

Pier Light Monitoring System

Niangua Bridge Dash Board Summary View

The screenshot shows the Tago web interface for MoDOT. The sidebar on the left lists 'Dashboards' and 'NEW MODOT Summary' with sub-items for 'NEW 54 & Niangua Bridge' and 'Ashland Radio Tower'. The main content area is divided into three sections: a 'GovMobile: Light Monitoring' header with the MoDOT logo, a 'Map Summary' showing a map of Missouri with asset locations, and a 'Summary' table. The table has columns for 'Entity Name', 'Entity Type', 'GW Issues', 'TX Issues', and 'Asset Issues'. The '54 & Niangua' row shows 0 GW Issues, 1 TX Issue, and 0 Asset Issues. The 'Ashland' row shows 0 GW Issues, 0 TX Issues, and 0 Asset Issues. Annotations explain that monitored assets are listed in the sidebar, the summary table provides an at-a-glance look, the map displays assets with color-coded status icons (Green for OK, Yellow for Warning, Red for alert), and the table cell values indicate the number of alerts.

Entity Name	Entity Type	GW Issues	TX Issues	Asset Issues
54 & Niangua	Bridge	0	1	0
Ashland	Tower	0	0	0

Monitored Assets (bridged, towers, etc.) listed here. Select Asset to drill down to a detailed view.

Summary Table: Provides at-a-glance look of the status of each monitored asset. One asset per row.

All Monitored assets are displayed on a map. Icon color reflects status. Mouse over icon and a pop-up text box provides status details.

Table cell values indicate number of alerts. Table cell colors indicate status.

- Green = OK
- Yellow= Warning (ex. Battery low)
- Red= alert (ex. light out)

Description

The Pier Light Monitoring System is a remote light monitoring for bridge navigation and radio tower lights. This innovation is a solution to the problem with monitoring the proper operation of the MoDOT owned navigation and aerial lighting in order to comply with the FCC, FAA, Coast Guard and Water Patrol. The specific issues and their solutions are below:

- The FAA requires ALL radio towers over 200' to have aviation lighting for day and night. They also require that it be inspected once every 24 hours.
 - Current solution: Contract with a local person to check the lights daily and report outages or require MoDOT personnel to monitor the lights and try to flex the over time within the same week or pay for overtime. (Contract price \$150 per month).
- The Coast Guard requires MoDOT to notify them as soon as known if navigation light has failed. MoDOT policy states navigation lights are to be inspected twice a week and after every storm. EPG 770.4 Navigation lights/Light Tenders.
 - Current solution: Contract with a local person to check the lights daily and report outages or require MoDOT personnel to monitor the lights and try to flex the over time within the same week or pay for overtime. (Contract price \$150 per month).
- State wide MoDOT has 61 bridges with navigation lights, one with aviation lighting and 13 radio towers with aviation lighting. The Central District has 10 bridges with 132 navigation lights and four remote radio towers with lighting and nine radio towers with backup generators.

Cellio Transceivers and Gateway with Tago web based interface are additional solutions to the problem MoDOT faces. Implementing Cellio Devices will eliminate the burden on the Maintenance personnel and allow them to perform the primary function. The units are scalable and configurable for many different needs. The solution comes with a web based dashboard that allows MoDOT employees to access the status of lights from any web based interface (computer, smart phone).



Benefit

Reduces the afterhours workload to monitor lights and reduces the time MoDOT employees are on the right of way.

Materials and Labor

4 hours of staff time with \$1,765 in initial equipment and \$26 monthly reoccurring costs – see materials and parts breakdown below.

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Additional photos or videos can be seen by accessing the Innovations Challenge SharePoint page at: <http://sharepoint/systemdelivery/TP/Documents/InnovationsChallenge.aspx>.

Equipment:

- Cellio Cellular Gateway -\$595.00 each
- Cellio Transceiver \$195.00 each

Reoccurring Fees:

- Monthly Service per Gateway -\$14.00 / month (1 gateway per installation)
- Monthly service per Transceiver -\$2.00 / month /each (scalable 64 transceivers per gateway)
- Includes application provisioning and activation of service.
- Includes cellular service and application hosting.

Typical Bridge installation:

1 gateway and 6 transceivers – initial cost \$1,765. Monthly fee \$26.

Current cost \$1,800 per year. (Based on paying \$150 per month for monitoring)

Cellio System: First year with equipment \$2,077 (Based on purchase of equipment and service fees)

After first year annual cost \$312.

Current cost for a 5 year period: \$9000

Cellio projected cost for a 5 year period: \$3325

Savings over 5 year period \$5675 for average bridge.