

Synchrophasor Registry

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NASPI

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PEAKRELIABILITY
assuring the wide area view

Overview

- What is the Synchrophasor Registry?
- What's new?
 - Add, update, delete
 - Exports
 - New attributes
- Demonstrations (Demo)
 - Adding PMU
 - Circuit mapping
 - Data exports



What is the Synchrophasor Registry?

The Registry is an information management application that stores Synchrophasor Measurement Devices and associated assets.

- Communicates changes to Peak
- Enables members to affect change
- Unique PMU IDs, naming conventions
- Provides circuit mapping information



What's new (1)?

- Member -> Peak Communication through
 - Add, update, delete PMUs and signals



- Registry
 - Synchrophasor
 - Owners
 - AESO
 - APS
 - BCH
 - BPA
 - Substations
 - ALLSTON
 - PMUs

Pop-Up Dialog will pre-fill the PMU Name

Add PMU

Please provide as much information as possible and then click **Add**. A request will be sent to have the named PMU added to the Registry. Peak may contact you to obtain additional information.

Owner

PMU Name: W001ALLSTON__02

C37.118 Unique ID: 34002



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What's new (2)?

- Naming standard suggestions
- Registry Export - XML output format (Demo)
- PMU/Signal Export (demo/request only)
 - COMTRADE format
 - JSIS format

Request Data Export

Please provide as much information as possible and then click **Submit**. A request will be sent to Peak to generate the report for the data you requested. Peak may contact you to obtain additional information.

Report Criteria

Substations:

- AESO - HEATHFLD
- AESO - LANGDON
- AESO - NEWELL
- AESO - PICT_BUT
- AESO - SUNDANCE
- AESO - SUNNYBRK
- APS - CHOLLA
- APS - DELANEY
- APS - FOURCORN
- APS - MOENKOPI

Contact Name:



Data Exports - COMTRADE

- CFG File

```
PEAK,1,2013
596,596A,0D
1,W001ASHE_____01:A500FREQ_____1F_,F,,Hz,1,0,0,0,400,1,1,P
2,W001ASHE_____01:A500FREQ_____1R_,df,,Hz/s,1,0,0,0,9600,1,1,P
3,W001ASHE_____01:B500NORTH_____1VP,Pa,,Deg,1,0,0,-3.141593,3.141593,1,1,P
4,W001ASHE_____01:B500NORTH_____1VP,Pm,Vnom=500,V,1,0,0,0,100000,1,1,P
5,W001ASHE_____01:B500SOUTH_____1VP,Pa,,Deg,1,0,0,-3.141593,3.141593,1,1,P
6,W001ASHE_____01:B500SOUTH_____1VP,Pm,Vnom=500,V,1,0,0,0,100000,1,1,P
7,W001ASHE_____01:L500CGS_____1IP,Pa,,Deg,1,0,0,-3.141593,3.141593,1,1,P
8,W001ASHE_____01:L500CGS_____1IP,Pm,Vref=A,1,0,0,0,100000,1,1,P
9,W001ASHE_____01:L500HANFORD_____1IP,Pa,,Deg,1,0,0,-3.141593,3.141593,1,1,P
10,W001ASHE_____01:L500HANFORD_____1IP,Pm,Vref=A,1,0,0,0,100000,1,1,P
```

- DAT File

```
0000000001,0,59.99767,0.0001557497,-20.53461,312641.5,-20.55044,313137.4,-1
0000000002,66,59.99764,0.0008392381,-20.59641,312645.9,-20.61323,313140.2,-
0000000003,133,59.9976,-0.002908702,-20.65281,312637.3,-20.66919,313133.3,-
0000000004,200,59.99764,0.001192074,-20.70907,312631.5,-20.72578,313128.3,-
0000000005,266,59.99752,-0.003147125,-20.77408,312614.3,-20.79053,313111.9,
```

Lines Truncated
for Presentation



Data Exports - JSIS

A	B	C	D	E	F	G	H	I	J	K	L	M
Time	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH
Type	F	F	VPA	VPM	VPA	VPM	IPA	IPM	IPA	IPM	IPA	IPM
ms	Hz	Hz/s	Deg	kV	Deg	kV	Deg	Amps	Deg	Amps	Deg	Amps
Time	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH	W001ASH
0	59.99773	0.00244	-7.21454	310896.5	-7.20503	310852.5	-177.943	1214.994	13.46828	737.8627	168.9325	514.1531
66	59.99761	0	-7.27541	310888.9	-7.26577	310841.9	-177.996	1215.963	13.41072	738.2719	168.8959	514.0694
133	59.9977	-0.00252	-7.32814	310867.5	-7.3187	310819.4	-178.041	1216.061	13.38714	737.7962	168.7957	513.7319
200	59.99772	0.00404	-7.38354	310872.6	-7.37435	310821.9	-178.098	1215.742	13.33719	736.8968	168.7333	514.1943
266	59.99766	-0.00282	-7.43855	310840.8	-7.42986	310795.5	-178.163	1216.477	13.29839	736.8195	168.6916	514.3442
333	59.99773	0.00204	-7.49349	310828.8	-7.48477	310782.1	-178.21	1216.276	13.1852	735.8987	168.624	513.7166
400	59.99777	0.00129	-7.54191	310804.1	-7.53291	310758.6	-178.288	1216.663	13.12105	735.301	168.5431	513.7228
466	59.99783	0.00192	-7.59551	310849.8	-7.58664	310798.9	-178.316	1217.419	13.14745	735.266	168.4698	513.5725
533	59.99774	-0.00306	-7.65368	310842.7	-7.64402	310794.6	-178.379	1216.397	13.06716	734.7803	168.4406	513.6954
600	59.99771	-0.00066	-7.7043	310806.4	-7.69533	310762.4	-178.431	1216.583	12.99194	734.1107	168.3366	513.5164
666	59.99755	-0.00151	-7.76701	310841.5	-7.75858	310796.8	-178.494	1216.502	12.98374	734.1423	168.3042	513.7781
733	59.99733	-0.00399	-7.83453	310848.5	-7.8255	310802.4	-178.58	1216.361	12.8548	733.7872	168.2594	513.7109



What's new? (3)

- PMU operational status
 - Streaming (also last received date)
 - No data
 - NA (No associated PI tag)
- Signal circuit number values
- Phase Angle Pairs
- Circuit mapping (Demo)



Demos

- Adding a PMU, signal
- Circuit mapping
- Data export requests



Use Case 1 – Adding a PMU/Signal

The screenshot displays a software interface for adding a PMU/Signal. On the left, a tree view shows the hierarchy: Registry > Synchrophasor > Owners > APS > Substations > CHOLLA > PMUs > W066CHOLLA_01 > Signals. A context menu is open over the 'Signals' folder, listing options: Voltage Phasor, Current Phasor, Frequency, and Frequency Rate Of Change. The 'Voltage Phasor' option is selected.

The main window is titled 'Add Voltage Phasor Signal'. It contains the following fields and sections:

- Owner:** Equipment Type (dropdown), To Bus (text), Nominal Voltage (dropdown), Signal Name (text), Coordinate System (dropdown), Numeric Data Type (dropdown), Measurement Identifier (dropdown, set to 'Voltage - Positive Sequence').
- Notes for Owner:** A large text area for additional information.
- Notes for Peak RC:** A text area for Peak Reliability Corporation notes.

Instructions at the top of the form state: "Please complete the required sections and click **Generate Signal Name**; a WISP-compliant name will be generated for you. Edit the signal name if needed and click **Add**. The Notes for Owner section can be used to store content related to your organization. Contents will be saved in the Registry, but not used by Peak RC for PMU or PDC configuration." A note below states: "Note: Only positive sequence phasors are requested by Peak RC."

At the bottom of the form, there are buttons for 'Generate Signal Name', 'Add', and 'Cancel'. A 'Required Field' indicator is visible at the bottom left of the form area.

On the right side of the interface, there is a vertical panel with several input fields and a dropdown menu, which can be used to store any content related to the configuration.



Use Case 2 – Circuit Mapping

Save Add Refresh Delete Export Request Data Export

- CHOLLA
 - PMUs
 - W066CHOLLA__01
 - Signals
 - A500FREQ__1F_
 - A500FREQ__1R_
 - B500EAST__1VP
 - B500WEST__1VP
 - G500CHOLLA_2_1IP**
 - G500CHOLLA_3_1IP
 - G500CHOLLA_4_1IP
 - L500SAGUARO__1IP
 - L500SUGARLOF_1IP
 - W066CHOLLA__02
 - W066CHOLLA__03
 - DELANEY
 - FOURCORN
 - MOENKOPI
 - MORGANAZ

G500CHOLLA_2_1IP

Signal Information as modeled in the WSM is shown on the right. The Owner area on the left can be used to store any content related to your organization. Complete this area will be saved in the Registry, but not used by Peak RC for PMU or PDC configuration.

Note: Only positive sequence phasors are requested by Peak RC.

Owner	Westwide System Model
Equipment Type: Generator	Signal Name: G500CHOLLA_2_1IP
Nominal Voltage: 500	Circuit Number: 1
Signal Name:	Value Offset: 0
Voltage Phasor Signal:	Angle Offset: 0
Coordinate System:	Magnitude/Real Value: 1.28
Numeric Data Type:	Angle/Imaginary Value: -67.25
Measurement Identifier:	Upper Limit: 0
Notes for Owner:	Upper Limit Warning: 0
	Lower Limit Warning: 0
	Lower Limit: 0

Ready



Use case 3 – Data Request

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Registry

NECCRegistryEditor

Save Add Refresh Delete Export Request Data Export

- CHOLLA
 - PMUs
 - W066CHOLLA__01
 - Signals
 - A500FREQ__1F_
 - A500FREQ__1R_
 - B500EAST__1VP
 - B500WEST__1VP
 - G500CHOLLA_2_1IP
 - G500CHOLLA_3_1IP
 - G500CHOLLA_4_1IP
 - L500SAGUARO_1IP
 - L500SUGARLOF_1IP
 - W066CHOLLA__02
 - W066CHOLLA__03
- DELANEY
- FOURCORN
- MOENKOPI
- MORGANAZ

Ready

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Request Data Export

Please provide as much information as possible and then click **Submit**. A request will be sent to Peak to generate the report for the data you requested. Peak may contact you to obtain additional information.

Report Criteria

Substations: AESO - HEATHFLD
AESO - LANGDON
AESO - NEWELL
AESO - PICT_BUT
AESO - SUNDANCE
AESO - SUNNYBRK
APS - CHOLLA
APS - DELANEY
APS - FOURCORN
APS - MOENKOPI

Contact Name: Engineer 1

Contact Email Address: engineer@powersystem.com

Contact Phone Number: 111-111-1111

Contact Entity: Power Company

Description: Why I need to request these data from Peak RC

Start Time: 10/07/2016 00:00:00 (UTC)

End Time: 10/07/2016 04:00:00 (UTC)

Output File Type: COMTRADE

Samples per Second: 30

File Size: 2.7 (GB)

If the file size is satisfactory, click Submit. Otherwise, change criteria and re-check the file size.

Required Field

Get Estimated File Size Submit Cancel

Need assistance? Contact us: PMUSupport@peakreliability.com

ion. Complete the sections in the Owner area and click Save on the toolbar. Co

HOLLA_2_1IP

5

Measu

Volta

Co

Nu

Owner

Note:

Signal this ar

G5

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