Lighting and Smart Services

An End User's perspective to Using DALI for Outdoor Lighting

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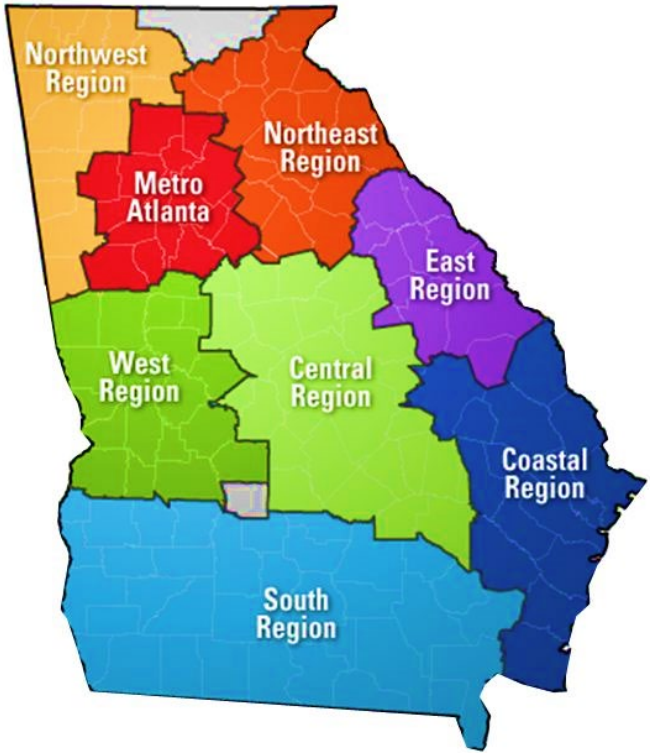
Georgia Power

Georgia Power is an investor owned utility (IOU)

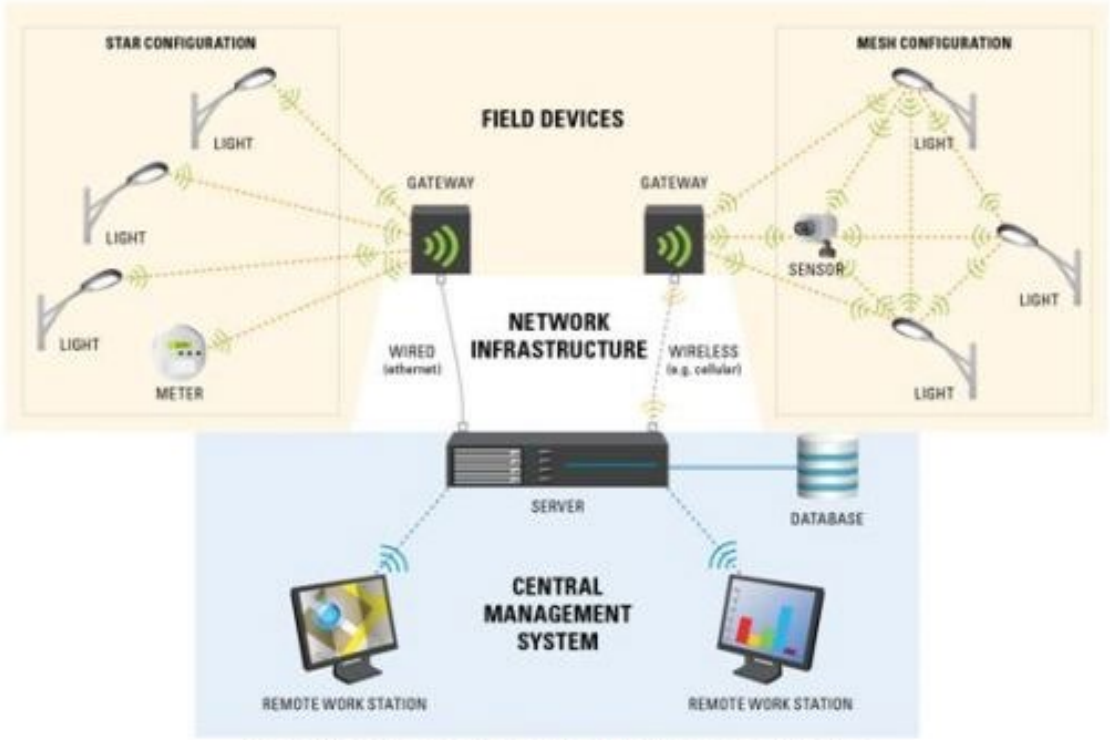


Outdoor Lights: ≈ 900,000

Area Lights: ≈ 500,000

Roadway Lights: ≈ 400,000

Networked Lighting Control System



Major Components of an Outdoor Lighting Control System

(Image Credit: California Lighting Technology Center, UC Davis)

Networked Lighting Control System

- All LED luminaires have, or will soon have, a networked lighting controller (NLC) instead of a photo control (PC)
- The NLCs are installed into the 7-pin control receptacle which provides connection to the driver(s) of the LED luminaire
- The NLCs connect wirelessly to our lighting control network
- The lighting control network is tied to a central management system (CMS)

Questions to Answer

- Why did Georgia Power select DALI over other control protocols
- How does Georgia Power use DALI today
- How will Georgia Power use DALI 2 in the future

Why did Georgia Power select DALI over other control protocols

- We needed an existing and established lighting control protocol
- We needed a bi-directional (two-way) lighting protocol
- We needed power supplies (drivers) with the selected protocol available and rated for outdoor use

How does Georgia Power use DALI today

DALI is used between the networked lighting controller (NLC) and the driver(s) of the luminaire

- Asset management using lookup codes
- Operational control using our wireless wide area networked lighting control system

Automatic Luminaire Registration into a Central Management System

- Let's allow luminaires to communicate with the central management system (CMS) and transfer their luminaire attributes without human intervention
- This allows our installers to focus on installing luminaires and networked lighting controllers

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Automatic Luminaire Registration into a Central Management System

This process is analogous to connecting a new printer to a computer

- Remember how frustrating installing a new printer was several years ago.
- Now you just connect the printer and computer via a USB cable or wireless connection and let the machines talk to each other and do the work for you

Automatic Luminaire Registration into a Central Management System

This automatic process accomplishes three important goals:

- Eliminates data entry errors
- Saves time
- Saves money

Automatic Luminaire Registration into a Central Management System

How do we do this?

- We use luminaires with digital addressable lighting interface (DALI) protocol power supplies (drivers) to allow bi-directional communication between the luminaire and the central management system (CMS)
- The luminaire DALI power supplies are coded with special lookup codes during production that correlate to a specific set of fixture attributes.
- These lookup codes are automatically relayed from the luminaire, through the networked lighting system and into the CMS
- The CMS decodes the information and populates the database with the specific set of fixture attributes for each luminaire
- The luminaire is registered into the CMS without human intervention

How does Georgia Power use DALI today

Asset management via Lookup Tables

- DALI is used to extract 10 attributes from the luminaire and deliver (write) them back to our central management system (CMS) without human intervention or assistance
- Manufacturer, part number, style, input wattage, light source technology, lumen output, CCT, optical distribution type, luminaire housing color, input voltage range

How does Georgia Power use DALI today

- Operational control
  - On/off
    - Disconnects
    - Reconnects
    - Events
  - Dimming
    - Scheduled
    - Occupancy/Vacancy

How will Georgia Power use DALI 2

- Georgia Power will utilize memory bank 1 (MB1) in DALI 2 compliant drivers for coding and extracting luminaire attributes.
- This will replace the current method using lookup tables
- ANSI C137.4 (when published) provides a data map for the locations of the luminaire attributes in MB1

Conclusion

- Georgia Power has been using DALI since 2014
- The two-way communication of DALI meets our current and future needs
- DALI 2 will allow us to improve the efficiency of our automated luminaire registration process into our central management systems **without** the use of lookup tables