Meeting Summary
Orange Water and Sewer Authority
Natural Resources and Technical Systems Committee
November 6, 2013 (5:30 p.m.)

Members Present

Terri Buckner (Chair), Stephen Dear, Michael Hughes, Heather Payne, Dana Raborn, Amy Witsil, John Young

Staff Present

Ed Kerwin, Todd Taylor, Mary Darr, Pat Davis, Ruth Rouse, Stephen Winters, Dan Przybyl

Visitors Present

Meg Holton (UNC-Chapel Hill)

Major Items Discussed

Todd Taylor made a presentation on advanced metering infrastructure (AMI) that covered background information on AMI, OWASA's current meter reading practices, the impacts of AMI on water conservation, and four implementation alternatives (slides are Attachment 1). The implementation alternatives range from providing AMI to only UNC (Option A) to providing AMI to OWASA's entire service area (Option D). Summary information on the four alternatives is included in the Table included as Attachment 2.

- Generally, conversion to larger areas results in higher net present value and return on investment (exception - Option C had higher ROI and lower payback period than Option D). This is because a certain amount of core AMI infrastructure is needed for each option.
- It is assumed that a new AMI system would last 20 years.
- Question was asked what would happen in 20 years if we had to replace the entire system at one time; would OWASA need to make another one-time payment? Potentially, but could plan for that.
- Question was asked if we replaced all meters at one time, would there be operational efficiencies. There potentially could be; we do not know what price of meters would be in future.
- It was noted that if OWASA went ahead with Option D (full replacement) or Option C where we are retrofitting/replacing ~20 percent of the meters, we are likely locking ourselves into a given AMI system for next 20 years.
- Board members noted that the 4 options were not exclusive of one another. In fact, the project could be phased starting with Option B to allow OWASA to test the assumptions in our cost analyses and then move forward with Option C or D if it makes sense. Moving ahead in phases would also allow staff to learn about issues that may come up or customer concerns/questions that should be addressed.

- Others noted that AMI is a mature, proven technology; large utilities are using it so likely relatively low risk. Key question is how do we pay for it.
- Meter prices are increasing; a new requirement affecting costs is that meters can have no lead content.
- AMI will also work with reclaimed water meters.
- Cary recently implemented AMI; they had some "Big Brother" concerns from customers.
- Staff recommends moving forward with complete conversion (Option D). AMI should be evaluated against other needs during the FY 2015 budget planning process.
- Staff also recommends that if OWASA decides to purchase a new billing system, that AMI not be implemented until after new billing system is operational.

Next Steps

- Staff should bring AMI options to staff negotiations around CIP projects for FY2015 and include it as part of the Board discussions during FY 2015 budget process
- Staff should find out if phasing in an AMI system is truly modular. Staff should sharpen cost information around the phasing options.
- Staff should go back to utilities surveyed that have implemented AMI and ask if they would do it again and if so, is there anything they would do differently if they could start over with AMI. AMI capable utilities should also be surveyed as to their evaluation and and experience with providing customers the ability to view meter readings and consumption patterns on-line in (near) real-time.

Adjournment

The meeting was adjourned at approximately 6:50 p.m.

Ruth C. Rouse

Meeting Summary Prepared by: Ruth Rouse, AICP
Planning and Development Manager

Attachment 1

Advanced Meter Infrastructure (AMI) Implementation Options

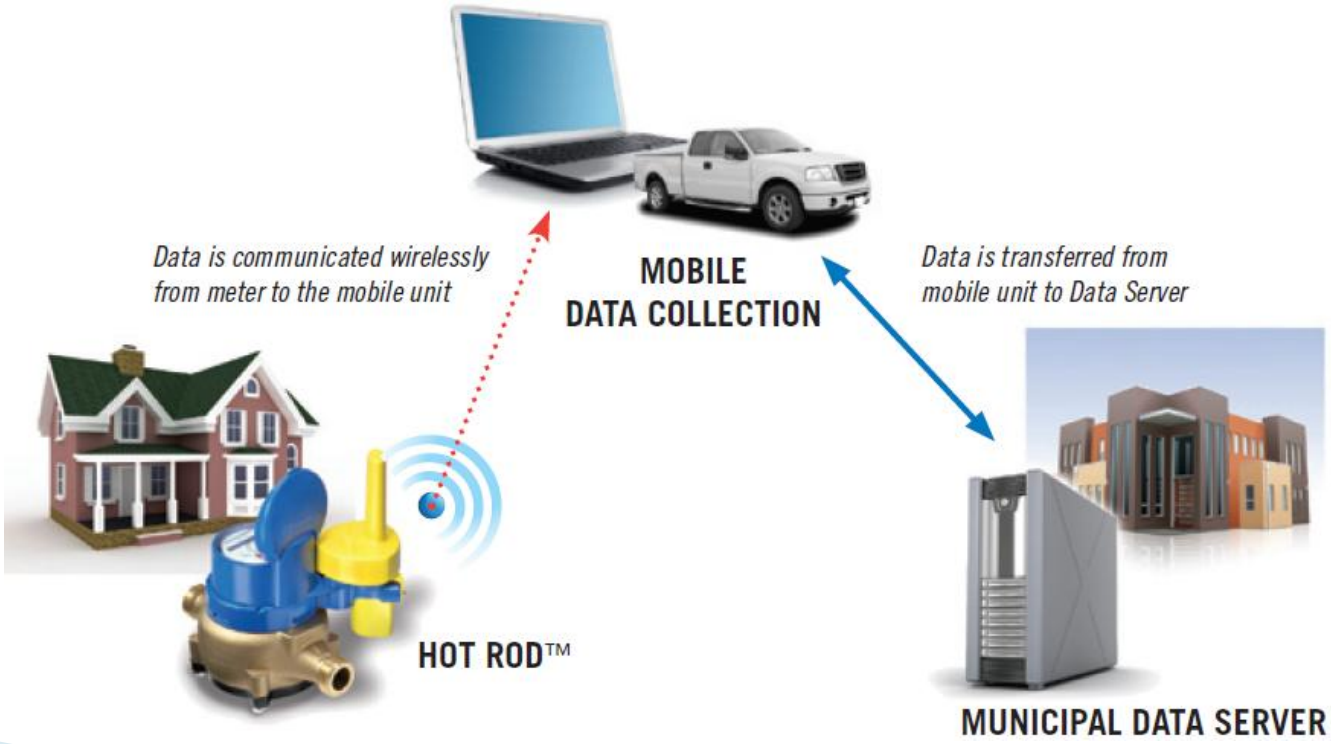
Orange Water And Sewer Authority
NRTS Committee Meeting
November 6, 2013

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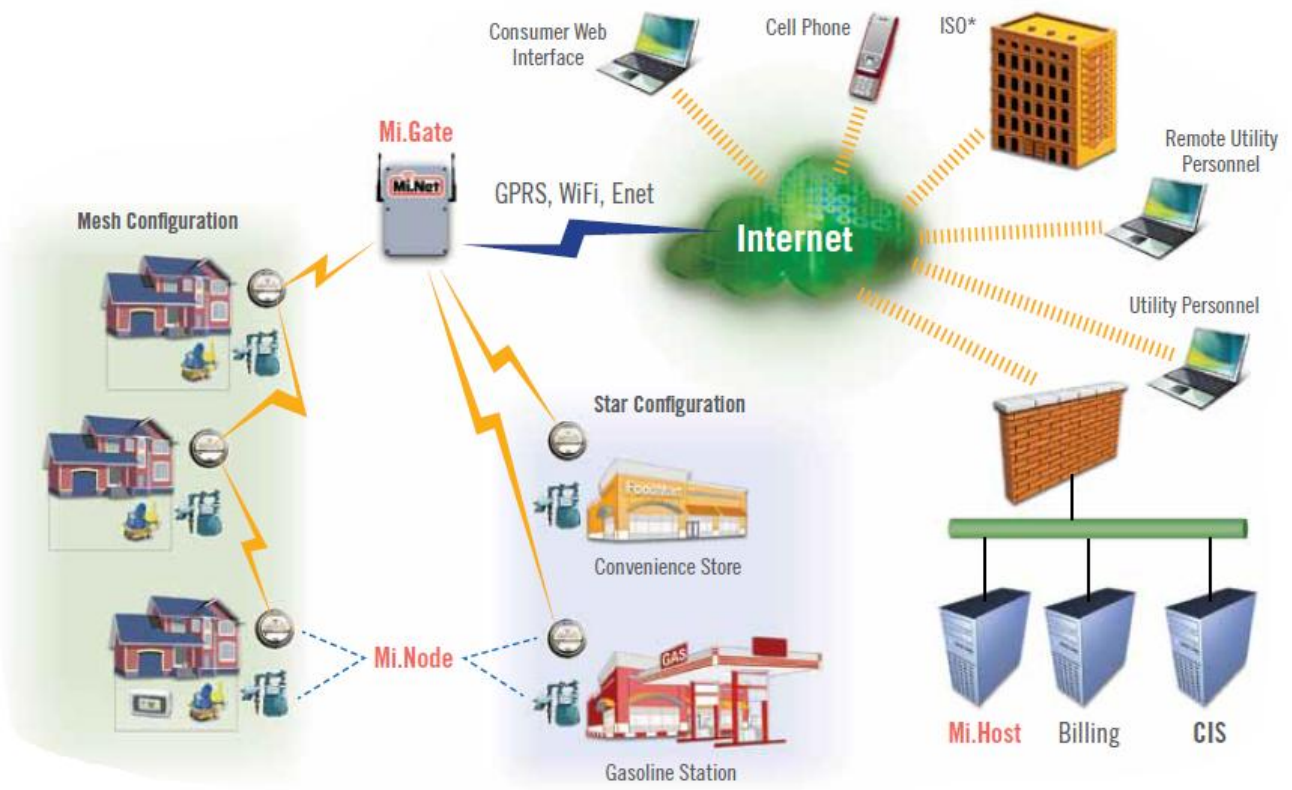
Review of Acronyms

- AMR (Automated Meter Reading) – Reading is accomplished via a drive-by data collector.



Review of Acronyms

- AMI (Advanced Meter Infrastructure) – Reading is accomplished via a fixed network of data collectors.



Current Strategy

- Replace ~1,000 manual read meters per year with AMR meters (radio read via drive-by system)
- ~7,000 AMR meters currently installed
- Cost = ~$150,000/year
- Investment to date = ~$1,000,000
- Full conversion will be achieved in 14 more years at the current pace

Reasons to Consider AMI

- Reduced operating costs
  - Reduced labor, vehicles, etc.
  - Fewer re-reads
  - Remote disconnect capabilities
  - On-demand readings for new service and final bills
- Leak, theft and tamper detection
- Improved reading accuracy/consistency
- Improved workplace safety
- Increased volume and availability of data
- Reduced carbon footprint

AMR Conversion Costs

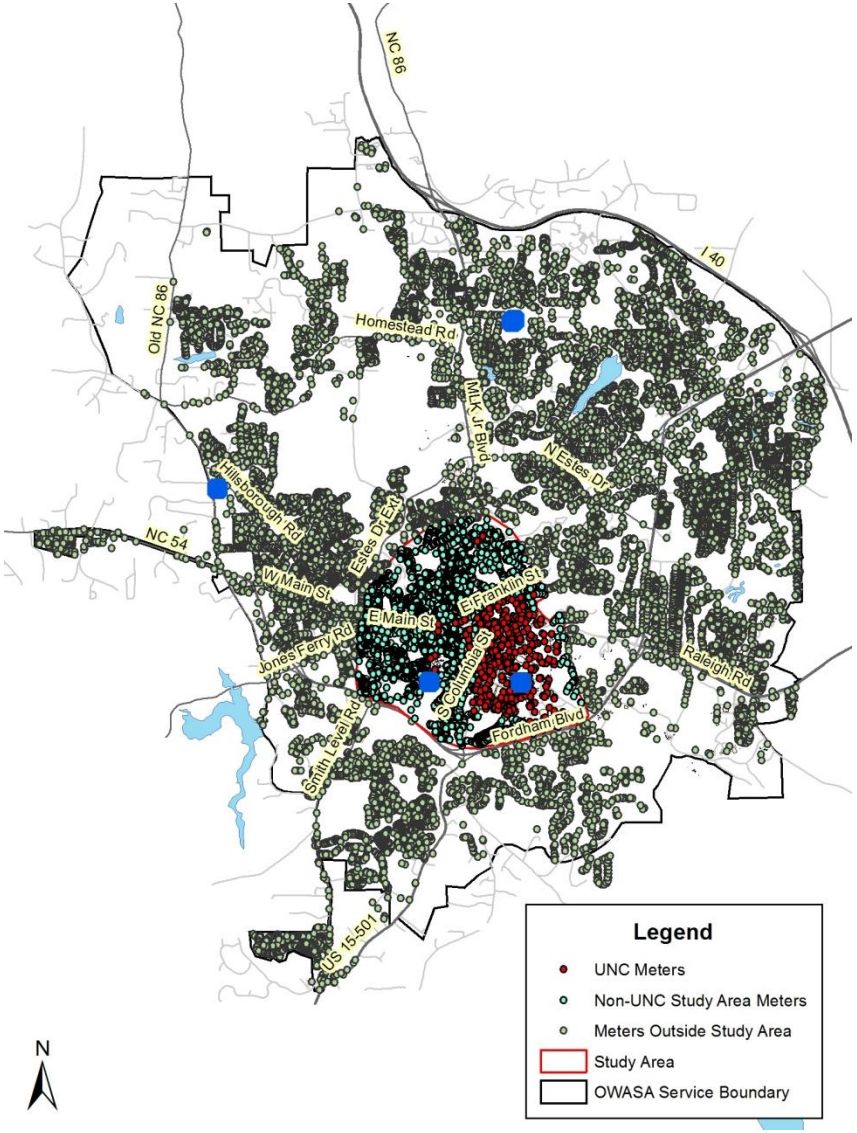
- Current transmitters are not compatible with an AMI system
- New transmitters could be retrofitted depending on the vendor (5/8" Hersey meter retrofit cost = $208 – $65 trade-in allowance = $143)
- Replacement of the meter, register and transmitter could be required depending on vendor (5/8" Hersey meter w/ Mi.Node register and transmitter = $225)

Conservation Impacts

- No utilities contacted indicated increases in water conservation as a result of AMI implementation
- The most cited conservation impact is from early leak detection capabilities
- Potential measures:
  - Peak demand pricing schedules
  - Consumption restrictions and penalties
  - Enhanced ability to bill in smaller usage increments

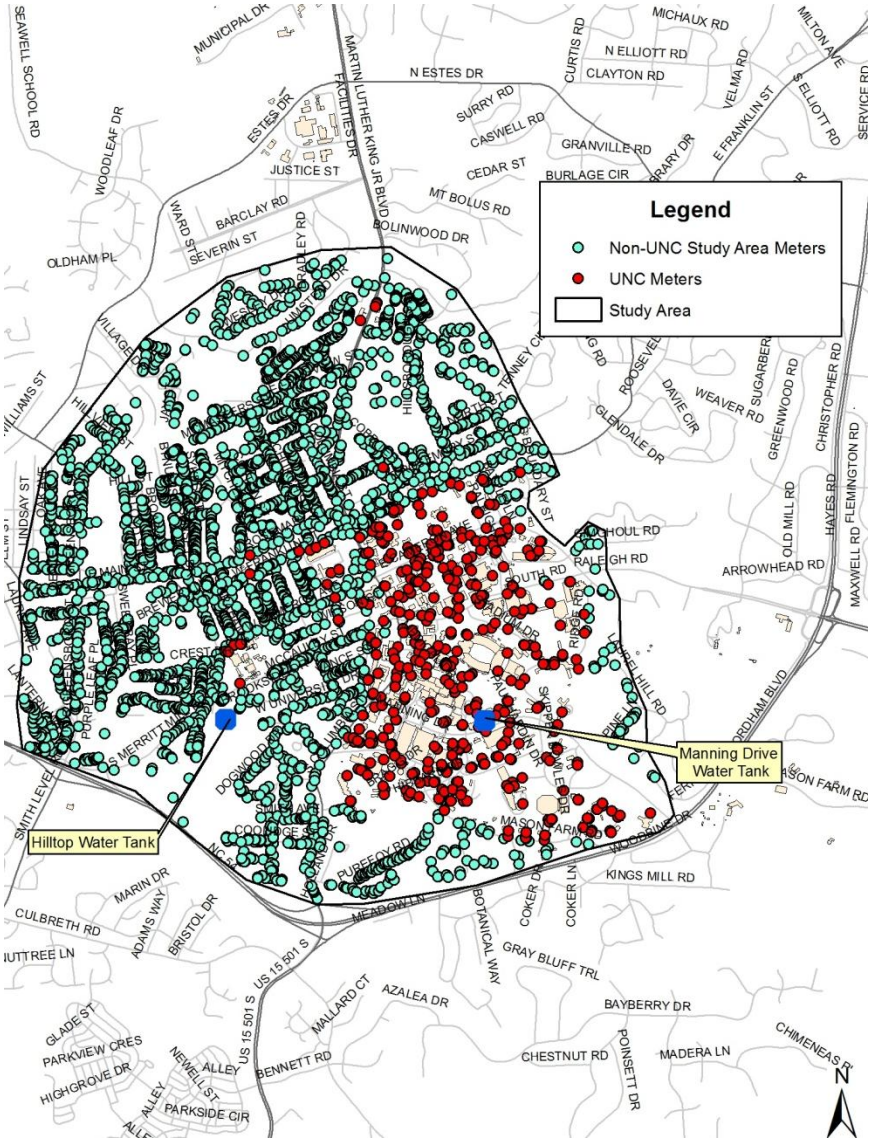
Implementation Options

- Option D – Replace and/or retrofit all meters within the system.
  - 20,842 Meters
  - 12-18 Month Timeframe
  - Total Cost = $5,281,000
  - NPV = $1,765,000
  - ROI = 33%
  - Payback = 10 Years
  - Relative Advantages:
    - Highest NPV
    - Short payback period
    - Most equitable
    - Streamlines billing
  - Relative Disadvantages:
    - Largest initial investment
    - "Throws away" all AMR investments (~$1,000,000)
    - Highest maintenance costs



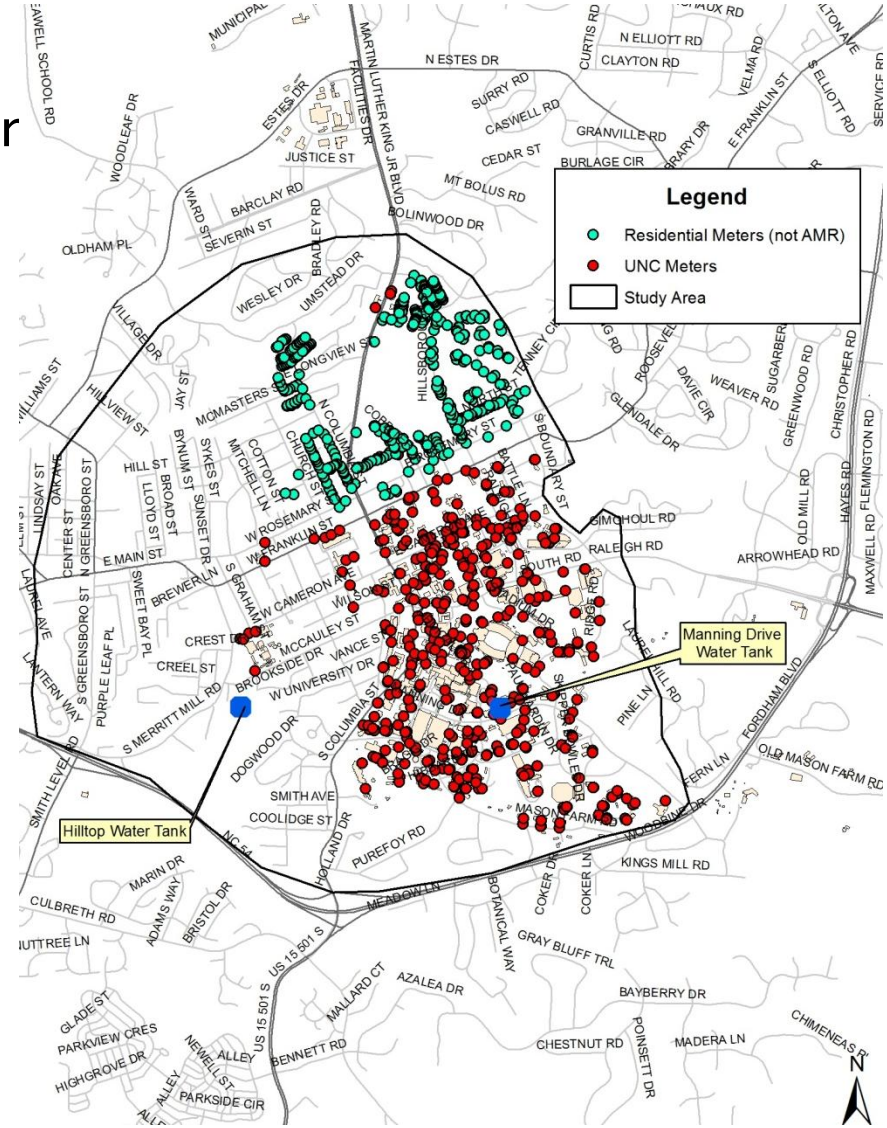
Implementation Options

- Option C – Replace and/or retrofit all UNC Campus, commercial, irrigation and residential meters within the Phase 1 service area.
  - 4,248 Meters
  - 6-12 Month Timeframe
  - Total Cost = $1,336,000
  - NPV = $556,000
  - ROI = 42%
  - Payback = 9 Years
  - Relative Advantages:
    - Maximizes coverage area utilization
    - Highest ROI
    - Shortest payback period
    - High diversity of customer types
  - Relative Disadvantages:
    - Large initial investment
    - “Throws away” some AMR investments (~$173,000)
    - Modest equitability
    - Complicates billing process



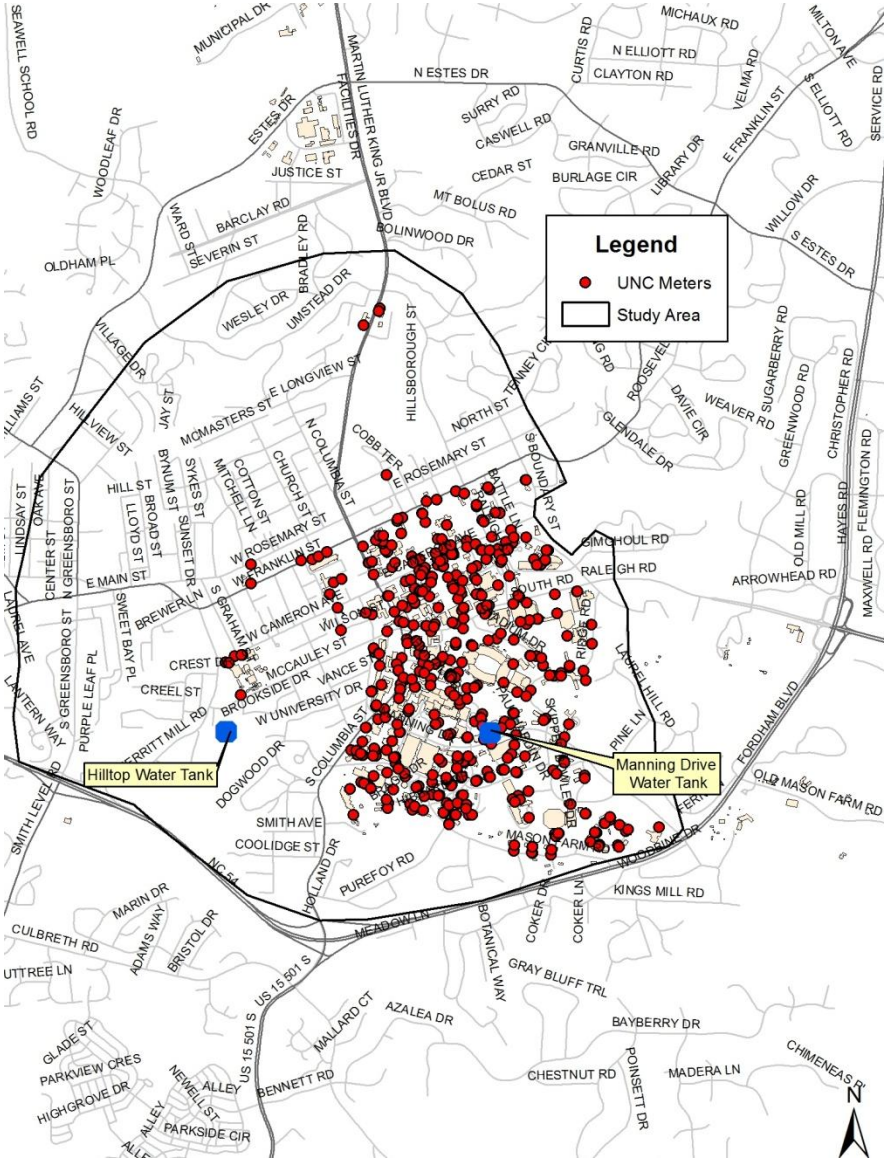
Implementation Options

- Option B – Replace and/or retrofit all UNC Campus meters and 500 residential meters withir the Phase 1 service area.
  - 932 Meters
  - 6-12 Month Timeframe
  - Total Cost = $504,000
  - NPV = -$5,000
  - ROI = -1%
  - Payback exceeds useful life
  - Relative Advantages:
    - Moderate initial investment
    - Some diversity of customer types
  - Relative Disadvantages:
    - Low utilization of coverage area
    - High network infrastructure investment (21% of the total cost)
    - Complicates billing process
    - Negative NPV & ROI
    - Low equitability



Implementation Options

- Option A – Replace and/or retrofit UNC Campus meters within the Phase 1 service area.
  - 432 Meters
  - 6-12 Month Timeframe
  - Total Cost = $385,000
  - NPV = -$45,000
  - ROI = -12%
  - Payback exceeds useful life
  - Relative Advantages:
    - Smallest initial investment
    - High acceptance & utilization by UNC
  - Relative Disadvantages:
    - Low utilization of coverage area
    - High network infrastructure investment (30% of total cost)
    - Complicates billing process
    - Negative NPV & ROI
    - Least equitable



Staff Recommendation

- If unconstrained by cost…
- Option D, a one-time, complete conversion to an AMI system
  - Highest net present value
  - Most equitable to customers
  - Streamlines the billing process
- Include project in FY 2015 budget discussions
- Schedule implementation after the new billing system is operational

Discussion

Table 1
Advanced Meter Infrastructure (AMI)
Implementation Options

Option	A	B	C	D
Description	Replace and/or retrofit UNC Campus meters within the Phase 1 service area.	Replace and/or retrofit UNC Campus meters and 500 residential meters in the Phase 1 service area.	Replace and/or retrofit all UNC, commercial, irrigation and residential meters in Phase 1 service area.	Replace and/or retrofit all meters in the system.
Quantity of Meters	432	932	4,248	20,842
Installation Schedule	6 - 12 months	6 - 12 months	6 - 12 months	12-18 months
Total Investment	$385,000	$504,000	$1,336,000	$5,281,000
Net Present Value (NPV)	-$45,000	-$5,000	$556,000	$1,765,000
Return on Investment (ROI)	-12%	-1%	42%	33%
Payback Period (Years)	Payback exceeds useful life	Payback exceeds useful life	9	10
Relative Advantages	-Smallest initial investment -High acceptance & utilization by UNC	-Moderate initial investment -Some diversity of customer types	-Maximizes coverage area utilization -Highest ROI -High diversity of customer types -Shortest payback period	-Highest net present value -Most equitable to all customers -Streamlines billing process
Relative Disadvantages	-Low utilization of coverage area -High network infrastructure investment (30% of total cost) -Complicates billing process -Negative NPV & ROI -Least equitable	-Low utilization of coverage area -High network infrastructure investment (21% of total cost) -Complicates billing process -Negative NPV & ROI -Low equitability	-Large initial investment -"Throws away" some AMR investments (~$173,000) -Modest equitability -Complicates billing process	-Largest initial investment -"Throws away" all AMR investments (~$1,000,000) -Highest maintenance costs

Assumptions:

-20 year equipment life cycle
-3.3% discount rate
-1% revenue gain
-Elimination of labor costs equivalent to 5 full-time positions
-Unit prices provided by Mueller Systems on 9/10/2013 are still valid
-Meter information obtained from GIS is accurate.
-Growth rates and trends used in NPV calculations are accurate
-Current meter changeout program expenses are not accounted for (~$150,000-$200,000/year)
-Cash purchase