

# Standards

WHY ARE THEY IMPORTANT?

Missouri Public Service Commission  
November 29, 2011



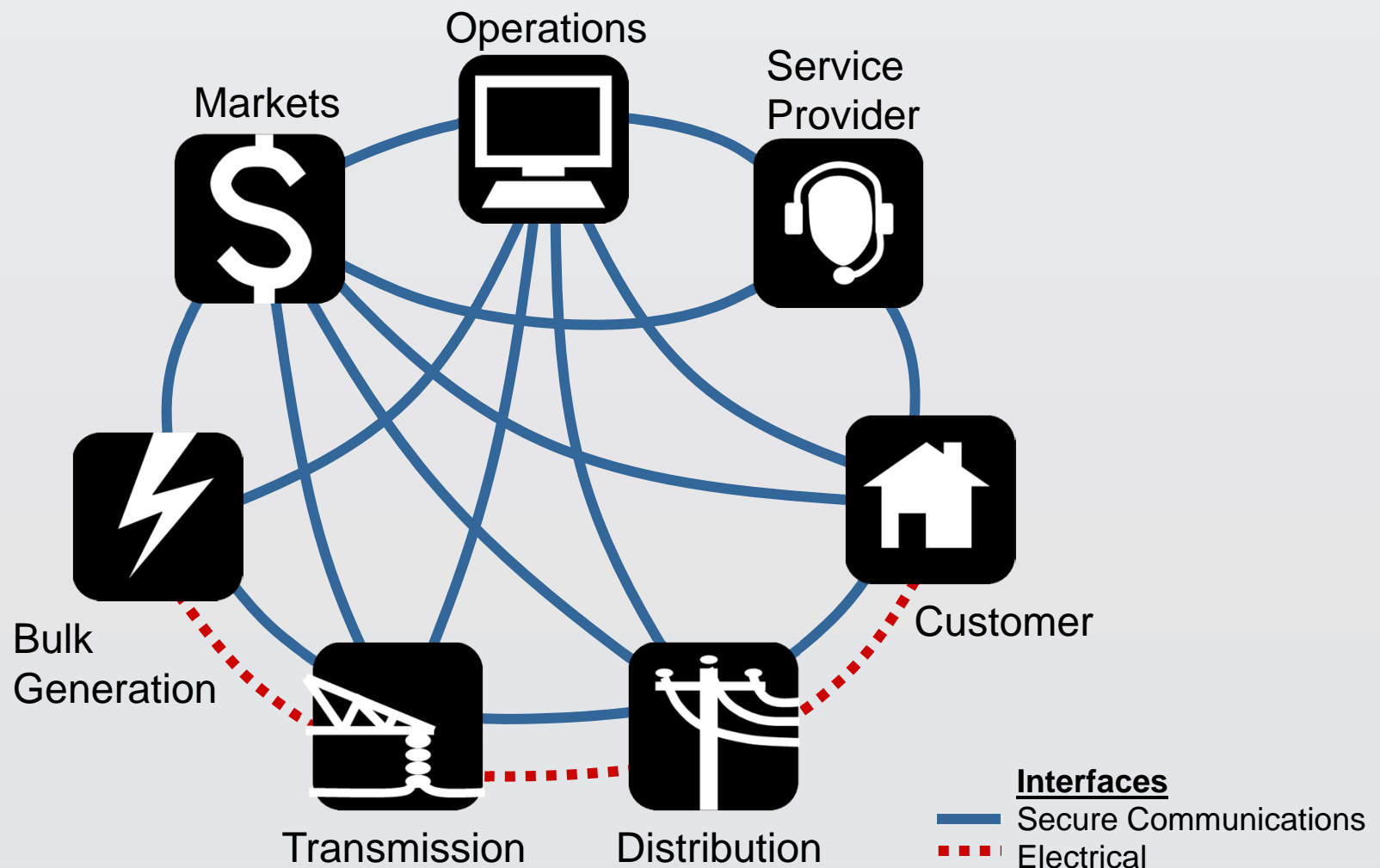
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# Agenda

- ▶ What is the Smart Grid?
- ▶ What is a standard?
- ▶ Why use standards?
- ▶ Why are standards important?
- ▶ What impact or role do they play on Smart Deployments?
- ▶ As a Regulator, what should I be considering?



# Smart Grid Conceptual Model

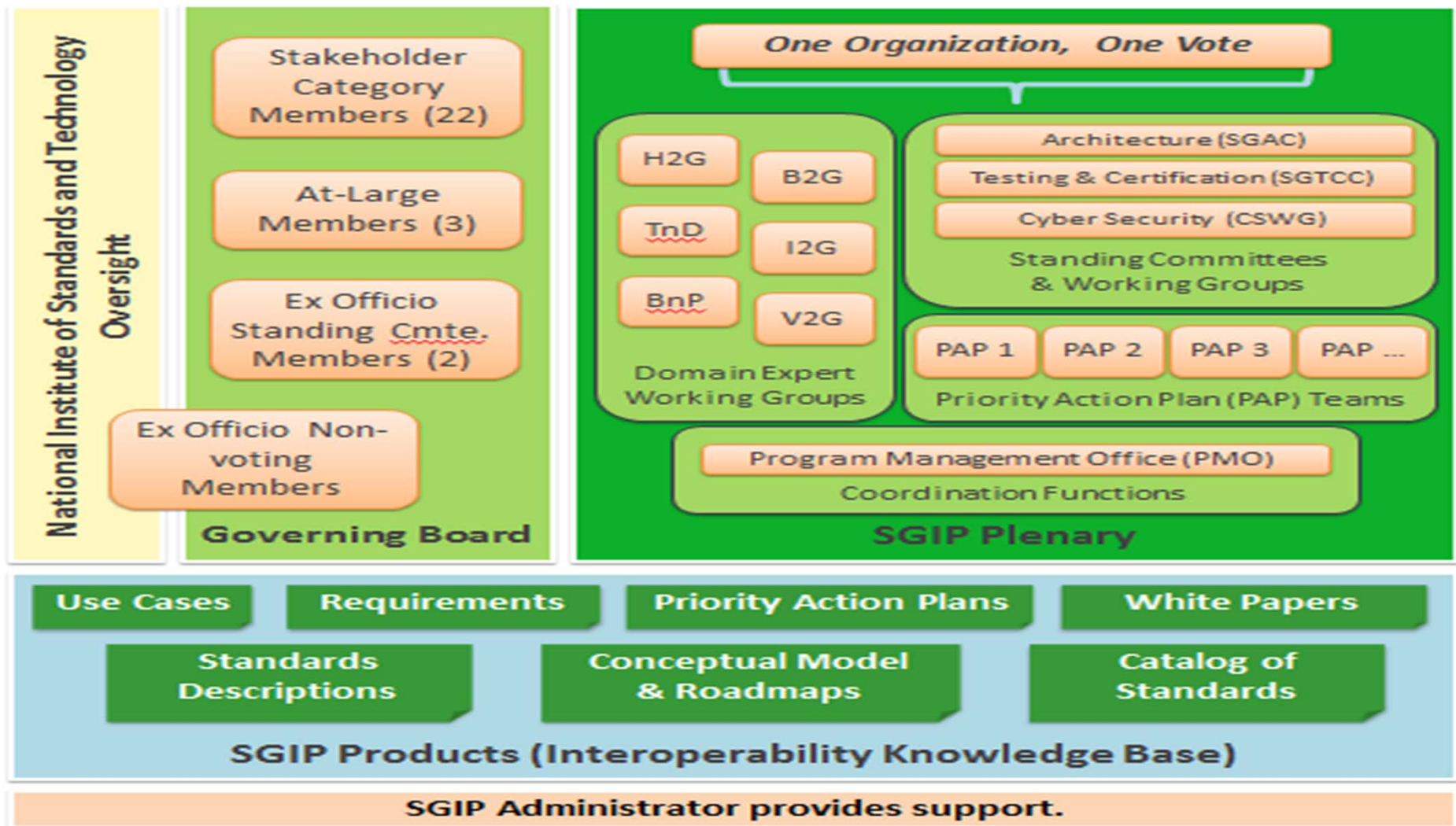


# What is a Standard?

- ▶ A set of requirements to perform a certain task
- ▶ The set is given a single name to represent them all
- ▶ Users can specify the name as a shorthand
- ▶ Implementers can claim compliance
- ▶ Makes it easy to mix-and-match
- ▶ Replace one implementation with a similar one



# What is the SGiP?





# Why Use Standards?

- ▶ Avoid re-inventing the wheel
- ▶ Learn from industry best practices
- ▶ Specify requirements more easily
- ▶ Reduce integration costs
- ▶ Prevent single vendor “lock-in”
- ▶ Vendors share a much larger market





# Deployments and Standards

- ▶ Each of the standards needs to be reviewed to determine relevance to state jurisdiction
- ▶ What does it mean to my state?
  - Do they enable an existing or envisioned policy to be cost effectively implemented?
  - Will/could/should this standard impact previous, current, or future proceedings or rulemakings such as those related to approved or pending utility smart grid projects?
- ▶ What can I do as a State Regulatory Agency?
  - Analyze all existing dockets for applicability
  - Analyze against core policy objectives for applicability
  - Develop guidelines for when/how utilities should consider them
  - Mandate specific standards be considered in certain situations
  - “Score” utility project proposals based on use of standards

# CoS: Standards Review Queue

Priorit y	Standard/Publicatio n	Title	Responsible WG
1	IEEE C37.238	IEEE Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications	PAP13
2	OASIS WS-Calendar	Web Services Calendar	PAP04
3	IEEE 1901-2010	IEEE Standard for Broadband over Power Line Networks: Medium Access Control and Physical Layer Specifications	PAP15
3	ITU-T G.9972	Coexistence mechanism for wireline home networking transceivers	PAP15
4	SGIP 2011-0008_1	PAP 18: SEP 1.x to SEP 2.0 Transition and Coexistence White Paper	PAP18
5	IEEE P1815	Standard for Electric Power Systems Communications - Distributed Network Protocol (DNP3)	PAP12
6	IEEE P1815.1	Standard for Exchanging Information Between Networks Implementing IEC 61850 and IEEE Std 1815 (Distributed Network Protocol - DNP3)	PAP12
7	IEC 61400-25-2	Wind turbines - Part 25-2: Communications for monitoring and control of wind power plants – Information models	PAP16
9	NAESB REQ-22	Third Party Access to Smart Meter-based Information	CSWG
10	IEC/TS 62351-1	Power systems management and associated information exchange - Data and communications security - Part 1: Communication network and system security - Introduction to security issues	CSWG
10	IEC/TS 62351-2	Power systems management and associated information exchange - Data and communications security - Part 2: Glossary of terms	CSWG
10	IEC/TS 62351-3	Power systems management and associated information exchange - Data and communications security - Part 3: Communication network and system security - Profiles including TCP/IP	CSWG
10	IEC/TS 62351-4	Power systems management and associated information exchange - Data and communications security - Part 4: Profiles including MMS	CSWG
10	IEC/TS 62351-5	Power systems management and associated information exchange - Data and communications security - Part 5: Security for IEC 60870-5 and derivatives	CSWG
10	IEC/TS 62351-6	Power systems management and associated information exchange - Data and communications security - Part 6: Security for IEC 61850	CSWG
10	IEC/TS 62351-7	Power systems management and associated information exchange - Data and communications security - Part 7: Network and system management (NSM) data object models	CSWG
10	IEC/TS 62351-8	Power systems management and associated information exchange - Data and communications security - Part 8	CSWG





# The Catalog of Standards: A Few Choice Picks

PAP 00 – Meter Upgradeability Standard – CoS

PAP 01 – Role of IP in the Smart Grid – CoS

PAP 02 – Wireless Comm. For the Smart Grid – V1 CoS

PAP 10 – Standard Energy Usage Information – CoS

PAP 11 – Interoperability Standards to Support Plug-in EVs – to be voted

SAE J2836\_1 USE CASES FOR COMMUNICATION BETWEEN PLUG-IN VEHICLES AND THE UTILITY GRID

SAE 2847-1 COMMUNICATION BETWEEN PLUG-IN VEHICLES AND THE UTILITY GRID

SAE J1772™-2010 ELECTRIC VEHICLE AND PLUG IN HYBRID ELECTRIC VEHICLE CONDUCTIVE CHARGE COUPLER

<http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/SGIPCoSStandardsInformationLibrary>

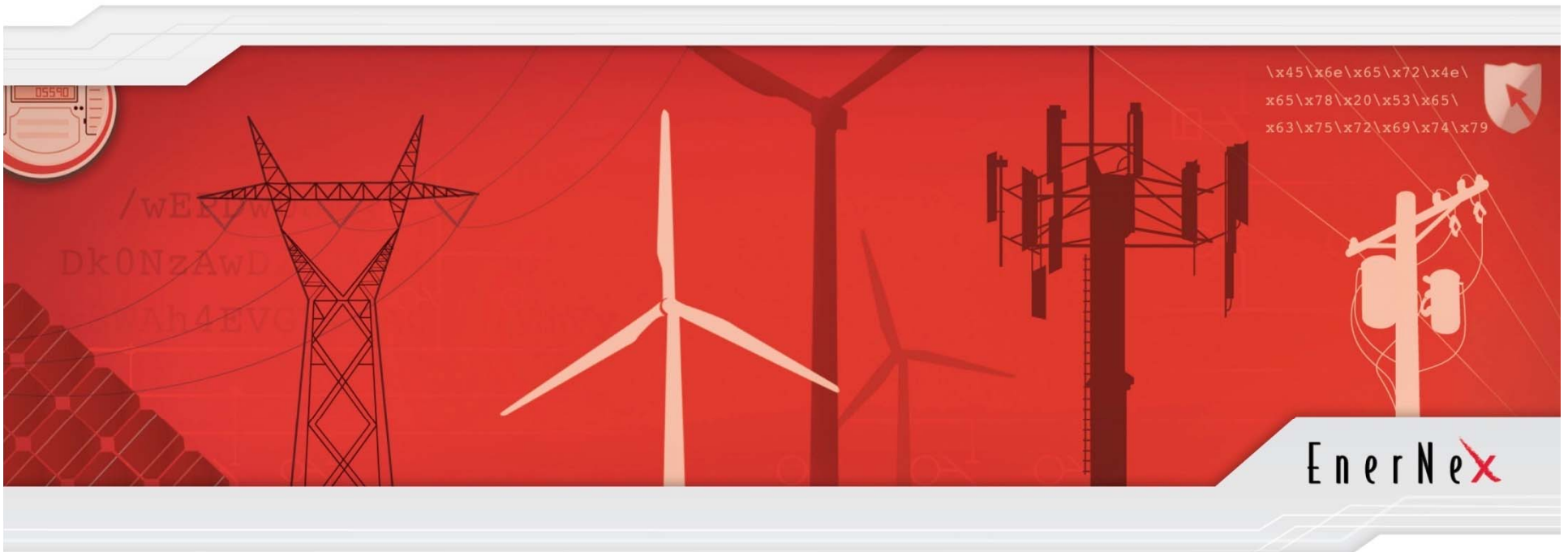
# Summary: Standards...

- ▶ Are a quick way to specify complex requirements
- ▶ Reduce costs, prevent lock-in, avoid silos
- ▶ Are not all the same; some are better than others
- ▶ Come from different groups, for different reasons
- ▶ Should be selected based on
  - The function they are performing
  - The environment they are used in
  - The aspect of communications (layer) they address
- ▶ Must evolve to meet user requirements
- ▶ Should be specified as part of an evolutionary framework



# Questions?

Thank you for your Attention!!



# Q and A

Q. Will these standards require hardware changes in existing substations and field locations?

A. Yes and no - It depends on the age of the equipment and which of the standards is being considered

Q. Will these standards require writing down existing assets?

A. In general no, some software interfaces in the back office may need to be reworked or replaced, but in most cases the interfaces don't exist today.

Q. Is there an advantage to my ratepayers?

A. Yes, all of these standards reduce system integration, installation, and maintenance costs and increase overall system reliability

Q. Will these standards be "it" for NIST or will there be more in the future?

A. NIST will continue to work on the EISA 2007 mandate and provide additional mature standards to FERC as they are deemed ready by the SGIP.

Q. Are these standards in use anywhere?

A. Almost all of these standards are in use not only in the US, but in the rest of North America, South America, Europe and China.



# Reference Material

## EnerNex: What We Do

**Our mission** is to be the preferred supplier of specialized engineering services to the electric power industry.

**Our focus** is to help our customers solve electric power related issues and develop technology and expertise that will improve the operation and reliability of electric power systems.

**Our offering** is a cross-cutting blend of experience in engineering to government, utilities, research, commercial product lines, industry and private institutions.



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