

The future of nutrient management in the San Francisco Bay



BACWA
BAY AREA
CLEAN WATER
AGENCIES

Lorien Fono

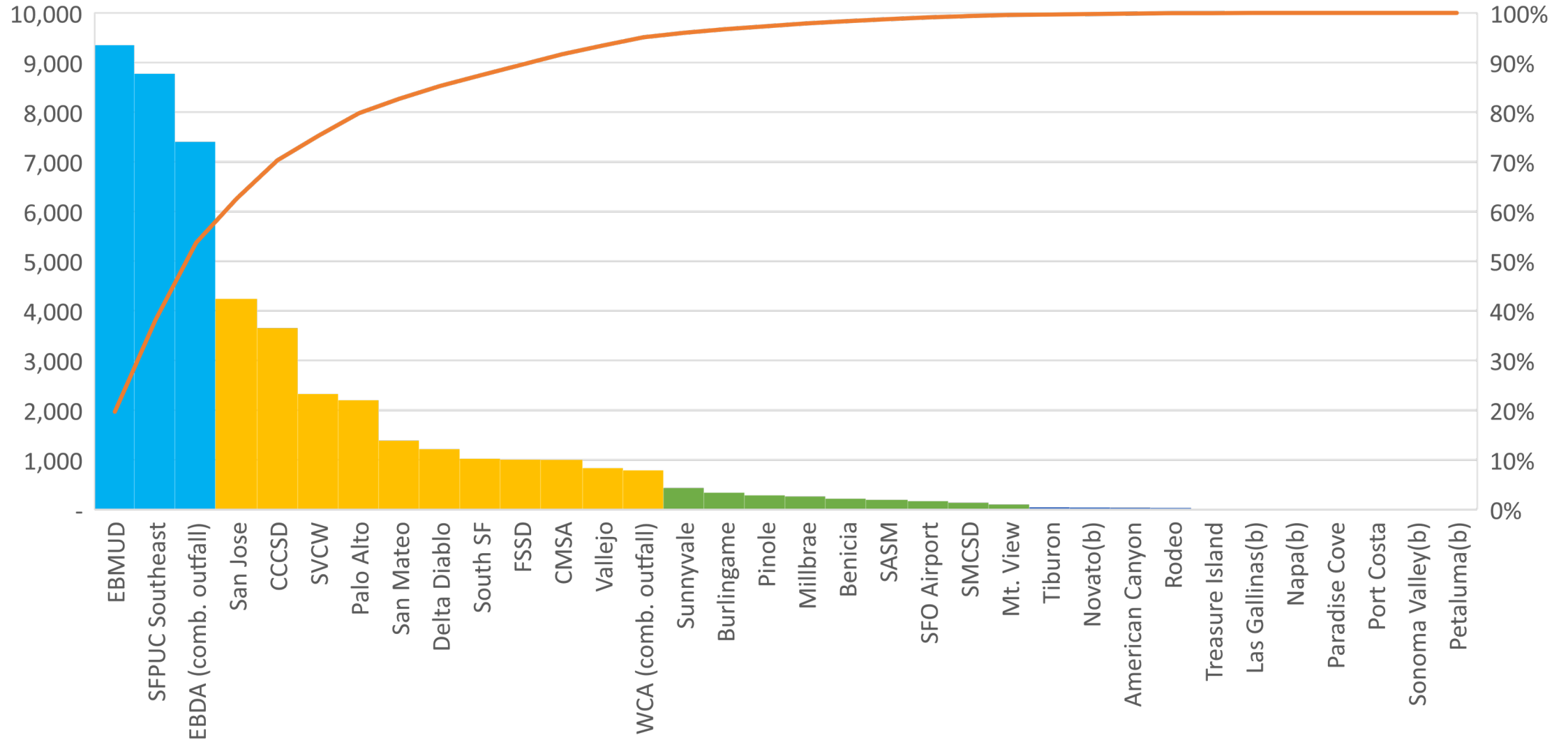
May 5, 2023

BACWA Annual Meeting



Nutrient reduction will be a regional effort

Cumulative Contribution of TIN Loading (Based on 2013-2022 Averages)





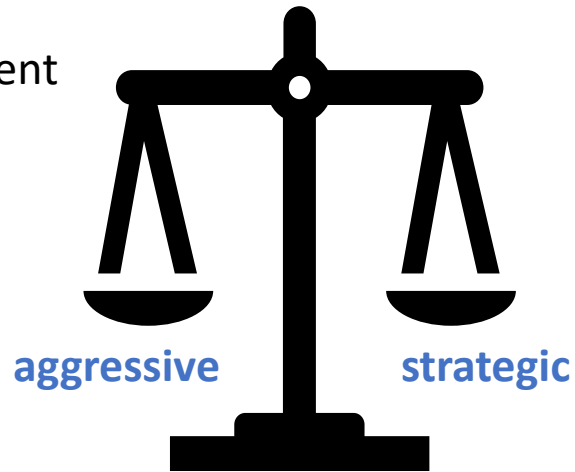
BACWA
BAY AREA
CLEAN WATER
AGENCIES

Benefits of a strategic regional approach to nutrient reduction

Visit www.bacwa.org

Should our region pursue aggressive or strategic nutrient reductions?

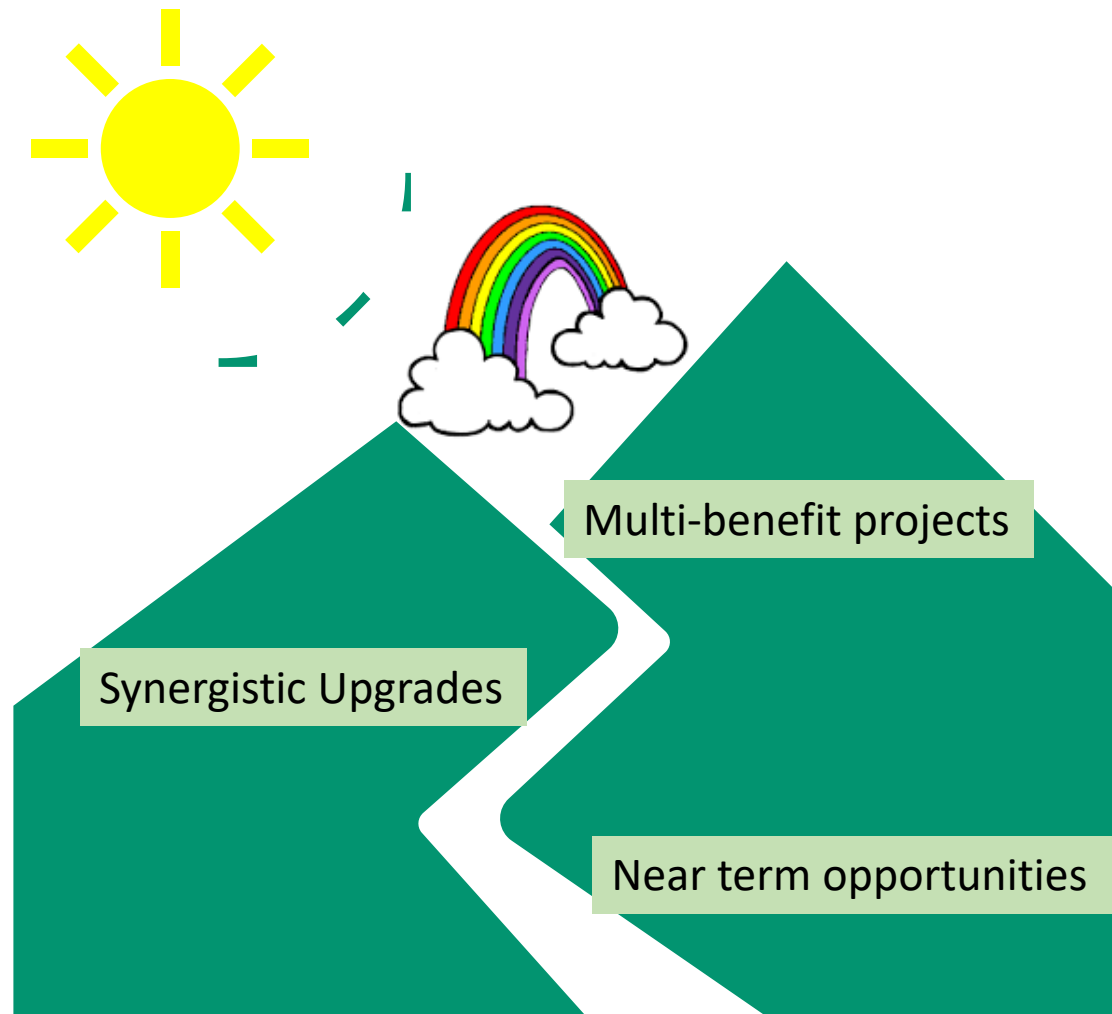
- Reduced nutrient loads in 10 years
- Maximized cost to ratepayers due to competition between agencies for funding and contractors
- Stranded assets and displacement of other critical infrastructure



- Reduced nutrient loads over 0-25 years (near term opportunistic to long term re-envisioning of water management)
- Eventual load targets driven by science
- Balanced environmental priorities
- Multi-benefit projects for climate change resilience
- Emerging technologies to minimize energy, costs, footprint, etc.
- Nutrient trading for maximum efficiency
- Synergy with existing capital priorities and funding



What we gain from a phased regional approach





B A C W A
B A Y A R E A
C L E A N W A T E R
A G E N C I E S

**What are the specific plans to
further reduce nutrients?**

Several agencies already reduce nutrients substantially

- Most agencies get some nutrient removal via existing secondary processes and recycled water
- Several agencies have implemented upgrades to further reduce nutrients
- Existing recycled water programs reduce nutrients to the Bay
- Some examples:



DSRSD
>80% dry season TIN
diverted via RW



Oro Loma SD
80% TIN removal from influent



San Jose/Santa Clara RWF
85% TIN removal from influent



Sunnyvale
80% TIN removal from influent

What's coming next?

2023 opportunities

- EBMUD – split stream treatment and “Right-sizing” resource recovery program
- SFPUC – split stream treatment pilot
- City of Richmond – optimization

Near-term opportunities 2024+

- SFPUC – Sidestream treatment
- FSSD – Optimization
- City of San Leandro – Treatment Wetland
- Delta Diablo – Secondary improvements
- Silicon Valley Clean Water (sidestream to offset codigestion)

In-progress upgrades complete by 2029

- Union Sanitary District
- City of Hayward
- City of San Mateo
- City of Palo Alto
- City of Sunnyvale
- City of Pinole
- City of San Jose – Phase 1 upgrade to compensate for solids handling

Non-potable RW expansion by 2029

- City of American Canyon
- Central San
- City of Hayward
- City of Palo Alto
- City of San Mateo
- SFO
- Treasure Island

Multi-benefit project concepts – 2029+

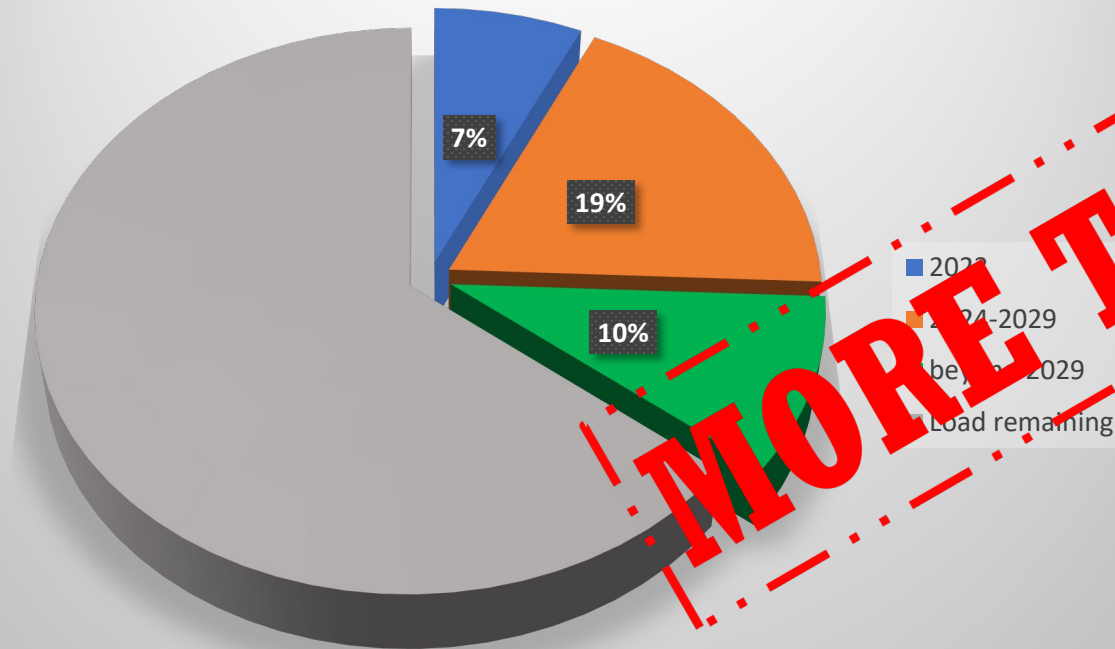
- Central San – Potable Recycled Water
- Silicon Valley Clean Water – Potable Recycled Water
- FSSD – Nature Based Solution
- City of Hayward – Nature Based Solution
- City of San Jose – Phase 2+ upgrade to compensate for solids handling

MORE TO COME!

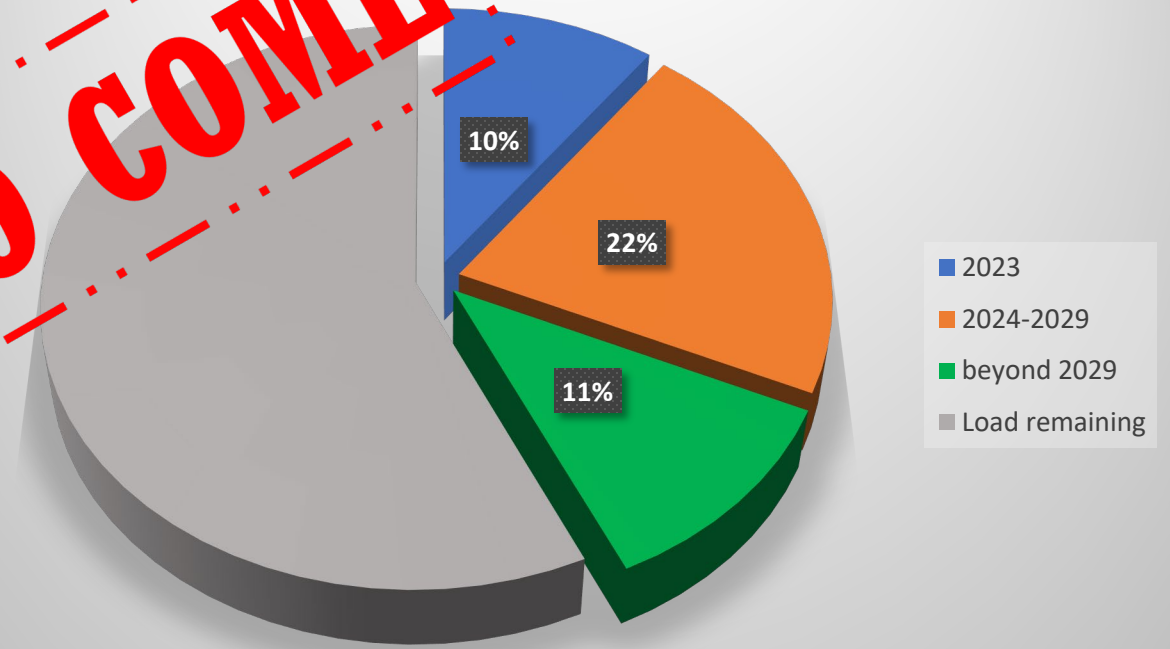


Preliminary difference in nitrogen compared to 2022

Preliminary load reduction from 2022 - low estimate



Preliminary load reduction from 2022 - high estimate



36 to 43% reduction from 2022

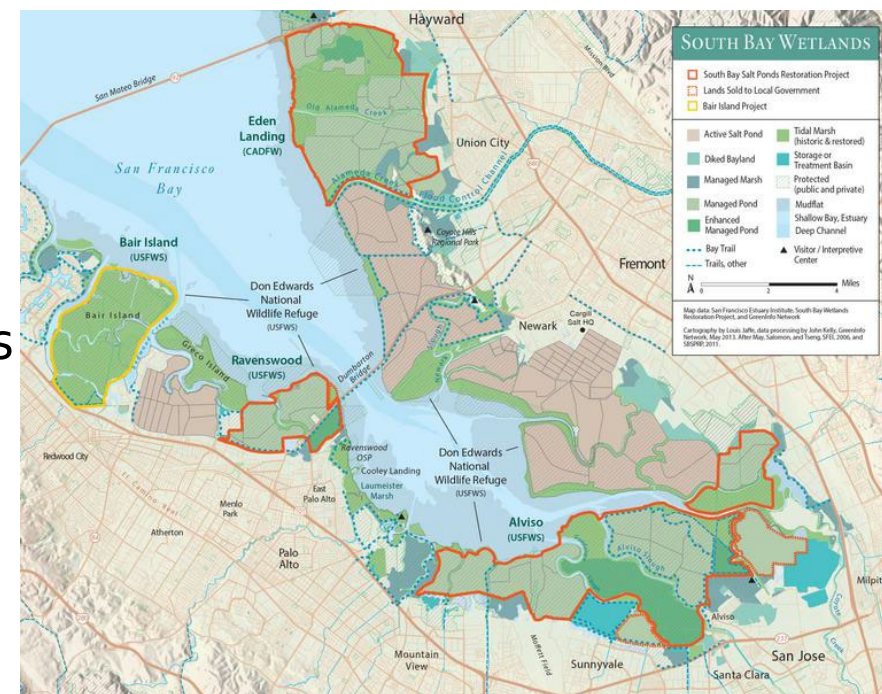


B A C W A
BAY AREA
CLEAN WATER
AGENCIES

**Are there other
opportunities to support a
resilient Bay?**

In addition to reducing nutrients, we can...

- Reorient the science program to:
 - Consider the impact of “green engineering” such as the use of oyster beds to increase grazing
 - Estimate the impacts South Bay salt pond management alternatives
- Explore the utility of restoration measures in suppressing harmful algal species
- Plan aerated refugia for fish during low DO events





BACWA NEEDS **YOU** TO
ENGAGE ON NUTRIENTS

Upcoming:

- Each agency must sign off on Nutrient Special studies
- BACWA Nutrient Strategy team meets monthly to discuss engagement with the Water Board – open to all members
- ED will reach out to each agency as part of negotiations

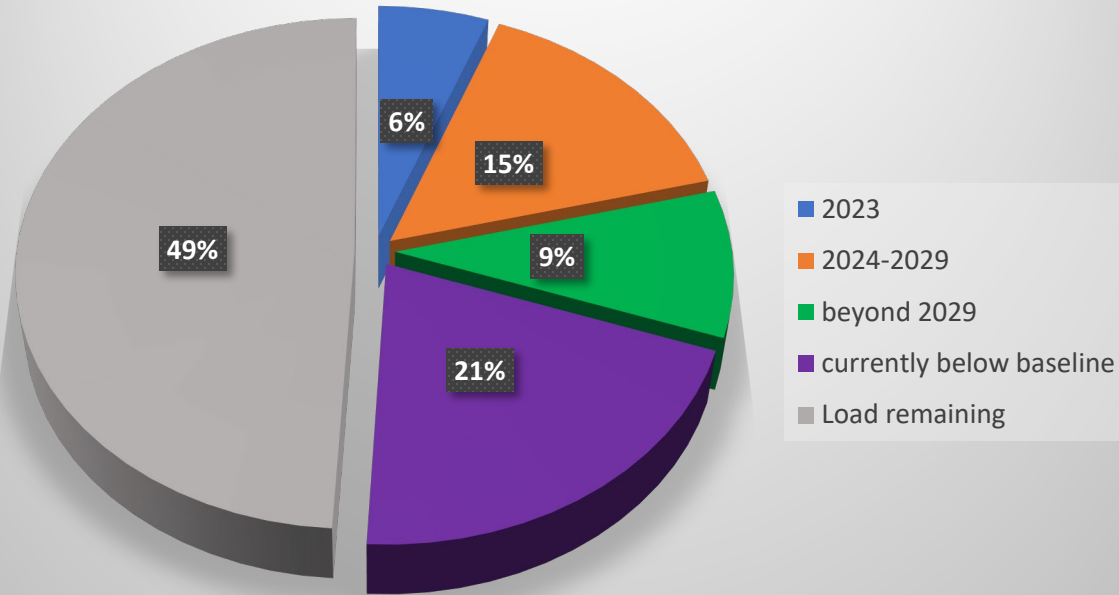


B A C W A
B A Y A R E A
C L E A N W A T E R
A G E N C I E S

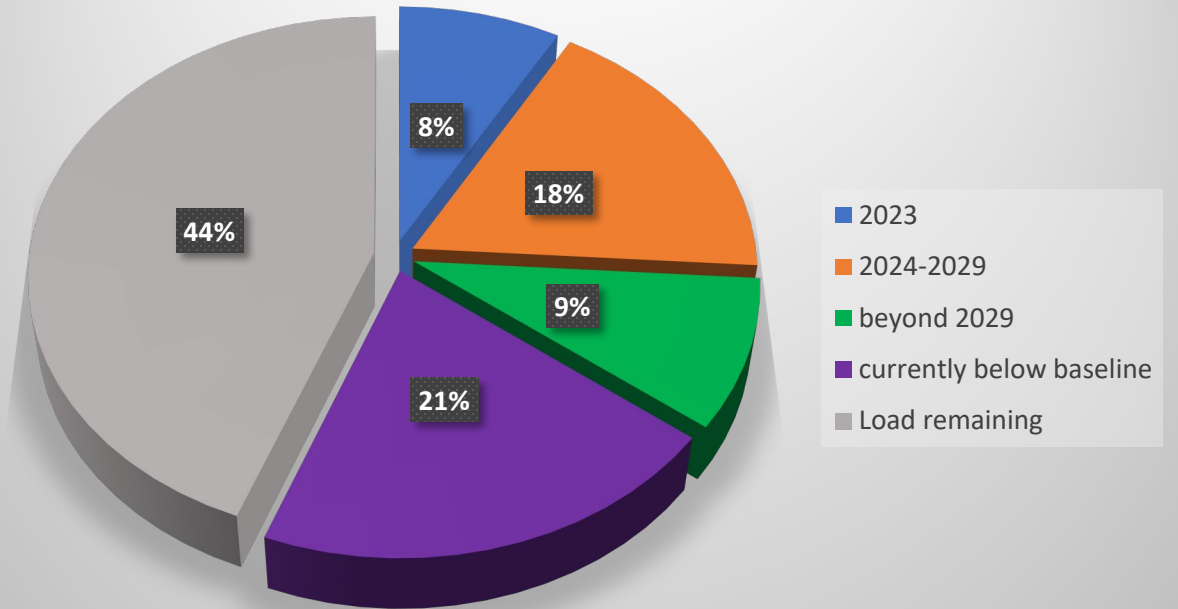
Nutrient Panel Discussion

Preliminary difference in nitrogen compared to baseline established in 2019 Watershed Permit/UTL

Preliminary load different from baseline - low estimate



Preliminary load different from baseline - high estimate

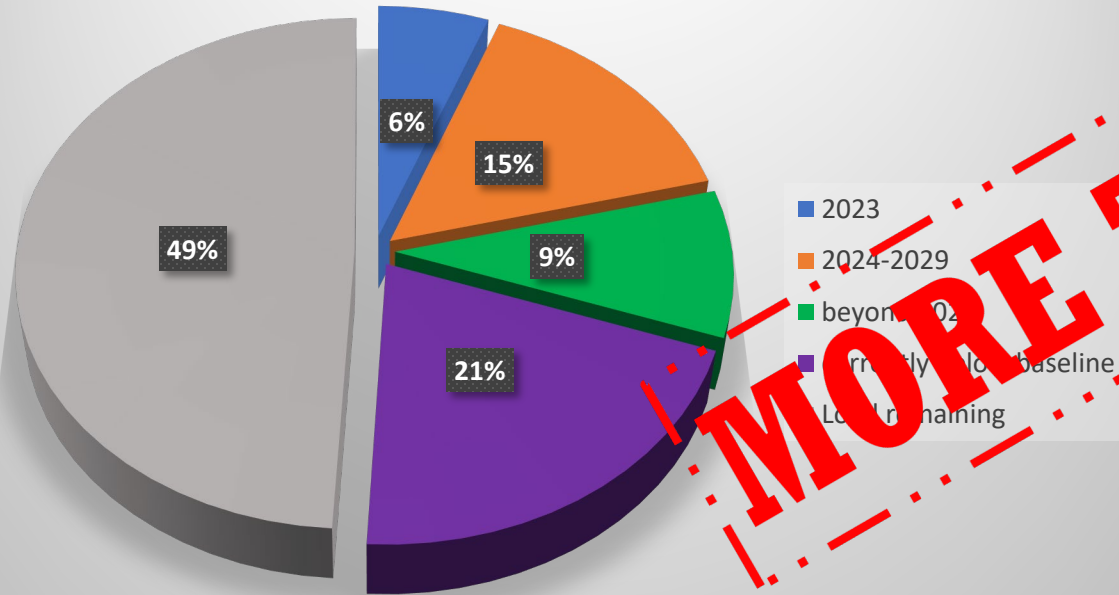


51 to 56% reduction from baseline

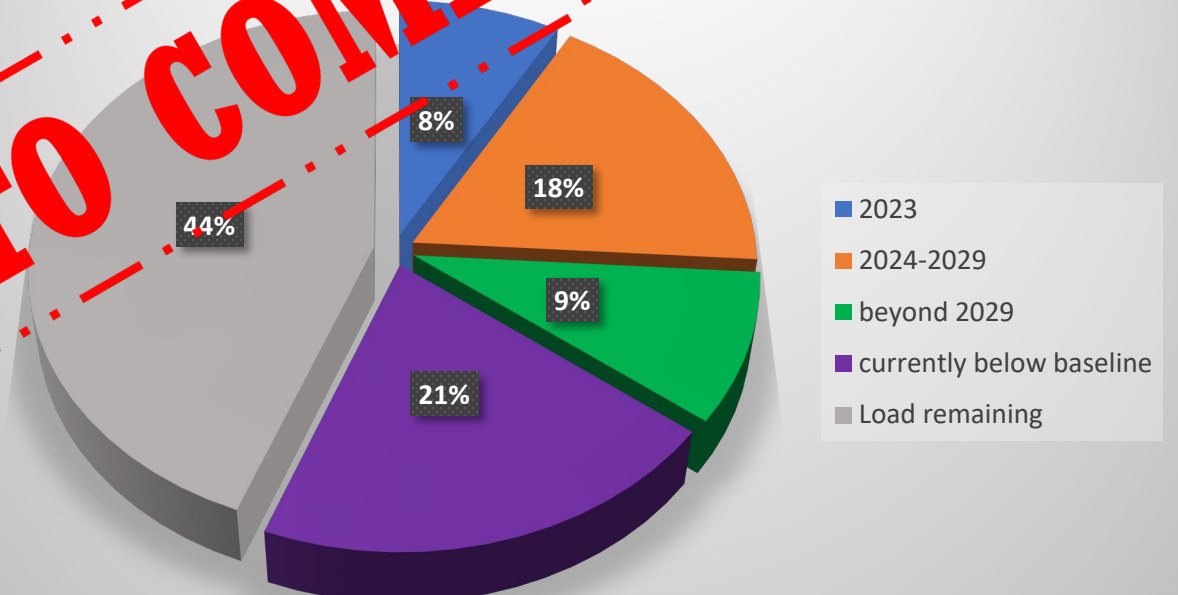


Preliminary difference in nitrogen compared to baseline established in 2019 Watershed Permit/UTL

Preliminary load different from baseline - low estimate



Preliminary load different from baseline - high estimate



51 to 56% reduction from baseline

MORE TO COME!

Why have nutrient loads decreased from the baseline?

- Nutrient load reductions by early actors



- Changing resident and worker populations

BAY AREA // SAN FRANCISCO
 S.F. population falls to lowest level in over a decade after second year of the pandemic

Roland Li, Yuri Avila
 Jan. 26, 2023 | Updated: Jan. 27, 2023 9:47 p.m. [Gift this article](#)



- Low precipitation

