

# Calif. Firms Work on Hybrid-Electric Buses

Two Southern California companies have received orders for components for 27 40-foot hybrid-electric buses that Long Beach Transit plans to add to its fleet to help improve air quality in the Southern California port city of Long Beach.

According to Jim Ditch, Long Beach Transit's executive director of maintenance and facilities, reliability represents a key issue in transit bus operation.

"Our buses operate 20 hours a day, so being able to eliminate maintenance-intensive systems and components in new vehicles is an important consideration for us," he said. "We are pleased that Long Beach is the first transit agency to deploy this new technology in volume revenue service."



Photo courtesy of ISE

*Long Beach Transit plans to enhance its fleet with 27 gasoline hybrid-electric buses like the one shown here. Manufactured by New Flyer Industries, the buses will feature the ISE ThunderVolt™ gasoline hybrid-electric drive system equipped with Maxwell Technologies, Inc.'s BOOSTCAP® ultracapacitors, which will enable the buses to operate more cleanly and 50 percent more efficiently than those powered by conventional drivetrains.*

Last year Long Beach Transit authorized the purchase of the buses from New Flyer Industries, the largest manufacturer of heavy-duty urban transit buses in North America. New Flyer has issued a purchase order to ISE for its ThunderVolt™ gasoline hybrid-electric drive system equipped with BOOSTCAP® ultracapacitors made by Maxwell Technologies, Inc. Both ISE and Maxwell are headquartered in San Diego.

"Ultracapacitors' ability to discharge and recharge rapidly makes them ideal for capturing and reusing energy generated by braking, which is critical to achieving the fuel economy and reduced emissions consumers are seeking from hybrid vehicles," said Dr. Richard Balanson, Maxwell president and CEO.

Added David Mazaika, president and CEO of ISE, "Ultracapacitor-based systems achieve 10 to 15 percent better fuel economy than comparable battery-based systems because they are lighter and more efficient in absorbing electrical energy produced by regenerative braking. Perhaps more importantly, they perform reliably over hundreds of thousands of discharge-recharge cycles, which equates to years of maintenance-free energy storage and power delivery performance for transit operators."

ISE's ThunderVolt drive system consists of an ultra-low-emission Ford Triton V10 gasoline engine, Siemens ELFA™ electric motors, motor controllers and generators, and a ThunderPack II ultracapacitor-based energy storage system that includes 288 Maxwell BOOSTCAP ultracapacitors. According to the company, this is the only commercially available gasoline-electric hybrid drive system that meets the California Air Resources Board's 2007 emission standards.

To learn more about the components for the hybrid-electric buses, visit [www.maxwell.com](http://www.maxwell.com) and [www.isecorp.com](http://www.isecorp.com). Information about Long Beach Transit is available at [www.lbtransit.com](http://www.lbtransit.com).



**Current is a publication produced by the Electric Transportation Department of Southern California Edison.**

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