

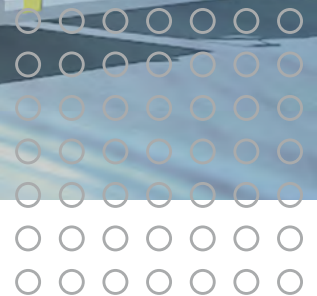
**1898** **co** SM


PART OF BURNS & MCDONNELL

CASE STUDY / TRANSPORTATION ELECTRIFICATION

# 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.





## A comprehensive plan serves as an electrification road map for infrastructure and charging needs.

### Project stats

**Client**

Foothill Transit

**Location**

Southern California

**Completion Date**

May 2019

**100%**  
electrification by 2030

**350+**  
buses

**39**  
routes

**2**  
depots



### Challenge

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.

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.


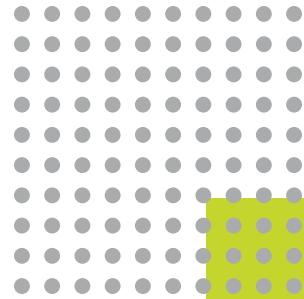
1898 & Co. is a business, technology and security solutions consultancy where experience and foresight come together to unlock lasting advancements. We innovate today to fuel your future growth, catalyzing insights that drive smarter decisions, improve performance and maximize value. As part of Burns & McDonnell, we draw on more than 120 years of deep and broad experience in complex industries as we envision and enable the future for our clients.





**1898**  **CO** <sup>SM</sup>

PART OF  **BURNS & MCDONNELL**



For more information, visit [1898andCo.com](https://www.1898andCo.com).

15538-EPT-0420