



***Benefits of Smart Grid
Interoperability for Smart Grid
Implementation and
Confirmation & Collaboration
with Smart Grid Partners***

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***Confirmation & Collaboration with Smart Grid
Partners – Personal/Professional Introduction***

- Recently retired from SCE, prior to SCE among others worked for SoCalGas, Grant County PUD, PNM
- Had the good fortune to join EPRI – exactly the organization I wanted at this point in my life and career
- Most recently worked on the EPRI's team to fulfill the NIST Revision 1 standards
- Assigned by EPRI to the Smart Grid Demo team as Collaborations Manager and be fortunate to work with all of you and others!

So let's talk about collaboration and what it means:
Work together – cooperate & fulfill goals!

Confirmation & Collaboration with Smart Grid Partners – My Purpose

Purpose of my presentation from our scope of work:

Task 4.2 Coordination with DOE, EPA, and International Research

Task 4.3 Industry Standards Development Participation

I will:

Describe recent work completed by DOE's GridWise Architecture Council

Show the value of interoperability and that open standards are a critical key to getting to interoperability

Possible Collaboration with Smart Grid Demo Partners (most described in EPRI #1016931)

- GWAC
- NIST
- DOE
- FERC
- NARUC
- ADDRESS
- FREEDM
- SDOs (IEEE, IEC, ANSI, etc)
- PSERC
- CERTS
- CEATI
- GRIDAPP
- State R&D Agencies (CEC, NYSERDA)
- EPRI IntelliGrid & ADA
- SINTEF
- National Labs
 - NETL
 - ORNL
 - Sandia
 - PNNL
 - LBL
- APERC (WVU)
- APEC (UCI)

GridWise™ Architecture Council (GWAC)

Mission: The GWAC enlists industry involvement to:

- Articulate the goal of interoperability across the electric system
- Identify the concepts and architectures needed to make interoperability possible
- Develop actionable steps to facilitate the interoperation of the systems, devices, and institutions that encompass the nation's electric system.

GridWise strives to **establish broad industry consensus** around the path to interoperability and the value it offers. Much of that value lies in the integration of the increasing number of automation, informational, and control systems involved in system operations.

GridWise™ Architecture Council Circa 2005 & Ben Franklin At Constitutional Convention in Philly



Them GWAC BIG Collaborative Accomplishment

EISA 2007 recognized the role GWAC had played and directed NIST to look to GWAC for advice and counsel to bring about the coordination of standards to enhance interoperability in the electric power industry

WOW!!!!

Shifting Gears to the Financial Benefits of Interoperability – *Smart Future – GWAC White Paper*

- What is interoperability?
 - Interoperability: “the capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the use to have little or no knowledge of the unique characteristics of those units.” [from the ISO]
- Most power/consumer systems interoperable – No
- Why is it important? Basically so one can have a liquid fluid currency market (like money) for information and infrastructure transactions rather than a barter system
- Interoperability will allow the information and infrastructure to come together into an interoperable, integrated system for information to flow and be exchanged without user interaction

Financial Benefits of Interoperability for the Electric Power Industry – SMART FUTURE – GWAC White Paper

- Automatic Meter Reading Reduces Transaction Costs
- Demand Response Leads to Efficient Systems
- Standardization Makes Design & Installation Simple & Less Costly
- Load Management and Distributed Resources Increases System Predictability
- Predictive Maintenance Increases System Stability

Future Utility Benefits of Interoperability for the Electric Power Industry – SMART FUTURE – GWAC White Paper

- Physical Network Connectivity
- Network-to-Network Integration
- Common Data Structures and Models
- Business Process Standards

Shifting Gears again -- “Interoperability: The Road to Maximizing Smart Grid’s Environmental Benefit” – GWAC White Paper

- Resource Optimization
- Greener Energy
- Carbon Productivity
- Plug-In Hybrid Electric Vehicles
- Interoperability in a Carbon-Constrained World

Shifting Gears again -- “Interoperability: The Road to Maximizing Smart Grid’s Environmental Benefit” – GWAC White Paper

- Resource Optimization
 - Energy Conservation
 - Energy Efficiency
 - Demand Response
 - System Optimization

Shifting Gears again -- *“Interoperability: The Road to Maximizing Smart Grid’s Environmental Benefit”* –
GWAC White Paper

- Greener Energy
 - Enhanced **Integration** of Renewable Energy
 - Support of Distributed Generation
 - The **Future** of Green Energy

Shifting Gears again -- *“Interoperability: The Road to Maximizing Smart Grid’s Environmental Benefit”* –
GWAC White Paper

- Carbon Productivity
 - Advanced Meters
 - Electronic Billing and Other Forms of Carbon Productivity

Shifting Gears again -- “Interoperability: The Road to Maximizing Smart Grid’s Environmental Benefit” – GWAC White Paper

- Plug-In Hybrid Electric Vehicles
- Interoperability in a Carbon-Constrained World

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Opportunity at Grid-Interop for Collaborators of Smart Grid Demo Program – Denver 17-19

Panel Session – Consist of program collaborators with & without demos sites

- Highlight and showcase host demonstrations showing focusing on how the project is dealing with interoperability.
- Describe the challenges anticipated and actually encountered
- Describe lessons learned.
- Panel presentations should address as much as possible how the project will contribute to implementation of the NIST roadmap.

Prepare an integrated paper reflecting the presentations described above for review by Grid-program committee.

Program Committee is publication outlets for the highest quality papers for top papers!



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Thank YOU!!

Together...Shaping the Future of Electricity

Comments/Questions

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