

# Lessons Learned from a Large Utility Network Implementation

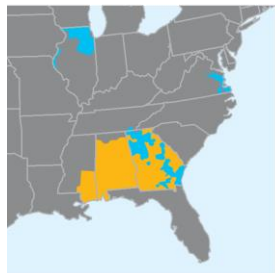
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Southern Company*

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*CTO, SSP Innovations*



# Southern Company Background

# We provide clean, safe, reliable, affordable energy and customized solutions



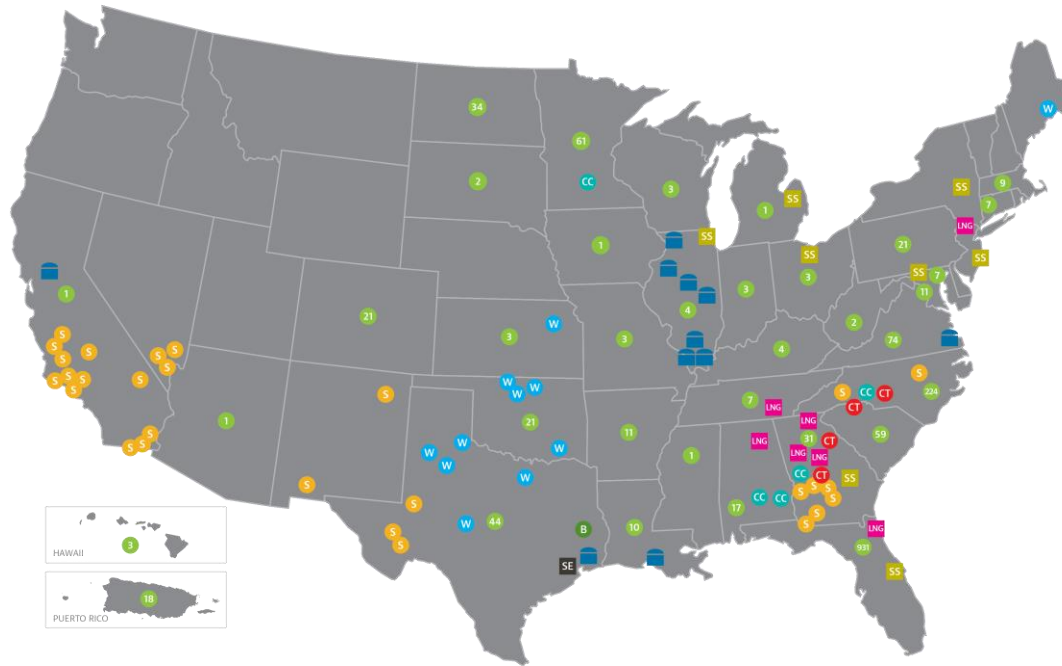
Service territories

- Electric
- Gas



Gas pipelines

- Southern Natural Gas
- Southern Company Gas
- Pipeline projects



### Southern Power

- Combined-cycle facility<sup>1</sup>
- Peaking facility
- Biomass facility
- Solar facility
- Wind facility

### Southern Company Gas

- LNG facilities
- Sequent Energy Management
- SouthStar
- Natural gas storage

### PowerSecure

- # Owned and managed sites per state

<sup>1</sup>In November 2018, Southern Power agreed to sell its combined-cycle facility in Mankato, Minnesota.

Capabilities in  
**50 States**

**7**  
Electric & Natural  
Gas Utilities

**9 Million**  
Customers

Approximately  
**29,000**  
Employees

Approximately  
**44,000 MW**  
of Generating Capacity



# Major Subsidiaries



<b>Alabama Power</b>	1.4 million electric utility customers
<b>Georgia Power</b>	2.5 million electric utility customers
<b>Mississippi Power</b>	188,000 electric utility customers
<b>Southern Power</b>	12,800 MW of wholesale solar, wind, biomass and natural gas in 11 states
<b>PowerSecure</b>	A national leader in distributed infrastructure technologies doing business in 32 states
<b>Southern Nuclear</b>	An innovative leader among the nation's nuclear energy industry
<b>Southern Linc</b>	Wireless communications service

## Southern Company Gas

4.2 million natural gas distribution customers in 4 states, wholesale and retail energy businesses and gas storage facilities across the U.S.

- Atlanta Gas Light (GA)
- Chattanooga Gas (TN)
- Nicor Gas (IL)
- Virginia Natural Gas (VA)

## GIS Current State

Operational demands have begun to outpace our current technology. We lack sustainable solutions to the following challenges:

- Unified methodology for engineering and design
- Scalable approach to distributed energy management
- Objective and data-driven analysis that improves network reliability
- Readily accessible distribution maps and data for knowledge workers

Southern Company operates three similar but independent Distribution GIS systems, plus a multitude of disparate and disjointed supporting interfaces and sub-systems. By managing independently, we experience:

- Added operational and administration costs
- Complexities associated with implementing new technology solutions
- Limitations during mutual assistance emergencies
- Impediments to cross-company collaboration
- Disparities in fundamental workflows



# Utility Network and Overall Program Goals

# Utility Network Benefits

## Functionality

- Enhances data accessibility across mobile, web, and desktop platforms
- Simplifies future upgrades and technology integrations
- Reinforces data quality control measures

## • Operational

- Enhances our capability to model and simulate complex networks
- Improves support for future Grid Modernization
  - Including Distributed Generation and multi-source Mesh Networks
- Web-Centric Technology – allows data access on any device, anywhere, anytime

## Uniformity

- Standardizes data models, integrations, and symbology across companies
- Institutes a common application framework for engineering tools including design and mobile applications
- Streamlines extracts for common 3rd party interfaces (TCMS, IDMS, CYME)



# Prime Mover Advantage

By electing to become one of the first large electric utilities to implement Esri's Utility Network solution, Southern Company will be positioned to take full advantage of several important factors.

- Southern Company can secure commitment from critical vendor resources and key Esri personnel. Several hundred utilities will be competing for available resources as we approach end-of-life on the current solution.
- Southern Company's experienced GIS team will wield heavy influence on the roadmap and direction of this new product. This will benefit the company throughout the life of the solution.
- Southern Company will have early access to leading GIS experts that will help ensure a successful project implementation.





# Roadmap Project

## Roadmap Goals

- Utility Network 101
  - Determine Level of Fidelity required
  - Educate all impacted business units on new network
- Identify interfaces and impacted applications
- High level requirements for future business processes
- Identify change management impacts
- Budgetary estimate and schedule



# Pilot Project

## Pilot Goals

- 3 Feeders per operating company
- Overhead and Network Underground (Mesh Network)
- Esri only conversion – no partner software
- Gain experience with Esri EDAP model
- Allow business to get “hands on” experience
  - What is the quality of our existing data
  - Where are partner “easy buttons” required
- Preliminary infrastructure requirements
  - Database
  - Portal
  - ArcServer
  - ArcGIS Pro



# Roadmap and Pilot Execution

# Roadmap Project

## Utility Network Advantage Program



### PROJECT GOVERNANCE & ORGANIZATIONAL CHANGE MANAGEMENT

**PROCESS  
OPPORTUNITIES &  
EFFICIENCIES**

**DATA  
CONSIDERATIONS  
& EVALUATION**

**PLATFORM  
INTEGRATION  
CONSIDERATIONS**

**APPLICATION  
& EDITING TOOLS  
CONSIDERATIONS**

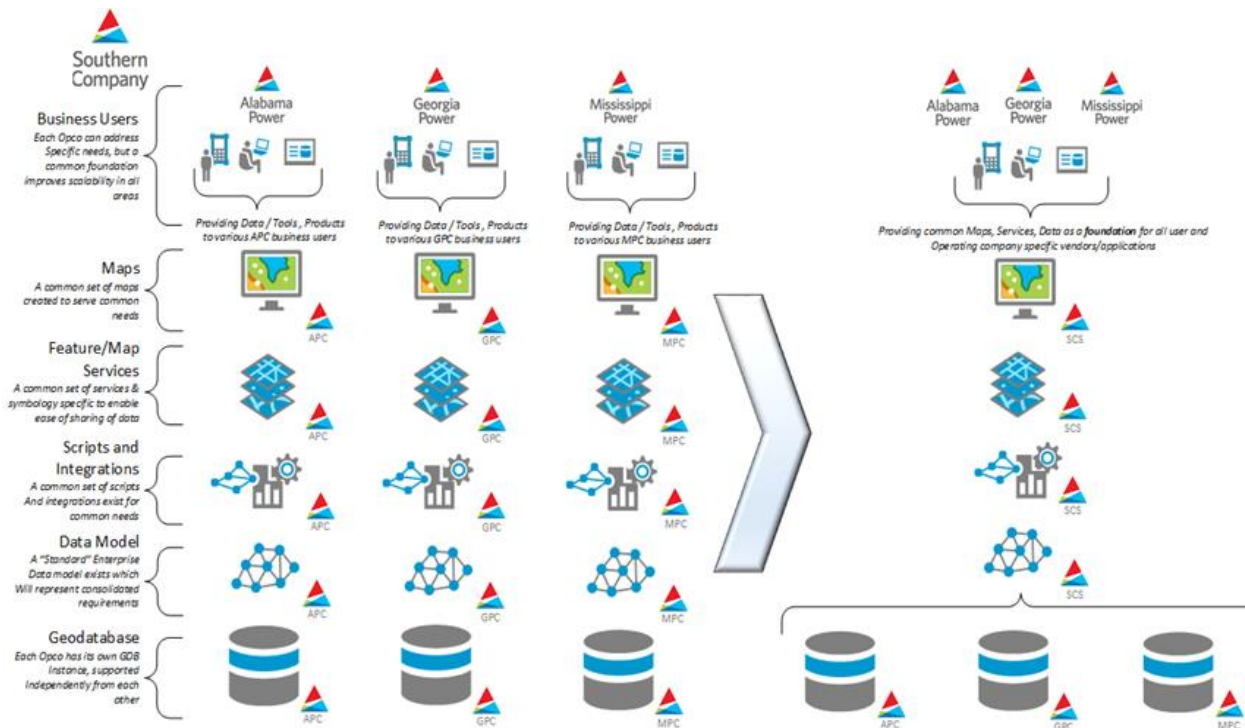
**Esri Involvement**



# Roadmap Project

## Collaboration Across Companies

- Collective Goal-setting
- Establishing Priority and “MoSCoW”
- How far do we go?
- Establishing an “Enterprise Foundation”

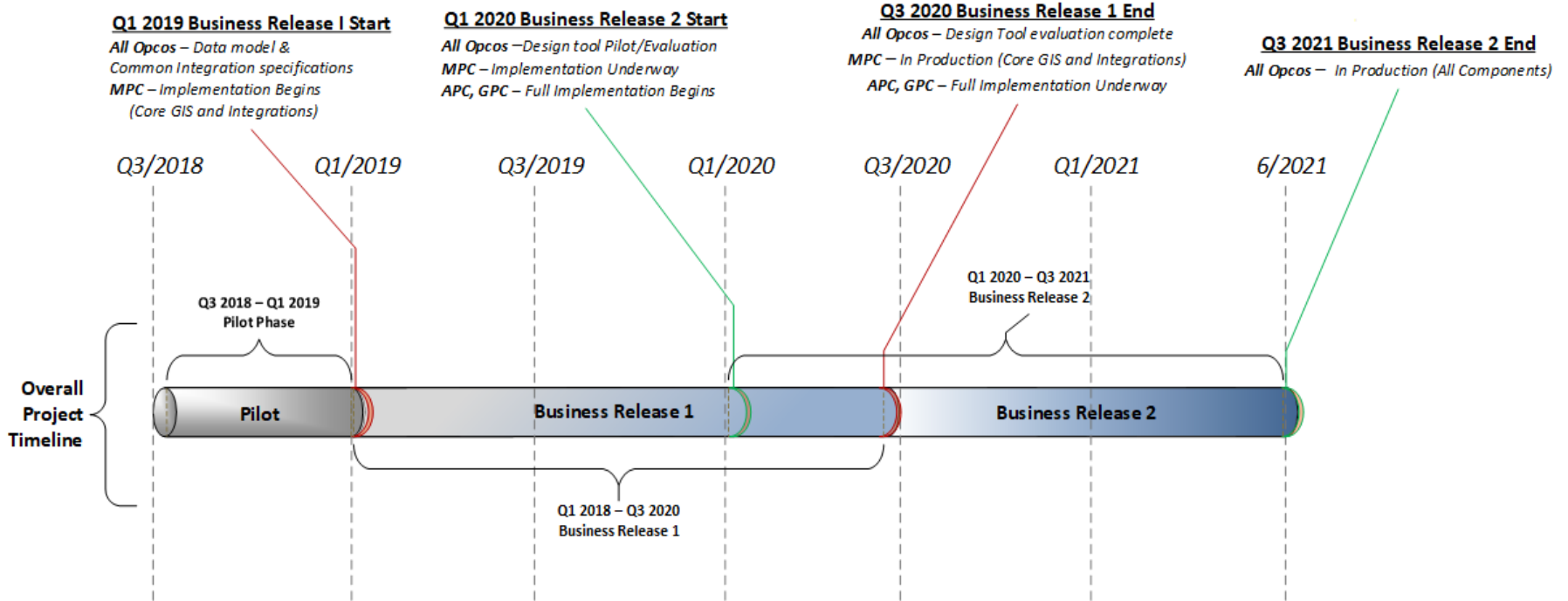


# Roadmap Project

## A Plan to address Benefits to Southern Company



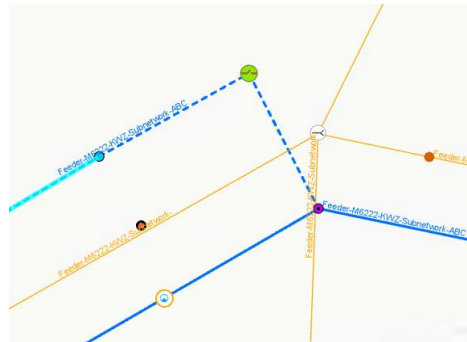
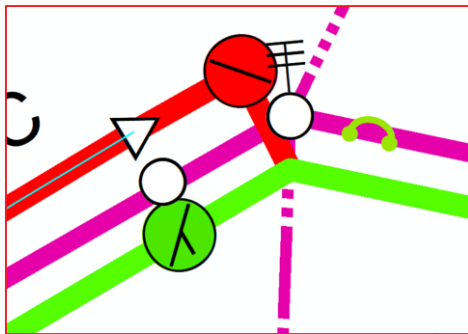
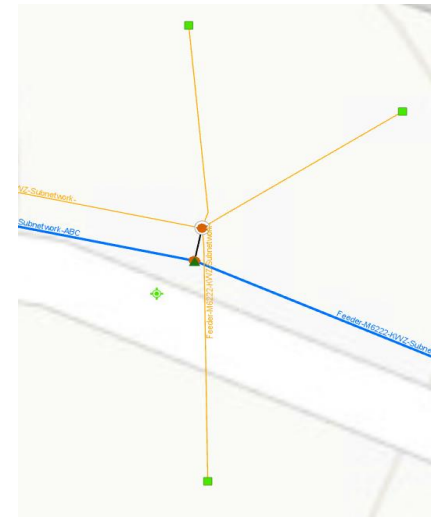
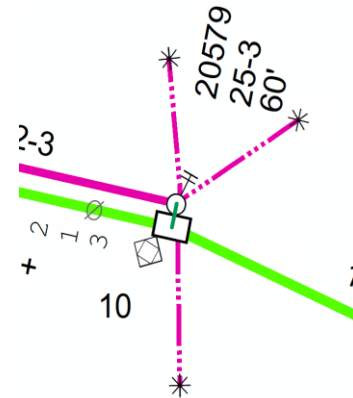
Southern Company Overall Timeline/Phase/Release View DRAFT v0.x July 2018



# Pilot Project

## Getting into the “Weeds”

- Migrated sample data from each Opco
  - 2 circuits each, plus a Mesh
- A deep dive on the Utility Network
- Getting users familiar with core tools
- How the same data looks in UN vs GN
- Following UN / Pro Workflows
- How much detail do we want to model?



# Results and Next Steps



# Roadmap Project

## Pilot Results

- Data quality is good
- Mapping of data is critical
- Editing Esri UN presents challenges
- Partner solutions will be required – “Easy Buttons”
  - To address ‘clicky’ processes and editing requirements
- EDAP is starting point only
- Feedback to Esri will be critical
- Infrastructure will be more complex
  - ▶ Portal needs to be robust and case hardened
  - ▶ Additional ArcGIS Servers for custom mapping



# Next Steps

## The UN Project

- Phased Implementation
- Design phase in progress
  - Data modeling
  - Symbology standardization
  - Interface design (Internal and external)
- Mississippi Power June 2020, no design tool
- Alabama Power and Georgia Power June 2021
- Infrastructure design
- Governance model/process implemented
- Continue partnership with Esri to define and resolve gaps
- Selection of Mobile and Design tools
- Transmission UN project
  - Roadmap commenced June 2019

