



INFORMATION ITEM

Delta Plan Performance Measures: 2022 Year in Review

Summary

Council staff will present an annual update on the Delta Plan performance measures, highlighting key data, significant changes, and progress. Staff will also provide an overview of new and revised performance measures adopted as part of the 2022 amendment to Chapter 4 of the Delta Plan, “Protect, Restore, and Enhance the Delta Ecosystem,” (Ecosystem Amendment) and how these are now being tracked using the performance measures dashboard.

Background

Water Code Section 85308(b) of the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act) requires that the Delta Plan “include quantified or otherwise measurable targets associated with achieving the objectives of the Delta Plan.” To fulfill this requirement, the Delta Plan includes performance measures that track environmental and administrative changes due to the implementation of policies and recommendations in the Delta Plan, in relation to time-specific, measurable performance targets. Delta Plan performance measures allow the Council to integrate science and monitoring results into decision-making concerning priorities and funding, inform adaptive management, and track progress toward achieving the coequal goals over time.

The 2013 Delta Plan included an initial set of performance measures. Revised performance measures were adopted by the Council in 2018 as part of the Delta Plan Amendments. The 2022 Ecosystem Amendment added new performance measures and revised existing performance measures concerning the Delta ecosystem (<http://bitly.ws/z7t6>). As a result of these consecutive efforts, the Delta Plan now contains 158 performance measures. These include 120 administrative measures that track the status of implementing Delta Plan recommendations (e.g., implement water efficiency and water management planning laws, update Delta flow objectives, investigate opportunities for carbon markets), and 38 output and outcome measures that track environmental and social indicators over time, using

defined baselines, metrics, and targets (e.g., acre-feet of Delta water exported, acres of natural communities restored, salmon abundance, subsidence reversal activities and land accretion rate).

The schedule for performance data collection and evaluation is based on source data frequency and availability. While some performance measures are updated annually, others are related to a specific water year type (e.g., critically dry years versus wet years), or triggered by specific events (e.g., emergency-related water delivery interruption). Baselines and target values were established in 2018 for many measures. The first year that data will be evaluated for the newer ecosystem performance measures will be 2023. The Council's Performance Measures Unit tracks and evaluates performance measures continually and reports the findings to the Council annually to inform about the progress of Delta Plan implementation.

2022 Performance Measure Updates

This report provides key performance measure data updates and progress made by implementing agencies in following through on Delta Plan recommendations. It also includes an overview of the new and revised ecosystem performance measures adopted by the Council in June 2022 as part of the Ecosystem Amendment. The report concludes with a look-ahead at the upcoming year, with the goal of continuing to promote and track performance measures to provide the Council and other implementing agencies with information they can use to improve the effectiveness of ongoing actions and programs.

Water Supply

The Delta is an important water source for California and drought is becoming routine. In 2022, California continued to experience dry conditions with lower-than-average precipitation and stream flow. These ongoing, multi-year drought conditions have significantly impacted Delta water supplies. The State Water Project (SWP) allocations in 2022 (<http://bitly.ws/z7tf>) were at 5% of requested supplies.

Urban Water Use

Monitoring water supply performance metrics is a key component of water conservation and drought preparedness. The Council's urban water use measure (PM 3.1 - <http://bitly.ws/z7tx>) tracks gallons per capita per day targets set by water suppliers who prepare and adopt urban water management plans (UWMPs). Out of 439 UWMPs submitted to DWR in 2020, all but 41 have been reviewed by DWR as of

this writing. When the reviews are completed later this year, performance measures tracking water use efficiency (PM 3.1), use of alternative water sources (PM 3.2), and water supply reliability during single and multiple dry years (PM 3.4) can be updated.

Additionally, urban water suppliers report monthly residential gallons per capita per day water usage to the State Water Resource Control Board (SWRCB). Because of the ongoing drought, the Governor, in a 2021 executive order (N-10-21), requested that Californians voluntarily reduce their water use by 15% from 2020 use levels. Statewide, on average, urban water users in California have not met that goal but have reduced water use by about 5% since 2020 (Figure 1).

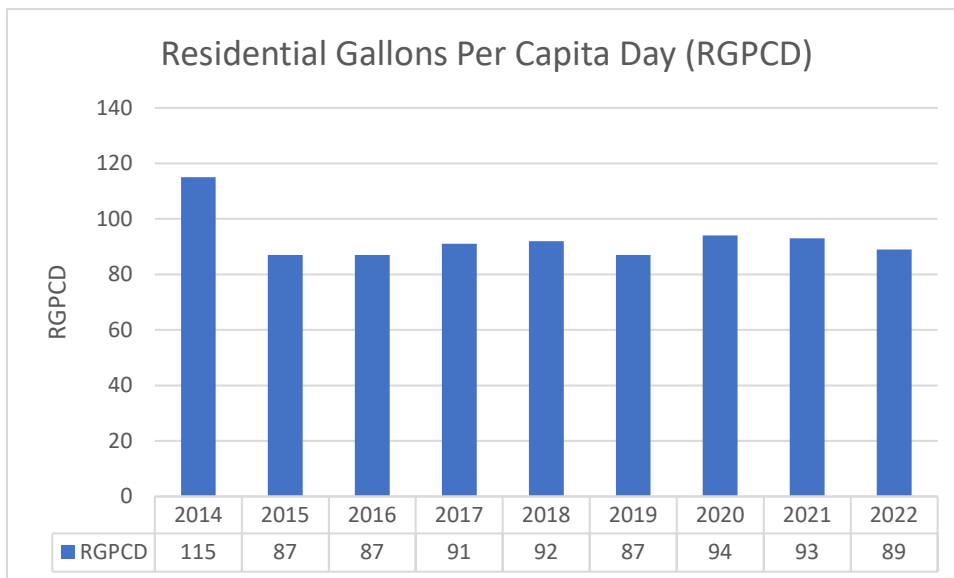


Figure 1. The graph shows aggregated monthly reports of residential gallons per capita per day usage. The comparison excludes the month of December, as data was not available at the time of this writing. December is usually a lower-than-average residential water usage month.

Reduced Delta Reliance

Reducing reliance on Delta water is an important aspect of statewide water supply reliability and regional self-reliance policies, including the Delta Reform Act. Delta Plan Policy **WR P1** (<http://bitly.ws/z7uZ>) requires covered actions exporting water from, transferring water through, or using water in the Delta to document measurable reductions in reliance on Delta water. Reporting of reduced Delta reliance is tracked using PM WR R04-01 (<http://bitly.ws/z7v7>). In 2022, DWR

reported that out of 238 urban water suppliers that receive Delta water through the State Water Project (SWP) and submitted UWMPs, 162 (68%) of the UWMPs contained Delta reduced reliance reporting. Of the 10 agricultural water suppliers that receive SWP water, which submitted an Agricultural Water Management Plan (AWMP) to DWR, all 10 (100%) included a reduced reliance component. This represents substantial progress, as for the first time, water suppliers are reporting quantified reduced reliance on the Delta in their AWMPs and UWMPs.

Sustainable Groundwater

Groundwater is an essential part of California's water supply. The Council's sustainable groundwater performance measure (PM 3.8 - <http://bitly.ws/z7vx>) tracks the implementation of the Sustainable Groundwater Management Act (SGMA). In 2022, DWR completed its required determinations and written assessments of the first 42 groundwater sustainability plans (GSP) submitted for review. DWR will also be reviewing plans for 63 additional groundwater basins by 2024. A GSP is a 20-year plan to ensure that groundwater is managed sustainably within a groundwater basin. These plans and their review status can be accessed on the Department's SGMA data portal (<http://bitly.ws/z7vC>).

Water Quality

Water Year 2022 (October 1, 2021, to September 30, 2022) continued a trend of especially dry years, with January and February being two of the driest months on the record. Water Year 2022 will likely be categorized as a critically dry year. Delta Plan ecosystem and water quality performance measures reflect the impacts of another consecutive drought year conditions on the Delta. The State Water Board approved temporary urgency changes (<http://bitly.ws/z7wm>) on April 1, allowing for relaxed water quality standards the SWP and CVP through June 30 in order to maintain critical water supply needs during extended drought conditions.

Delta Salinity

The Delta Plan's salinity performance measure (PM 6.2 - <http://bitly.ws/z7wn>) identified that only one water quality compliance station located in the Southern Delta exceeded acceptable salinity standards during the months of December and February. This contrasts with water year 2021, when multiple stations exceeded acceptable salinity standards in multiple months throughout the year.

Delta Water Quality

Maintaining water quality and keeping water free of toxins and pollutants are important for human health and the Delta ecosystem. The Council’s water quality performance measure (PM 6.1 - <http://bitly.ws/z7xM>) tracks the total number of impaired waterbodies and the contaminants prevalent within the Delta and Suisun Marsh on the 303(d)-list section (list) within the California Clean Water Act’s Integrated Report. Waterbody-contaminant combinations represent the number of times a particular contaminant type is found across multiple waterbodies. Consistently good water quality is critical for recreational use, agricultural and municipal water supplies, and healthy habitat that supports native vegetation and wildlife. For the 2020-2022 303(d) list, waterbody-contaminant combinations increased by 30% compared to 2014-2016 303(d) list. An increase means that water quality in the Delta is declining. The major pollutants added in the 303(d) list included pesticides, total dissolved solids, nutrients, and metals (Figure 2).

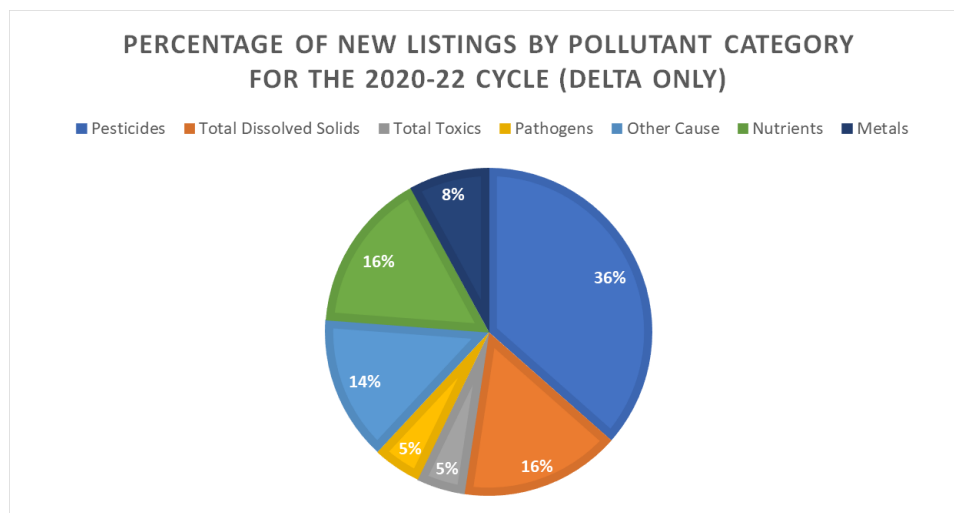


Figure 2. Water quality pollutant categories in the 2020-2022 California’s Clean Water Act’s Integrated Report 303(d)-list for the Delta.

Harmful Algal Blooms

Harmful algal blooms (HABs) remain one of the most important water quality issues in the Delta. In 2022, 60 HABs incidences were reported in the Delta, an increase from 46 in 2021 (PM 6.10 - <http://bitly.ws/z7xS>). The increase in reported HABs may be attributed to increased public awareness of HABs, additional monitoring by state

and local agencies, and the continued drought which exacerbates water quality conditions and benefits HABs formation.

To communicate, to Delta residents and visitors, the elevated level of risk posed to public health from HABS toxins that contaminate aquatic ecosystems and water quality (i.e., illness, irritation, domestic animal deaths), Regional Waterboard, landowners, or local agency issue advisory levels and posts the corresponding signage at the waterbody and through the press and/or social media.

Currently, there is not a comprehensive monitoring strategy for HABs in the Delta, HABs sightings rely on volunteer reporting and preliminary data from satellite and remote sensing instruments. In November 2022, the Delta Science Program hosted a Harmful Algal Blooms Workshop to help inform a science based HABs monitoring strategy.

Delta Ecosystem

Functional Flows

The low flows in the Sacramento River were not high enough in 2022 to overtop the Fremont Weir, providing floodplain inundation in the Yolo Bypass that would support native species. The “Big Notch” project, due to be completed in 2023, is expected to contribute to increased Yolo Bypass inundation that would support achieving more natural flow patterns and providing important ecosystem processes.

Invasive Species

There were no new notable introductions of non-native invasive species in 2022. However, nutria was recently found in the western region of the Delta. Nutria is a non-native, highly invasive wildlife species with devastating impacts on wetland habitats, agriculture, and flood infrastructure. Nutria control is actively managed by the California Department of Fish and Wildlife with the goal of eradicating nutria from California. Overall, nutria control numbers continue to decline with a total of 577 nutria taken from the watershed with 8 being taken from the legal Delta in 2022, compared to 703 taken in 2021 and 1,239 taken in 2020 (Figure 3). In total, over 3,379 Nutria have been taken from the watershed since the program started in 2017, with 116 being from within the Delta.

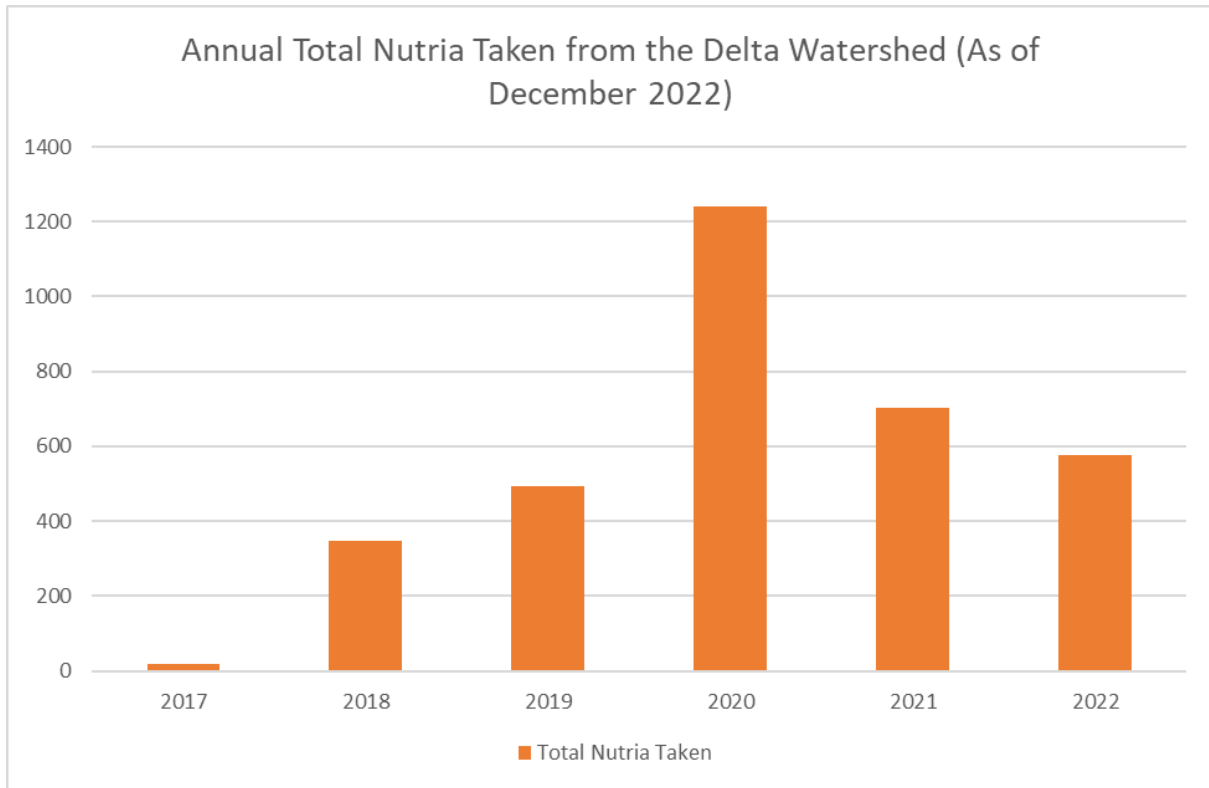


Figure 3. Nutria take numbers are declining for a second consecutive year, however recent spread of nutria invasions into the Delta continues to be a serious threat.

Non-native fish population and biomass relative to native fish species continued to increase in 2022, increasing the competition for habitat space and food. Non-native fish also prey on juvenile native fish. Protecting and increasing native fish species becomes increasingly difficult in the face of continued dry conditions and climate change.

Treatment of invasive aquatic vegetation in the Delta is actively managed by the Department of Parks and Resources Division of Boating and Waterways (DBW). DBW treats both invasive floating aquatic vegetation (FAV) and submerged aquatic vegetation (SAV) using a combination of herbicide treatments and mechanical harvesting, as well as other methods.

The Council's invasive species performance measure (PM 4.10 - <http://bitly.ws/z7xW>) tracks the total annual acres of invasive FAV and SAV treated within the Delta and upstream in the San Joaquin River and its tributaries. In 2022, DBW treated 2,530 acres of FAV and 2,114 of SAV. In 2021, 2,500 acres of FAV and

1,632 acres of SAV were treated (Figure 4), representing a significant increase in the acreage of SAV treatment. The number of acres treated can vary based on available resources, timing, weather, and / or the amount of aquatic vegetation present at the time of treatment. Information and priority maps regarding DBW's aquatic invasive species treatments for each season are regularly updated on their public notice page (<http://bitly.ws/z7y5>).

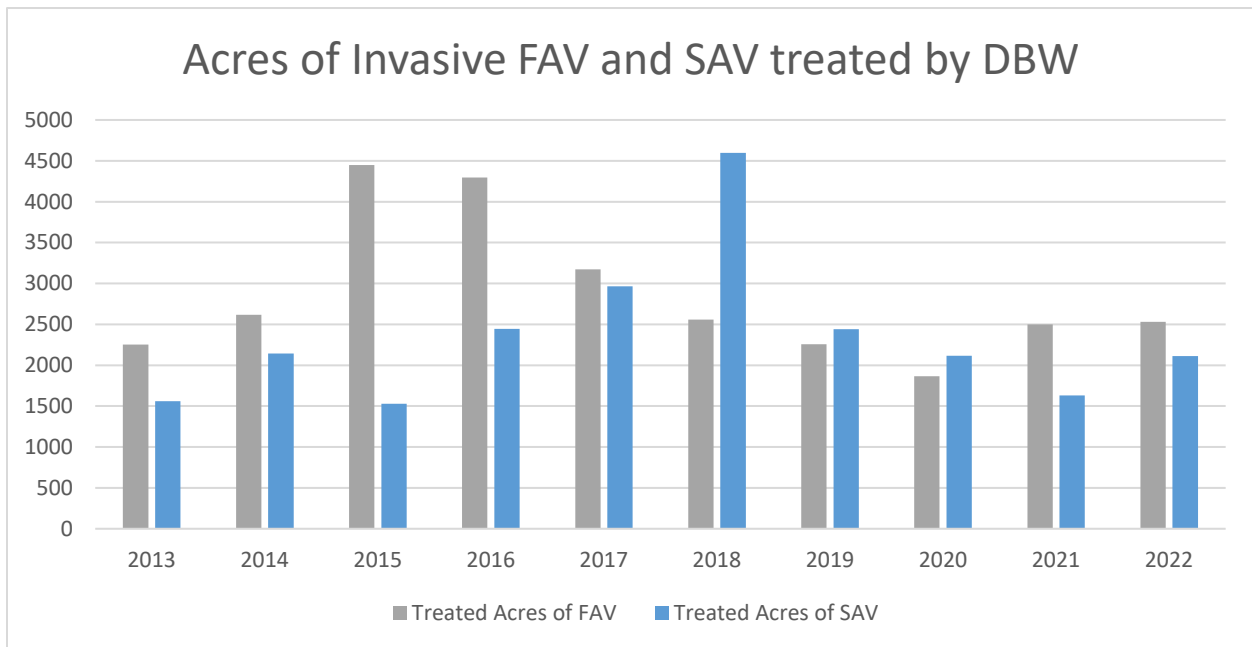


Figure 4. Treatment of invasive FAV and SAV reflects the amount of aquatic vegetation present, as well as other factors such as hydrology and weather conditions and available resources.

Performance Measures Added or Revised by the Ecosystem Amendment

Additional performance measures to track the status and health of the Delta ecosystem were added in 2022 when the Council adopted the Ecosystem Amendment. The new and revised performance measures were added to Appendix E of the Delta Plan. Council staff have begun tracking progress using the online performance measures dashboard. The six new and revised measures to help provide more comprehensive information about the Delta ecosystem are listed below

Salmon Doubling Goal

The Council's performance measure for doubling the salmon population (PM 4.6 - <http://bitly.ws/z7ys>) aims to increase Central Valley Chinook salmon recovery with natural production. Increasing natural production for all Central Valley salmon runs supports the State and federal salmon doubling goal. The Delta serves as a migration corridor for Central Valley salmon runs and as an important rearing habitat for young salmon while they migrate to the ocean. Salmon are native anadromous fish and larger salmon populations indicate a healthy ecosystem. Salmon is also important to fisheries, recreation, and tribal communities.

Subsidence Reversal for Tidal Reconnection

The Council's subsidence reversal for tidal reconnection performance measure (PM 4.12 - <http://bitly.ws/z7yt>) tracks subsidence reversal projects in areas where the soil accretion would allow for restored wetlands to be tidally reconnected to the estuary in the future. Large areas of the Delta, mostly in central Delta, are well below the sea level due to agricultural practices that contribute to soil oxidation and continued subsidence. Because the land is so low, it is not suitable for tidal wetland restoration. Subsidence reversal projects are projects that add soil to the landscape. The widespread method for subsidence reversal in the Delta uses natural processes of forming organic material that decomposes into soil on managed wetlands. If subsidence reversal projects are placed in appropriate locations in the Delta and Suisun Marsh, it is possible to get land back to higher elevations and become suitable for hydrologically connected wetlands. Hydrologically connected tidal wetlands are important because they support native aquatic species in the estuary. The measure targets 3,500 acres in the Delta and 3,000 acres in Suisun Marsh.

Fish Passage

The Council's fish passage performance measure (PM 4.13 - <http://bitly.ws/z7yu>) evaluates progress in remediating priority fish passage barriers, rim dams, and unscreened diversions. This is important because the Delta serves as a migration corridor for all anadromous fish species in the Central Valley; removing fish passage barriers throughout the Delta watershed opens in-stream migration corridors, restores aquatic habitat connectivity, and contributes to migratory fish recovery. Similarly, installing fish screens on water diversions along Delta migratory channels prevents fish from being drawn into diversion pipes, reduces fish mortality, and improves aquatic habitat.

While there are many fish passage barriers blocking fish migration, agencies such as the California Department of Fish and Wildlife (CDFW) and DWR prioritize those that are most critical for removal. There are around 3,000 unscreened water diversions within the Delta. Many of these diversions are small agricultural intake pipes; however, their cumulative impact to juvenile fish could limit migration and survival.

Ecosystem Restoration Funding

The Delta Plan Ecosystem Amendment set a new approach for achieving a healthy and resilient Delta ecosystem including re-establishing tens of thousands of acres of functional, diverse, and interconnected habitat. Restoration projects need to have specific attributes to ensure restoration areas provide ecosystem functions and maximize the effectiveness of individual ecosystem protection, restoration, and enhancement projects that together will support a resilient, functioning Delta ecosystem. Projects filing a certification of consistency with the Delta Plan under Policy **ER PA** must identify whether the project consists of specific high priority attributes. A high priority attribute project consists of the following: restoring hydrological, geomorphic, and biological processes, being large-scale, improving connectivity, increasing native vegetation cover, and contributing to the recovery of special status species. Increasingly, ecosystem restoration funding should be allocated to projects that have all and most of these attributes. This performance measure (PM 4.14 - <http://bitly.ws/z7yw>) tracks projects that file a certification of consistency and sets the target that 80 percent of total ecosystem restoration funding is allocated to projects that have all and most of the **ER PA** priority attributes, by 2030.

Seasonal Inundation

The Council's seasonal inundation performance measure (PM 4.15 - <http://bitly.ws/z7yA>) tracks areas connected to riverine and tidal flows and the frequency that these areas are inundated. Restoring ecosystem functions such as reconnecting land to water and allowing frequent flows to inundate wetlands supports native species and overall ecosystem resilience. The Yolo Bypass floodplain has great potential to provide fisheries benefits. The "Big Notch" project will create a managed notch in the Fremont Weir upstream of the Yolo Bypass and is expected to help to meet inundation and connectivity acreage targets set in the Delta Plan Ecosystem Amendment.

Natural Communities Restored

The Council's acres of natural communities restored performance measure (PM 4.16 - <http://bitly.ws/z7yD>) sets acreage targets for several key Delta habitat types. The restoration targets are derived from species conservation and recovery plans in the Delta and Suisun Marsh. Increasing the extent and connectivity of restored areas and creating large patches with natural communities creates suitable habitat and contributes to native species. To achieve these ecosystem goals, the Delta Plan Ecosystem Amendment sets to protect, restore, and enhance up to 80,000 acres of natural communities in the Delta by 2050.

Delta as an Evolving Place

Subsidence Reversal

The Council's subsidence reversal performance measure (PM 5.2 - <http://bitly.ws/z7yF>) tracks projects that reduce subsidence and sequester carbon in the soil. In the Delta, much of the land has sunken below sea level and continues to further subside. Continued land subsidence harms Delta agriculture because cultivation requires expensive drainage systems and ongoing levee maintenance. Subsidence can be reversed through activities that accumulate soil. Subsidence reversal projects can sequester carbon and take advantage of carbon credit markets while also helping California meet its greenhouse gas reduction targets. The next major planned subsidence reversal and carbon sequestration project in the Delta is planned for Staten Island. The Nature Conservancy plans to convert the island (<http://bitly.ws/z7yG>) to a mosaic of wetland, rice, and other agriculture. A related performance measure sets targets and tracks subsidence reversal activities in the Delta where the land is at a high enough elevation to potentially provide aquatic intertidal habitat (PM 4.16 - <http://bitly.ws/z7yD>).

Delta Farmland

In the Delta, farmland is a principal land use and supporting agriculture as the predominate industry. The Council's farmland loss performance measure (PM 5.3 - <http://bitly.ws/z7yI>) tracks changes in farmland areas over time. The total area of farmland has declined over the last 30 years, but that decline has slowed since 2013, when the Delta Plan was adopted. The Delta Plan acknowledges existing local government general plans anticipating conversion of farmland to urban land, but provides that no further loss of farms to urban development should occur (Policy **DP P1**). The Department of Conservation Farmland Mapping and Monitoring

Program (FMMP) provides data used to evaluate Delta farmland loss. Data first available in 2022 indicates that Delta farmland decreased during the 2016-2018 period by about 8,985 acres, out of which 1,067 acres were converted to urban development. Reductions in Delta farmland affect businesses, jobs, and many Delta communities because cultivated farmland is critical to the Delta agricultural economy. Preserving farmland promotes community and small family farms and retains the Delta's rural heritage.

Delta Tourism

The Delta is a world-class tourism destination and offers diverse opportunities for boating, fishing, recreation, cultural and agricultural tourism. It was designated as a National Heritage Area in 2019 by the United States Congress. The Delta Tourism performance measure (PM 5.8 - <http://bitly.ws/z7yI>) consists of seven recreation-related metrics, including fishing license sales data and data about tourist-related social media and web traffic. The trend of fishing license sales in Delta counties has been positive. In 2020 and 2021, sales of fishing licenses increased, reversing a general long-term slowing trend in fishing license sales. This is likely the result of people seeking fun and safe outdoor recreation during the COVID-19 pandemic.

Web traffic to the region's primary web resource for promoting the Delta (<https://visitcadelta.com/>) has seen steady growth. This resource promotes events, businesses, and amenities in the Delta for tourists to enjoy. Web traffic in 2020 increased by 72% from the previous year, and in 2021 the growth continued with a 28% increase over the previous year. In 2021, over 100,000 people used the website, demonstrating the increased value of the web presence to the region's recreational economy. At the time the Delta Protection Commission collected the data, calendar year 2022 was not available yet because the year had not yet finished.

Delta Plan administrative performance measure DP R16-01 recommends increasing bank fishing, hunting, levee trails and environmental education. SB 1556 gave the Delta Protection Commission (DPC) a formal role in establishing the Great California Delta Trail. To support that mission, DPC has worked on establishing a master plan for the trail. DPC staff in December 2021 presented to the Council on the Great California Delta Trail Master Plan (<http://bitly.ws/z7yL>), which was released in January 2022. The plan provides a unified vision for connecting the Delta via publicly accessible trails. It recommends locations, design features, and connecting trails to water-based recreation opportunities.

Protect People and Property

The Delta Plan recommends certain actions in preparedness for extreme events in the Delta and coordination of a multi-hazard task force (PM 7.1). Coordination for flood preparedness requires regular planning and practices to ensure communities are prepared for emergencies. To support this, in 2022 DWR awarded \$5 million in grants (<http://bitly.ws/z7yP>) to Delta communities to support flood emergency response, including San Joaquin County, Yolo County, Bethel Island Municipal Improvement District, Bradford Island Reclamation District 2059, the City of Sacramento, Hotchkiss Tract Reclamation District, and the City of Isleton. This funding will support emergency flood planning and flood fighting in the Delta.

Performance Measures Dashboard

The Council deployed a web-based dashboard in 2019 to visually track the performance measures and provide open access for the public and interested parties to the associated data, methods, and information. The performance measures can be viewed on the dashboard at viewperformance.deltacouncil.ca.gov.

Between December 2021 and November 2022, the dashboard registered more than 11,000 pageviews, averaging 950 page views each month. This is lower than the 13,994 total and the 1,300 average monthly views registered in 2021 and is the lowest monthly average since the website was deployed. Dashboard access peaked in October with over 1,400 views. These pages were accessed by an average of 289 users per month, over 40 users higher than the 2021 average of 255 users per month.

The number of dashboard users peaked in August with over 374 users. In total, 2022 registered the most dashboard users since the website's launch, with over 3,473 users. The number of users has increased every year since the launch of the dashboard in 2019. Higher user numbers indicate that more unique visitors are accessing the site, which could mean more people are aware of the website. The lower number of page views accompanied by the increase in users may mean that users are accessing different pages of the site less often. The decrease in page views may also mean that users accessing the site already know the website layout and only view the pages that they are most interested in. The high number of total page views in 2020 may be unique as the website was still new, 2020 represented the start of the COVID-19 pandemic, and the Council conducted considerable outreach promoting the dashboard in 2020.

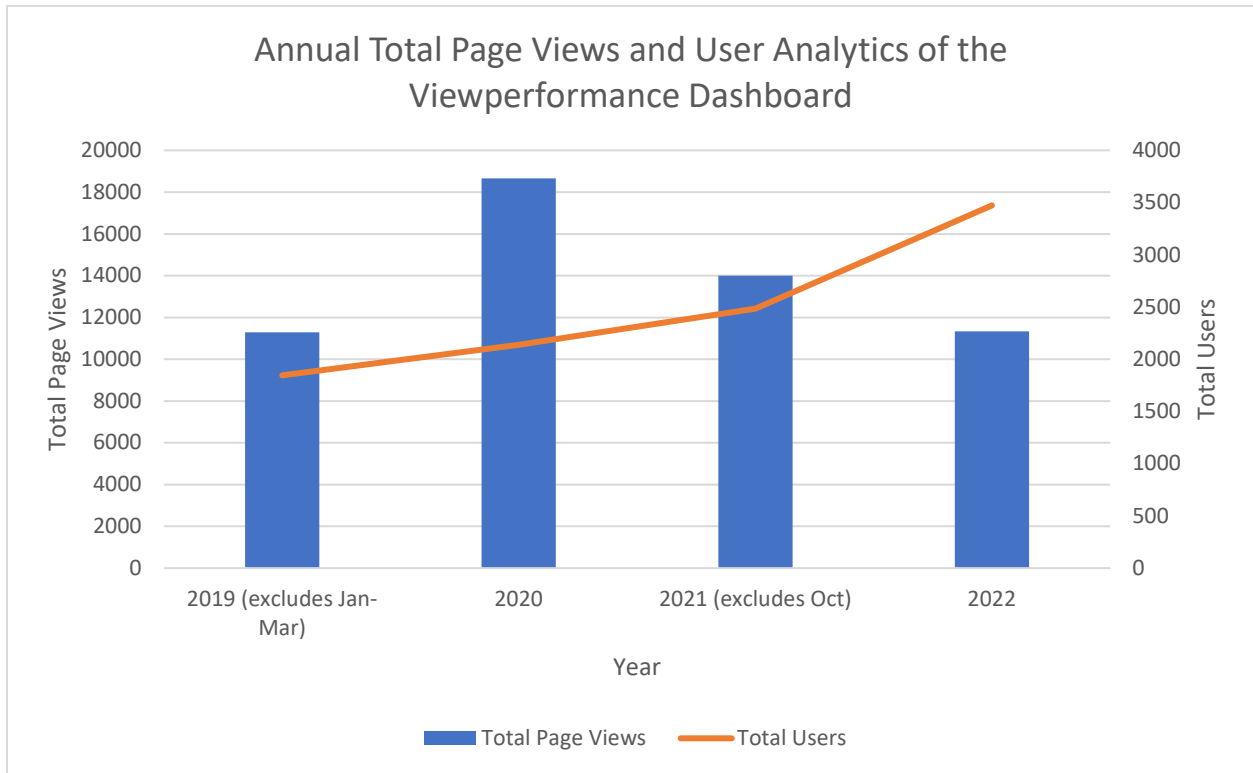


Figure 5. The number of dashboard users increased from 2019 and was the highest in 2022. The total number of dashboard page views decreased in 2022 to 11,000.

Next Steps for 2023

In 2023, Council staff will place renewed focus on communicating the status of Delta Plan implementation using the performance measures. The existing Performance Measures Guidebook will be updated to include the new ecosystem performance measures and provide an updated guide to the performance metrics, baselines, and targets. The online dashboard will continue to be the main source of performance data, providing access to graphs, tables and up-to-date information. Additionally, the Council's 2023 Five-Year Review of the Delta Plan will feature performance measures to evaluate the state of the Delta Plan implementation.

Fiscal Information

Not applicable.

List of Attachments

None.

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