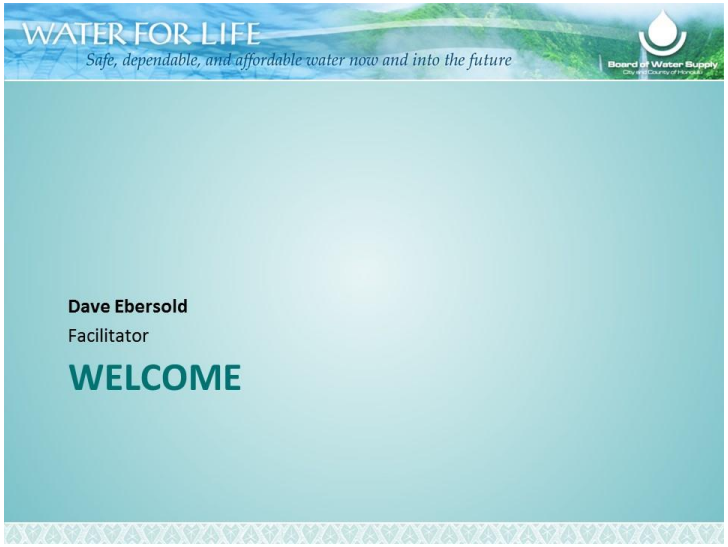
Slide 1


WATER FOR LIFE
Safe, dependable, and affordable water now and into the future
Board of Water Supply
Stakeholder Advisory Group
Board of Water Supply
City & County of Honolulu
Tuesday, March 14, 2017

Slide 2


WATER FOR LIFE
Safe, dependable, and affordable water now and into the future
Board of Water Supply
Dave Ebersold
Facilitator
WELCOME

Slide 3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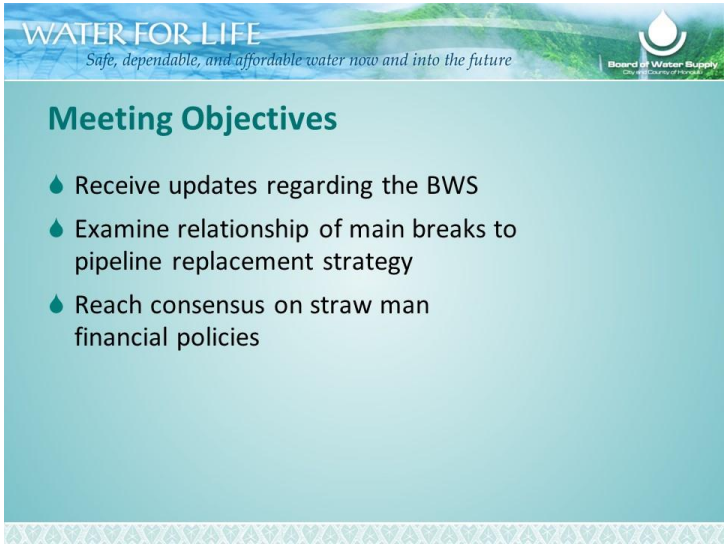
Board of Water Supply
WELCOME NEW STAKEHOLDER
Timothy J. Brauer
President and Chief Executive Officer
James Campbell Company

Slide 4


WATER FOR LIFE
Safe, dependable, and affordable water now and into the future
Board of Water Supply
Public Comments on Agenda Items

Slide 5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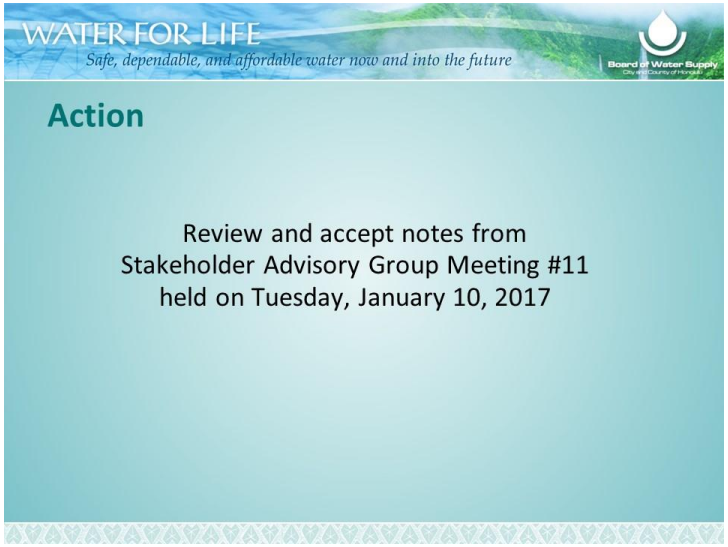
Meeting Objectives
Receive updates regarding the BWS
Examine relationship of main breaks to pipeline replacement strategy
Reach consensus on straw man financial policies

Slide 6


WATER FOR LIFE
Safe, dependable, and affordable water now and into the future
Board of Water Supply
Action
Review and accept notes from
Stakeholder Advisory Group Meeting #11
held on Tuesday, January 10, 2017

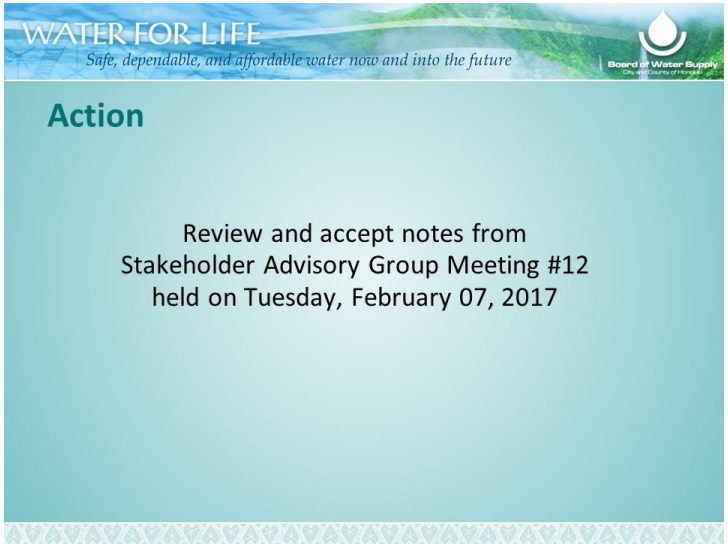
Slide 7

Follow-up on Bottled Water

Use	Gallons per year	% BWS total	Equivalent population served
Bottled Water	46,403,000	0.09%	820
Soft Drinks and Breweries	63,323,000	0.12%	1,119
Total	109,726,000	0.21%	1,939

Total BWS water produced = 52,231,500,000 gallons

Slide 8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Action
Review and accept notes from
Stakeholder Advisory Group Meeting #12
held on Tuesday, February 07, 2017

Slide 9


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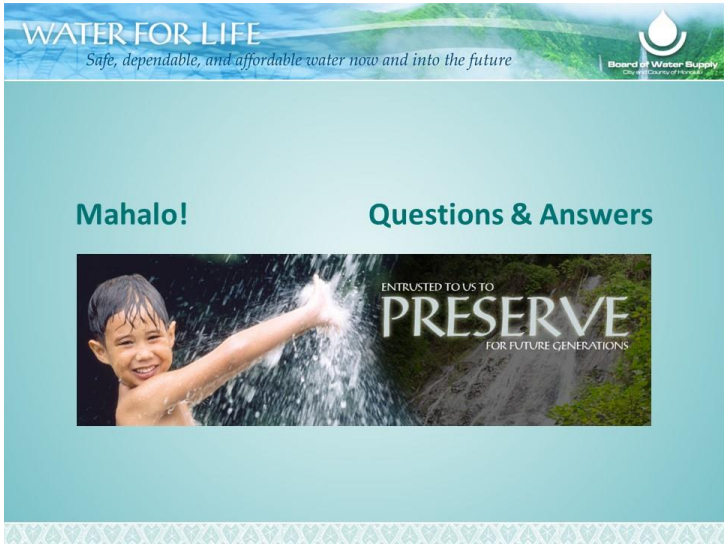
Ernest Lau P.E.
BWS Manager and Chief Engineer
BWS UPDATES

Slide 10

Area with Lead Concentrations in Soil > 800 mg/kg (Hawaii Department of Health)

Slide 11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Questions & Answers
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Slide 12

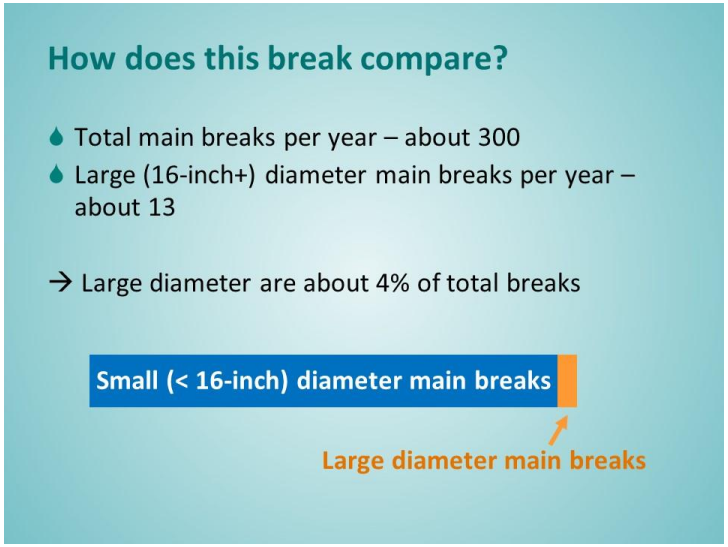
- This presentation was initiated by a request from Stakeholder Advisory Group Member Cruz Vina.
- Last month you heard from Mike Fuke, who is head of Field Operations for BWS, who gave an overview of the sequence of events related to the repair of the main break itself. David Ebersold also gave an overview of the public communications.
- The following slides place this event in the context of the Water Master Plan.

Slide 13

- The Kalanianaole Highway break was on a 24” Cast Iron pipe just east of Kahala.
- Repairs were complicated because the pipe was buried deep, going under a stream, and there was an abandoned pipe running just over the top of it.

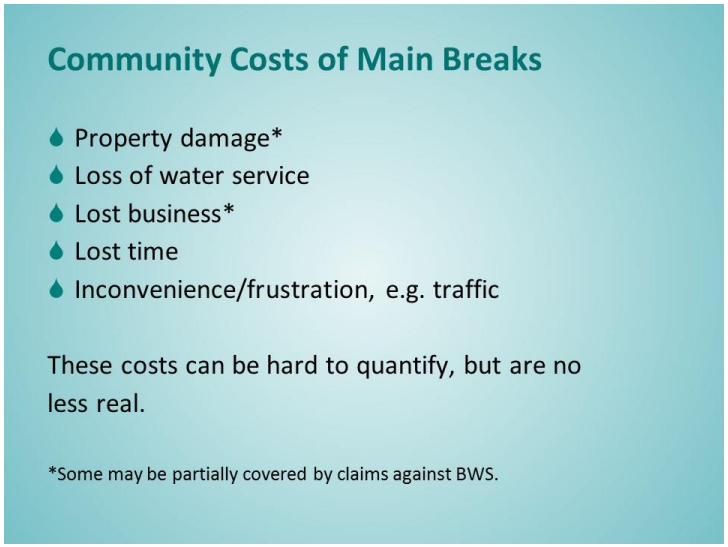
Slide 14

Slide 15



- Large diameter mains make up 18.6% of the system

Slide 16



- Breaks cost a lot to repair, and it's not just the BWS's labor and materials.
- The community also bears significant costs.

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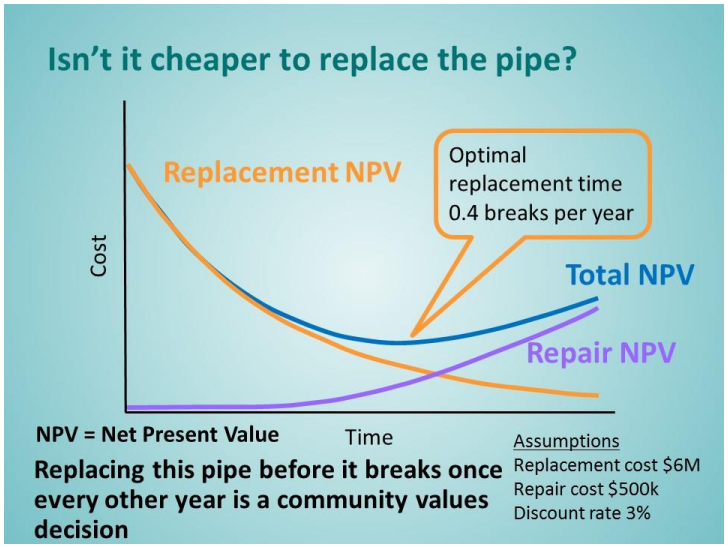
How does this break compare?

	Typical Break	Kalanianaole Break	Pipeline Replacement
Duration	24 hours	96 hours	1+ years
Total Cost	~$10k	TBD (<$500k)	$6.2 Million
Length	10-20 feet	~20 feet	1,400 feet

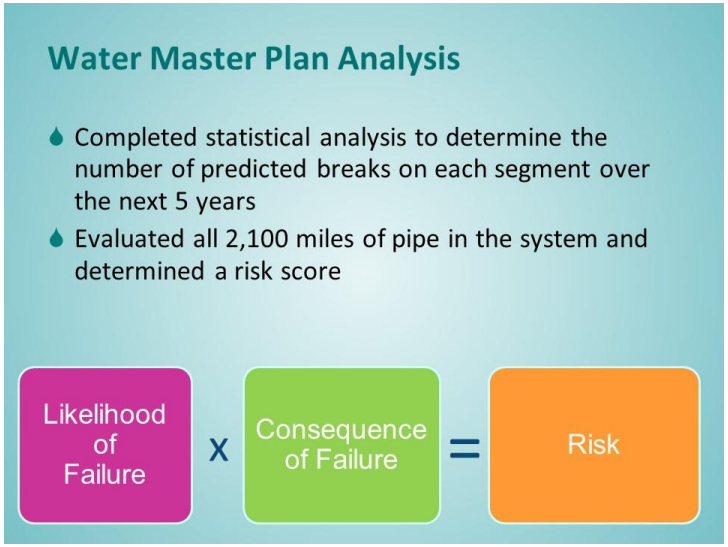
Slide 18



For this example we're using the costs of this break, $6M for replacement, and $500k for repair, at a discount rate of 3%:

- On the chart we see Net Present Value (NPV) over time. We intuitively know that the longer you can keep a pipe in service the less expensive it is. This orange line shows the NPV of pipe replacement.
- However, we also know that as the pipe gets older, it fails more often, and eventually the costs of repairs exceeds the cost of replacement. The purple line shows the NPV of all of the pipe repairs.
- So, if we add these two numbers, we can get the total NPV over the life of the pipe. And here, at the minimum, would be the most economical point to replace the pipe.
- The issue is, for this pipe, even with the very high repair cost, the economical replacement point is when it gets to nearly a break every other year, which we know is unacceptable.

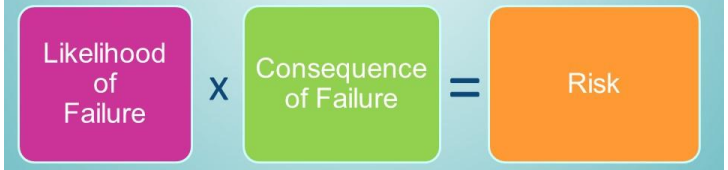
Slide 19



- Likelihood of Failure: Based on predicted breaks
- Consequence of Failure: Based on system and location

Slide 20

Metric	Value	Description	Percentile Rank
Predicted breaks in next 5 years	.007	Very Low	27th
Likelihood of Failure	2	Very Low	28th
Consequence of Failure	70	Very High	94th
Total Risk	140	Low	22nd



- Because of the high consequence of failure, this pipe had been identified for monitoring on a 10-year cycle.
- Depending on the results of the forensic analysis of this pipe, the rest of the section may or may not be moved up for replacement.

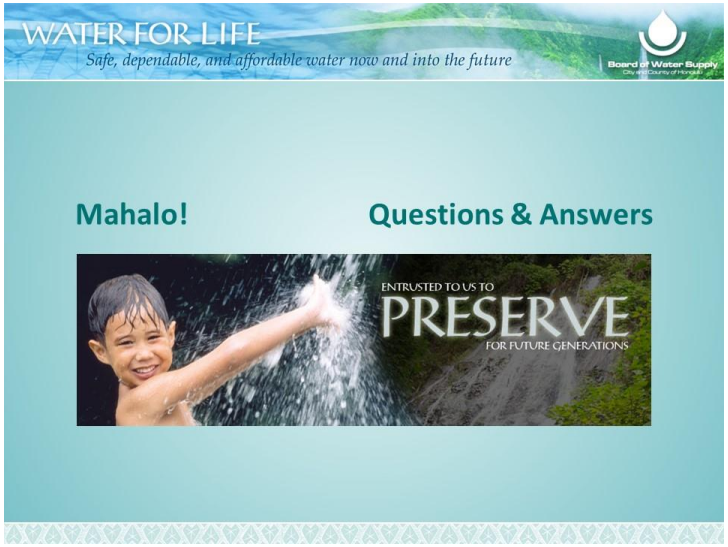
Slide 21

Slide 22

Need Stakeholder Input

- Previously showed 3 pipeline replacement scenarios
- From an economic/engineering standpoint, there is no “right” or “wrong” answer
- Decisions about rate of pipe replacement are about “level of service”

Slide 23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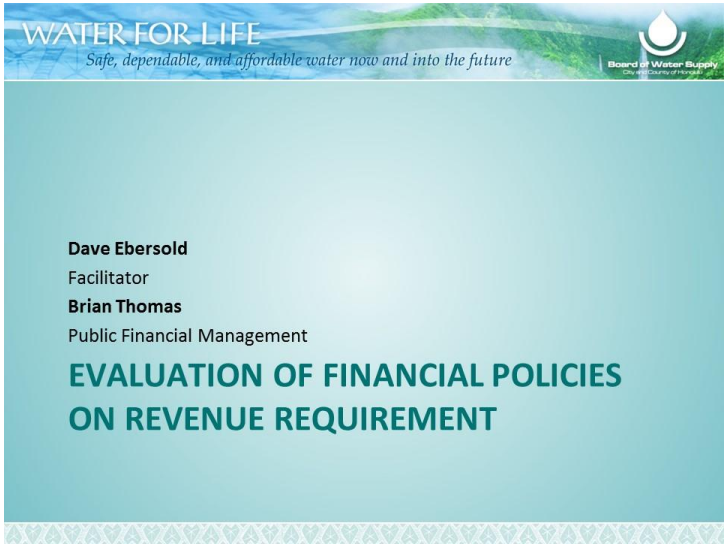
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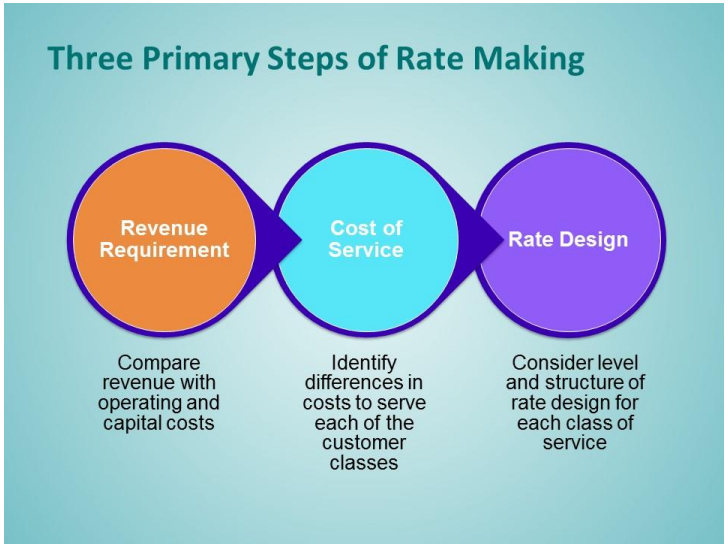
Board of Water Supply
Dave Ebersold
Facilitator
Brian Thomas
Public Financial Management
EVALUATION OF FINANCIAL POLICIES
ON REVENUE REQUIREMENT

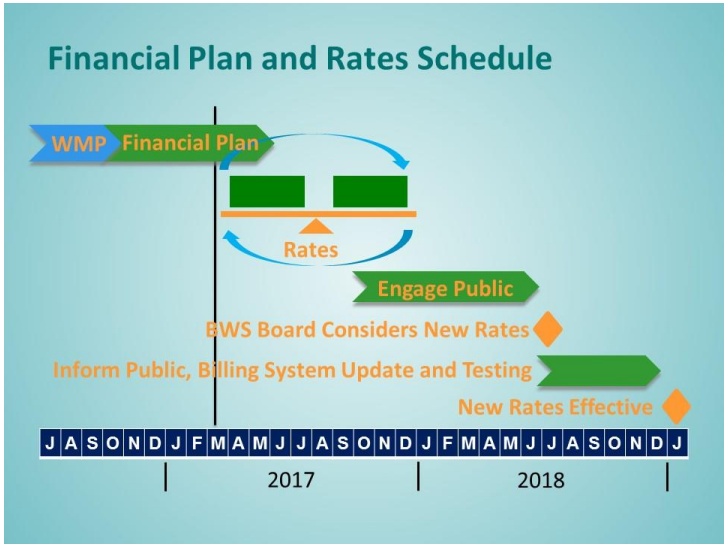
Slide 25



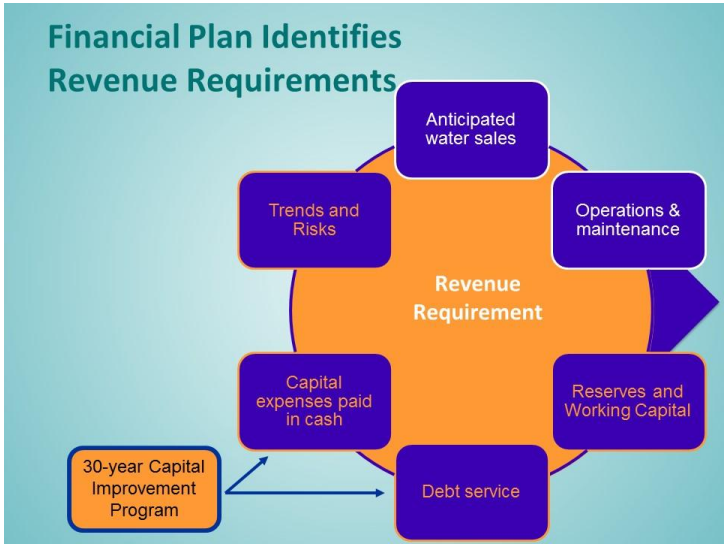
Using a “pie” analogy to describe the three primary steps of rate making:

- The revenue requirement is the size the pie.
- Cost of service is the cost of the ingredients.
- Rate design is the size of each person’s slice of the pie.

Slide 26

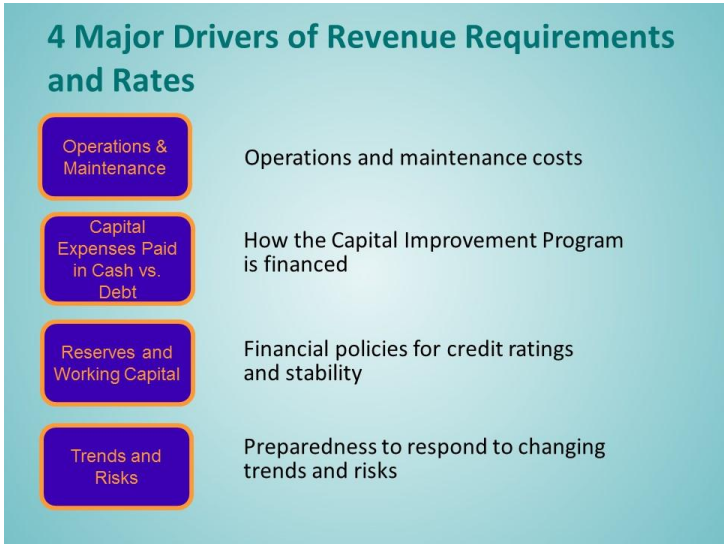

Financial Plan and Rates Schedule
WMP
Financial Plan
Rates
Engage Public
BWS Board Considers New Rates
Inform Public, Billing System Update and Testing
New Rates Effective
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J
2017
2018

Slide 27

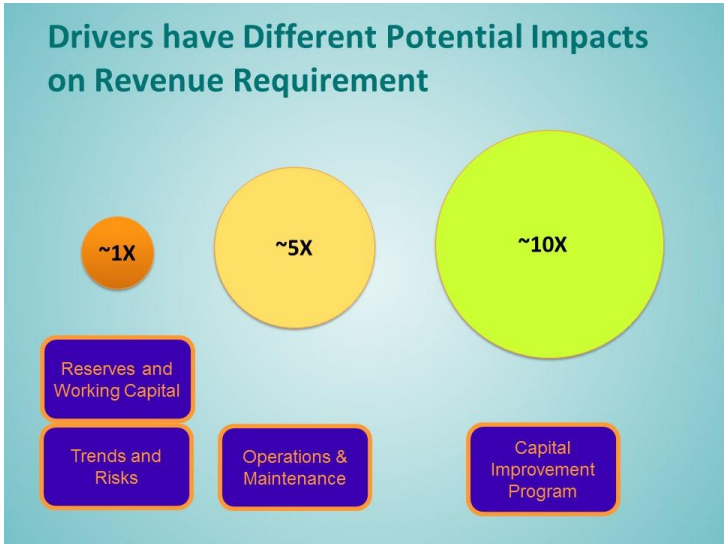


- The major elements of a financial plan were reviewed at the last workshop.
- Two workshops ago, the focus was on bracketing the range of scenarios for the Capital Improvement Program, which ultimately determines that amount of money that we need to make the decisions about how much money to borrow and how much to pay in cash.

Slide 28


4 Major Drivers of Revenue Requirements and Rates
Operations & Maintenance
Operations and maintenance costs
Capital Expenses Paid in Cash vs. Debt
How the Capital Improvement Program is financed
Reserves and Working Capital
Financial policies for credit ratings and stability
Trends and Risks
Preparedness to respond to changing trends and risks

Slide 29


Drivers have Different Potential Impacts on Revenue Requirement
~1X
~5X
~10X
Reserves and Working Capital
Trends and Risks
Operations & Maintenance
Capital Improvement Program

Slide 30

Proposed Updated Policy Framework

1. **Fund balance / working capital**
   Amount of Cash on Hand
2. **Purposes and uses of debt**
   When and Why to Borrow
3. **Debt to net assets ratio**
   How Much can be Borrowed
4. **Debt service coverage ratio**
   Ability to Make Loan Payments

Slide 31

1. Fund Balance / Working Capital (Amount of Cash on Hand)

Current

- Unrestricted fund balance = 45 days of operating expenses
- Includes annual debt service
- Allows setting aside net revenues that exceed budget for general contingencies (no limits)

Straw Man

- Target 180 days, never less than 60 days
- Exclude annual debt service (for consistency)
- Cover disasters and unforeseen circumstances
- Large enough to provide some rate stabilization
- >180 days may be re-programmed to fund CIP

Slide 32

Time for Federal Major Disaster Declarations in HI have Averaged 42 Days

Incident Start	Declaration Date	Days	Incident Description	Declaration Type
9/11/2016	10/6/2016	25	Severe Storms, Flooding, Landslides, and Mudslides	Major Disaster
9/4/2014	11/3/2014	60	Volcanic Eruption and Lava Flow	Major Disaster
8/7/2014	9/12/2014	36	Tropical Storm Iselle	Major Disaster
3/3/2012	4/18/2012	46	Severe Storms, Flooding, and Landslides	Major Disaster
3/11/2011	4/8/2011	28	Tsunami Waves	Major Disaster
10/10/2008	1/5/2009	87	Severe Storms and Flooding	Major Disaster
12/4/2007	2/6/2008	64	Severe Storms, High Surf, Flooding, and Mudslides	Major Disaster
10/15/2006	10/17/2006	2	Earthquake	Major Disaster
2/20/2006	5/2/2006	71	Severe Storms, Flooding, Landslides, and Mudslides	Major Disaster
10/30/2004	2/1/2005	94	Severe Storms and Flash Flooding	Major Disaster
10/28/2000	11/9/2000	12	Severe Storms And Flooding	Major Disaster
11/5/1996	11/26/1996	21	Severe Storms/Flooding	Major Disaster
9/11/1992	9/12/1992	1	Hurricane Iniki	Major Disaster

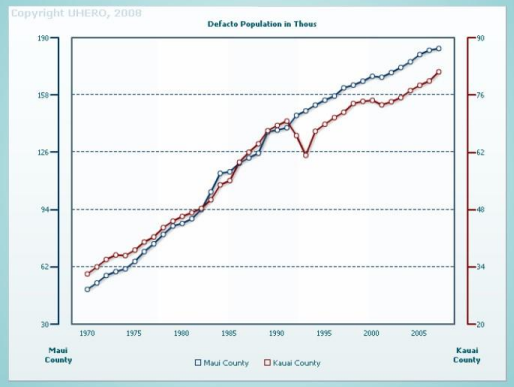
Slide 33

Comparing Disaster Impacts

Agency	Event (Year)	Damage (% of net assets)	Revenue Loss	Days Cash
Kauai Department of Water	Iniki (1992)	1.3%	3% over 9 months	102

Slide 34

10% Population Drop on Kauai Following Iniki



[UHERO Working Paper No. 2009-6, 2009]

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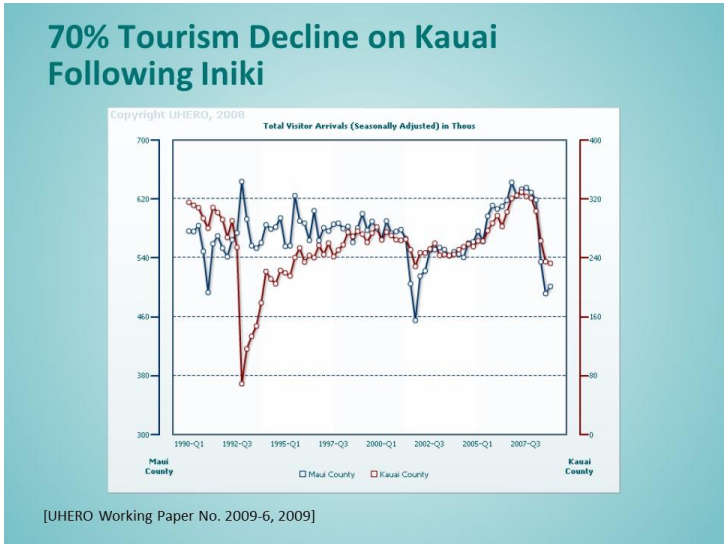

- Tourism took 3 years to stabilize and 14 years to recover to pre-Iniki levels

Slide 36

Comparing Disaster Impacts

Agency	Event (Year)	Damage (% of net assets)	Revenue Loss	Days Cash
Kauai Department of Water	Iniki (1992)	1.3%	3% over 9 months	102
Sewerage and Water Board of New Orleans	Katrina (2005)	3.7%	>90% loss in first 3 months, 24% loss in following year	237
City of Galveston Water Enterprise Fund	Ike (2008)	4.5%	1.9% in following year	65
New Jersey Water Supply Authority	Sandy (2012)	4.8%	2.4% in following year	141

Slide 37

24 Low Elevation / Coastal Pipeline Bridge Crossings in BWS's System

- Most are 10' elevation or less
- Some are between 10 and 15' but very close to coast
- One is part of Honouliuli recycled water system
- Some (like McCully St Bridge in Waikiki) have 2 pipelines
- Total length 4,505 feet

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BWS Disaster Recovery Scenarios

	Scenario A		Scenario B		Scenario C	
Item	Rate	$ M	Rate	$ M	Rate	$ M
Damages	2%	$22.4	4%	$44.8	4%	$44.8
Revenue Loss	50% Months 1-3	$28.9	25% Months 1-3	$14.4	100% Month 1	$19.2
Revenue Loss	25% Months 4-12	$43.3	10% Months 4-12	$17.3	50% Months 2-3	$19.2
Days Cash	201		163		177	

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Revenue Requirement Impacts of Different Working Capital Levels

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Cumulative Total
90 Days	0	0	0	0	0	0	0	0	0	1	0.5	1.5%
120 Days	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0	2.5%
150 Days	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0	0	3.0%
180 Days	0	0	0	2	1	0.5	0	0	0	0	0	3.5%

- Only shows changes resulting from changes in days cash
- Does not reflect potential changes in revenues for future capital and operating costs
- Assumes status quo CIP of $80 million escalated by CPI

Slide 40

2. Purposes and Uses of Debt (When and Why to Borrow)

Current

- Select most economical financing source
- Term of debt limited to life of facility it is funding
- Cannot fund operations & maintenance
- No more than 20% variable rate debt
- Pay-as-you-go funding "…in a range in conjunction with debt to net assets ratio."

Straw Man

- Select most economical financing source
- Term of debt limited to life of facility it is funding
- Cannot fund operations & maintenance
- No more than 20% ~~25%~~ variable rate debt

Slide 41

3. Debt to Net Assets Ratio (How Much Can be Borrowed)

Current
- 40% to 50% debt to net assets ratio

Straw Man
- No more than 50% debt to net assets ratio

OR

- Eliminate the policy

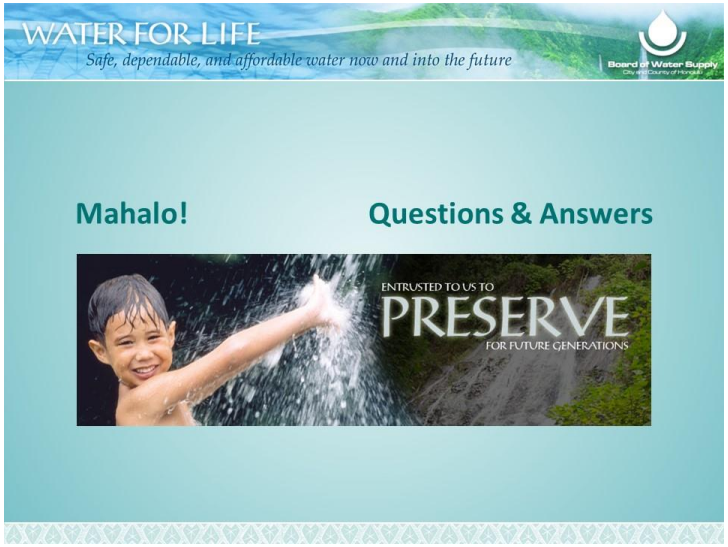
Slide 42

4. Debt Service Coverage Ratio (Ability to Make Loan Payments)

Current
- 1.6x senior annual debt service
- 1.3x junior annual debt service

Straw Man
- 1.7x senior annual debt service
- ~~1.3x junior annual debt service~~
- 1.6x total annual debt service "all in"

Slide 43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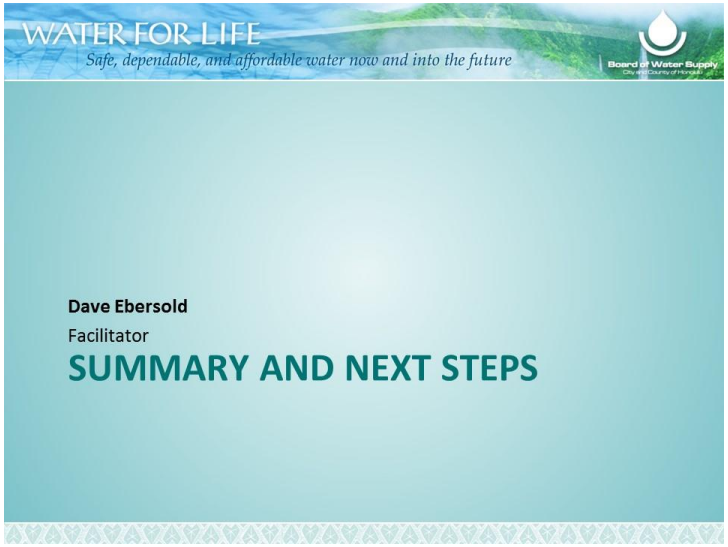
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Board of Water Supply
Dave Ebersold
Facilitator
SUMMARY AND NEXT STEPS

Slide 45

Other Items

- Next Meeting
  Wednesday, April 19, 2017
  4:00 – 6:30 pm
  HECO Trainings Rooms, Honolulu Club

Slide 46


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