WAI Committee

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Sent: Thursday, November 6, 2025 10:32 AM
To: WAI Committee
Subject: November 17 PPT Presentation (DWS)
Attachments: Ordinance 5759 7B Presentation.pptx

Aloha WAI Committee!

Please see attached powerpoint presentation for use on 11/17. Mahalo.

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DEPARTMENT OF WATER SUPPLY

Equivalent Single Dwelling Methodology

James L. Jensen, P.E.

Chief Engineer

INTRODUCTION

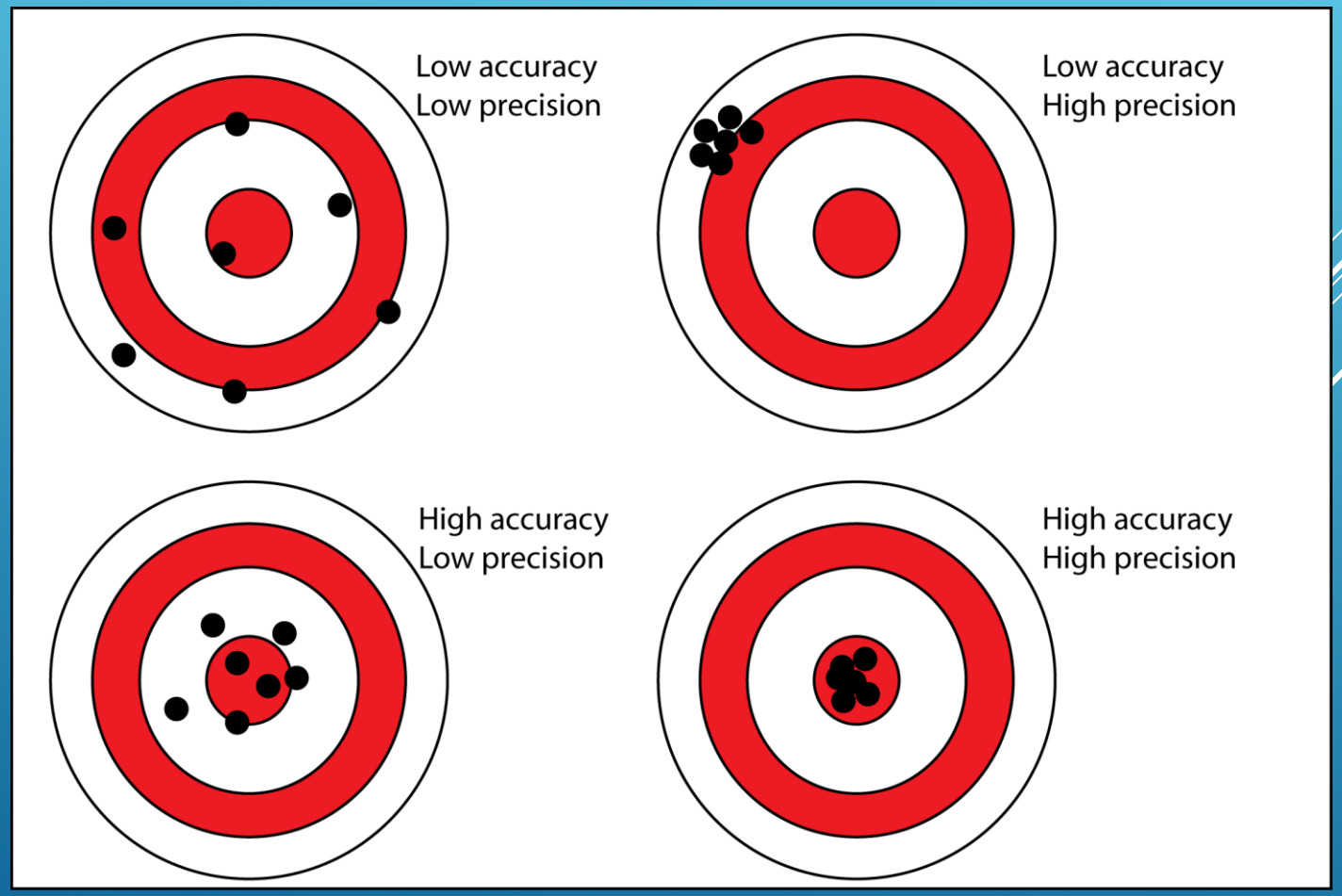
- Meter sizing current practice
- Ordinance 5759 and focus on daily demand
- Challenges with Hunter's Curve based approaches
- Unit Demand principle

IMPACT FEE SYSTEMS OF OTHER ISLANDS

- Honolulu Board of Water Supply
  - Sale of fixtures on a per-fixture basis
- County of Hawaii
  - Based on meter size or a specific charge per lot, dwelling unit, or equivalent unit (whichever is greatest)
- Kauai Water
  - Combination of meter size, subdivision lots, multi-family unit count, etc.

UNIT DEMAND PRINCIPLE

- To identify a unit of usage from which all uses can be measured and/or approximated
- Process simplification
- Accuracy, not precision
- Link daily usage to cost of source development
- Makes meter size less important



NEW SYSTEM
MEET THE EQUIVALENT SINGLE DWELLING (ESD)

- What is it?
  - a fixed unit of daily water usage
- How much is it?
  - 300 gallons per day
- Why do we believe this?
  - Data analysis
  - Research

ESD DEVELOPMENT

- Analysis of 19 combinations of beds and baths from 1/1 to 7/7
  - Approximation of occupancy and concurrent water users
  - Occupancy correlation to daily usage
  - Concurrent use correlation to occupancy
- ESD assumption
  - 4 to 6 occupants in a 4 bed/2 bath home
  - Includes underlying habitation assumptions
  - One dwelling per ESD calculation

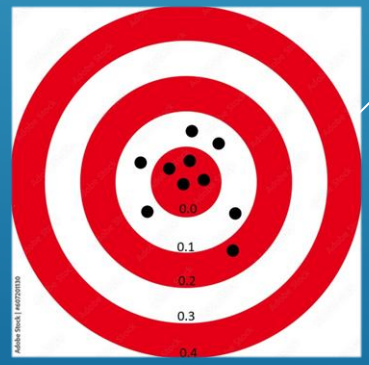
ESD DEVELOPMENT
PREDICTIVE EQUATION

- ESD = (1.15xBaths$^{1.3}$ + Beds + 3) / 10

- Predictive Equation Test Results
  - Aggregate Results:
    - Equal: 10.5%
    - Within 0.1: 84.2%
    - Within 0.2: 100%

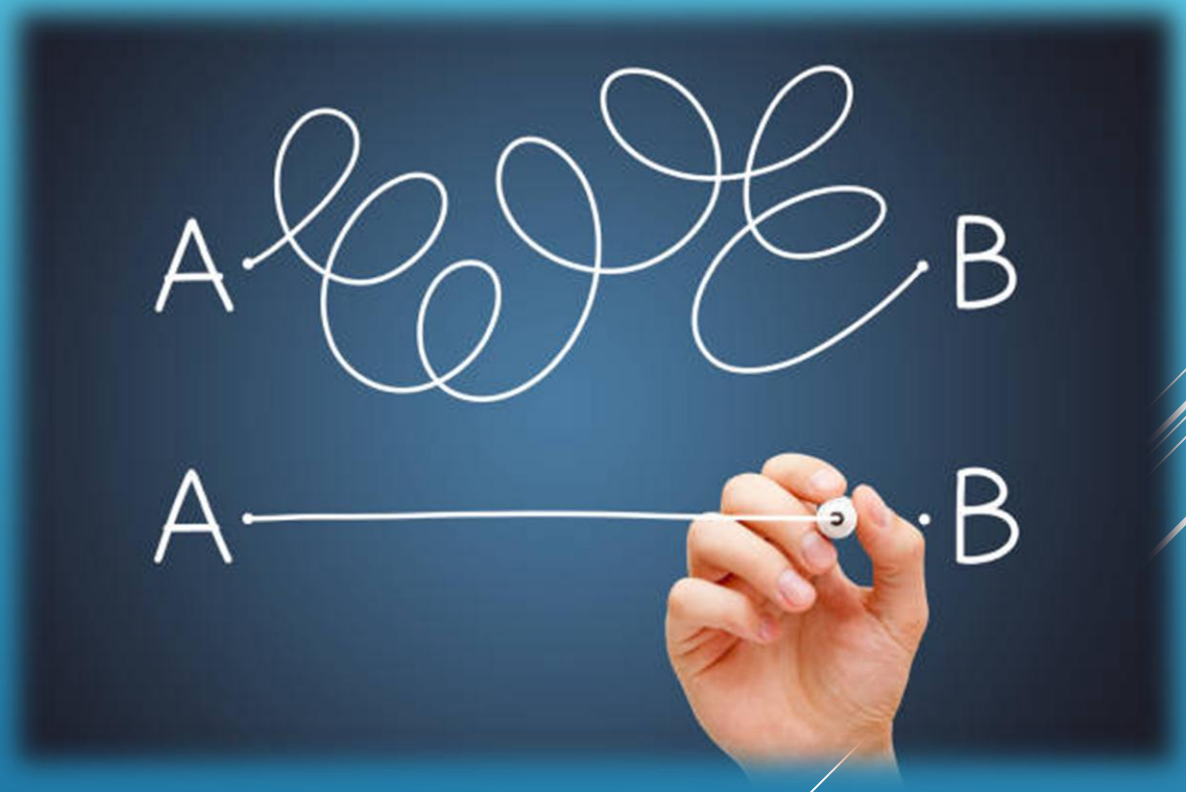
  - Daily Usage Results:
    - Equal: 42.1%
    - Within 0.1: 94.7%
    - Within 0.2: 100%

  - Concurrent Use Results:
    - Equal: 47.4%
    - Within 0.1: 89.5%
    - Within 0.2: 100%



NEW SYSTEM KEY RESULT
PROCESS SIMPLIFICATION

- How will it be simpler?
  - Just count beds and baths
  - Ignores ancillary fixtures
  - Predictive equation for rapid evaluation
- Standardized meter sizing
  - 5/8": 2.5 ESDs (750 GPD)
  - 3/4": 3.5 ESDs (1,050 GPD)
  - 1": 6.0 ESDs (1,800 GPD)
- Current source fee per ESD
  - $5,789 / 2.5 = $2,316 (based on smallest condition)



PROCESS
SINGLE FAMILY RESIDENTIAL

- Bedroom and bathroom counts
  - Summarized on plan, confirmed by staff
  - Fewer headaches
  - Rooms designed like bedrooms will count as bedrooms
- Approval Process
  - Confirm proposal is within total ESDs of meter size
    - New services will pay full impact fee and be entitled to all ESDs until FY27 budget alignment
    - 0.5 ESDs will be assumed for outdoor water use
    - Most existing meters will be able to add an ohana without issue

PROCESS
MULTI FAMILY RESIDENTIAL

- ESD computations same as single family residential
  - Outdoor usage separately estimated and included
  - Standardized meter sizing table
    - 1" up to 16 ESDs
    - 1.5" up to 60 ESDs
    - 2" up to 120 ESDs
    - 3" up to 240 ESDs
  - Based on International Association of Plumbing and Mechanical Officials (IAPMO) Water Demand Calculator (WDC)
    - Side note about WDC development for non-residential uses
  - Will allow meter sizing by custom WDC calculations if applicant chooses

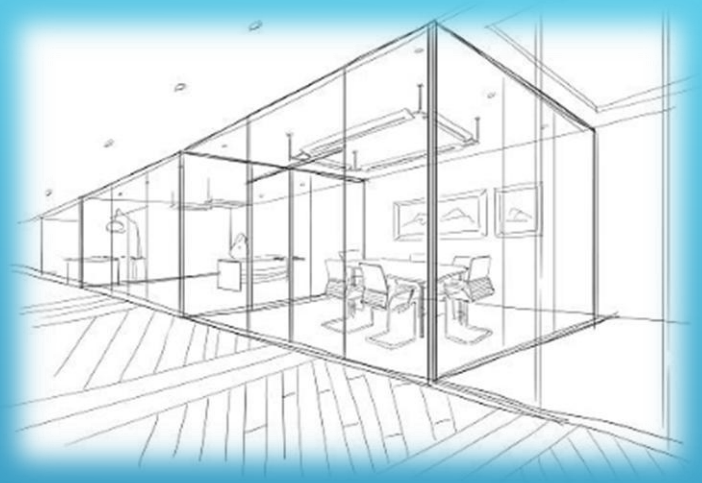
PROCESS
MULTI FAMILY RESIDENTIAL

- Existing MF Meters
  - Entitled to ESDs either:
    - Commensurate with current approved use
    - Equal to FY26 source fee / $2,316
    - Whichever is greater
    - No clawbacks
- Example ESD allocations:
  - 1.5”: 15
  - 4”: 103
  - 8”: 410
- …..a lucky example

PROCESS
NON-RESIDENTIAL

- Daily usage estimated by applicant based on:
  - Consumption guidelines in the Water System Standards
  - Custom calculations stamped and signed by a licensed professional
    - Outdoor use included
  - DWS staff to convert daily usage to ESDs
- Meter sizing calculations
  - Custom calculations stamped and signed by a licensed professional
  - Issue requested meter and collect associated storage and transmission fees.

PROCESS
NON-RESIDENTIAL



- Existing meters
  - Entitled to ESDs in the same manner as MF meters
  - FY26 source fee / $2,316 = ESDs

IMPLEMENTATION
HOW THE SHIFT WILL HAPPEN

- Staff preparation and training
  - Beta testing with current applications
  - Happening now
- Get the process in place!
  - There will be hiccups
- Separate source fee from meter size

FY27 BUDGET
SOURCE COMPONENT OF WATER SYSTEM DEVELOPMENT FEE

- Separate source fee from other impact fees associated with meter size
  - Change minimum meter size from 5/8" to 3/4"
- DWS is analyzing the development fee and structure and will propose changes in the FY27 budget
- Fee will be developed by reviewing recent source development cost figures against quantity of ESDs served

FY27 BUDGET
SOURCE FEE PRELIMINARY ESTIMATE

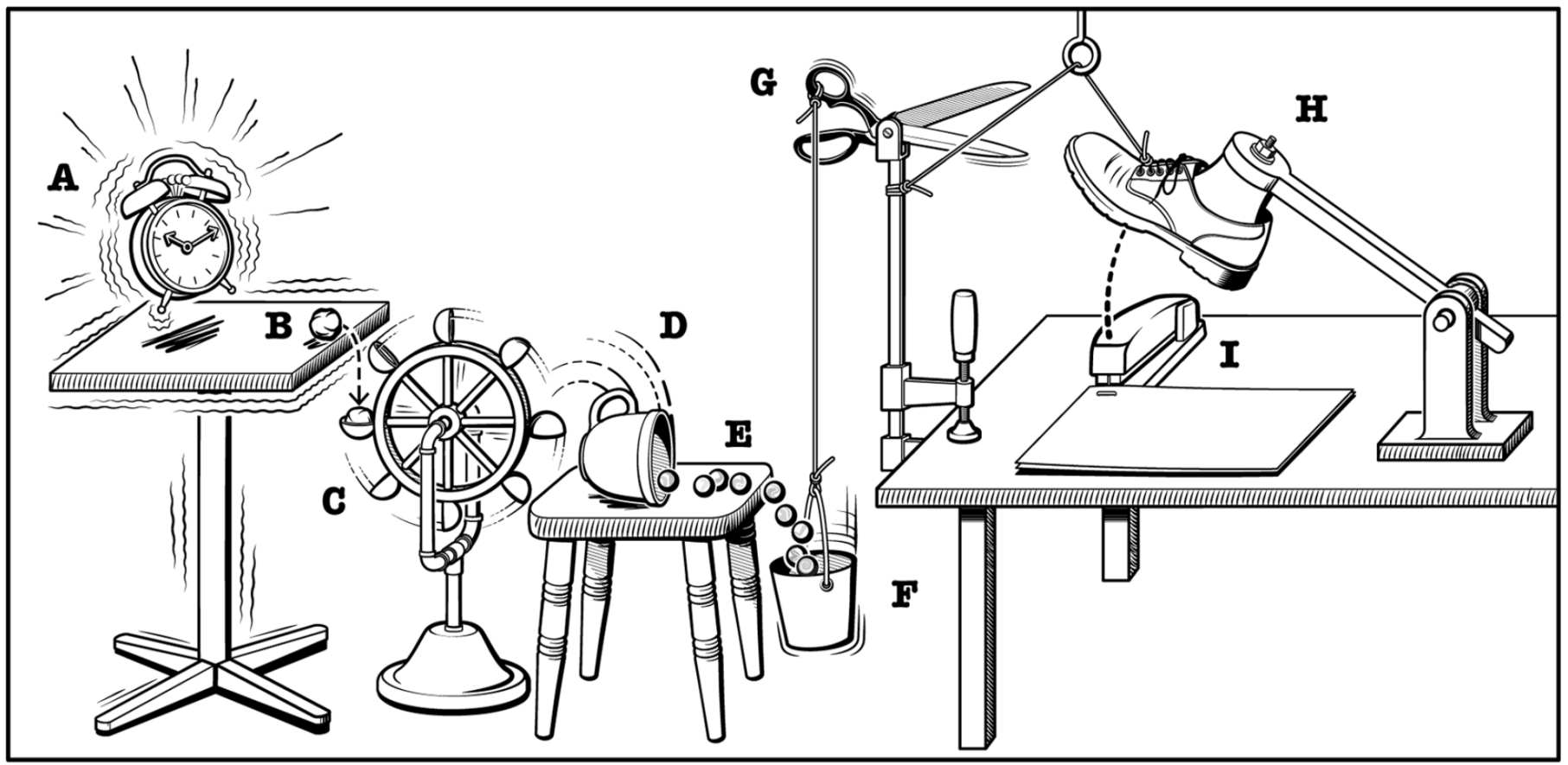
- Recent cost to develop well: $18.07 million
- Source provided by well: 0.96 MGD
- ESDs generated by new source: 3,200
- Resulting source fee: $18, 076,000 / 3,200 = $5,648 per ESD
- % Increase in per ESD fee: $5,648 / $2,316 = 2.44x

FY27 BUDGET
IMPACT FEE CALCULATION EXAMPLES

- First house and full build out on ¾" meter:
  - Current: $18,884
  - New: $18,293 (1.5 ESDs, including 0.5 for irrigation)
  - New: $29,590 (Full 3.5 ESDs, including 0.5 for irrigation)
- 300 MF units on a 3" meter + 3500 GPD irrigation:
  - Current: $279,380
  - New: $1,566,880 (251.7 ESDs)
- Commercial (3000 GPD indoor, 600 GPD outdoor, ¾" meter)
  - Current: $18,884
  - New: $77,605
- 1" irrigation meter using 9000 GPD:
  - Current: $33,356
  - New: $186,807

WHY IS THIS A BETTER SYSTEM?

- Large up front effort to result in a simple outcome



WHY IS THIS A BETTER SYSTEM?

- Simpler and Accurate
  - Focus on bedrooms and bathrooms
  - Improved representation of actual use
    - Custom calculations for non-residential uses
- Faster
  - Shifts work from engineers to administrative staff
  - Decreases total work to be performed
- Correction to impact fee

MAHALO NUI

QUESTIONS?