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CASE STUDY

Electrifying Public Transportation With an Industry Leader

As the first transit agency in the United States to bring a fast-charge electric bus into service, Foothill Transit has long held a leadership position in electrified transportation. Now it has taken the next step — developing a comprehensive master plan to transition its natural gas fueled bus fleet to 100% battery electric by 2030.

Challenge

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Foothill Transit serves 22 cities in Los Angeles County, supporting 39 routes with more than 350 buses. In support of its commitment to electrification, the transit agency decided to undertake a large-scale master plan, making it the first project of this size in the nation. As such, the plan and subsequent project were designed to be completed a decade ahead of California's mandate that all transit vehicles in the state be "zero emission" by 2040.

Project Stats

Client
Foothill Transit

Location
Southern California

100%
electrification by 2030

350+
buses

39
routes

With such a large fleet and so many varying route lengths, developing a comprehensive plan meant analyzing a wide range of factors. For example, the selected charging equipment would need to meet the considerable loads of the fleet, which — given heavy and consistent duty cycles — must be reliable and ready for a full day's service on an overnight charge. Additionally, meeting the significant electrical power demand of the fleet and designing a layout to optimize depot real estate would also be important to project success.

Solution

In partnership with ebusplan, Greenlots and AMMA Transit Planning, our team provided consultative planning and conceptual engineering services for the effort.

Developing a fleet electrification road map of this size required a thoughtful and thorough consideration of a number of variables. The team was tasked with modeling the energy consumption of more than 350 bus routes to determine the capability of all-electric buses to complete each route and then outline the resultant charging needs at two centralized depots.

Planning at the depots encompassed various equipment, space and infrastructure considerations:

To meet the daily needs of the fleet, we evaluated several commercially available options to find the right fit.
Electrical power demand associated with the fleet is significant. We assessed current on-site electrical systems, coordinated with Southern California Edison and evaluated the power supply — then applied those learnings to a plan for future infrastructure needs. Part of this was the consideration of how to integrate on- or off-site renewables and battery storage to support the goal of a fully zero-emission fleet.

Each depot offered a limited amount of real estate — and charging stations and buses take up a lot of space. The layout needed to be precise and tactically optimized to see that every electric bus can charge where it needs to, when it needs to.

While this is a landmark shift for the transit agency, the transition needed to remain nearly imperceptible to the riders who count on Foothill Transit buses every day to get where they need to be. As such, the plan included conceptual construction phasing and budgetary cost estimating, all structured to minimize impact to current operations.

Results

Foothill Transit has a clear vision of what the transportation agency of the future looks like. We're helping steer it in the right direction with a smart, strategic plan. As the fleet expands over the next decade — another essential element to a comprehensive master plan — the new road map will anticipate changes and assist Foothill Transit in developing options for what needs will emerge.

About 1898 & Co.

1898 & Co. is a global business, technology, and security consultancy serving critical infrastructure industries. We partner with clients to plan, secure and optimize their business. As part of Burns & McDonnell and our 120 years of industry experience, we understand the complexity of your asset-intensive business model, the trends impacting your industry, and the need to ground big ideas in operational realities. Learn more at **1898andCo.com**.

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