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CREATE BETTER COMMUNITIES

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THE LANGDON GROUP

GATEWAY MAPPING INC.

J-U-B FAMILY OF COMPANIES

The Balance of Conservation and Storage

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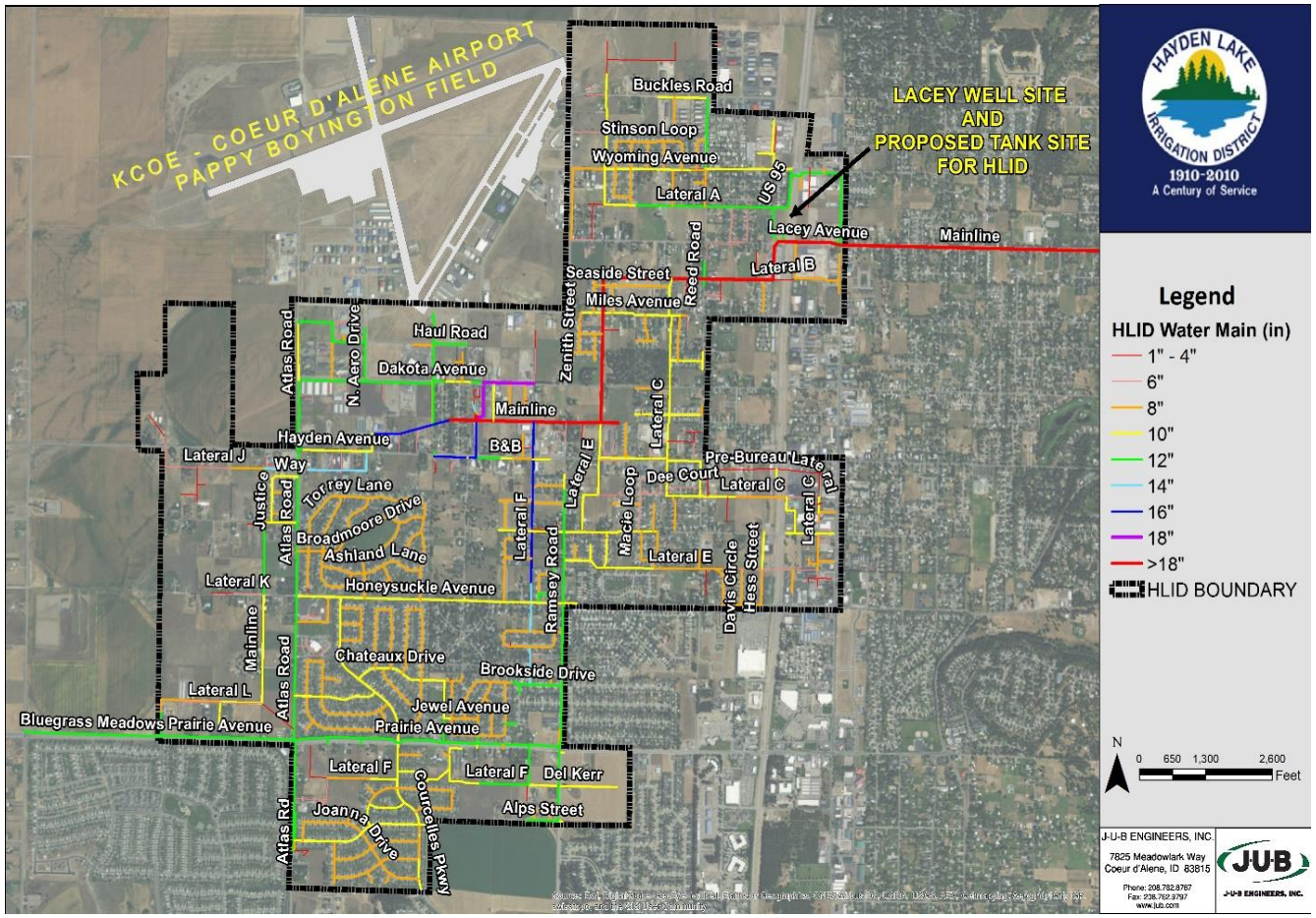
2024 AWWA Conference

Outline

- Background
- Management strategies used to date
- Planning Effort
- Impacts of Planning Efforts
- Lessons Learned & Project Highlights

Background



- Hayden Lake Irrigation District provides service within the incorporated cities of Hayden and Coeur d'Alene, as well as parts of Kootenai County.

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Background

- Water System
  - 3,750 physical connections
  - 6 supply wells
  - 75,000 gallons of storage (prior to July 2023)
    - Additional 1.6 MG of storage was recommended in 2001

Background

- 1.6 MG of additional storage recommended in 2001
- Efforts to construct fell short
- Focus shifted to saving for future storage and adding supply
- Efforts to construct new storage was finally approved in 2019

Background

- Various, creative, efforts to handle peak demands have allowed the District to operate for 20 years.
- Despite those efforts, the need for storage became urgent, but while they were working through the siting, design and construction, they had to keep serving water….

Strategies Used for Conservation

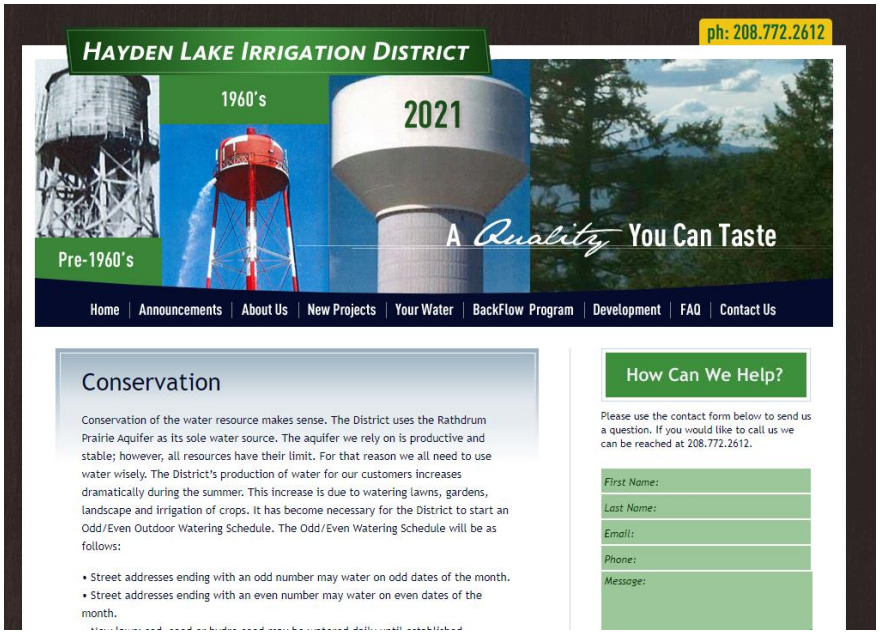
- Developed Laundry List of methods to promote conservation in order to eek by:
  - Using all the tools possible…
    - Rates,
    - Education,
    - Intricate SCADA programming,
    - Sleeping in the shop during lightning storms!

Strategies Used for Conservation

- Financial Methods:
  - Restructure of Rates –
    - Historically, rates were assessed annually
      - ~$117.3 per irrigation season for 326,000 gallons of water for the first acre under one would receive a portion of the allotment depending on size
    - Currently, the base rate is $17.50/ month, and you pay for all you use tier billing $1.16 1-10K $1.75 11-20k $3.18 21k gallons
      - Equitable – users are in control of what they use.
  - Impact of the Restructure
    - 1st year $2.8M in revenue, and 7.2MGD
    - 2nd year $2.3M in revenue, and 5.6 MGD
      - The Peak Day reduced by 1.6 MGD

Strategies Used for Conservation

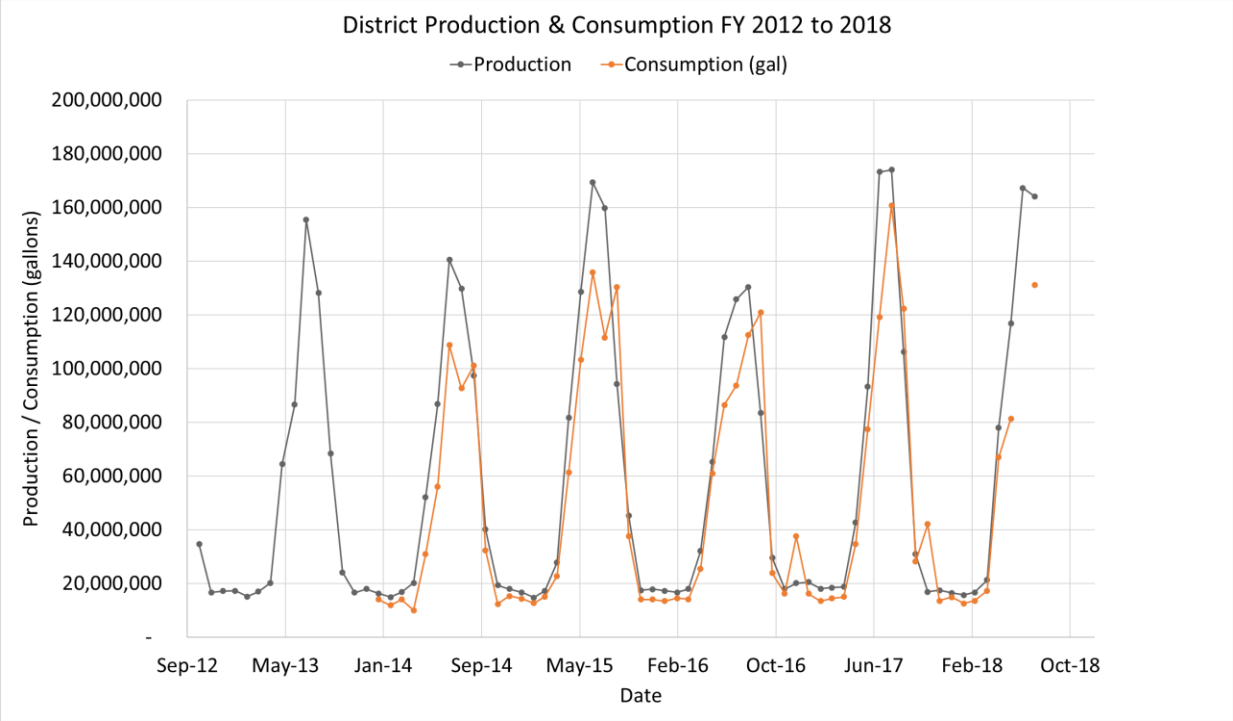
- Promote Conservation
  - Education on benefits
  - Landscape recommendations
    - Plants and Maintenance



Educating Customers on Broken Sprinklers

Strategies Used for Conservation

- Odd-Even Watering
  - Allow for new installations
  - Consumption increases, while production peak remains the same



Strategies Used to Date

- Emergency back-up power generators for 5 of the 6 wells

Strategies Used for Conservation

- Variable frequency drives

Burnt leads Motor

New 350hp VFD

Fast repairs or ??

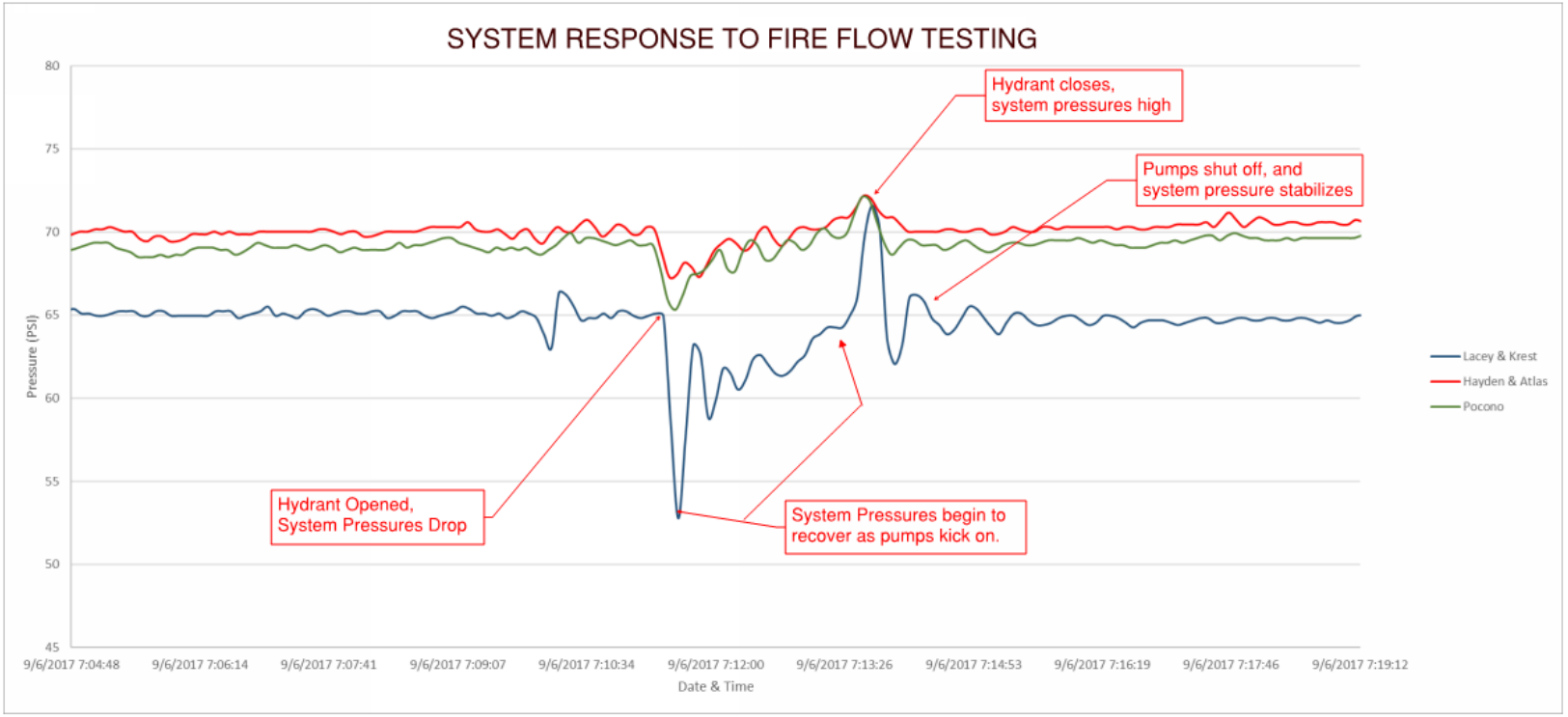
Strategies Used for Conservation

- SCADA programming
  - Complex, used to predict rate of fall in the tank
- Predictive Well Operation
- Special Lead Pump Operation

HLID Summer Operation Scheme	Lacey		Dakota 1		Dakota 2		Dakota 3		Larix		Start Time	
	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Hour	Min.
Recipe 1	10	19	1	2	9	18	12	19.5	9	17	3	0
Recipe 2	9	19	10	20	8	17	44	18	6.5	17	9	0
Recipe 3	9	18.5	13	19	14	20	10	18	6.5	17	2	30
Recipe 4	9	18.5	10	19	12	20	11	18	6.5	17	18	0
Recipe 5	12.5	20	5	6	14.5	20.5	0	0	13.5	19.3	2	30

Strategies Used to Date

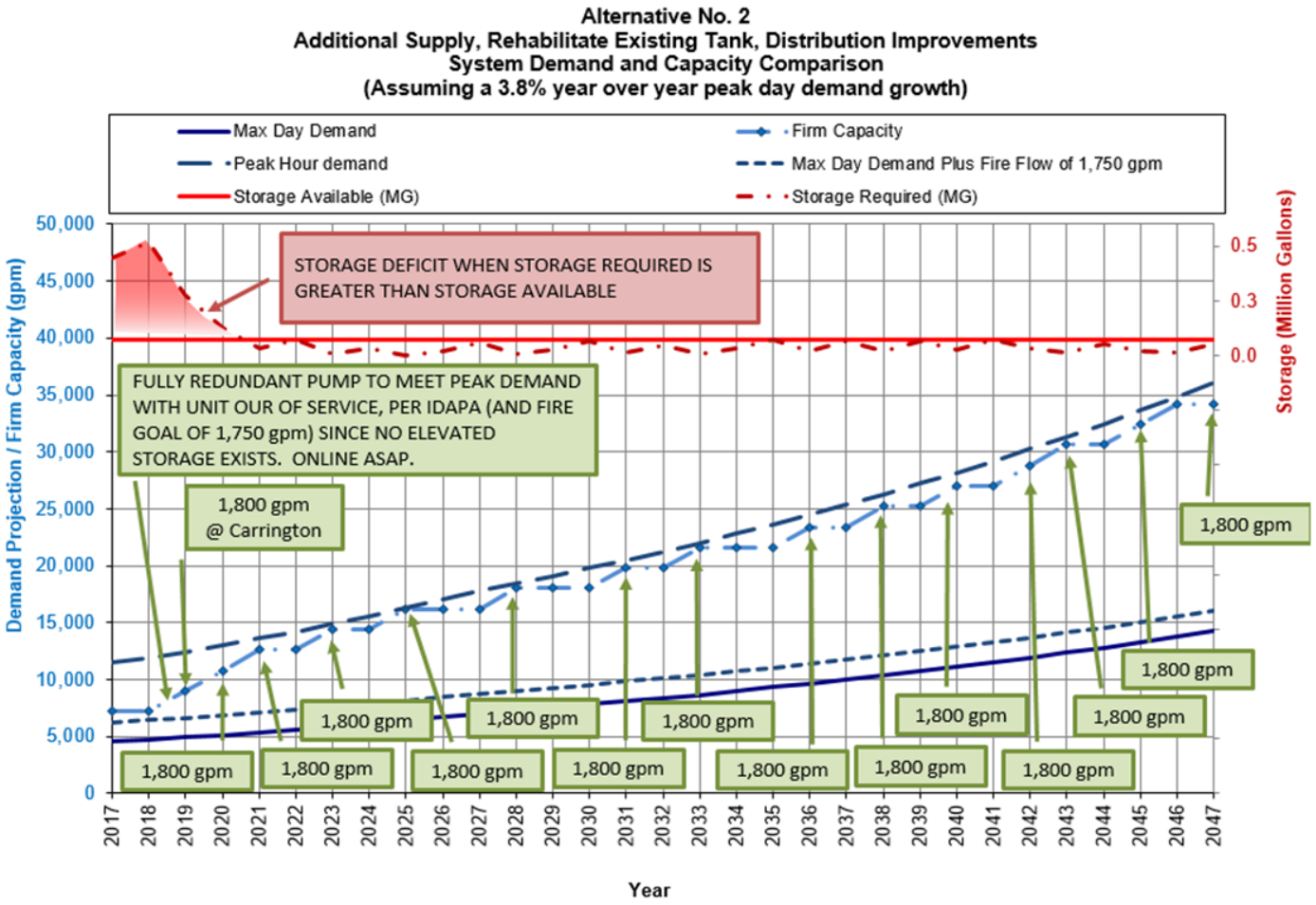
- SCADA programming
  - Remote access
- Rapid Response Alarms



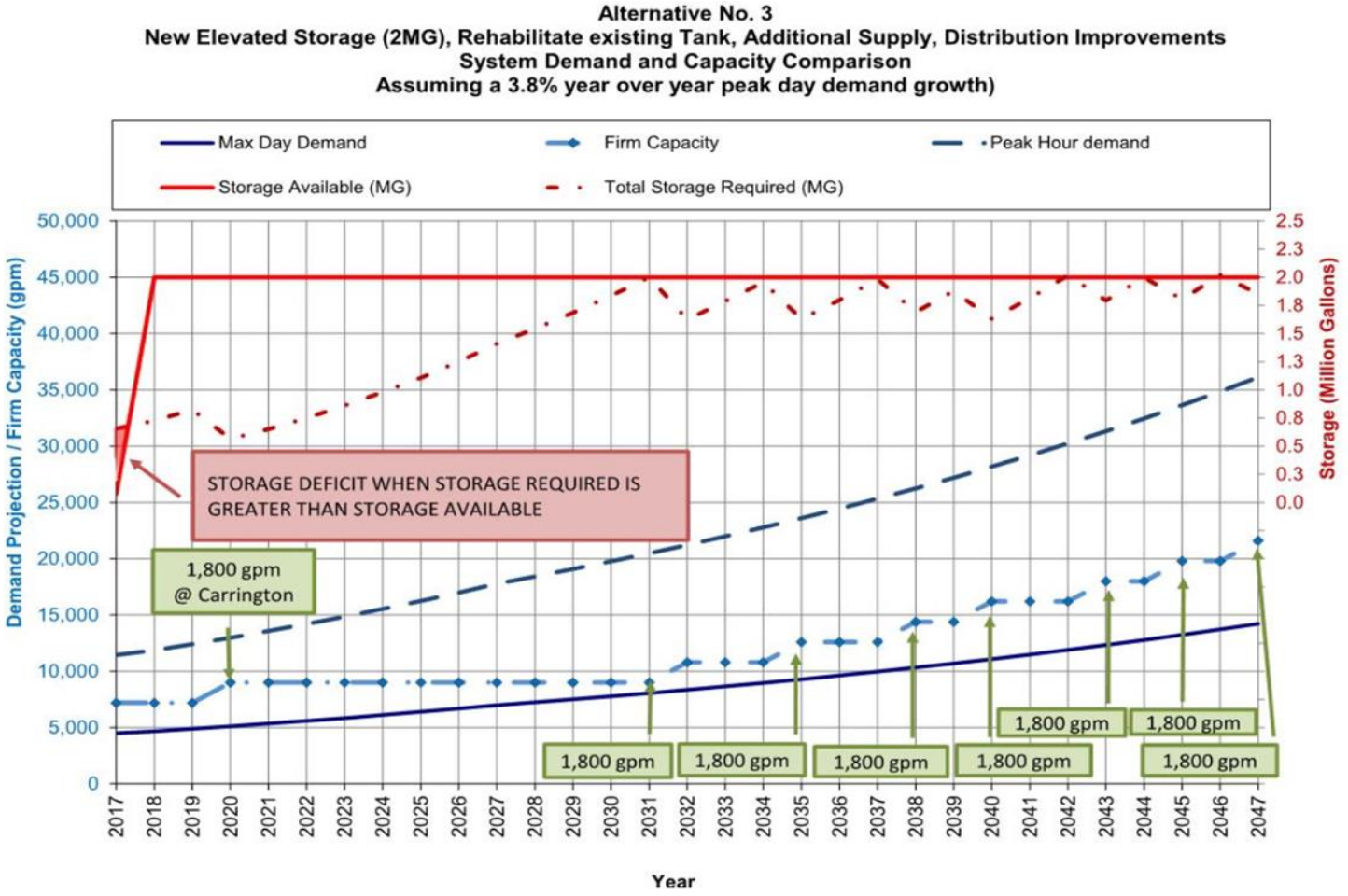
Strategies Used to Date

- System management employed to date often resulted in long hours for operators, especially during lightning storms, peak weeks and system tie-ins!

Future Without Storage

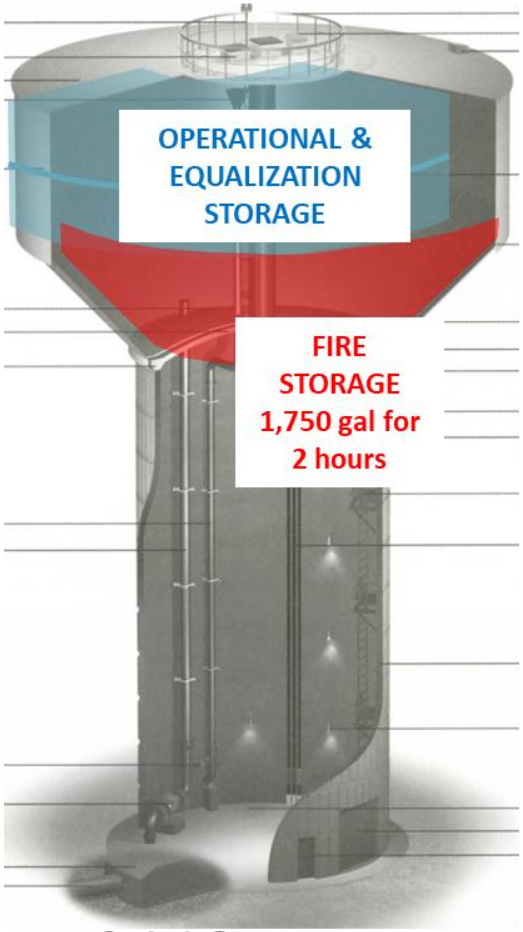


Future With Storage



Project Highlights

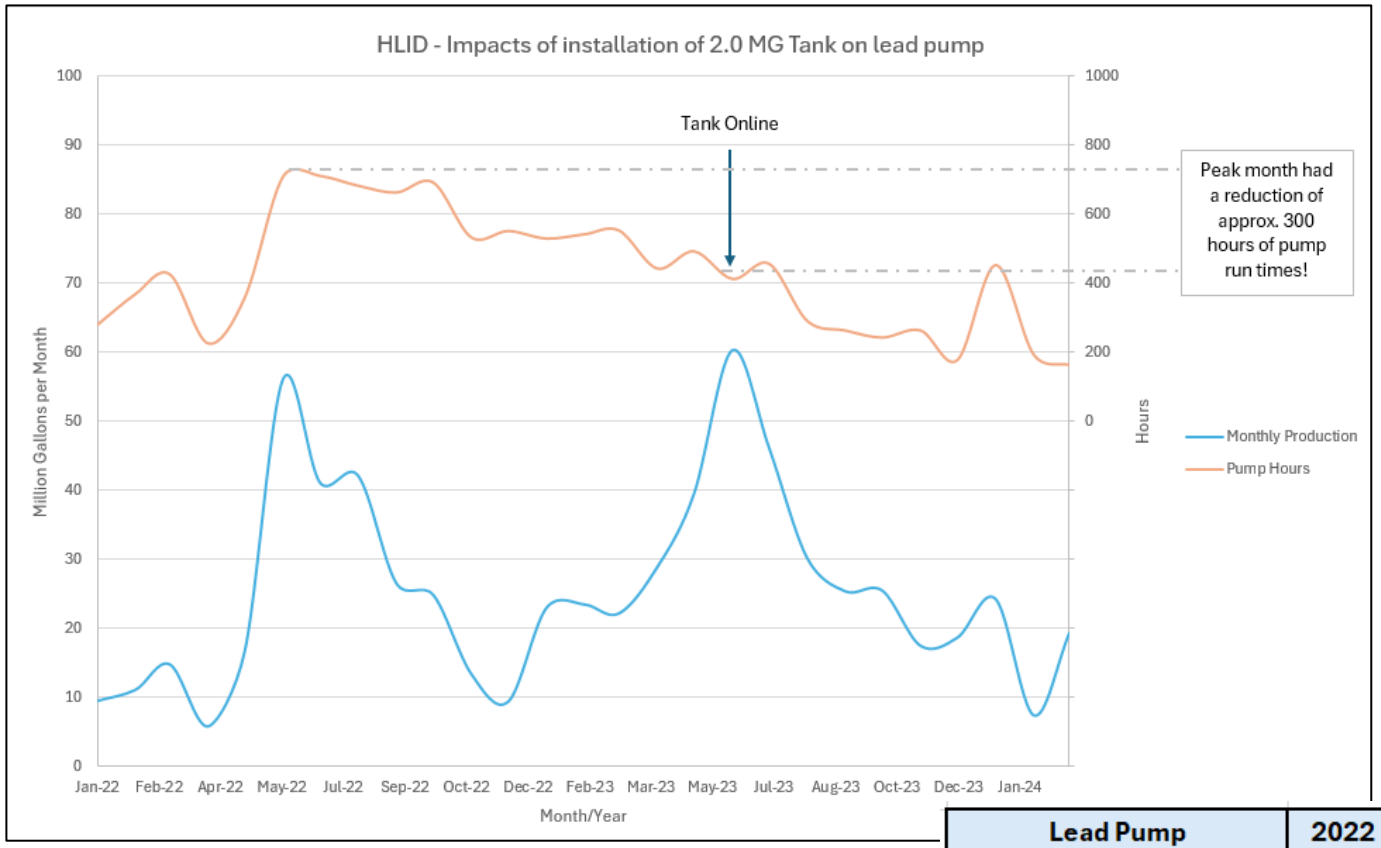
- Able to provide continuous water service.
- Improve the long-term storage needs for the system.



2 MG

0.075 MG

Project Highlights



Lead Pump	2022	2023	2024	Percent Change	
Monthly Production (MG)	56.2	60.4		7.4%	increase
System Connections	3230	3476		7.6%	increase
Pump Hours (peak month)	709	413		41.7%	decrease
KWH (winter month)		75.73	39.6	47.7%	decrease

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Questions and Open Discussion

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