

The Delicate Balance Between the Economy and the Environment

By Rohan Jadhav and Robert St. Jacques

A Unique Partnership

Benicia : Small Town

The City of Benicia is a San Francisco Bay Area city located adjacent to the Carquinez Strait, which is part of San Francisco Bay. A waterfront city of 28,000, Benicia is known for its small-town charm, history, and high quality of life. Benicia offers an abundance of leisure and recreational activities.

Valero : Industry

One of the primary businesses in Benicia is the Valero Benicia Refinery. It processes sour crude oils into gasoline, diesel, jet fuel and asphalt. The refinery was built in 1969 shortly after the military moved out of Benicia. Since Valero's acquisition in 2000, the 900-acre facility has been continually improved and upgraded.



Our Dependence On Oil Production

The region around Benicia is home to four of the state's 14 working oil refineries. They belong to Chevron Corp. in Richmond, PBF Energy Inc. in Martinez, Phillips 66 Co. in Rodeo and Valero.

Those facilities can produce more than 660,000 barrels of crude oil each day, which is nearly 40% of all crude oil refined in the state, according to the California Energy Commission.

Those facilities also release toxins into the air and water. Although these emissions are monitored by different agencies, there are sometimes failures that cause accidents.

It is important that we work together to minimize these accidents and protect our environment.

Valero actively works to improve and prevent accidents.

Benicia benefits from the oil produced at the Valero Benicia Refinery but it needs needs to do more to protect its residents and the environment.





Economic Partnership

- City of Benicia Revenue
 - Total City of Benicia 2020 revenue = **\$52,000,000**
 - In 2020, the City of Benicia reported that 39% of property taxes and 69% of sales taxes were from generated by the industrial park = estimate **\$16,251,000**
 - Valero's paid an estimated **\$8,125,500**.
We could not find Valero's exact contribution but using the City of Benicia's reporting, and understanding that Valero is the backbone of the Industrial Park, we estimated Valero could be responsible for 50% of the industrial park business.

Employment Partnership

- 430 employees at the Valero Benicia refinery
- 3,900 jobs created or supported in the region by Valero (1)
- Generates \$1.6 billion in employee compensation (1)



(1) Andrew Chang & Company, LLC report from 2014

BENICIA REFINERY

The Benicia Refinery was built in 1968 on nearly 900 acres on the Carquinez Strait in California's Bay Area. Since Valero's acquisition in 2000, the facility has been continually improved and upgraded.



FAST FACTS



430
employees

Focus on
**diversity,
inclusion
and talent
development**



\$11.5 million generated in local
property taxes in 2018



3,900+ jobs
created or
supported
by Valero
Energy
Corporation



**OSHA
Voluntary
Protection
Program**
(VPP) Star
Site



4,100+
employee
volunteer
hours in
2019



\$15 million
donated to
local charities
over the past
ten years



25% of the City of Benicia's General Fund revenue
generated by the refinery and associated Benicia
Industrial Park Association entities



165,000
barrels per day
(bpd)throughput
capacity



50 megawatts
of power generated
by the Cogeneration
Unit



\$804,464
pledged to United
Way of the Bay
Area in 2019

THE BENICIA REFINERY

Produces **jet fuel,
diesel and asphalt**

Produces **California Air
Resources (CARB) gasoline,**
California's clean-burning fuel

Accounting for **10%**
of CARB used in California

Accounting for **25%**
of CARB used in
San Francisco Bay Area

Accounts for **45% of asphalt
supply** in northern California

Paul Adler

*Director Community Relations
& Government Affairs*

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valero.com

ENVIRONMENTAL



We are committed stewards of the **environment**.

Since 2000, Valero has spent **\$1.6 billion** on infrastructure projects, such as flare gas recovery and reduced energy consumption, to **improve air quality and enhance safety**

Reduced sulfur dioxide emissions by **95%** and nitrogen oxide emissions by **55%**

Robust air monitoring system in place with air quality information available online at benciarefineryairmonitors.org

HEALTH & SAFETY



Safety is our foundation for success.

Continuously earned the **California/OSHA Voluntary Protection Program (VPP)** Star Site, OSHA'S highest plant safety designation for exceptional safety practices and procedures

One of only two refineries in California to receive the **VPP Star Site recognition**

Participates in **annual emergency preparedness drills** with the City of Benicia and other regulators

COMMUNITY



We will be a good neighbor by sharing our success with the **communities** where we live and work through **volunteerism, charitable giving and the economic support of being a good employer**.

Benicia Refinery gives **more than \$1 million each year** to local charities

Employees donate **more than 4,100 hours per year** to charitable work

We partner with **Community Organizations:**

- Benicia Teen Center
- Food Bank of Contra Costa and Solano
- Benicia Community Action Council

ABOUT VALERO

Valero is the **largest global independent refiner**, and a **leading ethanol and renewable diesel producer** and corporate citizen.



15 petroleum refineries

3.1 million barrels per day throughput capacity



14 ethanol plants in the U.S.

Combined production capacity of **1.73 billion gallons** per year



275 million gallons per year in renewable diesel

World's 2nd Largest Renewable Diesel producer



One of **50** most **community-minded** companies in the U.S.

Benicia Refinery

Reduce, Reuse, Recycle & Repurpose



FLARE-GAS RECOVERY SYSTEMS RESULTED IN MORE THAN 97% FLARING-FREE OPERATIONS IN 2020

More than 79% of Valero's large process flares are equipped with flare-gas recovery systems. These systems reduce flaring and recover fuel gases, which are used to fire heaters and boilers, reducing natural gas consumption.



SULFUR REMOVAL

Sulfur obtained from the refinery process unit is removed for a variety of beneficial uses, including crop fertilizer.



MARINE VAPOR RECOVERY UNITS

At certain refineries, captured vapors generated when loading ships with gasoline and other light products are routed back into the refinery's gasoline pool.



FUEL FROM OIL WASTE

Recovered usable oil and oily solids are reprocessed into high-value fuel and byproducts through refining processes, including "coke injection," avoiding the generation and disposal of wastes.



ENERGY EFFICIENCY INITIATIVES

We are focused on improving process monitoring and control systems to reduce energy consumption.

RECYCLING OF MATERIAL RECOVERED FROM TANK CLEANING

Recovered material is inserted back into the refining process to create fuels and other products. Alternatively, the recovered material is also used to fuel third-party facilities, avoiding landfill waste.



WASTEWATER MANAGEMENT

Process water and stormwater are managed at our wastewater treatment plants. We use specialized bacteria to naturally digest oil and treat wastewater streams to purify the water before returning to the ecosystem.



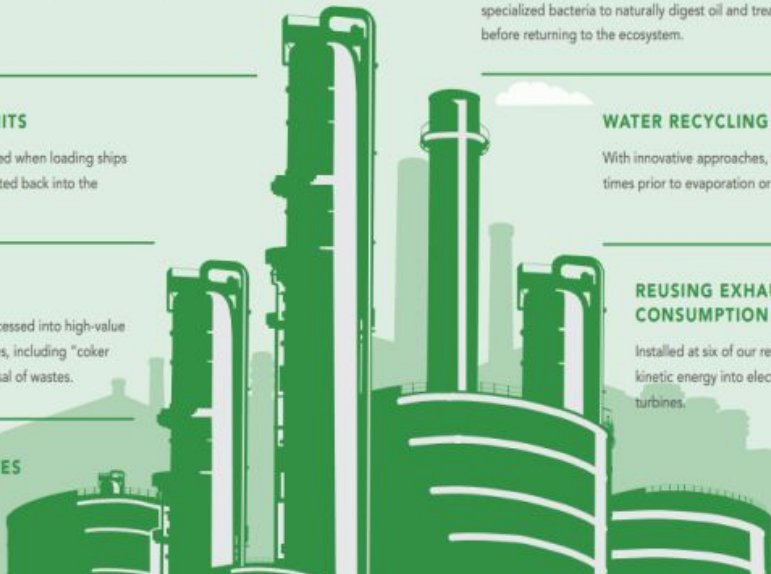
WATER RECYCLING

With innovative approaches, we use each gallon of water more than 18.5 times prior to evaporation or return to the environment.



REUSING EXHAUST GASES TO REDUCE ENERGY CONSUMPTION

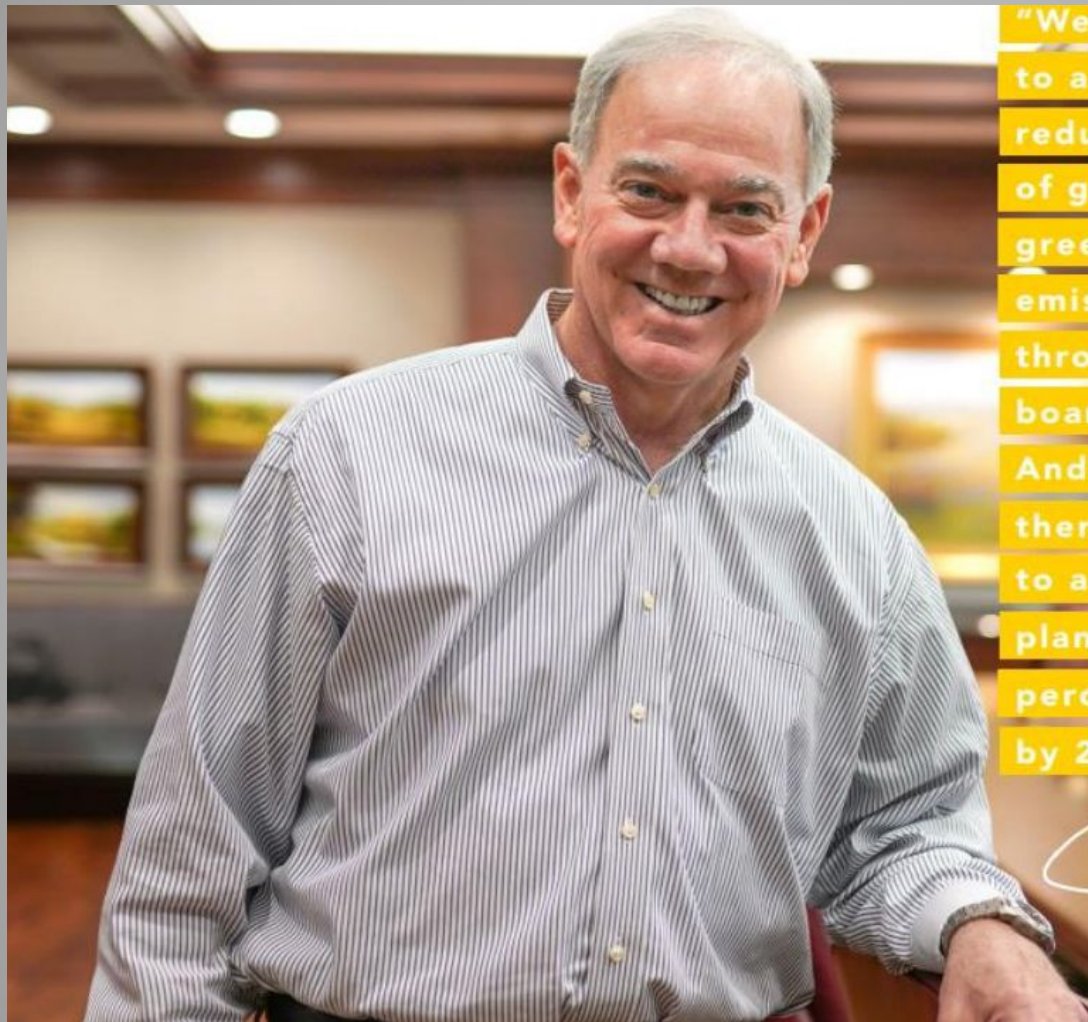
Installed at six of our refineries, expanders are designed to convert kinetic energy into electricity by reusing exhaust gases to spin turbines.



Valero's Recent Environmental Improvements

- Cogeneration Plant
 - Fueled by natural gas, reduces reliance on local power grid
 - One of four in world, uses excess heat and pollutants that are discharged to create power, those excess pollutants would otherwise go straight into the air and the surrounding environment
- Flare Gas Recovery Compressor
 - compress gases in the flare gas unit, greatly reducing the need to flare
- Wastewater Treatment Plant Effluent Line
 - Reduces pollutants in the water before being safely discharged
- Fuel Cell Microgrid
 - Renewable energy source that powers wastewater and asphalt plant
 - Saves the need for natural gasses to power these crucial elements of the refinery
- Habitat Conservation
 - Built straw “waddles” over pipelines to allow the salt marsh harvest mouse to pass
 - Dredged material used in Montezuma Wetlands Restoration Project
- Wildlife and Tree Restoration
 - Valero has had a long-standing partnership with the Benicia Tree Foundation to plant and prune trees annually throughout the area.





"We are on track to achieve our plan to reduce/offset 63% of global refining greenhouse gas (GHG) emissions by 2025 through existing board-approved projects. And we are not stopping there. I am pleased to announce that we plan to increase that percentage to 100% by 2035."

Joe Gorder
CHAIRMAN AND
CHIEF EXECUTIVE OFFICER

Dangers of Refining Oil

The Office of Environmental Health Hazard Assessment (OEHHA) reported that the ten most frequently reported routine toxic air contaminant emissions from California refineries from 2009-2012 (starting with the highest) were:

- ammonia
- formaldehyde
- methanol
- sulfuric acid
- hydrogen sulfide
- toluene
- xylene
- benzene
- hexane
- hydrogen chloride



Recent Health & Safety Incidents in Benicia

- In 2017, there was a power failure at Valero that caused 14 days of flaring that released 74,000 pounds of sulfur dioxide. This resulted in school closures.
- In December 2021, there was a release of a petroleum based that fell on Benicia neighborhoods.
- In 2022, the Bay Area Air Quality District (BAAQMD) conducted an investigation. From 2001-2018, they discovered one of Valero's hydrogen stacks released an estimated average of 4,000 pounds of hydrocarbons each day — more than 266 times the 15-pound limit.

Pollutants discovered included benzene, which causes an elevated risk of cancer and chronic health issues. Benzene is a carcinogen, and long-term exposure carries risks. The district calculated the risk from Valero's excess emissions over those 16 years as 3 chances in 1 million for developing cancer.



Existing Environmental and Safety Items in Benicia

- City Benicia – Valero Cooperation Agreement
 - Notification, Risk Management and Fire Department, and more
 - Donated Portable Air Monitors to the Benicia Fire Department
 - Funds Benicia FD liaison position
- Bay Area Air Quality Management District
 - BAAQMD Monitors and Investigates
- Fenceline Monitoring System
- Community Advisory Panel



More Ideas for a Safer Benicia

As a \$64 billion company, Valero might be able to do more locally

- Continue to Improve the City Benicia – Valero Cooperation Agreement
 - Request increased investment by Valero into public safety
 - Include hazardous materials cleanup companies in the agreement
- Work more closely with Bay Area Air Quality Management District
 - Formalize reporting and violations
 - Idea sharing between refineries and local cities
- Continue to improve the Fenceline Monitoring System
 - Have a city employee monitor reports
- Develop and Expand the Community Advisory Panel
 - Invite Solano County environmental science group
- Have city leaders meet regularly with Valero leaders
 - Find out what other cities with other oil refineries have in place
- Add a link to City of Benicia website that gathers all refinery and environmental information and share it with the community

More Ideas for a Safer Benicia - continued

As a \$64 billion company, Valero might be able to do more locally

- Reduce water usage and ask for recycled water
- Ask for new alternative energy production
- Ask to invest in the emergency safety containment at shipping docks and rail lines
- Ask BAAQMD to include trucking, rail and shipping emission in research
- Get Solano County to be more strict about emissions
- Make sure all the groups that monitor oil production, environmental safety are including Benicia in all their work
- Create a low-warning system. We have the loud sirens for emergencies but what about an automatic low warning alert so that people know to stay inside when pollution is high.
- Tell the residents what is being done by the city of Benicia to be a good steward of the environment.
- Tell residents what Valero is doing to be a good neighbor and a good steward of the environment.



THANK YOU

SOURCES

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<http://beniciaindependent.com/topics/valero-benicia-refinery/>

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