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## **Local ports help fund hybrid tug project**

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The ports of Los Angeles and Long Beach are teaming with a tugboat operator to give the shipping industry's grimy workhorse an ecological makeover, adding a hybrid electrical system to the vessel's powerful diesel engines.

"It should have a profound impact on tug technology in the decades ahead," Port of Los Angeles spokesman Arley Baker said.

The first boat from Foss Maritime Co., a leading U.S. tug and barge operator based in Seattle, may start production this year and be delivered next year to the Los Angeles area, home of the nation's largest port complex, officials said Thursday.

Foss' hybrid design is similar to the technology used in cars such as Toyota Motor Corp.'s gasoline-electric Prius, although the tug's engine was more directly inspired by diesel hybrids used in some railroad vehicles.

The hybrid tug will still have diesel engines, which provide the horsepower needed to guide massive containerships or pull loaded barges. But when idling in a harbor or doing less-strenuous tasks, the hybrid will rely on electric batteries for its power.

Because diesel engines burn fuel less efficiently at lower speeds, switching to battery power may cut particle and nitrous oxide emissions by 44%, along with reducing fuel use and noise, Foss said.

The pilot project is part of continuing efforts to cut pollution from the locomotives, trucks and ships that flood the country's two busiest container ports. Use of the hybrid tugs may be expanded if they perform to the standards set by their dirtier cousins, port officials said.

The hybrid is based on a conventional tug model that usually costs about \$6 million. Adding the new hybrid engine increases the price by as much as \$3 million, said Susan Hayman, a Foss vice president.

Los Angeles and Long Beach port officials are contributing about \$1.3 million to the project. In exchange, Foss agreed to base the first hybrid tug at the twin ports for five years.