



**NRG**Systems®

# **FLARE**

*Solar Resource Measurement*

NRG Flare is a portfolio of solar solutions that provide the data you need to successfully plan and operate your utility-scale photovoltaic projects. Encompassing everything from standardized hardware to data management tools and installation and maintenance support, our turnkey systems ensure reliable and repeatable performance, every time.

# Flare Systems

NRG offers two complete measurement solutions – the Flare SRA System for the early prospecting and formal pre-construction resource assessment of utility-scale PV projects, and the Flare SRM System (Tower and Array options) for performance monitoring per IEC 61724-1:2017.

## Solar Resource Assessment

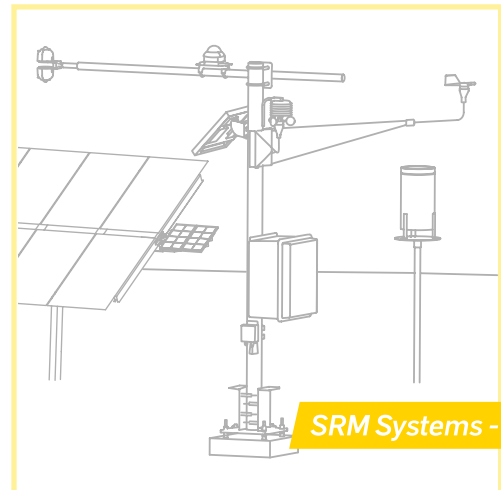
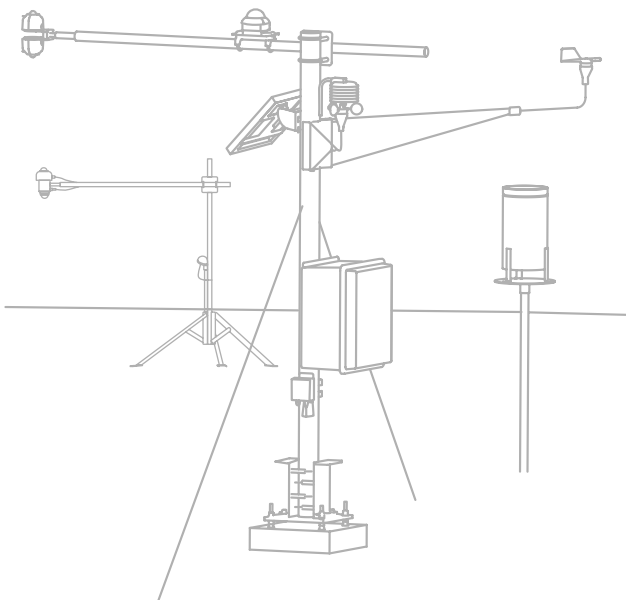
DEVELOPMENT PHASE

NRG Systems' Flare SRA System systematically collects "ground truth" meteorological data at a prospective solar energy production site. Our complete and integrated measurement solution captures all relevant conditions so users can lower the uncertainty of AEP estimates associated with utility-scale photovoltaic projects.

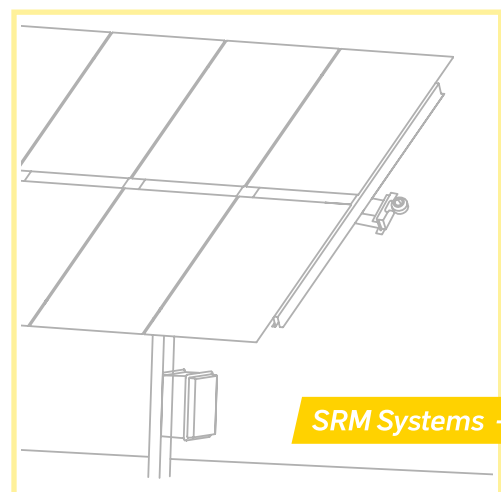
## Solar Resource Monitoring

OPERATIONAL PHASE

NRG Systems' Flare SRM System helps operators monitor and optimize the output from their utility-scale PV plant. Whether the project is tracking or fixed, mono- or bifacial, we help users detect inefficiencies at the module, string, and system-wide levels so they can launch real-time maintenance and build long-term, preventative maintenance and cleaning programs.



SRM Systems - Tower



SRM Systems - Array

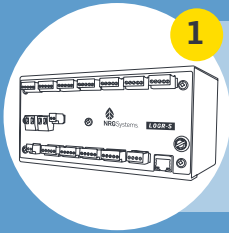
# How Flare Systems Work for You

NRG Systems' Flare Solar Resource Measurement solutions apply to pre-construction assessment through post-construction operational monitoring and are designed to transition seamlessly between the two.



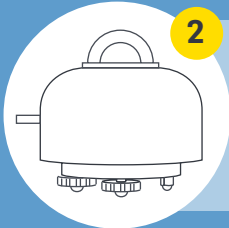
# Solar Resource Measurement Systems

## System Anatomy



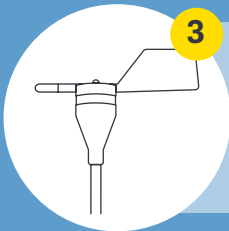
### Data Logging

LOGR-S & SymphoniePRO® data loggers



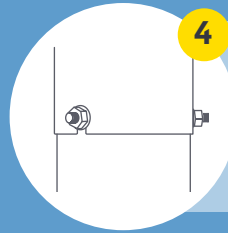
### Solar Irradiance

Industry-leading irradiance sensors



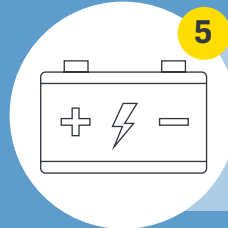
### Meteorological Sensors

Highly reliable, discrete sensors



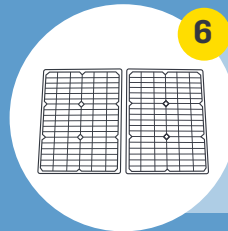
### Tubular Tower

Quick to ship, easy to install



### Auxiliary Power

Autonomous power in any setting



### Soiling Measurement

35 W or full-size PV options



### Turnkey Installation Services

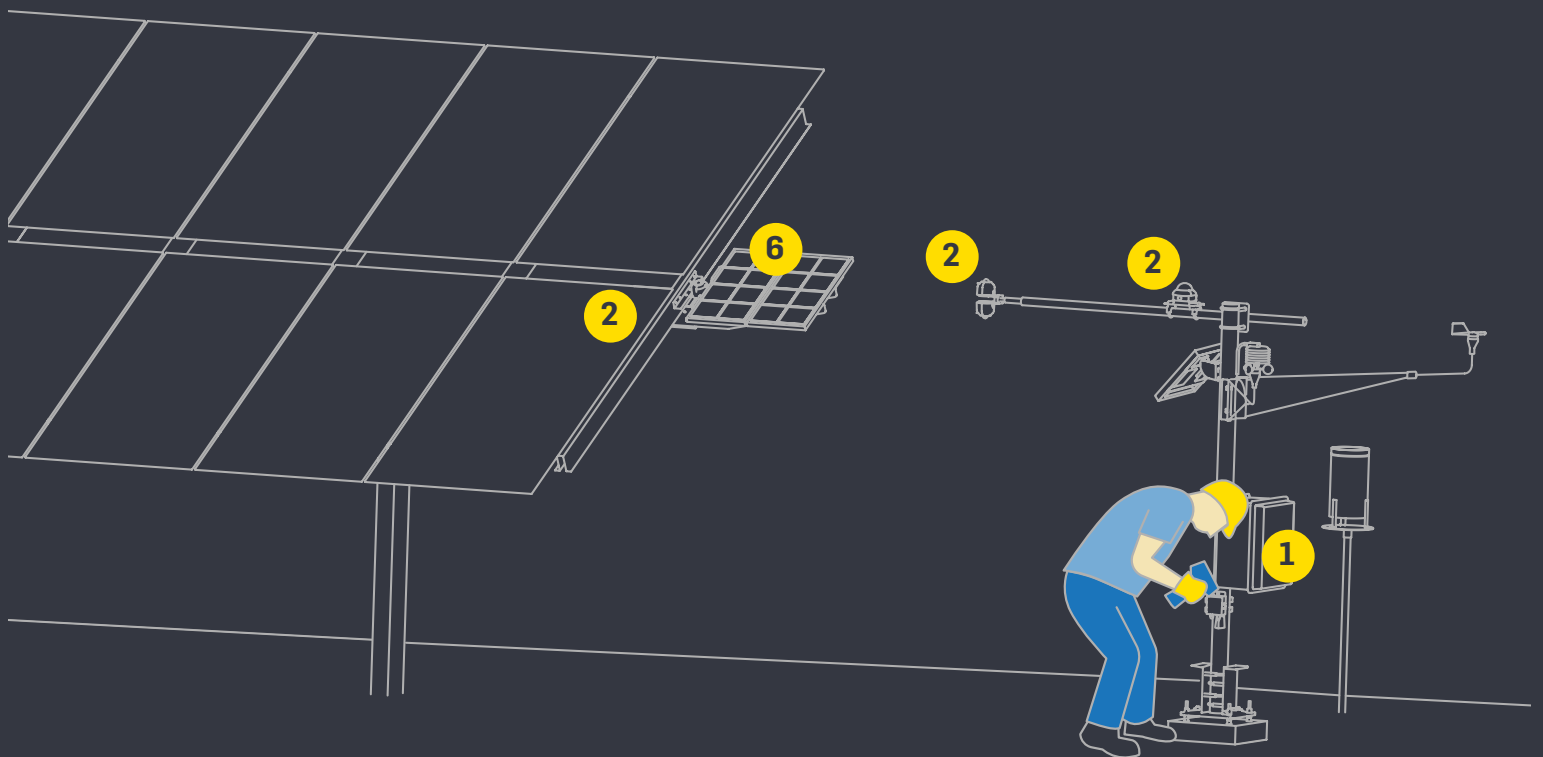
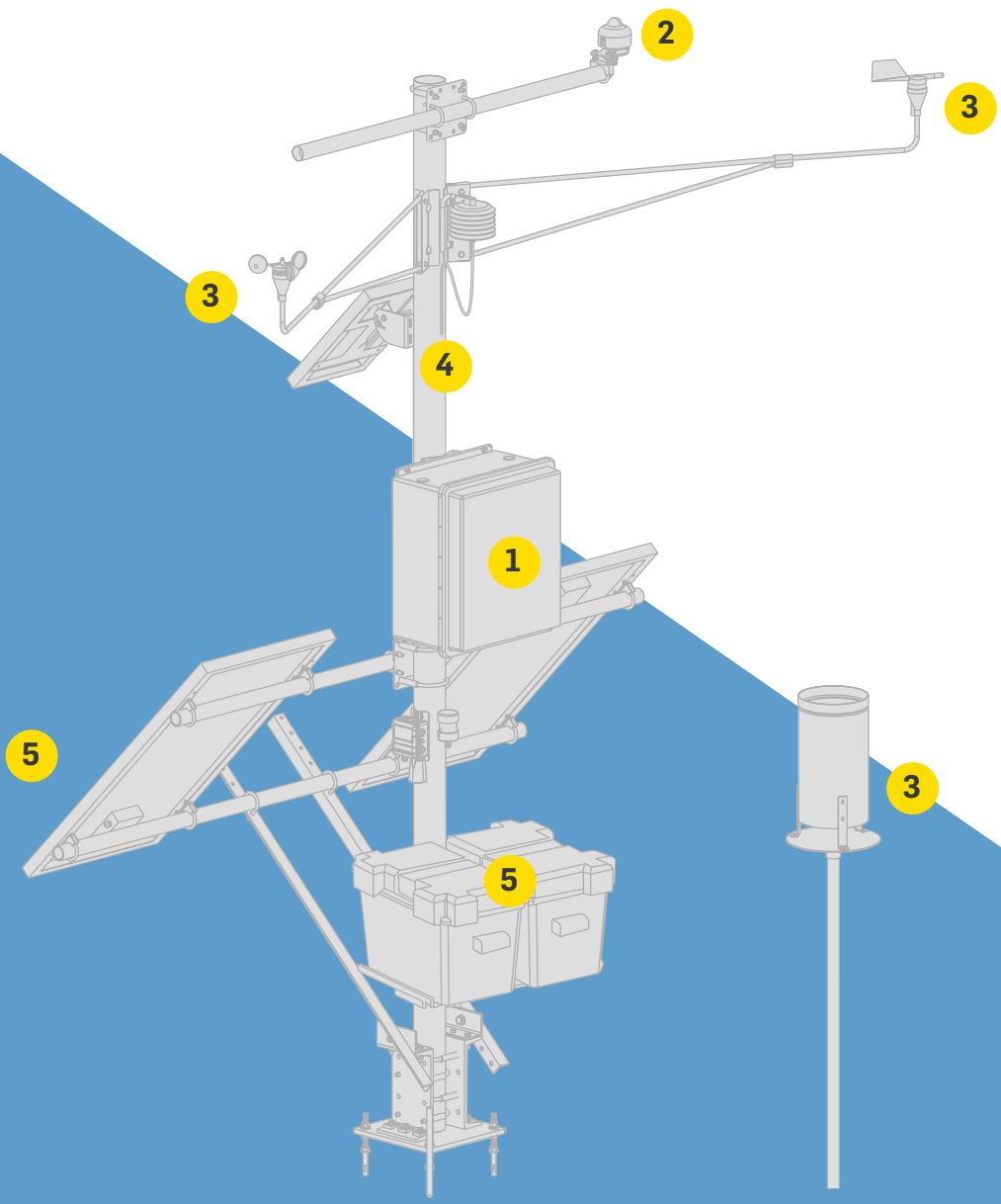
Support for all stages of project development



### NRG Cloud

Retrieve, store & share data, from anywhere



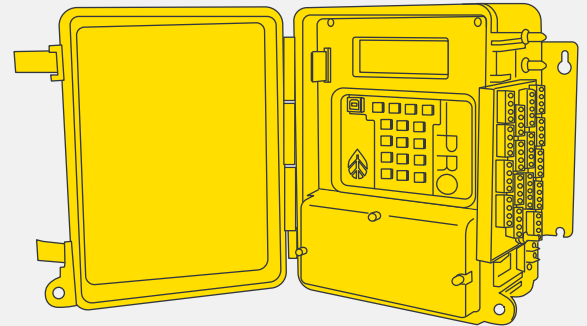
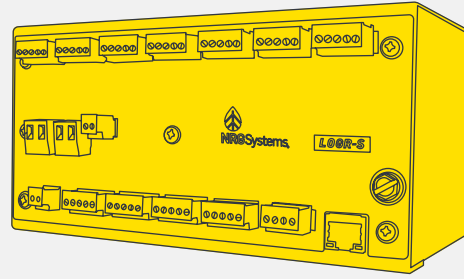


# Solar Solutions | Component Details

## Data Logging

### LOGR-S & SYMPHONIEPRO DATA LOGGERS

- High-resolution, high-accuracy measurements
- Long-term data storage
- Supports wide range of sensor types (analog, digital, serial)
- Calculated channels for additional solar information (solar position, direct normal irradiance (DNI), albedo)
- Easily configurable – no programming required
- Modular accessories for global communications & autonomous power support (Modbus TCP, Cellular, Satellite)



## Solar Irradiance

### ACCURATELY CAPTURE THE PRIMARY MEASUREMENT OF INTEREST IN A SOLAR RESOURCE CAMPAIGN

- All irradiance components (Global, Diffuse, & Direct) supported
- Class A, B, or C pyranometer options
- System compatibility with all industry-leading sensor brands
- Output options: analog vs. serial ("smart") sensors
- Thermopile pyranometer or PV reference cell
- Mounting flexibility for horizontal vs. plane-of-array irradiance capture
- Pyranometer heating & ventilation options

## FEATURED SENSORS

Spectrally flat class A pyranometer with both analog and digital outputs



Innovative class A "smart" sensor with internal heat & ventilation

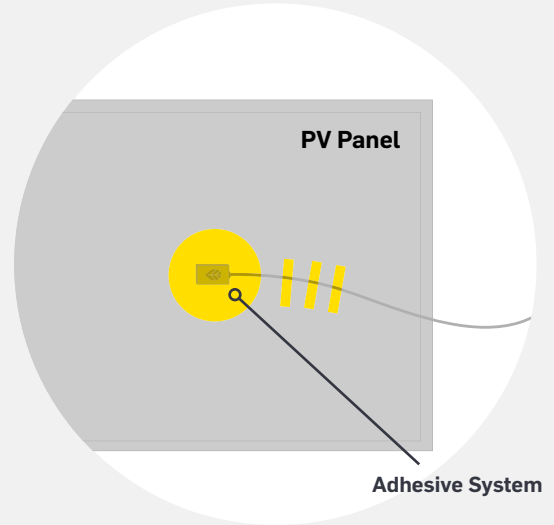


Captures all three irradiance components (GHI, DHI, DNI (calculated)) with low power & no moving parts

## PV Module Temperature

ACHIEVE IEC CLASS A MEASUREMENTS USING OUR HIGH-ACCURACY 0.2 C INTERCHANGEABLE 10K NTC THERMISTOR SENSOR

- Our 0.2 C interchangeable 10K NTC Thermistor sensor ensures Class A measurements per IEC-61724-1:2017
- 4-wire configuration ensures accurate measurement regardless of cable length and enables flexible positioning on array
- Easy and repeatable installation and long-term performance via specially designed adhesive system



## Meteorological Sensors

COST-EFFECTIVE AND INDIVIDUALLY REPLACEABLE MET SENSORS CAPTURE:

- Wind Speed
- Wind Direction
- Ambient Temperature
- Relative Humidity
- Barometric Pressure
- Precipitation

## Tower & Mounting

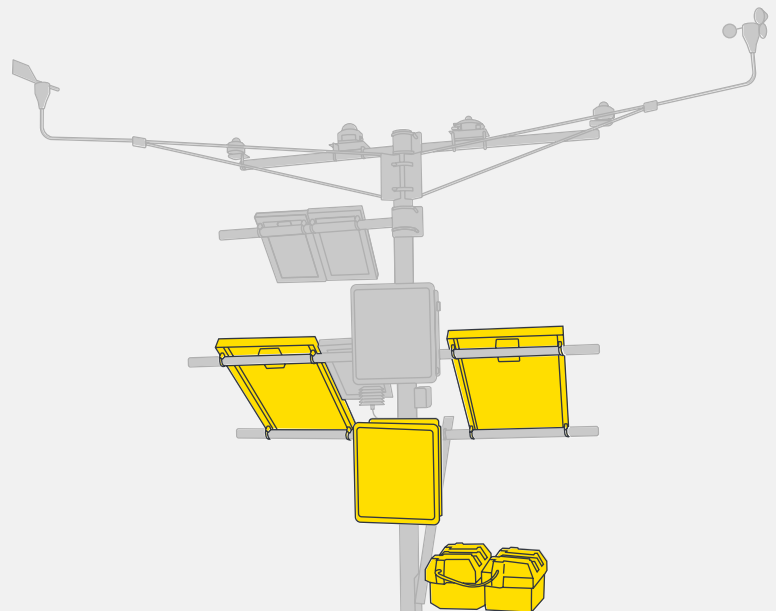
FLEXIBLE SOLUTIONS FOR ALL SETTINGS

- Tubular Tower height options:
  - 2.2 m (7 ft)
  - 3 m (10 ft)
- Temporary (guyed) or Permanent (pad or pile-mount) base designs

## Auxiliary Remote/Uninterruptible Power Supplies

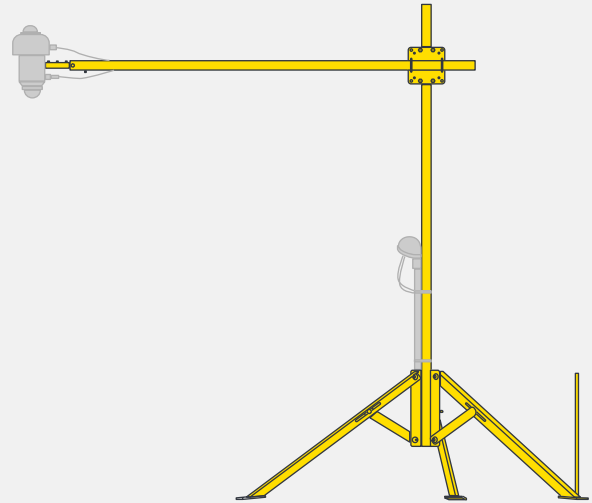
SCALABLE, MODULAR POWER SUPPLY, SIZED BY PROJECT DEPENDING ON:

- Sensor configuration
- Project location
- Autonomy requirements



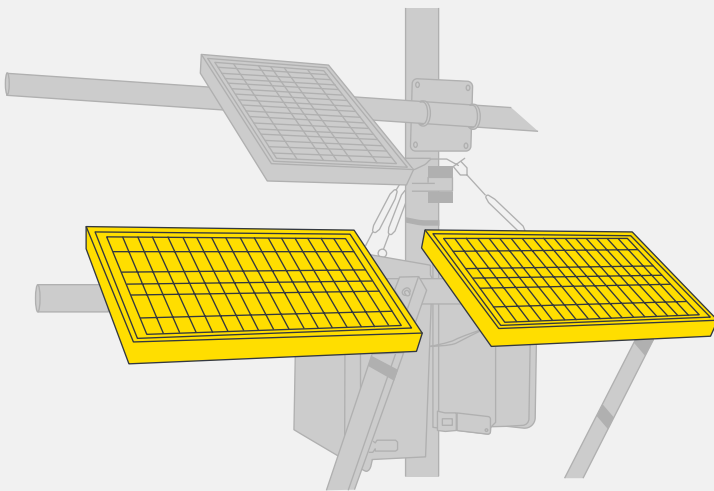
# Albedo Measurement Kit

- Unobstructed horizontal albedo measurements for bifacial PV modules
- Supports full range of pyranometers
- Matte black finish eliminates shading/reflections
- Special mounting fixture supports fixed or tracking installations



# Soiling Measurement Kit

- 35 W or full-size PV module options
- Fixed (tower) or tracking (array) mounting
- Clean and reference PV modules tested and paired at NRG
- $I_{sc}$  and PV (back-of-module) temperature measurements provided



# Services

## FOR TURNKEY MEASUREMENTS, OUR SERVICES INCLUDE:

- NRG Cloud web application
- Pre-configuration and engineering documentation
- Equipment installation and maintenance
- Data services to streamline data delivery, processing, site monitoring, and data quality assurance



## For more information:

NRG Sales

+1 802.482.2255

[solar@nrgsystems.com](mailto:solar@nrgsystems.com)

[nrgsystems.com](http://nrgsystems.com)

ISO 9001: 2015 Certified

ISO 14001: 2015 Self-Certified

