



Golf Cart Analysis for Mountain Course

Lithium Battery Benefits versus Gas/Acid Batteries



Environmental Impact

- Lithium batteries are environmentally friendly.
- Acid batteries have the potential to spill over time which has a negative impact on the environment.
- Lithium battery operated golf carts put off zero emissions into the air; acid batteries and gas carts emit emissions into the air.
- There is less impact on turf since lithium battery operated carts are 279 lbs. lighter than acid battery carts which translates into less turf damage.
- Lithium battery operated golf carts require NO water.
- WASTE NOT, GO GREEN!



Cost Savings

- By tapping into cutting edge technology, lithium batteries use less energy and requires less out-of-wall power to charge than acid batteries.
- Charge in half the time so it is a dramatic energy cost savings as well as time savings.
- Consistent performance that does not fade over time. Virtually NO down time so less labor in repairs.
- After five years, the lithium battery still performs at same level as day one, five year unlimited warranty, so significant cost savings on battery replacement.
- Zero-Maintenance – lithium batteries require NO watering, NO checking of terminal post, and NO cleaning of batteries.

Cost Savings

Built in timer for Off-Peak Rates - .03-.05 savings

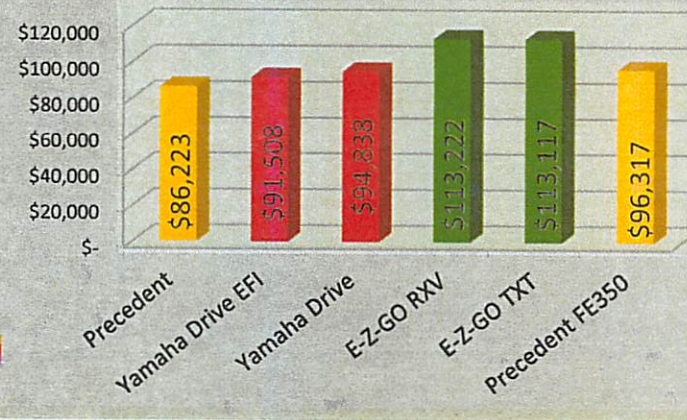
PEAK vs OFF-PEAK Savings	Hours to Charge	Fleet Size	Cost Savings Per Day	Peak Days May-Oct	Total Savings Per Year	60-mo / 72-mo Term	Total Fleet Savings
\$0.04	3.5	58	\$8.12	184	\$1,494	5	\$7,470
\$0.04	3.5	58	\$8.12	184	\$1,494	6	\$8,964

- Fuel Economy reported is based off Club Car testing and the Yamaha Drive website
- HP, torque and warranty reported were pulled from the Owner's Manuals and website specifications
- Maintenance costs are calculated based off the Periodic Maintenance Schedule in each manufacturers' Owner's Manual
- The hours for preventative maintenance are based off accepted warranty repair times for each maintenance item
- Here are some highlights of the major servicing differences
 - Yamaha recommends greasing the clutches annually
 - Yamaha recommends replacing the transaxle oil every two years due to the wet brake.
 - Yamaha recommends inspection/replacement of the brake pads every four years, which requires disassembly of the transaxle
 - E-Z-GO recommends oil and oil filter service semi-annually
 - E-Z-GO recommends engine valve adjustments annually

Formula and Data to get to get to cost per term on next slide

Gas Cart cost per term

Fuel and Maintenance Cost per Fleet per Term



Formula for Cost savings from previous page

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X
	Total Rounds per Year		25,000																			
	Percentage of Rounds Using a Golf Car		80%	20,000	Cart Fee Paid Rounds per Year																	
	Percentage of Rounds Using a Golf Car with 2 Golfers		80%	12,000	Golf Car Driven Rounds per Year																	
	Golf Car Fleet Size		50																			
	Desired Fleet Term, Years		5																			
	Average Course-Driven Miles per Round		5																			
	Fuel Cost, \$/gal		\$3.00																			
	Course Labor Rate (Minor PM Service), \$		\$10.00		Minor PM service such as daily and weekly car inspections																	
	Dealer Charged Labor Rate (Major PM Service), \$		\$80.00		Major PM service including alignment, engine, clutch and transaxle work																	

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U				
	Precedent EX40 EFI	Yamaha Drive EFI	Yamaha Drive Carbureted	E-Z-GO RXV	E-Z-GO TXT	Precedent FE350																
	Fuel Economy, MPG	35.0	35.4	31.3	29.2	29.3	25.9															
	Engine Horsepower	14.0	11.4	11.4	13.5	13.5	10.4															
	Engine Torque	27.0	23.9	23.9	26.5	26.5																
	Emissions CARB Website																					
	HC + NOx (g/kW-hr)	7.0	7.2	6.7	5.9	5.9	6.8															
	CO (g/kW-hr)	324	348	349	488	488	466															
	Costs per Round (Avg Over Term)																					
	Fuel Cost	\$0.43	\$0.42	\$0.46	\$0.51	\$0.51	\$0.58															
	Maintenance Cost	\$1.01	\$1.10	\$1.10	\$1.37	\$1.37	\$1.03															
	Total Cost	\$1.44	\$1.53	\$1.56	\$1.89	\$1.89	\$1.61															
	Additional Cost per Round	\$0.00	\$0.09	\$0.14	\$0.45	\$0.45	\$0.17															
	Maintenance and Fuel Costs per Car																					
	Year 1	\$287.72	\$264.36	\$295.84	\$368.82	\$368.46	\$330.54															
	Year 2	\$287.72	\$264.36	\$295.84	\$422.02	\$422.46	\$334.52															
	Year 3	\$287.72	\$264.36	\$295.84	\$368.82	\$368.46	\$330.54															
	Year 4	\$335.72	\$308.29	\$409.77	\$422.82	\$422.46	\$334.52															
	Year 5	\$287.72	\$264.36	\$295.84	\$368.82	\$368.46	\$330.54															
	Total	\$1,486.80	\$1,577.72	\$1,635.14	\$1,952.11	\$1,950.29	\$1,660.64															
	Additional Cost per Car	\$0.00	\$91.12	\$148.54	\$465.50	\$463.69	\$174.04															
	Maintenance and Fuel Costs per Fleet																					
	Year 1	\$16,687.79	\$16,492.77	\$17,158.82	\$21,391.63	\$21,370.59	\$18,171.07															
	Year 2	\$16,687.79	\$16,926.77	\$19,594.82	\$24,523.63	\$24,502.59	\$19,401.91															
	Year 3	\$16,687.79	\$16,492.77	\$17,158.82	\$21,391.63	\$21,370.59	\$18,171.07															
	Year 4	\$19,471.79	\$23,100.79	\$23,766.85	\$24,523.63	\$24,502.59	\$19,401.91															
	Year 5	\$16,687.79	\$16,492.77	\$17,158.82	\$21,391.63	\$21,370.59	\$18,171.07															
	Total	\$86,222.97	\$91,507.86	\$94,838.12	\$113,222.13	\$113,110.94	\$90,317.04															

Summary

- ❖ Lithium batteries are better for the environment and better for the Mountain Golf Course.
- ❖ Lithium battery operated carts provide sustained power over a round of golf, a more consistent drive, and no noise pollution.
- ❖ Lithium batteries require less charging time than acid based batteries (50% less for full charge) and a one hour charge can bring a lithium battery up to 80%.
- ❖ Energy cost savings
- ❖ Better customer satisfaction through an enhanced cart experience
- ❖ Less cost over the term of fleet even though up-front cost is more
- ❖ Allows our employees to focus on the guest experience versus the repair and maintenance of the golf carts
- ❖ Better for our elevation and terrain
- ❖ Zero down time for battery issues
- ❖ Has been road tested by driving one completely around the Mountain Course six consecutive times and battery life was only reduced to 30%.
- ❖ Moving to lithium battery powered carts is a best practice in the golf industry.
- ❖ Waste Not, GO GREEN!