



Information Technology &  
Telecommunications Department

# Tower Lighting & Maintenance

November 2, 2011



# Agenda

- RM 11349: Tower Light Monitoring and Inspections
- Progress Energy Network Overview
  - System Alarm Monitoring
  - NOC Operation
- Similar Utilities

# RM 11349

## Part B: Maintenance of Marking and Lighting

- Section 1: Inspection and Maintenance of Lighting
  - Requirement to inspect at intervals not to exceed 3 months all automatic or mechanical control devices, indicators, and alarm systems associated with the antenna structure lighting to insure that such apparatus is functioning properly.
  - Reporting to FAA for any extinguishment not corrected within 30 minutes.
  - Requirement to repair or replace lights, automatic indicators or automatic control or alarm systems as soon as practicable.

# RM 11349

## Part B: Maintenance of Marking and Lighting

- Several waivers have been granted to tower owners to permit annual rather than quarterly inspections for their automatic or mechanical control devices, indicators and alarm systems on the basis that they use advanced monitoring systems.
- All waivers granted to date have been based on manufacturer specific equipment and services.

# RM 11349

## Part B: Maintenance of Marking and Lighting

- **FCC-07-89** : Waiver granted May 15, 2007 to American Tower Corp.(Eagle Monitoring System) and Global Signal (HARK Tower Systems).
- **DA-07-4285A1** : Waiver granted October 15, 2007 to Optasite (Eagle Monitoring System).
- **DA-09-1763** : Waiver granted August 7, 2009 to Diamond Communications and Diamond Towers (TowerSentry).
- **DA-10-2006** : Waiver granted October 20, 2010 to Insite Towers, TowerCo Assets, and TowerCo II (Remote Monitoring Services)

# RM 11349

## Part B: Maintenance of Marking and Lighting

- PCI recommends to amend Section 17.47(b) of the rules to exempt systems using network operations control (NOC) center-based monitoring technologies from any requirement to regularly inspect all automatic or mechanical systems associated with antenna structure lighting.
- Sprint Nextel, Cingular, Crown Castle, and NAB also support the rule amendment.
- Hark Tower Systems also supported this approach in its comments on the ATC waiver request.

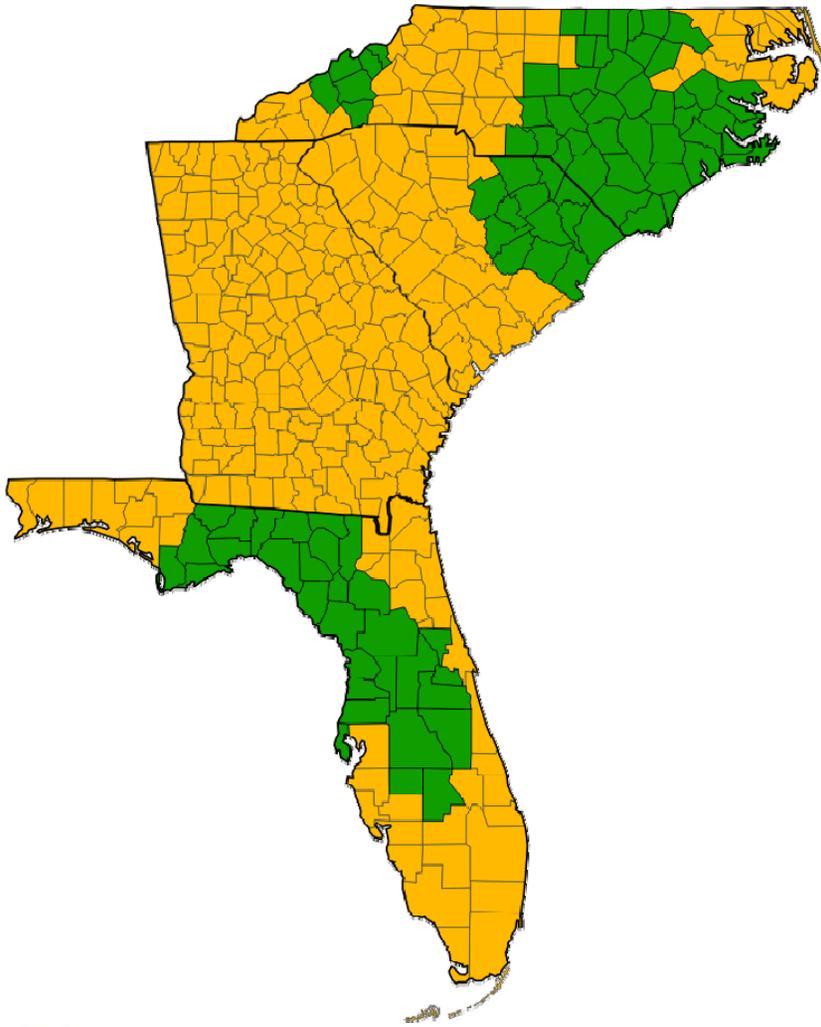
# RM 11349

## Part B: Maintenance of Marking and Lighting

- Recommendations

- Revise rules to exempt those antenna structures that are monitored by a NOC based alarm and control systems based on function rather than manufacturer specific systems.
- Maintain current requirements for FAA notification within 30 minutes of applicable lighting outages.
- Maintain current requirements to repair or replace lights as soon as practicable/as soon as possible.

# Progress Energy Profile



**\$10B Revenue**

**\$26.6B Assets**

**3.1M Customers**

**32 Generating plants -  
22,000+ MW**

**54,000 Sq miles service  
territory**

**11,000+ Employees**

# Tower Information

- 120 Towers in Carolinas and Florida from 150` to 450`
- 90 Towers with lighting
- Combination of Guyed, Monopole, and Self Supporting
- Services Provided
  - Trunking Radio
  - Microwave Radio
  - Load Control
  - SCADA Radio (900MHz MAS)

# Enterprise Network Infrastructure

## Transport

**7,207**  
On-Net Circuits  
**5,608**  
Leased Circuits

**2,413**  
Fiber miles  
**120**  
Towers

**55**  
Microwave sites  
**1,013**  
Microwave transport miles

### Private Voice

**Telephone Systems**  
PBX - 96  
Key Systems - 26  
VoIP - 12 sites  
VoIP Stations - 4,068  
Active Voice Ports - 24,578

**VCON Systems**  
**32**  
VCON Rooms

### Wireless

**Trunked & Conventional Radio Systems**  
Subscribers - 4,295  
Consoles - 86

**Base Stations - 395**

**Emergency Notification System**  
Sirens - 185

### Data

**Switches - 1,958**

Routers - 432  
Ports - 83,143  
CSU/DSUs - 227  
Subnet Monitors - 136

### SCADA

**SCADA RTUs - 940**  
On-net - 417

**DSDR Substations - 240**

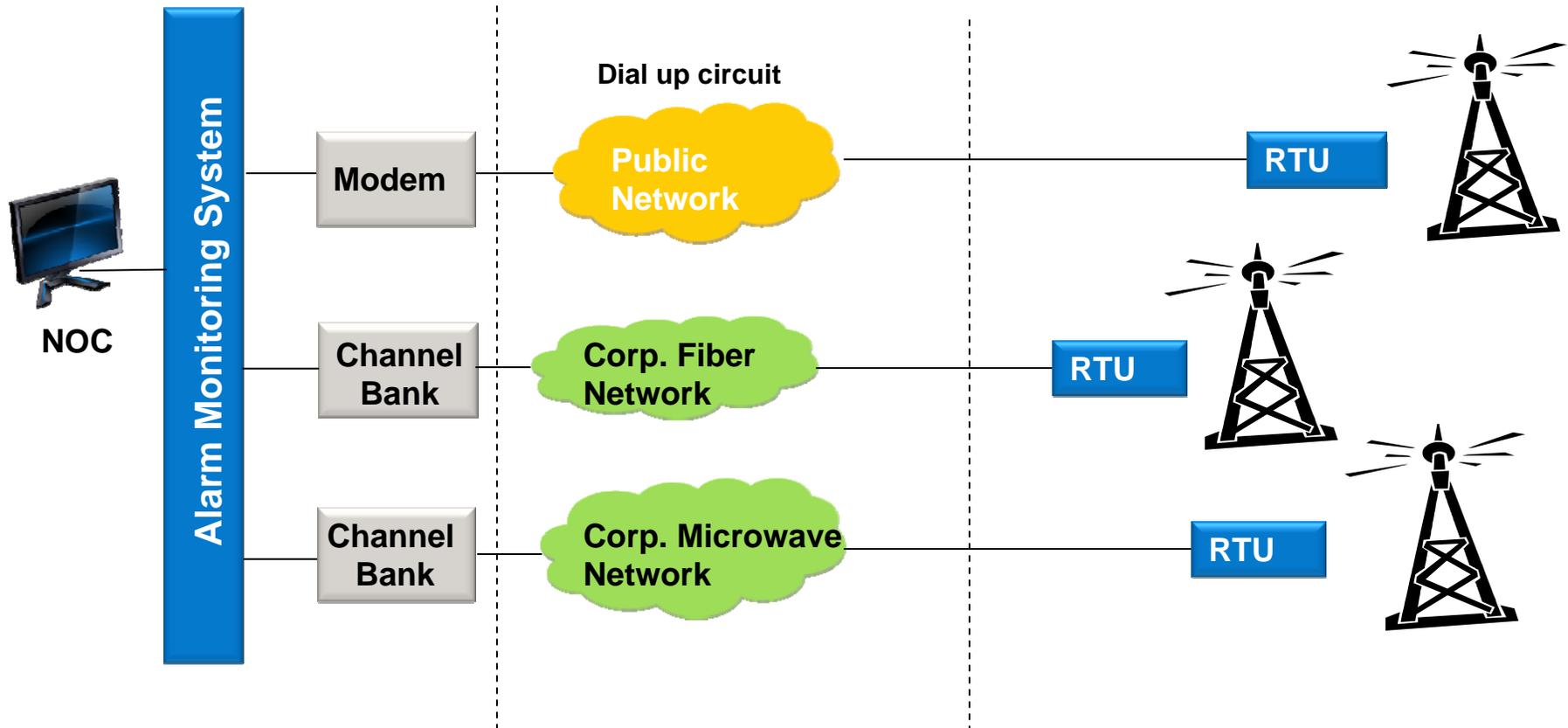
**VSAT**  
900 MHz MAS  
Wireline

# Alarm Monitoring Overview

Network Operations Center

Communications Network

Remote Tower Site



# Alarms Monitored

- Divided into three categories
  - Major – Service Affecting
  - Minor – Non Service Affecting
  - Status – Indication
- Examples of Facility Alarms
  - Generator running (minor)
  - High temperature (major)
  - Loss of AC power (major)
  - Tower Lighting Failure (major)

# NOC Overview

- NOC

- Located at Corporate Data Center (Raleigh, NC)
- Major Network Communications Hub
- Backup Power Systems – Generator and UPS
- Redundant Servers
- Secure Facility
- Dedicated Alarm Monitoring Personnel 24x7x365
- Second Level Support Personnel provide troubleshooting and problem resolution.

# Preventive Maintenance Program

- Preventive Maintenance Program
  - Based on:
    - Regulatory requirements
    - Equipment manufacturer recommendations
    - Historical data
  - Documentation
    - GetITT (Service Now) Ticket System
    - Site visit forms – filed electronically on network
    - Site data sheets – filed electronically on network

# Similar Southeast Utilities

- AEP
- Duke Energy
- Southern Company

# Summary

- Utility networks have been using advanced alarm monitoring systems for a long time
- NOC is necessary to monitor all alarm systems and ensure proper operation of the communications network 24x7x365
- Alarm monitoring is provided by a variety of equipment with similar functions
- Monitoring personnel are trained in procedures to properly respond to all events