

# NEWTON STRATEGIC PLAN WATER, SEWER, AND ELECTRIC OVERVIEW

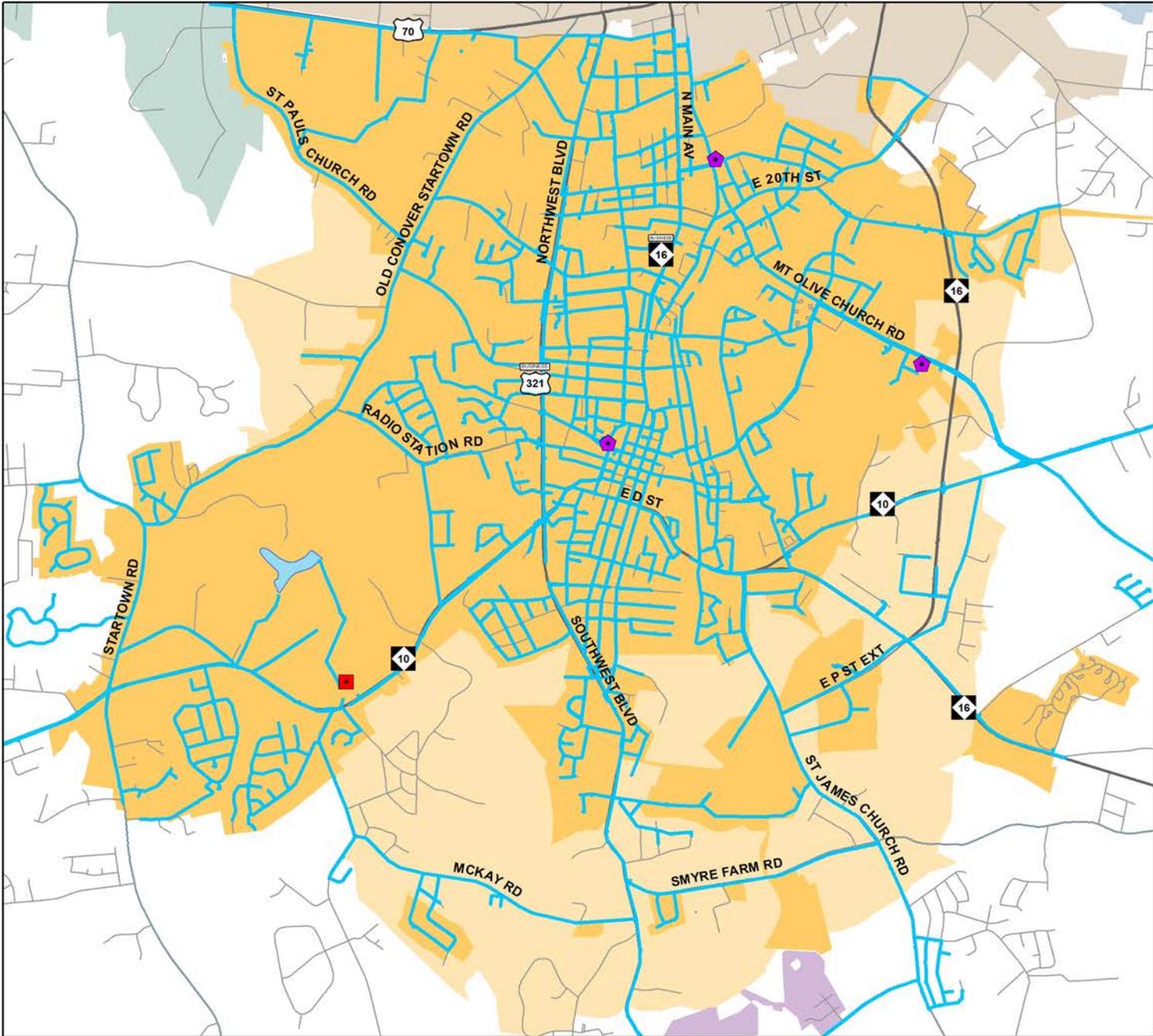
March 12, 2015



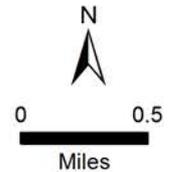
# Newton Water System



# CITY OF NEWTON WATER SYSTEM



- Newton City Limits
- Newton ETJ Limits
- Hickory City Limits
- Conover City Limits
- Claremont Town Limits
- Maiden Town Limits
- Lakes
- Water Line
- Major Roads
- Roads
- Water Treatment Plant
- Water Tanks



# Newton Water Highlights

- Jacob's Fork is the source of all Newton's water
  - The source watershed is only 475 acres and is largely undeveloped. No intake or discharge upstream from Jacob's Fork pump station.
- Raw Water is pumped from Jacob's Fork pump station to City Lake Reservoir, which holds 45 Million gallons (10 day supply)
- Capacity at Water Treatment Plant is 5 Million Gallons per Day (MGD)
- Current Average Daily demand 3.75 MGD
- Highest Demand – 5 MDG (usually in summer)
- Clear well at Water Plant holds 2 MG, the old Water Plant is also used for water storage and distribution.
- Biggest User is Energy United ~1 MGD , provides water to Troutman, Taylorsville, Alexander County & West Iredell County

# Newton Water System Expansion History

- Oldest water infrastructure are the water mains around the square and in downtown. Date back to the 1930s
  - 1950s – expanded lines along US 70
  - 1970's – upsized facilities for industrial users
  - Late 1980s-90s – expanded for residential growth
  - Current focus is on rehabilitation and maintenance of existing aging system
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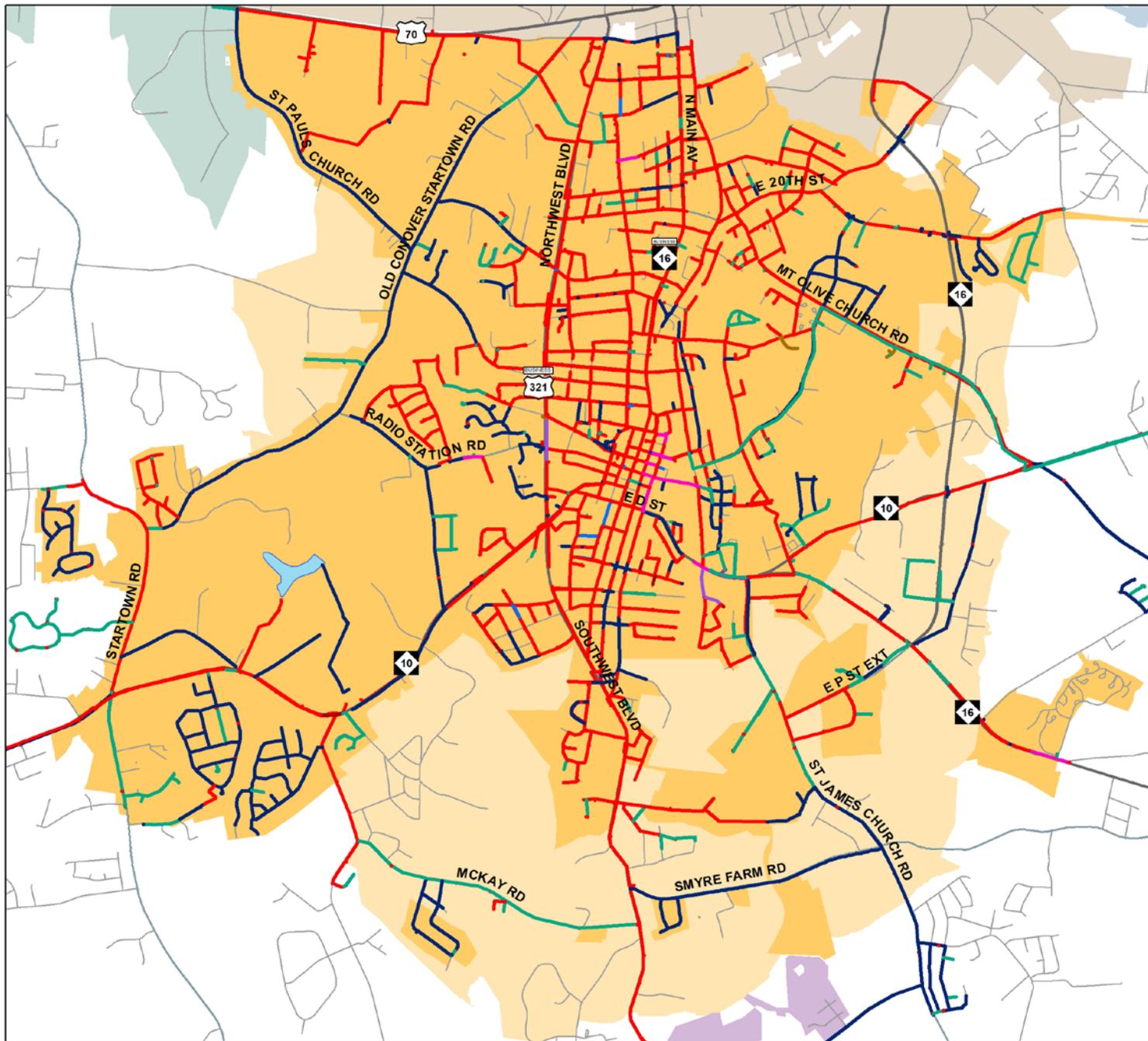
# Newton Water Recent Improvements

- Shannonbrook – Phase I, II and III
  - Highway 70 West Conover
  - Davis Ave- B Street to Caldwell
  - East E Street Ervin to Saunders
  - South Brady 4<sup>th</sup> to D Street
  - South Brady - N St to K St
  - College St - E St to K St
  - McDaniel's Circle
  - Finished Water Pump Upgrades at Water Treatment Plant
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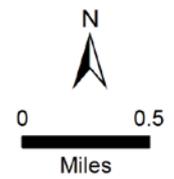
# Newton Water Issues and Challenges

- 2 Pumps, 2 clear wells, and cast iron pipes, ductile iron pipes and galvanized pipes are in need of replacement
  - Fire Code requires fire hydrants to be served by a minimum 6-inch line, several lines still in need of upgrading
  - Backup pumps and similar redundancy equipment in case of failure
  - Water lines will need to be upgraded during Streetscape implementation
  - Decreasing demand for water since textile manufacturing has left service area
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# CITY OF NEWTON WATER SYSTEM LINE MATERIALS



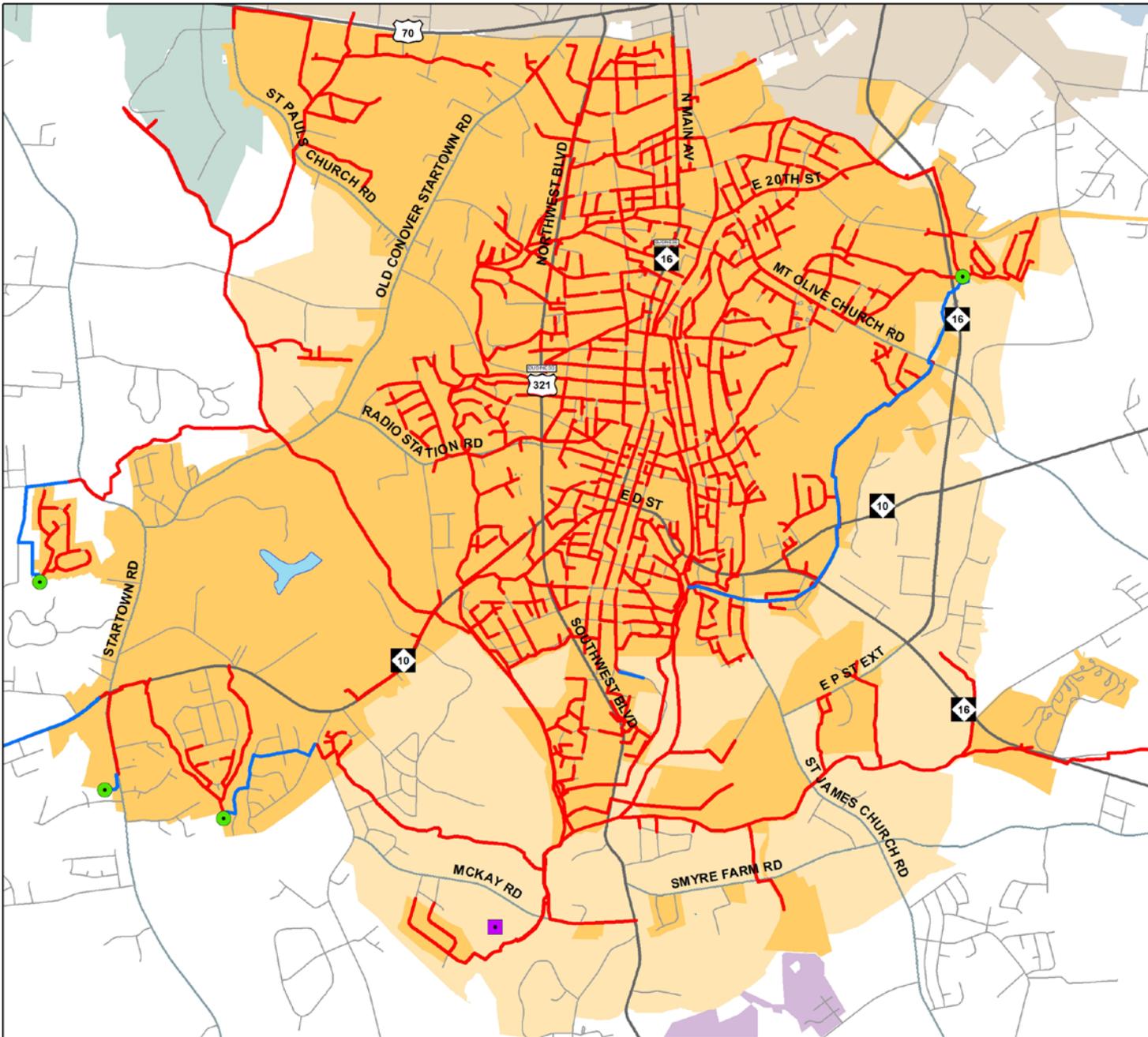
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  - Lakes
  - Major Roads
  - Roads
- Line Materials**
- Asbestos Complete
  - Cast Iron Pipe
  - Copper
  - Ductile Iron Pipe
  - Galvanized
  - PVC
  - Unknown
  - Other



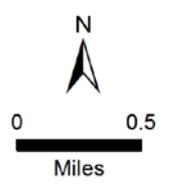
# Newton Sewer System



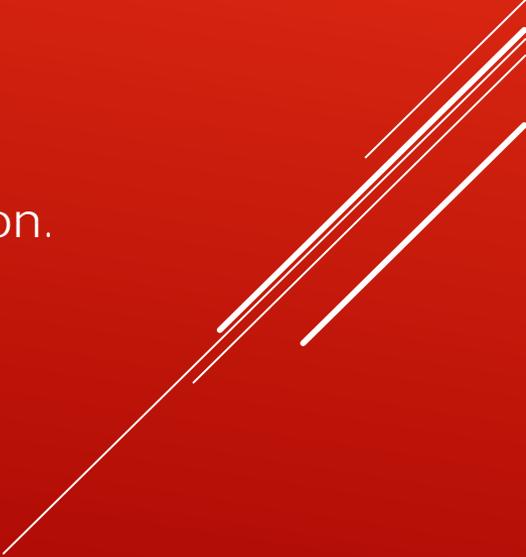
# CITY OF NEWTON SEWER SYSTEM



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- Lakes
- Major Roads
- Roads
- Pressurized Main Line
- Gravity Main Line
- Treatment Plant
- Pump Stations



# Newton Sewer Highlights

- Waste Water Treatment Plant in service since 1977
    - Designed to treat 7.5 Million Gallons per Day (MGD) with upgrades, permitted for 5 MGD
    - Current Average Demand 1.7 MGD
    - During heavy rain events, WWTP experiences 12.5 MGD for short periods of time due to infiltration
  - Sewer system
    - Expanded similar to the water system.
    - Aging clay pipes are a major source of infiltration.
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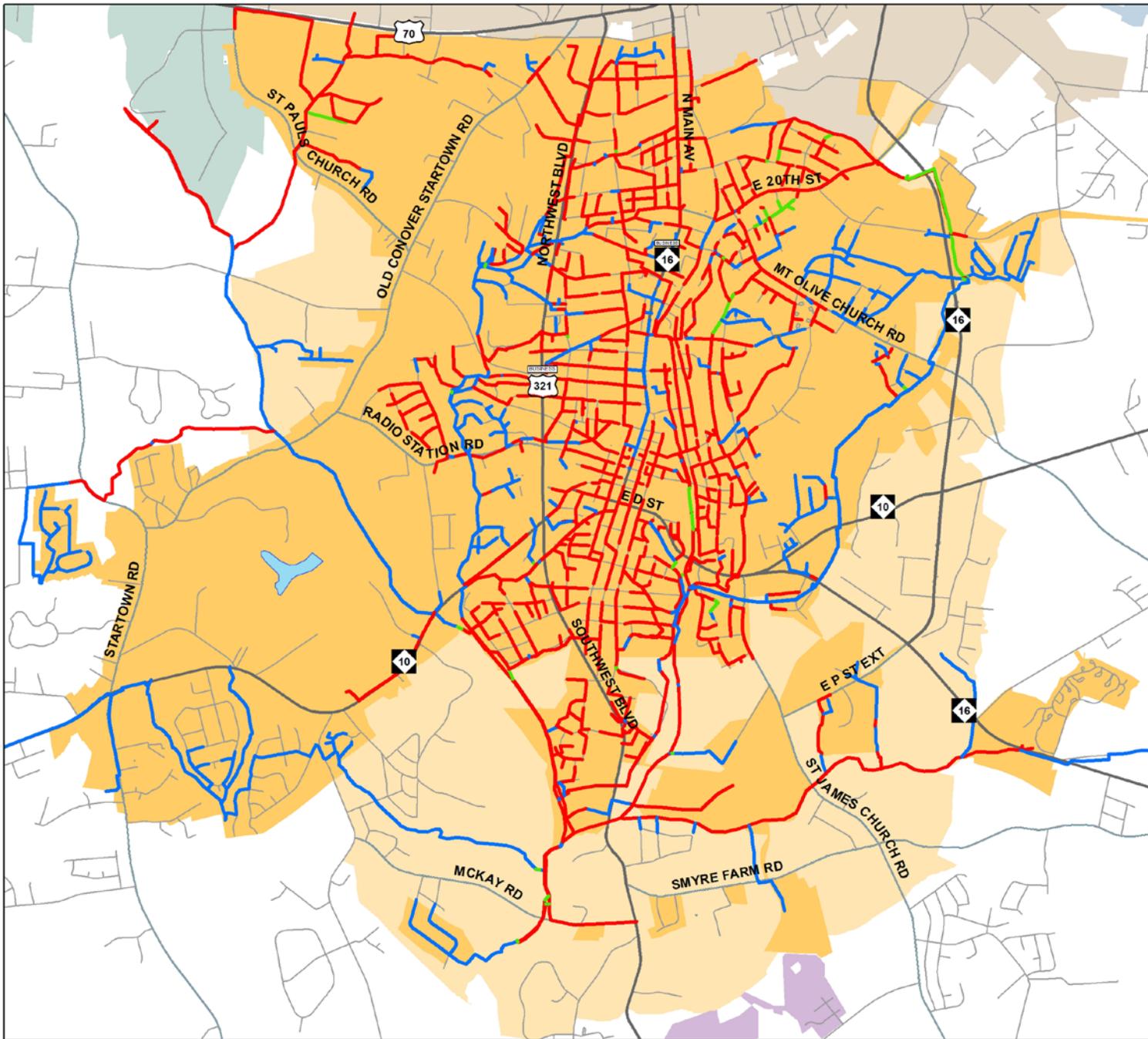
# Newton Sewer Recent Improvements

- Trunk lines in Startown area
  - N. College Ave Upgrade
  - S. Cline to S. Main
  - N. Frye Ave. -13<sup>th</sup> St. to 15<sup>th</sup> St.
  - Southfork Drive
  - High School to NW Blvd
  - Snow Creek Outfall Replacement
  - Burris Road Pump Station and Force Main Replacement
  - Highway 10 Pump Station Rehabilitation (In Progress)
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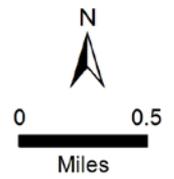
# Newton Sewer Issues and Challenges

- Age of sewer lines
    - 43 miles of clay pipes (terra cotta)
    - Root control done every year, still significant problem with clay pipes
  - Repairs deeper than 12 feet must be contracted to outside firms.
  - Sewer lines will need to be upgraded during Streetscape implementation
  - Providing service to residential homes in the Startown Area
  - Decreasing demand for sewer treatment since textile manufacturing has left service area
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# CITY OF NEWTON SEWER SYSTEM LINE MATERIALS



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  - Claremont Town Limits
  - Maiden Town Limits
  - Lakes
  - Major Roads
  - Roads
- Line Materials**
- Clay
  - Copper
  - Ductile Iron Pipe
  - PVC



# Newton Electric System



# Electricities History

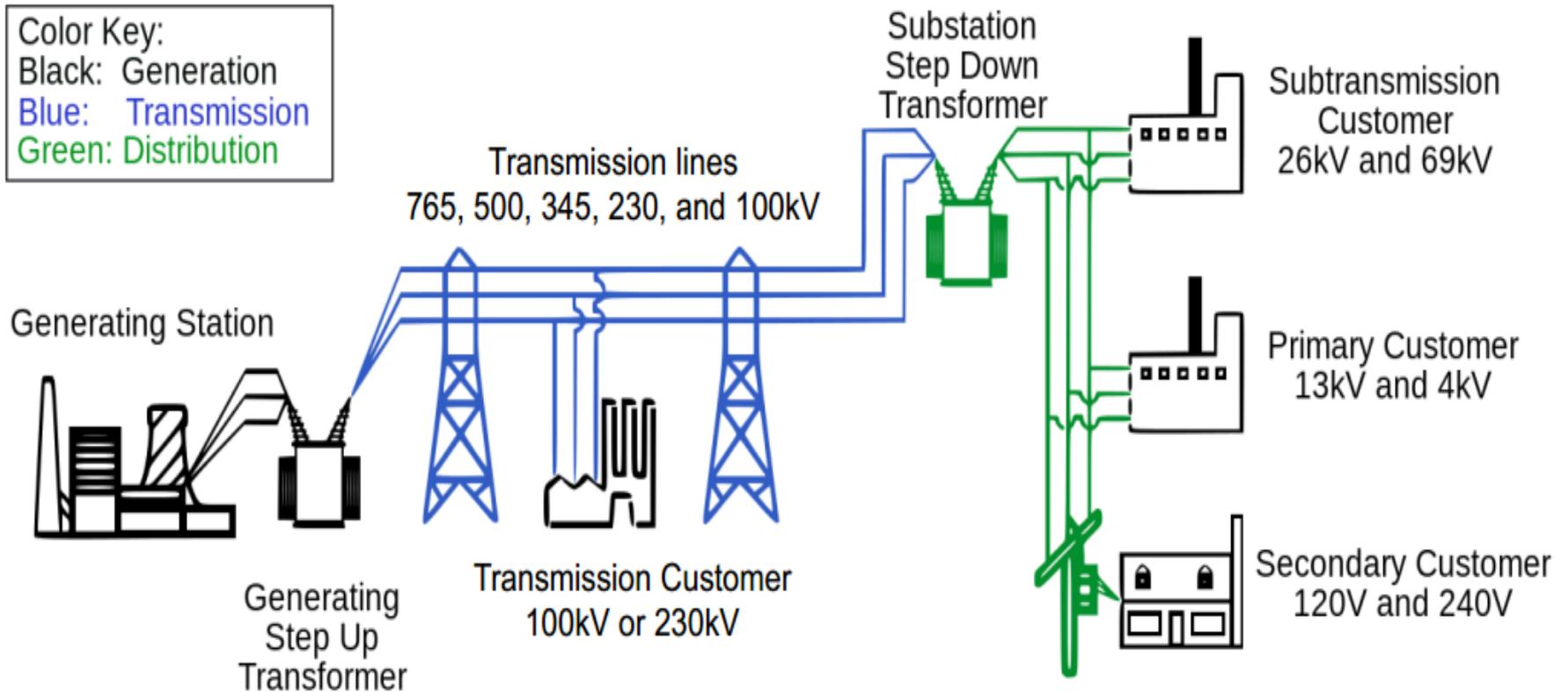
- NCMIPA1 (North Carolina Municipal Power Agency) was established in late 1970s
- 19 Cities in western NC have 75% ownership interest in Catawba Nuclear Plants.
- Nuclear Generation Plant produces 832 MW.
- Nuclear plant is operated by Duke Energy staff.



# 19 City Participants

Participant	Participant Shares	Participant	Participant Shares
Albemarle	7.6043%	Lexington	12.9345%
Bostic	0.0869%	Lincolnton	1.6078%
Cherryville	1.5788%	Maiden	1.2891%
Cornelius	0.3621%	Monroe	10.0377%
Drexel	0.5070%	Morganton	6.7352%
Gastonia	17.1205%	Newton	2.1147%
Granite Falls	0.9125%	Pineville	0.5359%
High Point	18.9600%	Shelby	5.9965%
Huntersville	0.6228%	Statesville	9.8639%
Landis	1.1298%	Total NCMPA1	100.00%

# Basic System Outline



# Newton Electric History

- City purchase it's power from Agency.
  - City purchased 152,860,367 Kwh last year.
  - Average of 37.5% increase in Kwh since 2005.
  - City operates two substations.
  - Hwy 10 capacity 30 Mw, Jacob's Fork substation capacity 27 Mw, with potential to expand an additional 25-30 Mw.
  - City maintains approximately 125 miles of distribution lines.
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# Newton Electric History

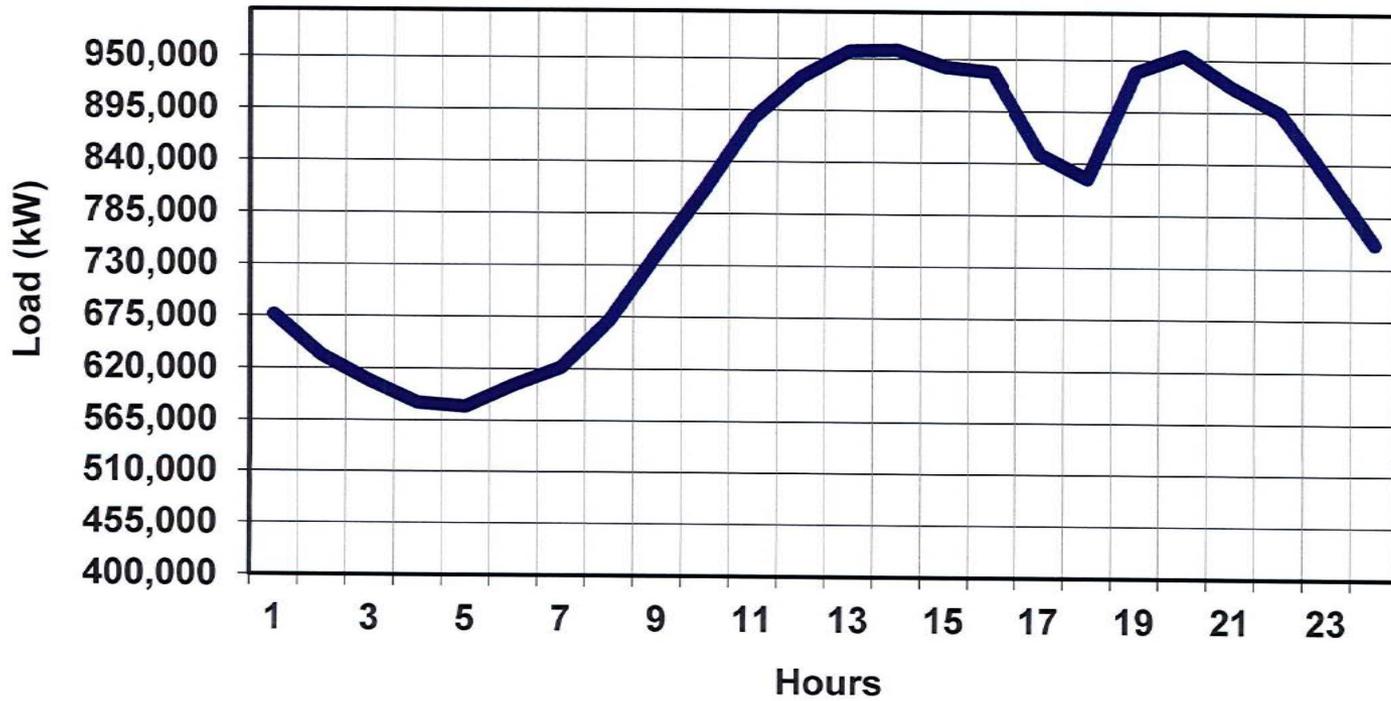
- Average Total Demand – 25-35 Megawatts
- City serves 3960 Residential, 463 Commercial and 30 Industrial customers.
- City's diversity per Kwh, 32% Residential, 32% Commercial and 36% Industrial.
- City has 11 Peak-Shaving generators approximately 19Mw.



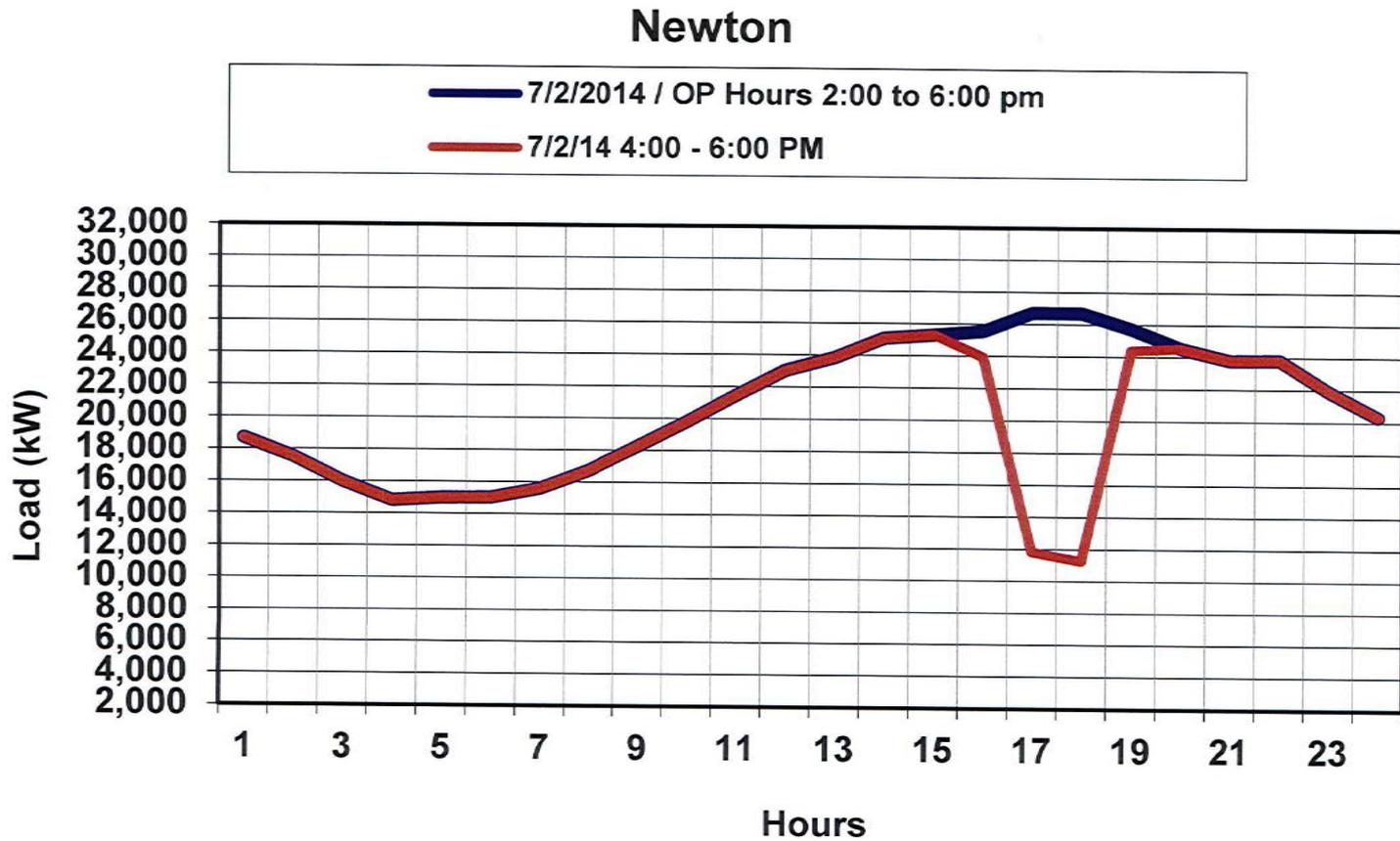
# Newton Electric Peak Shaving

## NCMPA 1 (HRD)

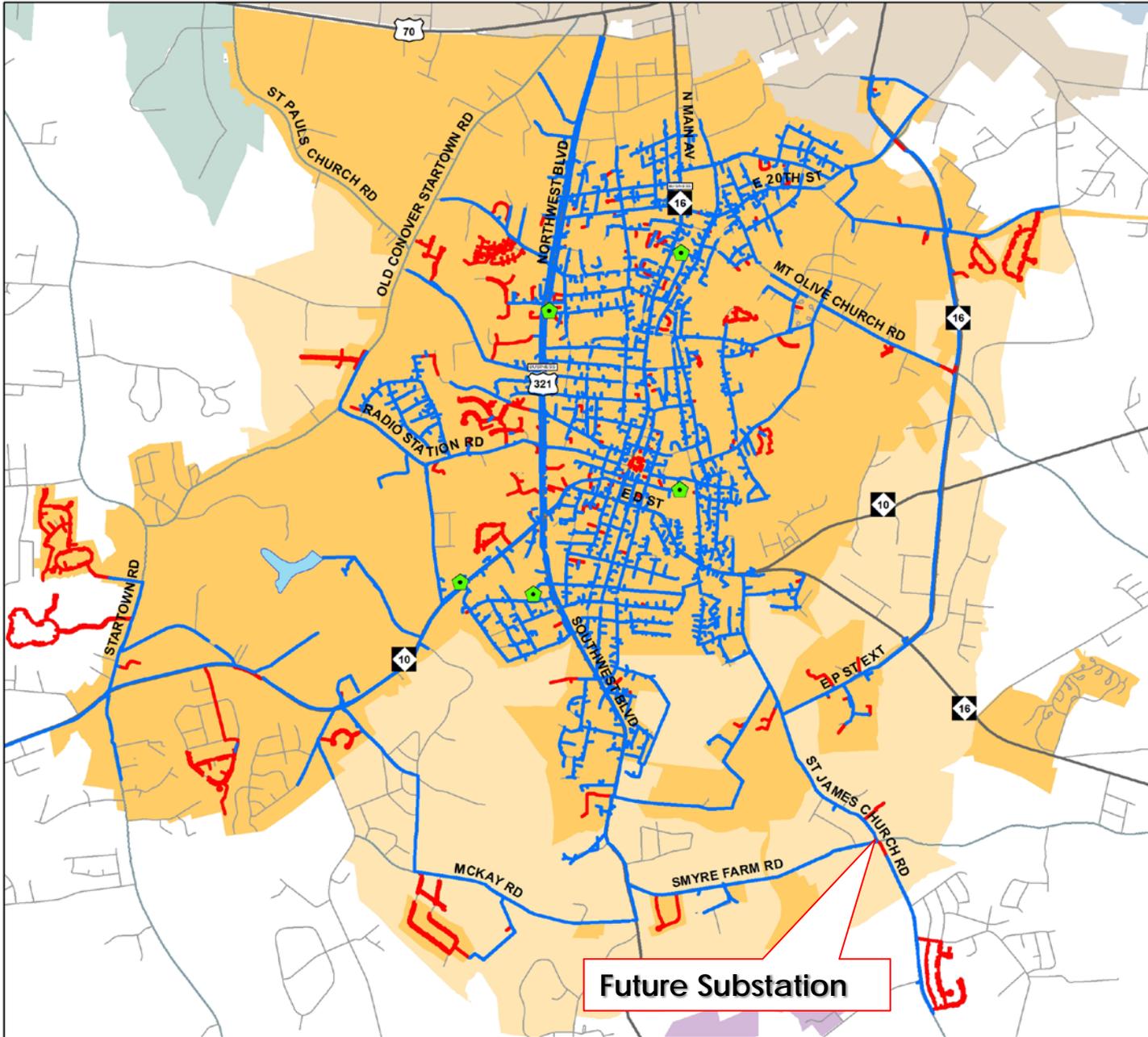
7/2/2014 / OP Hours 2:00 to 6:00 pm



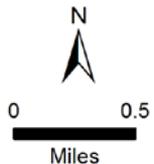
# Newton Electric Peak Shaving



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- Major Roads
- Roads
- Overhead Line
- Underground Line
- Substations



**Future Substation**



# Newton Upcoming Projects



# Upcoming Projects – Water and Sewer

- Water Projects with Catawba County
    - NC 16 to Buffalo Shoal Rd, connecting with existing system at Bandy's Cross Roads and Balls Creek Elementary School to create a loop.
    - Rocky Ford road from Startown Road to Hickory-Lincoln Hwy to Hwy 10 to create a loop.
  - Smart Grid project to upgrade water and electric meters to be read remotely.
  - Hwy 10 Pump Station rehabilitation
  - W. 1<sup>st</sup> and Ashe sewer rehabilitation
  - W. D and S. Cline sewer rehabilitation
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# Upcoming Projects - Electric

- Redundant Transformer at Jacob's Fork Substation
- Distribution Automation
- Redundant distribution lines
- LED Street Lights
- Smyre Farm Area Substation

