NIST
National Institute of Standards and Technology
U.S. Department of Commerce

Smart Grid Interoperability Standards: Governance Perspective

George W. Arnold, Eng.Sc.D.
National Coordinator for Smart Grid Interoperability
National Institute of Standards and Technology

Smart Grid Context

- "Supreme engineering achievement of the 20th century" – *National Academy of Engineering*
- Complex
  - 3200 utilities, 100s of suppliers, $1 trillion assets, 140 million customers
  - 14% of system owned/operated by federal government, 86% private sector or municipal
- Aging
  - Modernization is a key priority globally
  - Many new technologies and operating paradigms being introduced
  - Requires collaboration among many industries that have not traditionally worked together
  - Architecture and standards are critical

Authority

The Energy Independence and Security Act gives NIST

"primary responsibility to coordinate development of a framework that includes protocols and model standards for information management to achieve interoperability of smart grid devices and systems…"

- Congress directed that the framework be "flexible, uniform, and technology neutral"
- Input and cooperation by private sector and other federal and state agencies
- Use of these standards is a criteria for federal Smart Grid Investment Grants
- Input to federal and state regulators

NIST
National Institute of Standards and Technology

Stakeholders

1	Appliance and consumer electronics providers
2	Commercial and industrial equipment manufacturers and automation vendors
3	Consumers – Residential, commercial, and industrial
4	Electric transportation industry Stakeholders
5	Electric utility companies – Investor Owned Utilities (IOU)
6	Electric utility companies - Municipal (MUNI)
7	Electric utility companies - Rural Electric Association (REA)
8	Electricity and financial market traders (includes aggregators)
9	Independent power producers
10	Information and communication technologies (ICT) Infrastructure and Service Providers
11	Information technology (IT) application developers and integrators
12	Power equipment manufacturers and vendors
13	Professional societies, users groups, and industry consortia
14	R&D organizations and academia
15	Relevant Government Agencies
16	Renewable Power Producers
17	Retail Service Providers
18	Standard and specification development organizations (SDOs)
19	State and local regulators
20	Testing and Certification Vendors
21	Transmission Operators and Independent System Operators
22	Venture Capital

Smart Grid Interoperability Panel

- Public-private partnership created in Nov. 2009
- Currently government-funded; eventual transition to private
- Nearly 670 member organizations
- Open, public process, consensus-based, international participation
- Coordinates standards developed by Standards Development Organizations (SDOs)
  - Identifies Requirements
  - Prioritizes standards development programs
  - Works with over 20 SDOs including IEC, ISO, ITU, IEEE, …
- Web-based participation

SGIP Twiki:

http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/SGIP

SGIP Membership

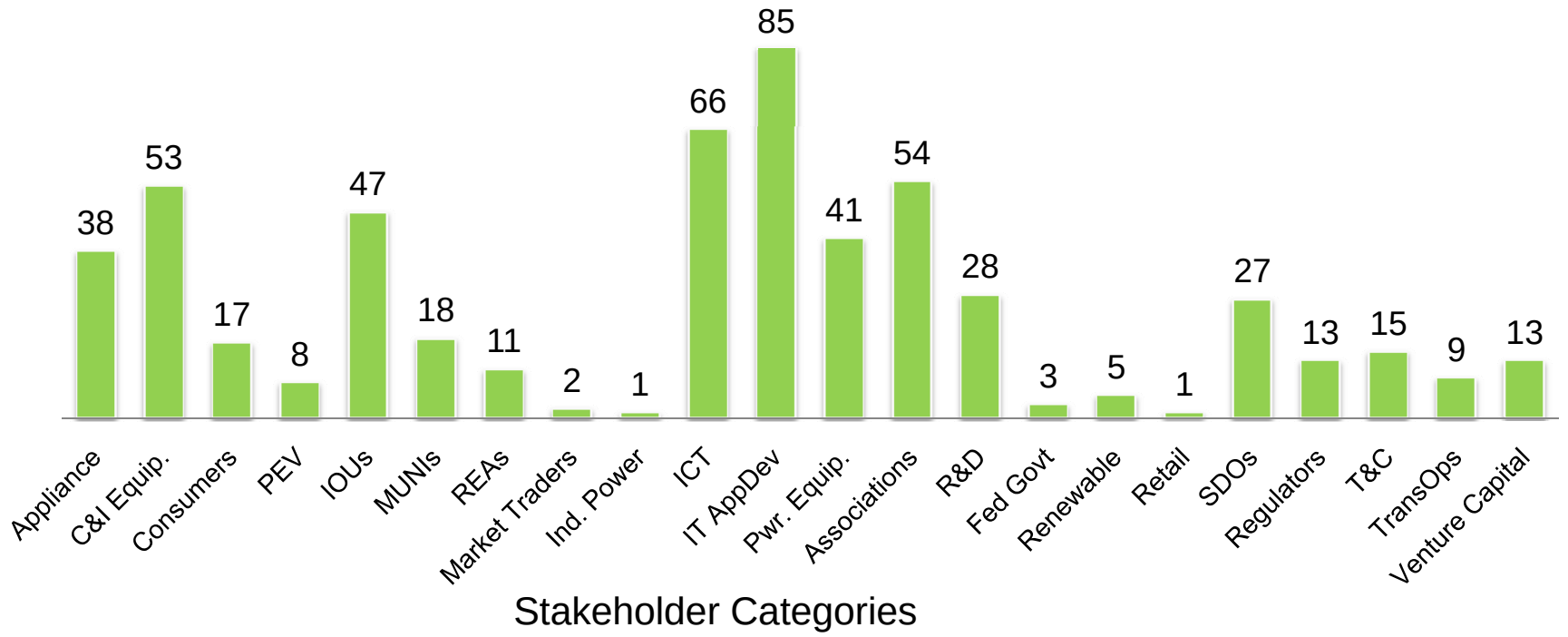
as of 03.15.11

- **Total # of Member Organizations: 664**
  - # of Participating Member Organizations: 555
  - # of Observing Member Organizations: 109
  - # of Organizations who joined in Q1 2011: 19
- **Total # of Individual Members*: 1,708**

of Organizations by Country

- USA: 592
- Europe: 21
- Asia: 16
- Oceania: 4
- North America (non-US): 29
- South America: 1
- Africa: 1

of Participating Member Organizations by Declared Stakeholder Category



** Omits non-active Signatory Authorities.*

SGIP Organization