

- Plug-In Hybrid PTO Systems provide superior benefits in many applications vs. Drive Line Hybrid Systems.
 - *But unlike Drive Line Hybrids, Plug-In Hybrids currently do not qualify for government rebates*
- Potential benefit of Plug-In Hybrid PTO Systems is enormous:
 - Commercial vehicles use conventional PTO systems to power the equipment on the vehicle, such as lifts on delivery trucks, compactors on garbage trucks, and winches on tow trucks.
 - This requires the vehicle engine to idle to generate power. Engine efficiency is worst at idle speeds.
 - As a result, many of these vehicles waste fuel and produce emissions when performing work while stationary.
 - 200,000 – 300,000 PTO units are sold in North America every year.
 - Plug-in Hybrid PTO Systems use battery power, charged from conventional 110v outlets, to run the PTO, eliminating the need to idle the engine for extended periods to operate equipment. Engine charging is available, if application so demands.
- Plug-In Hybrid PTO Systems provide similar fuel savings and emission reductions vs. drive line based hybrid systems in many applications, such as utility service vehicles:

	Conventional Chassis	Drive Line Hybrid System	Plug-In Hybrid PTO system
Fuel Consumption (gal/day)			
Driving	5.9	5.2	5.9
Operation at Worksite	4.8	0.7	0
Total Daily Fuel Consumption	10.7	5.9	5.9
Annual Fuel Consumption	2,680	1,475	1,475
Annual Fuel Savings (Gallons)	0	1,205*	1,205
Annual CO₂ Reduction (Metric Tons)	0	10.8*	10.8

* Unlike Plug-in Hybrid PTO Systems, Drive Line Hybrid systems reduce towing capacity which necessitates incremental tow vehicle in many applications – reducing average annual fuel consumption savings per vehicle by 400 gallons and reduces average annual CO₂ reduction by 4.1 Metric Tons – resulting in *overall superiority of Plug-In Hybrids*

- Plug-In Hybrid PTO Systems offer several economic and operational advantages vs. Drive Line Hybrid Systems:
 - Can be quickly and cost effectively retrofitted onto existing vehicles.
 - Can capture the benefits of the technology sooner by enabling rapid, economical conversion of large fleets rather than awaiting fleet replacement cycles. There are over 150,000 utility vehicles in the US with a typical life of 15 years.
 - Can create “Green Collar” jobs in the U.S. to build and install systems.
 - Superior Return on Investment – Comparable benefits achieved for retrofit cost of a quarter of the new Drive Line Hybrid vehicle
 - Dramatically reduce odor and noise pollution when performing work.
 - These benefits will be especially noticeable in heavily populated areas.
- Plug-in Hybrid PTO Systems can help achieve President Obama’s goal of one million plug-in hybrid vehicles by 2015.