

The case for DCBUS Hybrid- Bimodal power

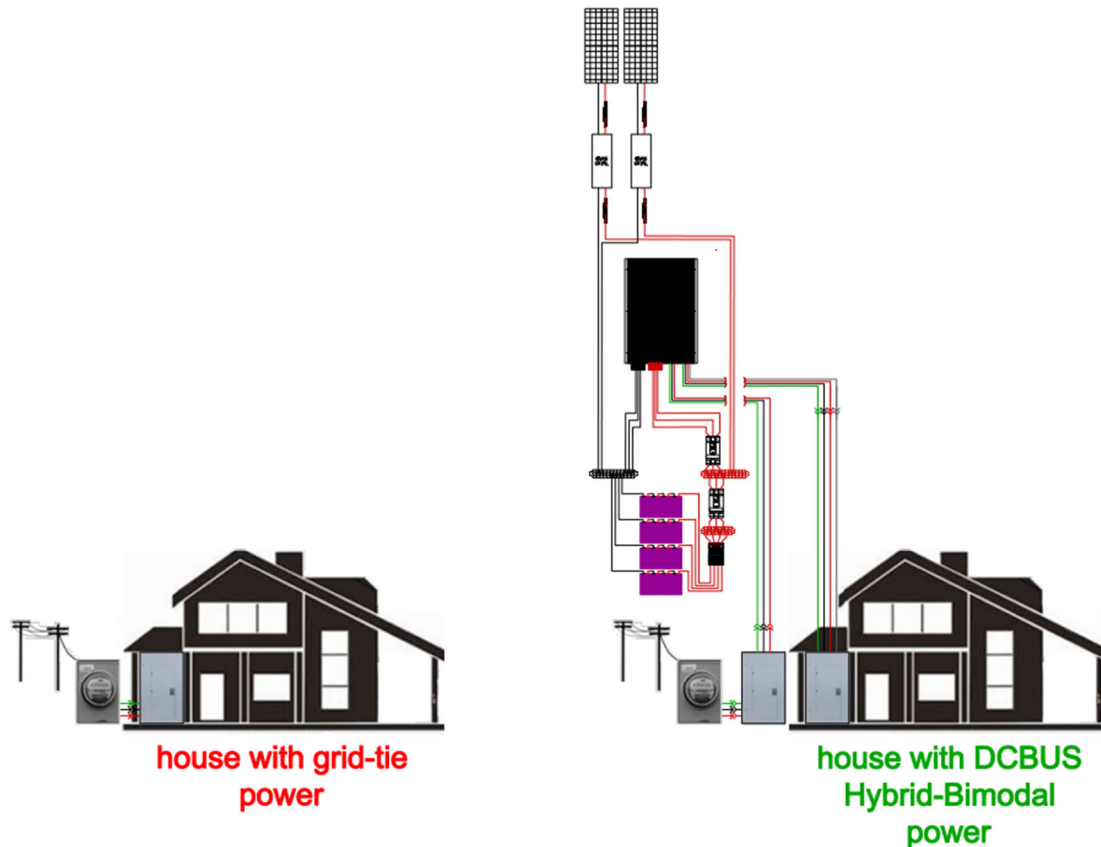
Introduction

FreeStar Power, LLC was established on February 8, 2018, by Michael E. Love. Herbert D. Richmond joined the corporation on August 27, 2018.

As a new electrical engineering & manufacturing company, our mission was to:

- 1) study residential electrical load,
- 2) prove the efficacy of DCBUS Hybrid-Bimodal power as a viable alternative power to utility (grid) power, and
- 3) develop a standard appliance for installations in US & worldwide markets that produces **clean, free, reliable** electricity, **autonomously**, by **DC to AC Inversion**.

We accomplished our mission. For 6 years we have designed, developed and operated the prototype of our product, **HarvesterIP**. The appliance is an “**Alternative Power Supply**” (APS), a DCBUS Hybrid-Bimodal power system sized to deliver AC electricity at power levels comparable to grid power & (whole house) generators. HarvesterIP is developed to the level of TR7 (technology readiness level 7). The prototype is operational at the FreeStar R&D lab in Humble, TX, an actual average-sized American suburban home.

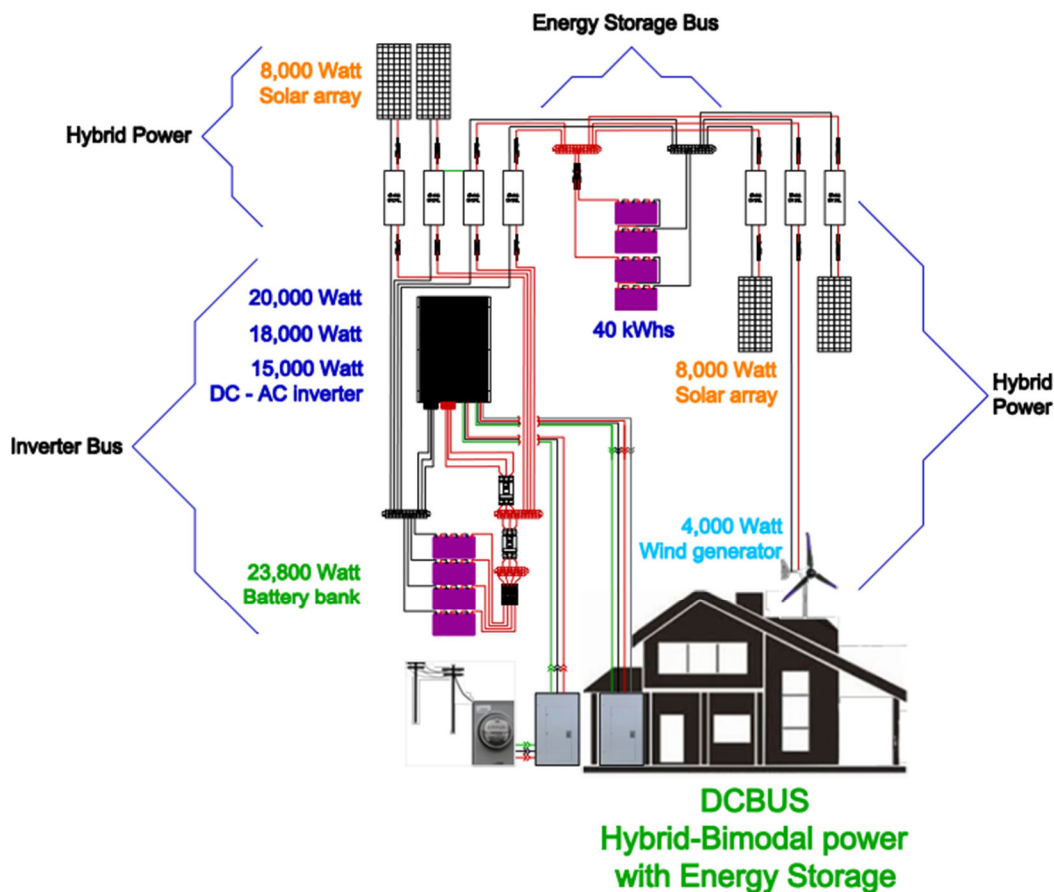


Unlike grid power & generated electricity, HarvesterIP neither generates electricity nor burns fossil fuels. HarvesterIP harvests (solar/wind) & stores (battery) renewable energy as DC power, and **inverts that power into AC electricity**, at the American standard for residential power bandwidth (20,000 – 24,000 watts).

Our **23,800-watt battery bank** is the foundation of the DCBUS which supports the full operational bandwidth of a **20,000-watt DC to AC inverter**. Renewable energy (solar/wind) supplies a hybrid flow of up to **16,000 watts** of DC power to the BUS.

These 3 DC powers establish a formidable DCBUS enabling local, **decentralized electricity production** by DC to AC inversion.

HarvesterIP makes 120/240VAC electricity from solar & battery power, at the location of the consumer, serving totally **free**, absolutely **clean** electricity to the home. It also serves utility (grid) power to the home. With HarvesterIP the home has **2 powers**, grid & DCBUS Hybrid, equipped for bimodal operation. Never in the 150-year history of utility power has there been 2 separate and equal powers on 1 home.



Our product, HarvesterIP DCBUS Hybrid-Bimodal APS, ushers in the new paradigm that our children will bring with them to the future. Our appliance solves all problems consumers face regarding their electricity use by enabling the consumer to make his/her own power. GHG emissions by electricity use are drastically lowered, cost for kilowatt-hour usage is drastically lowered, energy reliability and power bandwidth at location is doubled.

We developed HarvesterIP as a new application of DCBUS Hybrid-Bimodal power for residential use. However, our APS has far more applicable uses than just residential. *Everywhere* the sun shines and electricity is needed is an opportunity to apply our product.

Reduction of GHG emissions caused by electricity production & usage

The Grid generates ALL electricity for the entirety of modern society, which is an unfathomably large electrical load, requiring gargantuan amounts of fossil fuels be burned in motors that are belching out billions of tons of hydrocarbons into the atmosphere, causing destructive weather patterns & literally choking out plant and animal life in the terrarium we call Earth. For the sake of modern society, Grid **MUST** continue this method of power production because there is no other way to produce the electrical power at levels required to hold OUR collective load from centralized generators feeding massive transmission & distribution systems. Grid is an ocean of **generated AC electricity** that's killing the planet. The solution is to stop running AC generators and instead, utilize **DC to AC inverters**.

Decentralized (local) DC-AC inversion

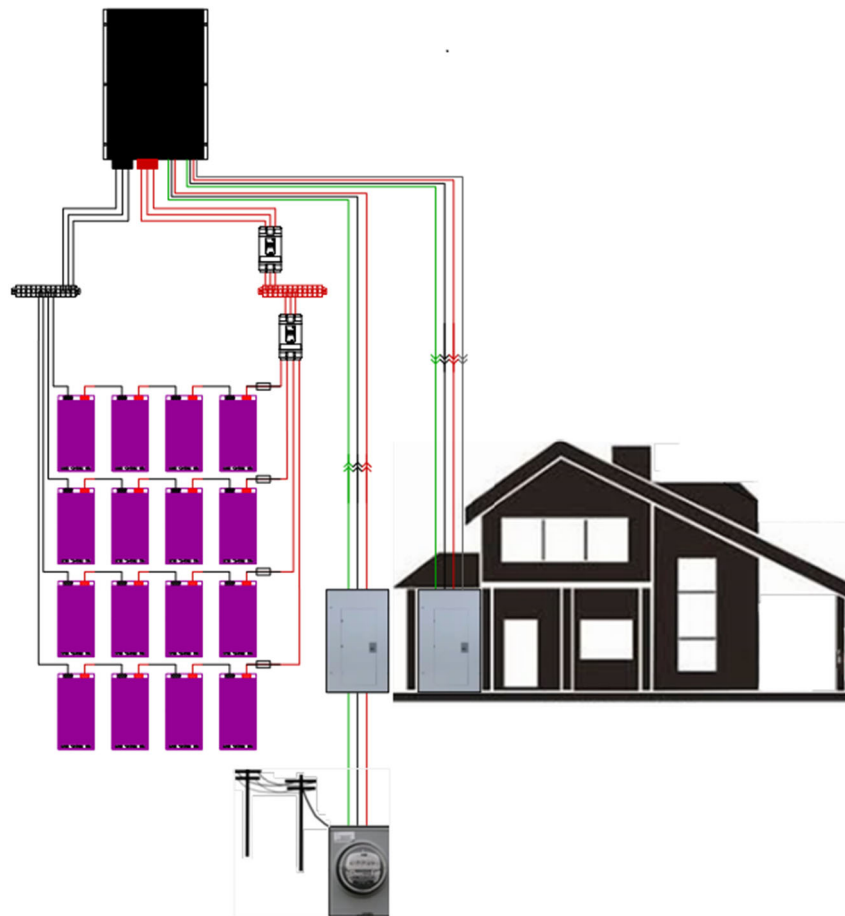
HarvesterIP APS removes grid power from the breaker panel and supplies inverted AC power derived from battery/solar/wind. There are NO GHG emissions in the process of DC to AC inversion. With energy storage the APS can supply pollution-free electricity to the home for 18 hours/day, constituting 75% reduction in GHG emissions caused by consumer electricity usage.

With every installation of HarvesterIP electrical load is removed from the Grid for periods of time. As consumers 1 by 1 employ DCBUS for their own benefits, **collectively, homes equipped with DCBUS reduce tremendous amounts of load on the Grid**, resulting in less strain on the Grid during daily peak usage periods and reduction in GHG emissions. DCBUS reduces the consumer's carbon footprint for electricity usage.

Increase in energy reliability & supply for consumer electrical load

Every load center (breaker panel) is literally tied to the Grid. Grid has the sole responsibility to provide AC electricity in support of modern civilization. Energy reliability is the highest priority for Grid because we all are 100% dependent on that 1 power.

HarvesterIP APS employs an automatic transfer switch (ATS) with 2 power inputs (Grid & DCBUS) and 1 output (to breaker panel). This marks the end of “grid-tie” and the genesis of local (decentralized) power production. The consumer now produces autonomous electricity “on location”, increasing energy reliability & supply by 100%. Consumer has total control of power flowing to the home and has doubled the power bandwidth.



With every installation of HarvesterIP electrical power is doubled at that location. Consumer transfers all or most of the load to DCBUS, leaving Grid power unused and available. Consumers can use Grid power for loads that are not suitable for DCBUS or exceeds the APS's capacity. There is no need for Grid to increase its generating & distribution capacity because HarvesterIP establishes new power at every location on the planet.

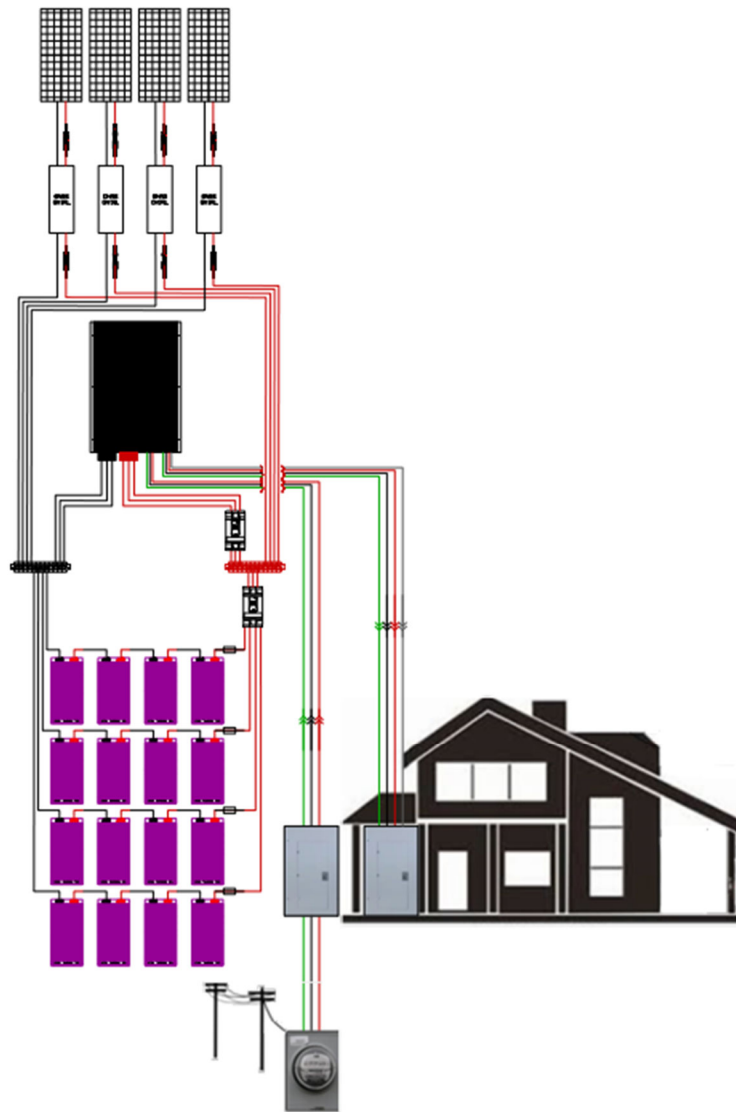
Having backup power during Grid outages is fast becoming the highest priority for consumers who want to invest in energy reliability. They justify spending large sums of money for the 1 function, generating power during Grid blackout. HarvesterIP APS provides whole-house UPS (uninterruptable power supply) functionality for Grid outage events, in addition to its daily operation of APS functionality. HarvesterIP is used every day benefiting the consumer, returning on the investment of energy reliability and independence.

Reduction in consumer cost for electricity usage

Modern civilization utilizes electricity 24 hours/day, 365.25 days/year, and pays the Grid for every kilowatt-hour of power we use. HarvesterIP harvests renewable energy and other forms of hybrid power to produce kilowatt-hours from DCBUS, which offsets Grid kilowatt-hour usage & expense.

HarvesterIP APS harvests solar power between sunrise and sunset, holding and carrying consumer electrical load off-grid for 12+ hours. By incorporating additional energy storage & hybrid sources, autonomous electricity production can be extended to 16 or 20 hours of off-grid operation.

Hours off the Grid means hours of free electricity. HarvesterIP reduces Grid electricity usage by 50% to 66% to 83% and higher. DCBUS enables the consumer to achieve 100% autonomous electricity production. DCBUS power inverted into AC electricity is free (and clean) kilowatt-hours for the consumer to use.



FreeStar Power's initial offering is a 20/24kW APS for single-family dwelling usage. APS (alternative power supply) can be designed for ALL electrical loads, commercial, industrial, medical, agricultural, ... The list is endless. DCBUS Hybrid-Bimodal power reduces the cost of electricity in every aspect of modern civilization.

Increase in engineering, manufacturing, installation & service opportunities for American & world-wide markets

Architecture & Engineering

DCBUS represents a \$620B investment opportunity in the deployment of battery power world-wide. Architects have new work designing homes, buildings & structures with autonomous power production capabilities utilizing batteries. They will incorporate DCBUS, renewable energy, hybrid power and energy storage appliances into their designs, relieving the Grid of responsibility to provide power for new development.

Electrical and mechanical engineers have new work designing & building DCBUS power appliances. Removing load from the grid comes with it the responsibility of providing reliable power. Understanding electrical load and learning how to hold & carry load for periods of time is the new task of engineers. Localized electricity production from DC to AC inversion to hold electrical load becomes new opportunity—for decades for electrical engineers, designers and integrators.

Manufacturing

DCBUS DC to AC inversion presents a grand opportunity for the manufacture of alternative power supplies (APS) everywhere in the world. FreeStar Power seeks funding to manufacture, operate & display 500 HarvesterIP APS system in a pilot program deployed on the homes of senior citizens on fixed incomes, who struggle with electricity costs and (a lack of) energy reliability. Once our product is in production there will be no stopping the proliferation of DCBUS & Decentralized Electricity Production. HarvesterIP APS makes clean, free electricity everywhere on the planet that the sun shines and the wind blows. The opportunity will be too immense for one manufacturer of APS systems to satisfy the demand. FreeStar Power will design, build and deploy tens of thousands of APS systems, leading the way for engineers and electricians to follow as we tackle the energy problem.

DCBUS Hybrid-Bimodal power is an assembly of discreet components operating in synergy to make electricity. These components are batteries, inverters, charge

controllers, solar modules, wind generators, permanent magnet (PMG) generators, ... The integration of these components into an APS appliance also requires computer technologies, electrical switching, circuit protections & grounding, ... The components and appurtenances present rises in manufacturing opportunity for American investment and American workers.

Installation, Service & Repair

The deployment of APS technologies to solve the energy problems will require installation at every location that uses electricity. Every home, apartment complex, building, business, day care center, gas station, traffic intersection, hospital, ... will require professional installation. This is new work for electricians everywhere. HarvesterIP is electrical switchgear, designed and built by electricians, for the electrical industry. It must be installed by a licensed electrical contractor. The electricians are a standing army of installers stationed everywhere HarvesterIP is needed, which is everywhere. Installations and service events of DCBUS Hybrid-Bimodal power is new work for electricians and technicians in every local economy for many decades to come. DCBUS Hybrid power is new opportunity for existing and growing solar and wind power contractors. The current prevailing solar technology is grid-tied, grid-dependent systems. These are totally useless during grid power outages and are often delayed in commissioning and permitting by the Grid. HarvesterIP establishes DCBUS power on the customer side of the electrical demarc (the meter), which is not regulated by the PUC. There are no special permits required to use solar and wind power in hybrid configuration charging to DCBUS. Renewable energy industries will flourish as rooftop solar and wind power see exponential growth supplying hybrid power to APS appliances.

HarvesterIP is the most prolific green energy technology mankind can deploy for impacting change now

The purpose of DC to AC Inversion is to replace fossil fuel generators with battery/inverter buses, to eliminate GHG emissions from electricity production. DCBUS Hybrid-Bimodal power is the electrical methodology that makes this possible. HarvesterIP APS ushers modern civilization into the new paradigm of Decentralized Power Production & energy independence; a small step for man, a giant leap for mankind.

In conclusion, FreeStar Power presents HarvesterIP APS as the solution to deploy: 1) in fighting climate change & reducing GHG emissions, 2) to establish alternative power for energy reliability & independence, 3) to reduce consumer cost for electricity usage, and 4) to reduce electrical load on the Grid.

