PI Tag Naming Conventions

Version 3.2
September 18, 2017

Document History

Version	Date	Author	Purpose
1.0	Sep 14, 2010	Bret Sinclair	Full Release
1.0	Jun 21, 2011	Bill Hewitt	Added LSSI related changes
1.1	Dec 05, 2014	Jane Zhang	New Naming Convention Initial Draft
1.2	Dec 09, 2014	Jane Zhang	Interim documents worked by the PI team (Jane, Brad)
1.6	Dec 09, 2014	Jane Zhang	Version 0.3 to 0.6 were interim documents worked by the EMS team (Jane, Landon, Ramiro, Visu, Khang, Alan, Erik)
2.0	Jan 18, 2015	Jane Zhang	Full Release
3.0	Aug 16, 2016	Bret Sinclair	Removed “new” tagname examples. Font, Table and Header Formatting
3.1	April 5, 2017	Bret Sinclair	Per POB 12869, removed “Nonstandard” suffixes from Section 1.1.4 Per POB 12893, removed “Wrong” suffixes from Section 1.1.4 Added RTVSA Application to @somewhere Enhanced example of SCADA tags Updated SCADA Point Measurement Types with the current list from the EMS. Added SCADA Analog Measurement Types with the current list from the EMS. Updated SCADA Device Types with the indication of whether they are used for @ESP tags
3.2	September 13, 2017	Bret Sinclair	Added new meas info for solar

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ABOUT THIS DOCUMENT

Purpose

This document provides information on the PI tag naming conventions. These naming conventions are used when creating new PI tags or when you are searching for specific existing PI tags.

Intended Audience

This document is intended for all PI users.

1. PI Tag Naming Conventions

1.1 Introduction

This section provides information on the PI Tag naming conventions used by the AESO. These conventions are applied each time a new PI tag is created.

Each portion of the PI Tag name contains specific information required by PI. PI tag names use the following format:

```
{Prefix}:root_tagname@somewhere!{suffix}
```

The detailed explanation of the information found in each portion of the PI Tags is as follows:

1.1.1 Prefix -- {Prefix}:root_tagname@somewhere!{suffix}

The **{Prefix}** portion of the PI tag indicates where the PI data is being collected from.

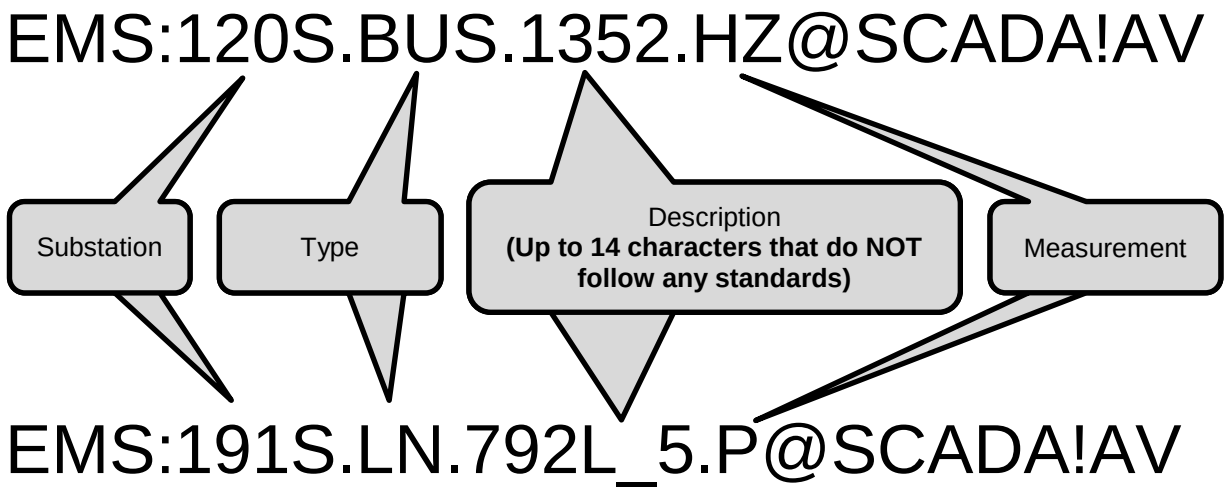
Prefix	Data is collected from
EMS	AREVA
MKT	DT, Margo, ETS, OATI
PI_CALC	PI ACE calculations

Note: Internal PI Performance tags use OSI defaults and are hidden from non-EMS users.

1.1.2 Root_tagname -- {Prefix}:root_tagname@somewhere!{suffix}

The **root_tagname** portion of the PI tag should provide a descriptive name of the point. To include drill-down detail in this portion, use **.** (dots) to separate the branches in the tree.

- Substation.Equipment_Type.Equipment_Description.Measurement



There are reference materials in the Appendix to assist with the above naming.

- For Type information use “SCADA Device Types”
- For Description information use “PI Tag Name Common Abbreviations”, remembering that this field follows no standard, but these are often used.
- For measurement information use “SCADA Analog Measurement Types” and “SCADA Point Measurement Types” depending on whether you are looking for Analog or Point data.

1.1.3 @Somewhere -- {Prefix}:root_tagname@somewhere!{suffix}

The **@somewhere** portion of the PI tag is used if the data source is EMS. This portion of the PI tag name allows for further qualifying of where in the EMS the data is collected.

@ somewhere	Data Source
ALARM	ALARM tables
ALRM	ALARM tables
CA	Contingency Analysis tables
ESP	Equipment Status Processing
GEN	Generation tables
LF	Load Forecast
LSSI	LSSI tables
MRS	Memory Replication System
NET	NETMOM tables
OLNETSEQ	Online Network Sequence
QKCTL	Quick Control

@ somewhere	Data Source
QKNET	Quick Network Analysis
RTCA	Real Time Contingency Analysis tables
RTDCP	Real Time Dynamic Case Preparation
RTNET	RTNET Application
RTSENH	Real Time Security Enhancement
RTVSA	Real Time Voltage Stability Analysis
SCADA	SCADA tables
VVD	Voltage Var Dispatch

Note: If the data source is not EMS the **@somewhere** is not included in the PI tag name.

1.1.4 Suffix -- {Prefix}:root_tagname@somewhere!{suffix}

The **{suffix}** portion of the PI tag indicates the data type and if the PI tag is used for data value or data quality.

Point Value	Suffix	Associated quality points
Analog with Quality	!AV	!AQ, !AQ2
Analog without Quality	!AVN	n/a
Accumulator (counter) with Quality	!CV	!CQ, !CQ2
Accumulator (counter) without Quality	!CVN	n/a
Status with Quality	!SV	!SQ, !SQ2
Status without Quality	!SVN	n/a
Text Value without Quality	!TVN	n/a

1.2 PI Tag Name Examples

Data Description	Naming Convention	Example Names
GENERIC SCADA DATA	EMS:{SUBSTATION}.{DEVTYPE}.{DEVICE}.{MEASUREMENT}@SCADA!AV Note: !AV can be substituted with !SV or !CV as required	EMS:101S.BUS.138A.V@SCADA!AV
DEVICE STATUS	EMS:{SUBSTATION}.{DEVTYPE}.{DEVICE}.STAT@ESP!AVN	EMS:101S.LN.762L_1.STAT@ESP!AVN
DYNAMIC SCHEDULING SYSTEM	EMS:{OPERATIONAREA}.TIE.{OPERATIONAREA}.{TIEID}.{MEASUREMENT}@GEN!AVN Note: !AVN can be substituted with !SVN as required for various status about the tie.	EMS:BCTC.TIE.AESO.BC_DYNAMIC.IMP_LASTHR.PH@GEN!AVN
GENERATION ASSET COMPONENT	EMS:UNIT.{UNITID}.{MEASUREMENT}@GEN!SVN Note: !SVN can be substituted with !AVN as required	EMS:UNIT.ALPAC1.AUTO@GEN!SVN
ASSET DATA	EMS:ASSET.{ASSETID}.{MEASUREMENT}@GEN!AVN MKT:ASSET.{ASSETID}.{MEASUREMENT}!AVN Note: For EMS tags, !AVN can be substituted with !SVN as required	EMS:ASSET.ABCI.AC.INUSER@GEN!AVN MKT:ASSET.BOW1.DISPATCH.DDS!AVN
LSSI DATA	EMS:LSSIDV.{LSSIDEVICEID}.{MEASUREMENT}@LSSI!AV Note: !AV can be substituted with !AVN or !TVN as required	EMS:LSSIDV.ANPC.ARMED.P@LSSI!AV
TRANSACTING AREA DATA	EMS:AIES.{MEASTYPE}.{TRANSACTINGAREA}.{MEASUREMENT}@GEN!AVN	EMS:AIES.PTH_IM.BC_MT.ATC@GEN!AVN
WPRM DATA	EMS:ASSET.{ASSETID}.DIRECTIVE.{MEASUREMENT}@GEN!SVN EMS:ASSET.{ASSETID}.DISPATCH.{MEASUREMENT}@GEN!SVN Note: !SVN can be substituted with !AVN as required	EMS:ASSET.ABCI.DIRECTIVE.SUPG.INUSE@GEN!AVN EMS:ASSET.ABCI.DISPATCH.TMR.INUSE@GEN!AVN

A. Appendix

A.1 PI Tag Name Common Abbreviations

Description	Tag Abbreviation
Available Capacity	AC
AGC Control Set Point	ACSP
Adjustment	ADJ
Electrical Current	AMP
Setpoint hitting a Limit	ATSETLIM
Available	AVAIL
Balancing Authority Area Limit	BAAL
Calculation	CALC
Canal Level	CANAL
Current Hour	CH
Close-loop Control	CLCTRL
Control Mode	CM
Control	CNTL/CTRL
Communication	COM
Component	COMP
Contingency	CONTING
Correction	COR

Description	Tag Abbreviation
Cut Plane	CUTP
Dead Band	DBAND
HVDC Valve Group	DCVG
Dispatch Down	DDS
De-aggregate	DE_AGG
Direction of Wind Turbine (Degrees)	DEGA
Phase Angle (Degrees)	DEPH
Disabled Out Of Service	DOUT
Line Fault Distance Relay Output	DISTNC
Dispatch Tool	DT
Demand Transmission Service	DTS
Exports	E/EXP
Energy	EN
Equipment Status Point	ESP
Exceed REG High Limit	EXCREGHI
Exceed REG Low Limit	EXCREGLO
Export Min Limit	EXNO
Exports	EXP
Export Max Limit	EXXO
Frequency (Hertz)	HZ

Description	Tag Abbreviation
Generation	GEN
GENMOM Database	GENDB
Generation Type	GENTYP
Gross MW (Generation) – GRMW is part of the EMS equipment description and is carried into the tagname. e.g. EMS:UNIT.112S_G1.GRMWMEAS@GEN!SVN EMS:UNIT.112S_G1.GRMWREPL@GEN!SVN EMS:UNIT.112S_G1.GRMWUNAV@GEN!SVN	GRMW
Generator Service Bus (Only for SCC)	GSB
Heart Beat	HBEAT
High	HI
Hour / Heat Rate	HR
Asset REG up range	HRRS
Headwater level	HWATER
Imports	I/IMP
Inter Control Center Protocol	ICCP
ID of Asset Component Type	IDGACTYP
Import Min Limit	IMNO
Imports	IMP
Import Max Limit	IMXO
Instantaneous	INST
Interchange	INTC/INTCHNG

Description	Tag Abbreviation
Fort Mac KNL Cutplane	KNL
Last Hour	LASTHR
Low	LO
LSSI Device	LSSIDV
Merit Order	M_ORDR
Maximum Capability	MC
Manual Entry	ME
Measurement Modeled	MEAS
Minimum Stable Generation (Only for SCC)	MSG
NETMOM Database	NETDB
Net Generation	NGEN
Next Hour	NH
Not In Service	NIS
Not Regulating	NOREG
Not Tracking	NO_TRK
Not Converging	NOTCONV
Net Reserve Generation	NRGN
Not Reserve	NRESRV
Net to Grid	NTGRID/NTG
Net MW (SCADA)	NP

Description	Tag Abbreviation
Net MW (Generation) – NTMW is part of the EMS equipment description and is carried into the tagname. e.g: EMS:UNIT.WINTG6.NTMWMEAS@GEN!SVN EMS:UNIT.WINTG6.NTMWREPL@GEN!SVN EMS:UNIT.WINTG6.NTMWUNAV@GEN!SVN	NTMW
Output Transfer Capacity	OTC
Real Power (MW) / Import Power / Export Power	P
High Power Range (MW)	HP
Low Power Range (MW)	LP
Net Power (MW)	NP
MW Hour	PH
MW Hour Input	PHI
MW Hour Output	PHO
Participation Factor	PART_FACT
Plant	PL
Path	PTH
Reactive Power (MVAR / MV)	Q
Reactor	REACT
Regulating	REG
REG Deployed	REGDEP
High REG Limit	REGH

Description	Tag Abbreviation
Low REG Limit	REGL
REG Asset Component Participation Factor for Setpoint	REGPF
Replaced	REPL
Requirements	REQ
Reserve	RES
Regulating Reserve	RR
Ramp Rate Down	RRDN
Ramp Rate Up	RRUP
Apparent Power (MVA)	S
Sluice Gate	S_GATE
Scheduled	SCHD
Setpoint Output	SETPTOUT
Severe	SEVR
Sluice Gate Control	SGC (not in use)
Single Largest Contingency	SLC
System Margin Price Error	SMPER (not in use)
Generating-Condensing	SCMT
South of KEG	SOK
Saskatchewan Power Corporation	SPC
Spin Dispatch Directive Obtained From DT Via DES	SPINDDES

Description	Tag Abbreviation
Effective Spin Dispatch Directive	SPINDEFF
Spinning Reserve	SR
Station (general for site, not particular power devices)	STN
Substation	SUBSTN
Supplemental Generation	SUPG
Supplemental Load	SUPL
Static Var System	SVS
Synch Condensing	SYNC
System	SYS
Temperature (Degrees Celcius)	T
Tail Race Level	T_RACE (not in use)
Tap Position (Manual Entry)	TAP.ME
Telemetry Source	TELEM_SOURCE
Temporary	TEMP
Transmission Facility Owner	TFO
Transmission Must Run	TMR
Transaction Scheduling System (Only for BC)	TSS
Total Transfer Capability	TTC
Tie Line	TYLN

Description	Tag Abbreviation
REG raise range for asset component	UP_REG
Uninterruptable Power Supply	UPS
Voltage Note: in efforts to synchronize PI with the EMS, we have discovered some .V@SCADA tags that were in use for months or years and gracefully retired when taken out of the EMS. Later when they were re-added back to the EMS model, new tags were added back to PI with incorrect spelling (KV instead of V). We found these when correcting the KV tagnames to V tagnames. What this means is that for a limited number of tags, we have a .V@SCADA tag for the currently recording data and .V_LEGACY@SCADA tag for the original data.	V
Violating	VIOL
Transformer	XF
Transformer From	XF_FR
Transformer To	XF_TO
Transformer (Either From or To)	XFMR
Zero Impedance Branch	ZBR

A.2 **SCADA Point Measurement Types (EMS April 4, 2017)**

Description	**Extended Descriptor *{key}**
AESO-BCTC Source	AB
AC-Battery	ACBT
'A' Circuit Failure	AFL
Automatic Generator Control Status	AGCS
Unit Level Auto Manual For AGC	AMU
Breaker A Phase	APH
Auto Voltage Regulation Stat HVDC	AQVC
LSSI Arm-Disarm	ARM
3 State RAS Arm	ARM3
Armed-Disarmed	ARMD
ICCP Alternate Status	ASTS
Auto-Manual	ATMN
Automatic Voltage Regulator	AVR
Phase Shifter Manual-Auto	AWR
'B' Circuit Failure	BFL
DC Blocked Status	BLK
Breaker B Phase	BPH
DC Bypassed Status	BYP
Communication Failure	CFL

Description	Extended Descriptor *{key}
Breaker C Phase	CPH
Cranbrook Isle Status	CRST
Deblocked State	DBLK
Disabled In Service	DIN
Direction Invalid/S/N/None	DIR
Disarmed-Armed	DISA
OPP 501 Mon Location	D-L
Dispatch Off-Dispatch On	DOFO
?	DOOR
Disabled Out Of Service	DOUT
RTU Status	DSIN
Emergency	EMRG
RAS Fail	FAIL
Generator At High Regulation Limit Status	HMW
Current-MW Mode	I/P
In Service Status	INSV
Joint AGC Accepted	JCAC
Joint AGC Requested	JCRQ
Generator At Low Regulation Limit Status	LMW
Local-Remote	LOCR

Description	Extended Descriptor *{key}
Local-Remote Control	LRCT
ICCP Link Status	LSTS
On Load Tap Changer In Limits – Low Limits	LTC
Comm Minor Alarm	MINR
Miscellaneous	MISC
Manual-Auto	MNAT
MVAR/Voltage	MVVL
Normal-Alarm	NMAL
RAS Normal-Trip Status	NMTP
No-Yes	NOYS
Off-On	OFON
OK-Not OK	OK
State Of Device	ON
On-Off	ONOF
Open-Close	OPCL
OPP 501 Flow Direction	OTIN
Protection Status	PROT
Phase Shifter Tap For DTS	PS
Power System Stabilizer	PSS
ICCP Path Status	PSTS

Description	Extended Descriptor *{key}
Q/V Control Available	QCTL
Q/V Control Status	QVC
Reduced Voltage Status	REDV
Regulating Status	REGS
Remote-Local	REML
Rainbow Lake Cutplane Limit Type	RLC
RAS Runup Signal	RNUP
AESO RSG Request Enabled	RQEN
RSG Extension Request	RREX
RSG Capability	RSAB
ICCP Remote Status	RSTS
Ruth Lake - Leismer	RTLS
Runback	RUNB
?	SCMT
Syncrocheck Relay	SCRY
Selector Switch	SELE
Summer/Winter	SMWT
RTU Status	STAT
Non-Telemetered Breakers	STFK
Standby/Main	STMN

Description	Extended Descriptor *{key}
Status	STTS
TAP Neutral On-Off	TAPN
Trip Element	TE
RAS Trip-Normal Status	TPNM
LSSI Trip Signal	TRIP
Unavailable-Available	UNAV
Q/V Control Status Invert	VCQ
Voltage/MVAR	VLMV
VL Participation Flag	VLPF
Auto Voltage Regulation Status	VRCS
AESO WECC Islanding	WISL
WPRM curtailment status	WLMS
Winter-Summer	WNSM
Yes-No	YSNO

A.3 **SCADA Analog Measurement Types (EMS Sept 18, 2017)**

Description	**Extended Descriptor *{key}**
Nxt Hour Plus One Avail Trans Cap	2ATC
Nxt Hour Plus One Trans Rel Margin	2TRM
Nxt Hour Plus One Total Trans Cap	2TTC
Phasor Amps Angle	AA
Phasor Amps Angle	AA1
Phasor Amps Angle	AA2
Area Control Error	ACE
Aeso Ace Mode Number	ACMD
Asset Component Setpoint	ACSP
Analog Multiplicative Adjustment Factor	ADJ
Aeso Agc Status Number	AGST
Actual Load Resp	ALR
Phasor Amps Magnitude	AM
Phasor Amps Magnitude	AM1
Phasor Amps Magnitude	AM2
Amperes	AMP
Amperes Per Minute	APM
Unit Auto Voltage Control Setpoint (HVDC)	AQVC
LSSI Armed MW	ARMW

Description	Extended Descriptor *{key}
Asset Setpoint Echo	ASPE
DC Angle Setpoint	ASPT
Asset Setpoint	ASSP
Application Status	ASTS
Actual Transcap	ATC
WECC ATEC MW	ATEC
ATL_High (RBC)	ATLH
ATL_Low (RBC)	ATLL
Average Historical KV	AVKV
Unit Auto Voltage Control Setpoint	AVR
Unit Auto Volt Reg Setpoint (MVAR Or KV)	AVRR
Unit Auxilary MW	AXMW
Balancing Area Generation For Reserve	BAGN
Bal Auth Load	BALD
BAAL High Limit	BA_H
BAAL Low Limit	BA_L
Bal Auth Load	BLCR
Cranbrook Island Instantaneous Load	CINS
Asset Control Mode	CMOD
Counter - Analog	CNT

Description	Extended Descriptor *{key}
Analog Counter - Input	CNTI
Analog Counter - Output	CNTO
Contingency Reserve Available	CNTR
NWPP CRO Adjust	CRAJ
Cranbrook Island Load Filtered	CRIS
Contig Res Inuse	CRIU
CRO Commitment	CROC
CRO Forced Outage	CROF
Cont Res Req	CRR
Dynamic Ratings Amps 15 Minute Loadshed Limit	DA15
Dynamic Ratings Amps Emergency Limit	DAEM
Dynamic Ratings Amps Normal Limit	DANR
DCCNV Angle	DCA
DC Current Measure	DCI
Calculated DC Current Measure	DCIC
DC MW Setpoint	DCSP
DC Voltage Measure	DCV
Calculated DC Voltage Measure	DCVC
DC Power Measurement	DCW
Calculated DC Power Measurement	DCWC

Description	Extended Descriptor *{key}
DDS	DDS
Effective DDS Schedule	DDSE
DDS Schedule	DDSS
Degrees Rotation	DEG
Degrees Celsius	DEGC
Frequency Deviation From Nominal In Hertz	DHZ
Dynamic Ratings MVA Normal Limit	DMNR
Dispatch Variance	DSVR
Effective Energy Schedule	EGYS
Energy Schedule	ENRG
Path1 Export Availability	EXCA
Export Min Limit	EXNO
External Up Distrib Factor	EXUF
Export Max Limit	EXXO
Frequency Bias	FB
Freq Dev From Nominal	FDEV
Filtered Load	FLD
Any Filtered Value	FLTR
Frequency Output	FQ
Tme Erro Freq Off Set	FQOS

Description	Extended Descriptor *{key}
Freq Input For LSSI	FREQ
Phasor Frequency	FRQ
Phasor Frequency	FRQ1
Schedule Frequency	FSCH
Baal Ftl High	FTLH
Baal Ftl Low	FTLL
Dtlr High MVA Limit	HMVA
	HMW
Remaining Regup	HRRS
Heartbeat	HTBT
	HX00
	HX39
Frequency	HZ
Interchange Mw	ICHG
Int Export Factor	IEFC
Int Import Factor	IIFC
Path1 Import Availability	IMCA
Import Min Limit	IMNO
Integrated MW Import	IMWI
Import Max Limit	IMXO

Description	Extended Descriptor *{key}
Joint AGC Requested MW	JRMW
	KM
	KM/H
Kilo Volts(Voltage)	KV
Kilo Volts(Voltage)	KV1
Phasor KV Angle	KVA
Phasor KV Angle	KVA1
Kilo VARS	KVAR
Phasor KV Magnitude	KVM
Phasor KV Magnitude	KVM1
Phasor KV Magnitude	KVM2
Kilo Watts	KW
Instantaneous L10	L10
Latest Received Heartbeat Counter	LAST
Load MW (Asset)	LDMW
Load Resp Correct	LDRC
Calculated Analog Limit	LIM
	LMSN
Dtlr Low MVA Limit	LMVA
	LMW

Description	Extended Descriptor *{key}
	LMWH
Link Status	LSTS
Load Tap Changer Tap Position	LTC
Millibar Pressure	MBAR
Ace Meter Error Correction	MERR
Minute	MIN
	MISC
MM:SS	MMSS
Min Stable Generation	MNSG
Control Mode	MODE
Most Sev Sing Cont	MSSC
	MV
	MV1
MVA Mega Volt-Ampere	MVA
MVAR Measurement	MVAR
MVAR 2	MVR2
Mega Watts	MW
Mega Watts	MW1
	MW2
Megawatt Hour	MWH

Description	Extended Descriptor *{key}
Megawatt Hour In	MWHI
Megawatt Hour Out	MWHO
NERC ACE	NACE
Nexthour Actual Transcap	NATC
NERC Calculation Input (In MW;Positive Into System)	NERC
Net Gen	NGEN
Net Interchange Output	NINT
Nominal Frequency	NMHZ
Unit Net MW	NMW
	NMX
Non-Reserve-Generation (Bal-002)	NRGN
Net-To-Grid	NTG
Nexthour Trans Reliability Marg	NTRM
Nexthour Total Transcap	NTTC
NWPP Contingency Reserve Available	NWAV
NWPP CRO Commit	NWCC
NWPP Reserve	NWPP
LSSI Offered MW	OFMW
On Demand Oblig	ONDO
On Demand Rights	ONDR

Description	Extended Descriptor *{key}
Operating Reserve Required By Peak RC	ORR
NWPP Pool CRO Adjustment	PCRA
Percentage	PCT
PNSC Reserve Adjust	PNAJ
PNSC Reserve	PNSC
PNSC Spin Res	PNSP
Path Status	PSTS
Phase Shifter Tap Position	PTAP
Any Per Unit Value	PU
Per-Unit KV Based On Average Historical KV	PUKV
Unfiltered Load	RAWL
Regulation Schedule Effective	REGS
Asset Reg Down Range	RGDN
Asset Reg Up Range	RGUP
Inverted Available Generation From Nwpp	RINV
DCCTL Ramp Rate	RMPT
AESO Rsg Request MW	RQMW
Required Spin Reserve	RQSP
Rsg Request Time	RREM
Regulation Schedule	RRSK

Description	Extended Descriptor *{key}
Rsg MW	RSG
Active Rsg Count	RSGC
Available Generation From NWPP	RSGG
Rsg Available From NWPP	RSGM
Rsg Request Timer	RSGT
	RSMW
Remote Status	RSTS
Second	SEC
Volts/Vars Setpoint For Sync Svs Etc	SETP
Effective SUPG Directive	SGDE
Asset SUPG Effective	SGSE
Path1 Scheduled Interchange	SINT
OPA SUPL Directives	SLD
OPA SUPL Schedule	SLS
Operating Reserve Maintained By Sink Ba	SNKR
Spin Directive Effective	SPDE
DC MW Setpoint Echo	SPEC
	SPIN
KV Setpoint	SPKV
Set Point MW	SPMW

Description	Extended Descriptor *{key}
Spin Directive	SPND
Spin Schedule	SPNS
Asset Spin Effective	SPSE
Spinning Reserve	SR
Operating Reserve Maintained By Source Ba	SRCR
SUPL Directive Effective	SUDE
Asset SUPG Effective Directive	SUGD
SUPG Schedule	SUGS
SUPL Directive	SULD
SUPL Schedule	SULS
SUPG	SUPG
SUPL Schedule Effective	SUSE
Tap Position	TAP
Tie Dev Output	TDEV
	TE
	TINT
Effective TMR Schedule	TMRS
Trigger Flag - Seasonal Limits	TRIG
Trans Reliability Margin	TRM
Total Transcap	TTC

Description	Extended Descriptor *{key}
Total DC Tie Actual	TTDC
Unit Net Generation (RTNET)	UNNG
Unit AVR Setpoint	UVSP
Volts	V
VG Resource MW Min	VGMN
VG DSS Response	VGMW
VG Resource MW Max	VGMX
VG Request	VGRQ
VG Reamp Rate	VGRR
VL Obligation MW Min	VLMN
VL Response MW	VLMW
VL Obligation MW Max	VLMX
VL DSS Request MW	VLRQ
DC Voltage Setpoint	VSPT
Dispatch Variance Threshold	VTHR
WECC BAAL High Limit	WBAH
WECC BAAL Low Limit	WBAL
WECC Reserve	WECC
Wind Power Curtailment Type (trans=1,prorata=2,none=3)	WLMT
Wind Power Curtailment Type ACK From AGF	WLTA

Description	Extended Descriptor *{key}
Power Limit ACK From AGF (MW)	WMXA
Wind Power Limit (MW)	WMXP
Potential Wind Output (MW)	WPMW
Solar Horizontal Irradiance	WPM2
DCCTL MW Setpoint	WSPT
	WSUM
Integrated MW Export	XMWI

A.4 SCADA Device Types (EMS April 4, 2017)

Only devices with *** are available for Device Status Tags (@ESP)

Description	Extended Descriptor *{key}
Asset Component	ACMP
Asset	ASST
Bus	BUS
By Pass	BYPASS
Capacitor ***	CAP ***
Circuit Breaker	CB
Circuit Breaker with Synch-Check	CBSC
Circuit Breaker with Synchronizer	CBSN
Communication Status	COM
Disconnect Switch	DSC
Dynamic Thermal Line Rating	DTLR
Load	LD
Load Transformer (From side)	LD_XFR
Load Transformer (either From or To side)	LD_XMR
Lightning	LIGHTN
ICCP Link	LINK
Line ***	LN ***

Description	Extended Descriptor *{key}
Load Shed Service	LSS
LSSI Device	LSSIDEV/LSSIDV
Motor Operated Switchgear	MOS
Node	ND
Plant	PL
Reactor ***	REACT ***
Remedial Action Scheme	RAS
Reclosure	REC
Remote Terminal Unit	RTU
Static Var Compensator	SVC
Switch	SW
Tap Position	TAP
Tie Switch	TIE
Tie Line ***	TYLN ***
Unit ***	UN ***
Uninterruptable Power Supply	UPS
Under Voltage Load Shed	UVLS
Venturi	VENTUR (not in use)
Weir	WEIR (not in use)
Transformer	XF

Description	Extended Descriptor *{key}
Transformer From	XFM_FR
Transformer To	XFM_TO
Transformer (Either From or To)	XFMR
Zero Impedance Branch ***	ZBR ***

A.5 **+/- Signs on the PI Data**

AC Lines

For line MW, MVAR and MVA:

- (+)ve means the flow is going out of that substation
- (-)ve means the flow is coming into the substation

A value that is (+)ve at one end will be (-)ve at the other end.

DC Lines

For line Power Order, Power Reference and DC Power (DCW in EMS keys):

- (+)ve for north to south
- (-)ve for south to north

Synchronous Condenser and SVC.

- (-)ve number means the devices are absorbing the vars, just like a UN absorbing vars (or you can think of this as the opposite of a LD)
- (+)ve means they are supplying the vars to the system, just like UN producing MW to the grid