

The Current State of Smart Grid Interoperability Standards

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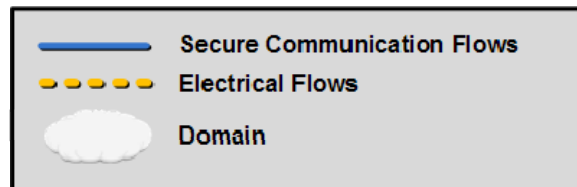
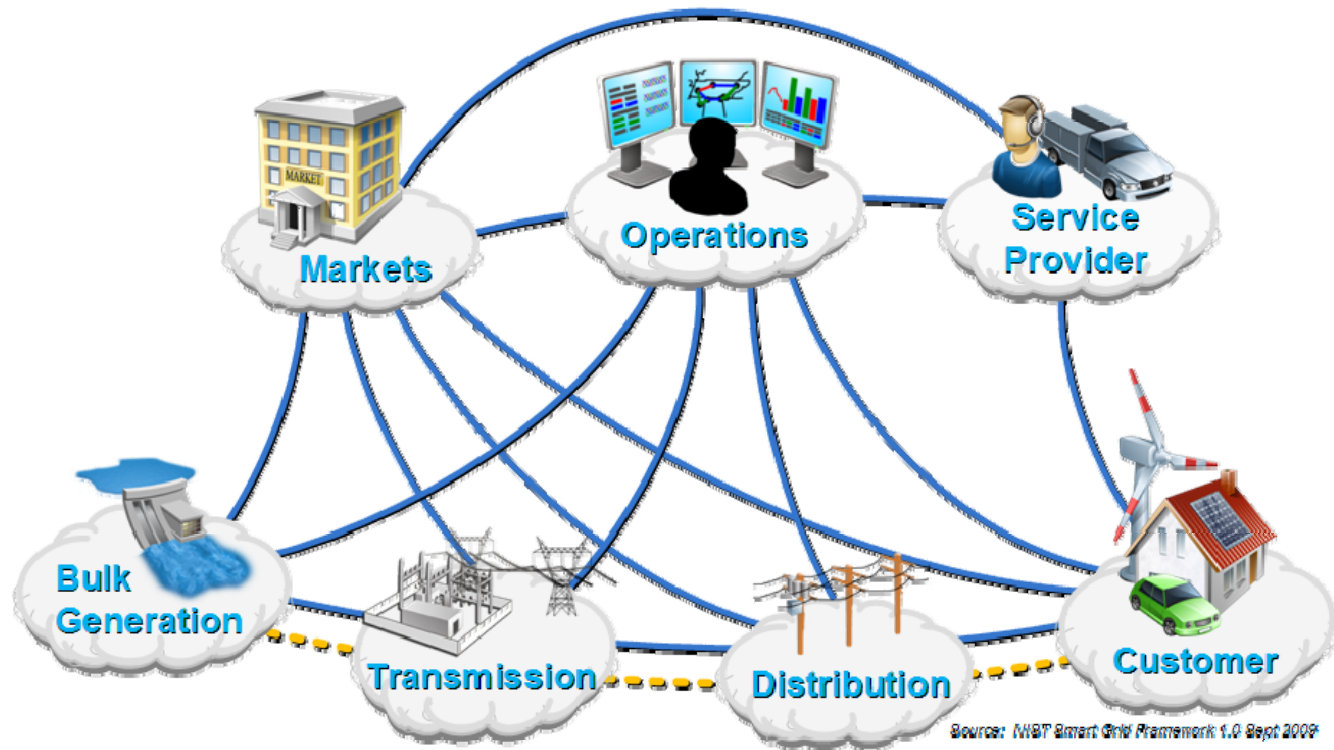


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Agenda

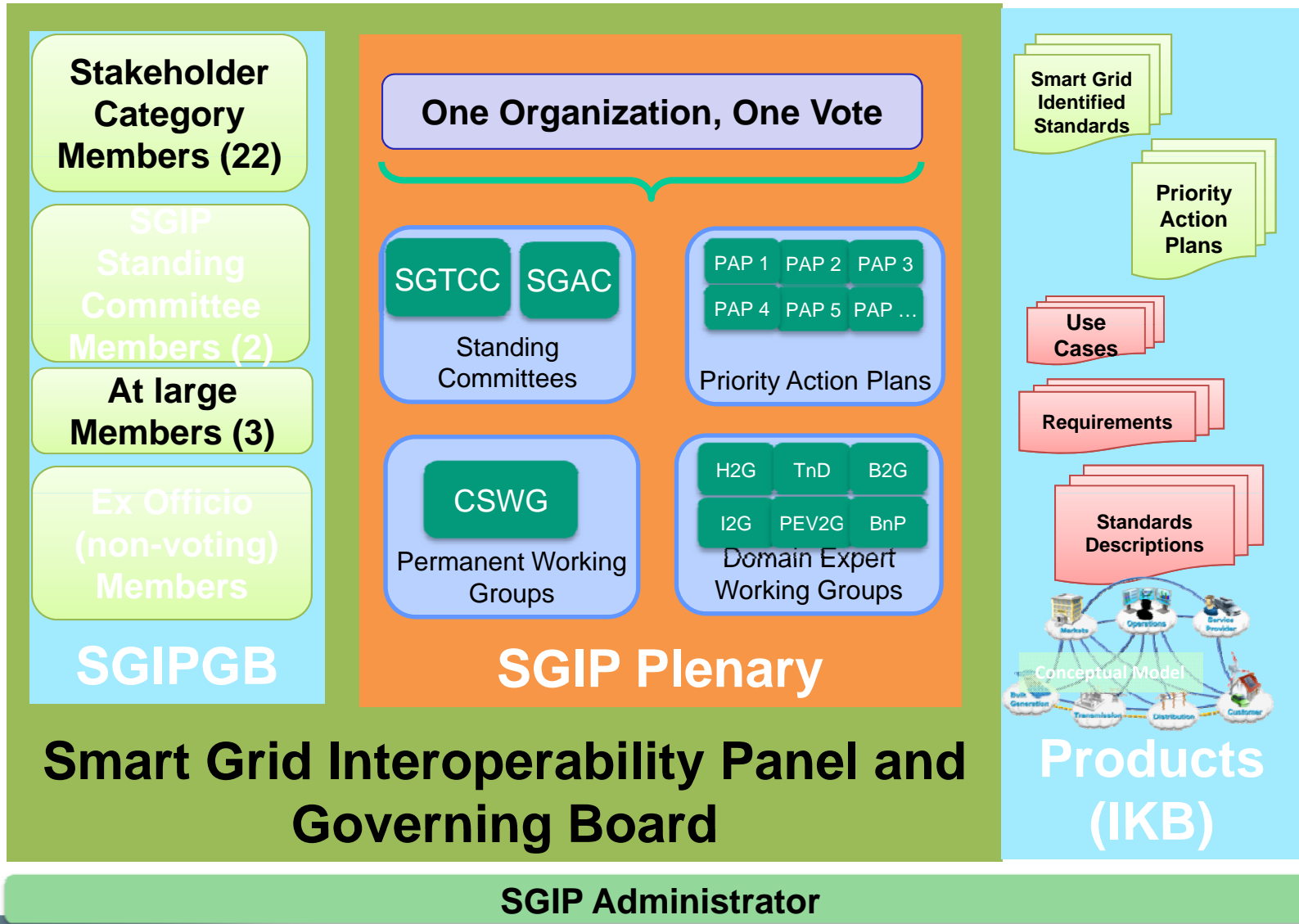
- Review of the Smart Grid Interoperability Panel (SGIP)
- Priority Action Plan (PAP) Progress
- SGIP Progress to date
- Major Summer Activities:
 - FERC Order on Smart Grid Interoperability Standards
 - NARUC Summer Resolutions
 - Canadian Electricity Association
 - PAP 18: “SEP 1.x to 2.0 Transition and Coexistence” version 1 published
- Upcoming Activities

NIST Smart Grid Conceptual Model



SGIP Structure

NIST Oversight



SGIP Membership

Total # of Member Organizations: 672

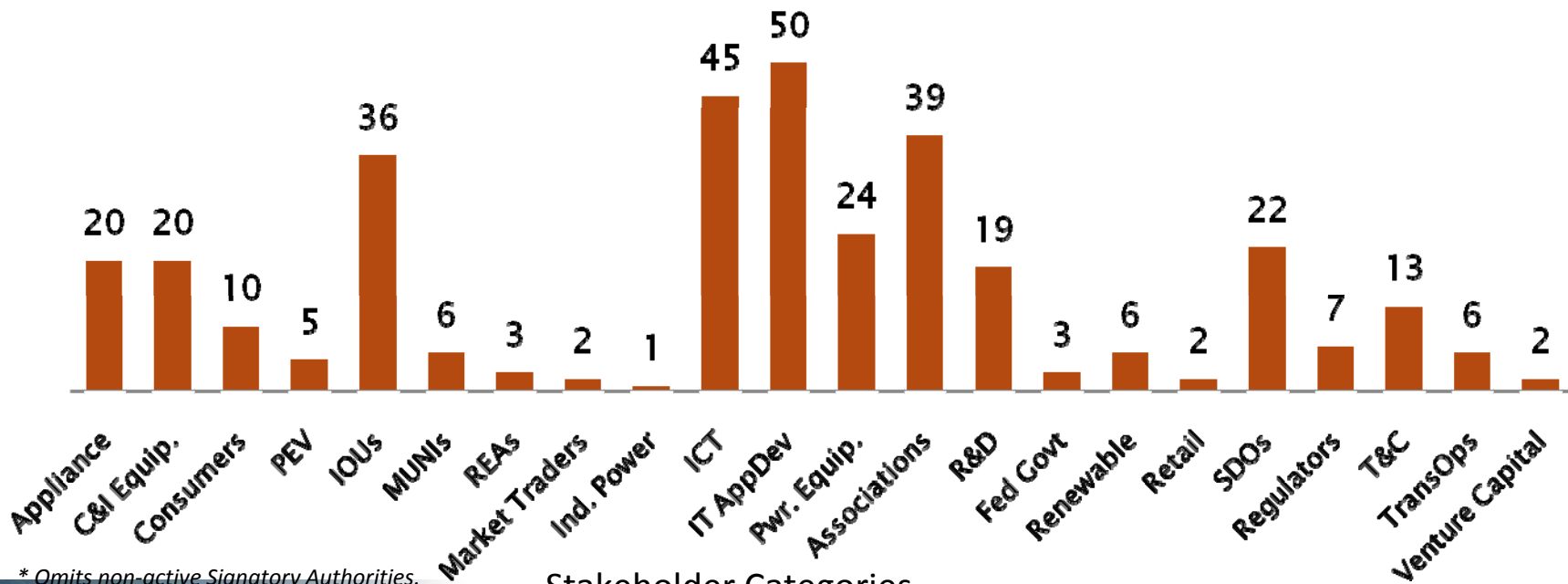
- # of Participating Member Organizations: 340
- # of Observing Member Organizations: 332
- # of Organizations who joined in March & April: 13

Total # of Individual Members*: 1,742

of Organizations by Country

- USA: 599
- Europe: 21
- Asia: 17
- Oceania: 4
- North America (non-US): 29
- South America: 1
- Africa: 1

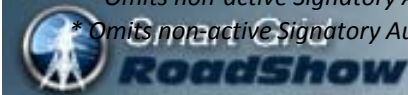
Participating Member Organizations by Declared Stakeholder Category



* Omits non-active Signatory Authorities.

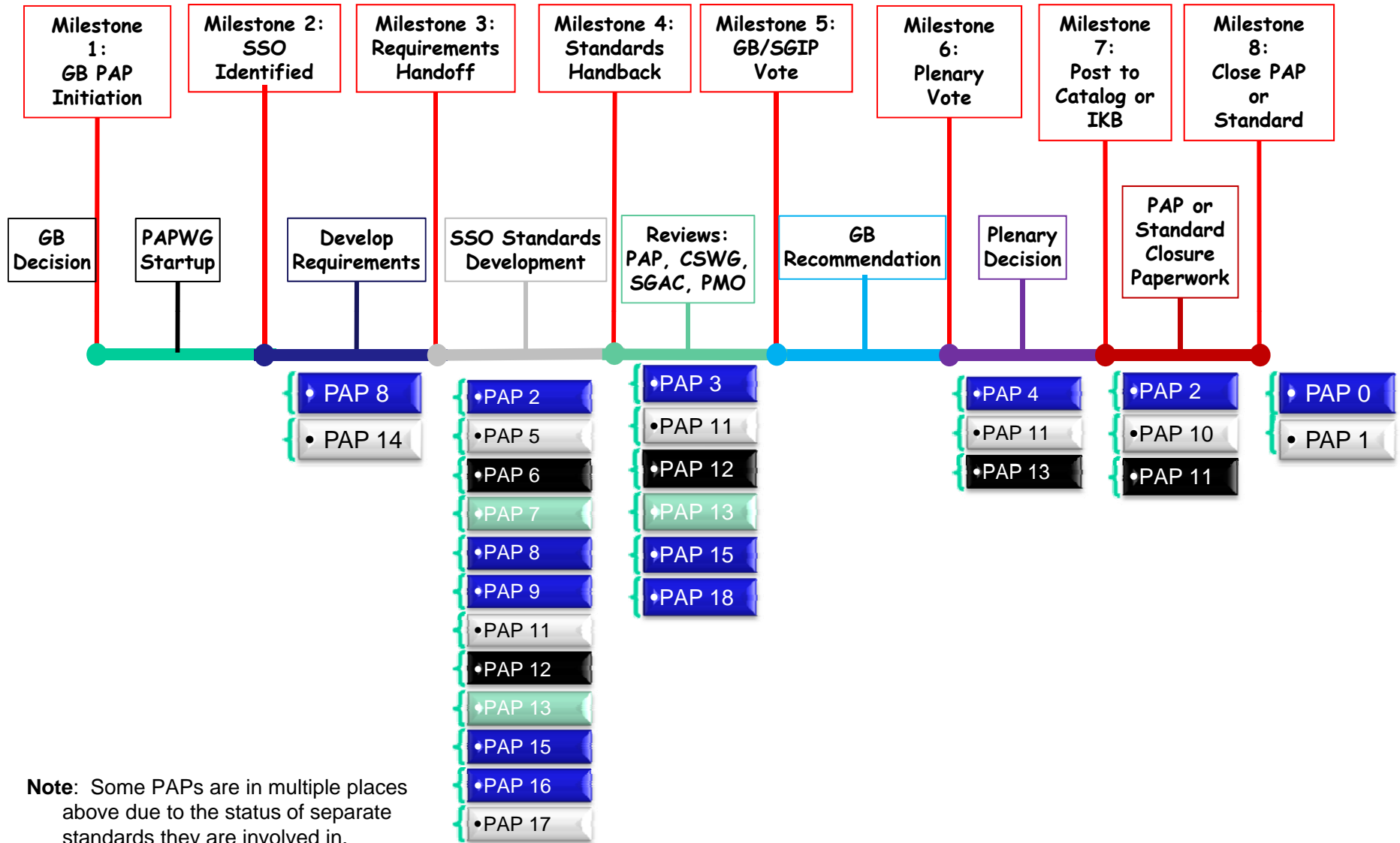
* Omits non-active Signatory Authorities.

Stakeholder Categories



Priority Action Plan	Standard(s) or Guideline(s)
PAP 1 - Role of IP in the Smart Grid	Informational IETF RFC
PAP 2 - Wireless Communications for the Smart Grid	IEEE 802.x, 3GPP,3GPP2, ATIS, TIA
PAP 3 - Common Price Communication Model	OASIS EMIX, ZigBee SEP 2, NAESB
PAP 4 - Common Scheduling Mechanism	OASIS WS-Calendar
PAP 5 - Standard Meter Data Profiles	AEIC V2.0 Meter Guidelines (addressing use of ANSI C12)
PAP 6 - Common Semantic Model for Meter Data Tables	ANSI C12.19-2008, MultiSpeak V4, IEC 61968-9
PAP 7 - Electric Storage Interconnection Guidelines	IEEE 1547.4, IEEE 1547.7, IEEE 1547.8, IEC 61850-7-420, ZigBee SEP 2
PAP 8 - CIM for Distribution Grid Management	IEC 61850-7-420, IEC 61968-3-9, IEC 61968-13,14, MultiSpeak V4, IEEE 1547
PAP 9 - Standard DR and DER Signals	NAESB WEQ015, OASIS EMIX, OpenADR, ZigBee SEP 2
PAP 10 - Standard Energy Usage Information	NAESB Energy Usage Information, OpenADE, ZigBee SEP 2, IEC 61968-9, ASHRAE SPC 201P
PAP 11 - Common Object Models for Electric Transportation	ZigBee SEP 2, SAE J1772, SAE J2836/1-3 , SAE J2847/1-3, ISO/IEC 15118-1,3, SAE J2931, IEEE P2030-2, IEC 62196
PAP 12 - IEC 61850 Objects/DNP3 Mapping	IEC 61850-80-5, Mapping DNP to IEC 61850, DNP3 (IEEE 1815)
PAP 13 - Time Synchronization, IEC 61850 Objects/IEEE C37.118 Harmonization	IEC 61850-90-5, IEEE C37.118, IEEE C37.238, Mapping IEEE C37.118 to IEC 61850, IEC 61968-9
PAP 14 - Transmission and Distribution Power Systems Model Mapping	IEC 61968-3, MultiSpeak V4
PAP 15 - Harmonize Power Line Carrier Standards for Appliance Communications in the Home	DNP3 (IEEE 1815), HomePlug AV, HomePlug C&C, IEEE P1901 and P1901.2, ISO/IEC 12139-1, G.9960 (G.hn/PHY), G.9961 (G.hn/DLL), G.9972 (G.cx), G.hnem, ISO/IEC 14908-3, ISO/IEC 14543, EN 50065-1
PAP 16 - Wind Plant Communications	IEC 61400-25
PAP 17 - Facility Smart Grid Information Standard	New Facility Smart Grid Information Standard ASHRAE SPC 201P

Typical PAP Lifecycle (end of Sept.)

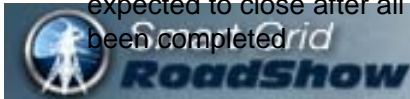


Note: Some PAPs are in multiple places above due to the status of separate standards they are involved in.

Planned PAP Closings by Quarter

PAP	2009		2010				2011				2012				Highlights (See other slides for details)
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
PAP 00 - Meter Upgradeability Standard	X														Now in the Catalog of Standards. PAP CLOSED
PAP 01 - Role of IP in the Smart Grid				X											Now in the Catalog of Standards. PAP CLOSED
PAP 02 - Wireless Communications for the Smart Grid												X			Version 1 Now in the Catalog of Standards; Version 2 under development
PAP 03 - Common Price Communication Model										X					In review by SGAC, CSWG, and PMO
PAP 04 - Common Scheduling Mechanism									X						Waiting for Plenary vote
PAP 05 - Standard Meter Data Profiles										X					Iterating within SSO after discussion at Governing Board meeting in July
PAP 06 - Common Semantic Model for Meter Data Tables										X					PAP team developing UML Model
PAP 07 - Electric Storage Interconnection Guidelines												X			Awaiting standards handback from SDOs
PAP 08 - CIM for Distribution Grid Management													X		Developing requirements affecting IEEE 1547 and IEC 61850-7-420
PAP 09 - Standard DR and DER Signals													X		SSO developing Standard
PAP 10 - Standard Energy Usage Information												X			Now in the Catalog of Standards. PAP LEFT OPEN FOR ADOPTION SUPPORT
PAP 11 - Interoperability Standards to Support Plug-in Electric Vehicles									X						Waiting for Plenary vote; PAP is CLOSED
PAP 12 - IEC 61850 Objects/DNP3 Mapping												X			In review by SGAC and CSWG; SSO developing Standard
PAP 13 - Time Synchronization, IEC 61850 Objects/IEEE C37.118 Harmonization													X		Waiting for Plenary vote
PAP 14 - Transmission and Distribution Power Systems Model Mapping												X			PAP team developing requirements under new scope
PAP 15 - Harmonize Power Line Carrier Standards for Appliance Communications in the Home													X		Broad Band in review by SGAC and CSWG; SSO developing Narrowband PLC Standard
PAP 16 - Wind Plant Communications									X						SSO developing Standard
PAP 17 - Facility Smart Grid Information Standard												X			SSO developing Standard
PAP 18 - SEP 1.x to SEP 2 Transition and Coexistence									X						In review by SGAC and CSWG
	1	0	0	0	0	1	0	0	0	4	3	5	3	2	

Note: Above dates are when PAPs expected to close after all their tasks have been completed



FERC Order on Smart Grid Interop Standards

- 6-month review
- Open meetings held in January and March
- Found there was not enough consensus to rule on the “first five” IEC standards, but:
 - Emphasized the role of the NIST SGIP in accelerating standards development and adoption
 - Encouraged more participation
 - Did not ask for a definition of “consensus”
 - Did not clarify if FERC would mandate the standards
- Docket is closed (for now)

NARUC Summer Resolutions

- ▶ Addressed and made recommendations around:
 - ▶ Cost recovery
 - ▶ Investment
 - ▶ Dynamic Rates
 - ▶ Consumer Engagement
 - ▶ Consumer Protections
 - ▶ Data Access, Privacy Issues
 - ▶ Interoperability Standards
 - ▶ Security Issues
 - ▶ Lessons Learned
 - ▶ Third Party Deployments
 - ▶ Working with Federal Partners

<http://summer.narucmeetings.org/2011SummerFinalResolutions.pdf>

Canadian Electricity Association

- ▶ CEA released a “Guideline for Smart Grid Standards”
- ▶ “...intended to provide a framework for electric utilities and other decision-makers in selecting standards related to modernizing electricity infrastructure.”
- ▶ Contains eight fundamental principles and fifteen elective criteria intended to assist manufacturers and users of smart grid technologies in developing and integrating new and emerging technologies
- ▶ <http://www.electricity.ca/posts/guideline-for-smart-grid-standards-released-66.php>

SGIP PAP 18: SEP 1.x to 2.0 Transition and Coexistence

- Met face-to-face in Montreal to show the 0.95 version of the white paper with all (200+) comments resolved
- Achieved consensus to move the white paper to version 1.0 and published on 07/22/2011
- Requirements delivered to the ZigBee Alliance- CSWG Reviews- NESCOR; SGAC and CSWG reviews completed and responded to
- Many members working on CSWG-NESCOR Task Force mitigation plan; Recent creation of ZigBee-WiFi-HomePlug consortium

Upcoming Events

- ▶ Spring 2011 SGIP Meetings:
 - F2F Meetings
 - December 5-8: Face-to-face in Phoenix
 - Virtual Meetings
 - Sep 15; Nov 10

- ▶ Use and contribute to the Use Case Database:
<http://collaborate.nist.gov/twiki-ssgrid/bin/view/SmartGrid/IKBUseCases>

- ▶ Participate on the panel or working groups:
To join: <http://collaborate.nist.gov/twiki-ssgrid/bin/view/SmartGrid/SGIP>

Questions

- ▶ Thank you
- ▶ For further resources or inquiries, contact Anna Grau, anna@enernex.com

