

North American Energy Standards Board Smart Grid Work Shop - May 18, 2010

The North American Energy Standards Board Smart Grid Activities Planned, Underway and Completed

**Presented to
Missouri Public Service Commission**

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NAESB Profile

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- ❖ In 1992, the Natural Gas Council agreed that the wholesale gas market needed a standards organization and fostered the needed efforts to start one.
- ❖ During the formation from 1992 to 1994, the Department of Energy hosted monthly meetings where the gas industry in open meetings determined the best structure for the organization.
- ❖ In 1994, the Gas Industry Standards Board was incorporated to develop business practice standards and communications and e-commerce protocols for the interstate natural gas industry.
- ❖ GISB was approached by the Coalition for Uniform Business Rules to expand its charter to include retail gas and electric interests to support customer choice states.
- ❖ After 18 months of industry deliberation, GISB was expanded to NAESB effective January 1, 2002. The scope of development was broadened to include standards development efforts for the wholesale gas and electricity and retail gas and electricity markets.

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- ❖ Scope of work that we can undertake to develop standards and model business practices

NAESB's scope is cited in the NAESB Certificate (Article 2, section 1):

“The objects and purposes of NAESB are to propose and adopt voluntary standards and model business practices designed to promote more competitive and efficient natural gas and electric service, as such standards apply to electronic data interchange (“EDI”) record formats and communications protocols and related business practices that streamline the transactional processes of the natural gas and electric industries.”

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Organization by Quadrant and Segment

Wholesale Gas - 5 Segments

1. End Users
2. Local Distribution
3. Pipelines
4. Producers
5. Services

Wholesale Electric - 7 Segments

1. End Users
2. Distribution/LSE
3. Transmission
4. Generation
5. Marketers/Brokers
6. Independent Grid Operators/Planners
7. Technology and Services

Retail Gas - 3 Segments

1. End Users/Public Agencies
2. Utilities
3. Service Providers/Suppliers

Retail Electric - 3 Segments

1. End Users/Public Agencies
2. Distributors
3. Service Providers/Suppliers

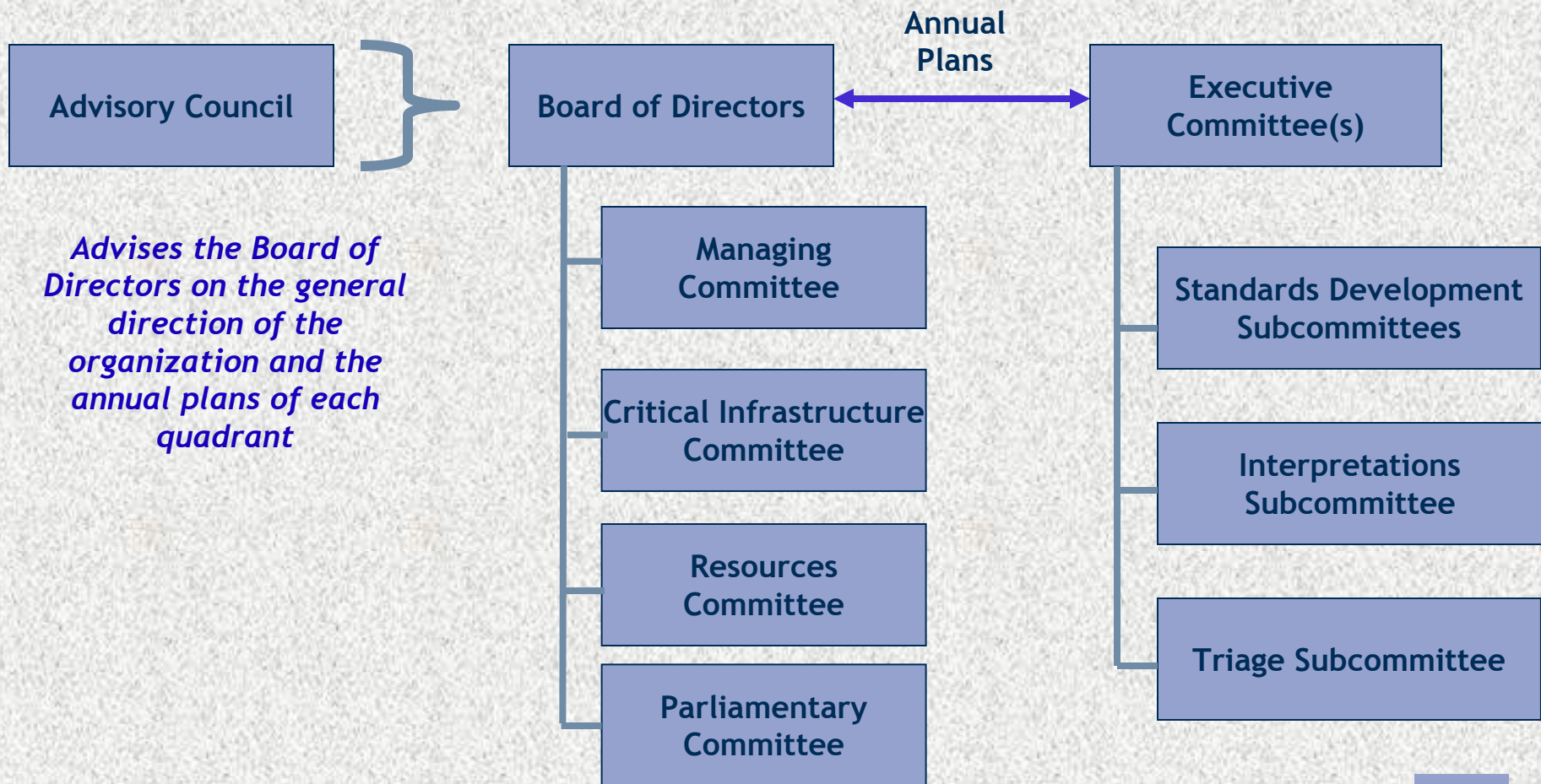
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Two Governing Bodies with identical structures -

Board of Directors - strategic direction, financial well being, annual planning for standards development, coordination of activities with other groups

Executive Committee - Carries out the annual plan, develops and maintains the standards and business practices through its subcommittees and task forces

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❖ Standards Development Process

- ❖ The process begins with a request - which can come from a member, an interested industry participant, a government agency or commission, an ISO or RTO, or a NAESB subcommittee or it can be an annual plan item approved by the Board of Directors.
- ❖ The process followed is ANSI accredited -- ANSI accredits organizations as Standards Development Organizations (“SDO”) based on their adherence to ANSI’s cardinal principles of standards-setting.
- ❖ The process is open and any interested party can participate and contribute to the standards development regardless of membership in NAESB.

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ANSI Principles of Standards Development.

- ❖ Open. Any materially affected and interested party has the ability to participate
- ❖ Balance and Lack of Dominance. The consensus body shall be balanced and shall not be dominated by any single interest category or organization.
- ❖ Due Process. All objections shall have an attempt made towards their resolution. Interests who believe they have been treated unfairly shall have a right to appeal.
- ❖ Consensus. More than a majority but not necessarily unanimity.
- ❖ Voluntary. Standards are not binding unless adopted by a governmental entity as part of a code or set of regulations.

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❖ Voluntary Standards

- ❖ From the organization's perspective, all standards are voluntary and may be provided to regulatory agencies as status reports as they are published.
- ❖ The standards and model business practices may incorporate regional or operational differences
- ❖ Regulatory agencies may choose to adopt standards or model business practices, but NAESB will not advocate such action.
- ❖ The organization will not monitor for compliance, provide performance measures for compliance, nor will it define sanctions for non-compliance.
- ❖ The organization will not advocate before any regulatory body.

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❖ Relationship of NAESB Standards and Model Business Practices to Policy

- ❖ NAESB does not set policy.
- ❖ We defer to state and federal agencies in determining policy.
- ❖ Our work products are intended to focus on the implementation of policy decisions by providing a road map for the interactions between the various parties.
- ❖ Our standards and model business practices recommend practices for alternative regulatory models but leave the decision as to the appropriate policy or model to the regulators.

Profile of a Key Development Issue

Smart Grid

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❖ H.R. 6 -- Energy Independence and Security Act of 2007

TITLE XIII—SMART GRID

SEC. 1305. SMART GRID INTEROPERABILITY FRAMEWORK.

(d) STANDARDS FOR INTEROPERABILITY IN FEDERAL JURISDICTION.—

At any time after the Institute's work has led to sufficient consensus in the Commission's judgment, the Commission shall institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets.

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❖ Efforts taken by NIST & FERC

- ❖ Policy Statement Issued by FERC (Docket No. PL09-4-000) - July 2009
- ❖ Creation of the Smart Grid Interoperability Panel - Nov 2009
 - ❖ 517 organizations as members
- ❖ Creation of the SGIP Governing Board - Nov 2009
 - ❖ 25 members
- ❖ Issuance of Smart Grid Interoperability Roadmap - Jan 2010
 - ❖ 25 standards and specifications identified
 - ❖ Additional 50 standards, profiles and requirements that need further review
 - ❖ 14 priority action plans identified to address gaps (now 16)

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❖ Priority Action Plans:

- ❖ PAPs supporting metering: Meter Upgradeability Standard (PAP 00); Standard Meter Data Profiles (PAP 05)
- ❖ PAPs supporting enhanced customer interactions with the Smart Grid: Standards for Energy Usage Information (PAP 10); Standard Demand Response Signals (PAP 09); Develop Common Specification for Price and Product Definition (PAP 03); and Develop Common Scheduling Communication for Energy Transactions (PAP 04);
- ❖ PAPs supporting smart grid communications: Guidelines for the Use of IP Protocol Suite in the Smart Grid (PAP 01); Guidelines for the Use of Wireless Communications (PAP 02); and Harmonize Power Line Carrier Standards for Appliance Communications in the Home (PAP 15)

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❖ Priority Action Plans:

- ❖ PAPA supporting distribution and transmission: Develop Common Information Model (CIM) for Distribution Grid Management (PAP 08); Transmission and Distribution Power Systems Model Mapping (PAP 14); IEC 61850 Objects/DNP3 Mapping (PAP 12); and Harmonization of IEEE C37.118 with IEC 61850 and Precision Time Synchronization (PAP13); and
- ❖ PAPA supporting new smart grid technologies: Energy Storage Interconnection Guidelines (PAP 07); Interoperability Standards to Support Plug-in Electric Vehicles (PAP 11).

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Priority Action Plans:

- 0 [Meter Upgradeability Standard](#)
- 1 [Role of IP in the Smart Grid](#)
- 2 [Wireless Communications for the Smart Grid](#)
- 3 [Common Price Communication Model](#)
- 4 [Common Scheduling Mechanism](#)
- 5 [Standard Meter Data Profiles](#)
- 6 [Common Semantic Model for Meter Data Tables](#)
- 7 [Electric Storage Interconnection Guidelines](#)
- 8 [CIM for Distribution Grid Management](#)
- 9 [Standard DR and DER Signals](#)
- 10 [Standard Energy Usage Information](#)
- 11 [Common Object Models for Electric Transportation](#)
- 12 [IEC 61850 Objects/DNP3 Mapping](#)
- 13 [Time Synchronization, IEC 61850 Objects/IEEE C37.118 Harmonization](#)
- 14 [Transmission and Distribution Power Systems Model Mapping](#)
- 15 [Harmonize Power Line Carrier Standards for Appliance Communications in the Home](#)
- 16 [Wind Plant Communications](#)

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- ❖ **NAESB Involvement in Smart Grid Efforts:**
 - ❖ In February 2009, the NAESB Advisory Council gave guidance to the NAESB Board that the organization should participate in Smart Grid activities.
 - ❖ In September 2009, NAESB was assigned standards development tasks through the NIST process for -
 - ❖ Requirements Specifications for Common Electricity Product and Pricing Definition (NIST PAP03)
 - ❖ Requirements Specifications for Common Scheduling Mechanism for Energy Transactions (NIST PAP04)
 - ❖ Requirements Specifications for DR/DER Signals (NIST PAP09)

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- ❖ NAESB Standards Development Status - PAPs 3, 4, 9
 - ❖ The NAESB task force completed the first phase of its development in late February-early March for the proposed standards for the three areas noted. The industry comment period just concluded.
 - ❖ The standards include use cases and data requirements and distinguish between wholesale market use and retail market use where different
 - ❖ The task force will take the industry comments and determine how best to incorporate them into the draft standards and provide responses in the next few weeks, which will be considered late comments.

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- ❖ **NAESB Standards Development Status (Continued)**
 - ❖ The task force will take the industry comments and determine how best to incorporate them into the draft standards and provide responses in the next few weeks, which will be considered late comments.
 - ❖ A single topic review session for both the retail and wholesale business practices related to PAPs 3, 4, and 9 will be scheduled this month
 - ❖ The Retail and Wholesale Electric Quadrant Executive Committees will consider the comments, the draft standards and the late comments from the subcommittee in actions they may take
 - ❖ NAESB ECs will vote to on the standards

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- ❖ Coordinated development with other standards groups
 - ❖ These standards will be used as the basis for further technical standards development undertaken by other groups as assigned through the NIST process.
 - ❖ The hand off has already occurred as this more technical standards development phase is underway.
 - ❖ Coordination and shared task force members are critical to ensuring the standards remain consistent from the standards that represent the business practices, requirements, actor lists and use cases.
 - ❖ The development is iterative, so that should there be changes resulting from the incorporation of comments, the changes would be passed on to the other groups.

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- ❖ Standards Development Underway
 - ❖ NAESB is developing more granularity for the data requirement standards it has already completed (phase 2 efforts)
 - ❖ NAESB also is participating in the development of standards for energy usage data (NIST PAP10) - but not as a standards developer. In this case, NAESB is acting as a convener.
 - ❖ As a convener, NAESB is in the process of conducting a survey of existing practices, and then consolidating the existing use cases and requirements provided through the survey responses.

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- ❖ Standards Development Underway (continued)
 - ❖ NIST is considering a single developer prepare the standards for energy usage/a single standard is developed
 - ❖ While we may be considered for the work, other groups such as OASIS and ASHRAE are also under consideration
 - ❖ The energy usage information standards are defined as data standards for fine grained and timely information about energy usage
 - ❖ The source of the information to which the standards would be applied is the monthly electric usage information as well as the near real time information as smart meters and other devices are deployed.

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❖ Related Standards Development

- ❖ NAESB has also received a request to develop standards to support DR enrollment and it has been assigned to the retail electric quadrant for development.
- ❖ The first phase of NAESB demand response standards for measurement and verification have been completed for both retail and wholesale markets - FERC adopted the wholesale standards on April 15.
- ❖ Second phase of DR development is underway
- ❖ Retail market energy efficiency standards are being developed based on the NAPEE report.

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- ❖ Success Factors/Challenges in the development
 - ❖ Short time frames for development require agency support and clarity in stated policy, industry executive support and the availability of subject matter experts
 - ❖ Cohesive standards development beginning with clear policy, leading to supporting business practices and information requirements followed by technical standards
 - ❖ Strong coordination and collaboration between linked standards developers
 - ❖ All segments of the market have a seat at the table when the standards are developed and an equal voice in decision making, with an understood and accepted change control process
 - ❖ Transparency, transparency, transparency

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- ❖ Recommended Requirements if there may be an opportunity for Regulatory Action:
 - ❖ Opportunity for involvement in the standards development process by the entities who could be mandated to use the standards and the market entities impacted by possible regulations
 - ❖ Multiple opportunities for input, comment and vetting of the standards by the industry before they are provided as a work product to the industry for its consideration and to the regulator as it may consider its actions
 - ❖ A full record of the decisions made during standards development, including who made decisions, who were invited to make decisions, how decisions were made, how changes were processed, what were the minority positions and how they were addressed

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Web Site Information and Contacts

- ❖ Web Site : www.naesb.org
 - ❖ Quadrant Procedures, Bylaws, Certificate for NAESB
 - ❖ Calendar of Meetings, Agendas, Work Papers, Comments
 - ❖ Board minutes, EC Minutes, How to order Transcripts
 - ❖ Standards and Related Work Products
 - ❖ Membership Information
- ❖ Contact Information
 - ❖ Phone - 713-356-0060
 - ❖ Fax - 713-356-0067
 - ❖ Email - naesb@naesb.org
 - ❖ For further information on the organization, please contact Veronica Thomason (713-356-0060, naesb@naesb.org)

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How to Contact NAESB

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How To Monitor Activities

- ✓ Monthly Update Calls: http://www.naesb.org/monthly_update.asp
- ✓ Review updated annual plans quarterly: <http://www.naesb.org/materials/gov.asp>
- ✓ Review Board minutes quarterly: http://www.naesb.org/weq/weq_bod.asp
- ✓ Sign up for email distribution notices on subcommittees of interest:
http://www.naesb.org/listserv/mail/mail_register.cfm
- ✓ Call NAESB office (713-356-0060, naesb@naesb.org)

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Additional Background Information

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More Information on the Standards Development Process

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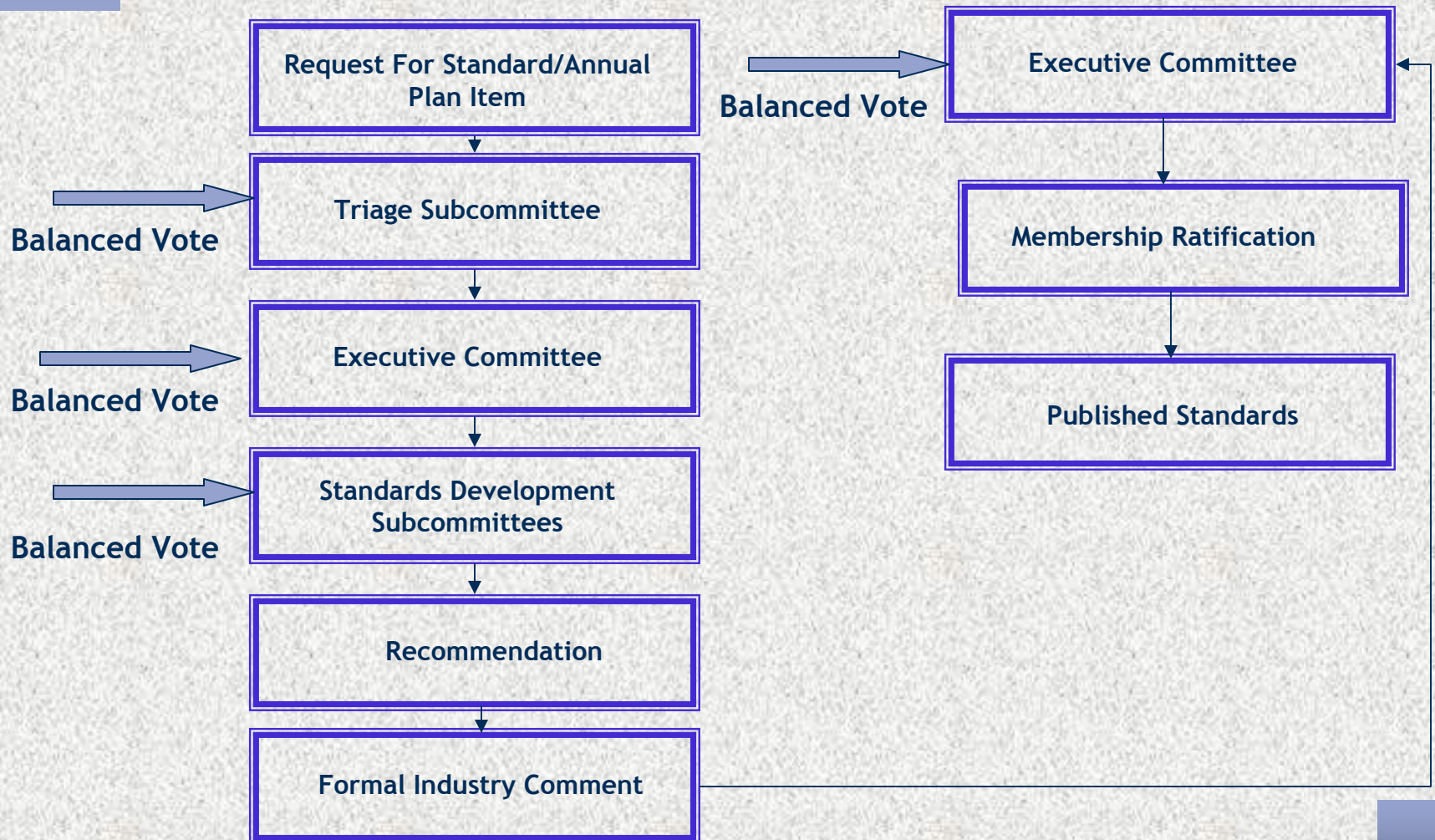
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How do the members create the standards?

- ❖ We average 30-35 meetings or calls per month
- ❖ We average more than 600 participants by phone per month
- ❖ We offer web casting to assist in the conference calls
- ❖ All participants, regardless of NAESB membership status, are welcomed to the meetings and subcommittee efforts

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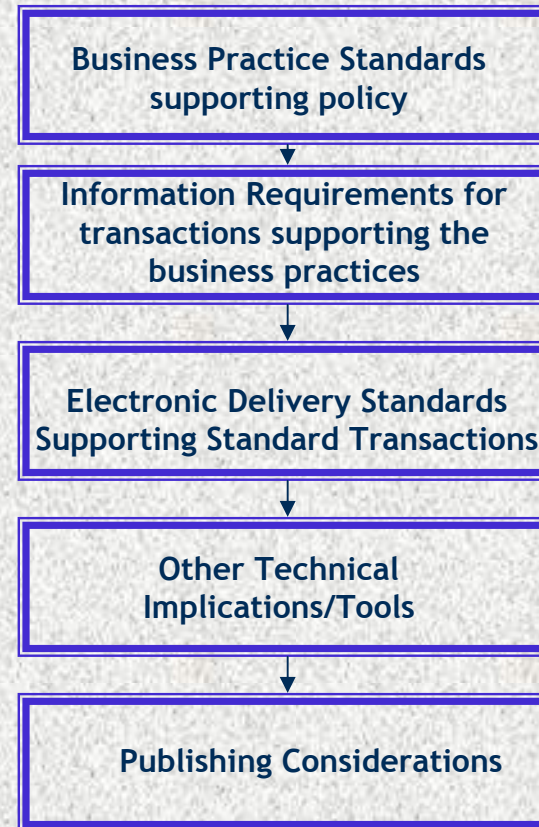
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Full Staffing



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- ❖ Standards development based on an Annual Plan and initiated by request or annual plan item
- ❖ Balanced voting structure at EC and subcommittees
- ❖ Multiple opportunities for involvement and comment
- ❖ ANSI accredited defined process for standards development with several tiers of voting to ensure broad based support
- ❖ All actions taken, decisions made and work products created are available publicly and fully transparent
- ❖ A record of how all decisions are reached is documented and publicly available

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Coordination With NERC

- ❖ NAESB and NERC have a joint standards development process that coordinates work to ensure that reliability standards and complementary business practices are in sync
- ❖ The has worked well over the years for several sets of standards
- ❖ Our filings of standards with the FERC are also coordinated
- ❖ We are also coordinated in use of tools and support systems such as the TSIN Registry

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NAESB Retail Gas & Electric Market Status for 2010

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Major Retail Work Underway Now:

- ❖ Phase 2 Demand Response and Energy Efficiency
- ❖ Smart Grid Standards Development for Common Price Communication Model, Common Scheduling Mechanism, Standardized Demand Response/Distributed Energy Resources Signals and survey underway for Energy Usage Data
- ❖ Process Flows and additional Model Business Practices (MBPs) for Billing and Payment
- ❖ Additional MBPs for Registration Agent process
- ❖ Develop practices for Distribution Companies to register/certify new Suppliers
- ❖ Develop a “Consumer Disclosure Statement” describing the Supplier’s service offerings and related contract provisions

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Version 1.2 Retail Standards:

Defined Terms

Market Participant Interactions

Electronic Delivery Mechanism

Internet Electronic Transport

Texas Registration Agent

Distribution Company-Supplier Disputes

Customer Enrollments, Drops and Account Information Change

Creditworthiness

Billing and Payments

Contracts

Electronic Invoicing

Customer Information

Last Published: December 2009, Version 1.2

Next Publication: March 2011

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NAESB Wholesale Electric Market Status for 2010

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Major WEQ Work Underway Now:

- ❖ Phase 2 Demand Response and Energy Efficiency
- ❖ Smart Grid Standards Development for Common Price Communication Model, Common Scheduling Mechanism, Standardized Demand Response/Distributed Energy Resources Signals and survey underway for Energy Usage Data
- ❖ Parallel Flow Visualization for Transmission Loading Relief
- ❖ Network Integration Transmission Services
- ❖ Coordination of Requests for Service Across Multiple Transmission Systems
- ❖ Transfer of the Registry
- ❖ Modifications of eTag Specifications

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Version 2.1 WEQ Standards:

OASIS Business Practices

OASIS S&CP

OASIS Data Dictionaries

*Coordinate Interchange**

*ACE Equation Special Cases**

*Manual Time Error Correction**

*Inadvertent Interchange Payback**

*Transmission Loading Relief**

Contracts

Standards of Conduct

Gas/Electric Coordination

Public Key Infrastructure

eTariff

Demand Response

Last Published: March 2009, Version 2.1, Adopted by FERC Nov. 2009

Next Publication: Third Quarter 2010, Version 2.2

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NAESB Wholesale Gas Market Status for 2010

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Major WGQ Work Underway Now:

- ❖ Updates to the eTariff Standards
- ❖ Security Profiles for Customer Information Access
- ❖ Review of Capacity Release Standards and EDI Usage
- ❖ Updates to Gas/Electric Coordination Standards

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Version 1.9 WGQ Standards:

Common Codes

Creditworthiness

Nominations

Flowing Gas

Invoicing

Electronic Delivery Mechanisms

Capacity Release

Contracts

Internet Electronic Transport

Gas-Electric Coordination

eTariff

Gas Quality

Last Published: Sep.2009, Tenth Version, Adopted by FERC March 2010

Next Publication: Fourth Quarter 2010

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NAESB Copyright Policy

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- ❖ All NAESB standards are copyrighted:
 - ❖ Exclusive Rights provided under the Copyright Act are held by the owner
 - ❖ These rights include: reproduction, distribution, adaptation and display
 - ❖ Limited monopoly over use
- ❖ Copyright Infringement
 - ❖ Copyright infringement is normally dealt with by the owner
 - ❖ Rights include: injunction, impoundment, destruction, actual damages, seizure of profits, court costs and attorney's fees, and
 - ❖ Statutory damages from \$750 to \$150,000 per infringement
 - ❖ Willful infringement is more punitive

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- ❖ **NAESB Reasons for Copyrighting:**
 - ❖ We want our standards to be distributed by us alone to ensure their integrity and to be certain that the most current standards are used
 - ❖ NAESB's income, by which we discharge our mission, depends upon revenue from the sale of our standards

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❖ NAESB Copyright Policy:

- ❖ Members get standards as a part of their membership
- ❖ The standards may be used by the member alone, not by its agents, affiliates, partners or subsidiaries
- ❖ Non-member third parties may purchase standards or access for their own use
- ❖ These restrictions are fully consistent with the Copyright Act
- ❖ Waivers are provided and considered on a case by case basis

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Interactions with FERC

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NAESB Filing of standards with FERC

- ❖ All wholesale electric and wholesale gas standards that are federally jurisdictional are filed with the FERC
- ❖ The standards themselves and any standards that failed to pass due to a segment vote failure are forwarded
- ❖ The NAESB record of minutes, work papers, voting, comments related to the standards are forwarded, including all minority positions noted in comments
- ❖ Related transcripts are made available to FERC and can be purchased by any other interested party
- ❖ Any regulatory agency can request access to or copies of NAESB standards

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NAESB's Value to the Industry

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- ❖ Provides an open and balanced forum for the industry in a membership and industry driven process to develop standards that:
 - ❖ implement regulatory policy - with a clear record of decision making and means for access and maintenance
 - ❖ support a more efficient and robust market with improved communications and transactional processes between trading partners and government agencies
- ❖ Provides a forum for the regulatory agencies to have the industry recommend standards that implement their regulatory policies and provide the agencies with the record of decision making