

NIST Interoperability Framework Initiative

Jerry FitzPatrick

Smart Grid Team

National Institute of Standards and Technology

IEEE PES ETCC Late-breaking News Session

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fitzpa@nist.gov

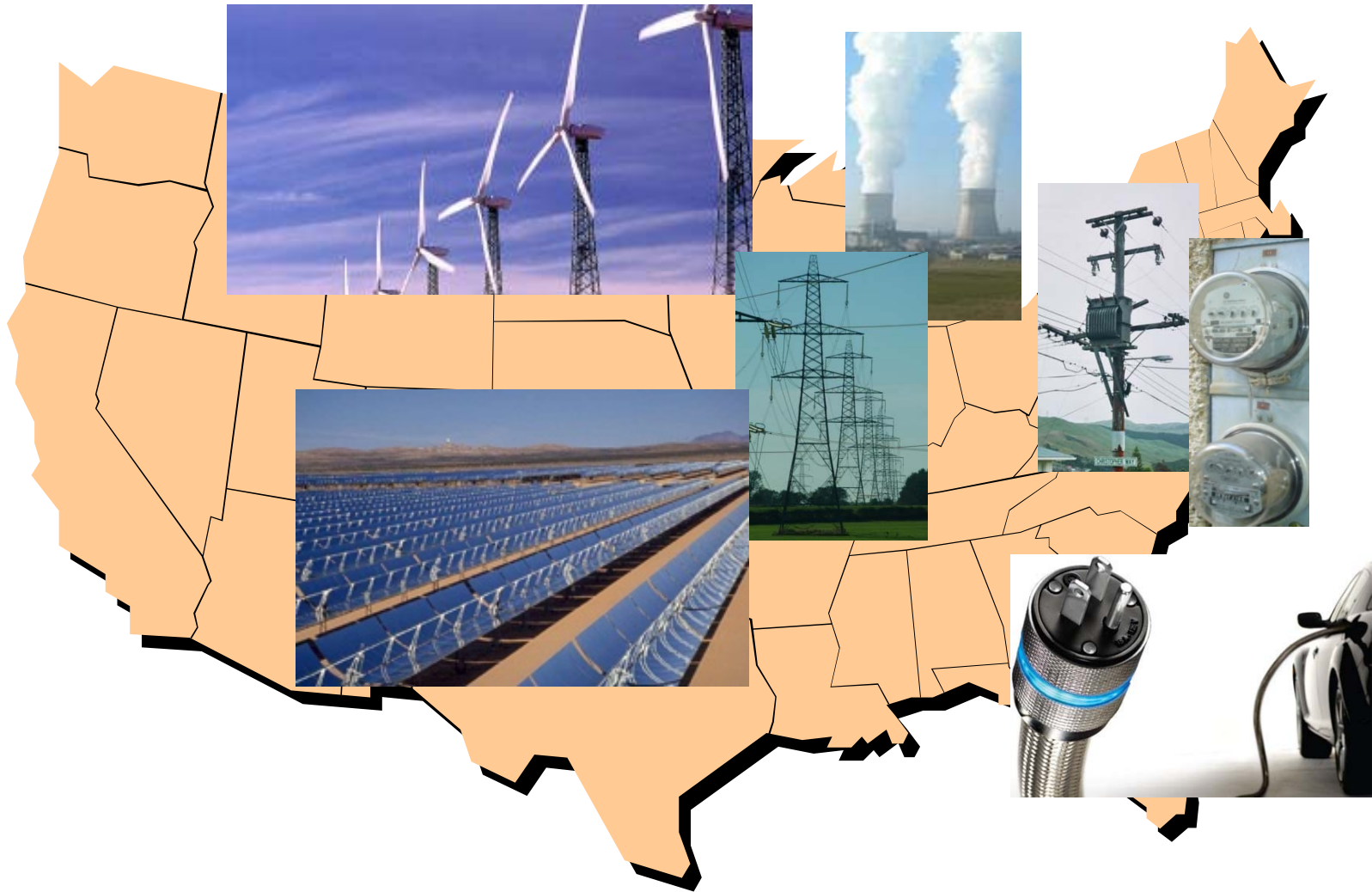


Outline

- Introduction - 2007 EISA
- NIST Three Phase Plan
- Recent Progress
- Next Steps

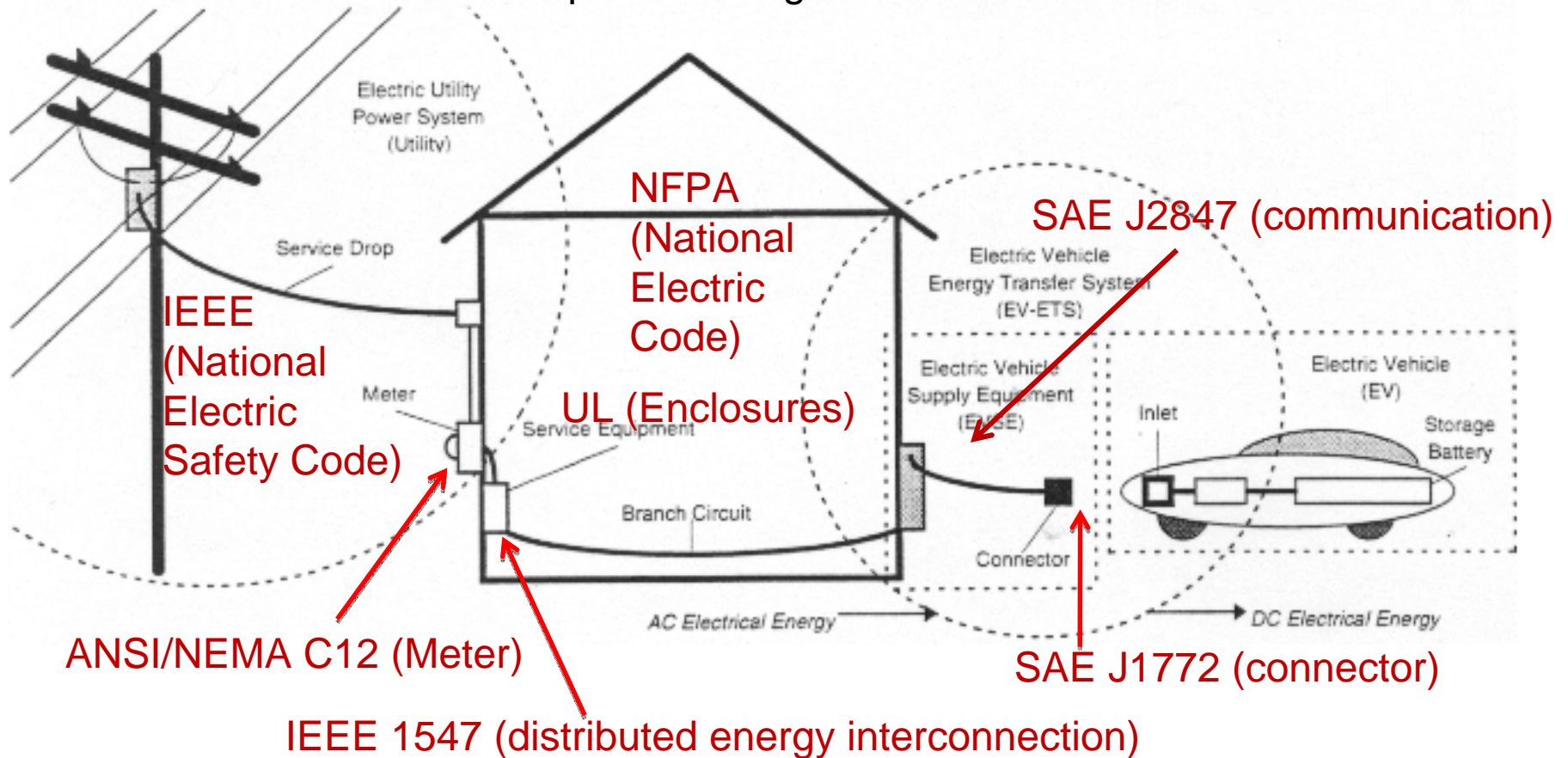
Standards Are Essential

To Realizing a National Interoperable and Secure Smart Grid



Example: Plug-in Electric Vehicle – Grid Interface

Coordination is required among several standards bodies



Additional standards will be needed for: communications/Information protocols for charge management, power injection management, operations and maintenance, metering, roaming.

The Need for Standards is Urgent



Example: Smart Meters

\$40 - \$50 billion dollar
deployment nationwide

Underway now

ARRA will accelerate

Rapid technology evolution

Absence of firm standards

Source: Congressional Research
Service Report

The NIST Role

*Energy Independence and Security Act (EISA) of 2007
Title XIII, Section 1305.
Smart Grid Interoperability Framework*

In cooperation with the DoE, NEMA, IEEE, GWAC, and other stakeholders, **NIST** has “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...**”

White House Meeting May 18



Chaired by Secretaries Locke
and Chu
66 CEOs and senior executives,
federal and state regulators

We need to move fast – it can be
done!

Consensus does not mean
unanimity

SG investments being made now
cannot be ignored

Standards need to allow for
innovation

One size does not fit all

Open standards are essential

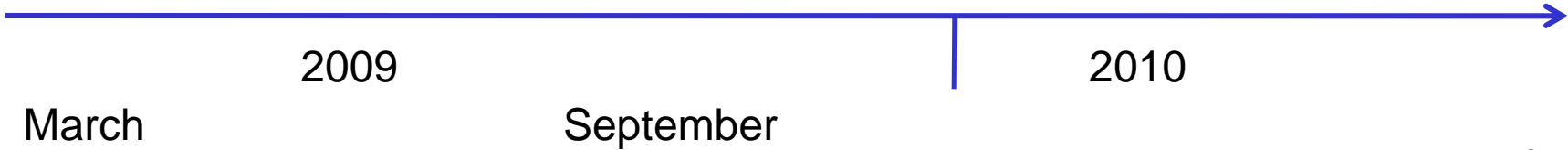
Today's regulatory assumptions
may have to evolve

NIST Three Phase Plan

PHASE 1
Identify an initial set of existing consensus standards and develop a roadmap to fill gaps

PHASE 2
Establish public/private Standards Panel to provide ongoing recommendations for new/revised standards

PHASE 3
Testing and Certification Framework



We Need A Standards Roadmap

Capabilities

Priorities

Reference Model

Standards

Release Plan

Responsibilities

Governance

Testing and
Certification



Roadmap Focus Areas

FERC-identified priority applications:

- Demand Response
- Wide-Area Situational Awareness
- Electric Storage
- Electric Transportation

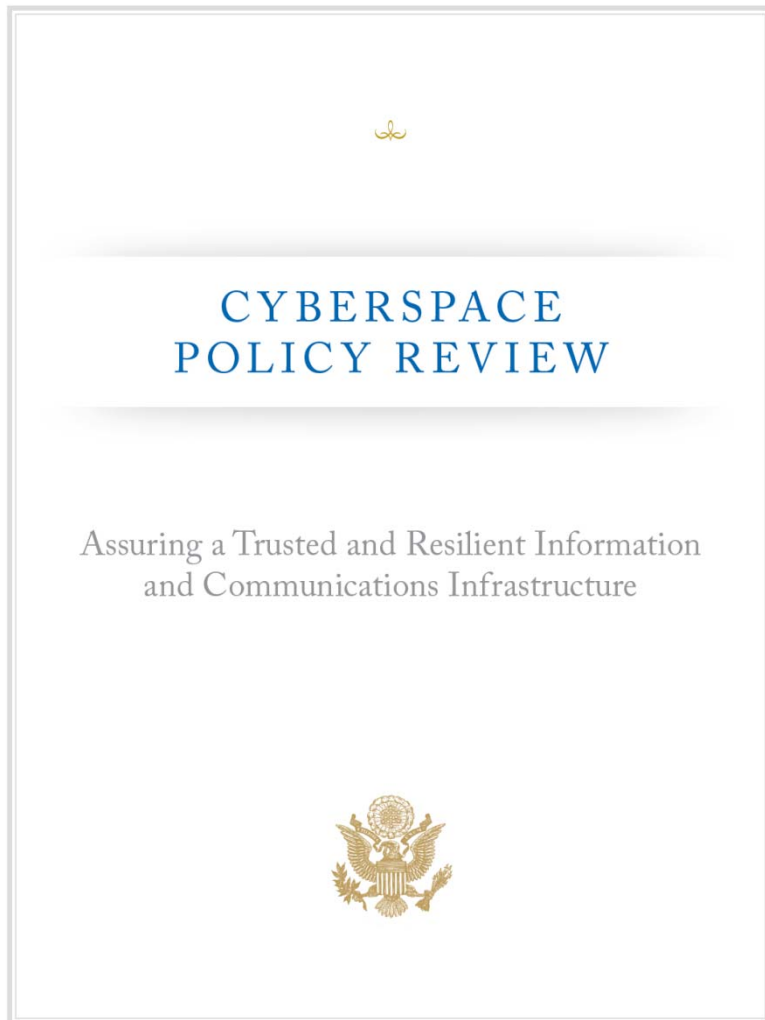
Additional priority applications:

- Advanced Metering Infrastructure
- Distribution Grid, including Distributed Energy Resource Integration

Cross-cutting priorities

- Cybersecurity
- Data networking

Cybersecurity: Critical Focus Area



...as the United States deploys new **Smart Grid** technology, the Federal government must ensure that **security standards are developed and adopted** to avoid creating unexpected opportunities for adversaries to penetrate these systems or conduct large-scale attacks.

Recent Progress

Two public workshops
More than 1000 participants
Report issued for comment
16 initial standards
64 more being considered
70 gaps & issues identified
12 priority items selected for
expedited action plans



http://collaborate.nist.gov/twiki-sggrid/bin/view/_SmartGridInterimRoadmap/SGR1Standards

http://collaborate.nist.gov/twiki-sggrid/bin/view/_SmartGridInterimRoadmap/InterimRoadmapFinal

<http://nist.gov/smartgrid>

Next Steps

15 Standards Development Organizations involved

August 3-4 workshop

Develop action plans for 12 key gaps

Publish Release 1.0 NIST Smart Grid Interoperability Framework - September



Phase 2: Standards Panel

Launch Smart Grid Interoperability Standards Panel by Year End 2009

Representation from all stakeholder groups – including State Regulators

Administered by private sector organization – will be selected by late August

Functions:

- Evolve Roadmap
- Ongoing coordination
- Recommend new or revised standards for NIST framework
- Monitor implementation
- Support testing/certification framework

What will NIST recommend?

- Identification of standards will be an ongoing process
- The standards will continue to evolve with new technology and requirements
- Most SG standards should be voluntary, not mandatory
- Collaboration is key to understanding which standards need to be uniform from state-to-state
- Absence of a voluntary standard from the NIST list should not be a barrier to its use in the market

“Top 10” Priority Standards Action Items

- Address issues about the IP suite (what’s in it, where it’s needed)
- Investigate guidelines for wireless communications in the SG
- Develop and standardize a pricing model
- Determine/develop SG scheduling standard
- Smart Meters
 - Develop one or more standard meter profiles using ANSI C12.19
 - Develop a meter upgradeability standard
- Translate ANSI C12.19 into common semantic model

“Top 10” Priority Standards Action Items

- Accelerate the work of developing the Common Information Model (CIM) for Distribution Grid Management including CIM and Multispeak harmonization; should include IEC 61850
Develop or adopt standard DR signals
- Provide energy usage information to Customer EMS
- Map IEC 61850 objects to DNP3 for legacy interfaces
- Develop or adopt application-based synchronization guideline; Harmonize IEC 61850 and IEEE C 37.118
- Identify information needs and map to transmission and distribution power system models; Integrate relay settings and other field component management functions

How to be involved with the NIST Effort

NIST Smart Grid Web portal: <http://nist.gov/smartgrid>

TWiki (accessible through portal)

Domain Expert Working Groups (contacts on portal)

Email – smartgrid@nist.gov

Standards Panel – November 2009

Comment on EPRI Roadmap Report:

http://collaborate.nist.gov/twiki-sggrid/bin/view/_SmartGridInterimRoadmap/InterimRoadmapFinal