Montara Water and Sanitary District
2011 New Customer CIP
and
Water Capacity Charge

Presentation to Board
April 21, 2011

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PRESENTATION OUTLINE

- Master Plan Overview
  - Purpose and Approach
  - Supply and Demand Overview
  - Storage Requirements
  - Distribution System Analysis
- Capital Improvements Program
  - Purpose and Approach
  - 2011 MWSD New Customer CIP
- Water Capacity Charge
  - Purpose and Approach
  - Relevant Legal Requirements
  - Capacity Charge Calculation

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MASTER PLAN OVERVIEW
Purpose and Approach

Master Plan Objectives:

- To present a clear picture of the current supply, demand, and distribution system conditions of the water system
- To project the future demands on the system and assess the capacity of the sources and distribution system to meet that demand
- To act as the guiding document for future policy and management decisions

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MASTER PLAN OVERVIEW
Purpose and Approach

Master Plan Outcomes:

- A living planning document that focuses on water system supply, demand, and distribution system analysis, usually updated every 5-10 years
- ***Capital Improvements Program***: a short-term plan that identifies capital projects and equipment purchases, and provides a general schedule and budget for the improvements

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MASTER PLAN OVERVIEW
Definitions

- **CRITICAL:** The production of MWSD sources are dependent upon the demand on the system
- **Production:** The production of the system is the volume of water that sources produced and fed into the MWSD system. Production was calculated from the operator logs for each water source.
  - Used to calculate demand
- **Consumption:** The consumption values represent the actual usage of the MWSD customers. Consumption was calculated based on the billing record summaries.
  - Used to calculate conservation
- **Unaccounted-for-water:** Difference between Production and Consumption; water losses

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MASTER PLAN OVERVIEW
Supply and Demand Analysis

Supply and Demand Summary	
Average Daily Demand (ADD) OR **Average Daily Source Production** *Based on source production records*	318,418 gpd
Maximum Daily Demand (MDD) OR **Maximum Daily Source Production** *Based on source production records*	473,758 gpd
Average Daily Water Use *Based on Metered Sales Records*	292,400 gpd
Total Reliable Supply *Calculated with largest source out of service*	470 gpm OR 676,800 gpd

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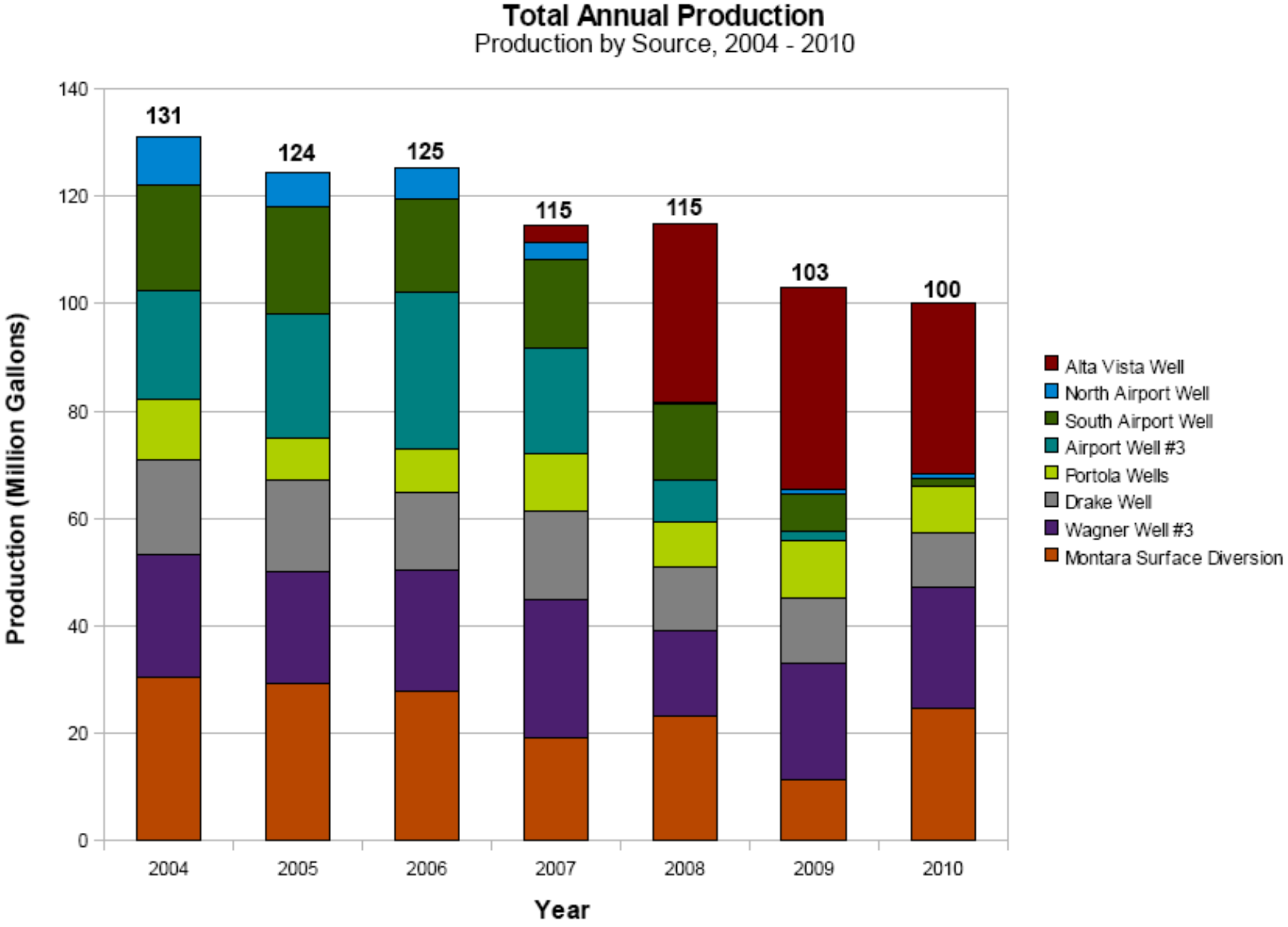
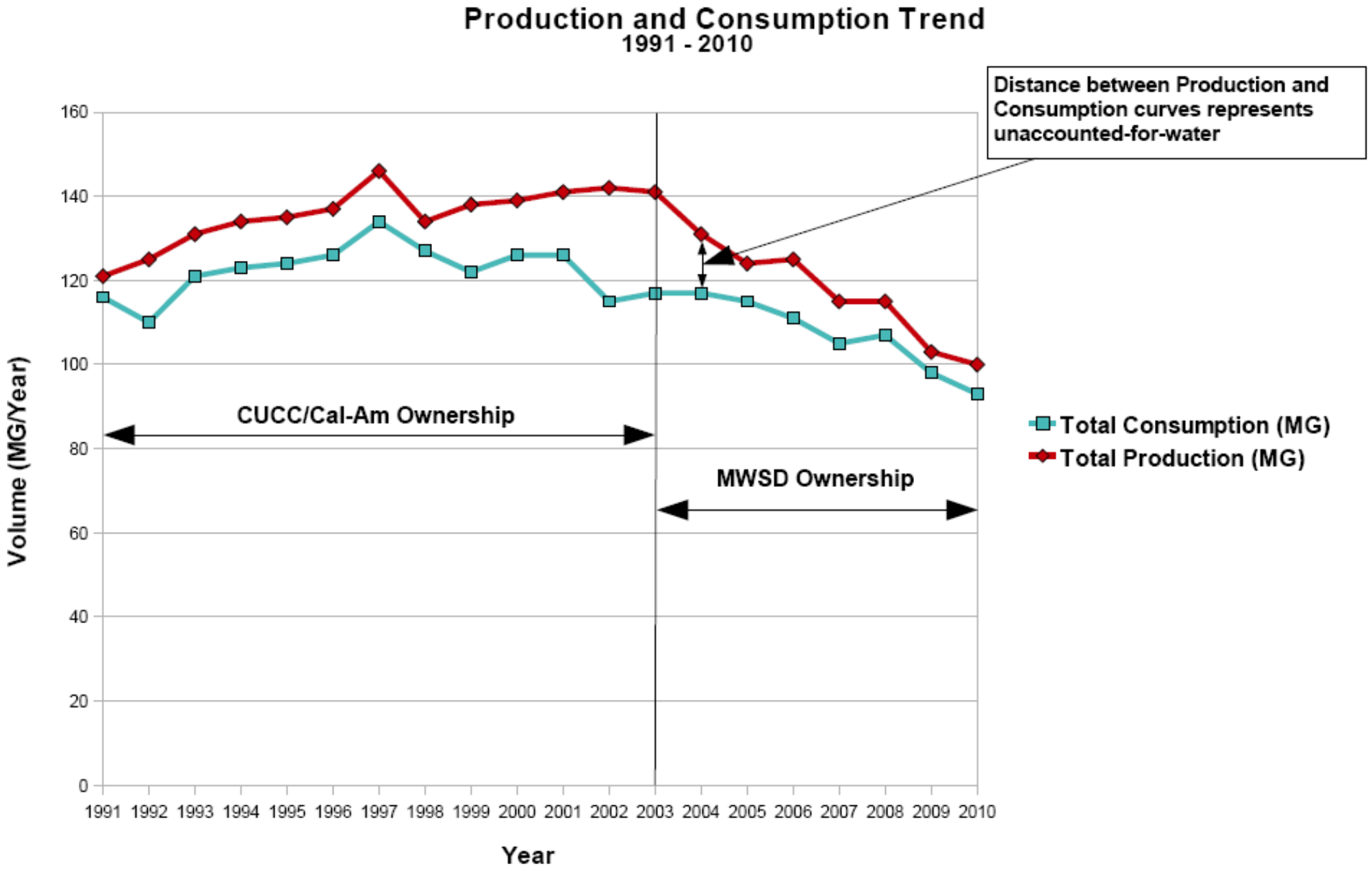

Total Annual Production
Production by Source, 2004 - 2010
Production (Million Gallons)
140
120
100
80
60
40
20
0
131
124
125
115
115
103
100
2004
2005
2006
2007
2008
2009
2010
Year
Alta Vista Well
North Airport Well
South Airport Well
Airport Well #3
Portola Wells
Drake Well
Wagner Well #3
Montara Surface Diversion

MASTER PLAN OVERVIEW
Supply and Demand Analysis



MASTER PLAN OVERVIEW
Supply and Demand Analysis

Per capita demand was determined from 2000 US Census data, MWSD production records, and water connection records

Per Capita Demand Calculation	
Average Daily Demand (ADD)	318,418[1]
Maximum Daily Demand (MDD)	473,758[1]
Number of Residential System Connections	1614
Household Size	2.74 people/household[2]
Population Served	4,422 people
Per Capita Demand	**72 gpcd[3]**

[1] Calculated empirically from production records

[2] Based on 2000 census data

[3] The ADD includes the 30 commercial water connections in the service area, so the population absorbs that demand in the per capita demand estimate

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MASTER PLAN OVERVIEW
Supply and Demand Analysis

- Based on 2000 US Census data, MWSD sewer and water connection records, the 2009 DRAFT SM County LCP, and calculated per capita demand

Year	Total Population	Average Annual Rate of Growth	Projected ADD (gpd)	Projected MDD (gpd)
2000	4,903	--	--	--
2010	5,283	.75	380,376	570,564
2020	5,836	1	420,192	630,288
2030	6,447	1	464,184	696,276
2040	7,121	1	512,712	769,068
2050	7,866	1	566,352	849,528
2060	8,689	1	625,608	938,412
Buildout (2066)	9,215	1	663,480	995,220

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MASTER PLAN OVERVIEW

Supply and Demand Analysis

- Reliable supply will match projected MDD around the year 2027
- Additional connections can be served with existing supply

Year	Total Reliable Supply (gpd)[1]	Projected MDD (gpd)	Excess or Deficit Supply (gpd)
2010	676,800	570,564	106,236
2020	676,800	630,288	46,512
2030	676,800	696,276	-19,476
2040	676,800	769,068	-92,268
2050	676,800	849,528	-172,728
2060	676,800	938,412	-261,612
Buildout (2066)	676,800	995,220	-318,420

[1] **Calculated from the reliable supply capacity of 470 gpm for 24 hours**

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MASTER PLAN OVERVIEW
Storage Requirements

- **Operational Storage:** required operational storage volume is the quantity of water necessary to moderate daily fluctuations in demand beyond the capabilities of the production facilities
  - 25% of MDD
- **Emergency Storage:** required emergency storage volume is a function of supply sources, redundancy, reliability of production facilities, and the anticipated length of emergency outage
  - 2 x ADD (based on AWWA Guidelines)
- **Fire Protection Storage:** required fire protection storage volume is defined by the National Fire Code and local Fire Department
  - 2 hrs x 2,000 gpm

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MASTER PLAN OVERVIEW
Storage Requirements

	Current	2020	2040	Buildout
ADD	318,418	420,192	512,712	663,480
MDD	473,758	630,288	769,068	995,220
Operational Storage (25% of MDD)	118,440	157,572	192,267	248,805
Emergency Storage (2 x ADD)	636,836	840,384	1,025,424	1,326,960
Fire Fighting Storage (2 hr @ 2,000 gpm)	240,000	240,000	240,000	240,000
Total Storage Required	**995,276**	**1,237,956**	**1,457,691**	**1,815,765**
Existing Storage	642,000	642,000	642,000	642,000
Current Storage Deficit	**353,276**	**595,956**	**815,691**	**1,173,765**

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MASTER PLAN OVERVIEW
Distribution System Analysis

- Model utilizes Navier Stokes equations to mathematically simulate the water system
- Once calibrated, the model can be used to test system stress, such as fire flows, peak hour demands, and future demands
- Model results such as high pipeline velocity or headloss, or low/high node pressures, can help identify areas in need of improvement
- System capacity can be improved dramatically by merely replacing aged pipes

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CAPITAL IMPROVEMENTS PROGRAM
Purpose and Approach

- Water Master Plan is a living document reviewed every 5 to 10 years
- One of the results of a Water Master Plan is usually a Capital Improvement Program (CIP)
- A CIP identifies and prioritizes projects that are necessary to ensure a safe and reliable water supply for years to come
- CIP Projects are usually scheduled according to future need and available budget

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CAPITAL IMPROVEMENTS PROGRAM
Purpose and Approach

- **CIP Projects are identified different ways:**
  - System Calculations / Deficiency Analysis
  - Infrastructure Inspection and Assessment
  - Operator Interviews
  - Redundancy Review
  - Hydraulic Computer Modeling – Distribution System Analysis

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CAPITAL IMPROVEMENTS PROGRAM
2011 MWSD New Customer CIP

- The *2011 New Customer CIP* was developed based on system deficiencies due to new customer demand
- The *2011 New Customer CIP* only includes improvements necessary to serve additional customers
- The *2011 New Customer CIP* is complementary to the annually updated *Existing Customer CIP*, which addresses deficiencies due to existing customer demand

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CAPITAL IMPROVEMENTS PROGRAM
2011 MWSD New Customer CIP

- Consists of 12 improvement projects
- Implemented and financed over 14 years
- All projects are *Level 1 Priority*
- Total CIP cost is $8.81M
- To be financed by the Water Capacity Charge

CIP Project List
1. Develop Additional Supply Reliability
2. Portola Tank Telemetry Upgrade
3. New and Upgraded PRV Stations
4. SCADA Improvements
5. Schoolhouse booster Pump Station - New
6. Treatment Upgrades
7. Phase I PWP Projects
8. PWP Phase II Development and Implementation
9. Valve Installation Program
10. New Water Storage Tank
11. Wagner Well Pump Upgrade
12. Water Main Upgrades

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2011 MWSD NEW CUSTOMER CIP

Develop Additional Supply Reliability

- Provides for planning, permitting, and implementation of water supply augmentation to ensure that reliability remains intact with the addition of the new water customers
- District has 20 percent water supply reliability and redundancy, which will initially be utilized to add new customers
- This supply reliability needs to be replenished and paid for by the new customers
- **Estimated Cost:** $2,270,000

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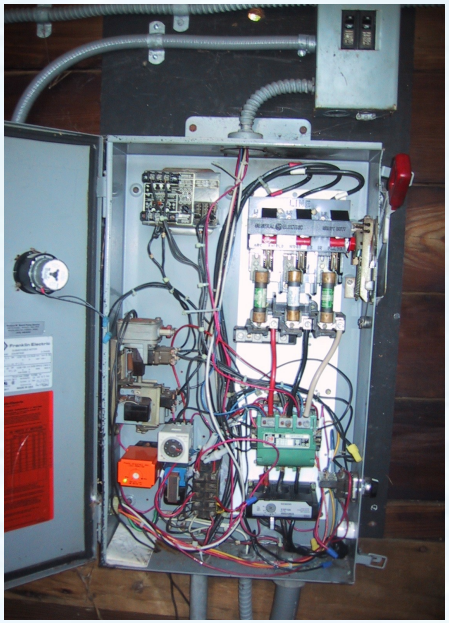
2011 MWSD NEW CUSTOMER CIP



Portola Tank Telemetry Upgrade

- Existing Portola Tank currently operates with no telemetry link to SCADA
- Addition of new customers requires adding the tank to SCADA to ensure optimization of operations
- **Estimated Cost:** $50,000

New and Upgraded PRV Stations

- The addition of new customers throughout the service area will result in the installation of up to 5 new PRV stations and upgrade of up to 10 existing PRV stations
- **Estimated Cost:** $300,000

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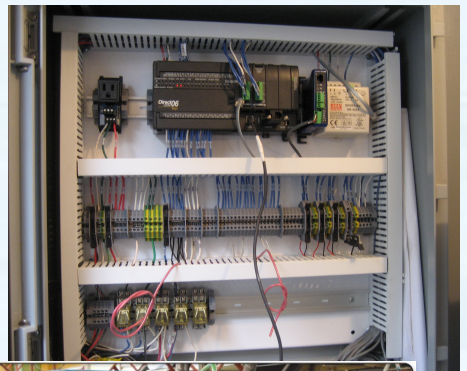
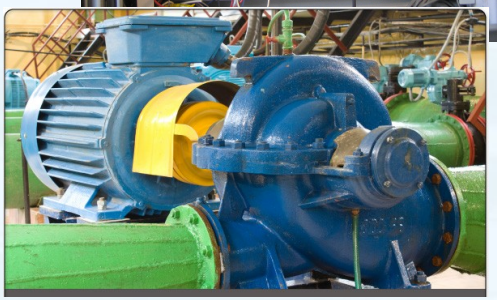
2011 MWSD NEW CUSTOMER CIP

SCADA Improvements

- The SCADA system operates at capacity and expansion is required to accommodate addition of new water customers
- Includes the equipment and installation work
- **Estimated Cost:** $50,000



Schoolhouse Booster Pump Station



- Additional demand necessitates the installation of a new set of booster pumps
- Includes a new set of pumps, rehabilitation of the existing pumps, and a new building
- **Estimated Cost:** $600,000 Total; $300,000 New Customer Cost

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2011 MWSD NEW CUSTOMER CIP

Treatment Upgrades

- Includes treatment upgrade for Airport Well No. 3, which is currently not used for normal operations due to elevated levels of nitrate and manganese
- Operation of Airport Well No. 3 is necessary with additional customers
- **Estimated Cost:** $320,000

Valve Installation Program

- The District will install up to eight new isolation and control valves throughout the distribution system to allow flow improvements to serve new customers
- **Estimated Cost:** $165,000

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2011 MWSD NEW CUSTOMER CIP

Phase I PWP Storage Projects

- The PWP stated that additional storage volume of 1.1 MG was needed to supplement approximately 650,000 gallons of storage currently available.
- Due to a significant decrease in the customer water demand, lower unaccounted-for-water, and lower peaking factors, existing customers require 1 MG (instead of 1.75 MG)
- Additional storage required by existing customers = 350,000 gallons
- Storage capacity to be utilized by new customers = 750,000 gallons
- **Estimated Cost** = $2,600,00 Total; $1,770,000 New Customer Cost

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2011 MWSD NEW CUSTOMER CIP

New Water Storage Tank

- Additional storage capacity to the PWP Phase I storage volume to utilized for new customers beyond year 2020.
- **Estimated Cost:** $550,000

Water Main Upgrades

- Design and construction of new water main extensions and up-sizing the existing distribution system mains to accommodate increasing demands
- Includes an estimated additional 7,800 linear feet of 6 to 8-inch diameter mains
- **Estimated Cost:** $1,560,000

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2011 MWSD NEW CUSTOMER CIP

Wagner Well Pump Upgrade

- Due to increased demands, Wagner Well pump will become unable to pump into the system.
- Includes pump and motor replacement
- **Estimated Cost:** $25,000

Phase II PWP Development and Implementation

- Permitting the improvements included in the *New Customer CIP*.
- **Estimated Cost:** $1,450,000

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2011 MWSD NEW CUSTOMER CIP

Project	Total Project Cost	Covered through Water Rates	New Customer WCC
Develop Additional Supply Reliability	$2,270,000	-	$2,270,000
Portola Tank Telemetry Upgrade	$50,000	-	$50,000
New and Upgraded PRV Stations	$300,000	-	$300,000
SCADA Improvements	$50,000	-	$50,000
Schoolhouse booster Pump Station	$600,000	$300,000	$300,000
Treatment Upgrades	$320,000	-	$320,000
Phase I PWP Storage Projects	$2,600,000	$830,000	$1,770,000
Phase II PWP Development and Implementation	$1,450,000	-	$1,450,000
Valve Installation Program	$165,000	-	$165,000
New Water Storage Tank	$550,000	-	$550,000
Wagner Well Pump Upgrade	$25,000	-	$25,000
Water Main Upgrades	$1,560,000	-	$1,560,000
Total New Customer CIP Cost			**$8,810,000**

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WATER CAPACITY CHARGE
Purpose and Approach

- **Conducted by Bartle Wells Associates**
- **Independent calculation of MWSD's Water Capacity Charge**
- **Capacity charges objectives:**
  - Recover the cost of facilities needed for new service connections
  - Be reasonable and based on industry-standard methodology
  - Equitably allocate costs to existing and future customers
  - Comply with all legal requirements
  - Be easy to understand and administer

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WATER CAPACITY CHARGE
Purpose and Approach

- One-time charge to new water connections to recover the costs of infrastructure benefiting new development
- The charge is established pursuant to the ***Mitigation Fee Act*** (Government Code §66000)
- The charge is not considered a tax or a special assessment
- The charge is not subject to Proposition 218
- The ***Mitigation Fee Act*** requires the local agency to establish a reasonable relationship between the charge's uses and the type of development on which the charge is imposed

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WATER CAPACITY CHARGE
Relevant Legal Requirements

- Development impact charges are governed by ***California Government Code*** Section 66000 *et. seq.*, commonly known as AB1600
- Section 66013 pertains specifically to water charges
  - States that the charge "*shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed*"
  - Notes that a capacity charge can recover costs for:
    - "*Facilities in existence at the time a charge is imposed*"
    - *"New facilities to be constructed in the future that will provide benefit to the person or property being charged"*
- Code does not specify any particular method for deriving fees; a variety of methods may be used to determine an appropriate fee

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WATER CAPACITY CHARGE
Relevant Legal Requirements

- Identify purpose of the charge
- Identify the use to which the charge will be put
- Demonstrate a reasonable relationship between the charge's use and the type of development project on which the charge is imposed
- Demonstrate the reasonable relationship between the need for the public facility and the type of development project
- Determine there is a reasonable relationship between the amount of the charge and the cost of the public facility attributable to the project development

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WATER CAPACITY CHARGE
Capacity Charge Calculation

ASSUMPTIONS:

- The District anticipates 600 new customers over the next 15 years
  - This number includes all existing well users and eventual new customers
- Approximately 98% of existing customers use a 5/8-inch standard meter
- There are different meter sizes in the MWSD system
- The current distribution of meter sizes can be used to project the number of connections equivalent in flow to the 5/8-inch meter
  - These are called “equivalent meters”

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WATER CAPACITY CHARGE

Capacity Charge Calculation

- Projected Equivalent Meters

Meter Size	Connection Percentage	Number of New Meters	Meter Ratio	Projected Equivalent Connections
5/8-inch Meter	97.77%	586	1	586
3/4-inch Meter	0.48%	3	1.1	3
1-inch Meter	0.97%	6	1.4	8
1 1/2-inch Meter	0.30%	2	1.8	4
2-inch Meter	0.36%	2	2.9	6
3-inch Meter	0.00%	0	11	0
4-inch Meter	0.12%	1	14	14
Total	**100.00%**	**600**		**621**

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WATER CAPACITY CHARGE
Capacity Charge Calculation

CIP Projects attributable to future new service connections	$8,810,000
Projected number of new equivalent meters	621
Water Capacity Charge per equivalent meter for a typical residential customer	$14,187

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WATER CAPACITY CHARGE

Capacity Charge Calculation

- Capacity Charges per Meter Size

Meter Size	Meter Ratios	Charge
5/8-inch Meter	1	$14,187
3/4-inch Meter	1.1	$15,606
1-inch Meter	1.4	$19,862
1 1/2-inch Meter	1.8	$25,537
2-inch Meter	2.9	$41,142
3-inch Meter	11	$156,057
4-inch Meter	14	$198,618

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END OF PRESENTATION

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