DWP's Strategic Meter Replacement Plan

June 25, 2024 Presentation

Purpose

- Implement a phased meter replacement plan that balances cost and functionality while ensuring a manageable failure rate.
- Determine what role advances in meter technology should have in DWP's system given higher associated costs.
- Establish a strategic meter replacement strategy. Meter replacements will occur as ongoing failures occur and as service conditions permit, but a general overall strategy is needed to ensure optimal replacement outcomes and proper management of financial resource needs.
- Establish a system improvement plan to seek grant funding.

Background

- All DWP meters were converted to AMI mechanical measurement meters between 2014 and 2020.
- Mechanical accuracy degradation & battery failures are expected between 10-20 years for these meters.
- The 1st round of meters surpassing the 10-year threshold will occur in fiscal 2025. Initial meter replacements are budgeted for fiscal 2025.
- DWP is currently replacing mechanical meters with Iperl meters which,
  - Use non mechanical electromagnetic flow technology.
  - Report volume hourly, but do not record or report additional telemetry data.
  - Have no remote-control functionality available.
- New telemetry capable, remote controlled AMI meters (Smart Meters) are available.
  - DWP has installed 4 Smart Meters and deployed test units in remote service locations.
- There are grant opportunities available for meter infrastructure improvements.
- Staff is recommending a long-term strategic meter replacement plan that includes Smart Meter technology to optimize operational efficiency.

Background - Meter Aging By Area

Installed	Boulder Bay	Erwin Lake	Lake William	Fawnskin	Sugarloaf	Upper Moonridge	Big Bear Central Service Area	Total
<=2014	76	1	60	100	3	6	547	793
2015	3	121	57	587	34	309	1,882	2,993
2016	12	620	1	2	642	476	1,587	3,340
2017	6	-	1	2	727	195	1,253	2,184
2018	11	2	3	6	585	18	1,414	2,039
2019	10	2	-	2	1,212	53	1,208	2,487
2020	97	7	-	4	17	100	920	1,145
2021	204	7	-	2	11	6	131	361
2022	22	9	4	9	14	8	137	203
2023	148	6	4	2	10	6	169	345
2024 YTD	8	2	3	9	4	4	87	117
	597	777	133	725	3,259	1,181	9,335	16,007
	4%	5%	1%	5%	20%	7%	58%	

Standard Replacement Meter – Sensus Iperl

- Type - non-mechanical register that uses electromagnetic flow sensors to measure water volume.
- Telemetry – water volume.
- Remote control - none.
- Average unit price - $192

Smart Meter – Sensus Ally

- Type - non-mechanical register that uses electromagnetic flow sensors to measure water volume.
- Telemetry – water volume, pressure and temperature.
- Remote control - turn on/off, water flow regulation.
- Average unit price - $446

Advantages of Smart Meters

- Service trips for turn on/off are eliminated.
- The current average leak response time from issuance of shutoff service order to completion of the service order is 3.5 hours. A smart meter could be shut off remotely eliminating all lag time.
- Liability costs related to road accidents are reduced.
- Liability costs from confrontations with unhappy customers are reduced.
- Water flow can be reduced to a residence. Policies could be revised to restrict flow for necessity of life usage rather than fully turning off a meter for non-compliant customers in violation of DWP policies.

Advantages of Smart Meters

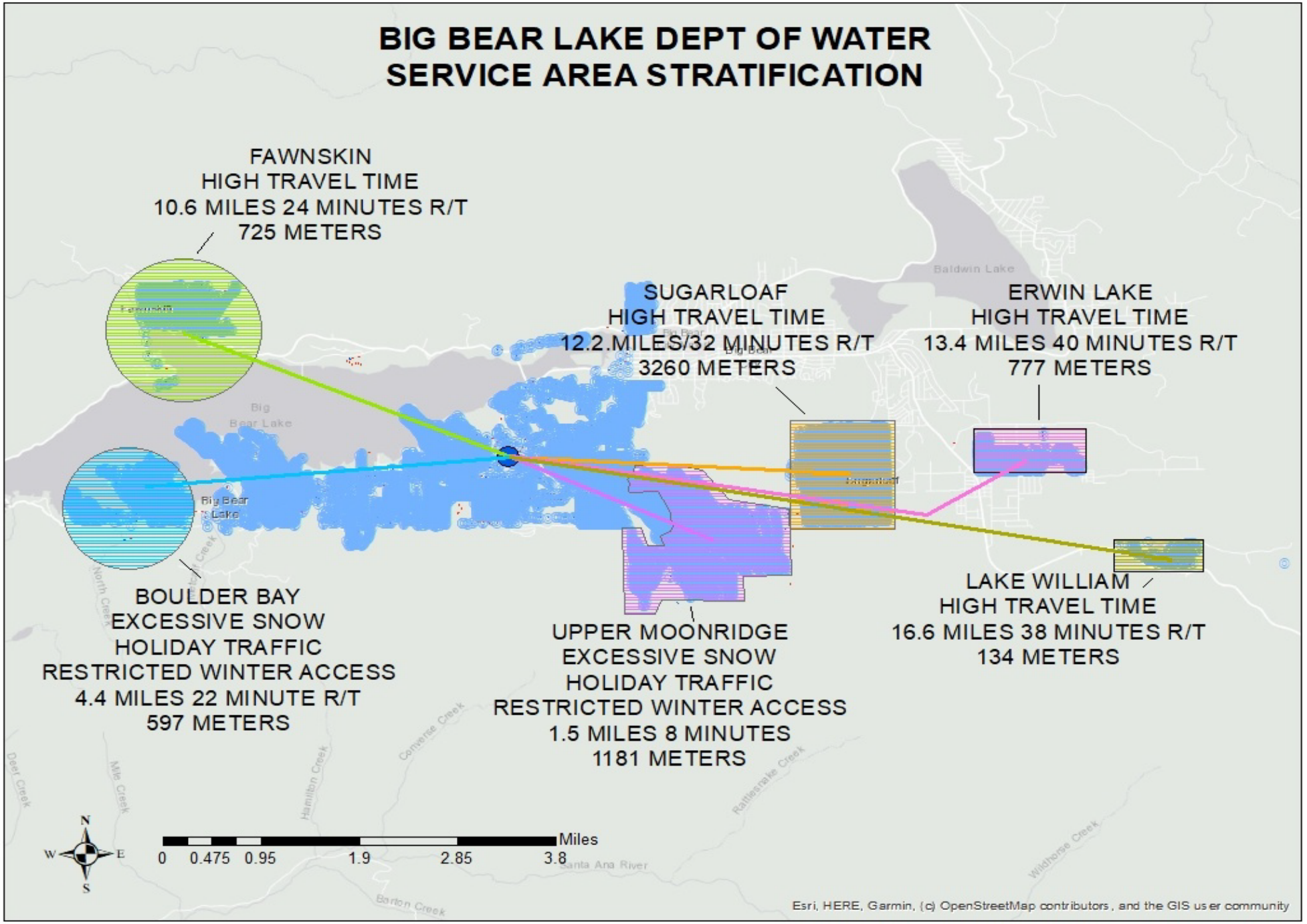
- Meter boxes can be secured.
  - DWP struggles with customers using meters as a turn on/off device. With smart meters, the box could be locked and a placard that says "call DWP for remote turn on/off" added. The turn on off could be done remotely while the customer waits at the meter.
- Leak detection parameters can be refined. Currently, continuous leaks for 24 hours are addressed. If freezing water temperatures were read immediately prior to the leak, the leak could be addressed more promptly.
- Telemetry data for water pressure can be used to monitor the system.

Cost vs. Benefits of Including Smart Meters

- Total system-wide meter replacement costs using Iperl meters is $3.1 million compared to a full smart meter implementation which would cost $7.1 million. Smart meter saving can offset some of the cost differences.
  - Cost saving would result from eliminating service trips for turn on/offs.
  - Water loss reductions would occur.
- DWP staff determined that a blended approach resulting from stratifying DWPs service area would optimize the cost vs. benefits of adding Smart Meters to DWP's system.

Cost vs. Benefit - Service Area Stratification

- Six areas representing 42% of DWP's service area are more difficult to access which results in higher DWP resource utilization:
  - Boulder Bay – holiday traffic & higher levels of snow fall.
  - Erwin Lake – higher than average travel times
  - Lake William – higher than average travel times
  - Fawnskin - higher than average travel times
  - Sugarloaf - higher than average travel times
  - Upper Moonridge – inaccessible, narrow, steep roads & higher levels of snow fall


BIG BEAR LAKE DEPT OF WATER
SERVICE AREA STRATIFICATION
FAWNSKIN
HIGH TRAVEL TIME
10.6 MILES 24 MINUTES R/T
725 METERS
SUGARLOAF
HIGH TRAVEL TIME
12.2.MILES/32 MINUTES R/T
3260 METERS
ERWIN LAKE
HIGH TRAVEL TIME
13.4 MILES 40 MINUTES R/T
777 METERS
BOULDER BAY
EXCESSIVE SNOW
HOLIDAY TRAFFIC
RESTRICTED WINTER ACCESS
4.4 MILES 22 MINUTE R/T
597 METERS
UPPER MOONRIDGE
EXCESSIVE SNOW
HOLIDAY TRAFFIC
RESTRICTED WINTER ACCESS
1.5 MILES 8 MINUTES
1181 METERS
LAKE WILLIAM
HIGH TRAVEL TIME
16.6 MILES 38 MINUTES R/T
134 METERS
Big Bear Lake
Baldwin Lake
N
W
E
S
Miles
0 0.475 0.95 1.9 2.85 3.8
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Cost vs. Benefit – Resource Savings

Area	Annual On/off Service Order Savings	Price Increase	Savings (15 years)	Net	Pay Off Period (years)
Boulder Bay	$ 11,026	$ 150,800	$ 165,397	$ (14,598)	14
Erwin Lake	18,270	197,591	274,043	(76,452)	11
Lake William	3,855	33,059	57,820	(24,761)	9
Fawnskin	18,890	183,350	283,349	(99,999)	10
Sugarloaf	77,405	829,018	1,161,078	(332,060)	11
Upper Moonridge	14,643	297,577	219,652	77,925	20
	$ 144,089	$ 1,691,395	$ 2,161,339	$ (469,944)	

Cost vs. Benefit – Water & Emission Savings

- On average, a leak in the stratified areas takes 3.5 hours from initiation to completion of the service order. This results in an average of 370 gallons of water being wasted. The estimated water savings for the stratified areas would be 162,600 gallons per year.
- In FY 2023, DWP vehicles drove 14,600 miles to address turn on/off calls in the stratified service areas, which would be eliminated by Smart Meters. Assuming an average emissions rate of 337 grams per mile (EPA 2023), installing smart meters would reduce fleet CO_2 emissions by 4,920 pounds.

Meter Replacement Plan

- Install Smart Meters in limited access areas as the meters reach the end of their useful lives.
- Utilize Iperl meters for the remaining service area.
- Replace meters over the next 15 years based on age.
- This strategy provides broad guidance that will be shifted by actual meter failures and will be prioritized based on meter usage where feasible.

Meter Replacement Plan

	Smart Meters	Standard Meters		
Fiscal	Limited Access Areas	Big Bear Central Service Area	Meters	Cost
2025	437		437	224,854
2026	445	667	1,112	375,394
2027	445	667	1,112	375,394
2028	445	667	1,112	375,394
2029	445	667	1,112	375,394
2030	445	667	1,112	375,394
2031	445	667	1,112	375,394
2032	445	667	1,112	375,394
2033	445	667	1,112	375,394
2034	445	667	1,112	375,394
2035	445	667	1,112	375,394
2036	445	667	1,112	375,394
2037	445	667	1,112	375,394
2038	445	667	1,112	375,394
2039	445	667	1,112	375,394
	6,672	9,335	16,007	5,480,368