



**JetStream**  
Smarter Sustainability

# ***CHES***

*Clean Hybrid Energy Scalable System*



## *The value of clean independent energy*

Personal convictions about the environment and energy independence are reasons people give for wanting an off-grid system. The peace of mind that comes with a self contained, clean system provides a sense of well being and energy security. An added benefit from this lifestyle choice often results in greater energy awareness and efficiency in use.



A first step towards alternative energy systems is evaluating what is in place today. There are different approaches that can be taken to reduce your existing energy consumption and costs, so that when you are at a point of moving to an off-grid or hybrid system, it will be the right size for your needs.

While off-grid energy systems offer flexible and scalable solutions based on personal need and desired investment, there can be challenges. Achieving consistent and reliable sustainable energy (security and reliability) is a difficult objective to attain using conventional standalone approaches, such as solar or wind only.

Consider a hybrid solar-wind energy system -- because the peak operating times for wind and solar systems occur at different times of the day and year, hybrid systems are more likely to produce power when you need it.

*energy.gov*

**Department of Energy**

The **Clean Hybrid Energy Scalable System (CHESS)** advanced power generation system provides an approach that improves energy efficiency and lowers overall emissions, while increasing energy security for you.

# CH<sup>ESS</sup>

## *Clean Hybrid Energy Scalable System*

CH<sup>ESS</sup> leverages state-of-the-art designs and patented technology to integrate solar and wind energy with multiple energy types to maintain the advantages of clean power while eliminating the variability that detracts from renewable systems. The integration of three redundant power sources provides a steady supply of electrical power with maximum efficiency.

The CH<sup>ESS</sup> solutions employ methods and techniques that improve the robustness of energy delivery systems throughout their operational lifecycle while also reducing the risk of loss of energy services due to economic dislocations, depletion of natural resources, natural or man-made disasters. The Clean Hybrid Energy Scalable System (CH<sup>ESS</sup>) family of products capitalizes upon leading design principles to provide cost effective, reliable, and sustainable energy support adaptable to a wide range of conditions.



*CH<sup>ESS</sup> Mobile System*

CH<sup>ESS</sup> encompasses a suite of solutions that can scale to meet your specific implementation needs. The CH<sup>ESS</sup> mobile, mini and micro-grid systems provide:

- Cost savings over grid extension
- Demonstrated reliable energy output throughout the entire day
- Autonomous operation of energy sources
- Redundant systems component design
- Limited refueling requirements
- Capacity to scale to meet demand (incorporating new energy sources)
- Multiple output types at large capacities
- Low emissions and environmentally friendly electricity

The Clean Hybrid Energy Scalable System (CHESS) is designed to combine both renewable and non-renewable energy sources to produce a source of electrical power. The renewable component includes a solar panel and a small wind turbine, whereas the non-renewable component is an auxiliary tri-fuel generator.

***One of the major modern issues with renewable energy sources is that they are neither constant nor consistent. This is necessary to maintain a constant energy output when the variability of the renewable energy affects the output load.***

JetStream Energy Systems integrates renewable energy sources in a system that is adaptable, user-friendly, rugged, and scalable to meet the different power demands.

## *The CHESS solution:*

The CHESS Intelligent Master Control system Integrates the power generation systems to maximize component utilization, providing a consistent source of energy.

Is a patented technology that integrates renewable energy sources for micro-grid, off-grid and retrofit power needs.

Uses a combination of wind, solar and generator augmentation to provide a more reliable source of energy.

Maintains constant energy output when the variability of the renewable energy affects the output load

Is deployable as both a mobile and fixed system. Set up time of the mobile system is estimated at 4 hours. Fixed installations vary based on site specifications.

Is compatible with most leading renewable energy components and provides integration based on a plug-and-play approach.

Is designed to be scalable based on power generation needs. (Variable kW - mW output).

Provides a steady source of electrical power than can be harnessed to operate any electrical device providing all standard output interfaces, including 120 and 240 V AC outlets, USB, and other DC charging interfaces.

Operates autonomously and accurately monitors and balances the power produced by the wind turbine, solar panels, and auxiliary systems.

## *Deploying the CHES solution:*

There are a number of variables that should be considered when deploying an off-grid, micro-grid or retrofit energy system. To optimize the CHES solution for you, we provide energy systems experience and consulting to help you best evaluate your needs and energy requirements.



### **Deployment Factors:**

- Renewable energy availability sources and performance characteristics
- Portable vs. Fixed installations
- Systems output requirements (kW-mW)
- State renewable energy policy regulations
- Turn Key installation or retrofit
- Renewable energy credits / Incentive programs
- Site specifications (Commercial / Residential / Agricultural / Others)
- Augmentation vs. sole power source
- Energy proximity analysis
- Component integration
- Additional factors...

The benefit of the CHES energy system is the flexibility to adapt to a number of different scenarios to meet your energy needs. We'll work with you to help or facilitate a deployment factors analysis for determining a right-sized solution.



### **Deployment Process:**

- Deployment Analysis and Energy Use Profile; to understand your current usage and energy needs
- Design – what type of systems fits best to the site it is targeted for
- Incentives Analysis – what type of incentive programs may help offset costs
- Inspection / Installation – coordination with local install teams to deploy the CHES system.
  - For mobile systems, coordination of delivery
- Customer Support – Customer CHES package and documentation
- Customer Care – follow up and maintenance as needed to ensure maximum performance

## **CHES** *Smarter Sustainability*

The value of a microgrid or mobile system lies in its ability to enable the user to rapidly deploy electrical power to high-demand low-density locations within hours or days, depending upon need. Customers requiring portable sources of electrical power face the dilemma of choosing between traditional fossil fuel generators and clean but potentially inconsistent renewable power sources, often with limited production capacities.



The JetStream engineering team and our strategic partners designed CHES to our **Smart Sustainability Standards (S3)** providing hybrid energy production in a plug-and-play system that allows for customization and scalability. The S3 architecture principles focus on the creation and maintenance of a flexible, dynamic, and scalable platform that can be rapidly integrated, and deployed to address the specific energy requirements of our customers.

The S3 CHES architecture is flexible enough to work with commercially available hardware, facilitates ease of expansion and scale, as well as the ability to incorporate constantly evolving and disparate energy technologies with the goal of serving our local and global communities.

**To find out more information on the CHES  
clean independent energy family of  
products contact JetStream at:  
[info@jetstreams.biz](mailto:info@jetstreams.biz)**

