Idaho Falls Water Facility Plan
Public Presentation

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Reasons to Develop a WFP

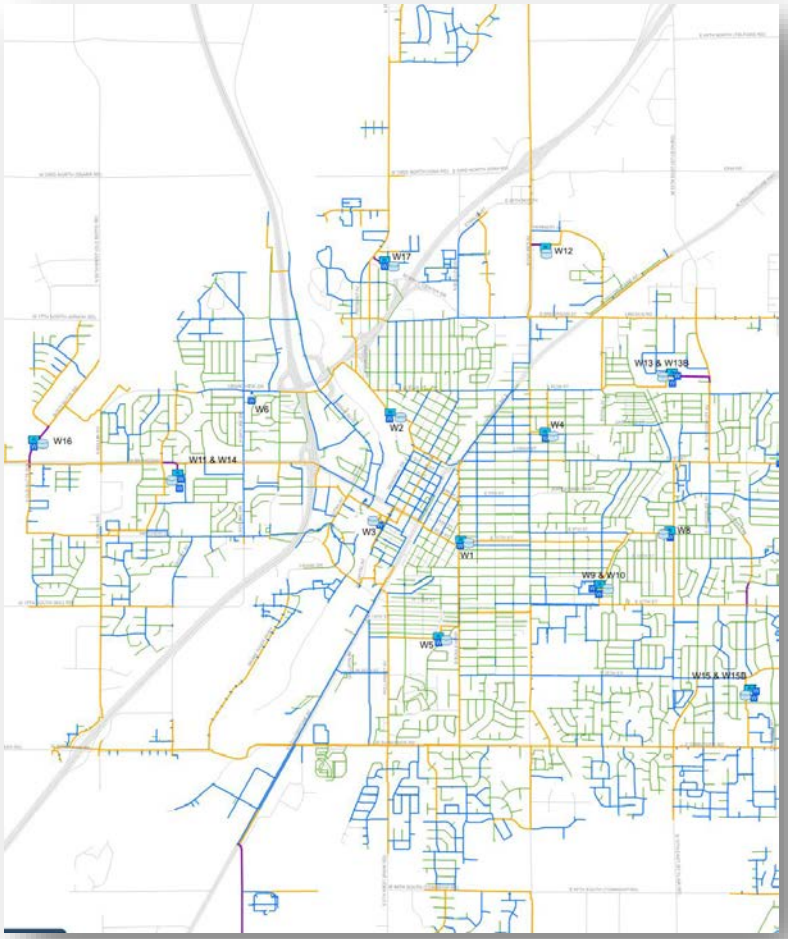
- Last WFP completed in 1989
  - Significant growth (demand and system expansion) has occurred
  - Legal & regulatory environments have changed
- Ensure future summer demands can be met
- Develop prioritized plan for upgrading facilities
- Identify locations for new sources of supply
- Identify distribution system weaknesses and associated improvements
- Identify short-term (1-5 yr) and long-term (6-20 yr) capital plan
- Ensure rates and fees can pay for improvements

System Description

- 16 Water Division employees
  - 14 O&M operators
- 314 miles of City-owned pipeline
  - 25 additional miles of private pipeline
- 19 groundwater wells
- 13 booster stations
  - 22 booster pumps
- 16 water tanks
  - 13 chlorine contact tanks (30 - 315 Kgal)
  - 3 water storage tanks (0.5 to 3 Mgal)

The system provides water to:

- Approximately 58,000 people
- 24,000 accounts
  - 250 metered accounts



Population and Demand Projections

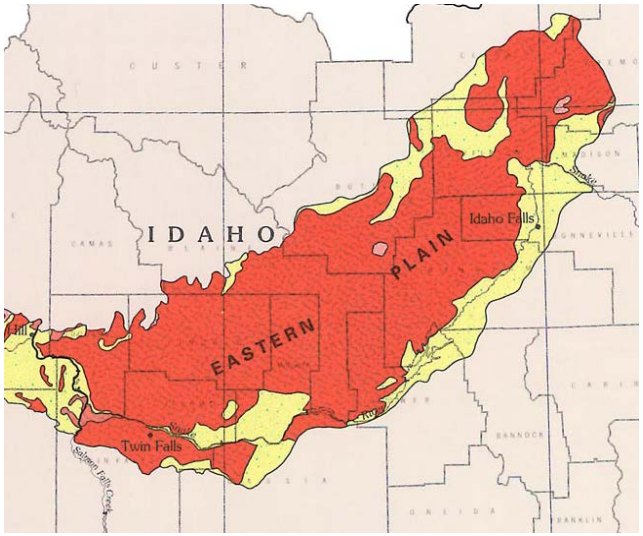
- Limited customer water use data
- Bonneville Metropolitan Planning Organization data used for population estimates and location
- Existing well production data indicates Average Day Demand of 455 gallons per capita per day
- Projections include specific large industrial demands
- Demand projections indicate a 100% increase in 40-years.

Year	ADD (mgd)	MDD (mgd)	PHD (mgd)
2014 (Existing)	26.7	60.7	82.6
2020 (5-Year)	31.7	72.3	96.7
2035 (20-Year)	39.6	92.0	123.5
2055 (40-Year)	53.8	127.7	172.0

ADD = average day demand
mgd = million gallons per day
MDD = maximum day demand
PHD = peak hour demand

Water Rights

- City must have adequate water rights to ensure future growth
- 3 Water Right Evaluation Options
  - Acquire new water rights
  - Use existing water rights more efficiently
  - Pursue conservation measures
- 12 Total Alternatives Evaluated
- Water Right Initial Recommendations
  - Add points of diversion to existing water rights
  - Construct large storage tanks at well sites
  - Identify alternative irrigation sources for parks
  - Implement water conservation plan
  - Actively pursue aquifer recharge banking
- Unknowns
  - Curtailment orders
  - Mother Nature



System Design Standards

- Supply
  - MDD with largest pump out of service (Well 5)
- Storage
  - Provide peak demands and fire flow excluding dead and operational storage
- Pumping
  - Redundant pumping adequate to serve PHD or MDD + fire flow (whichever is larger)
- Pressure
  - 20 psi during MDD+fire flow
  - 40 psi during PHD
  - 40-80 psi under typical operations
- Pipe velocity
  - 5 feet/second under MDD
  - 10 feet/second under PHD or MDD + fire flow
- Fire Flow Requirements
  - 1,500 (residential) to 4,500 gpm (heavy industrial)

System Analysis

- Water Rights and Supply evaluated for existing, 5, 20 and 40 year projections
  - Adequate yearly average water rights for 40 years.
  - Adequate instantaneous water rights for existing and 5-yr conditions.
  - Instantaneous water right deficiency of 7.4 mgd in 20-yr and 35.7 mgd in 40-yr horizon (43.1 mgd total).
  - Adequate existing well supply.
  - 10.8 mgd supply deficiency in 5-yr horizon, another 11.7 mgd within 20-yr horizon, and another 26 mgd within 40-yr horizon.

System Analysis

- Storage, pumping and distribution piping evaluated for existing, 5 and 20 year projections
  - Storage Analysis
    - Adequate storage for existing and 5-yr conditions.
    - 1.6 million gallon deficit within 20-yr horizon
  - Backup power
    - 11.1 mgd existing deficit (due to revised regulations) and an additional 13 mgd within the 20-yr horizon (24.1 mgd total)
  - Peak Pumping Analysis
    - Adequate pumping capacity for existing demand.
    - PHD booster pumping deficit of 4.3 mgd within 5-yr horizon, additional 17.4 mgd needed within 20-yr horizon (21.7 mgd total).
  - Distribution System Analysis
    - Existing ADD, MDD and PHD pressures generally adequate.
    - Currently a significant number of fire-flow deficiencies due to undersized pipes.
    - Pressure problems at 20-yr demand under PHD at north & south ends of system.

Operations and Maintenance

O&M Program Recommends implementation of programs to address:

- Water storage tank inspection and cleaning
- Pipeline replacement
- Unidirectional flushing
- Valve exercising
- Water meter testing and calibration
- Current safety plans and equipment
- Asphalt and concrete flatwork at each facility
- Asset management software

Operations and Maintenance

Benchmarking results:

- Staffing:
  - The City currently operates the system with fewer staff than most cities. This indicates a need to add staff to perform O&M tasks.
  - Staffing needs will grow as system expands, flows increase and regulations become more stringent.
  - Current recommendations include:
    - Hire two FTE's and appropriate equipment in the distribution section to implement identified programs (valve exercising, unidirectional flushing, meter O&M, etc.).
    - Adding an additional FTE and appropriate equipment to the supply section to perform well site O&M work.

System Condition & Code Evaluation

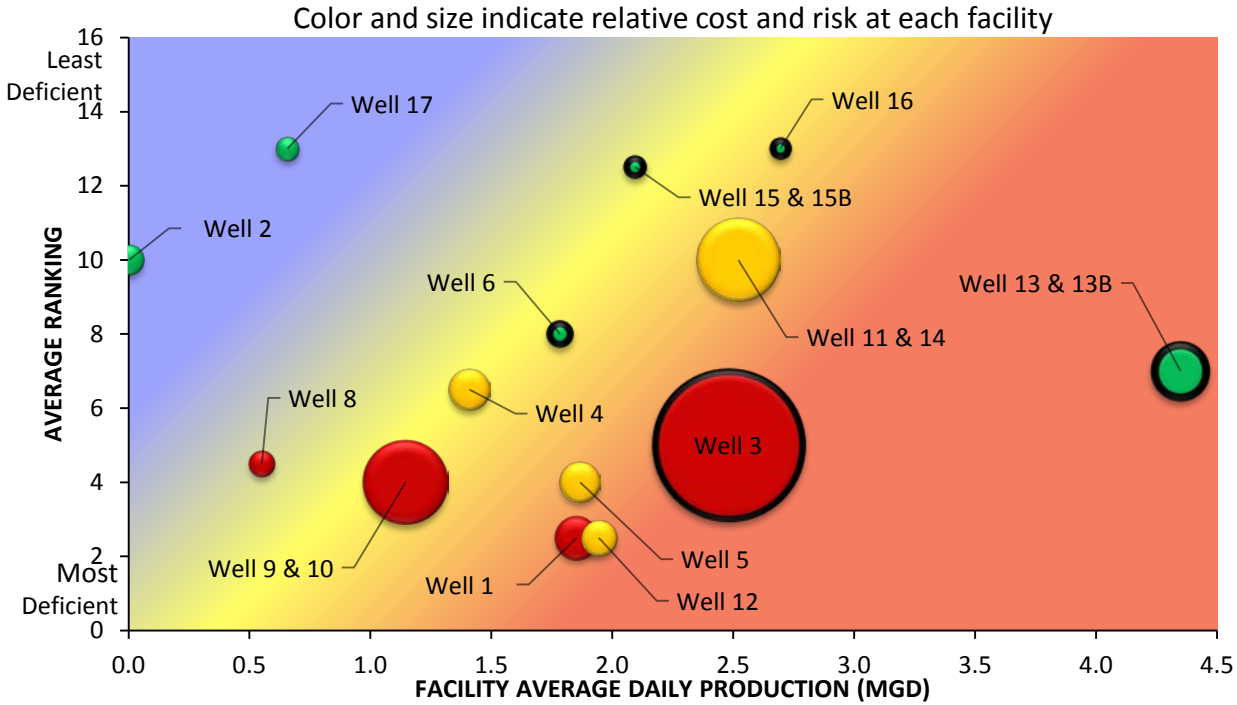
Task Description:

- Evaluate the City's pumping facilities and distribution system with regards to operational and code compliance.
- Recommend specific facility improvements and provide facility rankings based on condition.
- Determine pipeline condition priority and recommend replacement program.

System Condition & Code Evaluation

Facility evaluations and resulting improvements focused on the following areas;

- HVAC
- Electrical
- Site/Facility Security
- Site/Facility Safety
- Piping Modifications
- General Condition
- Wells
- Reservoirs
- Additional Items



Each facility was ranked on the areas listed above, then compared with water production rates, risk of failure and relative cost for improvements.

System Condition & Code Evaluation

Facility Results:

- Recommended improvement ranking was based on:
  - Risk of facility failure
  - Facility water production
  - Condition & Code ranking

Highest to Lowest Priority

Ranking	Facility
1	Wells 9 & 10
2	Well 3
3	Well 1
4	Well 4
5	Well 8
6	Well 5
7	Well 12
8	Wells 11 & 14
9	Wells 13 & 13B
10	Well 6
11	Well 16
12	Well 17
13	Well 2
14	Wells 15 & 15B

System Condition & Code Evaluation

Pipeline Analysis and Results:

- The water system is comprised of approximately 314 miles of public pipeline and 25 miles of private.
- The oldest pipe installed in 1902 (cast iron), with the majority of pipes installed from 1960 to 1979 (cast iron & ductile iron).
- Ductile iron pipeline installed today.
- City pipeline break records indicate that 1902 – 1959 cast iron pipe accounts for 70% of the breaks and repairs.
- It is recommended that these pipelines be replaced first.
- Based on 100-yr design life, it its recommend the City replace approximately 3.2 miles of pipe a year.

Capital Improvement Program

- Major Project Categories
  - New and upgraded pipelines
    - Primary focus on hydraulic deficiencies
    - 87 projects over 20 years
  - New and upgraded facilities
    - Wells, storage tanks and booster stations
    - 24 projects over 20 years
    - 3 yearly maintenance projects
  - Metering
    - $250,000 yearly – focused on metering large water users

Capital Improvement Program

	Cost of Required 2020 (1 to 5 Year) Improvements	Cost of Required 2035 (6 to 20 Year) Improvements
New and Upgraded Pipelines	$7,000,000	$28,014,000
New and Upgraded Facilities	$14,715,000	$28,328,000
Metering	$1,250,000	$3,750,000
Total	**$22,965,000**	**$60,092,000**
Annual Average	$4.6 million/year	$4.0 million/year

- $83 million over 20 years
- Annual 100 year pipeline replacement not fully funded in 20 year CIP

CIP Funding Plan & Rate Impact Analysis

Financial Planning Assumptions

- Annual expense escalation, 4.5 – 5.0%
  - Consistent with historical trends
  - Reflects recent policy changes & increased maintenance activities
- Customer growth, 0.75%
- Capital cost inflation, 2.5%
- Conservative forecast of connection fees
  - Average of last six fiscal years, includes recession

Available CIP Funding Sources

- Current operating revenues (PAYGO)
  - Expenses outpacing revenue growth
  - $1.0 million annually, without future rate increases
- Connection fee revenues
  - Annual revenues of $200K
- Existing operating reserves
  - Historical savings related to fiscal constraint
  - Water rate revenue reserves of $8.0 million
- Long-term debt

Proposed Five-Year Funding Plan

- Rate revenues primary funding source
  - Roughly half of CIP funded through rate increases
- Draw down reserves, connection fee funds

Annual CIP Expenditures and Funding by Source

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	TOTAL	Percent
Projected Capital Expenditures	**$ 4.72**	**$ 5.09**	**$ 5.34**	**$ 4.43**	**$ 4.51**	**$ 24.09**	100.0%
Proposed Rate Increases	***20.0%***	***5.0%***	***5.0%***	***5.0%***	***5.0%***		
Operating Revenues	3.02	3.16	3.40	3.65	3.92	17.14	**71.0%**
Connection Fee Revenues	0.45	0.45	0.45	0.45	0.45	2.25	**9.3%**
Existing Reserves	1.27	1.54	1.50	0.25	0.18	4.74	**19.6%**
Used (Unused) Balance	(0.02)	(0.06)	(0.01)	0.08	(0.04)	(0.05)	
Total Funds	**$ 4.72**	**$ 5.09**	**$ 5.34**	**$ 4.43**	**$ 4.51**	**$ 24.09**	100.0%

Reported in escalated dollars

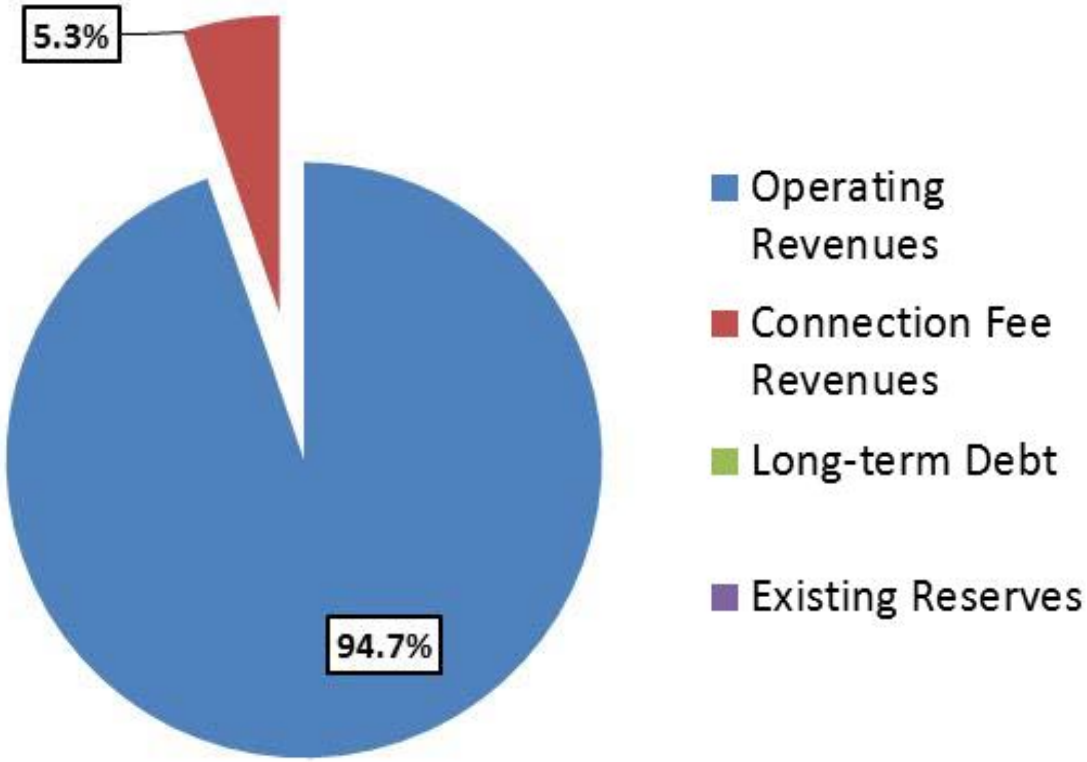
Community Rate Comparison

Community	Monthly Charge	Volumetric Rate	Total Bill (20 kgals)
Butte, MT	$ 26.84	Varies per hundred cubic feet, declining block structure	**$ 83.53**
Bozeman, MT	$ 14.65	Varies, inclining block structure	**$ 68.82**
Malad, ID	$ 43.00	$0.60 / kgal after first 5 kgals	**$ 52.00**
Pocatello, ID	$ 7.55	$2.00 / kgal for first 25 kgals	**$ 47.55**
Boise, ID	$ 10.40	Varies, inclining block structure	**$ 46.20**
Meridian, ID	$ 5.49	$1.90 / kgal, no minimum	**$ 43.49**
Logan, UT	$ 16.00	$0.99 / kgal for first 10 kgal, $1.60 beyond that	**$ 41.90**
Twin Falls, ID	$ 10.74	$1.70 / kgal after first 2 kgals	**$ 41.34**
St. Anthony, ID	$ 27.13	$0.54 / kgal, no minimum	**$ 37.93**
Ammon, ID	$ 37.25	Flat rate (some residential customers charged $44.75/mo.)	**$ 37.25**
Nampa, ID	$ 34.90	Flat rate	**$ 34.90**
American Falls, ID	$ 24.15	$0.89 / kgal after first 15 kgals	**$ 30.50**
Blackfoot, ID	$ 21.90	$1.54 / kgal after first 15 kgals	**$ 29.60**
Burley, ID	$ 18.70	$0.573 / kgal after first 3 kgals	**$ 28.44**
Rexburg, ID	$ 15.87	$0.82 / kgal after first 6 kgals	**$ 27.35**
Idaho Falls, ID (proposed)*	$ 25.20	Flat rate (incorporates annualized irrigation charge and DEQ fee)	**$ 27.20**
Brigham City, UT	$ 9.31	$1.31 / kgal after first 7 kgals	**$ 26.34**
Idaho Falls, ID (existing)	$ 21.00	Flat rate (incorporates annualized irrigation charge and DEQ fee)	**$ 22.71**
Rigby, ID	$ 19.00	Flat rate	**$ 19.00**
Shelley, ID	$ 17.50	Flat rate	**$ 17.50**

** Monthly rate after proposed FY 2016 increase of 20%*

Proposed 20-year Funding Plan

- Annual rate increases of 3.9% to fund CIP
- Reserves are replenished by year 20
  - Residential water rate of $54.50 at end of forecast



Plan Notes & Recommendations

- Follows standards of practice, conservative
  - Low revenues, CIP based on high growth
- Continually update plan
  - Actual vs. forecasted CIP, financial performance
  - Adjust rate increases as necessary
- Recommendation: establish new fund for CIP
  - Separate CIP expenditures from O&M budget
  - Provide mechanism for use of reserves, connection fees

Conservation Planning

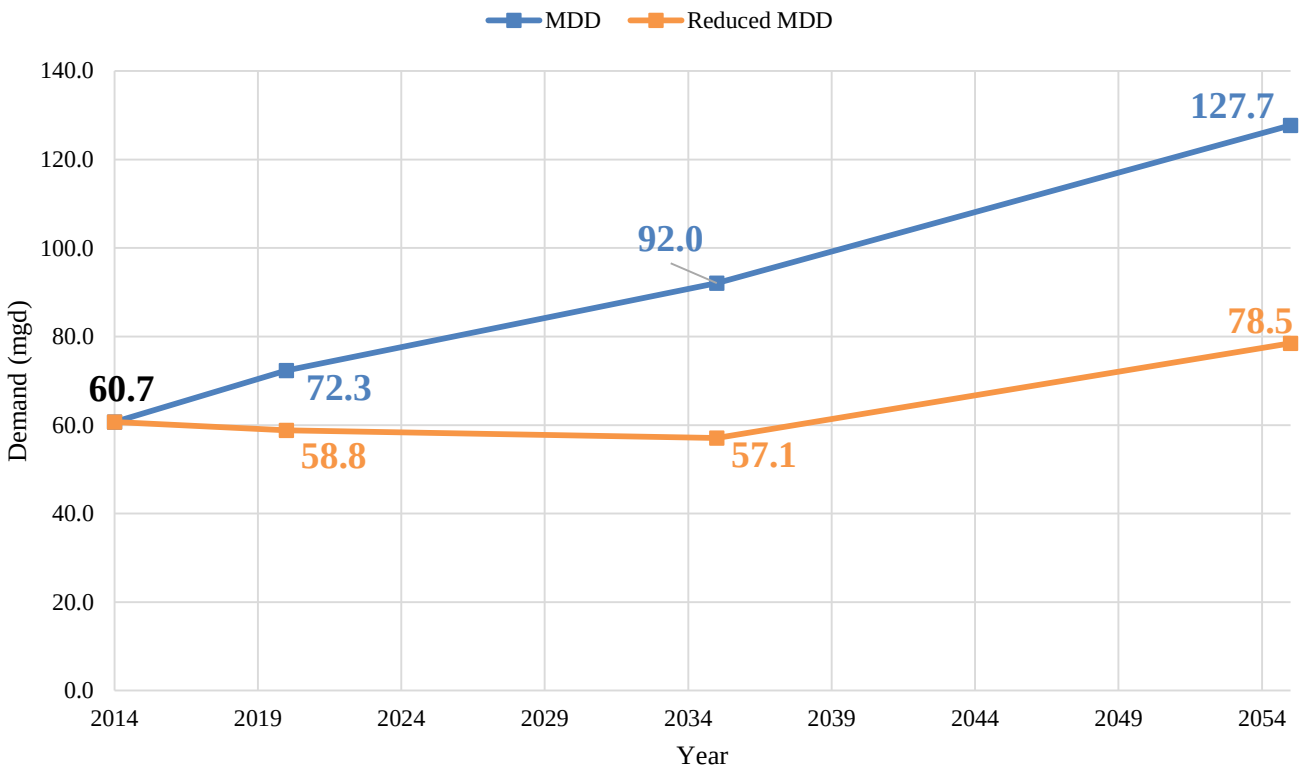
Conservation Planning

- Review of 63 separate conservation actions
- Conservation plan recommendations
  - 20 current actions to continue or augment
  - 27 actions to begin within 1-5 years
  - 10 actions not recommended
  - 6 actions involving metering deferred
- Benefits of conservation
  - Water use reduction of 30%-40% (comparative analysis with Rexburg & Pocatello)
  - Extended water rights = continued City growth
  - Deferred future capital projects
  - Public perception
- Drawbacks of conservation
  - Most effective actions require labor & money
  - Results marginal without installation of meters

Meter Implementation Analysis

Metering: Impact on Demand

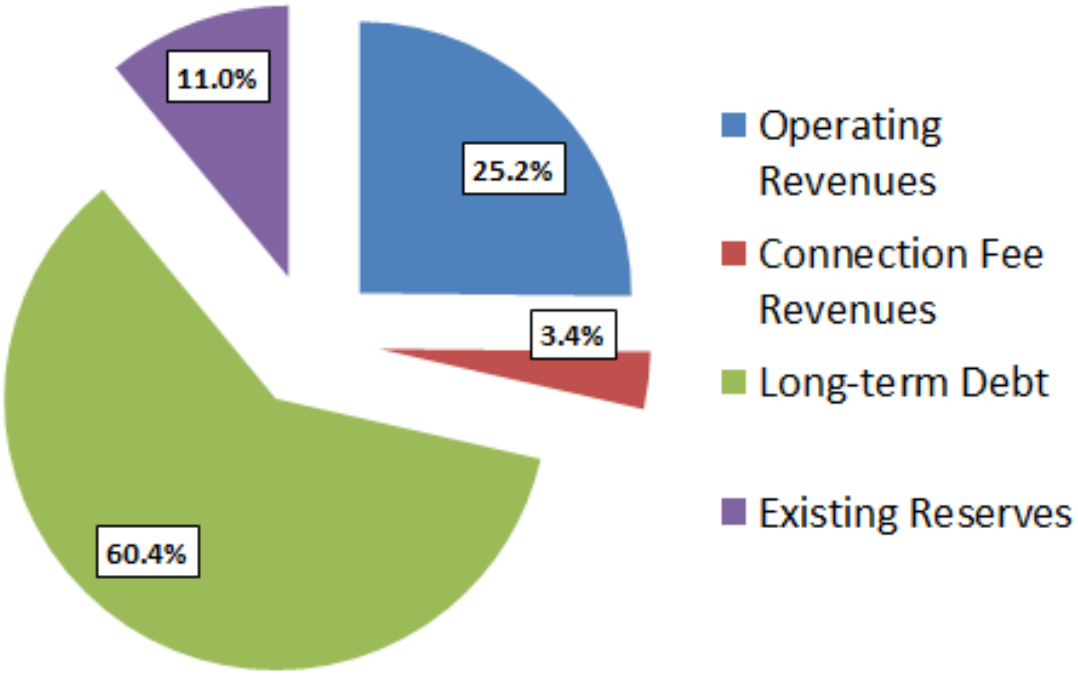
- Assumed 30% reduction in average demand and 40% reduction in peak demands due to metering.
- Peak 20-year demands below current levels.

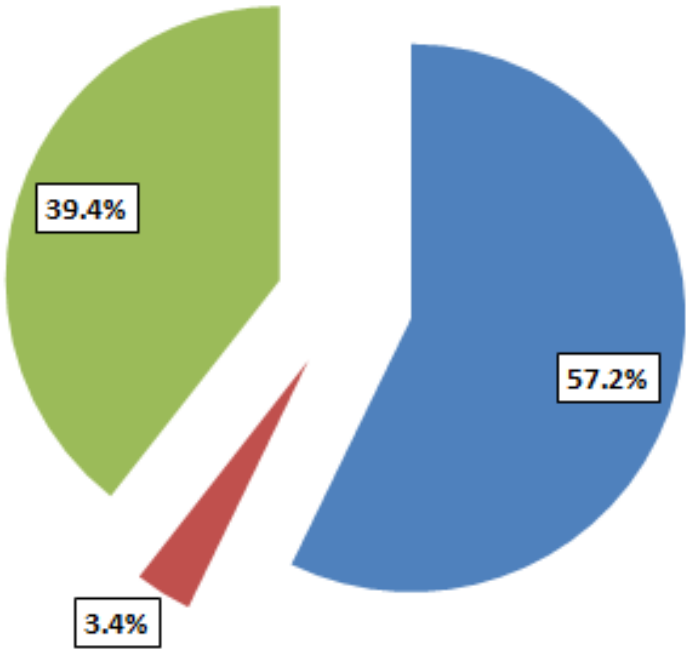


Meter Installation Assumptions

- Cost of city-wide meters: $77.7 million
  - Ten-year implementation period
  - Customers charged volumetric rate, demand reduced
- Capital improvement project deferrals
  - $20.8 million, mostly over last 15 years
- Debt in two issuances
  - $40 million in year 1, $25 million in year 6
  - Assumes availability of low-interest state loans
- Substantial rate increases during first 5 years
  - *20% per annum first 5 years, but none thereafter*

Meters: Suggested Funding





Questions