About the Demonstration Initiative

The Smart Grid Demonstration Initiative was a seven-year (2007–2014) collaborative research effort to design, deploy, and evaluate how to integrate distributed energy resources (DER) into utility grid and market operations. Evaluation and documentation of results for some demonstrations extended into 2015–2016. The Initiative leveraged multi-million dollar investments in the smart grid by the electric utility industry, with the goal of sharing information and research results on a wide range of smart grid technologies and applications. Twenty-four utilities from Australia, Canada, France, Ireland, Japan and the United States collaborated in the Initiative.

Using this List

This deliverables list includes case studies, reports, training session videos, proceedings and other materials produced by utility collaborators and EPRI technical staff. Materials are sorted by topic area and by type. Direct links are provided for each deliverable, and they can also be accessed by searching for the product number on www.epri.com/. Use Cases are identified by topic; they are downloadable at the Use Case Repository.

Freely Available Reports

Reports are typically available only to Initiative members, but many are also available at no cost to the public. These documents are labeled as “public” at the end of the entries, and a list of all documents that are publicly available at no cost is provided. Training videos are organized by topic and there is also a separate training videos list. Key Deliverables are noted at the beginning of the list.

Viewing the Deliverables List Online

As a way to help members easily locate content of interest and enhance convenience, a list of the 200+ Smart Grid Demonstration deliverables, organized by topic and type, is available in an electronic format:

Smart Grid Demonstration Deliverables: Go to www.smartgrid.epri.com→EPRI Research tab→Smart Grid Demonstration

EPRI also prepared an electronic catalog of DVDs of smart grid training sessions. The online catalog features short clips of each training video.
Table of Contents

About the Demonstration Initiative .......................................................................................... 1
Using this List .......................................................................................................................... 1
Freely Available Reports ......................................................................................................... 1
Viewing the Deliverables List Online ...................................................................................... 1
KEY DELIVERABLES ............................................................................................................. 3
DELIVERABLES ...................................................................................................................... 3
Animations ............................................................................................................................... 3
Communications .................................................................................................................... 4
Cost Benefit Analysis .............................................................................................................. 5
Customer Applications ........................................................................................................... 5
Demand Response .................................................................................................................. 6
Distributed Energy Resources ................................................................................................. 8
Energy Storage ......................................................................................................................... 10
Events .................................................................................................................................... 11
Grid Equipment & Technologies .............................................................................................. 12
Grid Management .................................................................................................................. 12
Host Site Project Descriptions and Overviews ........................................................................ 14
Program Documents and Compilations .................................................................................. 15
Progress Reports ..................................................................................................................... 16
Public Documents .................................................................................................................. 18
Training Sessions .................................................................................................................... 20
Standards & Requirements ...................................................................................................... 21
Use Cases ............................................................................................................................... 21
KEY DELIVERABLES

2016 (December)

- Smart Grid Demonstration Initiative Case Studies Volume 3: Product ID 3002005012

2015

- Smart Grid Demonstration Initiative Case Studies Volume 2: Product ID 3002005011

2014

- EPRI Smart Grid Demonstration Final Update: Product ID 3002004652 (public)

2013

- EPRI Smart Grid Demonstration Five Year Update: Product ID 3002000778 (public)
- EPRI Smart Grid Demonstration Initiative Four Year Update: Product ID 1025781 (public)
- Smart Grid Demonstration Initiative Case Studies, Volume 1: Product ID 1026435

DELIVERABLES

Animations

Links to YouTube are provided below. These animations are also available for viewing /downloading at http://smartgrid.epri.com/DemoProjects.aspx
(Go to smartgrid.epri.com→EPRI Research→Smart Grid Demonstration→Demo Projects. Animations are listed under company name.)

EPRI Smart Grid Demonstration Key Findings
http://www.youtube.com/watch?v=uyRPlLJTlkI

EDF Smart Grid Demonstration
https://www.youtube.com/watch?v=QzmNmvkwyTcc&list=PLphKrneCf69X0MxPf4aHDu1UJHNn8wGuq

Ergon Energy/EPRI Smart Grid Demonstration
https://www.youtube.com/watch?v=RtFF9zF2s8w
KCP&L/EPRI Smart Grid Demonstration
https://www.youtube.com/watch?v=kXc6c_I1wOU&index=13&list=PLD313D1EABCE1B1E4

PNM/EPRI Smart Grid Demonstration
https://www.youtube.com/watch?v=mtkyetyCfSg

Smart Grid Application -- Southern Company’s Approach
https://www.youtube.com/watch?v=S2pWqBXkmNg&index=4&list=PLphKrnecF69X0MxF4aHDu1UJHNn8wGuq

Smart Grid Application - A Virtual Power Plant (Con Edison, Queens, NY)
https://www.youtube.com/watch?v=uBdO7N88o98&list=PLD313D1EABCE1B1E4&index=5

Time-Based Electricity Pricing for Consumers
https://www.youtube.com/watch?v=T7_g76WUvc0&list=PLD313D1EABCE1B1E4

Additional animations are provided at smartgrid.epri.com:
Salt River Project Smart Grid Demonstration (Field Area Network)
SMUD Renewable Energy Projects Animation
SMUD Smart Grid Demonstration Animation

Communications

2016 (October)
- A Field Area Network Pilot at Salt River Project – Product ID 3002004646

2013
- Utility Grade Communications - Smart Grid Training Session 8: Product ID 3002001096

2012
- IEC 61850 for the Smart Grid - Smart Grid Training Session #6: Product ID 1025677
- Case Study on Capacitor Bank Health Monitor: Southern Company – Product ID 1026447

2011
- Smart Grid Communications – Smart Grid Training Session #2 - October 2011: Product ID 1023428
Smart Grid Deliverables by Topic and Type

Cost Benefit Analysis

2016 (August)

• Permanent Peak Load Shifting Benefits Using Ice Storage at FirstEnergy – Product ID 3002007324

2015

• Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Revision 3 – Product ID 3002006694 (public)
• Field Assessment of Large Scale Smart Grid Applications in Distribution Systems – Product ID 3002006940

2014

• Cost Benefit Analysis in the Smart Grid: Training Session #10 – Product ID 3002002274

2012

• Cost Benefit Analysis for the Smart Grid - Smart Grid Training Session #5: Product ID 1025676

2011

• Estimating the Costs and Benefits of the Smart Grid: Product ID 1022519 (public)

2010

• Methodological Approach for Estimating the Benefits and Costs of Smart Grid Demonstration Projects: Product ID 1020342 (public)

Customer Applications

2015

• KCP&L Residential Time-of-Use Impact Study – Product ID 3002004632

2014

• A Case Study on the SMUD Residential Summer Solutions Pilot Project: Sacramento Municipal Utility District Smart Grid Demonstration – Product ID 3002002247 (public)
• A Case Study on Revenue Protection Software: Sacramento Municipal Utility District Smart Grid Demonstration – Product ID 3002004623
• Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines – Product ID 3002000282 (public)

2012
• Case Study on Customer Acceptance and Technology Adoption: Kansas City Power & Light – Product ID 1026444
• Synthesizing Utility Experiences in Educating and Engaging Customers in Smart Meter/Smart Grid Deployments – Product ID 1026432

2011
• Consumer Engagement: Facts, Myths, and Motivations – Product ID 1024566 (public)
• Commonwealth Edison Company Customer Applications Program – Objectives, Research Design, and Implementation Details: Product ID 1022266 (public)
• Commonwealth Edison: The Effect on Electricity Consumption of the Commonwealth Edison Customer Application Program Pilot: Phase 1, Appendices – Product ID 1022761 (public)
• The Effect on Electricity Consumption of the Commonwealth Edison Customer Applications Program: Phase 2 Final Analysis – Product ID 1023644 (public)
• Grid Strategy 2011: Consumer Engagement – Product ID 1024565

Cyber Security

2012
• Grid Strategy 2012: Cyber and Physical Strategy for Substation and Field Equipment (Greenfield and Legacy) – Product ID 1025843

2011
• Grid Strategy 2011: Security in Demonstrations – Product ID 1024573
• Smart Grid Cyber Security – Smart Grid Training Session #3 - December 2011: Product ID 1023489

Demand Response

2015
• **KCP&L Case Study on Residential Demand Response Standards and Interoperability** – Product ID 3002004639

2014

• **A Case Study on the Demand-Side Uses of a Thermal Storage Energy Plant: Con Edison Smart Grid Demonstration** – Product ID 3002003870
• **A Case Study on the SMUD Residential Summer Solutions Pilot Project: Sacramento Municipal Utility District Smart Grid Demonstration** – Product ID 3002002247
• **Deferring Investment with Distributed Energy Resources: Ergon Energy Smart Grid Demonstration** – Product ID 3002004413
• **A Case Study on PJM Market Participation: FirstEnergy Smart Grid Demonstration** – Product ID 3002004495

2012

• **A Case Study on Remote Dispatch of Customer-Owned Resources: Consolidated Edison**: Product ID 1026437
• **Case Study on Impact of Advanced Metering Infrastructure (AMI) on Demand Response: Commonwealth Edison** – Product ID 1026442
• **Case Study on Smart-Meter Customer Behavior Trial: ESB Networks** – Product ID 1026441
• **The Effect on Electricity Consumption of the Commonwealth Edison Customer Application Program: Phase 2 Supplemental Information** – Product ID 1024865 (public)
• **The Response Precision of the PREMIO Virtual Power Plant: Électricité de France** – Product ID 1026439

2011

• **Decision Support for Demand Response Triggers: Methodology Development and Proof of Concept Demonstration** – Product ID 1022318 (public)

2010

• **Tennessee Valley Authority/Bristol Tennessee Essential Services Smart Water Heater Pilot: Summary of Data Analysis and Results** – Product ID 1020674

2009

• **Bristol Tennessee Essential Services (BTES) / Tennessee Valley Authority (TVA) Smart Water Heater Project – Technology Description and Installation Lessons Learned**: Project ID 1020213
Distributed Energy Resources

2016

- FirstEnergy Integrated Distributed Energy Resource Management Training, Use, and Acceptance – Product ID 3002004624
- JUMPSmartMaui Demonstration Project Phase 1 Assessment – Product ID 3002007129 (public)
- Demand Response Standards and Interoperability: Kansas City Power & Light Smart Grid Demonstration – Product ID 3002004639

2015

- A Case Study on Delmarva Power’s Fuel Cell Demonstration – Product ID 3002005036
- Grid Strategy: Operating the Grid with High Penetration of Distributed Resources – Product ID 3002004966
- Integrated Control Platform Visualization: FirstEnergy Smart Grid Demonstration – Product ID 3002004662
- Integrated Distributed Energy Resources Training, Use, and Acceptance – Product ID 3002004624
- FirstEnergy Distribution Data Analytics Using Integrated Distributed Energy Resource Sensor Data – Product ID 3002004625
- Demonstration of Storage for Simultaneous Voltage Smoothing and Peak Shifting 2015 Update: Public Service New Mexico – Product ID 3002002257
- A Case Study on Delmarva Power’s Fuel Cell Demonstration – Product ID 3002005036

2014

- A Case Study on Evaluation of Solutions for Limiting Transformer In-rush Currents of a Distribution Connected Wind Park at Hydro-Québec – Product ID 3002004502
- A Case Study on Evaluating the Protection Impacts Associated with the Integration of a Wind Park on the Distribution System at Hydro-Quebec – Product ID 3002004503
- A Case Study on PJM Market Participation: FirstEnergy Smart Grid Demonstration – Product ID 3002004495
- Cross-Utilization: Managing Multiple Technologies and Applications on a Distribution System – Product ID 3002004390 (public)
- A Case Study on the Demand-Side Uses of a Thermal Storage Energy Plant: Con Edison Smart Grid Demonstration – Product ID 3002003870
• A Case Study on Interconnection Requirements Study for HECO Battery Energy Storage Systems on MECO 12.47 kV Distribution Circuit: Hawaiian Electric Company and Maui Electric Company Smart Grid Demonstration – Product ID 3002003602
• A Case Study on the Drexel Smart Grid Campus Project: Product ID 3002002131 (public)
• Deferring Investment with Distributed Energy Resources: Ergon Energy Smart Grid Demonstration – Product ID 3002004413

2013
• A Case Study on Integrated Distributed Energy Resources (IDER) Management; Device Installation and Commissioning: FirstEnergy Smart Grid Demonstration – Product ID 3002002133
• 2013 Grid Strategy: Operating the Grid with High Penetration of Distributed Energy Resources – Product ID 3002000813
• A Case Study on Multiple Technology Aggregate Response: American Electric Power Smart Grid Demonstration – Product ID 3002001965
• Smart Inverter–Smart Grid Training Session #9: Product ID 3002001873
• A Case Study on Anti-islanding Protection of Distributed Generation Using Autoground: Hydro-Québec Smart Grid Demonstration – Product ID 3002001375 (public)
• Case Study on Integrated Distributed Energy Resources (IDER) Management: First Energy – Product ID 1026443
• Final Report on the PREMIO Experimental Results: Électricité de France Smart Grid Demonstration Project – Product ID 3002002024

2012
• Case Study on Assessment of Achieving Increased Reliability with Distributed Energy Resources: Consolidated Edison – Product ID 1026438
• A Case Study on Remote Dispatch of Customer-Owned Resources: Consolidated Edison – Product ID 1026437
• A Case Study on the Demonstration of Storage for Simultaneous Voltage Smoothing and Peak Shifting – Product ID 1026445 (public)
• Case Study on Smart Green Circuits: ESB Networks Part 1 & 2 – Product ID 1026440
• Distributed Energy Resources Integration in the Smart Grid Demonstration Project: Product ID 1025778
• Hawaiian Electric Company (HECO) Smart Grid Demonstration Project: "Distributed hierarchical control systems to facilitate the interconnection of high PV and EV penetration levels" – Product ID 1024840 (public)
• System Protection Implications with DER - Smart Grid Training Session #7: Product ID 1025678

2010
• Architecture Considerations for Integration of Distributed Energy Resources (DER): EPRI Smart Grid Demonstration Meeting Panel Session Proceedings, March 4th, 2010 – Product ID 1021265
• Architecture Reference Design for Distributed Energy Resource Integration: Smart Grid Demonstration Task 2.1 – Product ID 1020340
• Concepts to Enable Advancement of Distributed Energy Resources: Product ID 1020432 (public)
• Distributed Energy Resources and Management of Future Distribution: Product ID 1020832 (public)
• Regional Profiles for Distributed Resource Integration: Product ID 1020312

2009
• Assessment of Wholesale Market Opportunities for Participation and Aggregation of Distributed Resources: Product ID 1020314
• Development of a Standard Language for Photovoltaic and Storage Integration: Product ID 1020435
• Distributed Resource Integration Framework: Product ID 1020313
• EPRI Pre-Conference Workshop: Active Distribution System Management for Integration of Distributed Resources Research, Development and Demonstration Needs: Workshop Proceedings, Nice, France, December 9, 2008 – Product ID 1018926
• Methods to Firm Distributed Energy Resources: EPRI Smart Grid Demonstration Project Task 1.3 – Product ID 1020385
• Smart Grid Distributed Energy Resources (DER) Projects Assessment: Product ID 1018945
• Summary of Potential Use Cases for Distributed Solar (PV) Integration: Product ID 1019584

Energy Storage

2015
• Photovoltaic Smoothing Using Coordinated Control of a Battery and Gas Generator: Public Service New Mexico – Product ID 3002002257

2014
• A Case Study on Interconnection Requirements Study for HECO Battery Energy Storage Systems on MECO 12.47 kV Distribution Circuit: Hawaiian Electric Company and Maui Electric Company Smart Grid Demonstration – Product ID 3002003602
• A Case Study on the Demand-Side Uses of a Thermal Storage Energy Plant: Con Edison Smart Grid Demonstration – Product ID 3002003870

2012
• A Case Study on Simulation of Community Energy Storage: American Electric Power – Product ID 1026436
• A Case Study on the Demonstration of Storage for Simultaneous Voltage Smoothing and Peak Shifting – Product ID 1026445 (public)

2011
• Grid Strategy 2011: Energy Storage Monetization – Product ID 1024483
• Utility Compatibility Evaluations on GreenSmith Energy Storage Utility Interconnected System: Product ID 1022750

Events

2012
• Strategic Intelligence Update: Smart Grid Conferences and Events (March 2012) – Product ID 1024592
• Strategic Intelligence Update: Smart Grid Conferences and Events (August 2012) – Product ID 1025760
• Strategic Intelligence Update: Smart Grid Conferences and Events (October 2012) – Product ID 1025761
• Strategic Intelligence Update: Smart Grid Conferences and Events (December 2012) – Product ID 1025762

2011
• Strategic Intelligence Update: Smart Grid Conferences and Events (June 2011) – Product ID 1021472
• Strategic Intelligence Update: Smart Grid Conferences and Events (September 2011) – Product ID 1023427

2010
• Strategic Intelligence Update: Smart Grid Conferences and Events January 2010 – Product ID 1020566
• Strategic Intelligence Update: Smart Grid Conferences and Events July 2010 – Product ID 1021444

2009
• Strategic Intelligence Update – Smart Grid Conferences and Events: Product ID 1020214
Grid Equipment & Technologies

2015
- Evaluation of the T13X Smart Grid Panel – Product ID 3002004934

2014
- A Case Study on the Approaches to Self-Healing Networks at Duke Energy: EPRI Smart Grid Demonstration – Product ID 3002004619

2013
- A Case Study on Integrated Distributed Energy Resources (IDER) Management; Device Installation and Commissioning: FirstEnergy Smart Grid Demonstration – Product ID 3002002133
- A Case Study on Testing and Certification of Equipment for a Volt-VAR Control Application at Hydro-Québec: Product ID 3002001379

2011
- Heart Transverter HT2000: Test and Evaluation – Product ID 1023251

2010
- Smart Grid Technologies Report: Product ID 1020415

Grid Management

2015
- Distribution Volt-Var control to Optimize Customer Voltage at Southern California – Product ID 3002004612
- Substation Automation: Irvine Smart Grid Demonstration Product ID – 3002004613

2014
- Peak-Time Voltage Reduction Analysis Case Study at Georgia Power – A Southern Company – Product ID 3002004616
• A Case Study on the Approaches to Self-Healing Networks at Duke Energy – Product ID 3002004620
• A Case Study on Self-Healing Networks at Southern Company – Product ID 3002004621
• Analysis of Alabama Power Conservation Voltage Reduction (CVR) Tests: Southern Company Smart Grid Demonstration – Product ID 3002004617
• A Case Study on Evaluation of Solutions for Limiting Transformer In-rush Currents of a Distribution Connected Wind Park at Hydro-Québec – Product ID 3002004502
• A Case Study on Evaluating the Protection Impacts Associated with the Integration of a Wind Park on the Distribution System at Hydro-Québec – Product ID 3002004503
• Cross-Utilization: Managing Multiple Technologies and Applications on a Distribution System – Product ID 3002004390 (public)
• A Case Study on Summer 2013 Analysis of Sacramento Municipal Utility District Conservation Voltage Reduction – Product ID 3002004622
• A Case Study on the Approaches to Self-Healing Networks at Duke Energy: EPRI Smart Grid Demonstration – Product ID 3002004619
• A Case Study on Revenue Protection Software: Sacramento Municipal Utility District Smart Grid Demonstration – Product ID 3002004623

2013

• A Case Study on Multiple Technology Aggregate Response: American Electric Power Smart Grid Demonstration – Product ID 3002001965
• A Case Study on the Effects of Distribution Line Capacitors on Substation Bus Voltage Regulated with a Load Tap Changing (LTC) Power Transformer: Southern Company Smart Grid Demonstration – Product ID 3002002245
• A Case Study on 2012-2013 Conservation Voltage Reduction: Ameren Illinois Smart Grid Demonstration – Product ID 3002002246
• Smart Inverter-Smart Grid Training Session #9: Product ID 3002001873
• A Case Study on Anti-islanding Protection of Distributed Generation Using Autoground: Hydro-Québec Smart Grid Demonstration – Product ID 3002001375 (public)
• Case Study on Smart Green Circuits: ESB Networks Part 1 & 2 – Product ID 1026440

2012

• Distribution System Equipment Survey: Hydro-Québec Smart Grid Demonstration: Product ID 3002001379
• ESB Networks Case Study on Distribution Volt-VAR Control Integrated with Wind Turbine Inverter Control: Product ID 1026589
• Case Study on Conservation Voltage Reduction and Volt-VAR Optimization: Sacramento Municipal Utility District – Product ID 1026446
• 2012 Grid Strategy: Distribution Management System (DMS) Advanced Applications for Distributed Energy Resources – Product ID 1025572
• Smart Grid Conservation Voltage Reduction/Volt-Var Optimization - Smart Grid Training Session #4: Product ID 1024628
• **Case Study on Capacitor Bank Health Monitor: Southern Company** – Product ID 1026447
• **Field Data Integration for Asset Management and Grid Operations: EPRI’s Coordinated Research** – Product ID 1025000 (public)
• **System Protection Implications with DER - Smart Grid Training Session #7:** Product ID 1025678

2011

• **Advanced Distribution Management Systems (DMS) Applications Training – Smart Grid Training Session #1:** Product ID 1023169
• **Grid Strategy 2011: Conservation Voltage Reduction and Volt VAR Optimization in the Smart Grid** – Product ID 1024482
• **Grid Strategy 2011: Distribution Management System Data Visibility** – Product ID 1024661
• **Grid Strategy 2011: Distribution Management System Data Visualization—An EPRI White Paper** – Product ID 1024621

### Host Site Project Descriptions and Overviews

2012

• **Hawaiian Electric Company (HECO) Smart Grid (SG) Demonstration Project Description:** Product ID 1025764

2011

• **Hydro-Quebec Smart Grid Demonstration Host-Site Overview:** Product ID 1023414 (public)
• **Hydro-Quebec Smart Grid Demonstration Host-Site Project Description:** Product ID 1023405
• **Sacramento Municipal Utility District (SMUD) Smart Grid Demonstration Host-Site Overview:** Product ID 1023413 (public)
• **Sacramento Municipal Utility District (SMUD) Smart Grid Demonstration Host-Site Project Description:** Product ID 1023406
• **Southern California Edison’s Smart Grid Demonstration Project: Irvine Smart Grid Demonstration (ISGD):** Product ID 1021420 (public)

2010

• **Duke Energy Smart Grid Demonstration Host-Site Project Description:** Product ID 1021399
• **Duke Energy Smart Grid Demonstration Overview:** Product ID 1021421 (public)
• **ESB Networks Smart Grid Demonstration Host-Site Overview:** Product ID 1020598 (public)
• **ESB Networks Smart Grid Demonstration Host-Site Project Description**: Product ID 1020597

• **Exelon Smart Grid Demonstration Host-Site Project Description**: Product ID 1020893

• **Exelon Smart Grid Demonstration Project**: Product ID 1021419

• **KCP&L Smart Grid Demonstration Overview**: Product ID 1021418 (public)

• **KCP&L Smart Grid Demonstration Host-Site Project Description**: Product ID 1020892

• **Southern California Edison (SCE) Smart Grid Demonstration Host-Site Project Description**: Product ID 1021398

• **Southern Company Smart Grid Demonstration Host-Site Project Description**: Product ID 1021400

• **Southern Company Smart Grid Demonstration Project**: Product ID 1021422 (public)

### 2009

• **AEP Smart Grid Demonstration Host-Site Overview**: Product ID 1020226 (public)

• **American Electric Power (AEP) Smart Grid Demonstration Host-Site Project Description**: Product ID 1020188

• **Con Edison Smart Grid Demonstration Host-Site Overview**: Product ID 1020227

• **Con Edison Smart Grid Demonstration Host-Site Project Description**: Product ID 1020190

• **Électricité de France (EDF) Smart Grid Demonstration Host-Site Overview**: Product ID 1020228 (public)

• **Électricité de France (EDF) Smart Grid Demonstration Host-Site Project Description**: Product ID 1020191

• **FirstEnergy Smart Grid Demonstration Host-Site Overview**: Product ID 1020229

• **FirstEnergy Smart Grid Demonstration Host-Site Project**: Product ID 1020189

• **PNM Smart Grid Demonstration Host-Site Overview**: Product ID 1020230

• **PNM Smart Grid Demonstration Host-Site Project Description**: Product ID 1020187

---

**Program Documents and Compilations**

### 2015

• **Smart Grid Demonstration Initiative Case Studies Volume 2**: Product ID 3002005011

• **Smart Grid Demonstration Initiative Case Studies Volume 3**: Product ID 3002005012

### 2014

• **EPRI Smart Grid Demonstration Final Update**: Product ID 3002004652 (public)

2013
• International Smart Grid Demonstration Project Case Studies and Survey Analysis: Product ID 1026756
• EPRI Smart Grid Demonstration Five Year Update: Product ID 300200778 (public)

2012
• EPRI Smart Grid Demonstration Initiative Four Year Update: Product ID 1025781 (public)
• Smart Grid Demonstration Initiative Case Studies, Volume 1: Product ID 1026435

2011
• A Smart Grid Reference Guide to Integration of Distributed Energy Resources: First Edition – Product ID 1023412
• EPRI Smart Grid Demonstration Initiative Three Year Update: Product ID 1023411 (public)

2010
• Smart Grid Demonstration Two Year Update: Product ID 1021497 (public)
• Smart Grid Leadership Report: Global Smart Grid Implementation Assessment – Product ID 1021417 (public)
• International Smart Grid Projects Update: Product ID 1020303

2009
• Smart Grid Demonstration Overview: Product ID 1020225 (public)

Progress Reports

2015

2014
• Hydro-Quebec Smart Grid Host Site Progress Report: For the Period Ending October 2013 – Product ID 3002001441

2013
• Final Report on the PREMIO Experimental Results: Électricité de France Smart Grid Demonstration Project – Product ID 3002002024
• Sacramento Municipal Utility District Smart Grid Host Site Progress Report: For the Period Ending May 2013: Product ID 3002001438
- **Ergon Energy Smart Grid Host Site 2012 Progress Report: For the Period Ending December 2012** – Product ID **1025758**
- **Kansas City Power and Light Company Smart Grid Host Site 2012 Progress Report: For the Period Ending December 2012** – Product ID **1025759**

**2012**
- **Duke Energy Smart Grid Host Site Progress Report for the Period Ending November 2012**: Product ID **1025571**
- **Hydro-Quebec Smart Grid Host Site Progress Report: Product ID 1024839**
- **Kansas City Power & Light Company Smart Grid Host Site 2011 Progress Report: Product ID 1024501**
- **Southern California Edison Smart Grid Host Site Progress Report: Product ID 1025688**
- **Southern Company Smart Grid Host Site Progress Report: Product ID 1025570**

**2011**
- **American Electric Power Smart Grid Host Site Progress Report: Period Ending December 2010** – Product ID **1021501**
- **Electricity Supply Board Smart Grid Host Site Progress Report for the Period Ending February 2011**: Product ID **1023253**
- **Électricité de France Smart Grid Host Site Evaluation Report After Six Months of Operation**: Product ID **1024460**
- **Électricité de France Smart Grid Host Site Progress Report: Product ID 1022675**
- **Sacramento Municipal Utility District Smart Grid Host Site Progress Report: Period Ending November 2011** – Product ID **1024620**
- **Southern California Edison Smart Grid Host Site Progress Report: Product ID 1024574**

**2010**
- **American Electric Power (AEP) Smart Grid Host Site Progress Report: Product ID 1020354**
- **Consolidated Edison Smart Grid Host Site Progress Report: Product ID 1021500**
- **Consolidated Edison Smart Grid Host Site Progress Report: Product ID 1020355**
- **Électricité de France Smart Grid Host Site Progress Report: Product ID 1021488**
- **ESB Networks Smart Grid Host Site Progress Report: Product ID 1021489**
- **FirstEnergy Smart Grid Host Site Progress Report: Product ID 1020352**
- **PNM Smart Grid Host Site Progress Report: Product ID 1020353**
- **Public Service Company of New Mexico Smart Grid Host Site Progress Report: Product ID 1021490**
Public Documents

2016

- JUMPSmartMaui Demonstration Project Phase 1 Assessment – Product ID 3002007129 (public)

2015

- Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Revision 3 – Product ID 3002006694 (public)

2014

- Cross-Utilization: Managing Multiple Technologies and Applications on a Distribution System – Product ID 3002004390 (public)
- EPRI Smart Grid Demonstration Final Update: Product ID 3002004652 (public)
- A Case Study on the Drexel Smart Grid Campus Project: Product ID 3002002131 (public)
- A Case Study on the SMUD Residential Summer Solutions Pilot Project: Sacramento Municipal Utility District Smart Grid Demonstration – Product ID 3002002247 (public)

2013

- Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Product ID 3002002266 (public)
- EPRI Smart Grid Demonstration Five Year Update: Product ID 3002004652 (public)
- A Case Study on Anti-islanding Protection of Distributed Generation Using Autoground: Hydro-Québec Smart Grid Demonstration – Product ID 3002001375 (public)
- Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines – Product ID 3002000282 (public)

2012

- EPRI Smart Grid Demonstration Initiative Four Year Update: Product ID 1025781 (public)
- A Case Study on the Demonstration of Storage for Simultaneous Voltage Smoothing and Peak Shifting Product ID – 1026445 (public)
- Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Product ID 1025734 (public)
• The Effect on Electricity Consumption of the Commonwealth Edison Customer Application Program: Phase 2 Supplemental Information – Product ID 1024865 (public)
• Decision Support for Demand Response Triggers: Methodology Development and Proof of Concept Demonstration – Product ID 1022318 (public)
• Hawaiian Electric Company (HECO) Smart Grid Demonstration Project: "Distributed hierarchical control systems to facilitate the interconnection of high PV and EV penetration levels" – Product ID 1024840 (public)

2011
• Consumer Engagement: Facts, Myths, and Motivations: Product ID 1024566 (public)
• EPRI Smart Grid Demonstration Initiative Three Year Update: Product ID 1023411 (public)
• Estimating the Costs and Benefits of the Smart Grid: Product ID 1022519 (public)
• Quantifying the Impacts of Time-Based Rates, Enabling Technology, and Other Treatments in Consumer Behavior Studies: Protocols and Guidelines – Product ID 3002000282 (public)
• Commonwealth Edison Company Customer Applications Program – Objectives, Research Design, and Implementation Details: Product ID 1022266 (public)
• Commonwealth Edison: The Effect on Electricity Consumption of the Commonwealth Edison Customer Application Program Pilot: Phase 1, Appendices – Product ID 1022761 (public)
• The Effect on Electricity Consumption of the Commonwealth Edison Customer Applications Program: Phase 2 Final Analysis – Product ID 1023644 (public)
• Decision Support for Demand Response Triggers: Methodology Development and Proof of Concept Demonstration – Product ID 1022318 (public)
• Hydro-Quebec Smart Grid Demonstration Host-Site Overview: Product ID 1023414 (public)
• Sacramento Municipal Utility District (SMUD) Smart Grid Demonstration Host-Site Overview: Product ID 1023413 (public)
• Southern California Edison’s Smart Grid Demonstration Project: Irvine Smart Grid Demonstration (ISGD) – Product ID 1021420 (public)

2010
• Methodological Approach for Estimating the Benefits and Costs of Smart Grid Demonstration Projects: Product ID 1020342 (public)
• Concepts to Enable Advancement of Distributed Energy Resources: Product ID 1020432 (public)
• Distributed Energy Resources and Management of Future Distribution: Product ID 1020832 (public)
• ESB Networks Smart Grid Demonstration Host-Site Overview: Product ID 1020598 (public)
• Duke Energy Smart Grid Demonstration Overview: Product ID 1021421 (public)
• KCP&L Smart Grid Demonstration Overview: Product ID 1021418 (public)
- Southern Company Smart Grid Demonstration Project: Product ID 1021422 (public)
- Smart Grid Demonstration Two Year Update: Product ID 1021497 (public)
- Smart Grid Leadership Report: Global Smart Grid Implementation Assessment – Product ID 1021417 (public)

2009
- AEP Smart Grid Demonstration Host-Site Overview: Product ID 1020226 (public)
- Électricité de France (EDF) Smart Grid Demonstration Host-Site Overview: Product ID 1020228 (public)
- Smart Grid Demonstration Overview: Product ID 1020225 (public)

Training Sessions

(Training videos are listed in order of session number, from oldest to newest.)

- Smart Grid Communications – Smart Grid Training Session #2 - October 2011: Product ID 1023428
- Smart Grid Cyber Security – Smart Grid Training Session #3 - December 2011: Product ID 1023489
- Smart Grid Conservation Voltage Reduction/Volt Var Optimization - Smart Grid Training Session #4: Product ID 1024628
- Cost Benefit Analysis for the Smart Grid - Smart Grid Training Session #5: Product ID 1025676
- IEC 61850 for the Smart Grid - Smart Grid Training Session #6: Product ID 1025677
- System Protection Implications with DER - Smart Grid Training Session #7: Product ID 1025678
- Utility Grade Communications - Smart Grid Training Session #8: Product ID 3002001096
- Smart Inverter–Smart Grid Training Session #9: Product ID 3002001873
- Cost Benefit Analysis in the Smart Grid: Training Session #10–Product ID 3002002274
Standards & Requirements

2015 (planned)

- KCP&L Case Study on Residential Demand Response Standards and Interoperability – Product ID 3002004639
- Substation Automation: Irvine Smart Grid Demonstration – Product ID 3002004613

2012

- IEC 61850 for the Smart Grid - Smart Grid Training Session #6: Product ID 1025677

2011

- Standard Portfolio Analysis at Public Service of New Mexico: Product ID 1024459
- A Utility Application Implementation Strategy Using the EPRI IntelliGrid Methodology and the GridWise Architecture Council Stack as a Model: Product ID 1024590

2010

- Utility Reference Guide to the National Institute of Standards and Technology Smart Grid Standards Effort: Product ID 1020343

2009

- Integration of Requirements and Use Cases into an Industry Model: Product ID 1020384

Use Cases

(Use Cases can be accessed via the online Use Case Repository)

AMI

- AEP AMI Network
- AEP Bulk Meter Readings
- AEP In Field Programming of Smart Meter & Firmware Upgrade
- AEP Meter Remote Connect Disconnect
- AEP On Demand Meter Reading from CIS
- AEP Outage Management System Poll Multicast
- AEP Outage Management System Poll Unicast
- AEP Outage Notification
• AEP Outage Restoration Notification
• AEP Remote Meter Firmware Update
• AEP Remote Programming of Smart Meter
• AMI Network
• Field Meter Programming and Firmware Update
• Last Gasp Message
• OMS On-Demand Poll
• OMS Ping
• On-Demand Meter Read from CIS
• Remote Connect-Disconnect
• Remote Meter Programming of Smart Meter
• Remote NIC-ESP Firmware Upgrade
• Scheduled Bulk Read from AMI Head End

**British Columbia Transmission Corporation Use Cases**
• BCTC - Operations to Planning v2
• BCTC - Planning to Operations v2
• BCTC - Planning to Planning v2

**Congestion Revenue Rights Model Use Cases**
• Create CRR Contingency Files V04
• Create CRR Model V04
• Create CRR Settlement File V04

**Customer Applications**
• AEP Customer Portal
• Customer Portal
• CAISO – IC-2 – ISO Publishes Indicators of Grid Conditions with Expectations
  Consumers Will Adjust Usage
• Consumer Portal P6 Customer Needs Meter Device
• Consumer Portal Scenario P4 Customer Account Move
• Consumer Portal Scenario P5 Customer Sign-Up for Demand Reduction Program
• Consumer Portal Scenario P7
• Consumer Portal Scenario P8
• Consumer Portal Scenario P9
• Customer Communications Portal Management
• Customer Communications Portal Management - Security Issues
• Customer Communications Portal Management - System Issues
• Customer Communications Portal Management - Telecommunications Issues
• Customer Implements Demand Response System
• Customer Provides Photovoltaics (PV) Based Generation Source
• PAP03 – Specifications for Common Electricity Products and Pricing Definition
• PAP11 – Different Utility Plans to Identify the Basic Customer Attributes
- Real Time Pricing

**Demand Response**
- AEP Direct Load Control Event
- AEP DR HAN Device Provisioning
- AEP DR HAN Pricing & Event Customer Opt-Out
- B2G - DR Load Profile Management via Pricing Mechanisms
- B2G – DR Load Profile Management via Reliability Based Signals
- B2G – Load Management with Dynamic Tariffs, DR and DER
- CAISO - IC-1 Demand Response Providers Adjust Consumer’s Energy Consumption in Response to ISO Dispatch Instructions
- Demand Response - Utility Commanded Load Control
- Direct Load Control
- Dispatch of Customer Load Controllers for Compact Network Load Alleviation
- Infotility Automated Demand Response for Network Operators
- Load Shedding - By Frequency Relay
- Load Shedding - By Order
- NEDO – BEMS Control of DERs and HVAC Equipment in a Commercial Building Which Enables Islanding Operation
- NEDO – Equipment Control within Smart House by HEM

**Distribution Automation and SCADA**
- AEP Circuit Reconfiguration
- Create DA Settlement File V04
- Data Acquisition
- Data Acquisition and Control DAC
- Data Acquisition from External DMS Network Monitoring Subsystem
- Maintain SCADA Database
- Remote Supervisory Control – KCPL
- SCADA Data Update
- SCADA Data Update – KCPL

**Distribution Energy Resources**
- Advanced Distribution Automation with DER Function
- CAISO – IC-3 – Non-Dispatchable Distributed Energy Resources (DER) Changes ISO Forecast and Unit Commitment Decisions
- Controlled Islanding
- Distributed Energy Resource Controller Generates and Executes Substation black start Sequence
- Distributed Energy Resource Controller Reconfigure Systems in Response to Faulted Segments with Islanding
- Distributed Energy Resource Forecasting
- Distributed Energy Resources Controller Configures EPS Equipment Based on Daily DER and Load Forecasts
- NEDO – PV Output Forecasting
- PAP07 – Key Energy Storage and DER Use Cases
- Software Demonstration of Intentional Islanding
- Utility Implements Integrated Management of Distributed Energy Resources

**Distribution Management System and Volt-VAR Control**
- Circuit Reconfiguration
- IVVC Centralized
- IVVC Decentralized
- Methodology for Volt/VAR Optimization on a Substation Basis
- NEDO C1 Hierarchical Control of DMS and Micro DMS
- NEDO C2 Hierarchical Control of EMS, EVECC, DMS & μDMS
- PAP08 – Distribution Grid Management (Advanced Distribution Automation) Functions
- Voltage Regulation
- Volt/VAR Dispatch A Sub-function of Operator Switched Feeder
- Volt VAR Optimization

**Electric Transportation**
- AEP Plug In Electric Vehicle (PEV) Charging at Premise
- PAP11 – Electric Vehicle Load Management
- PAP11 – Electric Vehicle Network Testing and Diagnostics
- PAP11 – Electric Vehicle Roaming
- PAP11 – Impact of PEV as Load and Electric Storage on Distribution Operations
- PAP11 – PEV as Storage Scenario
- PAP11 – PEV Default Charge Mode
- PAP11 – PEV Participates in Utility Events
- PAP11 – Plug-In Electric Vehicle Diagnostics
- PAP11 – Utility Provides Accounting Services to PEV Use Case
- PEV Charging at Premise
- PEV - E - General Registration & Enrollment Process
- PEV - L1 - Customer connects PEV at Home – premise
- PEV - L2 - Customer connects PEV at Another Home
- PEV - L3 - Customer connects PEV Outside Home Territory
- PEV - L4 - Customer connects PEV at Public Location
- PEV - PR1 - Customer charges the PEV
- PEV - S1 - Cordset (Rev D)
- PEV - S2 - Premise EVSE (Rev D)
- PEV - S3 - Premise EVSE that includes the charger (Rev D)
- PEV - U1 - TOU Program
- PEV - U2 - Discrete Event Program
Smart Grid Deliverables by Topic and Type

- **PEV - U3 - Real Time Pricing (RTP) Program**
- **PEV - U4 - Critical Peak Pricing (CPP) Program**
- **PEV - U5 - Active Management Program**
- **PEV - U5 - Active Management Program**
- **PEV - Use Case Instructions and Status**

**Energy Storage**

- **AEP Community Energy Storage (CES) Energy Dispatch**
- **AEP Configuration of a CES Controller**
- **AEP Configuration of a CES Unit**
- **CAISO – IS-1 – ISO Uses Energy Storage for grid Operations and Control**
- **CES Energy Dispatch**
- **Configuration of a CES Controller**
- **Configuration of a CES Unit**
- **NEDO - Peak Shift Contribution by Battery Aggregation**
- **NEDO - Online Power System Control by Battery Aggregation**
- **PAP07 – Key Energy Storage and DER Use Cases**
- **Utility/Customer Provides Electrical Energy Storage in Conjunction with Photovoltaics**

**Engineering and System Operations**

- **AGC Frequency Control**
- **Alarm management**
- **Application Adjusts Load to Meet System Capacity Based On Settings from System Operator**
- **Maintenance Engineer Monitors Health of Primary Equipment**
- **PAP12 – System Engineer Configures IEC 61850 Gateway to DNP3 Substation**
- **Protection Engineer Analyzes Run time Data and Protection Model after Fault Event**
- **Protection Engineer Changes Settings across a Network**
- **Protection Engineer Plans wide Area Protection Schemes Based on System Model**
- **Protection Engineer Sets up Bus Protection Based on Topology of Substation**
- **Protection Engineer Verifies Protection Models**
- **System Engineer Adds A Transmission Line with IEC 61850 Protection**
- **System Engineer Creates CIM Model from IEC 61850 Configuration**
- **System Engineer Retrosits a Substation**
- **System Operator Identifies, Locates, Isolates and Restores Service after a Fault**
- **System Operator Switches Feeders Based On Contingency Analysis**

**Microgrids**

- **NEDO A1 Energy Management of Grid Connected Microgrid**
- **NEDO A2 Autonomous Decentralized Microgrid Islanding Mode**
- **NEDO H1 Energy Management of Grid Connected Microgrid**
• NEDO H2 Energy Management of Microgrid Islanding Operation
• NEDO - Energy Management by Configuring a Virtual Microgrid
• NEDO - Sendai Microgrid Use Case
• Miscellaneous Use Cases
• AEP Utility DOE Smart Grid Clearinghouse
• As-Built Equipment Installation-Commissioning
• As-Built Model Update – KCPL
• Asset Manager Verifies Equipment Location
• CAISO – IP-1 – ISO Uses Synchrophasor Data for Grid Operations, Control, Analysis and Modeling
• Contingency Analysis – Baseline
• Contingency Analysis - Future Advanced
• Convert PMCR to NOMCR V0.9
• Create EMS Production Mode V03
• Create EMS Test Model V03
• Create MMS DA Model V04
• Create MMS RT Model V04
• Create NOMCR V0.9
• Create Planning Model V0.5
• Create PMCR V0.6
• Create RT Contingency Files V01
• Create RT Settlement File V04
• Data Warehouse
• Define Transmission Outage Schedules
• Energy Scheduling Billing and Settlement
• Export Powerflow Use Case 120606
• Extension Implementation
• Extension Planning
• Field Control Request
• Functional Requirements for Network Management
• Functions of the Work Management System (WMS)
• Hours Ahead Load Optimization

Planning and Marketing Operations
• Import Operational Model to Planning
• Load Forecast Data between EMS and Planning
• Market Operations - Long Term Planning
• Market Operations - Medium and Short Term Planning
• Market Operations – Overview
• Market Operations - Post Dispatch
• Network Equivalents between EMS and Planning
• Network Extension Use Case for Planning 110706
Power Quality

- Permanent Power Quality Measurement
- Power Quality Contracts
- Power Quality Event Notifications

Real Time Pricing (RTP)

- AEP Performing Real Time Price Auction
- AEP Post Real Time Price Auction Processing
- AEP Real Time Price (RTP) Billing
- AEP Real Time Price HAN Device Provisioning
- AEP Real Time Price HAN Messaging
- AEP RTP System Initialization of Customer Enrollments
- Real-Time Pricing - Top Level
- RTP Baseline Use Case
- RTP - Base RTP Calculation Function
- RTP - Customer's BAS Optimization
- RTP - DER Device Management
- RTP - Energy Service Provider Energy and Ancillary Services Aggregation
- RTP - ESP Customer Specific RTP Calculator
- RTP - Load Forecasting
- RTP - Market Operations Ancillary Services
- RTP - Market Operations Energy Services

Relay Protection

- Adaptive Transmission Line Protection
- Earth Fault Localization
- End To End Testing Of Protective Scheme
- Fault Isolation
- Synchrophasor
- Short Circuit Localization

Volt-Var Management

- AEP Integrated Volt Var Control Centralized
- AEP Integrated Volt VAR Control Decentralized

Wide-Area Monitoring and Control

- WAMAC Emergency Operations Baseline
- Wide Area Control System for the Self-Healing Grid SHG
- Wide-Area Control System Advanced Auto-Restoration
- Wide-Area Monitoring and Control - Automated Control Functions
- Wide-Area Wind Generation Forecasting
- Inter-Area Oscillation Damping
- Low Side Rollover Specifications
• Market Operations - Day Ahead Market Operations
• NEDO – S1 Cooperative Control Among Smart Grid and External Area EPS Energy Management Systems
• Network Colouring
• Network Modification
• PAP13 – Harmonization of IEEE C37.118 with IEC 61850 and Precision Time Synchronization Process Contingency Definition V03
• Process Dynamic Rating V0.3
• Process NOMCR V0.14
• Process PMCR V0.3
• Process SAMR V0.4
• Real Time Topology Processor
• Service Restoration
• State Estimation
• Study Mode Topology Processor
• Telemetry Definition
• Training Session
• Transport Contingency Specifications
• Voltage Security
MEMBERS OF THE EPRI SMART GRID DEMONSTRATION INITIATIVE