Power Inverter Information – by Ken Norwick

Thought process:
- Gas, diesel, propane or natural gas generators are not welcome in enclosed close-quarter communities. They pollute, create unwanted noise and are generally a bad idea. They are not helpful in an era where everyone is being asked to do their part to fight climate change, and where we are moving rapidly to a carbon-free era (electric vehicles, electric lawn mowers, electric power tools).
- These generators contribute to noise pollution in an urban environment. The general move is towards less, not more noise in our future.
- Most provincial, federal and private campgrounds either ban the use of gasoline generators for the above reasons, or severely restrict the hours that they can be used. It is generally seen as very bad manners to run a gas generator near other people at an inappropriate time/place
- These generators often involve the storage of gasoline supplies. This greatly increases the risk of fire in what is a close quarters community.
- These generators are currently a good solution for acreages and farms to provide a multi-day power solution at the least cost.

Inverters
- silent and unobtrusive in operation
- Lithium batteries are many times more energy dense and much lighter than typical car batteries using older lead-acid chemistries
- provide clean pure sine wave 110 volt power that can be used for a wide variety of electric or electronic equipment without causing damage
- online load calculators are available to help with sizing the inverter for your needs
- Portable inverters have a fixed sized battery. DIY units like mine can stack batteries in an array.

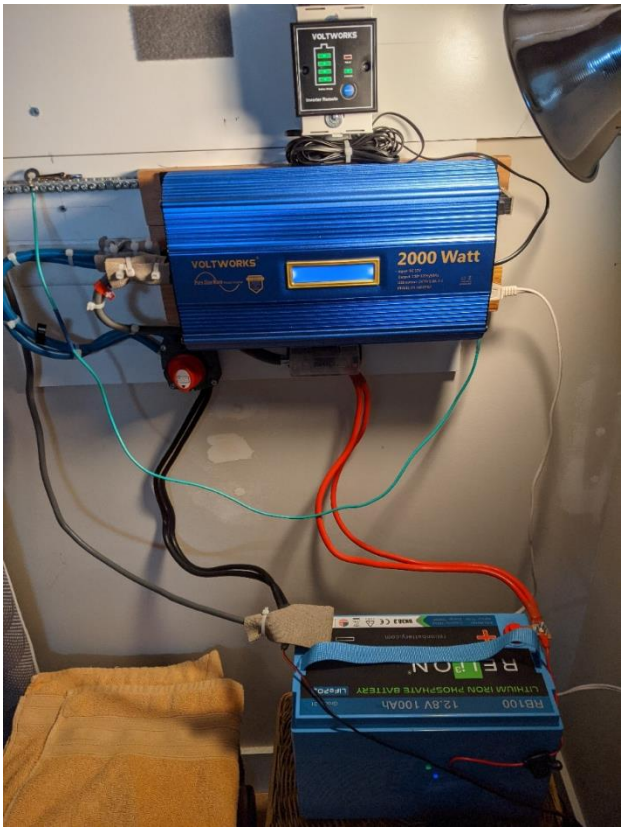
Harbour Landing
The majority of the power outages that we experience in our neighbourhood are from 1 to 6 hours of duration. Emergency power supplied by a portable power pack is convenient for these situations. Any power outage of longer duration would be different.
The last thing that is needed is for someone to turn on a gas generator for every short duration outage.
Outage would then equal outrage as no one wants to hear a gas generator running in the tight confines of our close quarters neighbourhood. We are already having issues with older condos to the south with noise issues related to bad bearings on an AC unit. Again, I am speaking about the 99% of the power outages where BC is not falling into the Pacific Ocean. For a major catastrophe all issues of noise and other environmental issues do not matter. The worry is that if someone is buying a gas generator to take them through the major emergency for 2 weeks (1%), they will be tempted to use the generator whenever a two hour outage occurs (99% of the time) and would really inconvenience their neighbours.

IMPORTANT:
Please note that whether or not we are talking about gas generators or battery-power inverters we are not talking about interconnecting to the main power grid. We must connect to either solution via extension cords. Grid interconnects require special permits and permissions from BC Hydro,

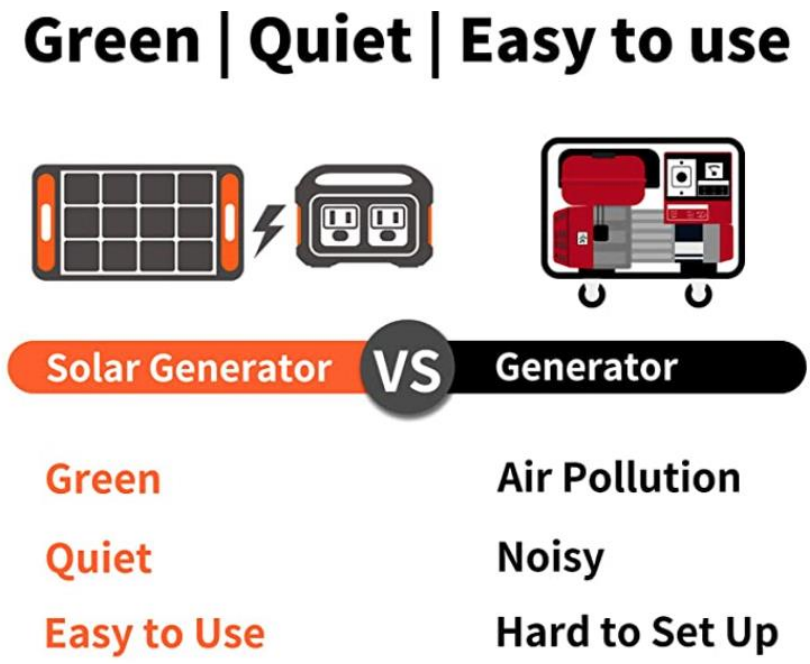
etc. They require additional equipment and are very costly. That is not what we are talking about in this discussion...

This is the original setup (shown below) but the final form will include a protective cabinet to keep electrical connections away from people. I have placed this under our stairs near the network wiring cabinet.

This setup includes a VoltWorks 2000 watt Pure Sine Wave inverter paired with a 100 Ah Lithium Iron-phosphate battery. I have added a marine-grade master power cutoff switch, and a 250 amp fusible link. The inverter comes with a (wired) remote control and a 15 cable. During recent load tests we were able to power our TV, computers, Internet router and switches, phone chargers, LED lighting, etc. for over 6 hours with 1/4 of the battery capacity being used. This is standard fare equipment in all modern motorhomes and trailers.
I have a single high capacity battery in my solution which would most likely do us for most of a day. To extend runtimes, I simply add another battery in parallel with the first for each additional day of use.



For most people portable units such as those made by Jackery are the way to go. Note: I am not recommending one manufacturer over another but Jackery is a very popular brand used for camping and the RV crowd.



<$400:
https://www.amazon.ca/Jackery-Portable-Station-Explorer-Generator/dp/B07K5FBF1B?ref_=Oct_s9_apbd_omwf_hd_bw_b6pSVv1&pf_rd_r=R8Z7310DMPCNGR5KCSRT&pf_rd_p=74426d14-e399-5895-a519-6ade6a6c4a51&pf_rd_s=merchandised-search-10&pf_rd_t=BROWSE&pf_rd_i=6257186011

< $700:

https://www.amazon.ca/Jackery-Portable-Solar-Ready-Generator-Emergency/dp/B07SM5HBK1?ref_=Oct_s9_apbd_omwf_hd_bw_b6pSVv1&pf_rd_r=R8Z7310DMPCNGR5KCSRT&pf_rd_p=74426d14-e399-5895-a519-6ade6a6c4a51&pf_rd_s=merchandised-search-10&pf_rd_t=BROWSE&pf_rd_i=6257186011

~ $1400:

https://www.amazon.ca/Jackery-Portable-Explorer-Generator-Optional/dp/B083KBKJ8Q?ref_=Oct_s9_apbd_orecs_hd_bw_b6pSVv1&pf_rd_r=R8Z7310DMPCNGR5KCSRT&pf_rd_p=b01b827f-620c-56ab-b6bd-25e3471fd7db&pf_rd_s=merchandised-search-10&pf_rd_t=BROWSE&pf_rd_i=6257186011

>$2000
https://www.amazon.ca/Jackery-Portable-Explorer-Generator-Emergency/dp/B08P2Q83BY/ref=asc_df_B08P2Q83BY/?tag=googleshopc0c-20&linkCode=df0&hvadid=459448773741&hvpos=&hvnetw=g&hvrand=12808121298464564489&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1001930&hvtargid=pla-1054215440802&psc=1

Finally, we get to the future of mankind:

https://en.wikipedia.org/wiki/Vehicle-to-grid
https://www.virta.global/vehicle-to-grid-v2g

The future is V2G Vehicle-to-Grid technology which is expected to be available within a 1-2 year timeframe. Essentially, your next electric car will have built in capabilities to interconnect to the main power grid and to feed stored energy back into your house as required. This technology will be available shortly in the 2022 electric vehicles coming from Hyundai, Tesla and others.

So for this conversation, we are really talking about a very short-term solution to **extension-cord-connected emergency power** typical to what we find on the northern Saanich Peninsula. For many retired people cost will play an important part of any decision. As well, ease of use and convenience will factor in heavily for this demographic. Portable power packs fit the bill nicely.

Also note that for any power solution one should generally look for pure sine wave power outputs which is required for many electronic and medical devices (such as CPAP) machines. Modified sine wave power output by some models will damage the sensitive electronic circuits found in these devices, but would be fine for powering an electric motor or water pump on a farm.

Please contact me at **ken.norwick@gmail.com** or on my mobile **(250) 886-7506** to discuss emergency power solutions for home use.