

# POWER CHALLENGES:

THE IMPACT OF WATER COSTS AND THE FUTURE FOR ARIZONA

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# ARIZONA DAIRYMAN AND FARMER

- 5<sup>th</sup> Generation Dairyman at Paloma Dairy, Gila Bend, Arizona
- 8,000 cow dairy managed by my Dad and Brothers
- RNG facility producing 400 MMBTU daily of pipeline-grade gas
- Capacity for 3MW of electric production or equivalent to 2850 gallons of diesel daily





# ARIZONA DAIRYMAN AND FARMER

## SUNSET FARMS

1<sup>st</sup> Generation Farmer in Gila Bend, Arizona

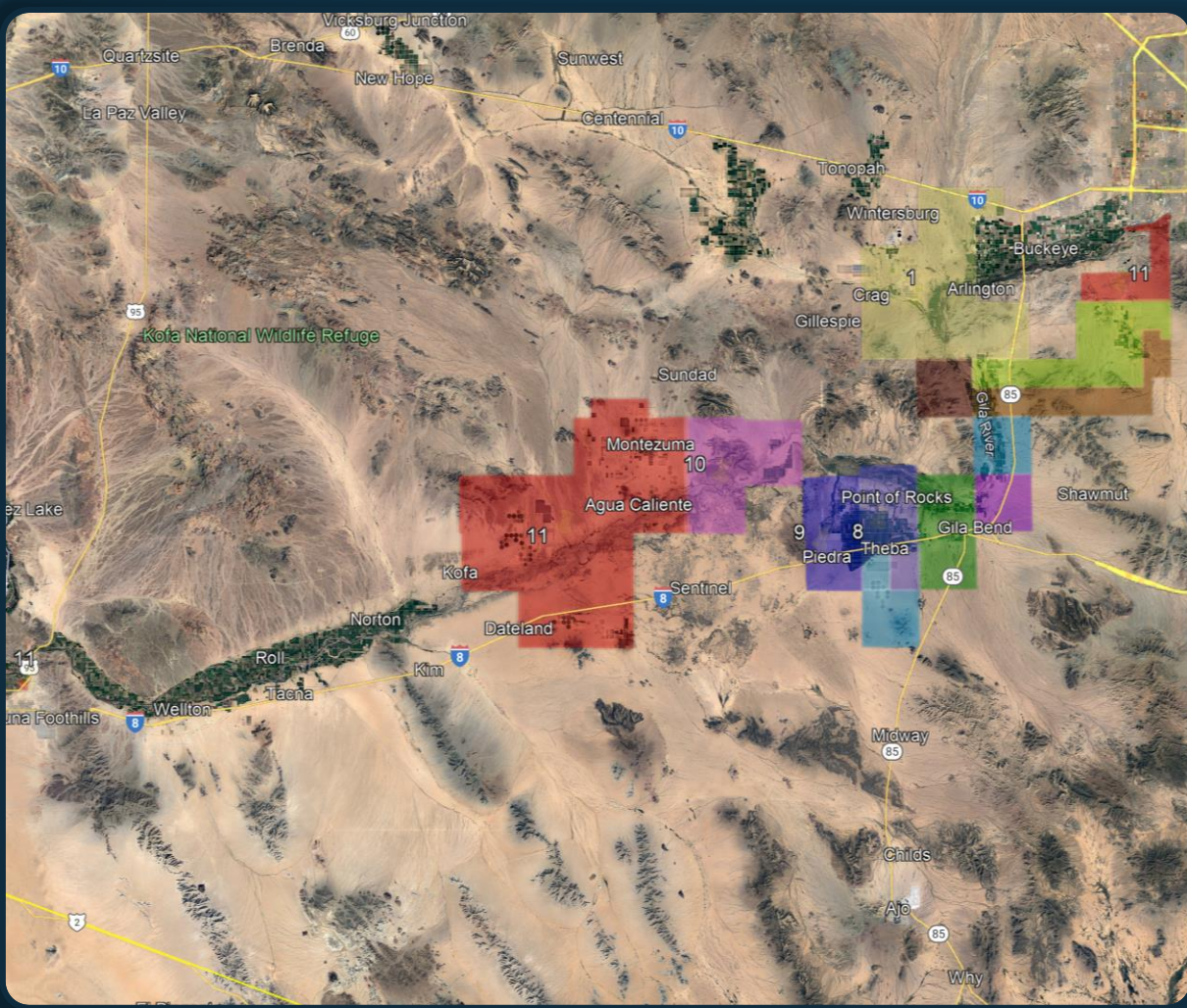
- Farm established in 2001 and expanded in 2012 to be managed with brother
- 7,000 acres of irrigated land planted to alfalfa, corn, barley, forage wheat, and sorghum

# MANAGEMENT POSITIONS

## District Manager at PIDD (2018-Present)

- District includes 30,000 acres
- Mix of surface, ground, and pump-back water
- 85 wells plus lift stations and sump pumps (equal to 19 MW of max load)
- Energy costs account for 63% of operating costs





# MANAGEMENT POSITIONS

District Manager at Electrical District 8 (2021-Present)

District serves 80 customers

85 MW of total load

PIDD use represents 22% of total load

Resource mix

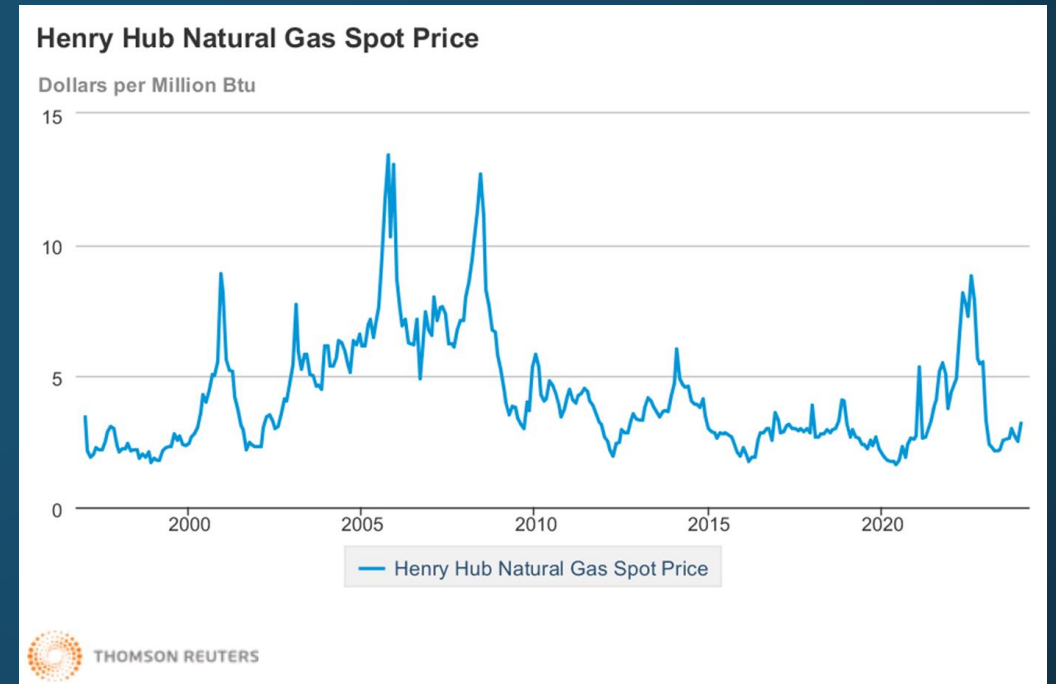
18% Hydro/electric from Hoover Dam, 58% combined cycle Natural Gas

Solar with battery storage in progress to meet remaining needs

# POWER MARKET AND ENVIRONMENTAL FORCES

## Natural Gas

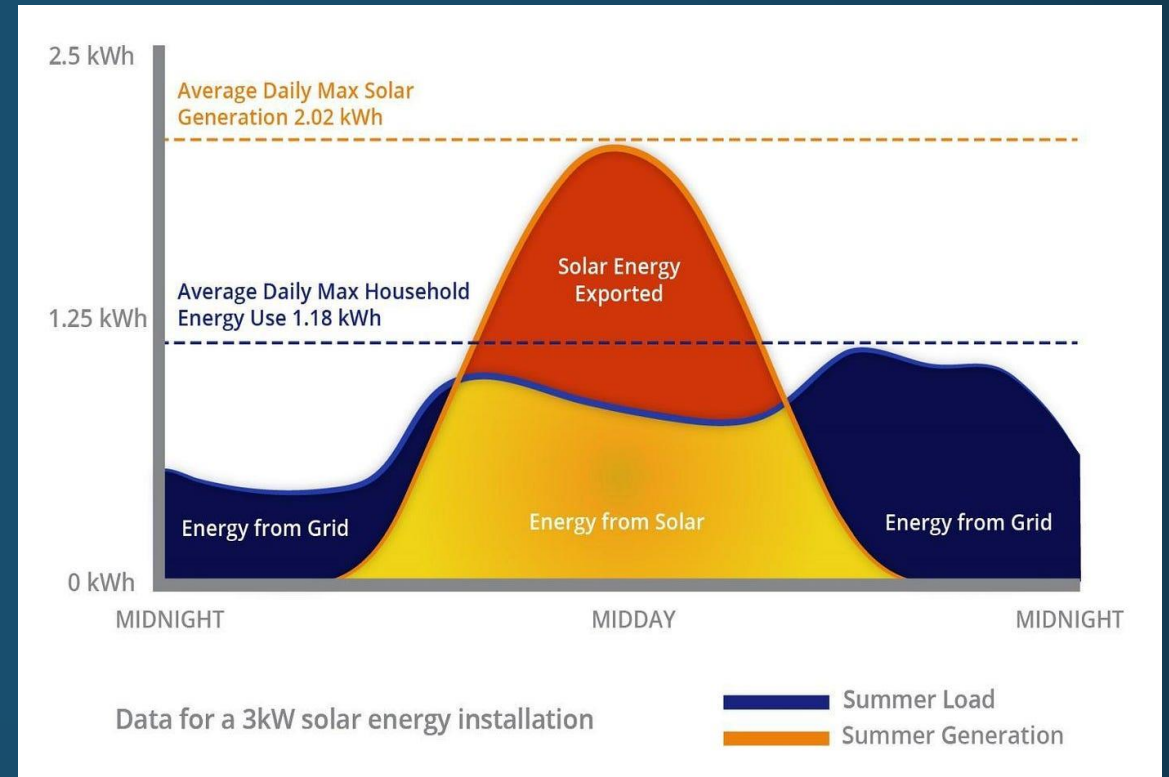
- Recent prices have been a rollercoaster (ongoing issue since early 2000's)
- High prices and limited supply switched to oversupply around 2010 with the widespread adoption of Shale Fracking
- Oversupply issue did not correct immediately
- Causes of recent high prices (2021-2022)
  - 2021 winter storm Uri (Texas)
  - El Paso Pipeline explosion in AZ – limited transmission capacity
  - Aliso Canyon Leak reduced storage capacity in Pacific region
  - Coal plant retirements & increased demand and reliance on Nat Gas
  - Large LNG facilities coming online soaking up more supply
- Current Conditions
  - Ongoing work to bring more Nat Gas and electric capacity online
  - “low prices solve low prices” and “high prices solve high prices”



# POWER MARKET AND ENVIRONMENTAL FORCES

## Increased Renewable Energy

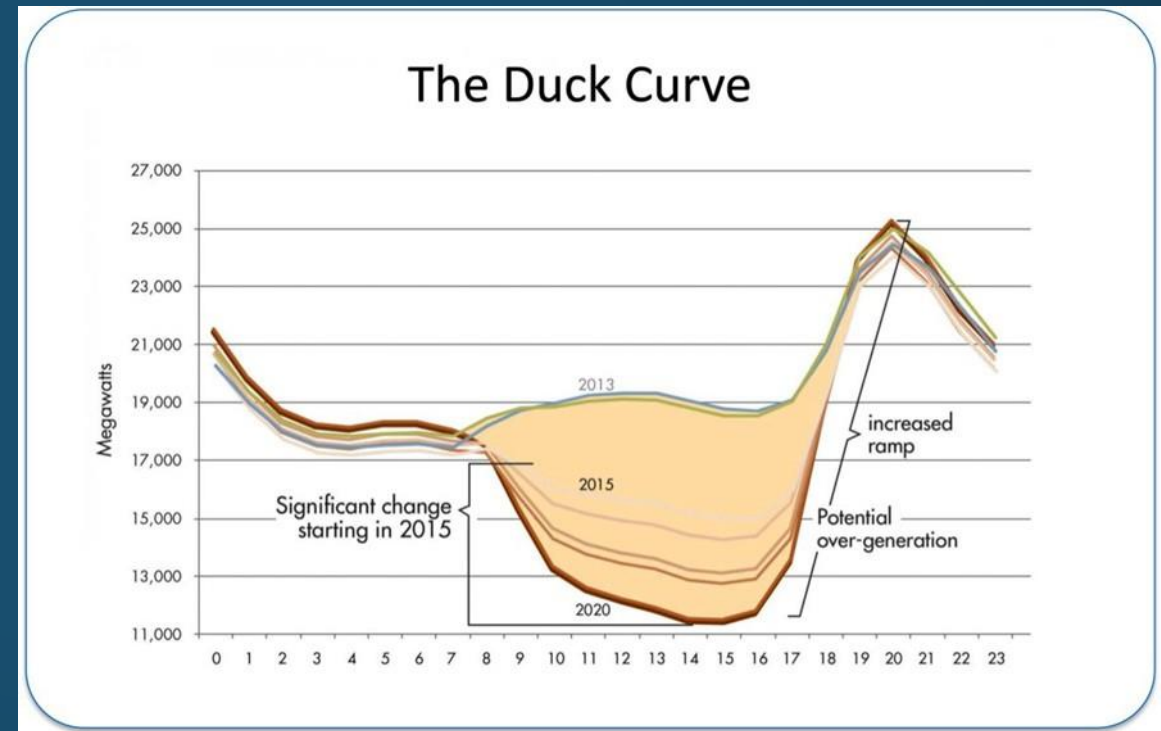
- Explosion in new capacity, but massive backlog of projects trying to get approval for zoning, siting, etc.
- Limited/inconsistent general capacity (daylight hours, wind consistency, etc.)
- Battery storage
  - Provides ability to store and shift capacity to other times of day, but is expensive
  - Still falls short of capacity profile of traditional generators



# POWER MARKET AND ENVIRONMENTAL FORCES

## Drought/Hydroelectric

- Drought and low lake levels
  - Less head pressure results in less capacity (think less horsepower)
  - Less overall volume results in less energy (think less range)
- 2023 weather was a welcome relief from possible “DeadPool” status but it has not solved water shortage issues





# POWER COST TRENDS FOR ED8 AND IRRIGATION DISTRICTS

## 2015 thru 2020

- Energy costs were very stable and affordable (even cheap) due to an oversupply of Energy
  - Low Nat Gas Prices
  - California Policies
- Ultimately this led to underinvestment into new resources (“low prices cure low prices”)

## 2021 -2022

- 2021 price hikes: a tale of two cities
- Those long on capacity going into this period reaped the rewards after years of losses on underperforming assets
- Those short on capacity got hammered after years of overperforming from the ability to secure extra capacity cheaply

# POWER COST TRENDS FOR ED8 AND IRRIGATION DISTRICTS

2023 thru Today

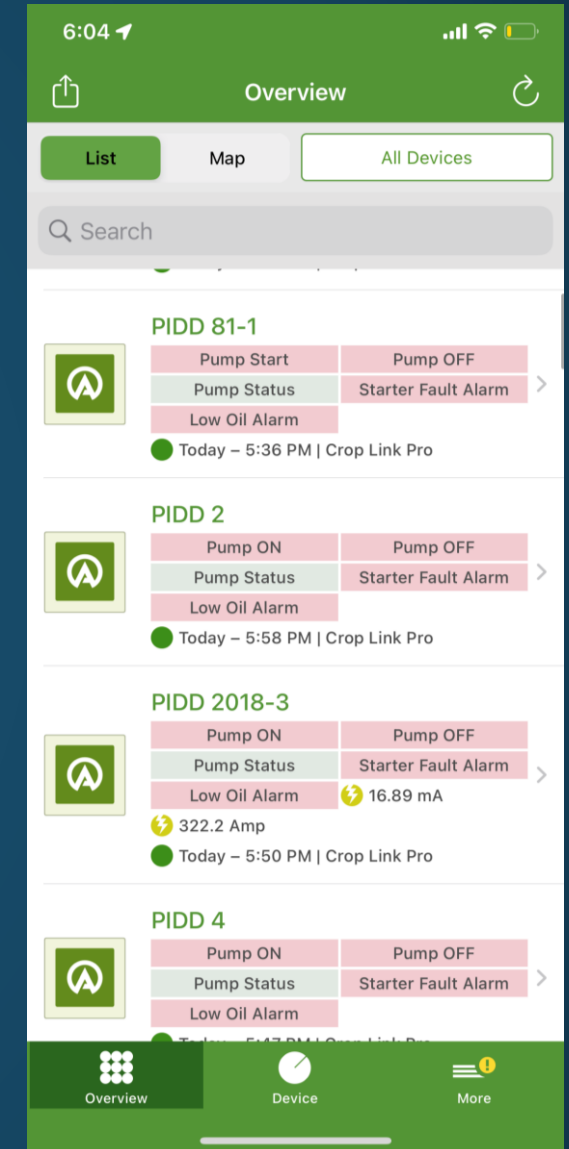
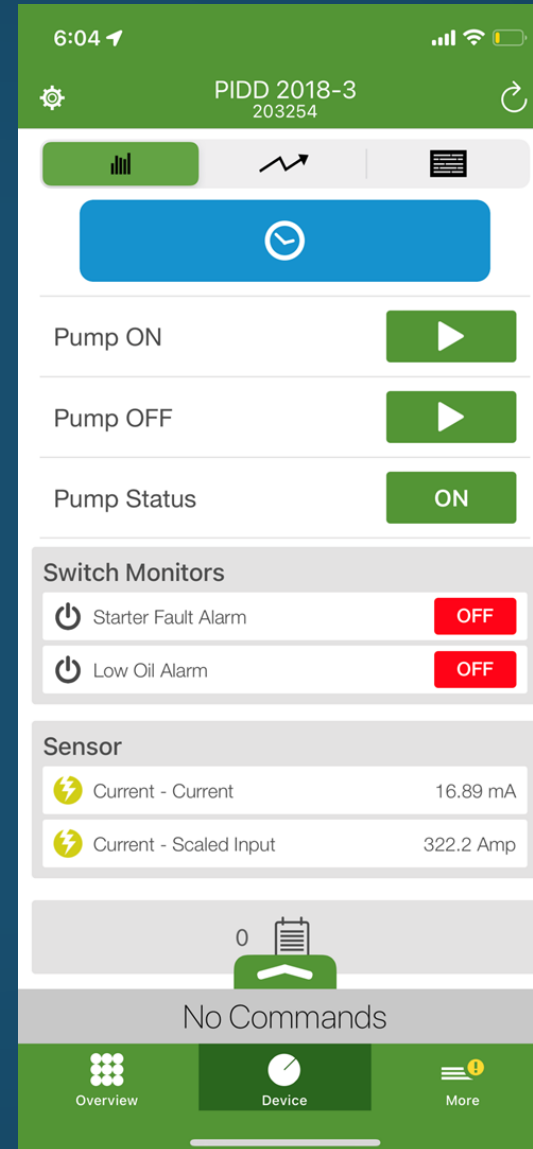
- Steps taken to reduce volatility
  - New resources have been contracted
  - Hedging of Natural Gas
  - Built a fortress balance sheet
- New tools deployed
  - In house forecasting created to better understand market moves on bottom line
  - Remote Power Meters being deployed to test real time data usefulness
  - Demand Management and Generation Opportunities
  - In house billing to allow more flexible rates

# SPECIAL IMPACTS FOR FARMS

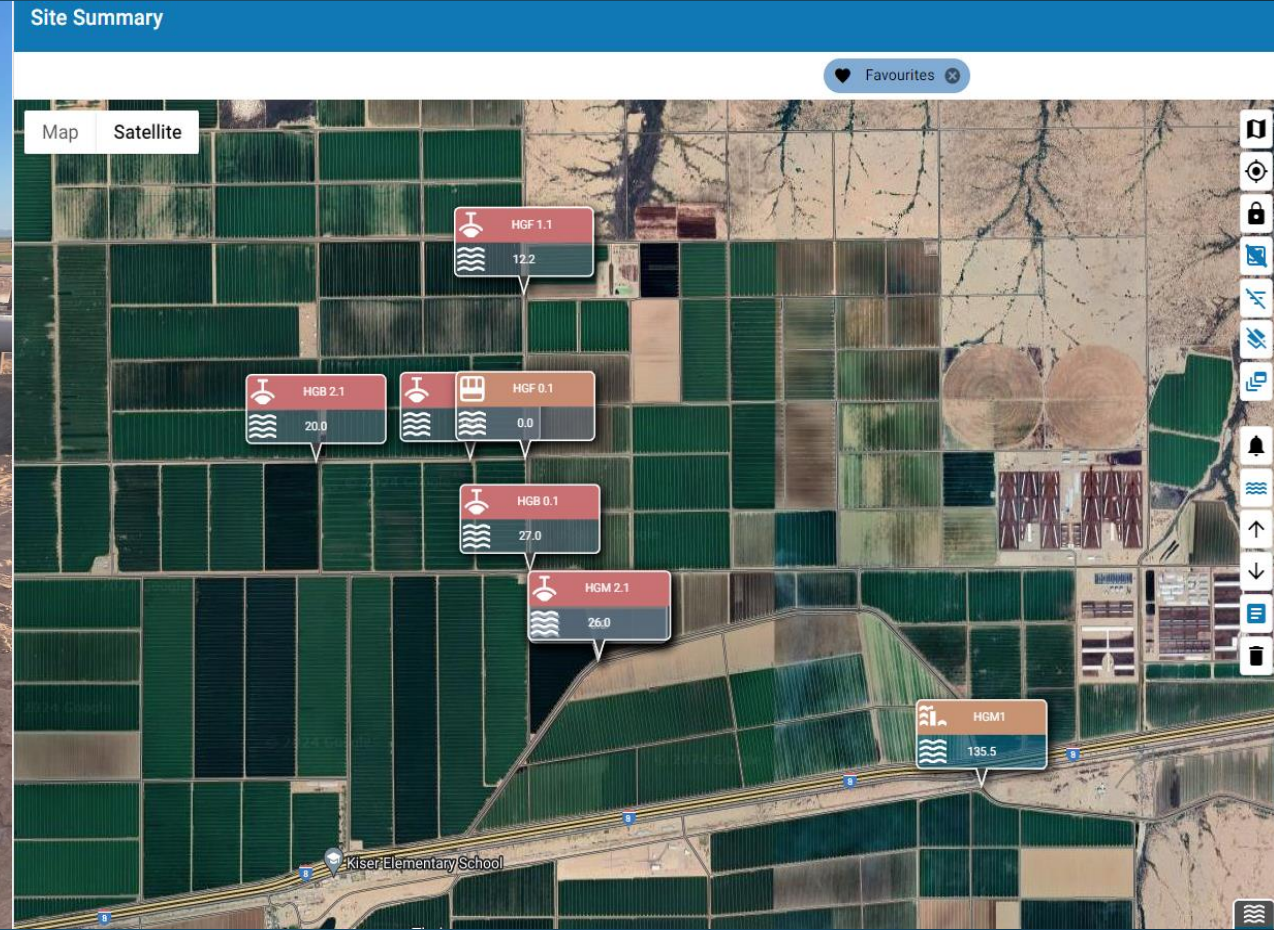
- Impacts to farmers vary according to power supplier and water situation
  - Some lost CAP water and have had to drill new wells
  - Some have had significant power rate increases
  - Some saw little to no change in pumping costs
- Most farmers were able to manage the worst of price hikes due to exceptionally high commodity prices at the time.
- Dairymen were in a similar position initially with high milk prices, but milk prices have fallen hard since then
- A strong economy and demand from other areas kept crop prices high through 2022, but the bottom fell out in 2023
- Most producers are currently struggling to make ends meet

# STEPS PIDD HAS TAKEN

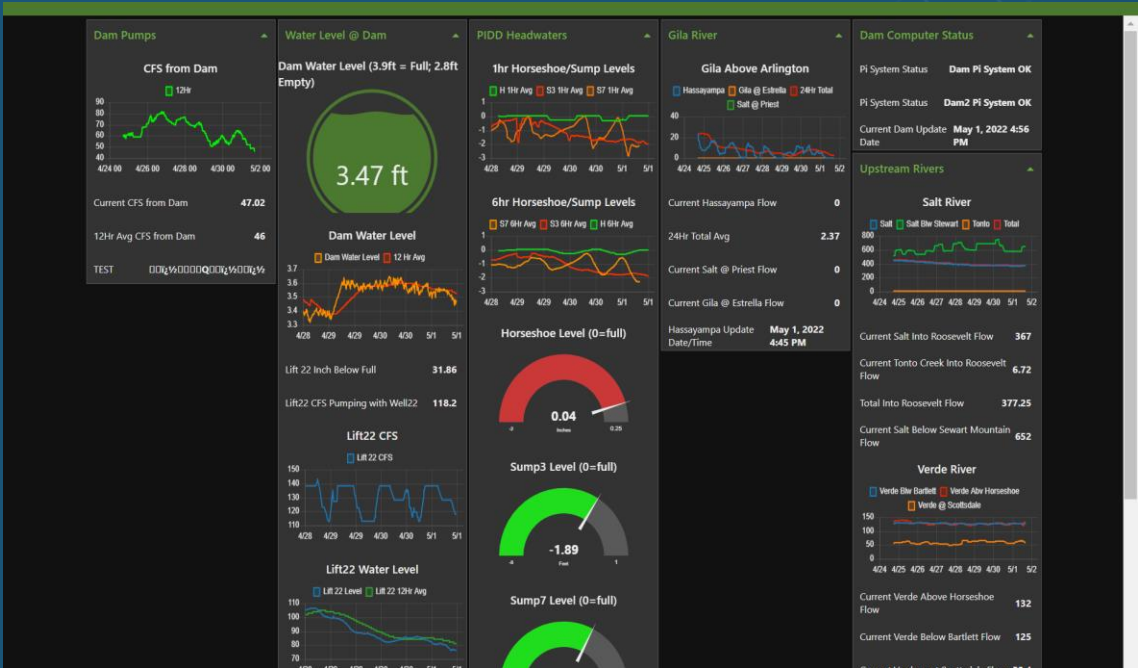
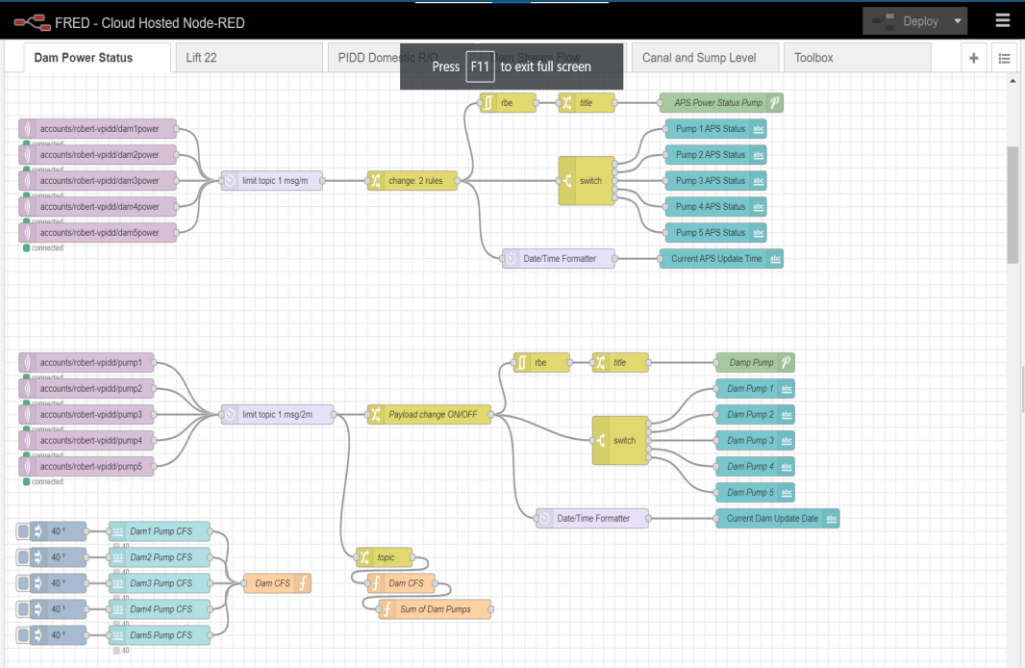
- Initially had to raise prices dramatically following our power costs
- Since then we have had the ability to lower prices as energy prices declined
- Investment in remote control and automation (SCADA)
  - Improves efficiency, preserves resources, and controls costs
  - Includes remote level sensors, automation on pumps and oilers, remote control pumps, and automated gates



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QUESTIONS?