



ARROW'S PROPOSED HYDROGEN STORAGE AND FUELING FACILITY

Overview

The San Bernardino County Transportation Authority (SBCTA) is proposing to retrofit the southern portion of the Arrow's Maintenance Facility (AMF), currently under construction in the city of San Bernardino, to house a new hydrogen storage and fueling center for the future Zero-Emission Multiple Unit (ZEMU) rail vehicle.

The Arrow service, a new nine-mile rail corridor between San Bernardino and Redlands, will begin operations in 2022 using eco-friendly Diesel Multiple Unit (DMU) rail vehicles. With SBCTA's introduction of ZEMU to the Arrow service, specific upgrades and modifications are required to the AMF to facilitate hydrogen storage, refueling and required safety enhancements. The storage and fueling facility is currently in the environmental phase and construction is expected to begin in late 2022.



Project Benefits

During regular operations, one of the Arrow's DMU rail vehicles will be replaced with a ZEMU vehicle, using a combination of both hydrogen fuel cells and batteries to propel the vehicle. The proposed project will modify the southern portion of the existing AMF to support the integration and operations of ZEMU train, anticipated for passenger use in 2024.

In an effort to reduce greenhouse gas emissions, the hydrogen storage and fueling facility will support SBCTA's ongoing effort to expand and improve an eco-friendly regional transportation system through the use of zero-emission transportation technology.

The use of hydrogen as a fuel for a ZEMU train will:

- Reduce greenhouse gas emissions on transit systems
- Improve air quality within the region
- Provide clean air by eliminating rail emissions and air pollutants
- Reduce noise, vibrations and exhaust

Funding

STATE	\$3 Million
(includes cost for the fueling station and AMF building retrofit)	
TOTAL	\$3 Million

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877-55-SBCTA
info@goSBCTA.com
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Schedule

- APRIL 2018**
SBCTA awarded a \$30 million grant from the State of California from the California Transit and Intercity Rail Capital Program (TIRCP) to develop and operate a zero-emission multiple unit (ZEMU).
- FEBRUARY 2021**
Begin Environmental Phase
- MID 2021**
Circulate Draft Environmental Document for Public Review
- LATE 2021**
Completion of Project Approval and Final Environmental Document
- MID 2022**
Anticipated Completion of Final Design
- LATE 2022**
Anticipated Start of Construction
- EARLY 2024**
Anticipated Service Start Date

Frequently Asked Questions

WHY IS A HYDROGEN STORAGE AND FUELING FACILITY NEEDED?

Beginning in 2024, the Arrow will begin operating a ZEMU train between San Bernardino and Redlands for passenger service. Modifications to the existing Arrow Maintenance Facility is required to accommodate a hydrogen storage and fueling station to support the operations of the ZEMU. The ZEMU will be maintained and refueled daily. SBCTA's new hydrogen storage and fueling facility will be the first hydrogen fueling station for rail vehicles in Southern California.

ARE THERE ANY SAFETY RISKS ASSOCIATED WITH TRAVELING ON A HYDROGEN-POWERED TRAIN?

When used in accordance with proper guidelines, hydrogen fuel is safe for public transportation. Today, hydrogen-powered buses and private automobiles are currently being used in parts of California and nationally. SBCTA's ZEMU train will be the first for passenger rail use in the United States. SBCTA and Metrolink, will follow strict fueling protocols and guidelines to protect its rail operators and ensure hydrogen fuel safety for its future passengers and surrounding community.

WHERE WILL THE ZERO-EMISSION TRAIN REFUEL ITS HYDROGEN?

The hydrogen storage and fueling facility is being proposed at the southern end of the existing Arrow Maintenance Facility located in San Bernardino. The proposed facility will be constructed in compliance with state and local requirements. Construction of the facility is anticipated to begin in late 2022.

WHAT ARE THE BENEFITS OF A HYDROGEN-POWERED PASSENGER TRAIN?

Hydrogen-powered passenger trains operate emission-free – meaning cleaner air, less global warming, a healthier environment for the region and quieter neighborhoods. A zero-emission train will not only bring forward improved air quality, it will also put San Bernardino County on the map as an innovative testing hub for green technology.

ARE THERE OTHER HYDROGEN-POWERED PASSENGER TRAINS IN THE US OR THE WORLD?

The Arrow's ZEMU will be the first of its kind in the United States to provide passengers a greener way to get to and from San Bernardino and Redlands. A similar hydrogen-hybrid passenger rail train recently completed 18 months of regular route testing on a 62-mile route in Germany.

We Plan.

In an effort to plan for a healthier future that includes both reliable and sustainable transportation options, SBCTA has been planning the Arrow service for more than decade. The nine-mile regional rail project will not only feature new tracks but was designed with innovation in mind and the potential to transform how commuter rail is operated in southern California and across the country.

We Build.

While the Arrow's ZEMU train will help address the commuting needs of today while also preserving the environment for a better tomorrow, SBCTA is proposing to construct a new hydrogen storage and fueling facility to accommodate the integration of a ZEMU rail vehicle into the Arrow's rail fleet.

Anticipated to begin construction in late 2022, the project would retrofit the southern portion of the existing Arrow Maintenance Facility to comply with state and local requirements to facilitate the use of hydrogen fuel. Modifications include installation of a hydrogen detection and flame detection systems; charging station, hydrogen storage tanks and associated fueling infrastructure.

You Move.

Initially, Arrow service will operate in 2022 with eco-friendly DMUs to support the planned operations, providing passengers a cleaner, quieter, more efficient rail vehicle, as compared to diesel locomotives.

SBCTA's vision of a self-powered, zero-emission commuter train to run interoperable with Metrolink and heavy freight rail vehicles will become a reality in 2024.

The Arrow's hydrogen storage and fueling facility will be the first of its kind in North America, marking a major milestone toward a greener future for the region and the passenger rail industry.

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Plan. Build. Move.