

# Advanced Metering Infrastructure

North Marin Water Districts Path to AMI

# Introduction

- \* Robert Clark, Operations / Maintenance Superintendent
  - \* AMI Project Manager
- \* Who do we have in attendance today?

# District Background

- \* North Marin Water District is located in the town of Novato in North Marin County.
- \* 1948 The Novato community approves formation of North Marin Water District and purchase of the Novato Water Company.
- \* Population of 60,000 residents with 20,500 service connections.
- \* Annual water use of 2,750,000,000 gallons of water.

# AMI Agenda

- \* NMWD Service Area
- \* Water Meter Population
- \* Benefits (why Choose AMI)
- \* Business Case
- \* Risks
- \* Areas of Concern
- \* Implementation Planning
- \* Operational Impacts
- \* Project Cost Summary
- \* Project Benefit Summary

# Service Area



# Table 4: Water Meter Population

Meter Size	Count
5/8 inch	15,110
3/4 inch	16
1 inch	4,589
1.5 inch	440
2 inch	252
3 inch	70
4 inch	10
6 inch	6
8 inch	2
10 inch	1

# Benefits (Why Choose AMI)

- \* Reduced Water Loss -
- \* Reduced Greenhouse Gas Emissions –
- \* Monthly Billing –

# Benefits Continued

- \* Increased Customer Engagement -
- \* Increased Customer Service –
- \* Increased Customer Satisfaction –
- \* Employee Safety -



# Business Case

<b>Net Present Value (\$000)</b>	<b>-\$295</b>
<b>Internal Rate of Return</b>	<b>2.1%</b>
<b>Return on Investment</b>	<b>17%</b>
<b>Payback Period</b>	<b>17 Years</b>
<b>Total CapEx (\$000)</b>	<b>\$5,228</b>

# Risks

- \* Lack of project team and internal stakeholder buy-in could lead to project failure.
- \* Insufficient project funding could lead to project delays or work stoppage.
- \* A lack of public awareness and education concerning the AMI program could lead to public concerns and hostility within the community.
- \* Ongoing or upcoming infrastructure projects may compete for resources.
- \* Inadequate resources to support the ongoing operations, maintenance, and data analytics of the AMI system.

# Areas of Concern

- \* Some PG&E customers have voiced anti-smart meter concerns.
- \* Water volume currently collected as CCF with conversion made to gallons by the billing system.
- \* Bi-monthly billing cycle currently in place; some customers complain of high bills
- \* Billing adjustments
- \* Customers complain of meter reads being incorrect
- \* FSR crews of three will refocus their time to increased customer service and water conservation with AMI

# Areas of Concern Continued

- \* Water meters nearing end of life and may have diminished accuracy capabilities
- \* Exception reporting - Hi/Lo reads, missed reads (Skips) - is time consuming to verify and correct.
- \* Call volumes by CSRs
- \* Higher volume of data will require an MDMS
- \* Core Utilities Billing Software houses volume metric as CCF
- \* Storage, cyber security and path of data will be very important moving to AMI.

# Implementation planning

TOTAL PHASE I - VII	Hours	Cost	Travel Estimate
Phase I - Assessment	180	\$ 37,185	\$ 3,000
Phase II - Roadmap	66	\$ 14,303	\$ 1,500
Phase III - Pilot Project Planning	243	\$ 55,215	\$ 4,500
Phase IV – Pilot Project Implementation	390	\$ 81,405	\$ 12,000
Phase V – Pilot Project Assessment	38	\$ 8,093	\$ 1,500
Phase VI - Full Implementation Planning	165	\$ 37,245	\$ 7,500
Phase VII – Full Implementation	741	\$ 144,533	\$ 30,000
<b>Total</b>	<b>1,823</b>	<b>\$ 377,978</b>	<b>\$ 60,000</b>

# Operational Impacts

- \* Personnel/Human Resources
- \* Business Process Re-Engineering
- \* Data/Information Processing

# Personnel / Human Resources

- \* Program Manager
- \* AMI System Technician
- \* Data Analyst
- \* AMI Infrastructure O&M
- \* Meter Reading
- \* IT / Systems Administration

# Business Process Re-Engineering

- \* Meter Reading
- \* Move In/Move Out
- \* Billing Process
- \* Customer Inquiries
- \* Mass Meter Exchange
- \* Single Meter / Endpoint Exchange
- \* Utility Operations



# Data / Information Processing and Reporting

- \* Meter Data Management System (MDMS)
- \* Data retention,
- \* Notifications,
- \* Reporting and
- \* Alarm functionality

# Project Cost Summary

Cost Area	Total Capital Cost	Annual O&M Cost
<b>AMI Costs</b>		
AMI Network Infrastructure, Software, and Professional Services	\$260,000	\$27,000
MDMS and Customer Portal Software, and Professional Services	\$107,500	\$30,000
Management Services	\$350,000	\$0
NMWD Project Team	\$000	\$46,200
Contingency (5%)	\$248,849	\$0
<b>Water Meter Costs</b>		
Water Meters and Lids	\$3,429,677	\$0
Meter Installation Services and Equipment	\$829,798	\$0

# Project Benefits Summary

Benefit Area	Key Assumption(s)	Annual Benefit (\$)
Meter Reading Reduction	95% reduction	\$153,900
Customer Call Reduction	30% reduction	\$19,715
Re-Read Reduction	95% reduction	\$35,340
Move In/Move Out Read Reduction	95% reduction	\$20,026
Water Loss Savings	5% savings	\$12,915

# Project Benefits Summary

<b>Billing Services and Exception Handling Reduction</b>	<b>20% reduction</b>	<b>\$5,257</b>
<b>Revenue Capture from Aging Meters</b>	<b>80% savings</b>	<b>24,598</b>
<b>Water Theft Identification</b>	<b>.25% savings</b>	<b>31,752</b>
<b>Water Meter Scrap Value</b>	<b>\$1.20 scrap/lbs.</b>	<b>\$7,939</b>
<b>Lower Pumping Costs</b>	<b>5% Savings</b>	<b>\$10,700</b>
<b>Annual Meter Replacement Budget</b>	<b>20% reduction</b>	<b>\$26,400</b>

# Questions