

Smart Grid Overview

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John Caskey

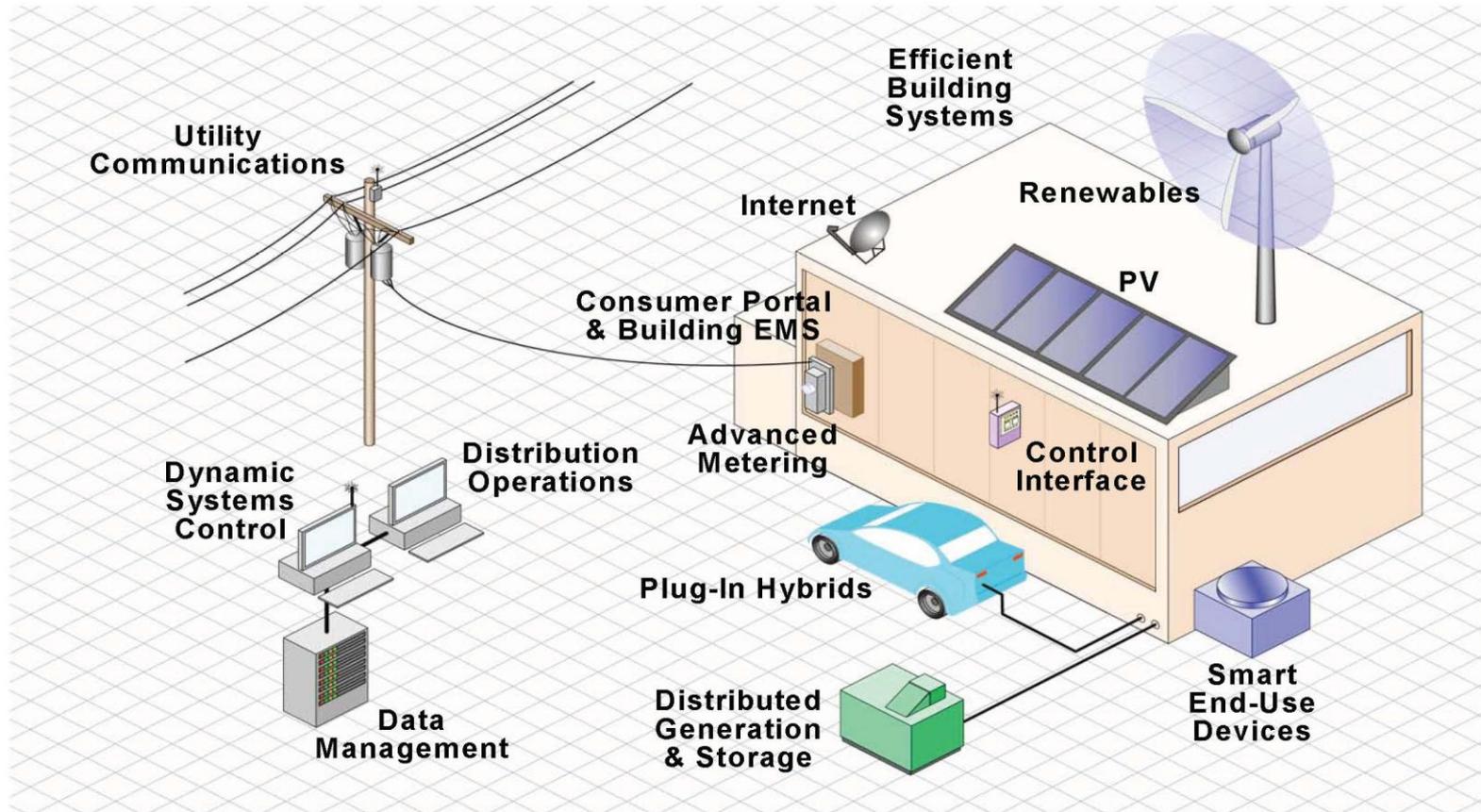
AGENDA

- NEMA's Smart Grid Program Plan
- Smart Grid Legislative Update
- NIST Domain Expert Working Groups
- DOE June Smart Grid Workshop
- NEMA Smart Grid Advisory Panel Meetings
- NEMA Energy Storage Workshop

NEMA's Smart Grid Definition

The basic concept of Smart Grid is to add monitoring, analysis, control and communication capabilities to the national electric grid in order to improve reliability, maximize throughput, increase energy efficiency, provide consumer participation and allow diverse generation and storage options.

Creating an Intelligent Grid: *Consumer Opportunities*



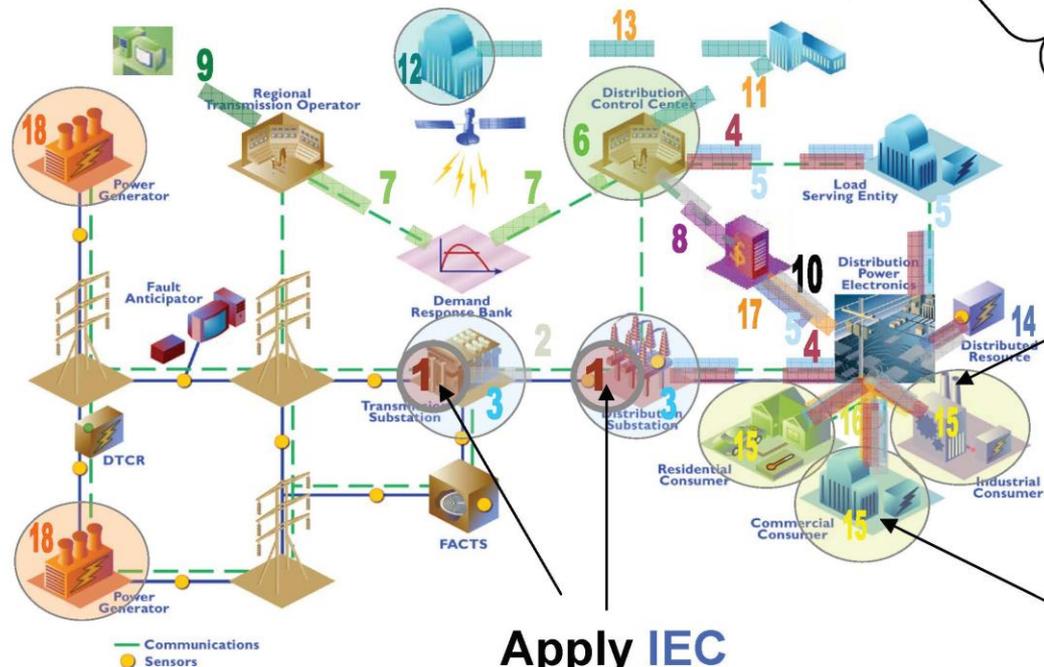
Energy efficiency and demand response is a driver that will greatly accelerate the creation of a smart grid

Examples of IntelliGrid Architecture Recommendations

Develop and implement consistent systems management and security policies

Apply IEC 61970 and 61968 for Enterprise Data Sharing

R&D:
Harmonize IEC 61850 and 61970 Standards



Apply ANSI C12 for Revenue Metering

Apply IEC 61850 for Real-Time Controls

Apply ASHRAE BACnet™ for Building Automation

NEMA's Smart Grid Program Goals

- Promote the adoption of the Smart Grid.
- Support the development of Smart Grid interoperability standards.
- Promote a positive financial environment for utilities to implement Smart Grid products and systems.

Goal 1 – Accomplishments

- Developed NEMA Smart Grid Advisory Panel – 15+ members.
- Coordinated joint EPRI IntelliGrid & NEMA Advisory Panel meeting– 50 EPRI people, 20 NEMA.
- Participated in DOE's Smart Grid characteristics workshop in June 08.
- Participated in DOE's GridWeek conference as a Silver sponsor in September 08.
- Presented NEMA Smart Grid program plan to all Power Equipment Division sections.

Goal 1 – Next Steps

- Develop comprehensive communication plan.
- Develop participation plan for future conferences and meetings.
- Host additional NEMA Smart Grid Advisory Panel meetings with EPRI, EEI, IT/Systems Architects, Consumer Advocates, etc.

Goal 2 - Accomplishments

- Participated in all NIST Smart Grid meetings and Domain Expert Working Group meetings.
- Provided NIST a framework and schedule for coordinating the development of interoperability standards.
- Hired consultant to evaluate standards “gaps” and represent manufacturers’ perspective.

Goal 2 – Next Steps

- Evaluate existing standards, identify gaps and recommend interim standards.
- Work with product sections to list functionality and survey existing communication standards.
- Participate in development of RTO/ISO requirements.

Goal 3 - Accomplishments

- Developed and distributed “Levels of Intelligence” whitepaper.
- Prepared Smart Grid 1-pager for House Science, House Energy, Senate Energy & Commerce, individual members.
- Lobbied for NIST funding.
- Lobbied for accelerated depreciation of smart meters and grid equipment.
- Recommended NEMA members for Electricity Advisory Committee - three selected.
- Submitted formal comments on standards role to Electricity Advisory Committee.
- Provided comments and briefings to states including - California, Michigan, DC, NARUC

Goal 3 – Next Steps

- Solidify NEMA as go-to organization for smart grid intelligence - Host DOE E-Forum 10/23.
- Tie in smart grid investments with renewables
 - Submitted technology language for Reid/Inslee Renewable Zones bills.
- Engage CEC, NIST, DOE, etc. on new research.
- Adapt Levels of Intelligence and other materials for regulators.
- Lobby for funding of Matching Fund and Demonstration Projects.

Levels of Intelligence

- Whitepaper published in December 2007.
- Jan 18, 2008 web seminar for members.
- Marketing/Outreach plan approved.
- Broad distribution to stakeholders.
- Next Steps – Expand/refine concept and identify best application.

LEGISLATIVE UPDATE

2008 Legislative Accomplishments

- Accelerated Depreciation (10 years instead of 20)
 - Smart meters
 - Smart grid equipment
- Energy Tax Credits
 - Installation (10%-30% of property cost)
 - Solar – 8 years
 - Fuel Cell – 7 years
 - Microturbines – 7 years
 - Small Wind – 7 years
 - Production (1.5¢/kwh for 10 years after installation)
 - Wind and Clean Coal – 1 year
 - Biomass, Geothermal, Solar, Landfill gas, Irrigation, Trash, Hydropower, – 2 years
 - Tidal – 3 years

2009 Top Policy Priorities

- Accelerated Depreciation
- Federal Renewable Portfolio Standards
- Federal Renewable Production Tax Credit
- Carbon Legislation
- Transmission Corridors for Renewables
- Real-Time Pricing
- Communication Module Depreciation
- Renewable Generation Integration

NIST Domain Expert Working Groups (DEWGs)

- Home to Grid (Caskey)
- Building to Grid (consultant)
- Industry to Grid
- Transmission & Distribution (Hsieh)
- Progress report due to DOE and Congress at the end on 2008

DOE Smart Grid Workshop

June 19, 2008

- Very well attended - over 150 attendees.
- NEMA participated on organizing committee and promoted NEMA member participation.
- Seven breakout groups identified metrics for measuring progress toward implementing Smart Grid.
 - Enable consumer participation
 - Accommodate generation and storage
 - Enable new products and services
 - Provide power quality
 - Optimize asset utilization
 - Anticipate and respond to system disturbances
 - Operate against physical and cyber attacks.

Joint NEMA/EPRI Workshop

July 17, 2008

- About 70 attendees – 20 NEMA members and 50 EPRI members and EPRI staff.
- Attendees heard the perspectives of four utilities implementing smart grid.
- Facilitated two breakout sessions – standards and financing issues.
- Developed list of several activities that NEMA and EPRI can implement in the short-term to promote smart grid.

Joint NEMA Utility Workshop

September 22, 2008

- NEMA Smart Grid Advisory Panel Meeting - About 50 attendees – 25 NEMA members and staff, and 25 guests.
- Guest speakers included:
 - National Rural Electric Cooperatives Association
 - American Public Power Association
 - Edison Electric Institute
 - Federal Energy Regulatory Commission
- Facilitated two breakout sessions – continued work on standards and financing issues.
- Next meeting will highlight IT companies (Google, Cisco, IBM, etc.) and/or consumer advocate groups.

Energy Storage

- Facilitated meeting on October 6, 2008 to discuss inter-compatibility issues and identify where standards are needed to interface with mission critical hardware.
- Attendees included:
 - Automotive Manufacturers
 - Battery manufacturers
 - Utility companies
 - NEMA members
 - Government agencies and research labs

Questions?