



Trimark Vantage Reporting

Preconfigured Reports

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- Trackers

An intuitive, customizable SaaS platform, Trimark's Vantage organizes and reports the vast quantity of data flowing through Trimark's SCADA system.

Overview

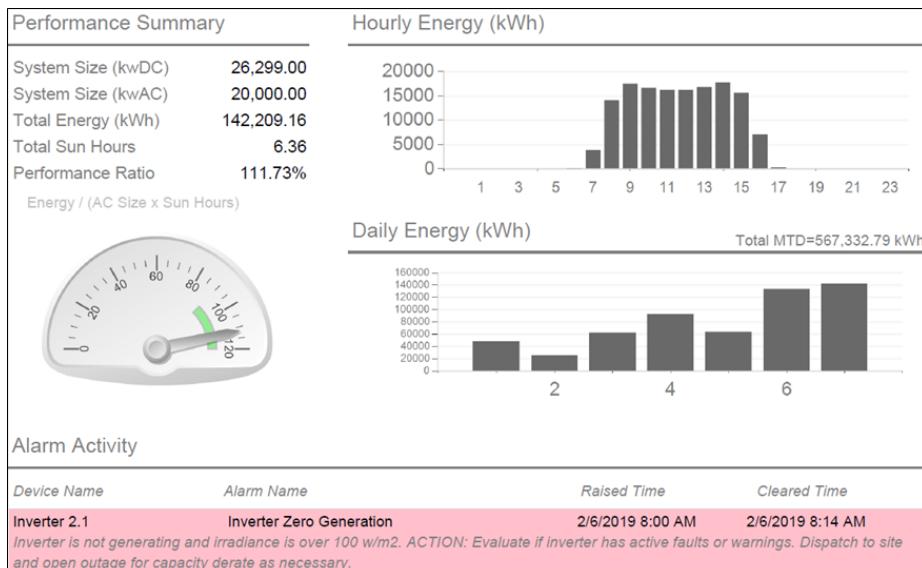
Trimark's Vantage hosts a variety of preconfigured reports, making it easier for customers who are not sure what is important to know. These reports can provide all the essential information for managing energy systems for a variety of system types, including solar, battery energy storage, and complex microgrids.

Custom reports enable customers to expand upon basic reporting functionality and see data the way they need it. Moreover, by utilizing report subscriptions, users will be notified of reports when they require them. Below are examples of the most widely-used reports and the insight they provide.

Base Reports

Activity Summary Report

The Activity Summary report displays a quick high-level snapshot of a site's performance. It shows the size of the system, energy production, and related information to indicate how the site is performing. The active alerts at the bottom provide insight into issues that may have impacted production.



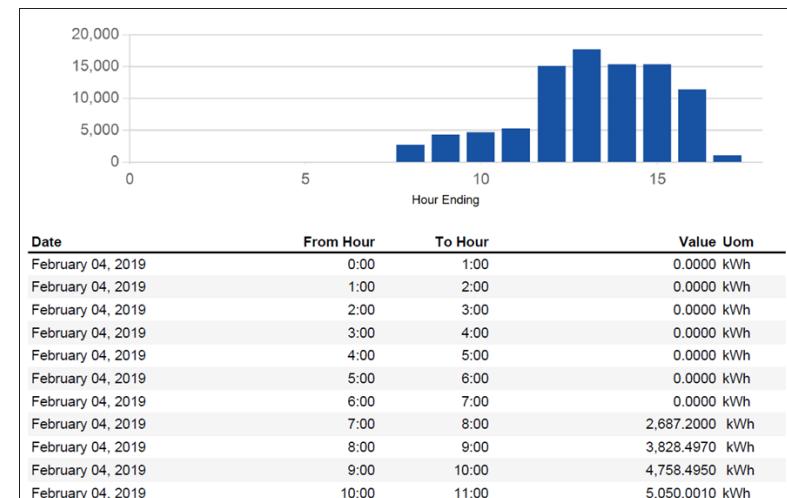
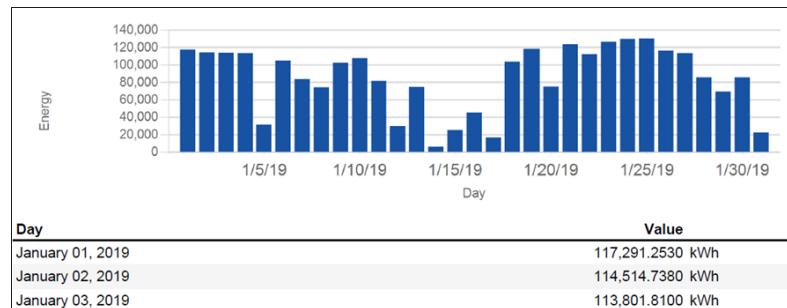
Active Summary Report

Daily Energy and Hourly Energy

Need detailed information about a site's hourly or daily energy production?

The Hourly Energy and Daily Energy reports presents a quick overview of the energy production during a selected timeframe.

This is especially useful for checking when a system went offline, or to see when energy production decreased or stopped.

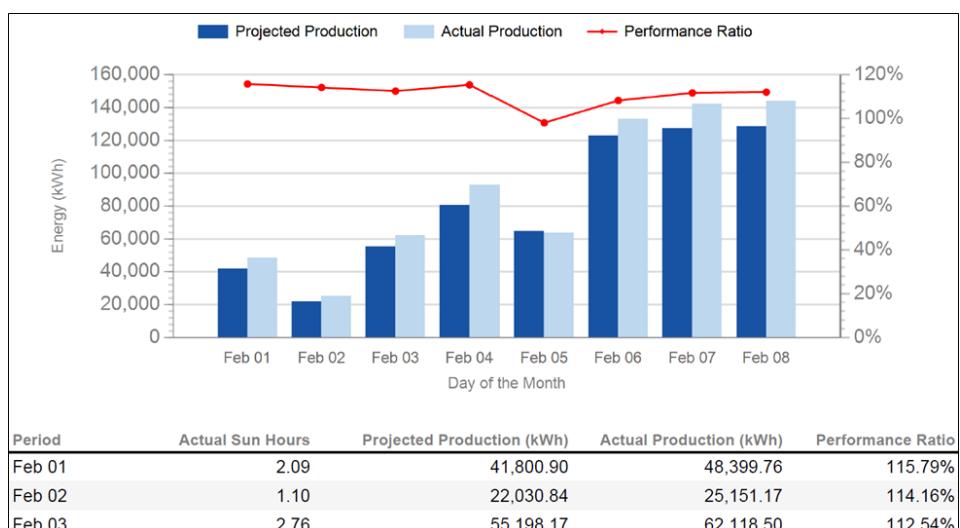


Daily Energy and Hourly Energy

Production Analysis

Energy production fluctuation significantly impacts ROI. The Production Analysis report displays forecasted production, actual production, and performance information to show how a site performed at a given time and to help visualize the accuracy of the projection model.

This helps determine whether the forecasting model requires refinement, in order provide more accurate projections.



Production Analysis

Alarm Activity

Alarms are a crucial tool for identifying problematic equipment, and determining when, where, and how to start troubleshooting.

The Alarm Activity report lists the alarms, along with information regarding the severity, timing, affected devices, and reasons any given alarm was triggered. The Alarm Activity report provides a list of reoccurring and unresolved issues.

Device Name	Alarm Name	Raised Time	Cleared Time
Inverter 3.1	Inverter Minor Underperformance	2/7/2019 09:45 AM	
	<i>Inverter Performance Index indicates at least a 3% underperformance on a clear day relative to other inverters on site. ACTION: Evaluate active tracker and inverter faults. Check if a combiner/inverter module is off, or if something else such as a tracker or site curtailment is limiting production. Dispatch to site as necessary.</i>		
Inverter 5.2	Inverter Major Underperformance	2/8/2019 9:01 AM	
	<i>Inverter Performance Index indicates at least a 25% underperformance relative to other inverters on site. ACTION: Evaluate active tracker and inverter faults. Check if a combiner / inverter module is off, or if something else such as a tracker or site curtailment is limiting production. Dispatch to site and open outage for capacity derate as necessary.</i>		
Inverter 1.1	Inverter Major Underperformance	2/8/2019 10:53 AM	
	<i>Inverter Performance Index indicates at least a 25% underperformance relative to other inverters on site. ACTION: Evaluate active tracker and inverter faults. Check if a combiner / inverter module is off, or if something else such as a tracker or site curtailment is limiting production. Dispatch to site and open outage for capacity derate as necessary.</i>		
Inverter 2.3	Inverter Warning	2/1/2019 6:55 AM	2/1/2019 7:00 AM
	<i>Inverter reported the following warning(s): Waiting for Restart, AC Frequency High</i>		

Alarm Activity

Alarm Definitions

Proper alarm setup is critical to ensuring your team appropriately receives alarm notifications and can correctly address them. The Alarms Definition report serves as a quick reference for reviewing all alarm definitions.

Device	ID	Name	Type	Severity	Ack
<u>Inverter 9.1</u>					
	1	Inverter Communication Alarm	Point Analysis	High	True
		Inverter communication loss. ACTION: Dispatch to site to confirm operational status of inverter. Verify, if possible, that inverter is producing by analyzing meter power output. Open outage for capacity derate once operational status is known and if necessary.			
	549	Inverter Major Underperformance	Point Analysis	High	True
		Inverter Performance Index indicates at least a 30% underperformance relative to other inverters on site. ACTION: Evaluate active tracker and inverter faults. Check if a combiner / inverter module is off, or if something else such as a tracker or site curtailment is limiting production. Dispatch to site and open outage for capacity derate as necessary.			

Alarm Definitions

Alarm Groups

Individually responding to numerous instances of the same alarm type can be tedious. The Alarm Grouping feature eliminates this hassle, allowing operators to simultaneously address multiple alarms that are grouped together by user-defined parameters.

Alarm Groups for Example Site		
+ Add an Alarm Group		
ID	Name	Description
12	Inverter Comm	Inverter communication alarms
18	Inverter Fault	Inverter fault alarms
21	Inverter Offline	Offline inverter alarms

Page Size: 10 | 1 - 3 of 3 total results.
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Alarm Groups

Site Availability and Device Availability

Knowing the availability of a site and its devices is extremely helpful for identifying equipment in need of troubleshooting or replacement.

The Site Availability and Device Availability reports provide the percentage of availability, as well the duration of the unavailability.

Availability Summary			Unavailable Intervals (where Irradiance > 50)		
Device	Unavailable	Availability	Interval End Time	Power	Irradiance
Intervals in Time Frame	107				
Unavailable Intervals	0				
Percentage Available	100.0000%				

Device Summary (107 Intervals)			Device Unavailable Intervals (where Irradiance > 50)		
Device	Unavailable	Availability	Device	Interval End Time	AC Power
Inverter 1.1	23	78.5047 %	Inverter 1.1	1/3/2019 7:40 AM	0.00
Inverter 2.2	18	83.1776 %	Inverter 2.2	1/3/2019 7:40 AM	0.00
Inverter 3.1	23	78.5047 %	Inverter 3.1	1/3/2019 7:40 AM	0.00

Site Availability and Device Availability

Device Details

Quick access to equipment details expedites the process of troubleshooting and replacing equipment via an organized list of all installed equipment.

Device Type	Device Name	Device Manufacturer	Device Model
Gateway	CAISO RIG	Trimark Associates, Inc.	T1-S Gateway
Inverter	Inverter 1	Solectria	SGI-750XTM
	Inverter 2	Solectria	SGI-750XTM

Device Details

Anomalous User Activity

Keeping data and controls secure is an extremely high priority. With the Anomalous User Activity report, suspicious activity can be regularly delivered for prompt review and to address potential security breaches.

Repeated Failed Login		Login after Multiple Failures		Login From Multiple IP Addresses	
Users Name	Count	Users Name	Count	Users Name	IP Address
John Doe	3	John Doe	1	Adam Smith	
		Jane Doe	1		174.###.14.1
					174.###.14.2

Anomalous User Activity

Meter Energy and Irradiance

Comparing meter energy and irradiance raw data can be helpful for relaying data to others and performing additional analysis.

The Meter Energy and Irradiance report allows users the flexibility to analyze and report this data as needed.

Interval End Time	CAISO Main Meter - T2					Met Data Average		Met Station 1		Met Station 2	
	Generation Accumulator	Load Accumulator	Settlement Energy	Settlement - Energy Uncompensated	Settlement Load Energy	Global Irradiance	POA Irradiance	Global Irradiance (Block 1.1)	POA Irradiance (Block 1.1)	Global Irradiance (Block 8)	POA Irradiance (Block 8)
02/07/19 00:05	34594504.00	641552.91	0.00	0.00	4.65	-1.95	-2.39	-1.59	-0.01	-2.30	-2.60
02/07/19 00:10	34594504.00	641557.55	0.00	0.00	4.64	-1.28	-1.44	-1.36	-0.27	-1.19	-1.36
02/07/19 00:15	34594504.00	641562.15	0.00	0.00	4.64	-1.18	-0.97	-2.22	-0.87	-0.14	-0.22
02/07/19 00:20	34594504.00	641566.86	0.00	0.00	4.65	-1.06	-0.80	-2.10	-0.77	-0.02	-0.01
02/07/19 00:25	34594504.00	641571.47	0.00	0.00	4.64	-1.29	-0.86	-2.12	-0.74	-0.47	-0.08
02/07/19 00:30	34594504.00	641576.11	0.00	0.00	4.65	-1.45	-0.97	-1.84	-0.41	-1.07	-0.57
02/07/19 00:35	34594504.00	641580.78	0.00	0.00	4.65	-1.06	-0.80	-0.99	-0.67	-1.14	-0.35
02/07/19 00:40	34594504.00	641585.45	0.00	0.00	4.64	-0.61	-0.81	-0.92	-0.68	-0.31	-0.24
02/07/19 00:45	34594504.00	641590.06	0.00	0.00	4.65	-0.08	-0.86	0.62	-0.94	-0.78	-0.37
02/07/19 00:50	34594504.00	641594.75	0.00	0.00	4.65	-0.27	-0.71	0.05	-0.13	-0.59	-0.23
02/07/19 00:55	34594504.00	641599.37	0.00	0.00	4.65	-0.86	-0.79	-1.22	-0.01	-0.51	-0.22
02/07/19 01:00	34594504.00	641604.01	0.00	0.00	4.64	-0.65	-0.87	-0.31	-0.23	-0.98	-0.39
02/07/19 01:05	34594504.00	641608.68	0.00	0.00	4.65	-1.25	-0.99	-1.38	-0.46	-1.11	-0.66
02/07/19 01:10	34594504.00	641613.30	0.00	0.00	4.64	-1.25	-1.17	-1.38	-0.46	-1.11	-0.76
02/07/19 01:15	34594504.00	641617.98	0.00	0.00	4.64	-0.10	-1.21	0.23	-0.84	-0.43	-0.18
02/07/19 01:20	34594504.00	641622.62	0.00	0.00	4.64	-0.35	-0.81	0.26	-1.35	-0.96	-0.46
02/07/19 01:25	34594504.00	641627.22	0.00	0.00	4.65	-0.91	-1.02	-0.38	-1.14	-1.43	-0.83

Meter Energy and Irradiance

Trackers

Trackers greatly increase the productivity of PV, but require extra supervision and analysis to ensure optimal production.

Trimark's Vantage can host a number of tracker reports that compare tracker positioning and highlight deviations at solar noon or any other desired time of day.

Solar Noon (12:06:55)				
Device	ID	Current °	Deviation °	Days ¹
Tracker 1.2.1.01	30.21	30.21	9	
Tracker 1.2.2.20	30.32	30.32	9	
Tracker 2.2.1.01	30.01	30.01	9	
Tracker 3.1.2.15	3.49	3.49	9	
Tracker 5.1.1.01	(60.34)	60.34	9	
Tracker 5.1.2.03	30.32	30.32	4	
Tracker 6.2.1.09	30.01	30.01	9	
Tracker 6.2.2.13	30.01	30.01	9	
Tracker 7.2.2.09	30.01	30.01	9	
Tracker 7.2.2.21	30.01	30.01	2	

Solar Noon (12:06:55)				
Device	ID	Current °	Deviation °	Days ¹
Tracker 1.2.1.01	30.21	30.21	9	
Tracker 1.2.2.20	30.32	30.32	9	
Tracker 2.2.1.01	30.01	30.01	9	
Tracker 3.1.2.15	3.49	3.49	9	
Tracker 5.1.1.01	(60.34)	60.34	9	
Tracker 5.1.2.03	30.32	30.32	4	
Tracker 6.2.1.09	30.01	30.01	9	
Tracker 6.2.2.13	30.01	30.01	9	
Tracker 7.2.2.09	30.01	30.01	9	
Tracker 7.2.2.21	30.01	30.01	2	

¹Consecutive Days Deviated - Last (10) Days

¹Consecutive Days Deviated - Last (10) Days

Trackers