Feasibility of Onboard Thermoelectric Generation for Improved Vehicle Fuel Economy

Potential fuel savings
Cost/mass analysis
Waste heat availability

Fuel saved by shifting from engine- to electrically-driven accessories

- 30 mph
- 50 mph
- 70 mph

Car
SUV
Class 4
Class 8
For Class 8 trucks, this steady-state, warm-start analysis found:

- **Present** (5-10% eff.): Electrical output comparable to alternator → 1-3% fuel savings
- **Future** (15% eff.): Electrical output driving ~½ of accessories → 2-9% fuel savings