

APRIL 2015

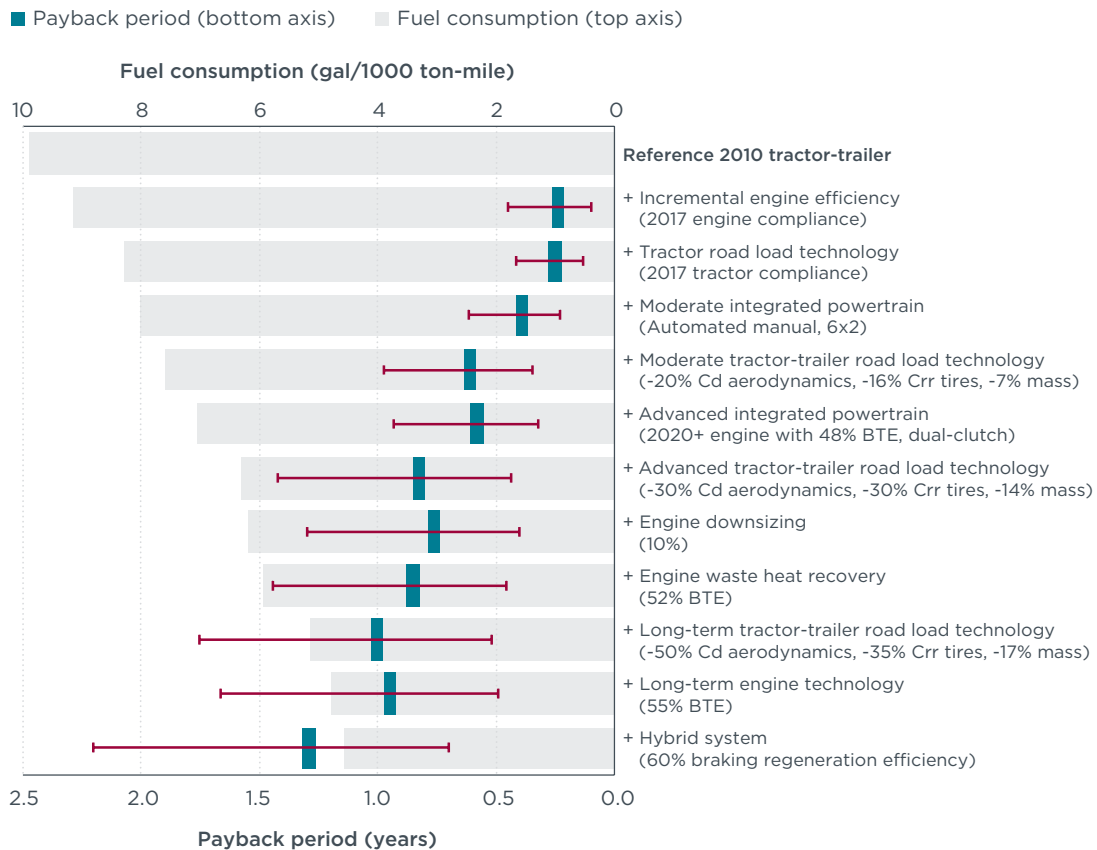
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COST EFFECTIVENESS OF ADVANCED EFFICIENCY TECHNOLOGIES FOR LONG-HAUL TRACTOR-TRAILERS, 2020-2030

Ongoing technology developments are pointing to the viability of tractor-trailers with fuel economy of 10 mpg or better. These developments raise questions about how quickly the technologies can be deployed and how cost-effective they might be. With U.S. federal regulatory agencies now working on the second phase of heavy-duty vehicle greenhouse gas (GHG) emission and fuel efficiency standards, such questions take on added importance.

This paper analyzes the costs and fuel savings of tractor-trailer efficiency technologies examined in a

companion paper, *Advanced tractor-trailer efficiency technology potential in the 2020-2030 timeframe*. The evaluation includes a synthesis of best-available data on technology costs and their associated fuel savings under a variety of fuel price and discount rate assumptions to bound low and high payback periods for average long-haul tractor-trailer conditions. The figure below summarizes the payback period results, ranging from reference 2010 technology, to compliance with 2017 standards, to further advancements in technology.



Payback periods for tractor-trailer efficiency technologies in the 2020-2030 time frame

KEY FINDINGS:

- (1) Already available tractor-trailer technologies can achieve 9 mpg, deliver payback periods of less than a year, and be widely deployed in the 2020–2025 time frame.
- (2) Advanced efficiency technologies, now emerging in the marketplace, can double fuel economy to 11–12 mpg, with payback periods of 18 months or less in the 2025–2030 time frame.
- (3) Even under very conservative assumptions — fuel prices remaining as low as \$3.10 per gallon diesel, higher technology costs, and a high discount rate of 10% — the most advanced technology packages have payback periods of only 1.4–2.2 years.
- (4) Typical first owners of tractor-trailers with efficiency technology packages up to 9 mpg would see fuel savings 3–9 times greater than the upfront technology cost over the period of ownership.

PUBLICATION INFORMATION

Cost effectiveness of advanced efficiency technologies for long-haul tractor-trailers in the 2020–2030 time frame

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