

As you read this the warmer temps of summer are quickly approaching. If you are the owner of a towable RV, you will need to consider how to get the AC and other appliances powered during your travels or dry camping adventures. For you who own a motorhome with an LP generator, some of the tables in here may open your eyes as to the operating costs of these units. I wrote this article a few months ago and the fuel prices referred to reflect that time, but since fuel prices are all over the place these days, it's anybody's guess where they will be this summer. So read on and take in as much of this as you can stand and hopefully you will gain just a little more insight before you purchase a generator for your rig or if it is time to re-power your existing RV generator.

Generator Choices

The more it goes, the more popular generator installations are becoming in non-traditional applications. In recent years we have installed RV style generator sets in a broad spectrum of applications ranging from Fifth Wheel RV's, Class B conversion vans, the cargo area behind the back seat of a Suburban, under the bed of a Dodge truck and in the tack area of a horse trailer.

The popularity of on-board electricity is growing at a healthy rate. What is now becoming a frequently asked question, regards the fuel that powers the generators. Many, very many, folks are asking about LP generators for their rigs. Granted, LP installations are somewhat simpler due to the fact that most trailers and all motorhomes have LP tanks on board. There are a few concerns that need to be addressed though, before making a generator choice.

Usage

In my opinion, the primary consideration in choosing a generator is how you will use it. If you only intend to occasionally use the generator to warm up some food in the micro or some other light duty work, LP is ok, provided you exercise it often enough to keep it operational.

We can install any generator that will fit into the compartment, but you really need to think more about the fuel you wish to use. LP Generators are the least fuel efficient, most expensive generators to operate. If you intend to do any amount of dry camping, you will want to stay as far away from an LP genset as possible! We average about 500 hours per year of generator use. Your actual usage will depend on where you camp, whether or not you need air conditioners and whether or not you have an inverter.

Let me illustrate for you... The larger LP tanks that Travel Supreme offers are 10 gallons each. Suppose you fill the tanks to maximum capacity, 8 gallons each, before you leave. You reach your campsite with 16 gallons of LP fuel.

You need to heat the water in your water heater. The SW 10 water heater in our Travel Supreme has an input BTU Rating of 12,000 per hour, the SF-42 Suburban furnace has an input rating of 40, 000 Btu/hour and the Refer consumes 1,600 BTU/hour. Since a gallon of LP Gas contains about 90,000 BTU of energy the water heater burner will run about 7.5 hours on a gallon of LP. The refer will run about 56 hours on and the furnace uses a whopping 1/2 gallon for every hour the burner is fired.

The generator alone, carrying one air conditioner and other minor loads, will place the 3600-watt generator under approximately 75% load while the Air Conditioner compressor is running and about 30 to 50% when it is not. The fuel consumption for the generator alone will average about 1.1 gallons per hour, or about 14.5 hours on both LP tanks combined. Once the LP is gone you can no longer heat water, cool the refer, run the furnace or prepare a meal on the stove.

If that is not bad enough, you cannot run to the corner store and buy LP gas. When you do find some LP gas, it is costing more than \$2 a gallon today. Doing a bit of math, we calculate that your fuel cost will be about \$2.72 per hour to run your small LP generator.

This is why we do not recommend LP generators on any towable RV and discourage ordering one on any RV, towable or motorized, if the owners will use them with any amount of regularity.

Cost to operate

I have attached a table that reflects the cost of operation for some popular 30-amp generators. This table illustrates the major differences in cost of operation based on fuel consumption only. I have listed half-load as average, but here again, that will depend on your type of usage.

Please note in the last row of the table that you can reduce the fuel cost on the diesel by another 6 cents an hour by using off-road dyed fuel reducing cost per hour to 16 cents per hour. I did not use this price level in my comparisons because of the difficulty that may be associated with finding highway tax-free (dyed) fuel.

Generator Model	Fuel	Cost per Gallon	Full load Fuel Consumption per Hour	Fuel Cost per Hour at Full Load	Half-Load (Average) Fuel Consumption	Cost Per Hour at Half-Load	500 hours Usage per year @ Average Loadbase	Fuel cost Savings from
Onan Emerald 3600	LP	\$2.09	1.3	\$2.72	0.6	\$1.25	\$627.00	\$0.00
Onan Emerald 4000	Gas	\$1.29	0.8	\$1.03	0.8	\$1.03	\$516.00	\$111.00
NextGen 3500	Diesel	\$1.49	0.2	\$0.30	0.15	\$0.22	\$111.75	\$515.25
NextGen 3500	Diesel	\$1.05	0.2	\$0.21	0.15	\$0.16	\$78.75	\$548.25

Maintenance is another consideration and since the diesel has no ignition system, there is some savings to be had there. The single cylinder Kubota diesel has no oil filter either so a little more savings there too. They all hold about the same amount of oil and have fuel and air filters. Oil change intervals on diesels are about 100 hours vs. 150 hours for gas-powered units.

Cost to purchase

Of course another consideration in selecting your generator is the cost of purchase. The table below compares the purchase price of the three gensets listed in this article. Since the diesel is the most expensive to purchase, I used it as the base. The table shows the how much less the two other sets cost to purchase.

Generator Model	Retail Price	Est. Street Price	Decrease from Base
Onan Emerald 3600 LPG	\$ 3,368.00	\$ 2,913.00	\$ 377.00
Onan Emerald 4000 Gas	\$ 2,836.00	\$ 2,461.00	\$ 829.00
NextGen 3500 Diesel	None	\$ 3,290.00	-

Based on fuel savings alone, the table below shows how many hours you would need to run your generator to have the increased purchase price offset by fuel savings, thus breaking even. Since the diesel is the most expensive to purchase, I used it as the base.

Generator Model	Increase from Base	Hours to Break-Even
Onan Emerald 3600 LPG	\$ 377.00	365.84
Onan Emerald 4000 Gas	\$ 829.00	804.46
NextGen 3500 Diesel	\$ -	-

If your usage is near average, in 9 months you have offset the cost of the LPG difference while the gasoline unit will take a little longer about a year and a half. After that, you are banking the difference. In five years, you can save over \$2,500 dollars in fuel costs alone!

Life expectancy

As a rule, the life expectancy between rebuilds for diesels compared to gas powered units is about 300% longer for diesel engines. So to expect the engine of your diesel powered anything, truck, motorhome or generator to last 3 times longer than a comparable gas powered unit is not unfounded.

Noise

Noise has been a great concern of late. I don't want to get off on a rant here, but if you haven't considered generator noise levels then you better be camping by yourself in a field somewhere. Why, you ask? It's quite simple, you see the folks parked next to you? They came out to enjoy the pristine surroundings of one of our Nation's Fine National Parks too, not to listen to your generator drown out the chirping birds or rustling leaves. Next chance you get, start your generator and go outside, set out a chair next to your RV where the next campsite would be, and have a seat. Now sit there for a few hours. This is what your campground neighbor has to listen to and smell. So be considerate, if your generator has not been silenced, use it sparingly. Either way, use an exhaust stack if you are camped next to someone to get the smell up and over the nearby RV's.

Back to the topic at hand, diesel gensets are noisier by nature than a comparable gasoline set. This is due to the way a diesel engine ignites its fuel charge, by compressing it. New design combustion chambers in modern day diesels have reduced noise, improved fuel economy, and reduced emissions dramatically but they are still noisier. All of them can be hushed though so don't skimp on this when having your new genset installed or a replacement installed. Existing generator installations can also be silenced, come by or give us a call if you are interested or better yet check with others in our club who have one of our generator installations and ask them for a demo.

Weight

The question of weight is of great concern since most of us are pushing the limit already. Below is a table of the weights of the units used in this comparison.

Generator Model	Shipping Weight
Onan Emerald 3600 LPG	216 lbs.
Onan Emerald 4000 Gas	216 lbs.
NextGen 3500 Diesel	155 lbs.

In Closing

While I have focused on a 30-amp genset for this comparison, similar differences apply for larger sets. If installation dollars are the primary consideration, we recommend the gasoline-powered sets, and if long-term cost of operation is the primary consideration, diesel is the only way to go. Since all installations are custom fits, I have only covered the cost of the generator set in this comparison, not the complete installation. If you intend to run your generator in National Parks or other pristine areas, then it must be quiet. The diesels are much more difficult to silence than the gas fired units. If it is your intent to use your generator this way, then by all means respect the others around you, have it professionally silenced.

A final wrinkle, Onan Corporation division of Cummins Power Generation and McDermott Technology are teaming up to develop a 10kw fuel-cell RV generator. Fuel-cell technology will be virtually silent and also consume less fuel and produce fewer exhaust emissions. The next 10 years will definitely be exciting in this area. I hope the tables and text above help you make a more educated decision when picking out a new or replacement generator.