



Idle Reduction Technology: Cost Comparison

Plug Into Savings

Heavy-duty truck idling increases driver and fleet expenses through higher diesel fuel costs, engine and component wear, and maintenance costs. Additionally, engine idling creates unnecessary exhaust emissions and noise, can be harmful to driver health, and may result in poor quality rest periods.

Many idle-reduction technologies have the potential to save drivers and fleets thousands of dollars per year. Truck stop electrification (TSE) provides the driver with grid-based power and may include other amenities such as cable television, Internet and phone connections. Power connections (shore power) are used for heating, ventilation and air conditioning (HVAC) systems, televisions, DVD players, computers, coffee makers, microwaves, power tools and lights.

Currently there are two different types of TSE. Shorepower TSE is very similar to shore power technologies used at marinas and recreational vehicle parks. Shorepower TSE focuses on providing electricity for on-board convenience appliances.

On the other hand, "off-board" TSE does not require the driver to have any equipment other than a \$10 window template. However, the on-site infrastructure and labor costs are 3 to 5 times that of Shorepower and also cost the end user up to 2 times more.

Another alternative is an auxiliary power unit (APU) system that is completely mounted on the vehicle; therefore, they can be used independently of any grid-based connection. However, auxiliary power equipment is more expensive and heavier than TSE equipment, thus taking away from the revenue producing capacity of the trailer load. These systems cannot provide other services such as cable television and Internet. In addition, most APUs use a small engine to provide heat, cooling and electricity; therefore, they generate a significant amount of local emissions and noise.

Savings that will accrue to users of non-idling energy technologies are specific to a number of variables including individual usage patterns, average annual idling hours avoided, diesel fuel prices, and fuel consumption rates. In this comparison, Shorepower TSE, off-board TSE and APUs are compared for relative cost savings to the end user using a common set of assumptions that are based on average industry data.

All the listed idle-reduction technologies have the potential to improve fleet profits. Depending on driver utilization patterns and the idling characteristics of the vehicle, Shorepower is the least expensive idling alternative available today.

Initial Capital Investment

Shorepower – Basic Connection	\$189
Shorepower – with electric HVAC	\$1,500
APU	\$8,000
Off-board TSE	\$10

Hourly Costs (Does not include capital cost)

Shorepower TSE with Cable TV & Internet	\$1.00
APU (fuel & maintenance).....	\$1.08
Average Off-board TSE	\$2.00

Other Assumptions for Calculations

Diesel fuel cost	\$3.25/gal
Idling fuel consumption rate ¹	1.0 gal/hr
APU fuel consumption rate	0.3 gal/hr
APU Maintenance interval ²	500 hours
APU Maintenance cost	\$50 each
Idling hours per year ¹	1,800 hrs
Lifetime/Investment cycle	5 years

Total 5-year Costs

Shorepower – with electric HVAC.....	\$10,500
APU	\$17,675
Off-board TSE	\$18,010
Idling	\$29,250

Total 5-year Savings

Shorepower – with electric HVAC	\$18,750
APU	\$11,575
Off-board TSE	\$11,240
Idling	\$0

Total Average Hourly Cost

Shorepower – with electric HVAC.....	\$1.17
APU	\$1.96
Off-board TSE	\$2.00
Idling	\$3.25

These calculations do not consider engine wear, service and maintenance, or parts replacement due to engine idling. The residual value of on-board components was also not considered. The above two factors would increase the overall savings from idle-reducing technologies and decrease payback times. Calculations also assume all technologies could be used 100% of the time. Off-board TSE and Shorepower include basic cable television and Internet services which is not included when using APUs or idling. The greatest overall energy, emission and cost benefits can be achieved with Shorepower's services. No on-site emissions are produced when using Shorepower's services.

¹ Averages from UC Davis Driver Survey Study

² Willis Auxiliary Power System