

## THÉ FUTURÉ FERERGY

**ENERGY MANAGEMENT SYSTEM SOLUTIONS (EMS)** 

Control | Insight | Optimization | Savings

## **A Custom EMS Solution Based On:**

FUNCTION AND CONFIGURATION OF BESS | LOCAL REGULATORY REQUIREMENTS | SERVICES OF BESS

Nor-Cal's EMS solutions are custom-built with open architecture design to meet our customer's site specific requirements.

## **Key Features**



#### Experience

50+ years of combined controls and automation experience / 500+ completed energy projects / 17+ GWac engineered.



## **Turnkey Solutions**

Full plant control, monitoring, EMS and analytics provided in an all-in-one solution.



## Reputation

Nor-Cal is the trusted SCADA provider for the industry's top Asset Owners and EPCs.

## , Cyber Security

All SCADA solutions are lowmedium NERC CIP impact compliant.

#### **Scalable**

All SCADA solutions are easily scaled to allow for future modifications, upgrades and enhancements.



### Reliability

Non-proprietary solutions that utilize well known off the shelf solutions, to allow for fast and reliable replacement, support, or augmentation in the future.



## **Open Architecture**

Solutions compatible with most manufacturers and OEMs for long term supportability.



## **Customer Service**

We are responsive, reliable and dependable.

## **Solutions Overview**

Energy Management Systems (EMS) is a supervisory controller that dispatches energy storage and/or generation systems. It optimally monitors and controls each energy storage system as well as interoperates multiple generation systems.



EMS is required to address two main engineering challenges faced in efficient operation of large-scale energy storage systems:

Optimal scheduling of grid energy storage to guarantee safe operation while delivering the maximum benefit.

Coordination of multiple grid energy storage/generation systems that vary in size and technology. It is common for the subsystems of an energy storage system to be made by different manufacturers. Therefore, one of the functions of EMS is to coordinate their operations.

## **EMS Controller System Operations**



Energy Applications like energy arbitrage, energy shirt time, etc. Power Applications like ancillary services, AVR renewable capacity firming, etc. Rack and master BMS interface Controls for battery charging, discharging, balancing and SOC System-level and component-specific alarms Instantaneous and automated remote-shutdown capability Communication interface with customer systems via OPC-UA or DNP3

## **EMS HMI Graphical Screens**



Web-based interface Customizable Allow changes in settings and control modes POI Data: MW, MVar, voltages, currents Inverter data: MW, MVar, voltages, currents Battery System Data: SOC, SOH, MW, voltages, currents, etc. Battery Module level data: SOC, SOH, temperature, current, voltage, etc. Act as master site controller for real and reactive power commands in compliance with LGIA and PPA Alarms and events

#### Inverter controller interface

# Nor-Cal Controls' EMS solution is custom-built to facilitate:

#### ITC compliance: Avoid charging from Grid

Log all charging activity to establish 75-100% charging from renewable energy source in first five service years to fully capture the tax credits.

Control export of PV Power to Grid per user specific maximum limit by charging ESS.

Application to capture solar energy that is otherwise wasted during:

Mid-day inverter clipping or Curtailment from the utility.

ESS discharge to meet export requirements without exceeding export requirements.

Scheduled P/Q control of ESS at any time.

Any additional site specific requirements.

### **On-going Maintenance** and Support Service Level Agreement (SLA)

- Telephonic support
- Monitored email support (ticketing)
- Remote assistance using Remote Desktop and a virtual private network (VPN)
- Planned or Emergency On-site Support
- Quarterly system health check



### Hardware

- Windows based virtualized or standalone servers for SCADA and Historian
- GE RX3i PLC as a power plant controller
- Full SCADA rack with single or redundant PLC(s)
- Field network communication enclosures
- MET stations (if solar on-site)



#### Software

- Inductive automation -Ignition HMI + Perspective
- Canary Labs Historian
- Kepware

## On-site Integration and Testing

- Factory acceptance testing (FAT)
- On-site commissioning support
- Site acceptance testing (SAT)
- Remote engineering and testing support through COD and Energization



## **Operator Training**

- Remote, site specific SCADA system training (hardware and software)
- Additional training options available upon request

**Nor-Cal Controls** has partnered with Flow to enhance our SCADA and EMS offerings by providing the ultimate analytics framework, centered around reliable data and critical insights, right at your fingertips.

The Flow Analytics framework defines, transforms, and openly shares critical information, for an individual site or fleet of resources giving you a single endpoint to query data from all of your operations.



flow-software.com



Your Project. Our Passion.

## **GET IN TOUCH**

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