

GIS IN DISTRIBUTION UTILITIES

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President, Esri India



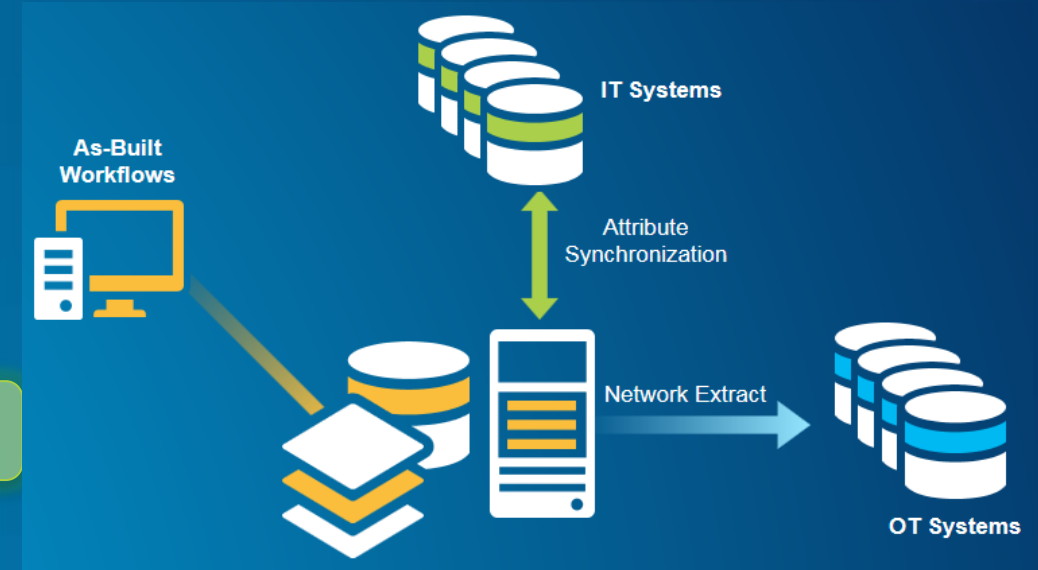
Esri's ArcGIS and ArcFM Software in Electric Utilities

S.No.	State Electric Utility	S.No.	State Electric Utility
1	Karnataka	13	J&K
2	Haryana	14	Jharkhand
3	Rajasthan	15	Himachal Pradesh
4	Uttar Pradesh	16	Sikkim
5	West Bengal	17	Assam
6	Gujarat	18	Manipur
7	Maharashtra	19	Meghalaya
8	Punjab	20	Mizoram
9	Madhya Pradesh	21	Nagaland
10	Andhra Pradesh	22	Sikkim
11	Tamil Nadu	23	Tripura
12	Uttarakhand	24	Odisha

S.No.	Private Utilities
1	BSES Yamuna Power
2	BSES Rajdhani Power
3	Reliance Energy
4	Essel

Current Status of GIS in Utility

System of Record – map, publish and view Asset Data





Utilities

Are Evolving

Undergoing a Massive
Digital Transformation

Renewables Integration

“Prosumers”

Grid “Edge” Automation (SG/IoT)

AMI / SCADA

Mobile Applications

Increasing need to understand the business.... geospatially

GIS Needs to Transform

Connecting People, Processes, Things and Data About Them

Improving Efficiency,
Collaboration and
Communication

*System of
Engagement*



*System of
Record*



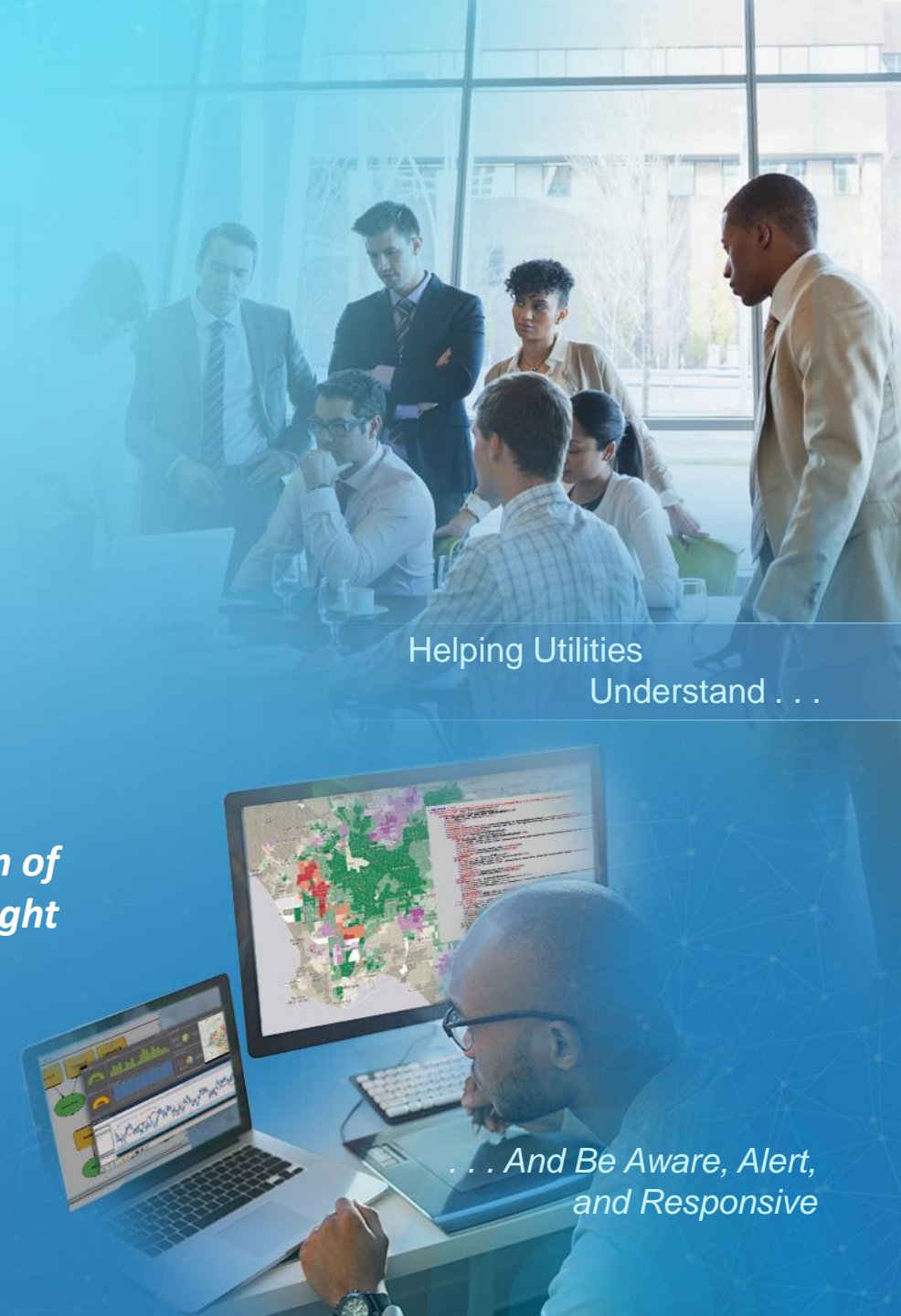
*System of
Insight*



Web GIS
Supports Multiple
Types of Systems

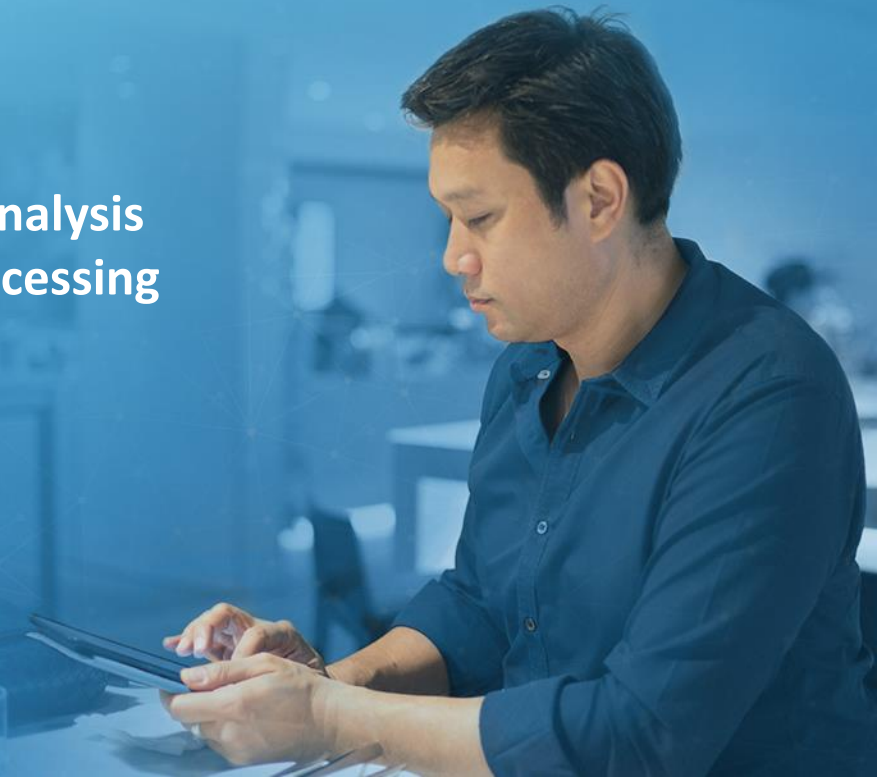
Helping Utilities
Understand . . .

. . . And Be Aware, Alert,
and Responsive

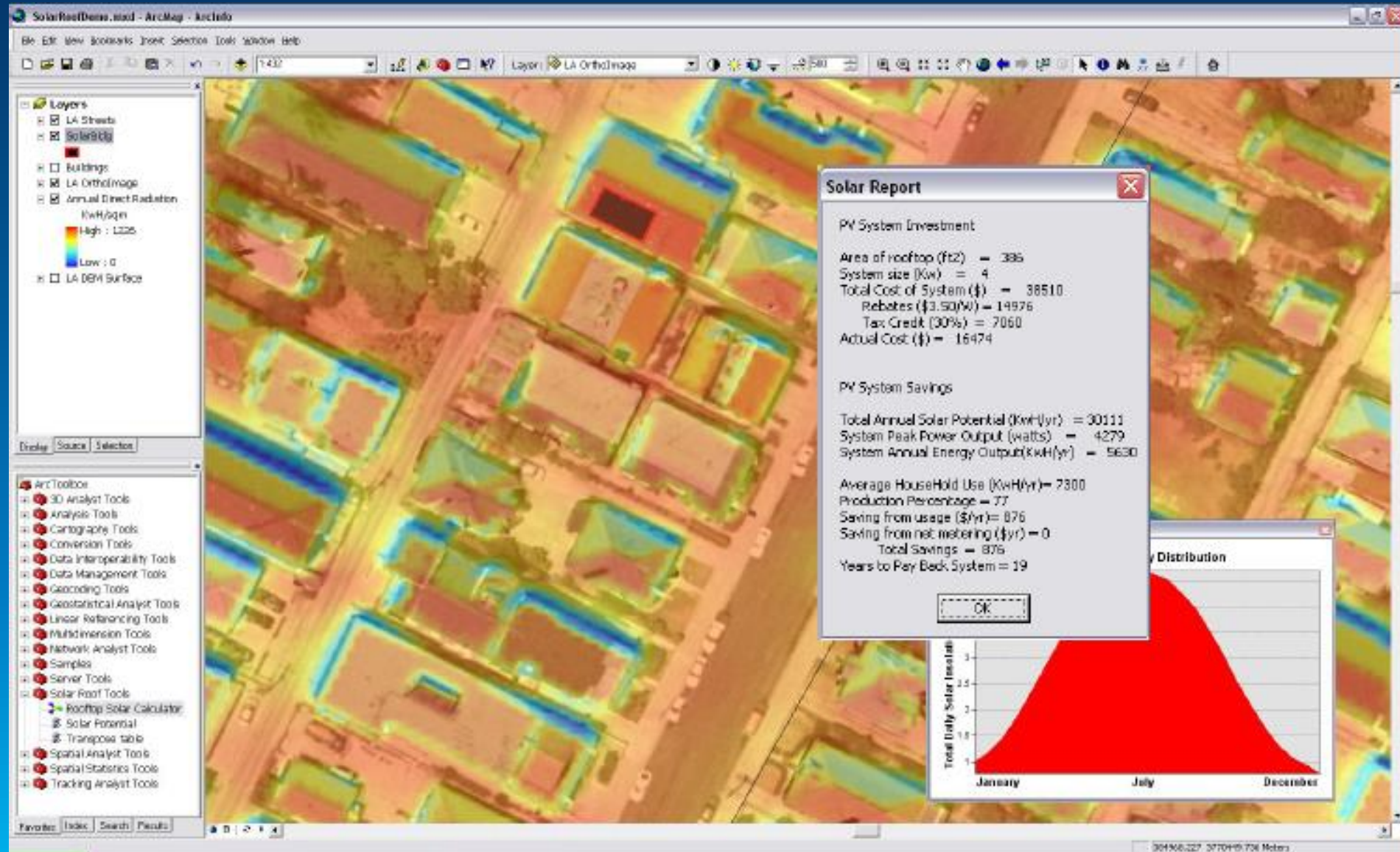


GIS needs to support Advanced Analytics and Visualization

Utilities are becoming 'Data Rich'



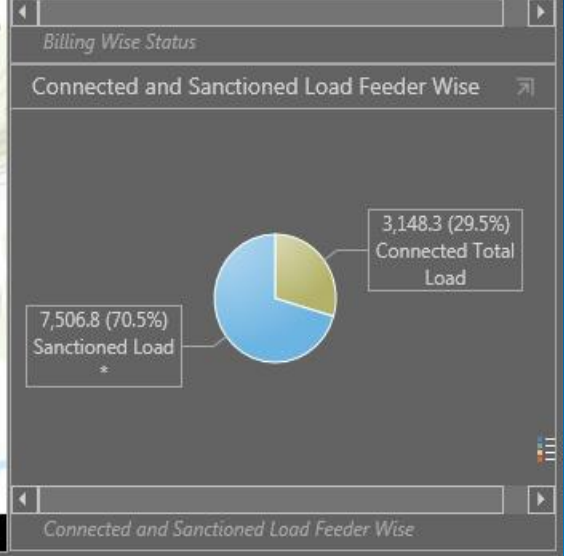
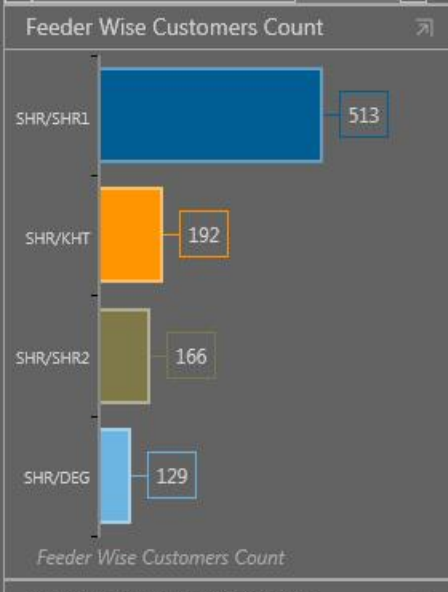
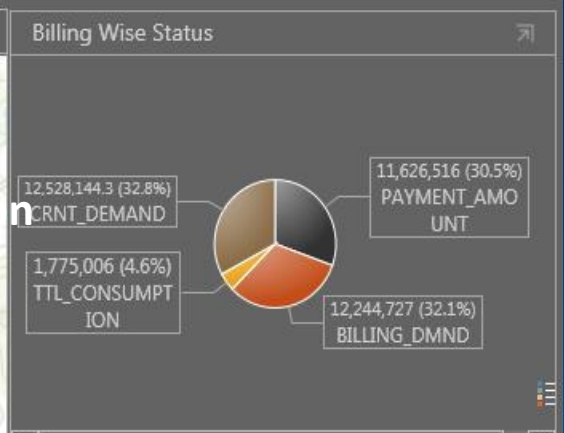
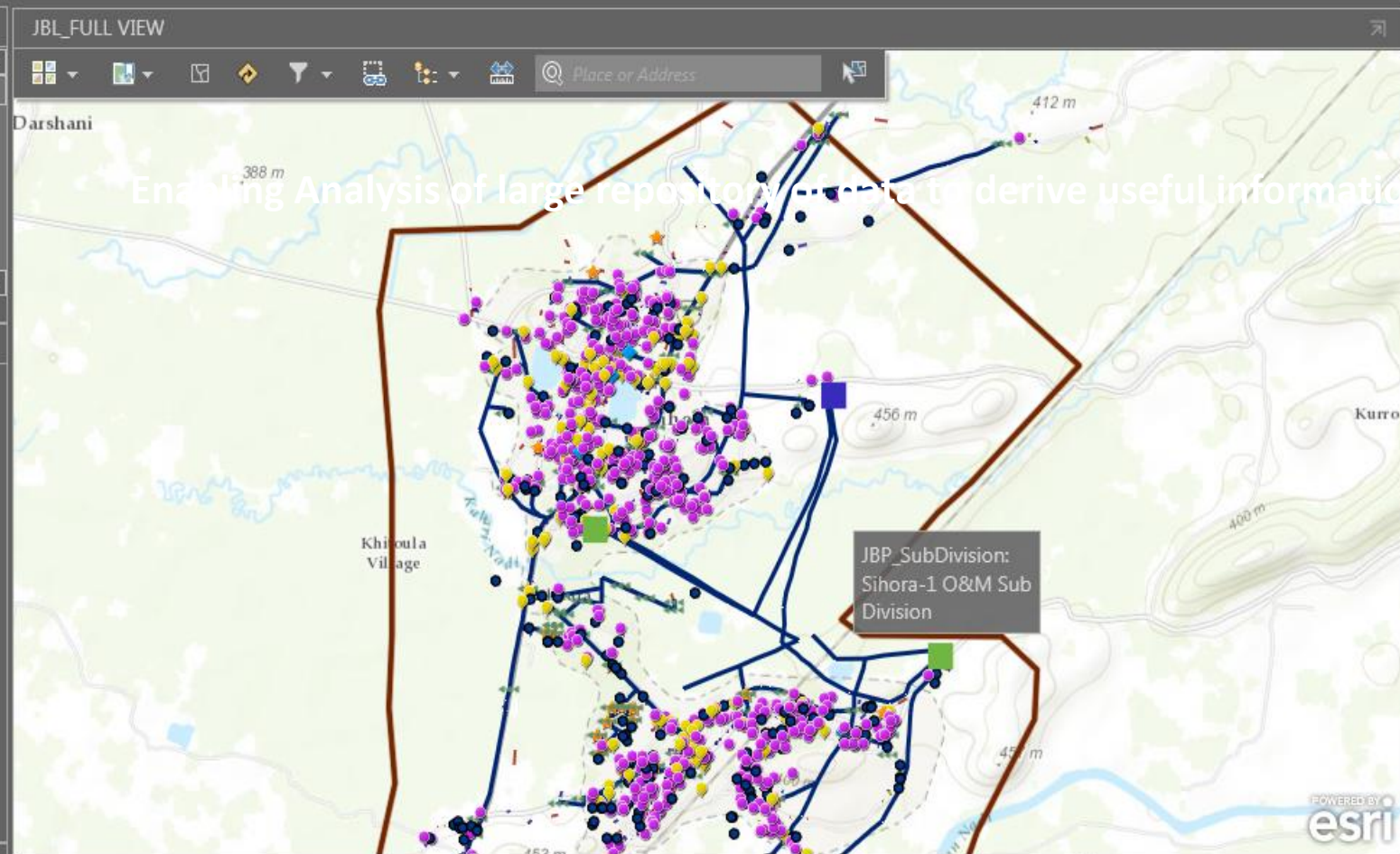
Renewable Potential



JBL_ELECTRIC_LEGEND

- <all other values>
- Distribution Station
- Grid SubStation
- SubStation

SP_Billing



DT wise search for Customers

FeederID Wise Customers

Transformer wise customers

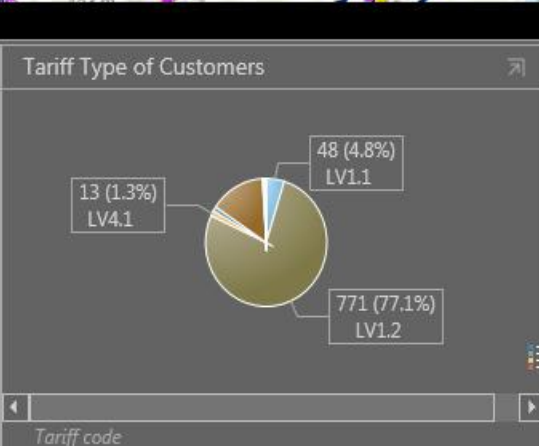
DT wise search for Customers

DTR Details

Filter

No Features

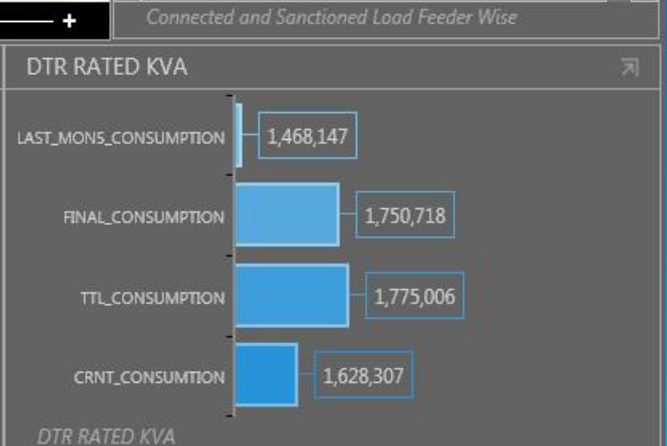
DTR Details



Sanctioned Load

7,506.80

Sanctioned Load





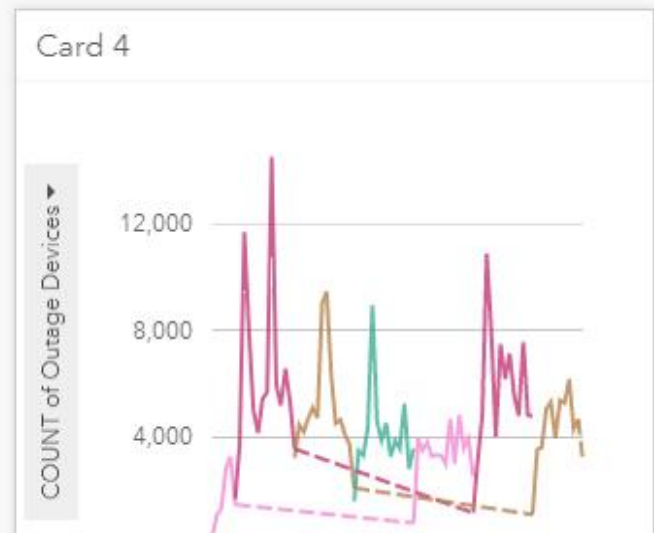
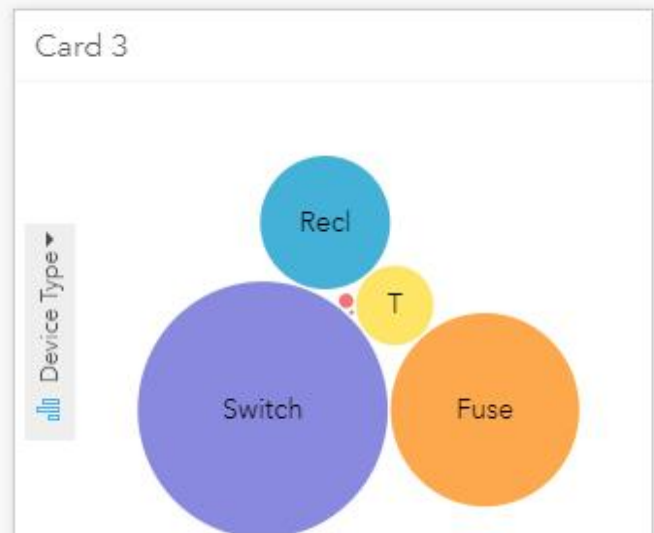
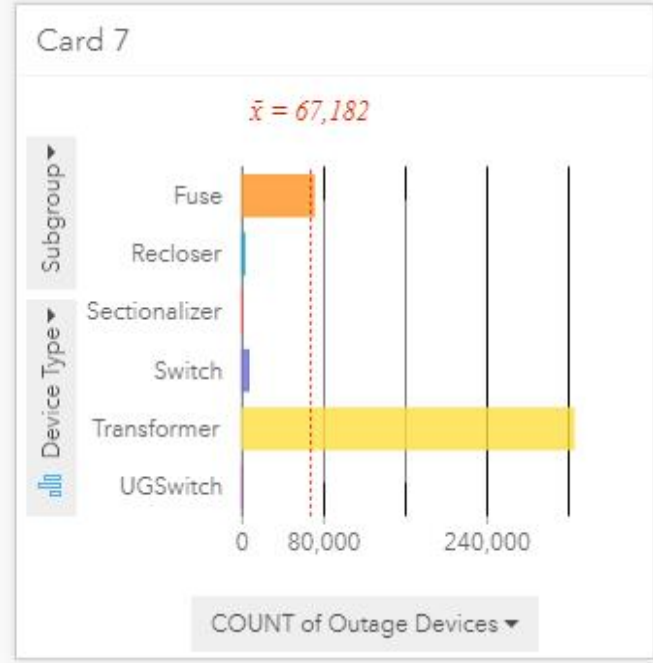
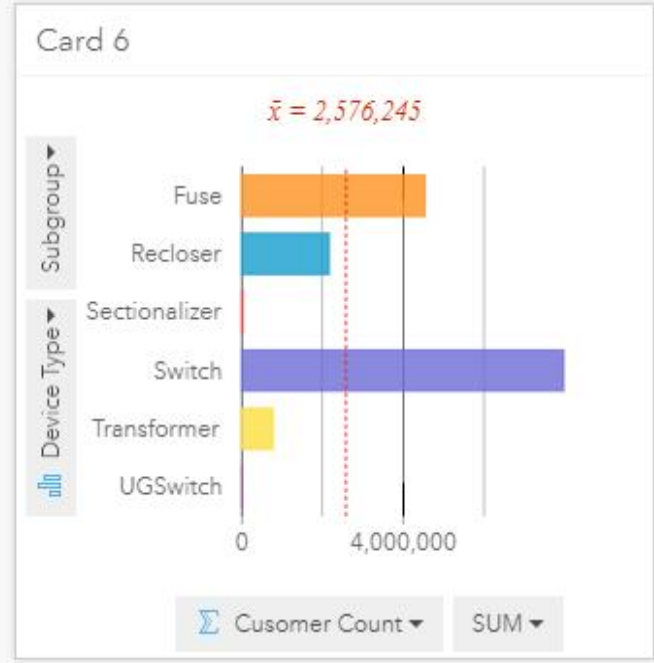
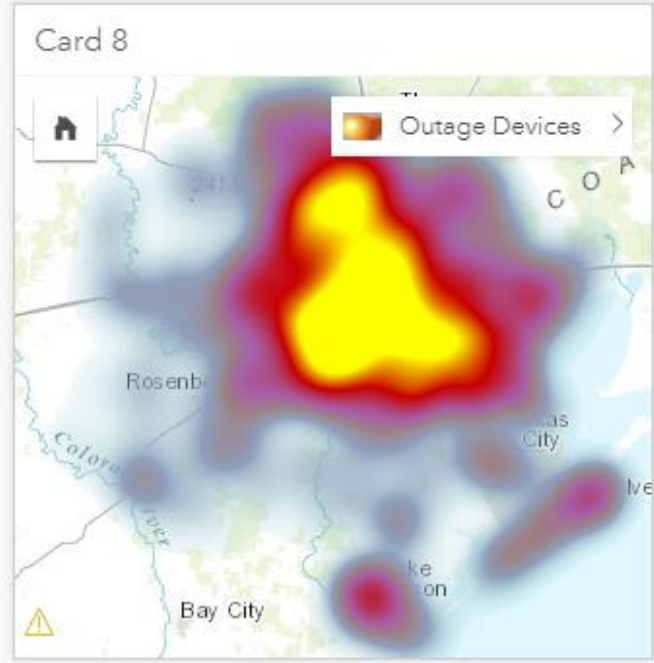
+ ADD DATA

Page 1 Output Page 1

Map Chart Table

- Card 2
- Card 3
- Card 6
- Card 7
- Outage Devices

- Location
- Outage ID
- Outage Start Time
- Outage End Time
- Outage Minutes
- Momentary Flag
- Customer Count
- Device ID
- Device Type
- OutageSummaries2s...



Card 2

Device Type	COUNT of Outage Devices
Transformer	324,797
Fuse	70,077
Switch	6,054
Recloser	1,869
Sectionalizer	176
Total 403,090	

System of Engagement



Making Mapping and GIS Available Across Organizations;
Central office, business units , districts, public and field

Enabling System of Engagement



IT
Historic Inspections
Work Management
Financial
EPR

OT
ADMS
AVL
Workforce
Management/Dispatch
AMI

Published and Registered
Web Services



Online Content & Services



Enterprise ArcGIS Platform

Cross Functional Utility GIS



Total AMI Meters 🗒

15,631

Total AMI Meters

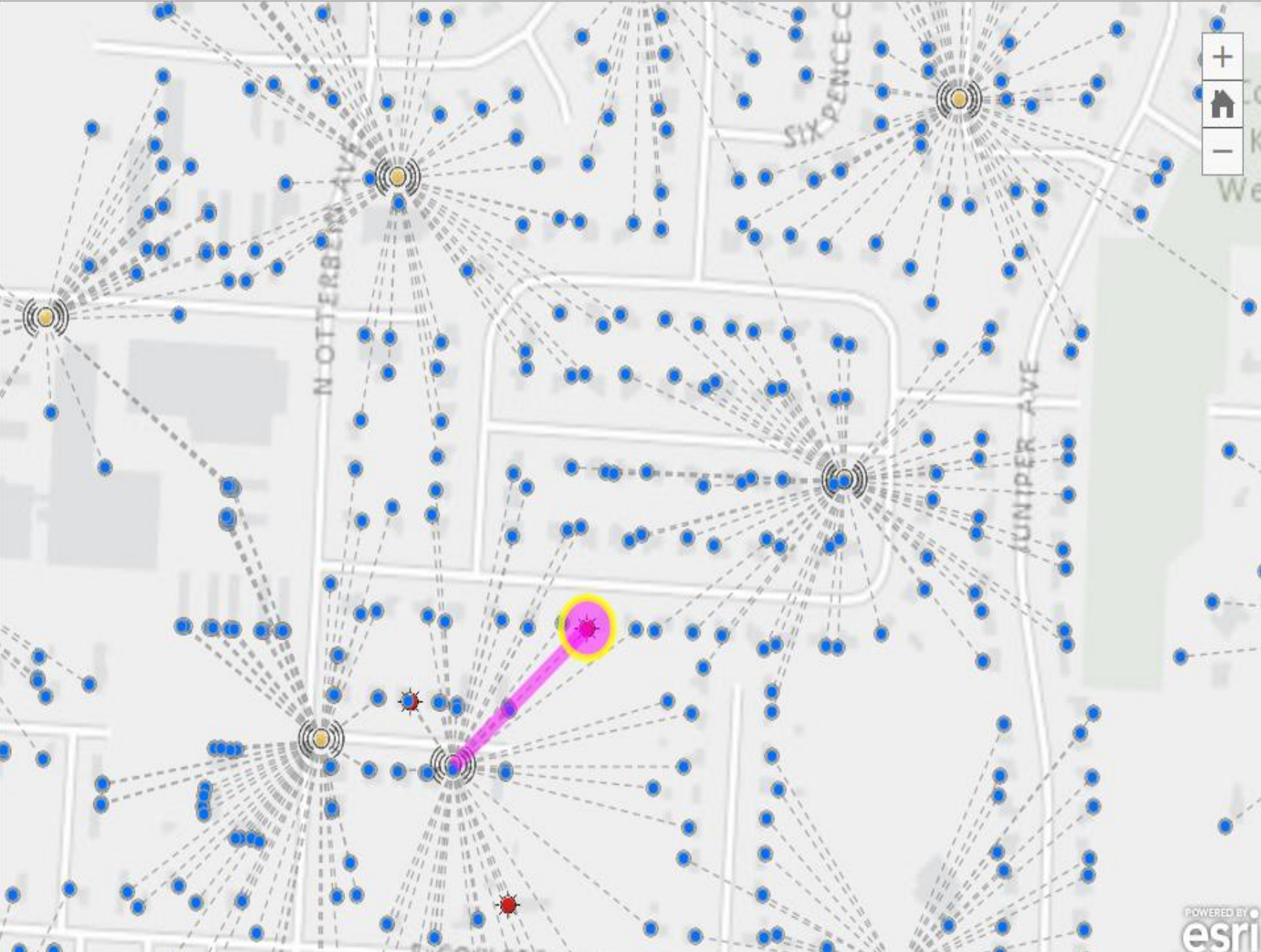
Recent In-Active 🗒

- Meter ID: Fdt5946H11448
Last Update: 11/29/2017, 10:33:55 AM
- Meter ID: Fdt14556H10186
Last Update: 11/29/2017, 10:33:55 AM

Weekly Avg. Transmissions 🗒



Weekly Avg. Transmissions



Map navigation controls:

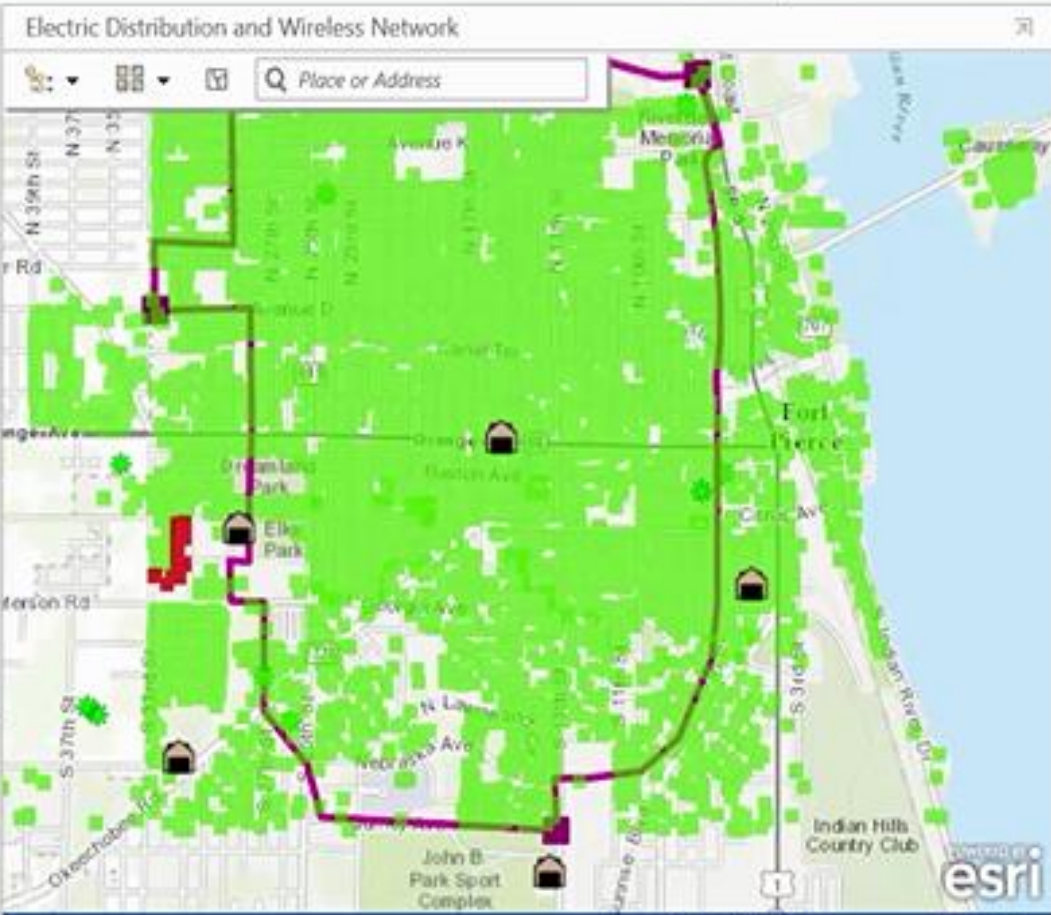
- +
- Home icon
-

Meters 44 Offline

Transformers 4 Offline

Substations 0 Offline

Cell Sites 0 Offline



Legend

- Garage Locations
- Crew Locations
- Network: Service Locations
 - Offline
 - Online
- Network: Substation
- Network: Transmission
 - Offline
 - Online
- Network: Cell Towers
 - Offline
 - Online

Critical Customers without Service

- Critical Customer at 708 S. 33rd Street
Service Location Type: **Commerical building**

Offline Service location Type

Detached single-unit housing	28
Attached Single-unit housing	4
Other	3
Movable dwelling	2
Attached Multi-unit housing	2
Semi-detached dwellings	2
Educational building	1
Government building	1
Commerical building	1

Field Management (Unassigned)

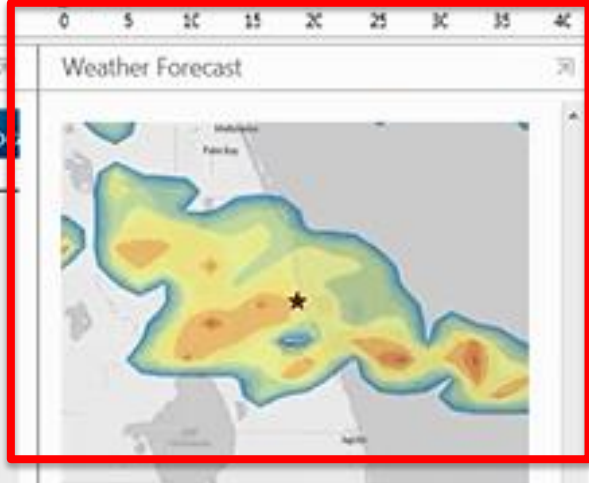
OBJECTID	Status	Assignment	Crew ID	Truck Load	Garage Location
1	None	None	John Smith	Unavailable	Orz
2	None	None	Pat Garcia	Unavailable	Qu
3	None	None	Sally Richards	Unavailable	Ne
4	None	None	Truck #475	Unavailable	Flo
6	None	None	Truck #67	Unavailable	Elk

Work Order Details

No Features

Field Management (Assigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load	Garage Location

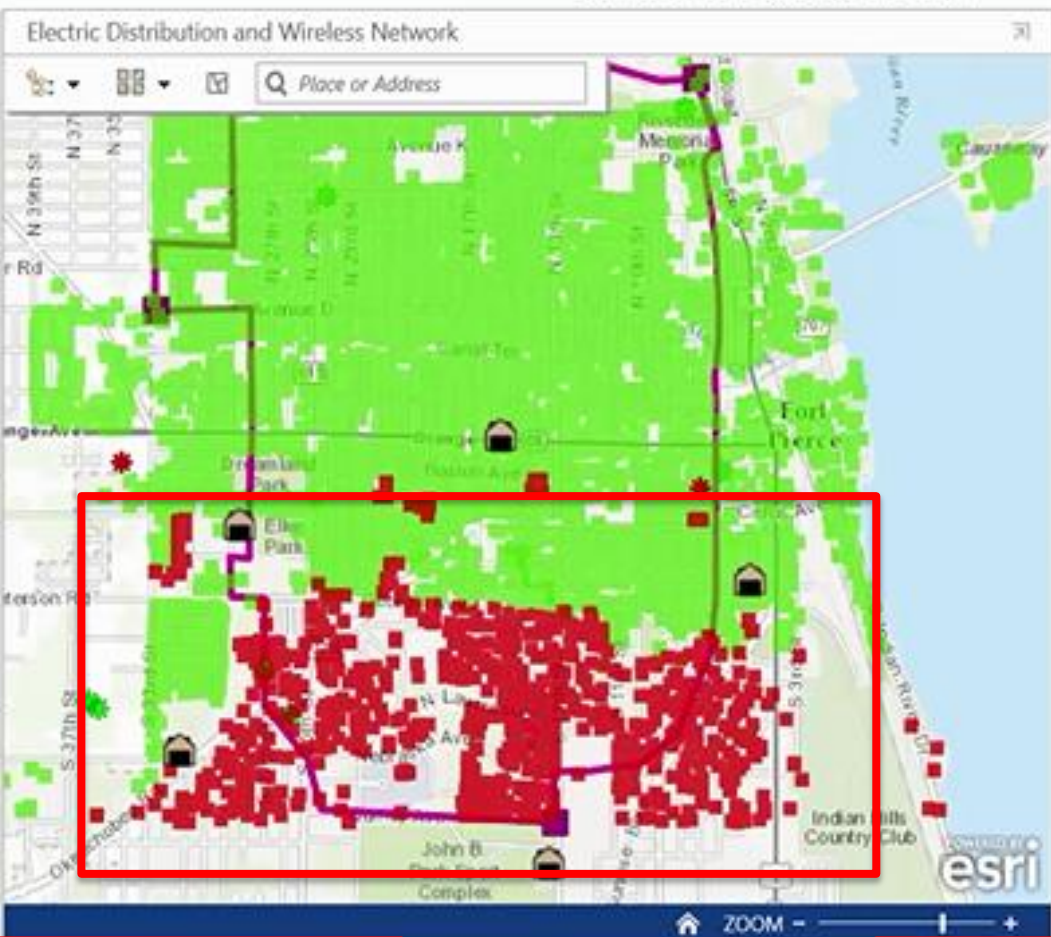


Meters: **2285 Offline**

Transformers: **460 Offline**

Substations: **1 Offline**

Cell Sites: **2 Offline**



Critical Customers without Service

- Critical Customer at 1600 S. 3rd Street
Service Location Type: **Detached single-unit housing**
- Critical Customer at 1600 S. 3rd Street
Service Location Type: **Detached single-unit housing**
- Critical Customer at 1700 S 23rd Street
Service Location Type: **Other**
- Critical Customer at 1700 S 23rd Street

Offline Service location Type

Detached single-unit housing	900
Other	26
Movable dwelling	15
Attached Multi-unit housing	14
Semi-detached dwellings	14
Commerical building	
Attached Single-unit housing	7
Educational building	7
Government building	5

Field Management (Unassigned)

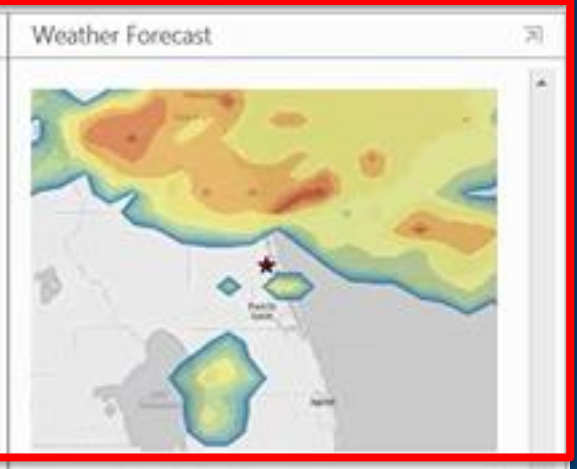
OBJECTID	Status	Assignment	Crew ID	Truck Load	Garage Location
1	None	None	John Smith	Unavailable	Orz
2	None	None	Pat Garcia	Unavailable	Qu
3	None	None	Sally Richards	Unavailable	Ne
4	None	None	Truck #475	Unavailable	Flo
6	None	None	Truck #67	Unavailable	Elk

Work Order Details

No Features

Field Management (Assigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load	Garage Location



Meters

✖ 2304 Offline

Transformers

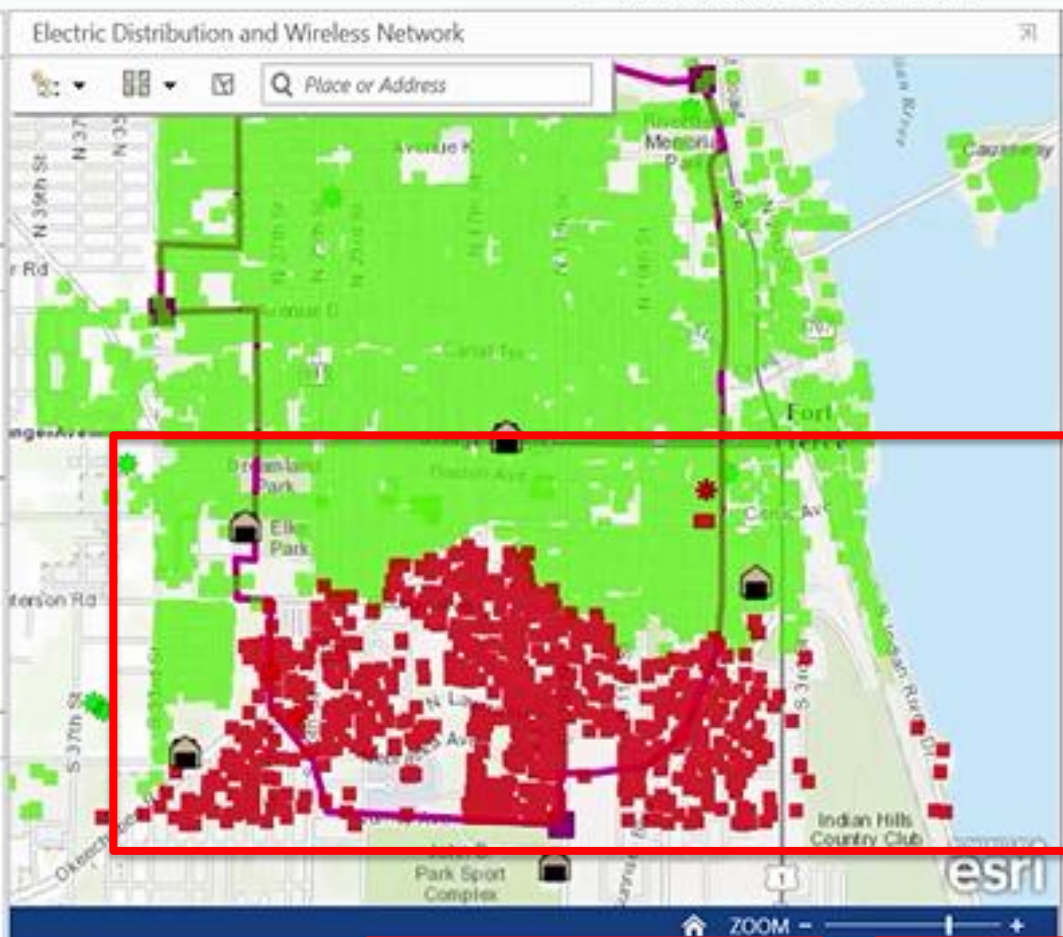
✖ 453 Offline

Substations

✖ 1 Offline

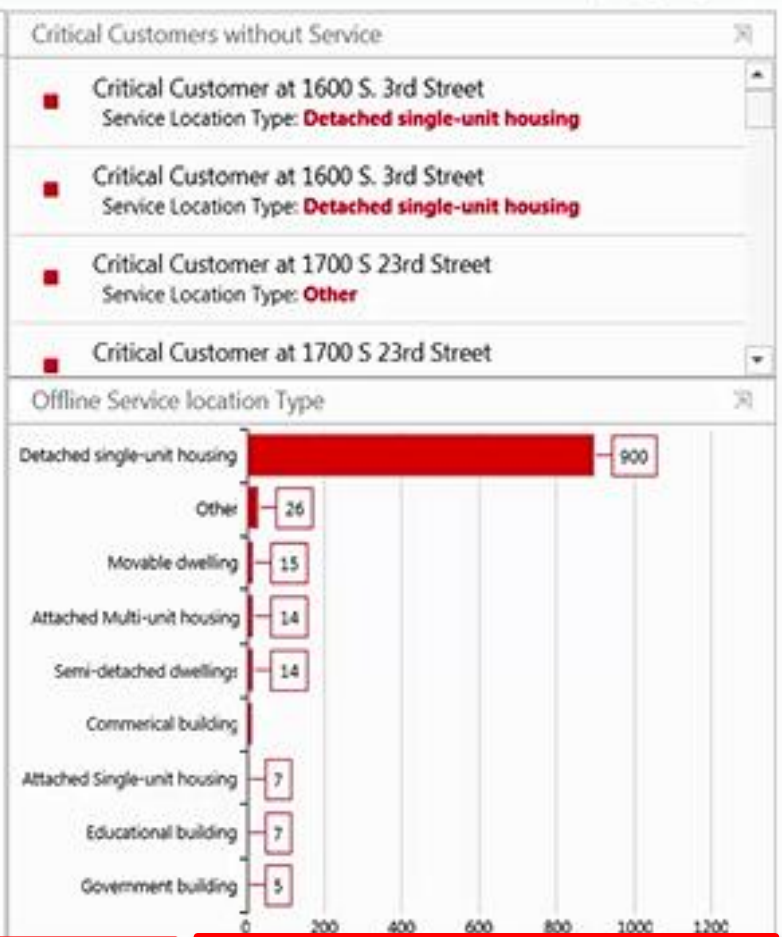
Cell Sites

✖ 3 Offline



Legend

- Garage Locations
- Crew Locations
- Network: Service Locations
 - Offline
 - Online
- Network: Substation
- Network: Transmission
- Network: Cell Towers
 - Offline
 - Online



Field Management (Unassigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load	Ge
1	None	None	John Smith	Unavailable	Or
2	None	None	Pat Garcia	Unavailable	Qu
3	None	None	Sally Richards	Unavailable	Ne
6	None	None	Truck #67	Unavailable	Elk

Work Order Details

Work Order for Truck #475

Work Order Status: Assigned

Stop Count: 2

Total Time (Minutes): 64.20

Total Service Time (Minutes): 60.00

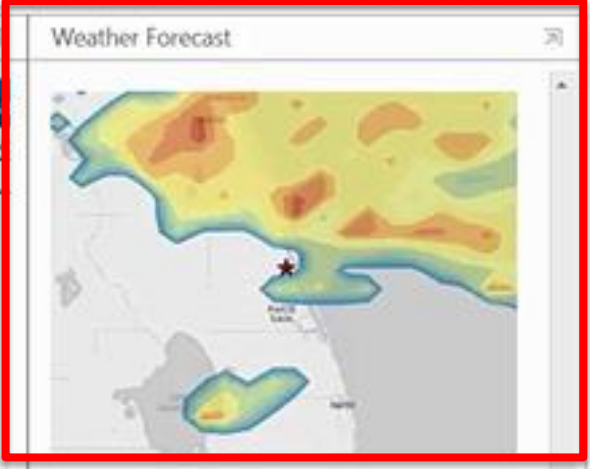
Total Travel Time (Minutes): 4.20

Total Miles: 1.11

Total Kilometers: 1.79

Field Management (Assigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load	Ge
4	In Route	Transformer	Truck #475	Unavailable	El

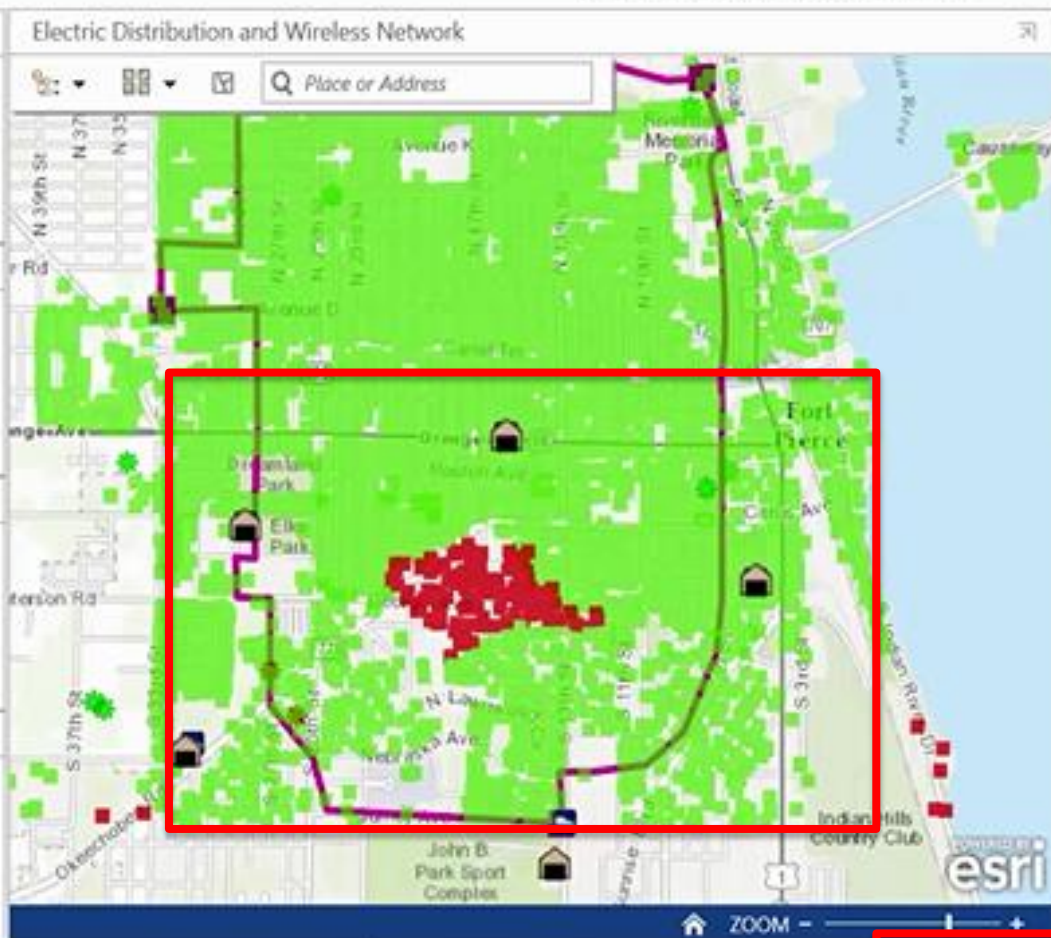


Meters 387 Offline

Transformers 0 Offline

Substations 0 Offline

Cell Sites 2 Offline



Legend

- Garage Locations
- Crew Locations
- Network: Service Locations
 - Offline
 - Online
- Network: Substation
- Network: Transmission
- Network: Cell Towers
 - Offline
 - Online

Critical Customers without Service

- Critical Customer at 900 S. Indian River Drive
Service Location Type: **Detached single-unit housing**
- Critical Customer at 0 S. Indian River Drive
Service Location Type: **Detached single-unit housing**

Offline Service location Type

Detached single-unit housing	355
Semi-detached dwelling	8
Attached Multi-unit housing	
Attached Single-unit housing	
Movable dwelling	
Commercial building	
Government building	3
Educational building	2
Other	1

Field Management (Unassigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load	Garage
1	None	None	John Smith	Unavailable	Orange
4	None	None	Truck #475	Unavailable	Florida
6	None	None	Truck #67	Unavailable	Elko

Work Order Details

Work Order for Pat Garcia < 1 of 2 >

Work Order Status: Assigned

Stop Count: 1

Total Time (Minutes): 30.63

Total Service Time (Minutes): 30.00

Total Travel Time (Minutes): 0.63

Total Miles: 0.25

Total Kilometers: 0.40

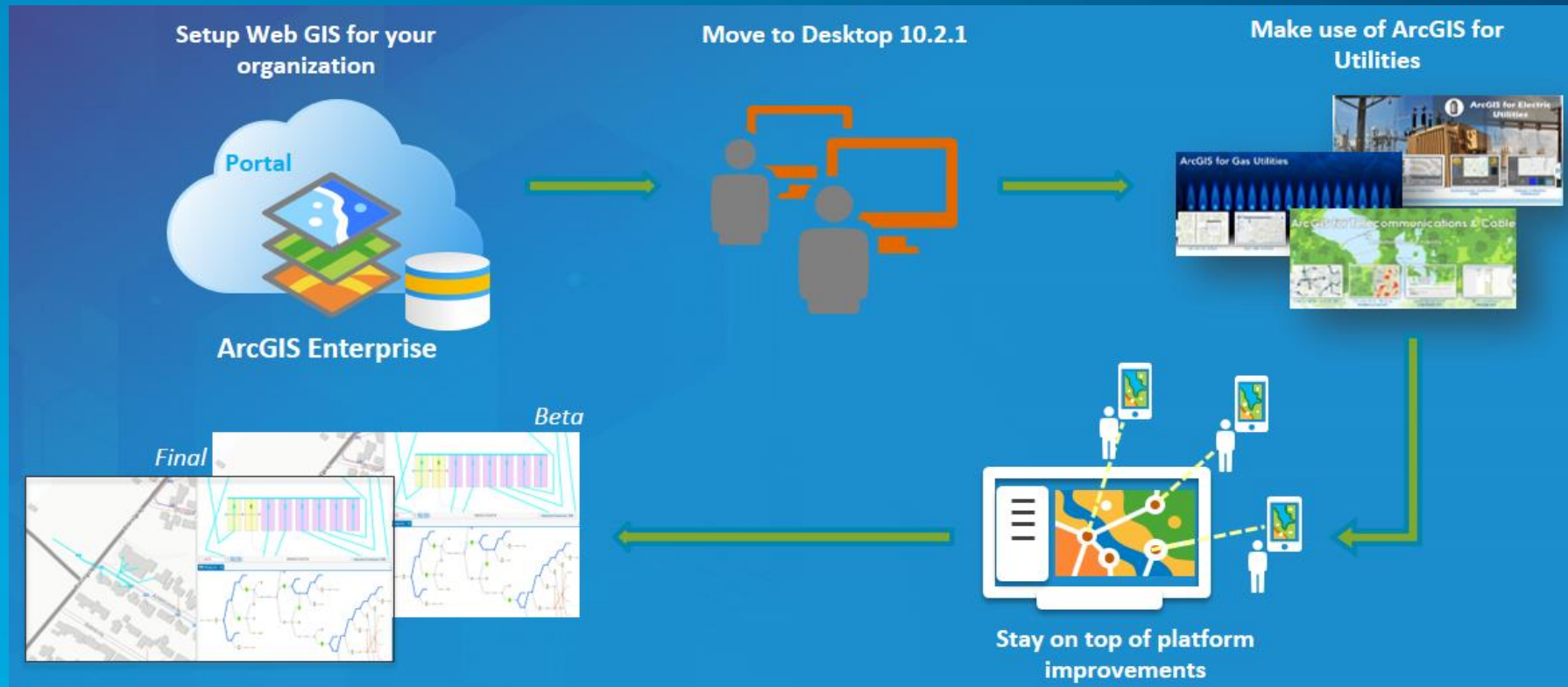
Field Management (Assigned)

OBJECTID	Status	Assignment	Crew ID	Truck Load
2	Arrived	Substation	Pat Garcia	Unavailable
3	In Route	Cell Tower	Sally Richards	Unavailable



Way Forward..... Towards a Smarter Utility

- Technology has evolved – We need to take advantage
 - Technology Updates – Legacy Product to Current
 - Base Map updates - Current
 - Utility Asset update – LT/HT/Poles/Transformers etc.,
 - Application updates – WebADF / Silverlight to JS – HTML5



Thank You!



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