

Home Micro Grid [HMG-M2]: Integrated Sustainable MG with Energy Storage Solutions for Homes with Battery and Solar Technology



Clean/ Sustainable/ Cheap Energy as You dream it.

Solution Overview:

We will install an integrated solar PV panels and battery packs as connected to your power panel in your home. This will enable you to have maximum use of clean solar energy as well as maximum benefit of charging battery during off peak and utilize during on peak periods. The battery can be charged from grid as well as from the solar PV panels. The system size will be optimized based on home load profiles and demand analysis to maximize your benefits of our solution.

Benefits to Homes:

- Reduce the electricity bill with minimum energy costs – especially during peak periods by lower cost electricity stored during off-peak hours.
- Provide electricity to Canadian demands as a clean environmentally focused energy solution.
- Provide critical emergency back-up electricity source during grid outages or blackouts.
- Manage and control energy at your home from anywhere in the world from your smart phone.

Installation Process:

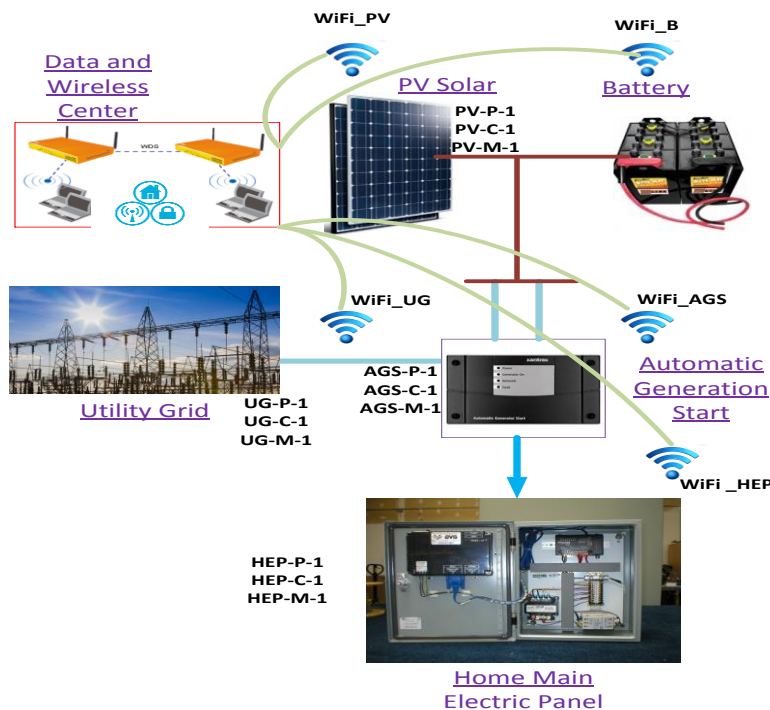
As part of our system installation, we will provide the following services along with our solution:

- We will conduct one visit to collect information about your loads and current systems, to perform profile analysis for accurate estimation of the demand
- Our technical team will perform system sizing and finalize the integrated system design and configuration
- Our installation team will visit your home to install our solution, which includes: electrical and structural installation, back up panel with ATS unit, and bidirectional meter (which will allow you to sell back to the grid)
- Our team will conduct onsite customized training sessions to help you monitor and operate your system efficiently
- We will provide post-installation technical support 24/7 with lifetime warranty and maintenance

Solution Details:

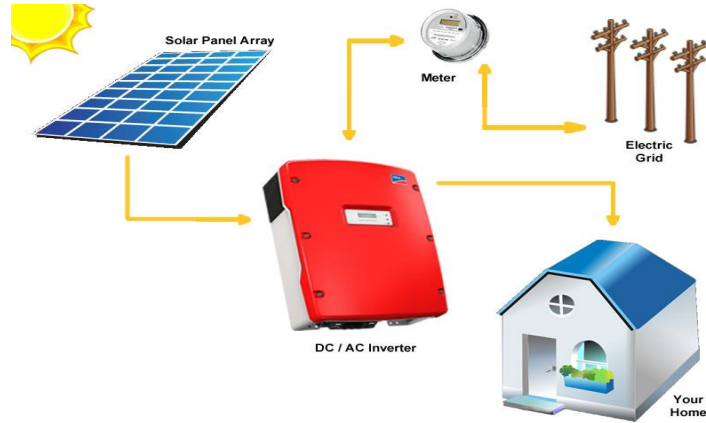
Integration of a hybrid solar & lithium-ion battery, based on specific load profile:

- 10 kWh Li-ion battery pack
- Solar PV panels with 3 MPPT 5kW solar inverter
- Bi-directional DC to DC battery converter
- (ATS) Automatic Transfer Switch
- Battery Charge Controller (Battery Management System)



Solution Alternatives and Models

HMG-M2-PV-5k:



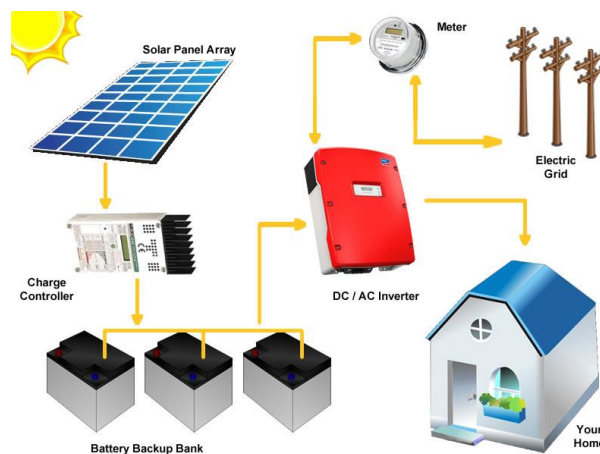
- System Cost (PV modules + Inverter + Installations BOS) = \$15,000 (estimated)
- System Savings per year = \$1,650 (estimated)
- **This level of savings, payback will be around 9 years from startup operating date.**

HMG-M2-BT-5k:



- System Cost (Battery Pack + Inverter + Installations BOS) = \$14,000 (estimated)
- System Savings per year = \$1,300 (estimated)
- **This level of saving, payback will be around 10 years from startup operating date.**

HMG-M2-PVBT-5k:



- System Cost (Solar PV + Battery Pack + Inverters + Installations BOS) = \$26,000 (estimated)
- System Savings per year = \$3,100 (estimated)
- **This level of savings, payback will be around 8 years from startup operating date.**

System Cost:

Cost will be estimated based on load profile, which will be determined in the first assessment visit. Total cost will be calculated based on the estimated system cost, which includes: PV, Battery, Electronic Components, Installation Components, and Meters (as referred in the show case and the detailed components in table 1 below). The integrated system installation and labor costs will be estimated and added to the system costs as a percentage of the system cost, depending on solution model and size.

Installation:

We will be responsible to engineer, construct and install each System in a professional manner following standards. The installations time will be agreed upon, after the down payment, as per the system model and size.

Maintenance:

We will be provide yearly maintenance for our systems. Maintenance is free for the first 3 months, and can be extended with maintenance and warranty contract.

Warranty:

5-year warranty on system components and installation. Battery has limited warranty.

Table 1: System Components

PV Solar Array

Description	Quantity
500W Modules: CSA / MC4	12
Two Tier Roof/ Ground Mount 205-215 Modules	2
MC 4MM #10 M/F connector -100'	4
3/4 Hole, 1/2" thread Strain Relief for Solar Modules	4
12 circuit/breaker, Separate 200A BUSBAR	1
15A PV Breaker for PV Combiner, 150VDC	4

Inverter 48V

120/240-60, 6000W, 48VDC Series Inverter/Charger	1
Power Distribution Panel	1
MPPT60 Charge Controller	1
System Control Panel	1
Auto Generator Start	1
QTY 1 Breaker 60A, 160VDC, panel mount, UL/CSA	2
Mounting and Wiring of single Inverter System	1
10', red and black heat shrink, Inverter to battery Cable	1

Battery 48V

Deep Cycle AGM 6V Maintenance Free Batteries 400 AH	8
16" 2/0 Battery Cables	7
Battery Cable Hardware: 1/4" x 1 1/2" BOLT	2
1/4" Flat Washer	4
1/4" Lock Washer	2
1/4" Nut	2
3/8" Flat Washer	16
3/8" Lock Washer	16
3/8" Nut	16