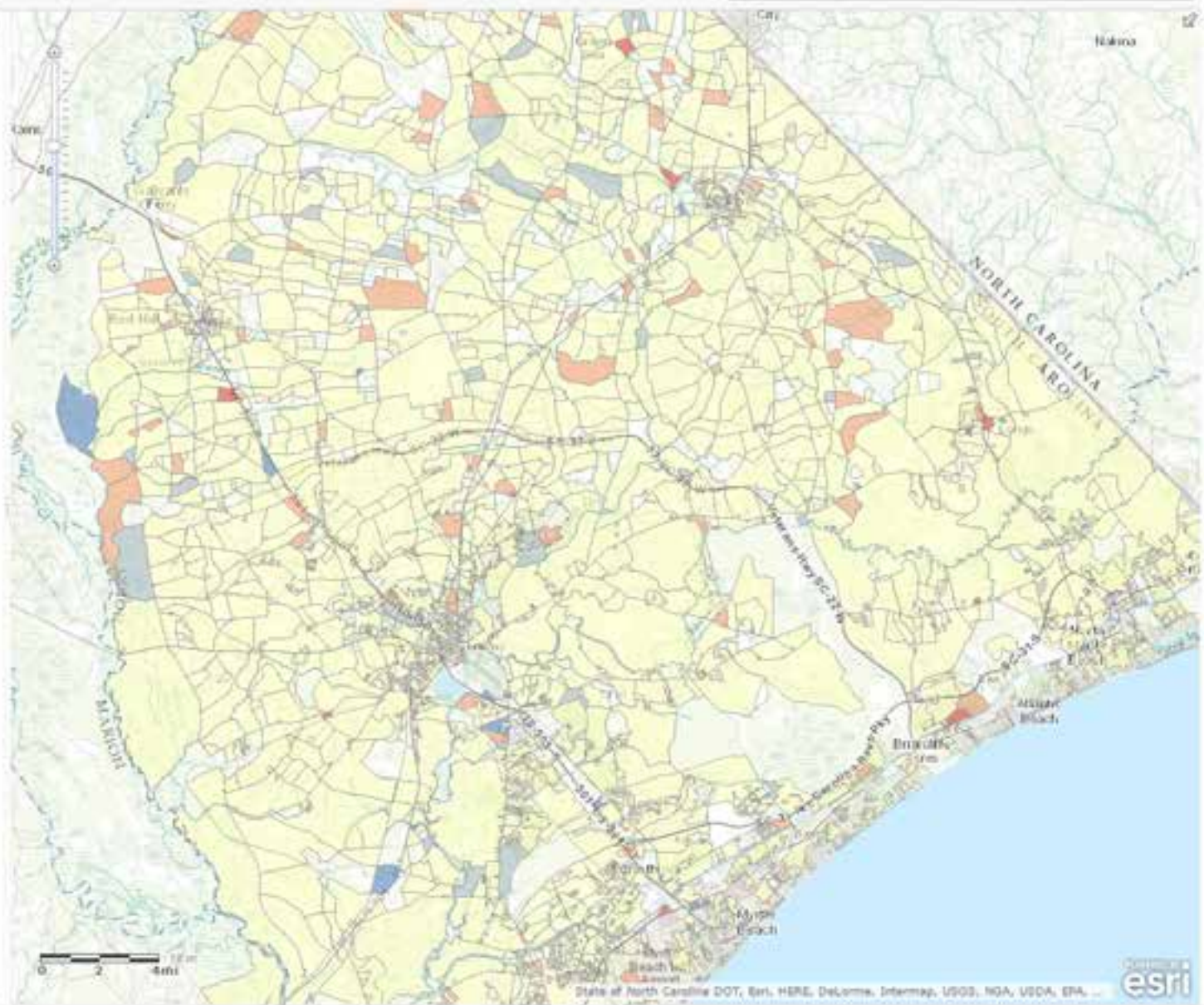
Details Add Basemap Save Share Print Measure Bookmarks Find address or place

Legend

**SONetGainNormalized**

SONetGainNormalized

Blue	-4.000 - -1.000
Light Blue	-0.9990 - -0.1333
Yellow	-0.1332 - 0.1111
Orange	0.1112 - 0.6667
Red	0.6668 - 4.000



## We are also using the Operation Dashboard!

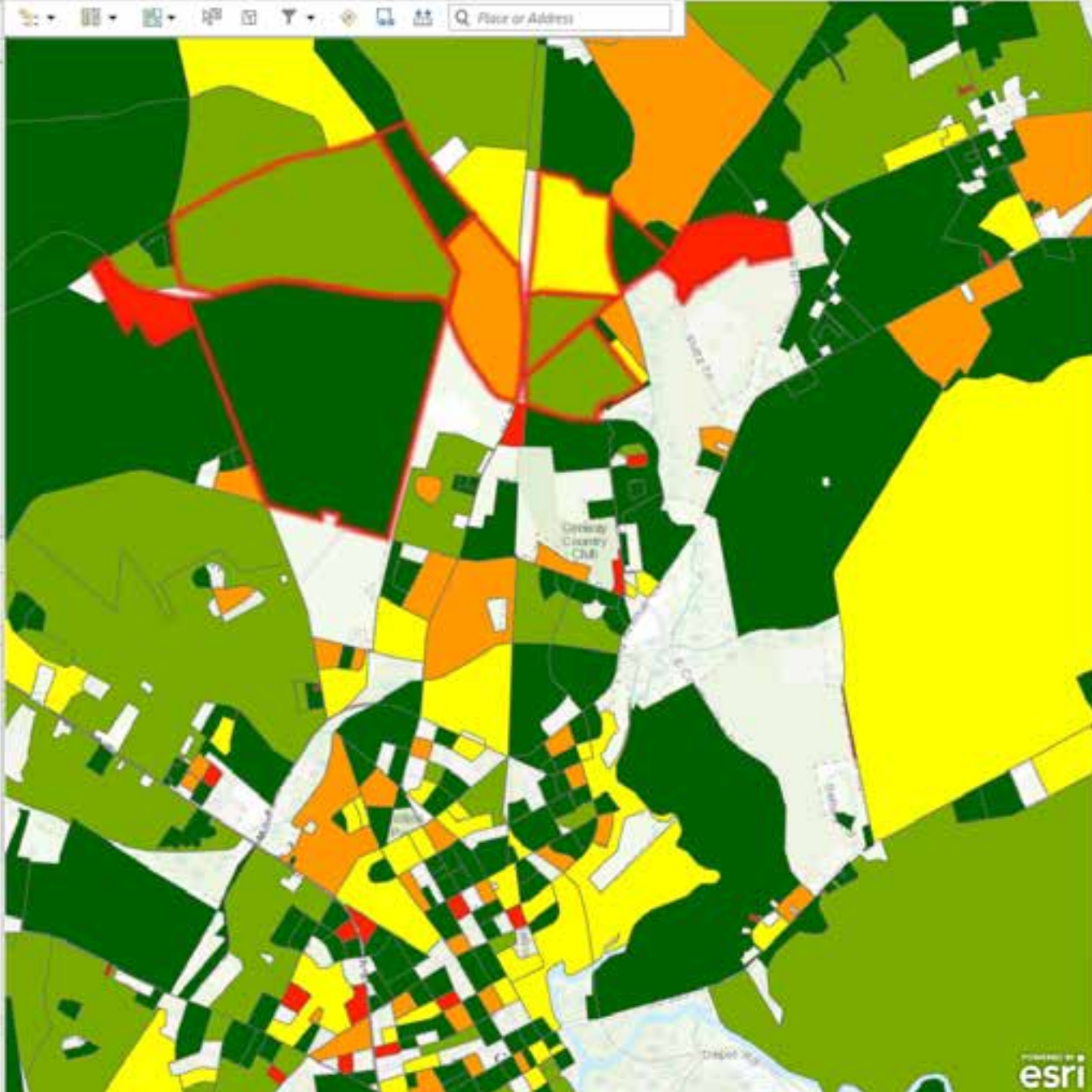
- It allowed us to compare overall performance against select areas.
- It does have limitations, which is why we aggregated our point data into polygons.
- Default limitation is it can only show 1000 records. This is adjustable to much larger numbers.
- Changing the default number of records can cause performance issues if you increase it to a large number.





SO Disconnect Percentage Legend

- 0.000 - 0.08511
- 0.08512 - 0.2462
- 0.2463 - 0.4348
- 0.4349 - 0.7500
- 0.7501 - 1.000

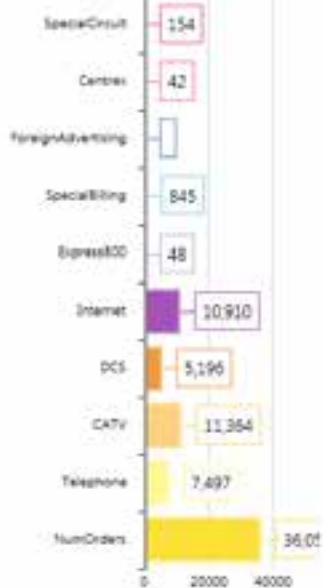


Selected Feature Details

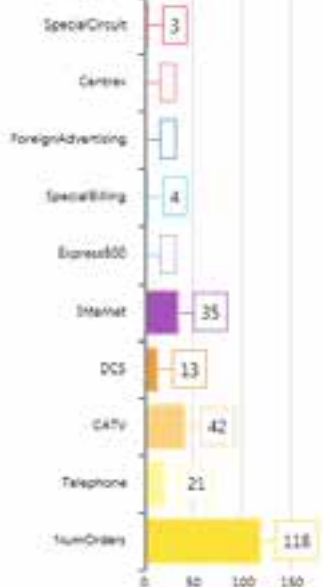
GIS.sde.SOHistoryByCensusBlock: Block 2084 < 1 of 10 >

GEOID	450510701012084
SUFFIX	
NAME	Block 2084
ALAND	292,322.00
AWATER	0.00
INTPTLAT	+33.8864279
INTPTLON	-79.0330834
NumOrders	2
NewInstall	0
Disconnect	2
Reinstall	0
Change	0
NumberChange	0
TransferOfService	0
FluctIn	0

All Service Types Bar Chart

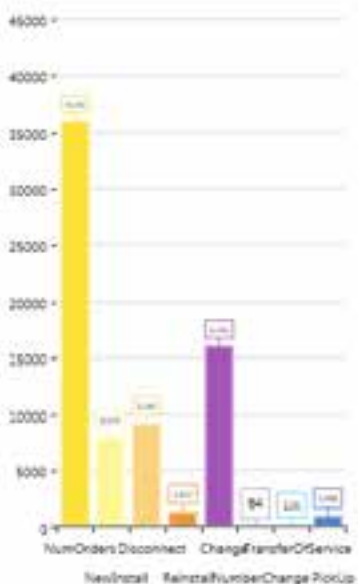


Selected Service Types Bar Chart

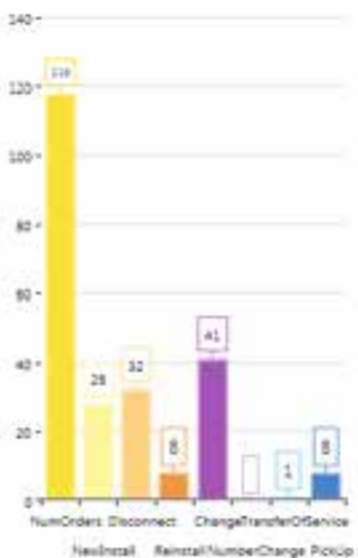




All Order Activity Bar Chart



Selected Order Activity Bar Chart



Grandy Country Club

Dragon Hill



# Portal for ArcGIS is Great!

- However there are still situations where we needed to build our own maps using the JavaScript API and ArcGIS Server.
- True GIS Power Users feel a little limited by the Portal Capabilities, but that is because they are use to all the power of ArcMap.
- Non-GIS Employees love the ease of Portal for ArcGIS and having access to all the map content.



# Lessons Learned

- To build a great GIS System whether on Portal or not requires getting all the right people together! For HTC that is the follow groups:
  - Information Services
  - Engineering GIS Digitizers: Staking and Plant Design
  - Marketing
  - County Governments



# Lessons Learned

- **Need to dedicate an employee to policing the Portal Site to make sure that the following is done:**
  - **Map/Data is current!**
  - **User Permissions are set correctly.**
  - **Keep the Home page with fresh examples.**
  - **Make sure there are good Icons for all the Maps and Applications.**



# Lessons Learned

- **Before installing Portal for ArcGIS you need to think, plan and document the following:**
  - **What Groups does your company need in order to share maps while keeping permissions controlled?**
  - **Who in your organization needs to have access, and what Groups should they have permission to see?**
  - **What content do you need to put on the Portal to empower users to build their own maps?**



# Questions

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