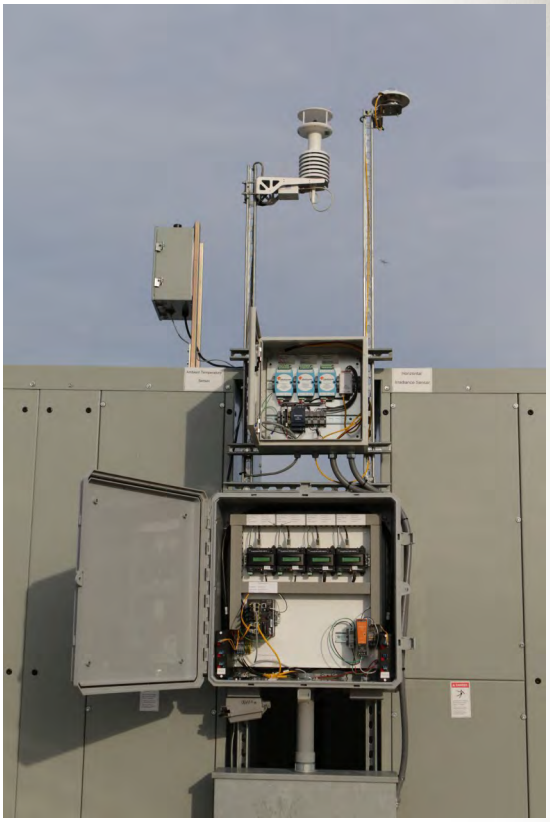
Affinity Energy
Reliable Control Solutions

UTILITY-SCALE SOLAR SCADA & INSTRUMENTATION

Focused on PV project requirements and schedule sensitivity

Affinity Energy's dedicated team of solar professionals are fluent in the language of utility-scale PV environments, and have a diversified portfolio ranging from 2MW to 550MW.

Our high degree of focus on controls and instrumentation for PV solar means we're able to develop systems that meet diverse utility interconnect requirements and stay on schedule.



AT A GLANCE

- 2MW - 550MW experience
- >100 solar site projects
- Work with EPCs, developers, owners/operators
- Turnkey or a la carte
- Comply with interconnect requirements
- PV solar controls and instrumentation focus
- Scalable and flexible

—EPCs—
We handle complex instrumentation & control

We can take turnkey or a la carte responsibility for specification, procurement, installation, and commissioning of instrumentation and control for your solar project to ensure it meets contractual requirements of the IA and PPA, as well as specific owner/operator requirements.

—Developers—
We extend your capability to construct more sites

In locations where utility interconnect requirements are more stringent, we offer active power and voltage control capabilities that allow for interconnection where a project would otherwise not be feasible. Our control systems enable solar farms to work well on very soft grid connections.

—Owners/Operators—
We give you the data to operate at peak output

Maximize your annuity revenue from your PPA with a variety of low-cost systems that deliver real-time plant information pulled from an often overwhelming amount of plant data. Then, push that information into your existing O&M platform, or talk to us about a custom solution.

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MEET PROJECT REQUIREMENTS

We're committed to help you meet contractual and operational requirements while maximizing short and long term solar farm interests.

SCADA and control system capabilities help you:

- Meet complex project requirements.
- React appropriately to unexpected grid conditions.
- Support difficult IA requirements such as ramp rate limiting, voltage and/or frequency droop, voltage scheduling, and integrated energy storage.

SOLAR EXPERTISE

In a young industry where available resources often lack solar expertise, we have completed instrumentation and controls projects at over 100 utility-scale solar sites connected to distribution and transmission.

At every project we complete, we place specific consideration on interconnect agreement requirements, the customer's monitoring platform, and cost.

We design, procure, install, and commission the spectrum of solar instrumentation equipment including:

- MV transformer I/O (contacts or analog values)
- Meteorological stations
- Reference modules
- Soiling monitoring systems
- LV/MV/HV metering and substation equipment
- Tracker systems
- Inverters (string or central)
- String level (combiner box) monitoring

"When my client needed a Modicon M340 PLC solution for a 135MWDC solar farm, I knew exactly who to go to. Affinity Energy's expertise with mission critical power systems and PLCs turned a fire drill into a cake walk.

From the drawings to the assembly, programming, and testing, Affinity Energy delivered a turnkey solution on time and in budget. I would highly recommend Affinity Energy for PLC solutions."

Ken Agee, President, Critical Power Resource LLC

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FLEXIBLE, CUSTOMIZABLE, & TURNKEY

Depending on your needs, we have the capacity to serve a full turnkey solution or a la carte services as needed, including, but not limited to:

- System installation
- Design/architecture
- Commissioning
- Programming
- Testing
- OEM coordination
- Training personnel
- Engineering
- Emergency field services
- Configuration
- Hardware acquisition
- Serial device cabling
- Maintenance/repairs
- Upgrades
- Data collection
- Network communications (fiber optic, serial, wireless, Ethernet)

Affinity Energy can deploy 'off-the-shelf' systems, such as AlsoEnergy, Draker, Trimark, or others, or provide total customization. Our control systems are engineered to be scalable from a single inverter to hundreds of MW, with a consistent look and feel. Ultimately, your system will be of the highest quality and provide maximum financial benefit.

RECENT PROJECTS

Merced Co., CA – 135MW

Conetoe, NC – 80MW

Hope Mills, NC – 78MW

Halifax Co., NC – 30MW

Alamosa, CO – 30MW

Eure, NC – 20MW

Beaufort Co., NC – 20MW

Nash Co., NC – 12MW

Chocowinity, NC – 10MW

Kenansville, NC – 6MW

Mt. Olive, NC – 6MW

Newton, NC – 5MW

Goldsboro, NC – 5MW

Mount Airy, NC – 3MW

Shelby, NC – 2.5MW

CUSTOMER REFERENCES

Contact information available by request

Operations & Maintenance Manager
SunEnergy1

Project Executive
WB Moore

Operations & Maintenance Director
O2EMC

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SCADA INSTRUMENTATION

Crafted from high quality industrial grade software and hardware components, Affinity Energy's SCADA instrumentation collects and analyzes data from grid-connected PV systems to provide in-depth system control, management, and performance monitoring.

We build intelligent systems to deliver the information you need to every solar PV system, regardless of size.

Because we are vendor-neutral, we recommend the system that best meets your PV monitoring needs, project requirements, and budget.

IMPORTANT DATA TO MONITOR

Devices around a PV plant produce an overwhelming amount of data. Having designed SCADA screens for plants up to 550MW, and with >500 inverters, we work with you to boil down important data into useful KPIs that indicate under-performing areas.

Typical Parameters

- MW hours (MWh)
- Overall PV performance
- Irradiance values
- Module temperature
- Meteorological data
- DC combiner output

Other Parameters

- Reference module output
- Diffuse irradiance
- Module soiling loss
- Voltage/PF variance at interconnect
- Transformer temperature or dissolved gas (GSU or MV)

SCADA TAKEAWAYS

24/7/365 access to performance metrics

Text/email alarming of events

24/7/365 remote support

3-year service warranty

Onsite maintenance & upgrades

Backup capability

Communication & monitoring

ABOUT AFFINITY ENERGY

Affinity Energy is a vendor-neutral control systems integrator with a national portfolio of over 800 power automation projects. The company helps customers throughout the U.S. operate efficiently, safely, and reliably. Founded in 2002, Affinity Energy is headquartered in Charlotte, NC.

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