



Advanced Metering Infrastructure (AMI)

- A Smart City Initiative -

City Council Presentation
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Presented by:

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What is a Smart City?

Leveraging Technologies and Data-driven Insights to Improve:

- Quality of Life
- Citizen Engagement
- Economic Development
- Service Delivery
- Community Vibrancy

Provide responsive solutions that enhance the live, work, and play experiences of people in the community

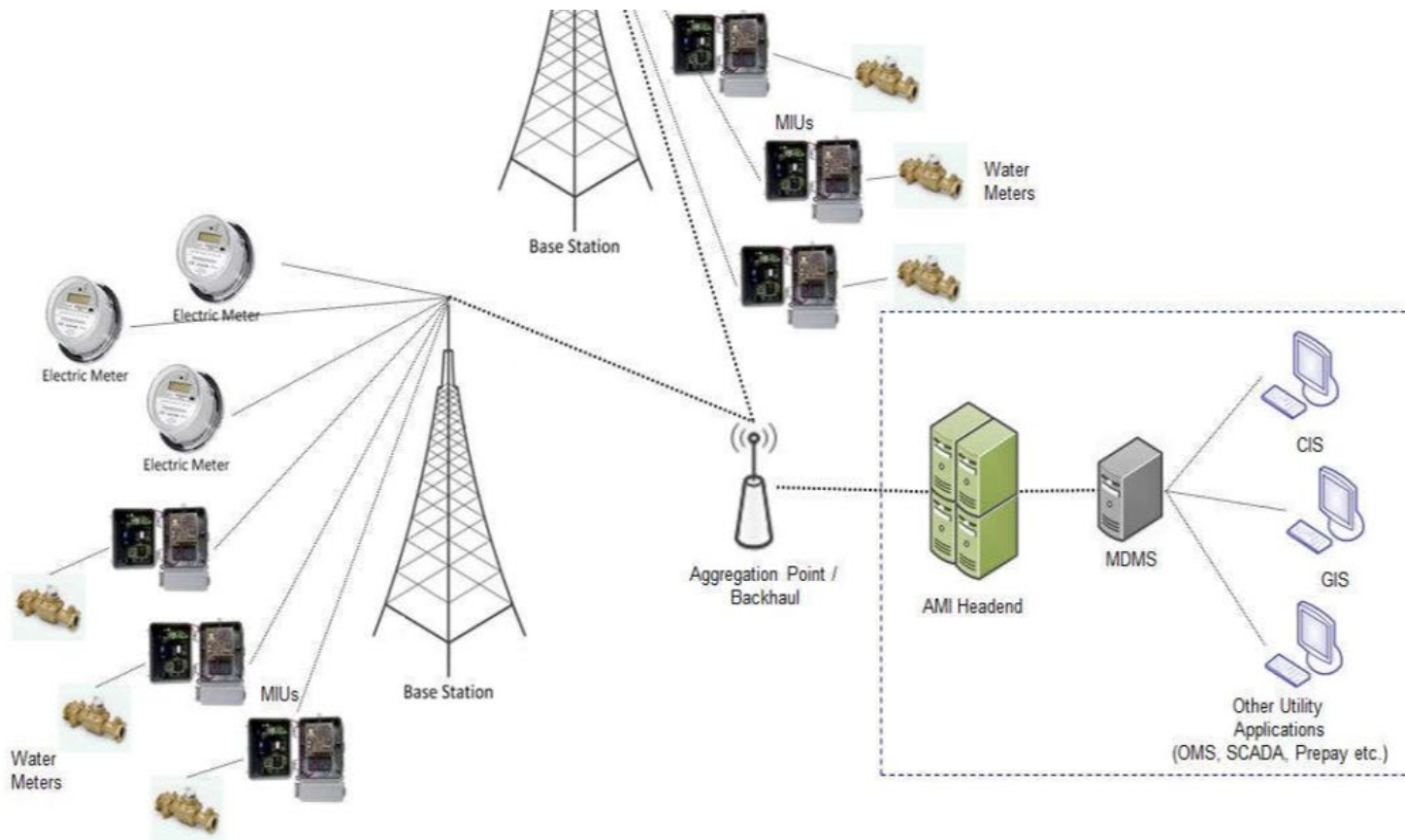
“Data is the fuel that powers our efficient and innovative services.”

Mayor John Giles

From the “City of Mesa Smart City Master Plan”

Advanced Metering Infrastructure (AMI) is also known as SMART METERS

- Existing meters are either replaced with a “smart” meter or retrofitted with a “smart” component depending on type of meter
- Commodity usage is measured at predetermined time intervals and communicated to a central location
- Commodity consumption data is available for both staff and customer review on a timely basis
- Remote service turn-on/turn-off available for some commodities



How Does a Smart Meter Work?

- Creation of the Information (Source/Endpoint)
- Collection of the Data
- Transmission of the Data
- Process/Storage of Raw Data (Headend)
- Conversion of Raw Data to Usable Data
- Usage of Data in Decision Making
 - By the City
 - By Customers
- Data Transmission back to Source where applicable (2-way communication)

Anticipated Benefits

Increased efficiency resulting in decreased system costs and additional revenue

- Minimal need for manual meter reading (\$1.72M/yr. savings)
- 80% reduction in trips for customer service calls (about 7,900 work hours)
 - *From 82,426 trips/yr. to 16,425 trips/yr.*
 - *Remote review of usage patterns*
- Improved meter accuracy (\$2.7M/yr. additional revenue)
 - *Timely removal of inaccurate meters*
- Increased water portfolio from conservation and efficient use

Timely access to usage data

- Customer/City notification of unusual usage
 - *Customer Portal*
- Increased customer engagement and control
 - *Setting of usage thresholds with notifications*
 - *Better conservation management*
- Reduced water leakage due to early detection (unbilled water)
- Improved outage management for Electric and Gas
- Two-way communication
- Faster response to theft/diversion

“In general, Mesa is well-informed and well-prepared for an AMI program implementation. Since Mesa has water, gas and electric utilities, the deployment logistics are more complicated, but there are also financial and operational advantages, especially in areas where there is service territory overlap and on the administration of the network and back office systems.”

UtiliWorks Consulting, LLC. conducted an assessment study and presented their findings to the City in October, 2018

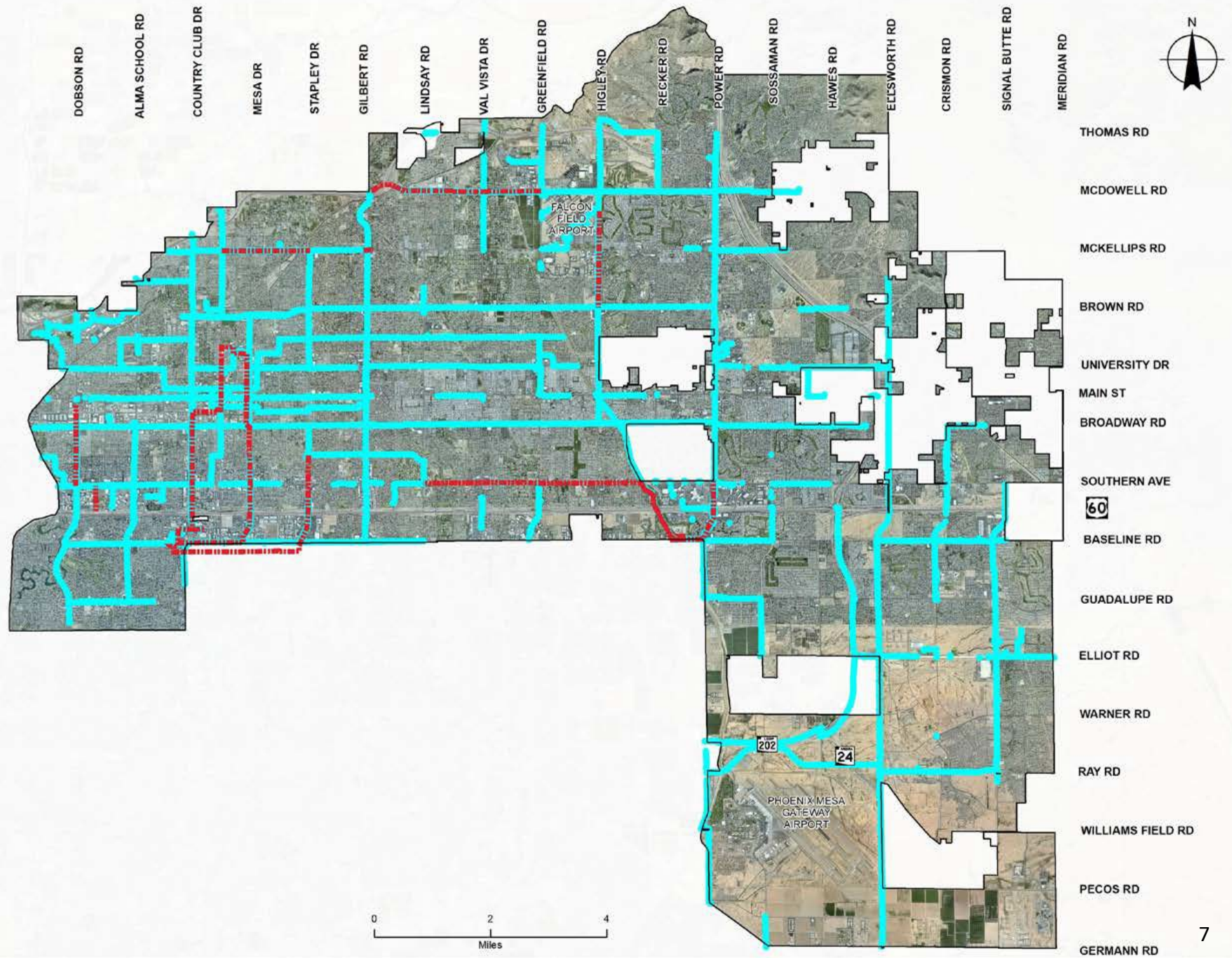
Cost scenarios for inclusion of all three utilities showed a return on investment of 12-13 years

Current State Analysis & Business Case

City Fiber Infrastructure

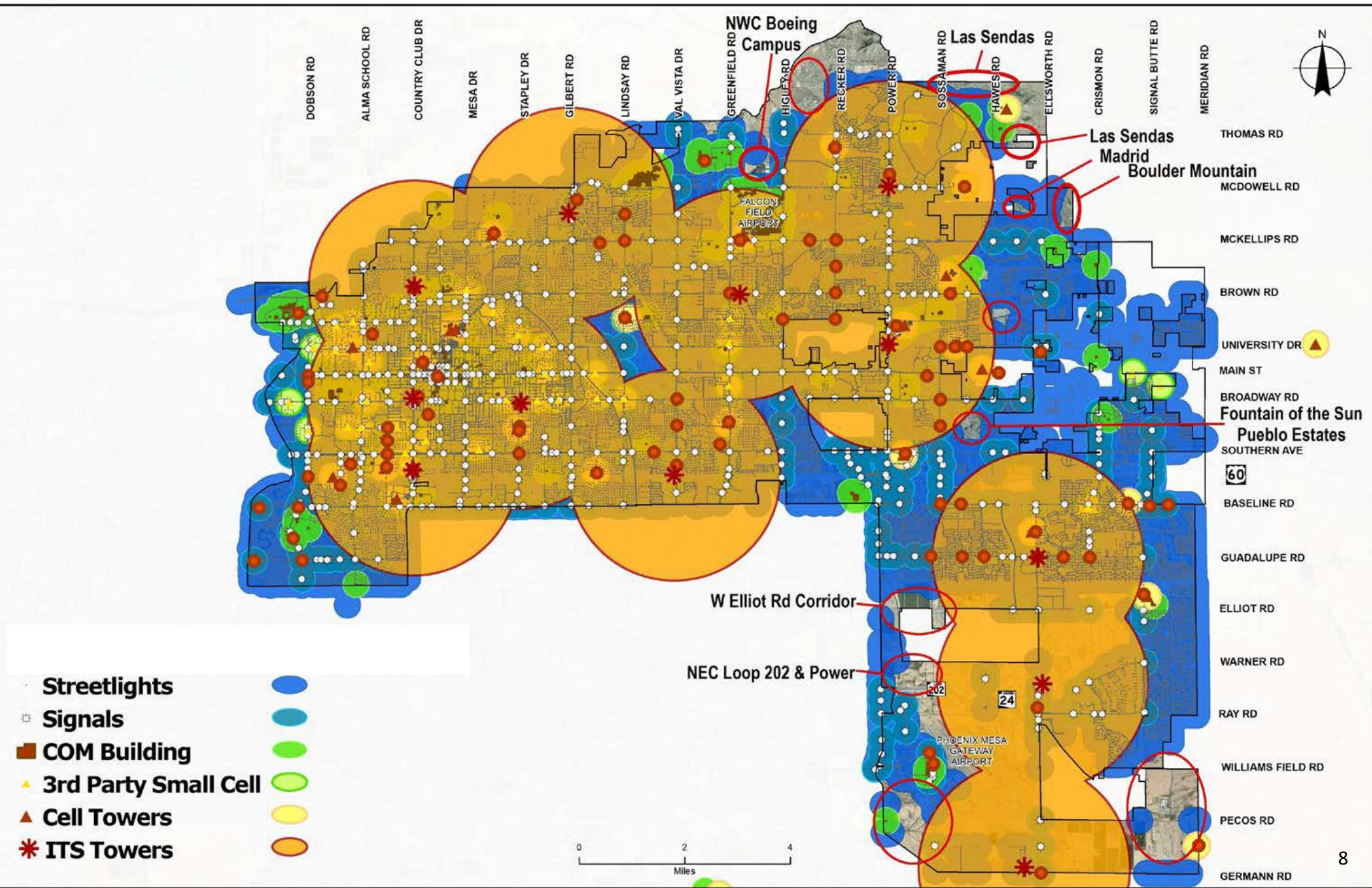
Engineering GIS 2: Project Files\City Manager Office\CONAM\Exhibits\Fiber.mxd 2/11/2019

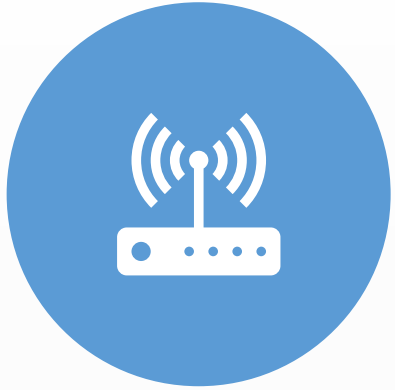
■■■■ 2018 Fiber Bond
■■■■ Installed Fiber



Other City Infrastructure

Engineering GIS Z:\Project_Files\City Manager_Office\COM\MIE\Exhibits\FinalSlide.mxd 2/8/2019





METER AND ENDPOINT



COMMUNICATION
NETWORK



METER DATA
MANAGEMENT SYSTEM



PROJECT MANAGEMENT

Meter population at time of consultant assessment: 229,210

Water 148,580, Gas 63,900, Electric 16,730

Meter replacement needs: Water 80%, Gas 92%, Electric 100%

Key Infrastructure Components

Mesa AMI Phase 1 Overview/Goals

Two unique geographic locations

- Downtown (Electric/Water/Gas, ready access to fiber)
- Superstition Springs area (Water/Gas, far east location, mix of older and newer meters)

Mix of residential and commercial meters

Determine the default frequency for data collection and transmission

- Frequency may be different for each utility
- Frequency of data reads is different than frequency of transmission of the data
- Timeliness/usability of data versus effect on life of the equipment

Mesa AMI Phase I Overview/Goals Continued

Test of Transmission Infrastructure

- Assessment of City infrastructure and determination of need

Determine Desired Technology

- Multiple technologies considered with intent for one type for full City deployment

Management System Integration

- Use for system oversight/data analytics, integration with billing system (CIS), customer portal value/usability

Project Management Consultant Engaged

- The City has contracted with ***Arcadis***, a design and consulting firm with expertise and experience in the advanced metering infrastructure industry as well as smart city infrastructure
- Contract signed Oct. 31, 2019
- Consultant on-site this month (Nov. 2019)
- Consultant will have a prominent role in the City's needs assessment, system design, and vendor procurement



Metering



Technology and Security



Integration and Reporting



Organizational Change Management and
Business Process



Communications (Internal and External)

**Five Teams
of Subject
Matter
Experts**

Anticipated Project Timeline





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