



WATER & POWER

Serving Central California since 1887

SUSTAINABILITY PLAN 2022

EXECUTIVE SUMMARY

About the Plan

135 years of forward thinking and data driven decision making has Turlock Irrigation District well positioned in climate-resilience operations, but there is still much to do.

Since our formation in 1887, Turlock Irrigation District has operated as a planning agency that actively seeks and invests in innovative and technologically advanced methods to address the numerous policies and challenges we face every day. TID's Sustainability Plan will serve as the District's guiding document, outlining our vision for the next 15 years as we continue to implement practices that best serve our customers and the environment. The Sustainability Plan is designed to highlight the District's existing and planned activities, succinctly, as they relate to the ambitious goals set by the State for water and power systems.

As a community-owned utility, our customers are always at the forefront of our decision making. As our customers look at their own practices, from purchasing electric vehicles to evaluating their own water management practices to implementing energy efficiency standards in new construction, we want to ensure TID's portfolio and sustainability efforts are known and align with the planning and compliance strategies desired and required by our customers and the State.

For the last 135 years, TID has been steadfast in providing reliable and competitively priced water and electric service, while being good stewards of our resources and providing a high level of customer satisfaction, it is our mission. And while we must continue to address present day issues and seek solutions to future unknowns, we do so with an overall philosophy that will carry our mission forward with a focus on Stewardship, Affordability and Reliability.

Turlock Irrigation District's Sustainability Philosophy



Stewardship – supporting the health and vitality of our community and its resources.



Affordability – minimizing the financial impact to our customers as we transition away from traditional resources.



Reliability – committed to being a dependable and responsible partner, as a balancing authority and the sole provider of surface water.

The strategies outlined in the Plan support our efforts to reach, or better yet, exceed the goals and requirements in the areas of water and power by 2037, TID's 150th anniversary. We look forward to supporting a cleaner future and to help shape sustainable practices for our customers, our region and the world.

Disclaimer: This report was prepared in the context of providing background information to policymakers and not for disclosure purposes under federal securities laws. As such, the financial data, projections of future events and other information provided herein are not warranted as to completeness or accuracy for purposes of federal securities laws and regulations and are subject to change without notice. This information is not intended to be relied upon by participants in the municipal bond market, and any potential investor reviewing this information should exercise caution.

DATA DRIVEN DECISION MAKING

WATER

TID has invested in innovative technology and has established forward thinking partnerships to inform its decision making and sustainable practices.

Airborne Snow Observatory

TID has been working with NASA-developed technology to bring snow survey measurement into the 21st century using LiDAR and imaging spectrometers to scan the Tuolumne River Watershed

- 97-99% accurate
- 4 million measurement points versus previous 17 measurement points
- Tuolumne Watershed first watershed in the state to use the technology

Scripps Institution of Oceanography

TID had implemented the Forecast-Informed Reservoir Operations (FIRO) program, even before its partnership with Scripps Institution of Oceanography, the lead organization in understanding Atmospheric Rivers. FIRO employs the latest data to improve weather and atmospheric river forecasting to better manage our water operations for agriculture, public safety and the ecosystem.

Theory Put into Practice

TID's Hydrocomp Forecasting and Analysis Model (HFAM) is one of the only hourly physically-based hydrologic models used for water operations in the state of California. Since 1998, HFAM has provided TID with insight into the current and future states of the Tuolumne River Watershed and its reservoirs to inform water operation decisions on both a short-term and long-term basis.

FLOOD CONTROL



15 Feet

In 2017, Scripps' forecasts data informed TID to start to make releases when the reservoir was 15 feet below the start of the Flood Control Space.

WATER SUPPLY



150,000 AF

In 2018, TID was able to save 150,000 AF of water that otherwise would have had to be released due to outdated flood control manual.

ACCURACY



98%

In 2021, 3 ASO flights resulted in data used to recalibrate our operations model, our model projection and what the actual runoff was, less than 10,000AF off.

DATA DRIVEN DECISION MAKING

POWER

TID actively seeks projects and initiatives that support the mission of providing reliable and affordable power while meeting its sustainability goals. Innovation, local control and real-time data allows TID to easily mitigate some inherent challenges of renewable generation, such as unanticipated increases or decreases in generation output and the anticipated challenges of meeting the Renewable Portfolio Standard requirements.

Balancing Authority

There are many ways TID benefits from being community-owned and that includes local control of our generation, transmission resources and distribution system as a Balancing Authority. As a Balancing Authority, TID is solely responsible for meeting the power needs of our customers and managing its power supply mix. TID is one of eight Balancing Authorities in California.

Energy Imbalance Market

In Spring of 2021, TID officially entered the Western Energy Imbalance Market (EIM) providing the District with access to additional low-cost energy to serve real-time demand. Participation in the EIM enhances TID's efforts of integrating renewable energy sources and expanding its renewable energy portfolio into the future.

Investing in Reliability

TID's Microwave Upgrade Project replaced TID's aging microwave radios, and channel banks that have been in service for twenty years. The microwave system is the main backbone of communications for the District's entire hydroelectric fleet. The entire microwave system has now been upgraded to modern industry standards, and meets current industry reliability requirements.

PLANNING



Load forecasting incorporates a wide range of data, econometric, gas and electric pricing, energy efficiency standards, electric, solar, and historic load data and trends to ensure reliability.

MODELING



Monthly modeling reports include current market pricing and our resource portfolio, hydro, thermal, wind, solar, and transmission resources to determine the optimal resource dispatch to meet the forecast demand.

IMPLEMENTATION



Outputs from the forecast and modeling reports are used to create a monthly purchase/sale plan to best support demand, maximize the District's purchase power, and support our renewable goals.

WATER

TID has consistently been a good steward of our natural resources and has met or exceeded conservation requirements through the use of innovative practices and tools. Below are current and future activity towards TID's 15-year sustainability goals.

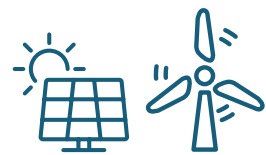
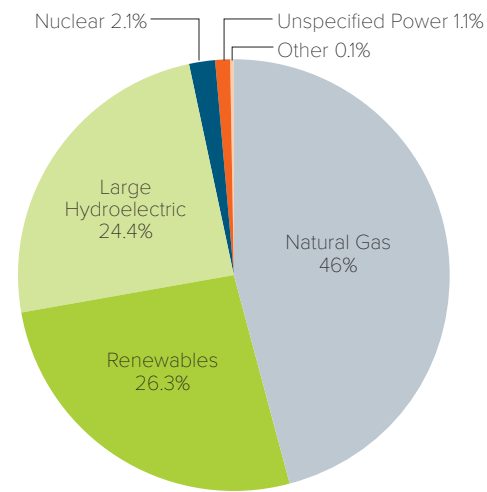
CURRENT	FUTURE	FUTURE	FUTURE	FUTURE
<p>Provide sustainable and reliable surface water supplies.</p> <hr/> <p>Operate a conjunctive management program.</p> <hr/> <p>36 studies conducted to identify restoration projects.</p> <hr/> <p>SB 7x-7: The Water Conservation Act of 2009. TID implemented tools to accurately measure water usage by parcel.</p> <hr/> <p>2015 Water Sales Agreement reduced the reliance on groundwater up to 30,000 acre feet (AF).</p> <hr/> <p>\$60 million invested in irrigation modernization and system rehabilitation since 2002.</p>	 <h2>TUOLUMNE RIVER MANAGEMENT PLAN</h2> <p>TID's comprehensive roadmap to maintain a reliable, safe, and sustainable water supply for Tuolumne River users, resulting in the fulfillment of the following sustainability goals:</p> <p>RIVER FLOWS 37%-114% River flows increase dependent on water year</p> <p>SALMON PRODUCTION 150% Increase over current conditions</p> <p>FUNDING COMMITMENT \$128M Investment in habitat restoration over 15 years, with our partners on the river</p>	 <h2>DIVERSIFICATION OF WATER SUPPLY</h2> <p>TID continues to explore and secure new partnerships and programs to maximize available water:</p> <p>RECYCLED WATER 2,000 AF Annually</p> <p>STORM WATER Maximizing storm water for beneficial use</p> <p>FLOOD RIGHTS APPLICATION Don Pedro Spillway Raise Groundwater Storage Project Reservoir Inter-Tie Project</p> <p>NON-POTABLE WATER Supplementing irrigation deliveries from non-drinking water</p>	 <h2>GROUNDWATER RECHARGE</h2> <p>TID is a leader in regional groundwater stewardship. Groundwater within the District is supplied by the Turlock Subbasin within the San Joaquin Valley Groundwater Basin. TID implements conjunctive use, balancing surface water and groundwater, to maintain a stable water supply and to support its sustainability goals:</p> <p>GOAL 10% INCREASE In groundwater recharge in the Turlock Subbasin</p> <p>2021 BASELINE 131,000 AF Average annual net recharger</p>	 <h2>IRRIGATION WATER CONSERVATION</h2> <p>TID is committed to water efficiency by maximizing its water operations through the development of new infrastructure and tracking water usage with innovative technology to maximize its sustainability goals:</p> <p>6 IRRIGATION CAPITAL IMPROVEMENT PROJECTS</p> <p>Regulating Reservoirs Drop Automation Canal Inter-Tie Projects</p> <hr/> <p>27,000 AF Average annual water savings</p>

POWER

Through a diverse portfolio, that meets our reliability requirements and our customer expectations for safe, affordable, and reliable power, TID is a dependable power provider who also seeks out sustainable practices and innovations.

CURRENT

TID'S 2021 POWER MIX



\$519 MILLION

invested in renewable energy to date

FUTURE

ELECTRIC GRID PLANNING

TID is actively planning for and continually seeks to procure a diverse energy portfolio that meets our reliable requirements and customer expectations for safe, affordable, and reliable power while meeting compliance obligations and goals:

GOAL
60% Renewable Portfolio Standards (RPS)

2021 BASELINE
26.3% Renewable Portfolio Standards (RPS)

GOAL
100% carbon-free retail electric grid by 2045

2021 BASELINE
52.8% carbon-free

FUTURE

EMISSIONS

TID's comprehensive roadmap to serve its customers and meet applicable requirements while minimizing cost and risk to reliability. The Plan will result in the fulfillment of the following sustainability goals:



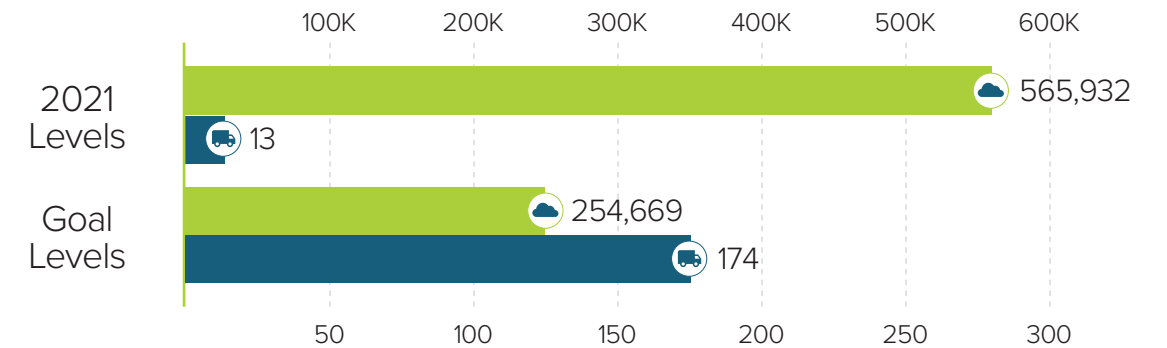
GENERATION EMISSIONS

GOAL
50% REDUCTION of GHG emissions by 2037 based on 2021
2021 BASELINE
545,400 metric tons



TRANSPORTATION FLEET EMISSIONS

GOAL
60% OF FLEET made up of Zero Emission Vehicles (ZEV) by 2037
2021 BASELINE
290 total vehicles



ADVOCATE AND PARTICIPATE IN ADOPTING SUSTAINABLE PRACTICES

TID understands there is a shared responsibility in cultivating, educating and providing resources to expand our sustainable practices.

WATER-WISE DEMONSTRATION GARDEN

Although the District is not the municipal domestic water supplier, there is a need to be a good steward of all our resources to support overall sustainability practices. In 2015, TID designed a Water-Wise Demonstration Garden at the Canal Office and developed a mapping guide to each of the plants utilized to create a visually appeal and water-efficient landscape.

SOLAR ON SITE

TID installed a 70.7 kilowatt array of photovoltaic panels atop the parking structure at our Canal Office in 2009. The array generates up to 132,460 kilowatt-hours a year. TID will evaluate how to expand the system to reach out sustainability goals for our facilities.



ELECTRIC VEHICLE CHARGING PROGRAM

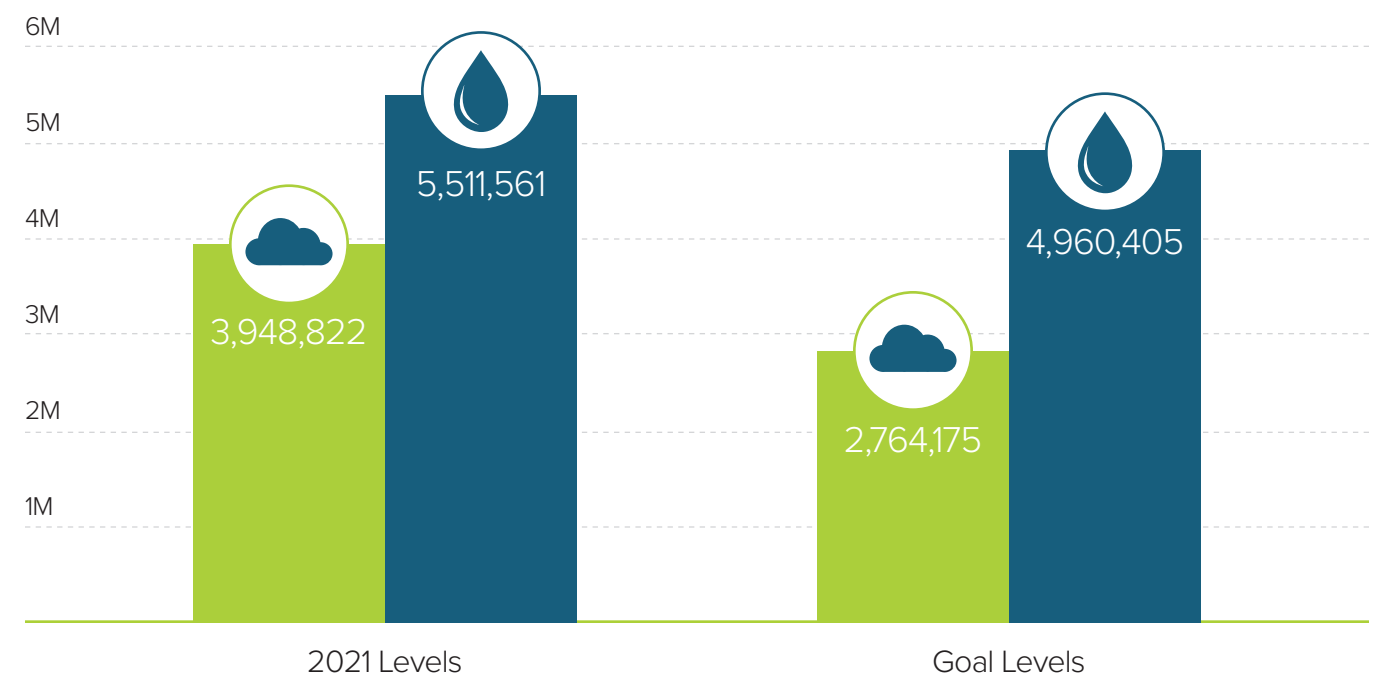
With the increased interest in electrification and wanting to support employees decarbonization efforts, TID installed charging outlets at six of its facilities, providing employees the opportunity to utilize District-owned facilities and electricity for charging their personal vehicles, at a cost.

TID OFFICE & FACILITIES

TID is committed to analyzing areas for improved efficiency and implementing new practices to reach the organization's sustainability goals for each of its facilities sites.



*Canal, Broadway, and Ceres locations



LOOKING AHEAD

TID's Sustainability Plan provides a framework for activities grounded on well-defined data while allowing for flexibility in an ever-changing world with new technology discovered daily. TID has the following projects on the horizon in its 15-year effort to reach remarkable and important sustainability goals:



Identification and investment in additional water storage for climate change adaptation



First in the nation innovation: Project Nexus – Solar Over Canals Pilot Project



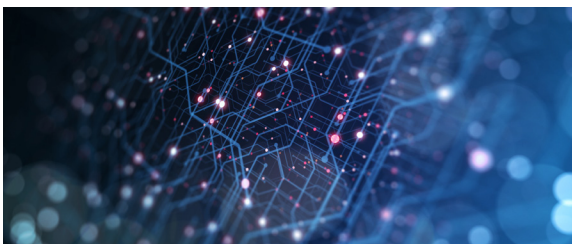
Exploration of battery storage opportunities



Implementation of TID EV Charging Stations



Electrification Pilot Projects: Monterey Park Tract



Utilizing Department of Water Resources Climate Generator Technology

CLIMATE REGISTRY & LIST OF DISTRICT PLANS



Recognized as a Leader in Sustainable Planning and Practices

The Climate Registry, a nonprofit organization that is governed by US states, recognized TID, as a Gold status member, in its voluntary greenhouse gas reporting program. TID has been a Climate Registered member since 2009, earning this recognition annually, by publicly reporting a third-party verified greenhouse gas emissions inventory for its operations.

A Comprehensive Approach to Sustainability, District-Wide

TID's Sustainability Plan outlines key compliance requirements and ambitious goals for the District to accomplish over the next 15 years. The featured milestones and projected goals are further outlined in various comprehensive plans developed by the District as presented below. As a planning organization, TID develops and refines its guiding documents to be utilized as a living roadmap, with the flexibility to pivot and/or take advantage of emerging data and tools to best serve its customers, employees and the environment.

Turlock Irrigation District's Planning Documents:

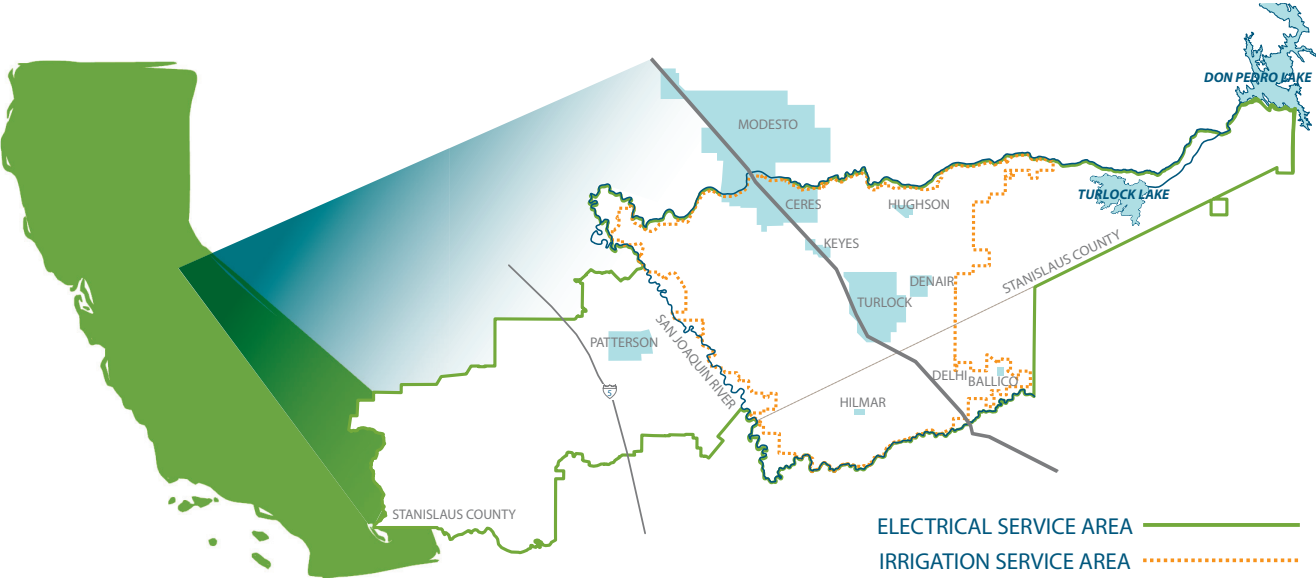
- **Tuolumne River Management Plan** – Outlines TID's operations, improvements and resource protection measures under a new Federal Energy Regulatory Commission (FERC) license for the Don Pedro Project.
- **Integrated Resource Plan** – Serves as a comprehensive roadmap to support its customers and meet applicable requirements while minimizing cost and risk to reliability.
- **Agricultural Water Management Plan** – Evaluates water use within the District and applicable management practices to make the best use of available resources.
- **Groundwater Sustainability Plan** – Tactical activities to prevent undesirable results and promote sustainable practices to manage groundwater sustainably through at least 2024. The Plan was developed by the West Turlock Sub-basin GSA and the East Turlock Sub-basin GSA (consisting of 17 public agencies in total).
- **Wildfire Mitigation Plan** – Describes programs, policies, and procedures implemented by TID to mitigate the threat of power line-ignited wildfires.

All plans can be viewed at [TID.org/Plans](https://www.tid.org/plans).

ABOUT TID

Established in 1887, the Turlock Irrigation District (TID) was the first publicly owned irrigation district in the state. Today it is one of only four irrigation districts in California that also provides electric retail energy directly to homes, farms and businesses. Organized under the Wright Act, the District operates under the provisions of the California Water Code as a special district. TID delivers irrigation water through 250 miles of a gravity-fed canal system that irrigates approximately 150,000 acres of farmland.

In addition, TID owns and operates an integrated and diverse electric generation, transmission and distribution system that serves 240,000 customers within a 662 square-mile area. TID is one of eight Balancing Authorities in California and operates independently within the Western United States power grid. A Balancing Authority performs a balancing function in which customers' usage and resources are matched on a moment-by-moment basis. TID is governed by a five-member, locally elected Board of Directors.



QUICK FACTS



662 SQ. MILES
Electric Service Area



307 SQ. MILES
Irrigation Service Area



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