ISGF
India Smart Grid Forum

SMART GRID PROJECT BOOK

- A GLOBAL SNAPSHOT

APRIL 2015



Acknowledgement

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India Smart Grid Forum

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Introduction

Power sector globally is at the threshold of a paradigm shift – from centralised generation we are fast moving to an era of distributed generation and smart grids - Increasing share of generation resource being added at the distribution grid. Indian power system which is fourth largest in the world is facing huge challenges to provide 24 x 7 quality power to all households and to reduce the T&D losses from >25% to below 10%. GoI has drawn a compelling vision to add 175 GW of renewable energy (100 GW solar, 60 GW wind, 10 GW Biomass and 5 GW of small hydro) by 2022 to the Indian grid. Out of this 40 GW is expected to be generated from rooftop PV systems spread across 20 million roofs which is going to radically transform the way electricity is generated, transmitted, distributed and consumed in the country. Several new technologies and changes in grid management processes are required to make this happen.

Governments of various Countries are implementing Smart Grid projects by giving grants and incentives. The table below indicates the spending on Smart Grid demonstration projects in various countries during 2008-2014:

Country/Region	Government Funding ($ Million)
European Union	6170
USA	7140
South Korea	71.8
Japan	5900
China	19200

ISGF has compiled summary of 68 projects across the world which is presented in this **"Smart Grid Project Book – A Global Snapshot"**. Certain data* relating to some of the projects were not readily available and those are being obtained from the project authorities. Next edition of this book will capture more detailed information.

It is observed that most successful projects were implemented in public private partnership (PPP). The Government grants varied from 25% to 50 % and Utilities and technology companies contributed to the rest of project cost. Many projects had active participation of academia which was mostly funded through Government grants. Transparent selection process were followed in which Government agencies invited call for proposals. Utilities partnered with technology companies and academia and submitted detailed project proposals which were evaluated by committees of experts and projects were allotted purely on the basis of the merits. Frameworks for monitoring of project implementation and evaluation of results were also observed in most cases.

ISGF will be updating the list of projects every six months.

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*The details of projects that were not successful have not been shared by any of the project authorities.

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<table>
<tr><th colspan="8">Smart Grid Project Summary Report-01-Austria</th></tr>
<tr><td>Country:</td><td colspan="7">Austria</td></tr>
<tr><td>Utility:</td><td colspan="7">Distribution System Operators and Transmission System Operators</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Andreas Abart / andeas.abart@netzgmbh.at</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Energia AG Smart Metering Project AMIS</td></tr>
<tr><td>Main Project Features</td><td colspan="7">Gathering information on smart metering technology with the ambitious aim to save money by efficient process automation and gain additional revenues</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">100,000 smart meters
25000 load switching devices</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td>250 euros per metering point</td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">DSOs and TSOs</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td>Actual Duration (Months)</td><td>Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td><td></td><td></td></tr>
<tr><td></td><td>2005</td><td>2013</td><td>2005</td><td>2013</td><td>96 months</td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">DSOs and TSOs</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="7">• Grid and customer service processes had to be altered completely
• Transferring information to customers about new technology
• Privacy and IT security management
• Making consumers realize their responsibilities</td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="7"></td></tr>
</table>

Benefits to Customers	• Detailed real-time information on energy consumption • New flexible tariffs • Better service • Support for decentralized funding-in				
Benefits to Utility	• Automation of metering and distribution grid • New business models				
Innovation factor					
Potential for replication/larger roll out	Roll-out of 600000 meters (70%) by 2017 has been planned and approved				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-02-Belgium</th></tr>
<tr><td>Country:</td><td colspan="7">Belgium</td></tr>
<tr><td>Utility:</td><td colspan="7">Smart Grid Flanders, VITO NV</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Wim Cardinaels/ wim.cardinaels@vits.be/ wim.cardinaels@energyville.be/ +3214335808/ www.linear-smartgrid.be</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">LINEAR - Local Intelligent Networks for Energy Active Regions</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Finding solutions to match residential electricity consumption with the availability of wind- and solar energy
• Models :
a. Variable Time of Use (ToU) is tested with 55 families. They are supported with a Home Energy Monitoring System and a display that shows market priced tariffs, scaled-up to 2020 wind and solar prediction. This model supports the business case of day ahead portfolio management

b. The second model is defined in cooperation with the families and designed to operate intra-day, guarantee user comfort and generate flexibility for families, grid- and system operators. Where ToU appeals to financial reward, the flexibility system appeals to financial benefits, as well as ecologic and societal engagement</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">240 families, 7 EVs</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Smart Grid Flanders, VITO NV, Imec, Iminds, KU Leuven, EDF, Agoria, Vreg, Siemens, FifthPlay</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>May 2009</td><td>December 2014</td><td>May 2009</td><td>9th December 2014</td><td>66 months</td><td>Completed successfully</td></tr>
<tr><td rowspan="7">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">VITO NV, Imec, Iminds, KU Leuven, EDF, Agoria, Vreg, Siemens, FifthPlay</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td></td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="4"></td></tr>
</table>

Communication Technology Used	Backhaul/WAN				
Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• The Linear project influences the day-to-day behavior of the end consumers, enabling them to participate in the electricity market without exposing them to its complexity • Smart Appliances • Cost Savings • Environmental Benefits • RE usage				
Benefits to Utility	• Reduction in pollution • Reduction in over and under voltage problems • Shift in energy use • Generation of electricity from wind energy • Development solar power plants and RE usage				
Innovation factor	• The partners represent the whole value chain which allows for a combination of the know-how of DSO's, retailers, research institutions, manufacturers and telecom providers • Solutions like device controllers, new generation smart grid ready appliances, home energy management systems • Facilities for real time interaction between user behavior and business case implementation				
Potential for replication/larger roll out	• The ambition of the Linear project is not only to develop innovative technologies, but to set the stage for an implementation of these mechanisms on a national and European level. For this reason, regulatory policies, consumer behavior and market models are all considered				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-03-Belgium</th></tr>
<tr><td>Country:</td><td colspan="6">Belgium</td></tr>
<tr><td>Utility:</td><td colspan="6">Smart Grid Flanders</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Heidi Lenaerts/ info@smartgridsflanders.be/ www.smartenergysolutions.be / +32 476528301</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Smart Grids for Industry (Smart Energy Solutions)</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• Awakening the consciousness of the consumer and the utility about the benefits of Smart Grids
• Increasing the market competition and more private involvement through the ‘Energy Bill’
• Enlightening industrial partners about the changing roles and responsibilities of suppliers, operators, energy producers in the current energy world
• Enhance innovation in the field of smart grids</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">120 members:
a. 100 residential households
b. 20 industrial users</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Colruyt, Alpro, d’Arta, Atlas Copco, Rezinal, Cofely Fabricom, Dalkia, BPost</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>September 2012</td><td>September 2014</td><td>September 2012</td><td>Not Available</td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">Colruyt, Alpro, d’Arta, Atlas Copco, Rezinal, Cofely Fabricom, Dalkia, BPost</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="4"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="4"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6"></td></tr>
</table>

<table>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Installation of Smart Grid Technology
• Cost savings
• Smart Energy Savings
• Quality and Efficiency of service
• Real-time information on the usage and billing data</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Relationship building between user and supplier
• Energy Savings
• Environmental Safety
• Voltage Regulation</td></tr>
<tr><td>Innovation factor</td><td colspan="5">Building network between suppliers and consumers as well as prosumers.</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• Requests for individual support towards a sustainable business management in a Smart grid are coming up from various utilities
• SG Flanders' innovation and expertise can be used in different Smart Grid models across the world</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

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Smart Grid Project Summary Report-04-Canada						
Country:	Canada					
Utility:	Maritime Electric, New Brunswick Power, Saint John Energy, Nova Scotia Power					
Point of Contact	Michel Losier / mlosier@nbpower.com / (506)-4583273					
Project Name/Title	Power Shift Atlantic- Phase I					
Main Project Features	• World's first fully grid-integrated virtual power plants designed to allow for more effective integration of wind power.					
Number of Customers involved	Almost 1 million across the 4 service areas, GWh mix 40% residential, 26% commercial and 31% industrial loads, 26,055 GWh across 4 service areas					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	1-4-2010	31-3-2012	1-4-2010	31-3-2012		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• A variety of residential and commercial end-uses (water heaters, water boilers, HVAC, refrigeration, electrical thermal storage). • Two system operators, utilities with different ownership and governance, markets with different rate structures (time of day versus flat rate). • Commercial customers with energy management systems, commercial customers with a specific device directly controlled by the aggregator.					
How the above challenges were overcome						

Benefits to Customers	Explore new customer roles and customer relationships that support customer participation in load management, and capture value for the customer. Determine best practices for establishing relationships of trust for direct load shifting.							
Benefits to Utility	Test the cost effectiveness of operating virtual power plants as ancillary service providers (10 minute spinning reserve and Real Time Generation Dispatch (RTGD)) and determine appropriate business models for integrating the components of a virtual power plant within a vertically-integrated utility.							
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

Smart Grid Project Summary Report-05-Canada						
Country:	Canada					
Utility:	Maritime Electric, New Brunswick Power, Saint John Energy, Nova Scotia Power					
Project Name/Title	Power Shift Atlantic- Phase II					
Main Project Features	• World's first fully grid-integrated virtual power plants designed to allow for more effective integration of wind power.					
Number of Customers involved	Almost 1 million across the 4 service areas, GWh mix 40% residential, 26% commercial and 31% industrial loads, 26,055 GWh across 4 service areas					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	1-4-2012	31-3-2015	1-4-2012	ongoing		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• A variety of residential and commercial end-uses (water heaters, water boilers, HVAC, refrigeration, electrical thermal storage). • Two system operators, utilities with different ownership and governance, markets with different rate structures (time of day versus flat rate). • Commercial customers with energy management systems, commercial customers with a specific device directly controlled by the aggregator.					
How the above challenges were overcome						

Benefits to Customers	Explore new customer roles and customer relationships that support customer participation in load management, and capture value for the customer. Determine best practices for establishing relationships of trust for direct load shifting.							
Benefits to Utility	Test the cost effectiveness of operating virtual power plants as ancillary service providers (10 minute spinning reserve and Real Time Generation Dispatch (RTGD)) and determine appropriate business models for integrating the components of a virtual power plant within a vertically-integrated utility.							
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

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Smart Grid Project Summary Report-06-Canada						
Country:	Canada					
Utility:	Ministry of Energy and MaRS Discovery District					
Point of Contact	Ravi Seethapathy/GreenButtonData.ca/ abarter@marsdd.com/ 416-673-6501					
Project Name/Title	Green Button: Enabling Consumer Empowerment in Ontario					
Main Project Features	• Use of innovative smart grid technology to give families and business direct, timely access to their own energy data through a secure download from their utility's website • Processes and securely manages over 96 million data transactions per day • Provides electricity consumers with standardized, electronic, machine-readable access to their electricity consumption data • Empowering customers to understand and to take control of their energy consumption is a fundamental element of the Green Button initiative which is done by facilitating proper understanding of consumption habits and patterns, a Green-Button-enabled application effectively empowers the consumer to reduce their monthly bill					
Number of Customers involved	2.8 million households					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	London Hydro, Hydro One, Ontario Energy Board, Ministry of Energy, MaRS Data Catalyst, Advanced Energy Centre					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	October 2012	Present	October 2012			
Project Executing Agencies	Consultants	London Hydro, Hydro One, Ontario Energy Board, Ministry of Energy, MaRS Data Catalyst, Advanced Energy Centre				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• energy literacy • cost savings- Reduction in the monthly bill • conservation				
Benefits to Utility	• Reduction of environmental impact through conservation and load shifting • Encourages competition, • Eliminates technology silos • Encourages more diverse smart grid program engagement				
Innovation factor					
Potential for replication/larger roll out	The Green Button standard can easily be fully integrated between utility companies, regions, and countries, leading to a very high potential for replication. The Ontario program is fully aligned with the parallel initiative in the United States, and is designed to be consistent with analogous initiatives ongoing in the EU				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-07-Canada						
Country:	Canada					
Utility:	Independent System operator (IESO), Ontario Energy Board, Ontario Ministry of Energy					
Point of Contact	Usman Syed/ usman.syed@ontario.ca					
Project Name/Title	Ontario Smart Metering Deployment Project					
Main Project Features	Modernizing electricity system by deploying smart meters in all homes and small businesses					
Number of Customers involved	4.8 million smart meters 4.5 million customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
		$ 1 billion				
Funding Agencies	Independent System operator (IESO), Ontario Energy Board, Ontario Ministry of Energy					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	April 2004	December 2012	April 2004	December 2012	104 months	
Project Executing Agencies	Consultants	Independent System operator (IESO), Ontario Energy Board, Ontario Ministry of Energy				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						
Benefits to Customers	• Demand Management Programs • Accurate meter readings • Timely consumption information					

<table>
<tr><td></td><td colspan="5">• Pro-active consumer service</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Reduces number of crew visits to read and service meters
• Reduces tempering and theft of electricity
• Operational Benefits</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">Model has been approved for future planning of programs and policy framework</td></tr>
<tr><td>Business Case</td><td colspan="5">Returns of $1.6 billion</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-08-Denmark						
Country:	Denmark					
Utility:						
Project Name/Title	EcoGrid: Consumer engagement in the future power system					
Main Project Features	• The objective of the EcoGrid project is to allow small-scale/residential electricity consumers to participate in the power market and contribute to the balancing of renewable electricity generation by active demand response to five minute real-time price signals.					
Number of Customers involved	240,000 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	March 2011	Aug 2015				
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs – Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						

Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

Smart Grid Project Summary Report-09-Denmark						
Country:	Denmark					
Utility:						
Point of Contact	Irin Bouwman / +31507009891 / irin.bouwman@dnvgl.com					
Project Name/Title	PowerMatching City Phase II					
Main Project Features	Transition from Centralized fossil fuel based power production to decentralized sustainable power production through smart energy infrastructure and democratizing the energy market					
Number of Customers involved	40-42 participants and 10EVs					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	DNV KEMA, Enesis, Essent, Gasunie, ICT Automatisering					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	September 2011	September 2014	September 2011	September 2014	36 months.	Data Collection Phase
Project Executing Agencies	Consultants	DNV, Hanze University, Technical university of Delft, TNU, Technical university of Eindhoven				
	System Integrator (s)	DNV				
	OEMs - Software	ICT Automatisering				
	OEMs - Hardware	DNV, Enesis				
	Installation Agencies	DNV, Gasunie				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• Integration of SG in existing energy market • Implementation in operations of various businesses • Understanding customer demand					
How the above challenges were overcome	• Capacity management • Testing Energy services • Innovative Smart Energy Consumer Services					

	• Market Research				
Benefits to Customers	• Customers can decide where and when they want to buy/sell energy • Home Energy management System • Smart App: Controls indoor climate and saves energy				
Benefits to Utility	• Decentralized Distribution • Less pressure on Authority • Management of Peak Loads • Better Service and Efficiency				
Innovation factor	• Application of an optimal buying and selling strategy • Involvement of local energy market • Cloud Computing for expansion				
Potential for replication/larger roll out	Designing of PowerMatching City to the entire population has already started in 2014				
Business Case	More Energy Efficiency which can lead to better services and profits. Global Model				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
			✓		

Smart Grid Project Summary Report-10-Denmark						
Country:	Denmark					
Utility:						
Point of Contact	Irin Bouwman / +31507009891 / irin.bouwman@dnvgl.com					
Project Name/Title	PowerMatching City Phase I					
Main Project Features	Role of Natural Gas Applications and Gas Infrastructure in the successful working of Smart Grids and understanding the various scopes of alternative and innovative technologies in SG. A coordination mechanism and alternate market model					
Number of Customers involved	25 participants					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	DNV KEMA, Enesis, Essent, Gasunie, ICT Automatisering					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	September 2007	September 2011	September 2007	September 2011	48 months.	Successful Completion and Research
Project Executing Agencies	Consultants	DNV, Hanze University, Technical university of Delft, TNU, Technical university of Eindhoven				
	System Integrator (s)	DNV				
	OEMs - Software	ICT Automatisering				
	OEMs - Hardware	DNV, Enesis				
	Installation Agencies	DNV, Gasunie				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• Integration of SG in existing energy market • Understanding customer demand • Storage of Heat Energy					

How the above challenges were overcome	• Capacity management • Testing Energy services- for heat storage • Market Research				
Benefits to Customers	• Gas-fuelled appliances • Home Energy management System • Cost Savings and Energy Efficiency • Management of fluctuation of demands of energy				
Benefits to Utility	• Managing the fluctuations : A stable outcome • Less pressure on Authority • Management of Peak Loads • Better Service and Efficiency				
Innovation factor	• Application of an optimal buying and selling strategy • Involvement of local energy market • Cloud Computing for expansion				
Potential for replication/larger roll out	Designing of PowerMatching City to the entire population has already started in 2014. Part of UN Sustainia 100 in Autumn 2012				
Business Case	More Energy Efficiency which can lead to better services and profits. Global Model				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-11-EU</th></tr>
<tr><td>Country:</td><td colspan="6">European Union Countries</td></tr>
<tr><td>Utility:</td><td colspan="6">Vito, European Union</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Erik Laes/ erik.laes@vito.be/ +32(0)14335909/ www.vito.be</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Smart Consumer - Smart Customer - Smart Citizen (S3C)</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• foster ‘smart’ energy behaviour of households and SMEs in Europe via active end user participation
• Develop a theoretical framework for ‘smart energy’
• Following a human-centric approach from social and behavioral sciences. It includes insights from other fields (e.g. telecommunications),and tests different technical and non-technical end user interaction solutions
• Analysis of experiences in over 30 smart grid pilots conducted in the EU. These 'best practices' are used as an input to the design of novel technical and social user-interaction schemes.
• Investigating the market functioning and end user behaviour as well as published results of already existing meta-analyses.
• Screening of databases using targeted selection criteria designed to find interesting projects from the end user engagement point of view.</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Vito, B.A.U.M. Consult GmbH, EDP, INEA, RSE S.p.A, SP Technical Research Institute of Sweden, ECN</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>1st November 2012</td><td>31st October 2015</td><td>1st November 2012</td><td></td><td></td><td>Ongoing Project</td></tr>
<tr><td rowspan="5">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="5">Vito, B.A.U.M. Consult GmbH, EDP, INEA, RSE S.p.A, SP Technical Research Institute of Sweden, ECN</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
</table>

	Other Agencies				
Communication Technology Used	Last Mile/Access/NAN/FAN				
	Backhaul/WAN				
Key Challenges faced during project implementation (if any)	Reducing greenhouse gas emissions, enhancing security of supply, boosting competitiveness in the energy sector, improving choice for users and raising energy consumption awareness persists in the low understanding and interest for the newly available Smart Grid technologies on the demand side.				
How the above challenges were overcome	Transforming challenges into opportunities for research and empirical study				
Benefits to Customers	Deployment and Availability of Smart Grid projects and facilities in the best possible manner within 2016.				
Benefits to Utility	Understanding the shortfalls of various Smart Grid projects to develop a better improved system of Smart Grid. Understanding customer needs and demands				
Innovation factor					
Potential for replication/larger roll out					
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-12-EU</th></tr>
<tr><td>Country:</td><td colspan="7">Reken (Germany), Uppsala (Sweden), Castellon (Spain), Forli-Cesena (Italy), Vrchlabi (Czech Republic) and Carros (France)</td></tr>
<tr><td>Utility:</td><td colspan="7">Électricité Réseau Distribution France (ERDF)</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Rémy Garaude Verdier/ 0033 1 8197 5048/ question@grid4eu.eu/ www.grid4eu.eu</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">GRID4EU - Large-Scale Demonstration Of European Smart Distribution Networks</td></tr>
<tr><td>Main Project Features</td><td colspan="7">The project is divided into 3 sites:
• A balance between installed distributed generation power (Feeding capacity: 25.9 MWp) and maximum demand (peak load: 25,5 MW)
• A high penetration of renewable energy production (feeding capacity: 105 MWp), mostly photovoltaic, along with low consumption in comparison
• Integration of massive decentralized photovoltaic (PV) generation connected on the low voltage grid.
Project Objectives:
• Wide replication and scalability potential between the different sites of the project</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td>€54 million</td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">European Commission, Distribution System Operators (DSOs)-ERDF, ENEL, RWE, Iberdrola, CEZ and Vattenfall</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>November 2011</td><td>January 2016</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">European Commission, Distribution System Operators (DSOs)-ERDF, ENEL, RWE, Iberdrola, CEZ and Vattenfall</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
</table>

<table>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Better service
• More efficient electricity supply
• Cost reduction
• Reduction in failures resulting to load-shedding
• Voltage control</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Higher reliability,
• Shorter recovery times after grid failures
• Loss reduction by increasing the surveillance
• Remote-control level of the grid</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• GRID4EU structure is innovative as it brings together 6 DSOs that never experienced this level of collaboration before, enabling significant works in terms of standardization, CBA and SRA
• To define the optimal number of agents and their locations, an integrally reusable optimization algorithm has been developed, enabling dynamic topology reconfiguration
• A control system with an “Always On” IP standard-based communication has been developed, enabling DG to actively support voltage regulation
• The NEM has been developed to respond to the need for coordination between flexibilities offered both by network entities and aggregators. This architecture enables the design of a new model of interactions between energy actors (consumers, commercial aggregators, TSO and DSO) to balance generation & consumption in this first megawatt-scale European smart solar district</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• Target of at least 27% for the share of renewable energy consumed in the EU in 2030
• Accounting for more than 50% of the European metered Energy, GRID4EU relies on a
• consistent playground for SRA.
• GRID4EU is also looking worldwide for potential replication and scaling-up opportunities</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5">GRID4EU is one of the largest smart grid projects ever funded by the European Union</td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-13-France						
Country:	France					
Utility:	EDF					
Point of Contact	Christophe Reinert / +33 469656388 / Christophe.reinert@edf.fr					
Project Name/Title	Smart Electric Lyon					
Main Project Features	Test Smart Grid Applications with real clients in real conditions in order to assess their conditions of acceptance for these solutions. Understanding and involving mainly industrial users					
Number of Customers involved	2500 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	EDFSA, HAGER, Dorbox, Orange, Philips and 16 others					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	October 2012	October 2016	October 2012	---		Ongoing
Project Executing Agencies	Consultants	EDFSA				
	System Integrator (s)	HAGER				
	OEMs - Software					
	OEMs - Hardware	Philips, Orange, etc				
	Installation Agencies	HAGER, Philips, etc				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• Defining project ambition and value addition • Defining use-cases and specifying tariff incentive • Specifying the equipment to address the consumer needs • Defining market model					
How the above challenges were overcome	• Qualitative approach with document analysis and observations • Analysis of cultural impacts • Analysis of DSM impacts					

<table>
<tr><td></td><td colspan="5">• Equipment usage analysis
• Analysis of energy practices and energy transformation techniques
• Analysis of the impact of actors around Smart Electric Lyon</td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Dynamic and appropriate tariffs
• Real-time information about consumption
• Option of becoming an active actor
• Getting personalized advice
• Getting access to new energy management equipment</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Consumer Analysis: tariffs and segmentation
• Sectorial organizational analysis
• Identification of upstream and downstream services and their behavior
• Information on technology, price, investment, production, network, quality, continuity on supply
• Cost Assessment
• Equipment Evaluation methodology
• Energy and Environmental analysis- amount of carbon dioxide emissions</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• Involvement of actors responsible for distributing and installing solutions
• Radio transmission use for collection of real-time data
• New dynamic and appropriate tariff system
• Multidisciplinary evaluation plan</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">Success of the model will allow it to be used and initiated in the domestic as well as commercial sector on a larger scale : City or Area basis</td></tr>
<tr><td>Business Case</td><td colspan="5">Larger roll out will mean larger customer base and more energy models.
All these will lead to monetary benefits in terms of savings, tariff policy, investments, etc.</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-14-France							
Country:	France						
Utility:	ERDF- Electricitre Research Distribution France , French Government, European Union						
Point of Contact	Christophe Arnoult / question@grid4u.en/ +33 698063863 / www.grid4eu.eu						
Project Name/Title	Nice Grid the French Demonstrator of GRID4EU						
Main Project Features	To test the entire smart grid concept including the impact of Distributed Energy Resources on low voltage grid to improve the efficiency and quality of service (voltage)						
Number of Customers involved	2500 customers						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes				
	30 million euros						
Funding Agencies	ERDF, EDF SA, Alstom, SAFT, RTE, Armines, Daikin and 20 others						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes	
	Start Date	End Date	Start Date	End Date			
	1st November 2011	31st January 2016	1st November 2011			Ongoing project.	
Project Executing Agencies	Consultants						
	System Integrator (s)						
	OEMs - Software						
	OEMs - Hardware						
	Installation Agencies						
	Other Agencies						
Communication Technology Used	Last Mile/Access/NAN/FAN						
	Backhaul/WAN						
Key Challenges faced during project implementation (if any)	• Using more renewable energy sources connected to distribution network • Implementing active, more efficient participation of customers in electricity market • Imposing peak-load management throughout the project						
How the above challenges were overcome							

Benefits to Customers	Increase in the efficiency (voltage)and reduction in costs				
Benefits to Utility	• Reduction in power demand • Management of maximized PV production • SG technology in towns • Islanding facilities				
Innovation factor					
Potential for replication/larger roll out	i. Industrial parties take active participation ii. Social diversity iii. Italy, Spain, Germany, Sweden and Czech Republic have shown interest in the same model				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-15-France						
Country:	France					
Utility:						
Point of Contact	Antonin Coliche / Antonin.coliche@direct-energia.com/ +33 635238817/					
Project Name/Title	Modelec					
Main Project Features	• To test the viability of retail customer's demand response, focusing especially on times of peak consumption • Apply the "internet of things" to energy • Study and control of Demand Response					
Number of Customers involved	500 customers, 1583 connected device					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	September 2011	September 2014	September 2011	September 2014	36 months	
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						

<table>
<tr><td>Benefits to Customers</td><td colspan="5">• Energy Efficiency
• Better quality
• Good voltage during peak time</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Delay in the peak consumption time
• An average of 12% energy consumption reduction (in kWh)
• Sustained client’s engagement and interest</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">If successful this model will be adopted by other countries for consumption reduction and avoiding load sheddings</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2">✓</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-16-France</th></tr>
<tr><td>Country:</td><td colspan="7">France</td></tr>
<tr><td>Utility:</td><td colspan="7">French Government and EDF</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Christian Dumbs / Christian.dumbs@edf.fr</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Millener</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Encourage demand side management and control in individual households
• Explore new potential business approaches for island electric systems
• Increasing share of Renewable Energy within the existing global electricity network
• Managing growth demand
• Remote control load shedding system during peak hours
• Online support for customers to monitor the usage and bills
• Individual battery storage systems for houses with solar PV panels</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">~1000 customers</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">EDF, BPL, Delta Dore, Edelia, Schneider Electric, Saft and Sunzil</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>2011</td><td>2014</td><td>2011</td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">EDF, BPL, Delta Dore, Edelia, Schneider Electric, Saft and Sunzil</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs – Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="7"></td></tr>
</table>

<table>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Enhanced understanding of the main electricity usages
• Reduction in electricity bill
• Increased efficiency in service/voltage
• Reduction of load-shedding problems</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Local and renewable energy backup
• Management of growth and demand</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• The project suggests particularly innovative control algorithms for the shared use of the storage devices for both customer and power system benefits.
• Remote-controlled load-shedding technology
• Online monitoring system for electrical consumption</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• The solutions experimented within the Millener project can be potentially applied to all electric systems. They will generate particular benefit for power systems containing a high share of intermittent renewable energies.
• Millener explores technical devices which will be able to adapt to a broad variety of electrical configurations in the residential sector</td></tr>
<tr><td>Business Case</td><td colspan="5">The project intends to demonstrate how smart grid solutions based on residential end customers' investments can translate into sustainable business models</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-17-France</th></tr>
<tr><td>Country:</td><td colspan="7">France</td></tr>
<tr><td>Utility:</td><td colspan="7">ERDF</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Matthieu Terenti/ matthieu.terenti@erdf.fr / +33 426298811/ www.greenlys.fr</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Greenlys</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Development of a technological showcase for widespread deployment of Smart Grids by 2016
• Customer Engagement and Empowerment by leading experimentation with active consumers
• Use of ‘Wiser Energy Box’
• Customer service availability over internet and phone
• Energy Efficiency related advice to consumers</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">600 residential customers
10 commercial sites</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">ERDF, Schneider, GDF Suez, GEG, Grenoble INP</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>2012</td><td>2016</td><td>2012</td><td>--</td><td>--</td><td>Ongoing project</td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">ERDF, Schneider, GDF Suez, GEG, Grenoble INP</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="7"></td></tr>
</table>

<table>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Locally pilot heating appliances
• Energy Savings
• Job Creation
• Reduction in costs
• Simple tariff offers</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Remote interruption controls to decrease consumption
• Eco friendly approach among customers
• Use of renewable energy
• Stakeholder relationship
• Creating a base for future models
• Optimize investments
• Reduction in peak load</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• Development of innovative solutions in terms of materials, information systems, infrastructure, equipment, prices and services
• One-to-one commercial follow of customers to understand their needs and usage patterns
• Remote interruptions for reduction in peak load</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">This model is already getting accolades from the energy industry and is being followed by other countries like Belgium, etc for replication.
It is expected to serve as a benchmark as well as a base model for all future development s and innovations in the field of energy</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-18-France						
Country:	France					
Utility:	Delmarva Power					
Point of Contact	Cyril Damet/ Cyril.damet@energy-pool.eu/ www.energy-pool.eu/ +33 (0) 488131660					
Project Name/Title	Energy Pool					
Main Project Features	• Create an Energy pool while balancing the electric grid while making it smarter and cleaner					
Number of Customers involved	1200MW					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
			2010			
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						

Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-19-France</th></tr>
<tr><td>Country:</td><td colspan="7">France</td></tr>
<tr><td>Utility:</td><td colspan="7">Électricité Réseau Distribution France (ERDF)</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Didier Colin/ 00333 2604 9169/ didier.colin@erdf.fr/ www.Venteea.Fr/En/</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Venteea</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Create the best conditions to ensure an economically and technically efficient integration of renewable energy sources (RES), in particular wind power plants, in rural medium voltage distribution networks
• Increases network observability along the feeders
• Improves network reliability in presence of generation
• Solves voltage constraints on the distribution network
• Reduces technical losses
• Defines and tests grid services to be provided through a large storage system (2MW-1.3MWh)
• Develops the information system to enable the deployment of smart grid objects
• Promoting the best practices and solutions among DSOs (from a technical regulatory and economic point of view) for the effective integration of RES, based on 6 demonstrators (in Spain, Italy, Germany,…), including Venteea</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Électricité Réseau Distribution France (ERDF)</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>December 2012</td><td>June 2016</td><td>December 2012</td><td>ongoing</td><td></td><td></td></tr>
<tr><td rowspan="5">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="5">Électricité Réseau Distribution France (ERDF), GE Digital Energy, Boralex, Laboratoire d’Electrotechnique et d’Electronique de Puissance, Schneider Electric, Universite de Technologie (UTT), RTE, Saft Batteries, Made, Enel, Central Lille</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
</table>

	Other Agencies				
Communication Technology Used	Last Mile/Access/NAN/FAN				
	Backhaul/WAN				
Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Better efficiency in service • Reduction in costs • Reduction in load-shedding • Stable output				
Benefits to Utility	• Avoiding network reinforcement • Increasing the network hosting capacity • Efficient and reliable voltage management solutions, such as local reactive power management • Deliver propositions of regulatory evolutions • A cost-benefit analysis and an environmental analysis assessing the impact of RES onto the distribution network • A social analysis assessing project acceptability, services provided to the territory and the impact of new technologies on society.				
Innovation factor					
Potential for replication/larger roll out	The new digital instrumentation and control system of Vendeuvre primary substation was installed and has been working properly ever since. This solution could be deployed in 900 French primary substations				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-20-France</th></tr>
<tr><td>Country:</td><td colspan="7">France</td></tr>
<tr><td>Utility:</td><td colspan="7">ERDF</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Hannah Besser/ Hannah.besser@erdf.fr</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Linky Project</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Modernization of 35 million electricity meters in France by installing smart meters
• Determining the roles and responsibilities of players of electricity market
• Management of low voltage network by collecting technical data
• Improve functioning of electricity market and policies
• Reduction in carbon emissions</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">300000 meters
4600 concentrators</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">ERDF, TURPE, Schneider Electric, Deltadore</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td>Actual Duration (Months)</td><td colspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td><td></td><td colspan="2"></td></tr>
<tr><td></td><td>March 2007</td><td>March 2009</td><td>March 2007</td><td>March 2009</td><td>24 months</td><td colspan="2"></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">ERDF, TURPE</td><td colspan="2"></td></tr>
<tr><td>System Integrator (s)</td><td colspan="2"></td></tr>
<tr><td>OEMs - Software</td><td colspan="2"></td></tr>
<tr><td>OEMs - Hardware</td><td colspan="2"></td></tr>
<tr><td>Installation Agencies</td><td colspan="2"></td></tr>
<tr><td>Other Agencies</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="7"></td></tr>
</table>

<table>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Better management of complaints
• Reduction in carbon emissions
• Voltage control
• Cost reduction
• Better and quick service
• Reduction in faults</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Better fault identification and localization
• Monitoring of power quality
• Increased capacity
• Management of peak load
• Reduction in carbon emissions</td></tr>
<tr><td>Innovation factor</td><td colspan="5">Power Line Carrier (PLC), GPRS, Extended Communication Network</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• New future offers for installation
• Tariff regulation in future
• 10000 job opportunities</td></tr>
<tr><td>Business Case</td><td colspan="5">• 35 million units by 2021
• 5 billion investment plans in future</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-21-Germany						
Country:	Germany					
Utility:	RWE Deutschland & Lechwerke AG					
Point of Contact	Roland Doelzer/ (+49) 821 328 1375/ Roland.Doelzer@lew-verteilnetz.de/ Https://Www.Lew.De/Energiezukunft/Smart-Operator/					
Project Name/Title	Smart Operator - The Smart Grid For The Future					
Main Project Features	• Smart grid control to smart household appliances • Exploit full potential of Renewable Energy reserves • The special about this project is that this smart grid integrates and controls not only the smart grid components including a central battery storage, a public charging station for electric vehicles and the installed smart meters, but also the intelligent appliances in the households such as smart washing machines, dryers and dish washers as well as battery storages and heat pumps • Installation of Home Energy Controllers (HECs) • Development of infrastructure for wind and solar energy plants					
Number of Customers involved	100+ households					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual	Actual Duration (Months)		Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	August 2012	December 2015	August 2012	ongoing		Since 1st of July 2014, the Smart Operator is controlling the grid with all its components in the settlement. It determines the expected supply power (based on weather forecasts) and loads, capacity and storage ability in the power grid. It communicates with households on load profiles via the HEC, the Smart Operator starts the intelligent home appliance

						according to the load profiles
Project Executing Agencies	Consultants	RWE Deutschland AG and Lechwerke (LEW)				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• Balance of fluctuating loads caused by the increasing supply of solar energy plants					
How the above challenges were overcome	• Installation of storage and capacity building facilities					
Benefits to Customers	• Voltage limit violations in the grid were reduced • The network status had been optimized. • The smart grid is independently balancing fluctuating loads					
Benefits to Utility	• Grid operators can run their existing networks more efficiently, instead of investing into additional cables, as peaks in energy production from solar or wind plants are toned down • Meeting customer demands • Developing future Smart Grids • Management of fluctuating loads • Generation of electricity from wind and solar energy					
Innovation factor	• Use of intelligent home devices • The first smart grid project that includes smart components on the level of the local grid					
Potential for replication/larger roll out	• Insights from the project will certainly flow into the development of new projects or the use of new technologies • The potential for replicating this project is especially given for rural areas where a lot of solar or wind energy is generated					
Business Case						

Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
		✓			

Smart Grid Project Summary Report-22-Hong Kong						
Country:	Honk Kong					
Utility:	CLP Power Hong Kong Ltd.					
Point of Contact	Anthony Lo / +85226787358 / acwlo@clp.com.hk / www.clp.com.hk					
Project Name/Title	Achieving sustainability with Advanced Metering Infrastructure – my energy Program					
Main Project Features	Installation of AMI systems in Hong Kong that works from the billing system all the way through to the meters in the field and out to the customers via mobile and web channel					
Number of Customers involved	4400 customers: 3000 residential + 1400 SMEs					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	CLP Power					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	May 2013	present	May 2013	-		ongoing
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						

<table>
<tr><td>Benefits to Customers</td><td colspan="5">• Reduction in demand
• Billing information to the customers
• Safety of connection (tampering, high impedence faults)</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• New AMI systems in Hong Kong
• Energy efficiency and conservation
• Safety and reliability of power supply
• Enhance company’s business and operational productivity</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">1. Large scale replication plans in South East Asia
2. Growing of a large consumer base</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-23-India						
Country:	India					
Utility:	Tata Power Pvt Ltd					
Point of Contact	Suhas Dhapare /scdhapre@tatapower.com / 022-67172021 / www.tatapower.com					
Project Name/Title	Consumer Reward Scheme					
Main Project Features	Offering value added services to key consumers of TATA Power under consumer reward scheme					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	TATA Power					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	23rd March, 2014		23rd March, 2014	--		Ongoing Pilot Project
Project Executing Agencies	Consultants	TATA Power Pvt Ltd				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						

<table>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Improvement in Power factor
• Avoiding payment of penalties
• Reliable O&M services to customers
• Reduction in monthly energy bill
• Safety of working environment</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Reduction in Energy consumption and supply
• Increase consumer lifeline value
• Maintains strong Consumer retention strategy
• Building consumer relations
• More foreign as well as domestic investors</td></tr>
<tr><td>Innovation factor</td><td colspan="5">New to utility sector in India and the reward scheme is very unusual.</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">This process can be used in any market/country / environment but taste of local consumers have to be analyzed</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5">Project is still in its Pilot Stage</td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-24-India</th></tr>
<tr><td>Country:</td><td colspan="6">India</td></tr>
<tr><td>Utility:</td><td colspan="6">Innovari & Reliance Infrastructure Limited</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Ed Solar/ (+1) 914 610 9108/ esolar@innovari.com/ http://www.innovari.com</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Automated Demand Side Management (ADSM) Expansion Project With Reliance Energy</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• Introduction of utility-owned Automated Demand Management assets
• Provide support automated demand side management (ADSM) programs that increase system reliability and improve overall system utilization, while attacking a worldwide industry problem–the load duration curve
• Executing a comprehensive strategy through enabling edge of grid resources, allowing curtailment of demand that shifts peak load to satisfy capacity requirements of the grid
• To automatically manage demand without impacting the customer’s environment</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">9 million-target in future
Raghuleela Mall, ITC, Blue Dart and Marriott- current customers</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Innovari, Reliance Infrastructure Limited (RInfra)</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>17th June 2014</td><td>Present</td><td>17th June 2014</td><td>Present</td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">Innovari, Reliance Infrastructure Limited (RInfra)</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td></td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="4"></td></tr>
</table>

Communication Technology Used	Backhaul/WAN				
Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Real-time visibility • Control into their energy usage • Lower their energy costs and monthly bills • Service reliability				
Benefits to Utility	• Shift in peak load • Management of demand • Capacity requirements of the grid				
Innovation factor	Innovari's patented technology includes utility-owned Energy Agent™ which are devices installed at customer sites that enable two way, verifiable, closed loop control of customer loads. Innovari connects HVAC, lighting systems, large loads, distributed energy resources and energy storage technologies with the utility systems				
Potential for replication/larger roll out	The innovative platform can immediately address many of the challenges RInfra faces in meeting its short-term capacity requirements and long-term sustainable energy future. Innovari is working with RInfra on an expansion project between 100MW-150MW to help the power utility serve their 9 million consumers				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-25-Ireland						
Country:	Ireland					
Point of Contact	Anthony Schoofs/ Anthony.schoofs@wattics.com/ +353870540534					
Utility:						
Project Name/Title	Scanergy					
Main Project Features	• A metering infrastructure to monitor consumption over various areas and innovative data analytics to uncover energy events in real-time and calculate savings • A set of QR codes associated to equipment and energy saving actions, to be deployed across the organisation • A smart phone application (i.e. the game) to allow employees to scan QR codes and register green actions they have taken for specific equipment					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)								
How the above challenges were overcome								
Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

Smart Grid Project Summary Report-26-Ireland						
Country:	Ireland					
Utility:	EirGrid Group					
Point of Contact	Robbie Aherne/00353 1 2370346/robbie.aherne@eirgrid.com / www.eirgrid.com					
Project Name/Title	DS3 - Delivering A Secure, Sustainable Electricity System					
Main Project Features	• Delivering a Secure, Sustainable Electricity System" programme is to transform the electricity system in Ireland and Northern Ireland and pave the way for a secure and sustainable electricity system for the future • To identify the challenges associated with integrating unprecedented levels of variable renewable generation and to implement solutions. • Evolution of the wider electricity industry and implementing changes in the market and regulatory sphere that ultimately benefit the end consumer • Safely and securely manage real-time penetration levels of 75% by 2020 • Economic competitiveness					
Number of Customers involved	Entire Population of Ireland					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	EirGrid Group					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	August 2011	2020 Expected	August 2011	Present		
Project Executing Agencies	Consultants	EirGrid Group				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					

<table>
<tr><td rowspan="2">Communication Technology Used</td><td>Last Mile/Access/NAN/FAN</td><td colspan="4"></td></tr>
<tr><td>Backhaul/WAN</td><td colspan="4"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Better operations
• Better service
• More Renewable Energy resources
• Less pollution
• Cost Reduction</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Financial incentives for better plant performance
• Development of new operational policies and smart grid tools to maximize the use of the existing generation portfolio
• Facilitation of controllable demand response
• Economic competitiveness</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• DS3 incorporates innovative techno-economic and regulatory initiatives designed to meet the renewable targets by 2020
• Three pillar system:- Performance, Policies and Tools
• System Non-Synchronous Penetration (SNSP)
• a cutting-edge wind dispatch tool
• best-in-class wind forecasting tools
• DS3’s world leading WSAT and Dynamic Studies tools.</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">The target is to achieve the 40% renewables electricity targets by 2020; the system will need to be operated in real-time with SNSP levels of up to 75%. This will be the highest levels achieved by any electricity transmission system operator of scale in the world</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-27-Ireland						
Country:	Ireland					
Utility:	Sustainable Energy Authority of Ireland; Commission of Energy Regulation					
Point of Contact	Joe Durkan/ joe.durkan@seai.ie					
Project Name/Title	Smart Meter Pilot : Consumer Behaviour Trial					
Main Project Features	• Deployment of Smart Meters for empowering customers with a more detailed, accurate and timely information regarding the energy consumption and costs • Reduction in energy shifts and faults in peak consumption time					
Number of Customers involved	5375 residential customers 700 commercial customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	SEAI, Department of Communication, Energy and Natural Resources, North Ireland Authority for Utility Regulation(NIAUR)					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2009	2010	2009	2010	12 months	
Project Executing Agencies	Consultants	SEAI, Department of Communication, Energy and Natural Resources, North Ireland Authority for Utility Regulation(NIAUR)				
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project						

implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Accurate information • Cost reduction • Timely information • Reduction in faults and delays • Reduction in load-shedding				
Benefits to Utility	• Reduction in faults • Reduction in costs related to repairs and maintenance • Reduction in peak load • Management of consumption pattern				
Innovation factor					
Potential for replication/larger roll out	Nation-wide rollout of AMI from 2015-2019				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-28-Italy						
Country:	Italy					
Utility:	A2A Reti Elettriche					
Point of Contact	Enrico Fasciolo/ enrico.fasciolo@a2a.eu/ (+39) 030 355 4493/ www.Autorita.Energia.It/It/Operatori/Smartgrid.Htm					
Project Name/Title	Lambrate (MI) Smart Grid Project - A2A Reti Elettriche S.P.A.					
Main Project Features	• Implementing a new technique for the automatic fault detection and isolation (logic selectivity and automatic network reconfiguration), with the aim to reduce the number and the cumulative duration of long and short interruptions (SAIFI & SAIDI). • Increase the IPS reliability by transfer trip message and voltage unlock to prevent unwanted islanding and to improve continuity of service • Enforce an innovative centralized voltage regulation, by coordination and modulation of DG reactive power injections, in order to improve the network's capability to accommodate DG(Hosting Capacity), the voltage quality and the energy efficiency of the grid • Enable limitation/modulation of active power injections by DG during contingency • operation (by the DSO) or emergency conditions (by the TSO). • Enable optimal local dispatch in order to determine the optimal set point (P & Q) for each generator according to distribution network conditions and to the transmission system requirements. • Make available measurements and forecasts of DG and load every 20 s in order to allow the TSO to manage system security (and eventually the DSO to implement a local dispatch).					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	A2A Reti Elettriche					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2011	2015	2011	ongoing		
	Consultants	A2A Reti Elettriche, Politecnico di Milano,				

Project Executing Agencies	System Integrator (s)		
	OEMs – Software		
	OEMs - Hardware		
	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Utility	• Advanced network automation and remote disconnection of GD plants • Logic discrimination between the Protection System of the DSO and the General Protection System of the users • Increased generation installed on distribution networks mainly from DG; • Greater energy efficiency, reducing losses along the network; • Less environmental impact by reducing CO2 emissions; • Increased quality of service QoS both for active users than for passive users		
Benefits to Customers	• Increase in supply • Better service • Reduction in carbon emissions • Reduction in load shedding and peak load disruption		
Innovation factor	• The main aspect of innovation involves the participation of GD to local dispatch services: optimizing the management of the GD units through production forecasts and real-time control • The project proposes an innovative management of the system of remote tripping of generators integrated with the logic of the fault detection which is capable of minimizing the area of influence of the fault in order to avoid the disconnection of generators that are not directly concerned with the failure of the network		

Potential for replication/larger roll out	In order to prove the interoperability and the proposed data model for the control of DG plants, a chosen way to use equipment from different manufacturers for the DSO network and for the active user's network is implemented. In this way, to carry out the innovative functionalities of the project, all the equipment will have to implement the same data model provided by A2A. This choice ensures the maximum replicability on a large scale (the entire network of A2A) of the proposed solutions, requiring limited additional future developments. In fact, it is possible to use the technical solutions proposed in a general manner (deployment) on all the network and connect all type of generators with equipment from different manufacturers with the only constraint that A2A data model is implemented				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-29-Italy</th></tr>
<tr><td>Country:</td><td colspan="6">Italy</td></tr>
<tr><td>Utility:</td><td colspan="6">University of Cagliary</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Emilio Ghiani/ (+39) 070 675 5872/ emilio.ghiani@diee.unica.it/ http://dipartimenti.unica.it/ingegneriaelettricaedelettronica/?lang=en</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Development And Control Of Hybrid Generation Set In Smart Microgrids</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• enabling the deployment and integration of variable renewable sources for grid connected end users and off-grid applications realizing a hybrid generation system based on the exploitation of renewables, traditional diesel generators and storage using off-the-shelf components. In particular, one mini wind turbine, one PV system, one energy storage device (VRLA batteries), and a diesel generator are used to feed a small industrial Microgrid (MG) within the premises of the Aentula factory
• The implementation and validation of the control and management systems of the MG on a commercial PLC, commonly used in industrial automation , is one of the objectives of the project
• economical or quality reasons to increase the continuity of supply in case of grid events</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td>90000 €</td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">University of Cagliary- Dipartimento di Ingegneria Elettrica ed Elettronica , Aentula S.r.l</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>7th January 2014</td><td>30th June 2015</td><td>7th January 2014</td><td>onging</td><td></td><td></td></tr>
<tr><td rowspan="3">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="3">University of Cagliary- Dipartimento di Ingegneria Elettrica ed Elettronica , Aentula S.r.l</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
</table>

	OEMs - Hardware		
	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Customers	• Affordable systems by developing countries and humanitarian institutions • Cost effectiveness • Energy savings • Reduction in blackouts and load shedding		
Benefits to Utility	• Maximization of the self-consumption of the energy produced by renewable generation simultaneously achieving economy benefits and maximizing the exploitation of renewable sources • Development of multiple renewable sources with a control system that allows both grid connected and off-grid operation • Reduction of building and design costs • Smart demand side integration and storage • Creation of new business models • Energy efficiency solution • High replicability, adaptability and scalability of project • The project is also applicable in situations where a distribution network is not available		
Innovation factor	• The degree of innovation is due to the fact that so far the development of MG is exclusively confined within the laboratories of major universities or main industrial research centres, with experimental projects difficult to replicate in a context of ordinary electrical user. • This project shows how to implement a MG with standardized control methodologies using easy to access products available in the market with affordable costs		
Potential for replication/larger roll out	• The project has been selected in a competition related to the development of pilot Projects • The proposed solution can be an alternative to the traditional consumption of energy fully bought from the utility that in several countries, when substantial incentives have been provided to push renewable development, resulting in a large increment in tariff charges for the final customers		

Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-30-Italy						
Country:	Italy					
Utility:	ENEL					
Point of Contact	Marco Cotti/ marco.cotti@enel.com/					
Project Name/Title	Telegestore : Automated Meter Management Project					
Main Project Features	• Installation of AMI, Low Voltage Concentrators • Remote Meter Management to collect data on voltage quality, interruptions, daily consumption, active and reactive energy measurement • Remotely manage contractual activities					
Number of Customers involved	400 million remote readings 9 million remote operations 32 million smart meters					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
		2.1 billion euros				
Funding Agencies	ENEL					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2001	2011	2001	2006		
Project Executing Agencies	Consultants					
	System Integrator (s)	ENEL				
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
	Last Mile/Access/NAN/FAN					

<table>
<tr><td>Communication Technology Used</td><td colspan="2">Backhaul/WAN</td><td colspan="3"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Transparency in energy consumption and bills
• Up-to-date billing information
• Flexible rate structure
• Remote and fast contract changes
• Elimination of human error in meter readings
• Reduction in complaints and faults
• Reduction in repair time</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Monitoring and control of power flows
• Monitoring and control of voltage
• Identification of technical and non-technical losses
• Information on supply quality and consumption
• Increase frequency of remote meter readings
• Reduction in carbon emissions</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• Services in future to EV owners thorough innovative mobile services
• Demand for 4 million smart meters by private distribution organizations
• Spain has requested ENEL to install 13 million meters in Spain
• Prediction and potential of installing 50 million meters in 5 years
• 1 million meters sold to European Authorities
• Massive deployment plans for ‘GAS Smart Meters’ by 2018</td></tr>
<tr><td>Business Case</td><td colspan="5">99% electronic meters already installed</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-31-Japan						
Country:	Japan					
Utility:	• Tokyo Electricity & Power Company (TEPCO) • Ministry of Economic Trade and Industry of Japan					
Point of Contact	Akio Urchida / www.enernoc.com / +81-3-32824004 / urchida-A@marubeni.com					
Project Name/Title	Incentive type Demand Response (DR) pilot project in Japan					
Main Project Features	• Research and Evaluate Effectiveness and Economics of DR including possibility of matching the performance of generation system • Recruitment, Education and Management of C&I Customers of the project					
Number of Customers involved	Generation 7586 kW					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	November 2013	March 2014	November 2013	February 2014	4 months	Completed 1 month in advance
Project Executing Agencies	Consultants	Marubeni Corporation, EnerNOC INC				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
	Last Mile/Access/NAN/FAN					

Communication Technology Used	Backhaul/WAN				
Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	Incentive and Reputation benefits in terms of Social Corporate Responsibility (CSR) for all Commercial & Industrial customers who participate in the project.				
Benefits to Utility	Large generation of power Management of 'Peak-Load' and Demand C&I Customer involvement				
Innovation factor	• International network between DRAS and EnerNOC by open ADR 2.06 ptotocol. • Most advanced automated DR communication protocol. • DemandSMART software				
Potential for replication/larger roll out	C&I expressed interest in taking active part in the project TEPCO considering replication of the model in other parts of JAPAN				
Business Case	Highly successful in USA and JAPAN				
Any other important point	Actual Output is 180% of Estimated Output				
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-32-Japan</th></tr>
<tr><td>Country:</td><td colspan="6">Japan</td></tr>
<tr><td>Utility:</td><td colspan="6">NTT Smile Energy Inc.(NSE)</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Kisho Iida/ (+81) 66 221 1234/ k.iida@nttse.com/ https://partner.eco-megane.jp/plus</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Eco-Megane Plus</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• Detect malfunction of PV facilities by analyzing data
• Maintenance services
• Analysis of Solar radiation for weather forecast
• Future electricity requirement prediction through analysis of data</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">• 400 MW generation as on Feb 2015
• 200000 small size PV facilities as on November 2014</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">NTT Smile Energy Inc.(NSE)</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>December 2014</td><td>Present</td><td>December 2014</td><td>Ongoing</td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">NTT Smile Energy Inc.(NSE)</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
</table>

<table>
<tr><td rowspan="2">Communication Technology Used</td><td>Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td>Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6">• To manage funds for maintenance
• To fix malfunction immediately
• Weather changes</td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="6">• Selling of power to electricity generation companies- profits used as funds
• Analyzing data from solar radiation</td></tr>
<tr><td>Benefits to Customers</td><td colspan="6">• New Employment opportunities
• More electricity sources
• Service Efficiency
• Avoidance of malfunction of PV facilities</td></tr>
<tr><td>Benefits to Utility</td><td colspan="6">• To make PV facility a reliable source for Smart Grid systems
• Forecasting for more electricity generation by PV facilities
• Revenue generation
• Alternate sources development
• Future prediction of electricity generation requirements through data analysis</td></tr>
<tr><td>Innovation factor</td><td colspan="6">• NSE selling electricity to Power Producers and Suppliers
• Solar radiation analysis through the use of satellite information</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="6"></td></tr>
<tr><td>Business Case</td><td colspan="6">Eco-Megane’s market share increased to 75%</td></tr>
<tr><td>Any other important point</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td></td><td>✓</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-33-Japan</th></tr>
<tr><td>Country:</td><td colspan="7">Japan</td></tr>
<tr><td>Utility:</td><td colspan="7">Kyoto Prefectural Government</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Akio Yamamoto/ a-yamamoto91@pref.kyoto.lg.jp/ +81-774-95-5035/ www.pref.kyoto.jp</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Keihanna Eco City Project (KECP)</td></tr>
<tr><td>Main Project Features</td><td colspan="7">Project orientation
KECP has conducted Demand Response linking the CEMS (Community Energy Management System) to HEMS (Home Energy Management System), BEMS (Building Energy Management System), and EV charging management centers in order to verify the effect in saving energy and reducing CO2 emissions. In the EV charging management system, KECP has verified the peak shift effect to be obtained from deriving the charging location and time from the location of the EV and the remaining power in the storage batteries. In the area of V2X (Vehicle to Everything), KECP has verified the use of EV storage batteries in relation to the supply and demand of power to factories. Based on the outcomes, KECP will create a business around the Keihanna Eco City Model, and extend it to the reconstruction of cities in the Tohoku area and promote its application in the rest of the world.

Themes of operational experiments
CEMS, HEMS, DR (Demand Response), BEMS, EV management system, V2X</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">• 14 households with HEMS
• Approximately 100 households with systems to render energy use visible
• Approximately 700 households participating in demand response program
• Keihanna Plaza, a cultural and research interaction facility with accommodations and shops
• 100 EVs</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Ministry of Economy, Trade and Industry, Kyoto Prefectural Government</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td colspan="2" rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>2014</td><td>2014</td><td></td><td></td><td></td><td colspan="2"></td></tr>
</table>

<table>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td rowspan="6">Kyoto Prefecture; Kizugawa City; Kyotanabe City; Seika Town; Kansai Research Institite; Kansai Economic Federation; Kyoto Center for Climate Actions; Urban Renaissance Agency; Enegates Co., Ltd.; i-Energy WG; Osaka Gas Co., Ltd.; OMRON Corporation; THE KANSAI ELECTRIC POWER CO., INC.; KEIHANNA INTERACTION PLAZA INC.; Sharp Corporation; Doshisha Yamate Sustainable Urban City Council; Nihon Unisys, Ltd.; Mitsubishi Motors Corporation; Mitsubishi Heavy Industry corporate; Mitsubishi Corporation; Mitsubishi Electric Corporation; Fuji Electric Co., Ltd.; Furukawa Electric Co., Ltd.; The Furukawa Battery Co., Ltd.; Renesas Electronics Corporation</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="3"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="3"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="3">Estimated at Project Approval Stage:
Actual Observed:
Examples of BEMS:
(building owner)
• Save money by optimized operational control, and reduce electricity rates by peak shaving which load control functions realize
• Operate facilities automatically and optically without depending operators' knowledge and experience
• Identify issues and take measures by visualizing energy consumption
• Collect investment money in five years by the reasons above in the case of building the same as Keihanna Plaza
• Receive coupon available inside Keihanna Plaza when saving electricity and hot water consumption (Each reduction exceeded 10 %.)</td></tr>
<tr><td>Benefits to Utility</td><td colspan="3">It was observed that Critical Peak Prices (CPP) enabled continuously home electricity use to reduce approximately 20% in peak demand.</td></tr>
<tr><td>Innovation factor</td><td colspan="3"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="3"></td></tr>
<tr><td>Business Case</td><td colspan="3"></td></tr>
<tr><td>Any other important point</td><td colspan="3"></td></tr>
</table>

Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-34-Japan	
Country:	JAPAN
Utility:	Kitakyushu Smart Community Council
Point of Contact	Murakami Emiko/ emiko_murakami01@city.kitakyushu.lg.jp/ +81-93-582-2238/ www.city.kitakyushu.lg.jp/english/index.html
Project Name/Title	Kitakyushu Smart Community Project (KSCP)
Main Project Features	Project orientation Due to factors including the establishment of environmental facilities and the introduction of a range of new energy sources, the Higashida area in Yahata-Higashi ward of the City of Kitakyushu already emits 30% less CO_2 than other areas in the city. This proving trial aims, by means of initiatives including further introduction of new energies, the use of community energy management, and the establishment of new transport systems, to achieve a further 20% reduction, reducing CO_2 emissions to more than 50% less than other areas in the city. The following five measures are being put into effect as the concrete means of achieving this goal. (1) Increase the rate of introduction of new energy sources, including photovoltaic generation, fuel cells, and small-scale wind power generation, to 10% or more (2) Development of HEMS (Home Energy Management System) and BEMS (Building Energy Management System), which can be coordinated with community energy management, increasing the efficiency of energy saving in normal homes and various types of buildings (3) Establishment of a Community Setsuden-sho, which provides advanced energy control and optimizes total energy distribution, encompassing electric vehicles (EV), storage batteries, etc. (4) In parallel with the establishment of charging infrastructure to facilitate large-scale introduction of EV, etc., the construction of next-generation traffic systems linking bicycles and public transport. (5) The extension of the new technological systems and business models emerging from the operational experiments to Asia via an Asia Low-carbon Center, and then to the world. Themes of operational experiments Photovoltaic generation (approximately 400kW), storage batteries (approximately 800kW), wind power generation, heat energy, hydrogen, CEMS (Community energy management System), BEMS, HEMS, EV, "demand bus lifestyle", Data Center, networks

<table>
<tr><td>Number of Customers involved</td><td colspan="6">➢ 192 households participating in demand response program
➢ 50 building (offices, a clinic, a dormitory, etc.)</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated Cost</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes for the variance between estimated and actual</td></tr>
<tr><td>NA</td><td></td><td colspan="4"></td></tr>
<tr><td rowspan="2">Project Financing Model and Funding Agencies</td><td colspan="6">Subsidy from the government: 2/3
Fund from the project agencies: 1/3</td></tr>
<tr><td colspan="6">Ministry of Economy, Trade and Industry</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes for variance between scheduled and actual</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>2010</td><td>2014</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="8">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="8">Human Media Creation Center / KYUSHU (HMC); Azbil Corporation; Iwatani Corporation; UCHIDA YOKO Co., Ltd.; ORIX Corporation; Saibugasu Co., Ltd.; JX Nippon Oil & Energy Corporation; Sharp Corporation; NIPPON STEEL & SUMIKIN ENGINEERING Co., Ltd.; NS Solutions Corporation; NIPPON STEEL & SUMITOMO METAL CORPORATION; SEKISUI CHEMICAL Co., Ltd.; SOFTBANK TELECOM Corp.; Daiwa House Industry Co., Ltd.; DENSO CORPORATION; TOTO; TOPPAN PRINTING Co., Ltd.; Toyota Motor Corporation; Toyota Industries Corporation; Toyota Tsusho Corporation; TOYODA GOSEI CO., LTD.; NITTETSU ELEX Co., Ltd.; IBM Japan; Japan Telecom Information Service Co., Ltd.; Higashida-Clinic; FamilyMart Co., Ltd.; FUJI ELECTRIC Co., Ltd.; Furukawa Electric Co., Ltd.; The Furukawa Battery Co., Ltd.; Hohkohsya; Mitsubishi Heavy Industry corporate; YASKAWA Electric Corporation; YASKAWA INFORMATION SYSTEMS Corporation</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Communication Infra Provider(s)</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies (if any)</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="4"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="4"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6"></td></tr>
</table>

How did the above challenges were overcome					
Benefits to Customers	Estimated at Project Approval Stage: Actual Observed: Examples of BEMS: (museum) ➢ 45% reduction of annual electricity use by introducing BEMS in 2014 (clinic) ➢ 44.4% reduction of annual electricity use by introducing BEMS and REs in 2012				
Benefits to Utility	Estimated at Project Approval Stage: Actual Observed: See below				
Key Outcomes of the Project	Positive: It was observed that Critical Peak Prices (CPP) enabled continuously home electricity use to reduce approximately 20% in peak demand. Negative (if any):				
Innovation factor in the project	Price elasticity was confirmed with the introduction of a variable peak pricing system in dynamic pricing, as part of the project's institutional design. The project also developed various devices, including the CEMS, which is an integrated management system for the electric power energy of the overall community; smart meters that are electricity measurement devices equipped with CEMS and household information terminals that have two-way communication functions; and BEMS, which supports Auto Demand Response				
Potential for replication/larger roll out	Currently, smart community projects are being promoted for development in the city of Kamaishi, which is an area that is undergoing earthquake & disaster reconstruction, as well as the city of Surabaya in Indonesia through utilizing outcome of this project				
Business Case					
Any other important points/experiences					
Customer Engagement	What measures taken to get customers active participation in the project? What was the level of customer participation:				
Training & Capacity Building	Briefly describe the training programs conducted to train the Utility Users on the new systems implemented: What percentage of the total project cost was spent on training component:				
Key Lessons Learnt	Under estimation				
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project worked as envisaged

	✔				

Smart Grid Project Summary Report-35-Japan						
Country:	Japan					
Utility:	New Energy and Industrial Technology Development Organization(NEDO)					
Point of Contact	http://www.nedo.go.jp/					
Project Name/Title	The demonstrative project on a multi power quality supply system (Sendai Microgrid)					
Main Project Features	This project demonstrates the possibility of supplying power at multiple levels of quality at the same time according to customer needs at a given point in time. This system utilizes power from two gas engines (350 kW for each), a molten carbonate fuel cell (50 kW), a photovoltaic system (50kW) and power from grid in a mutually complementary manner. The power quality levels are divided into five based on each requirement of interruption, voltage dip, outage, voltage fluctuations, AC/DC, etc. It is also demonstrated that this system enables us to get high-quality electric power more cheaply with a smaller space than existing uninterruptible power supply (UPS) systems do.					
Number of Customers involved	• Tohoku Fukushi University and its health and welfare facilities (a hospital, two dormitories, a research center, two geriatric health services facilities and a hall with classrooms) • Sendai municipal facilities (a senior high school and a water purification plant)					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	New Energy and Industrial Technology Development Organization					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2004	2008	2004			
Project Executing Agencies	Consultants	NTT Facilities, Inc.; NTT Facilities Research Institute; Tohoku Fukushi University; the city of Sendai				
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					

<table>
<tr><td rowspan="2">Communication Technology Used</td><td>Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td>Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="6"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="6">It was confirmed that the power supply system maintained the required power quality while keeping stable supply to each customer at the same time.</td></tr>
<tr><td>Benefits to Utility</td><td colspan="6">It was confirmed that compared with the existing measurements the power supply system was able to reduce the 15 year total cost of improving power quality by 14-30%, save space by 23-42% and reduce electrical loss equal to or less than that by the existing measurements</td></tr>
<tr><td>Innovation factor</td><td colspan="6"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="6"></td></tr>
<tr><td>Business Case</td><td colspan="6"></td></tr>
<tr><td>Any other important point</td><td colspan="6">• After the demonstration, the system or the Sendai Microgrid has continued to operate in the same place while changing its configuration and customers. For instance, they replaced the MCFC for a PAFC1, started to use heating generated by the gas engine systems and disconnected the two municipal facilities from the system.
• On March 2011, a huge earthquake hit the wide range of the Tohoku area including the university and stopped power supplied by the local electricity company for almost three days. Nevertheless, the Sendai Microgrid could continuously supply electrical and heat energy to its customers including a hospital and a nursing home for the elderly.</td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-36-Japan						
Country:	Japan					
Utility:	Toyota City Low-Carbon Society Verification Promotion Council					
Point of Contact	Tomoya Shimizu/ hybrid-city@city.toyota.aichi.jp/ +81-565-346982/ www.city.toyota.aichi.jp/en/index.html					
Project Name/Title	Smart Mobility & Energy Life in Toyota City (Smart Melit)					
Main Project Features	Project orientation Focusing on the household sector (residences and transport), the project seeks to identify medium-term technological issues based on an image of the household in ten years' time, when, for example, photovoltaic (PV) generation will be widespread and grid parity will have been established. Without rushing to raising the social cost, Smart Melit has developed low-carbon systems that present the overall optimum at the level of the community as a whole. In concrete terms, Smart Melit has offered highly convenient and satisfying incentives (such as "eco points") for activities conducted by citizens that contribute to reducing carbon (saving energy, reducing the load on the power system, making effective use of green power, etc.) in order to study the change in citizen's behavior and the magnitude of its impact. In terms of effective incentive design, in addition to introducing various devices and systems to the city, Smart Melit has established a system in which citizens obtain data on personal energy consumption and behavior to enable us to reduce carbon at the same time as ensuring the satisfaction of our citizens. Themes of operational experiments PV generation, biomass, heat energy, CEMS (Community Energy Management System), HEMS (Home Energy Management System), EV/PHV (Plug-in Hybrid Vehicles) / Fuel Cell buses, ITS					
Number of Customers involved	• 227 detached houses including 67 newly constructed smart houses1 • Two commercial buildings, one distribution center, and one educational facility "Toyota Ecoful Town" constructed to showcase the city's efforts to build a low-carbon society • 4,000 next-generation vehicles					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Ministry of economy, Trade and Industry					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		

	2010	2014	2010			
Project Executing Agencies	Consultants	Toyota City; Aichi Prefecture; Nagoya University; AISIN SEIKI Co., Ltd.; ENERES Co., Ltd.; KDDI CORPORATION; Circle K Sunkus Co., Ltd.; Sharp Corporation; Shinmei Industry Co.,Ltd.; Sumitomo Electric Industries, Ltd.; SECOM Co., Ltd.; Systems Engineering Consultants Co., Ltd.; Chubu Electric Power Co., Inc.; DENSO CORPORATION; TOSHIBA CORPORATION; TOHO Gas Co., Ltd.; Toyota Motor Corporation; Toyota Industries Corporation; Toyota Chamber of Commerce and Industry; TOYOTA SMILE LIFE Inc.; Toyota Tsusho Corporation; TOYOTA HOME; Dream Incubator Inc.; Central Nippon Expressway Company Limited; Nagoya Railroad Co., Ltd.; Development Bank of Japan Inc.; Hewlett-Packard Japan, Ltd.; Hitachi, Ltd.; FUJITSU LIMITED; Mitsubishi Corporation; YAZAKI Corporation; Yamato Transport Co., Ltd.; Yamaha Motor Co., Ltd.				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						
Benefits to Customers	This project will optimize infrastructure such as energy and transportation system of entire community					
Benefits to Utility	Average peak shaving (household electricity use): 15% in winter 2012, 11% in summer 2013, 10% in winter 2013					
Innovation factor						
Potential for replication/larger roll out						
Business Case						
Any other important point						
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged	
	✓					

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-37-Japan</th></tr>
<tr><td>Country:</td><td colspan="6">Japan</td></tr>
<tr><td>Utility:</td><td colspan="6">City of Yokohama</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Mishima Toshinori/ on-smart@city.yokohama.jp/ +81 456712623/ www.city.yokohama.lg.jp/lng/en/</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Yokohama Smart City Project (YSCP)</td></tr>
<tr><td>Main Project Features</td><td colspan="6">Project orientation
YSCP's aim is to transform a city already provided with social infrastructure into a low-carbon city while maintaining the comfort of its residents. In order to do so, YSCP has introduced a CEMS (Community Energy Management System) and developed and operated energy management systems optimized for this specific region. Together with these efforts, YSCP has used PV generation and other forms of renewable energy, and worked to change the way that citizens relate to energy. Specifically, YSCP has introduced HEMS (Home Energy Management System) for homes, BEMS (Building Energy Management System) for offices and commercial buildings, FEMS (Factory Energy Management System) for factories, and EV and charging stations for the transport sector, and YSCP has curbed peak energy demand and conserved energy through their mutual linkage.

Themes of operational experiments
PV generation (36MW), storage batteries, CEMS, HEMS, BEMS, FEMS, EV, charging infrastructure, SCADA (Supervisory Control And Data Acquisition) storage batteries</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">• 4,230 houses and apartments with HEMS
• 4 office buildings, 3 commercial buildings, 8 apartments, 1 large-scale factory
• 2,300 EVs</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Ministry of Economy, Trade and Industry</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td>Actual Duration (Months)</td><td>Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td><td></td><td></td></tr>
<tr><td>2010</td><td>2014</td><td>2010</td><td>2014</td><td></td><td></td></tr>
<tr><td rowspan="3">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="3">City of Yokohama; Tokyo Institute of Technology; URban Renaissance Agency; MM42 KaihatsuTMK, a subsidiary of Marubeni; Yokohama Smart Community; Accenture; NTT docomo; NTT FACILITIES, INC.; ORIX Corporation; ORIX Auto Corporation; Sharp Corporation; JX Nippon Oil &</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
</table>

	OEMs - Hardware	Energy Corporation; Sumitomo Electric Industries, Ltd.; Sekisui House, Ltd.; Sony Energy Devices Corporation; DAIKYO, ASTAGE, Inc.; Taisei Corporation; Tokyo Gas Co., Ltd.; TEPCO; TOSHIBA CORPORATION; NISSAN MOTOR CO., Ltd.; JGC Corporation; JGC Information Systems Company Ltd.; NEC; Nomura Real Estate Development Co., Ltd.; Panasonic Corporation; Hitachi, Ltd.; Misawa Homes Co., Ltd.; Mitsui Fudosan Co., Ltd.; Mitsui Fudosan Residential Co., Ltd.; MITSUBISHI ESTATE Co., Ltd.; MEIDENSHA CORPORATION	
	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Customers	Examples of CEMS: (community) • Realize optimal control of energy within a whole community • Reduce CO2 emission • Utilize renewable energy resources Examples of HEMS (resident) • Reduce electricity bill • Reduce environmental impact • Improve safety and security (backup power supply) Examples of BEMS: (building owner/tenant) • Save energy and reduce utility cost by introducing energy-saving equipments and BEMS • Diversify energy supply to strength energy security by reducing dependency on electricity grid		
Benefits to Utility	• Maximum peak shaving (household1 electricity use): 15.2% in summer 2013 • Maximum peak shaving (household2 electricity use): 58% in summer 2013 • Maximum peak shaving (building electricity use): 33.2% in summer 2013		
Innovation factor			
Potential for replication/larger roll out			

Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-38-Mexico</th></tr>
<tr><td>Country:</td><td colspan="6">Mexico</td></tr>
<tr><td>Utility:</td><td colspan="6">Comision Federal de Electricidad</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Francisco Jezziel Dominguez Gonzalez/Francisco.dominguez@cfe.gob.mx/ +525591261360/</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">AMI Polanco</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• Deployment of smart meters to avoid or decrease technical and non-technical losses during transmission
• Determine which equipment features were better and more cost-effective for services and distribution grids considering the different meter types

The varieties considered were:
- Deployment of smart meter equipment in every service and equipment of the distribution system.
- Deployment of smart meter equipment in the distribution transformers and conventional meters in the services.
- Deployment of smart meter equipment in the medium voltage branches (several secondary areas) and conventional meters in the services</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">29660 connections</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Comision Federal de Electricidad</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>July 2011</td><td>March 2012</td><td>July 2011</td><td>N/A</td><td></td><td></td></tr>
<tr><td rowspan="4">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="4">Comision Federal de Electricidad</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
</table>

	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Customers	• Quality products • Good service • Tariff reduction in insurance and billing • Efficient voltage • Reasonable billing due to removal of theft related losses • Usage regulation and control		
Benefits to Utility	• remote meter reading • reliable billing of services • remote connect/disconnect, especially for users with access difficulties or shared meters, • on line monitoring to detect energy theft, • prepaid option programs, • balance of energy between transformers and clients to detect fraud and outages • Possibility to get the voltage levels for each client • Establish different residential rates • demand control • energy market • two way meters for renewable sources • possibility to provide this service to other fields such as gas and water • demand management control • increase communication with the client		
Innovation factor			
Potential for replication/larger roll out			
Business Case			
Any other important point (OUTCOMES)	The most important outcomes of the project are listed below: - The cost-benefit ratio achieved was 3.16 - The automatized and reliable billing of the 29,660 services.		

<table>
<tr><td></td><td colspan="5">- 12,325 connect/disconnect services performed remotely
- Optimization of the truck rolls.
- Increase of 13.57% in the income for sales, 23.19% in the amount of services provided.
- Decrease of 13.57% of the non-technical losses
- Savings of more than 2 million pesos due to the diminution of operational costs.
- Billing quality increased up to 99.25%.
- The customer´ facilities become considerably safer.
- Less complains from the customers, as well as more trust toward the utility.
- Immediate connect of services after making the payment.
Visual interfaces in homes and businesses.</td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-39-Netherland						
Country:	Netherland					
Utility:						
Point of Contact	R.M. van de Meeberg/ ruud.van.de.meeberg@enexis.nl/ +31 611566441/ www.enexis.nl					
Project Name/Title	Your Energy Moment (Jouw Energie Moment)					
Main Project Features	• To understand how households are best facilitated to shift electricity demand in time to match supply conditions. • Managing issues related to cyber security and privacy, by applying so called privacy and security by design principles applicable to this type of ICT architectures • Use of Appliances according to the preferred time allocation					
Number of Customers involved	37 Households, 110 Apartments					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Enexis, Dong energy, SW2, Flexicontrol, CGI					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	December 1st 2013	December 1st 2016	December 1st 2013			ongoing
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project						

<table>
<tr><td>implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Society can benefit of a cleaner energy system, without having to reduce comfort drastically. This improves the quality of life.
• Households have the opportunity to keep their energy costs low and feel good that they can contribute to a cleaner energy system.
• DSOs and energy suppliers can use this as an input to define their future smart grid strategy. They can provide their customers with an affordable, reliable en sustainable energy system.
• IT developers have an opportunity to further develop their smart grid products based on user insights and by that creating a new market.</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Consumer satisfaction
• Load shift
• Power usage reduction</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5"></td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-40-Netherland</th></tr>
<tr><td>Country:</td><td colspan="7">Netherland</td></tr>
<tr><td>Utility:</td><td colspan="7">Nma (Dutch Energy Regulator), NL Agency</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Henk van Elburg/ henk.vanelburg@agentschap.nl</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Smart Meter Deployment Project</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Developing and integrating an Act which mandates net operators, who are owners of the smart meters, to offer households and small businesses a smart meter with minimal functional and technical requirements
• Deployment of 2 meters : one for electric use and one for gas
• Suppliers to provide consumers bimonthly home energy reports as a standard feedback service</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">500000 smart meters</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Nma (Dutch Energy Regulator), NL Agency</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td colspan="2" rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>2012</td><td>2014</td><td>2012</td><td>2014</td><td></td><td colspan="2"></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">Nma</td><td colspan="2"></td></tr>
<tr><td>System Integrator (s)</td><td colspan="2"></td></tr>
<tr><td>OEMs - Software</td><td colspan="2"></td></tr>
<tr><td>OEMs - Hardware</td><td colspan="2"></td></tr>
<tr><td>Installation Agencies</td><td colspan="2"></td></tr>
<tr><td>Other Agencies</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project</td><td colspan="7"></td></tr>
</table>

<table>
<tr><td>implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Limiting consumer peak load demand
• Consumer feedback report
• Regulation of tariffs
• Deployment of smart meters at a mass level</td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Customers free to choose and authorize any commercial service provider offering smart meter database information services
• Energy savings
• Broader energy market for domestic and small business owners
• Commercial based tariff schemes</td></tr>
<tr><td>Innovation factor</td><td colspan="5"></td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">The government aims having 80% households with smart meters by 2020</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2">✓</td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-41-Portugal						
Country:	Portugal					
Utility:	EDP Distribuição					
Point of Contact	Pedro Matos / +351210028794 / pedro.godinhomatos@edp.pt					
Project Name/Title	InovGrid					
Main Project Features	Implementation of SG technology for transformation in Distribution Grid System. More efficiency and Consumer awareness in Electrical Grid information along with better network management					
Number of Customers involved	31000 Consumers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	EDP Distribuição Energia S.A.					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2011	2014	2011	2014		Completed on Time
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs – Software					
	OEMs - Hardware					
	Installation Agencies	EDP Distribuição Energia S.A				
	Other Agencies	Quercus				
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						

How the above challenges were overcome					
Benefits to Customers	• Reduction in CO_2 Emissions • Smart Metering and Intelligent equipment for Consumer participation • Reduction in costs • Real-time information to customers regarding price, usage and carbon emission				
Benefits to Utility	• Energy Efficiency • 3rd Party participation in energy oriented products and services • Reduction in CO_2 Emissions • More Renewable Energy: Reduction in National Energy dependence • Average Energy efficiency increased by 3.9% for 31000 consumers				
Innovation factor	• SG based on Open Platform • Display information to customers • Consumption information in real-time basis				
Potential for replication/larger roll out	• InovGrid in 6 new locations in Portugal • 150000 potential customers in future • 1500 visitors from across continents				
Business Case	Model can be used and implemented in other parts of the world with more 3rd party participation and more profits				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-42-South Korea</th></tr>
<tr><td>Country:</td><td colspan="7">South Korea</td></tr>
<tr><td>Utility:</td><td colspan="7">KEPRI (KEPCO)</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Yeong-gu Cho/ (+82) 31 723 3368/ ygcho@poscoict.com/ www.kepri.re.kr</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Shinan Microgrid Project</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• To verify the stable microgrid operations by controlling ESS with grid-connected(GC) and grid-independent(GI) mode
• To provide PV output stabilization using ramp control
• To provide the regulating the voltage of the distribution lines through the active/reactive power control
• Minimizing line losses and distribution voltage stabilization</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">POSCOICT, POSCO Energy, KEPRI, KEPCO</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>February 2014</td><td>November 2014</td><td>February 2014</td><td>November 2014</td><td>9 months(286 days)</td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="4" rowspan="6">POSCOICT, POSCO Energy, KEPRI, KEPCO</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
</table>

<table>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Reduction in voltage irregularity
• Cost Reduction
• Protection against losses
• Elimination of load-shedding and power blackouts</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• PV output stabilization
• Stable Microgrid operations
• Regulating the voltage of the distribution lines
• Minimization of losses
• To overcome the limited generation resources in the off-grids
• Cost reduction of diesel generator
• Power supplying reliability
• Minimizing blackout duration in Microgrid
• Integrated remote control and monitoring</td></tr>
<tr><td>Innovation factor</td><td colspan="5">• Auto Grid-Independent mode
• POSCO ICT’s ESS
• ICT-based energy convergence project and the Korea Green Island Project by integration with the existing power resources and renewable resources
• In addition, POSCO ICT and KEPCO have cooperated and developed the domestic and overseas microgrid projects</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5"></td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-43-South Korea</th></tr>
<tr><td>Country:</td><td colspan="7">South Korea</td></tr>
<tr><td>Utility:</td><td colspan="7">Korea Electric Power Corporation (KEPCO)</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Woo-hyun Hwang/(+82) 61 345 3900/ hblue@kepco.co.kr/ www.kepco.co.kr</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Smart Grid Station of Korea Electric Power Corporation</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• 30% reduction target of Green House Gases by 2020
• Implementation of the Je-ju test bed
• Response to climate change
• Reduction in electricity consumption
• In the Smart Grid Station, each building is installed with Energy Management System(EMS) that integrates various independent systems, such as renewable energy resources including photovoltaic and wind turbine, Energy Storage System(ESS), smart devices, heating/cooling facilities, EV chargers, Distribution Automation System(DAS), etc.</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Korea Electric Power Corporation (KEPCO)</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td>Actual Duration (Months)</td><td colspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td><td rowspan="2">425 days</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>25 October 2013 (Phase 1),</td><td>23 December 2013</td><td>25 October 2013</td><td>23 December 2013</td></tr>
<tr><td></td><td>1 January 2014</td><td>31 December 2014 (Phase 2)</td><td>1st January 2014</td><td>31st December 2014</td><td colspan="3"></td></tr>
<tr><td rowspan="4">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="4">Korea Electric Power Corporation (KEPCO)</td><td colspan="2"></td></tr>
<tr><td>System Integrator (s)</td><td colspan="2"></td></tr>
<tr><td>OEMs - Software</td><td colspan="2"></td></tr>
<tr><td>OEMs - Hardware</td><td colspan="2"></td></tr>
</table>

	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Customers	• Reduction in electricity bills • Reduction in carbon emissions by 5% • Job Creation • Reduction in load shedding and peak demand		
Benefits to Utility	• Reduction in construction costs of generation, transmission and distribution • Reduction in peak load and demand by 5% • Reduction in indoor consumption by 10% • Technological innovation and commercialization of EMS and PCS • Creating standard operational and procurement procedures to expand the Smart Grid Station • Support for smart grid market creation and industrial eco-system • New business model that converges smart grid technology on renewable sources • Mutual growth with SMEs		
Innovation factor	• Standard procurement procedures lead to convenient replication and adaptation of Smart Grid Station • Hybrid PCS successfully integrates the inverter that controls PV, WT and PCS, which controls charging and discharging status of batteries. • EMS monitors and controls the systems, which compose the Smart Grid Station components. • ESS charging/discharging algorithm that reflects load patterns also automatically optimizes energy usage, peak load, cooling/heating, etc.		
Potential for replication/larger roll out	• KEPCO is planning to expand the application of the Smart Grid Station to 75 KEPCO buildings and will also construct the central control center, where all Smart Grid Stations can be remotely managed from the Head office • KEPCO had expanded it to 29 district offices in 2014 • 75 KEPCO buildings by 2015		
Business Case			
Any other important point			

Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-44-South Korea						
Country :	South Korea					
Utility :	Korea Electric Power Corporation					
Project Name/Title	Smart Grid Station					
Main Project Features	The Smart Grid Station is an integrated regional-based control center for optimal management of independent systems converged with ICT: heating/cooling, indoor electricity, gas, water system, renewable energy sources (PV, WT etc.), ESS, AMI, EV chargers, smart devices, electricity automatic systems.					
Number of Customers involved						
Project Cost (Currency : $/1,100KRW)	Estimated Cost	Actual Cost	Remarks/Explanatory Notes for the variance between estimated and actual			
	$200,000	-				
Project Financing Model and Funding Agencies						
	KEPCO					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes for variance between scheduled and actual
	Start Date	End Date	Start Date	End Date		
	-	-	-	-	-	
Project Executing Agencies	Consultants					
	System Integrator (s)	AnyGate Co, Ltd				
	OEMs – Software					
	OEMs – Hardware					
	Communication Infra Provider(s)					
	Installation Agencies	Dongeiecos Ltd, Revo Ltd, EASYSAVER Ltd				
	Other Agencies (if any)					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Procurement Procedure Followed (How above agencies were selected/ appointed)	Public bidding
Key Challenges faced during project implementation (if any)	
How did the above challenges were overcome	
Benefits to Customers	consumers can reduce their electric bills—10% reduction in energy consumption and 5% in peak demand
Benefits to Utility	utilities can save generation, transmission, and distribution related construction costs by also contributing to the reduction of peak demand, DSM and load shedding during uncontrolled service disruptions ; the government can stabilize the supply and demand of energy due to load shedding and also reduce CO_2 emissions because of lower energy consumption.
Key Outcomes of the Project	○ Support for smart grid market creation and industrial eco-system. - New business model that converges smart grid technology on renewable sources ○ Mutual growth with SMEs and contribution to job creation in smart grid industry - 39 SMEs participating in 2014 SG Station project. - Economically feasible through enhancement of technological and price competitiveness of SMEs.
Innovation factor in the project	○ Independent development of hybrid PCS and EMS leads to more innovative smart grid technology. - Optimal energy management and creation of a balanced electricity/renewable energy mix. ○ Development of Smart Grid Station EMS - Key features : PCS schedule management, according to load pattern analysis. - Function : System surveillance, load response, energy trading and load breaks during shortages. ○ Development of Hybrid PCS - Key features : Integration of renewable source inverter and battery control of PCS, accomplishing economic feasibility and technological advancement. - Function : Surveillance and control of renewable energy sources and charging/discharging status of battery.
Potential for replication/larger roll out	○ Standard procurement procedures lead to convenient replication and adaptation of Smart Grid Station. - Provides standard for 6 key components, inspection scope and method. - Standard procurement procedures are provided at http://srm.kepco.net. ○ Construction and operation manual enhances operational safety. - Construction manual provides guidelines for design and construction. - Operation manual provides information for the maintenance service provider, inspection cycle, subject, method, maintenance and repair method.

<table>
<tr><td>Business Case</td><td colspan="5">KEPCO is planning to expand the application of the Smart Grid Station to other KEPCO buildings with a contracted demand of 300kW or more. We plan to install 75 buildings by investing $13.5 million in 2015.
We are also discussing installation of Smart Grid Station model with two private corporations, three public institutions and one local government in their buildings.</td></tr>
<tr><td>Any other important points/experiences</td><td colspan="5"></td></tr>
<tr><td>Customer Engagement</td><td colspan="5">What measures taken to get customers active participation in the project?
What was the level of customer participation:</td></tr>
<tr><td>Training & Capacity Building</td><td colspan="5">Briefly describe the training programs conducted to train the Utility Users on the new systems implemented:

What percentage of the total project cost was spent on training component:</td></tr>
<tr><td>Key Lessons Learnt</td><td colspan="5"></td></tr>
<tr><td rowspan="3">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project worked as envisaged</td></tr>
<tr><td>o</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Any other Remarks:</td></tr>
</table>

Smart Grid Project Summary Report-45-South Korea						
Country :	Korea					
Utility :	Jeju special Self-Governing Province					
Project Name/Title	Construction of Gapado Carbon Free Island					
Main Project Features	Stand alone Power system development based on SG technology					
Number of Customers involved	5					
Project Cost (Currency : $)	Estimated Cost	Actual Cost	Remarks/Explanatory Notes for the variance between estimated and actual			
	-	-				
Project Financing Model and Funding Agencies	Matching Fund with Jeju & Company					
	Jeju special Self-Governing Province Envolved companies					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes for variance between scheduled and actual
	Start Date	End Date	Start Date	End Date		
	Nov.2011	Oct.2013	Nov.2011	Dec.2014	36	
Project Executing Agencies	Consultants	KEPCO				
	System Integrator (s)	KEPCO				
	OEMs – Software					
	OEMs – Hardware					
	Communication Infra Provider(s)	KEPCO				
	Installation Agencies	KEPCO, KOSPO, Hyosung, Woojin Industral System Co, Ltd				
	Other Agencies (if any)	Shin-kobe Electric, co				
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Procurement Procedure Followed (How above agencies were selected/appointed)	Request for cooperation by Jeju special Self-Governing Province
Key Challenges faced during project implementation (if any)	Stand alone Power system development based on SG technology
How did the above challenges were overcome	Replacement Diesel Generation to Renewable Energy and Smart Grid
Benefits to Customers	Estimated at Project Approval Stage: Track record for the Micro Grid construction and operation Actual Observed: same as estimated stage
Benefits to Utility	Estimated at Project Approval Stage: Construction of Carbon free Island Actual Observed: same as estimated stage
Key Outcomes of the Project	Positive: 1.Track record for the Micro Grid construction and operation 2. Fuel and CO2 reduction Negative (if any):
Innovation factor in the project	Applying SG Technology in all Phase from Generation to Consumption
Potential for replication/larger roll out	It is difficult to replicate.
Business Case	Stand-alone MG system, a small Island, mountainous areas, etc
Any other important points/experiences	
Customer Engagement	What measures taken to get customers active participation in the project? What was the level of customer participation:
Training & Capacity Building	Briefly describe the training programs conducted to train the Utility Users on the new systems implemented: What percentage of the total project cost was spent on training component:
Key Lessons Learnt	

Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project worked as envisaged
		✓			
	Any other Remarks:				

Smart Grid Project Summary Report-46-South Korea						
Country :	South Korea(ROK)					
Utility :	KEPCO					
Project Name/Title	Construction and Demonstration of Smart Power Grid					
Main Project Features	Integration of Smart Power Grid sub-systems connected with the field					
Number of Customers involved						
Project Cost (Currency : $/1,100KRW)	Estimated Cost	Actual Cost	Remarks/Explanatory Notes for the variance between estimated and actual			
	13million$	-				
Project Financing Model and Funding Agencies	Matching Fund with Government & Company					
	Government Envolved companies					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes for variance between scheduled and actual
	Start Date	End Date	Start Date	End Date		
	Dec. 2008	Nov. 2013	Dec. 2008	Nov. 2013	60	
Project Executing Agencies	Consultants					
	System Integrator (s)	KEPCO				
	OEMs - Software					
	OEMs - Hardware					
	Communication Infra Provider(s)					
	Installation Agencies	KDN				
	Other Agencies					

	(if any)		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Procurement Procedure Followed (How above agencies were selected/ appointed)	Selected companies when the project is started		
Key Challenges faced during project implementation (if any)	Construction of Demonstration Sites		
How did the above challenges were overcome	Cooperation with the related departments in KEPCO		
Benefits to Customers	Estimated at Project Approval Stage: Actual Observed:		
Benefits to Utility	Estimated at Project Approval Stage: - Reference site & public relations Actual Observed: - Reference site & public relations		
Key Outcomes of the Project	Positive: - Reference site & public relations Negative (if any):		
Innovation factor in the project	Integration with heterogeneous subsystems for power system		
Potential for replication/larger roll out	Planning for the next project to roll out		
Business Case			
Any other important points/experiences			
Customer Engagement	What measures taken to get customers active participation in the project? What was the level of customer participation: very good		
Training & Capacity Building	Briefly describe the training programs conducted to train the Utility Users on the new systems implemented: - not applied What percentage of the total project cost was spent on training component: - not applied		
Key Lessons Learnt			

Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project worked as envisaged
	o				
	Any other Remarks:				

Smart Grid Project Summary Report-47-Spain						
Country:	Spain					
Utility:	NEDO(Japan), CDTI(Spain) and City of Malaga					
Point of Contact	Jaime Brailes Guerrero/ jbriales@malaga.eu/ www.malaga.eu/ www.zem2all.com/ 951926007					
Project Name/Title	Zem2All (Zero Emission Mobility to All)					
Main Project Features	Understanding the impact and management of urban electric mobility through the use of EVs and other sustainable urban development setting					
Number of Customers involved	20 EVs, 160 Mitsubishi i- mieves, 40 Nissan Leafs, 23 Charging points					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
	60 million Euros		70% funded by Japan and 30% by Spain			
Funding Agencies	NEDO, CDTI, Endesa, Telefonica, Ayesa, Mitsubishi Corp, Mitsubishi Heavy Industries, Hitachi					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	May 2012	December 2015	May 2012			
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					

	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)						
How the above challenges were overcome						
Benefits to Customers	• Less noise • Less pollution • Reduction and control in expenses on energy • Less dependency on non-renewable energy • Better efficiency and service					
Benefits to Utility	• Next generation EV • Management of EV fleets • Impact of recharge on power grids • New value added services • Reduction in emission of CO_2 • Reduction in fossil fuel dependence • Reduction in national OIL Bill • Regulation of prices					
Innovation factor	Charging facilities and technology for EVs, EV management systems					
Potential for replication/larger roll out	High success of EVs and Zem2All has set the benchmark for all other European projects to follow this model in future					
Business Case						
Any other important point	The project is under " Japan Spain Innovation Program"					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged	
	✓					

Smart Grid Project Summary Report-48-Spain						
Country:	Spain, Austria, Italy, France					
Utility:	LinZAG(Austria), GEG(France), IREN(Italy), El Gas(Spain), Intelligent Energy Europe Programme of European Union					
Point of Contact	Stoyan Danov / sdanov@cimne.upc.edu / www.iee-empowering.eu/en / +34 937398987					
Project Name/Title	EMPOWERING					
Main Project Features	Helping customers to save energy and money by involving and informing them the information for meter reading and bill information.					
Number of Customers involved	344000 customers Current Status : 270000 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
	2 Million Euros					
Funding Agencies	12 member consortium including LinZAG, GEG, IREN, El Gas, Alec, GISCE, Reggio Emilia, Sinergia, etc					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	April 1st 2013	September 30th 2015	April 1st 2013	-	-	Ongoing
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software	Ext JS, Flask				
	OEMs - Hardware	Mango DB				
	Installation Agencies					

	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	Identification of the drawbacks for proper implementation of energy awareness services in the residential sector					
How the above challenges were overcome	Sets of procedures to be followed and internal changes necessary to implement energy awareness services					
Benefits to Customers	• Save Energy • Save Money • Information on Metering and Usage					
Benefits to Utility	• Improved customer relations • Improved customer energy performance • Client Loyalty					
Innovation factor						
Potential for replication/larger roll out	**i.** 50% of contacted utilities adopt EMPOWERING services **ii.** Development of EMPOWERMENT Utility in all European Union countries					
Business Case						
Any other important point	Energy Consumption has decreased by 25% with 80% customers showing positive response					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged	
	✓					

Smart Grid Project Summary Report-49-Sweden							
Country:	Sweden						
Utility:	Gotlands Energi AB and Swedish Energy Authority						
Point of Contact	Hakan Gustavsson/ hakan.gustavsson@vattenfall.com/ +467074 72545						
Project Name/Title	Smart Kund Gotland- Smart Grid Gotland						
Main Project Features	Excellence in Smart Grid Consumer Engagement and Empowerment through Smart Pricing and Control						
Number of Customers involved	2000 Households and 30 Enterprises						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes				
Funding Agencies	GEAB, Vattenfall, ABB, Schneider Electric, Royal Institute of Technology, Swedish Energy Authority						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes	
	Start Date	End Date	Start Date	End Date			
	September 2012	• December 2015(Testing) • December 2016 (Overall)	September 2012			Project	
Project Executing Agencies	Consultants						
	System Integrator (s)						
	OEMs - Software	Royal Institute of Technology					
	OEMs - Hardware	Schneider Electric, Vattenfall					
	Installation Agencies						
	Other Agencies						

<table>
<tr><td rowspan="2">Communication Technology Used</td><td>Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td>Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6">Finding a generic control and visualization system that could be used for a huge variety of different systems for residential electric heating</td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="6">• Installation of a new Hardware for Heating Control
• Software for Control Algorithm and visualization of Price Signals</td></tr>
<tr><td>Benefits to Customers</td><td colspan="6">• Real Electric Bill based on a new price model.
• Price Signals and Controls can be viewed and controlled by Consumers
• Increase in Power Quality</td></tr>
<tr><td>Benefits to Utility</td><td colspan="6">• Revenue support and Increase in the capacity in Renewable production.
• Also increase in Hosting Capacity from 195MW to 200MW
• Increase in Power Quality
• Decrease in Number and Duration Outages by 20%</td></tr>
<tr><td>Innovation factor</td><td colspan="6">• New hardware for heating control
• Customers to have remote control equipment for price signals and management of favorable controls</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="6">Larger Public/ Customer participation in Electricity Market</td></tr>
<tr><td>Business Case</td><td colspan="6">More Profits and Better Grid Facilities</td></tr>
<tr><td>Any other important point</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-50-Sweden						
Country:	Sweden					
Utility:	E.ON					
Point of Contact	Alf Larsen/ (+46) 70 644 3461/ alf.larsen@eon.se/ www.eon.se					
Project Name/Title	Karehamn_ Increasing Feed-In of Renewables					
Main Project Features	• Inclusion of the 48MW Karehamn wind farm to E.ON's power grid for more generation of power • Dynamic Line Rating (DLR) was selected as an alternative to reinforcement of an active network as it will cost a mere 5 million instead of 60-100 million for a reinforcement plan • To calculate the available transfer capacity on the supervised lines continuously to avoid high new connection fee • New cable to mainland-200MSEK					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	E.ON					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2013	2014	2013	2014		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					

	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	• Lower revenue cap • Risk factor doesn't reduce substantially • Uncertainty in wind energy • Utilization of existing lines closer to their operational limits					
How the above challenges were overcome	• Connection to other energy plants • Sharing of risks and economic benefits with other projects and customers • Energy storage facilities					
Benefits to Customers	• Better service • Reduction in load shedding • Reduction in carbon emissions • Monthly bill reduction • Development of the wind farms and more employment facilities • Reducing the rate of failures					
Benefits to Utility	• Measurement and monitoring of the line temperatures • Avoiding reinforcement by introducing DLR which is cost effective • The application can be used in other wind power applications • Good payback period • Fast installation • New communication solutions • Higher efficiency of electrical grid- reduction in failures					
Innovation factor	Monitoring the transmission lines during their peak usage to cease production and avoid loss of energy.					
Potential for replication/larger roll out	• The application can be used in other wind power applications • Sharing resources and infrastructure with other renewable energy plants					
Business Case						
Any other important point						
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged	
			✓			

Smart Grid Project Summary Report-51-Sweden						
Country:	Sweden					
Utility:	ELFORSK					
Point of Contact	Magnus Olofsson/ magnus.olofsson@elforsk.se					
Project Name/Title	Smart Meter Rollout Project					
Main Project Features	• Full scale installation of AMR/AMI systems • Hourly billing system					
Number of Customers involved	5.2 million customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
		1.5 billion euros				
Funding Agencies	ELFORSK					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2003	2009	2003	2009	72	
Project Executing Agencies	Consultants	ELFORSK				
	System Integrator (s)					
	OEMs – Software					
	OEMs – Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Ability to control consumption and bills • Hourly billing facilities • Accurate bills • Service quality improvement				
Benefits to Utility	• Increased consumer awareness • Improved safety on network • Easy access to faults • Reduction in risks of oversizing assets				
Innovation factor	• 50% PLC (Power Line Carried Communication) • 30% LPR (Low Power Radio) • 15% GPRS • 5% others				
Potential for replication/larger roll out and Business Case	• Platform for future projects • Infrastructure upgradation Vattenfall project made on similar model • Objective to reach 50% dependence on Renewable Energy by 2020 • By 2030, strategy to reach a vehicle stock independent of fossil fuels				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-52-UK						
Country:	United Kingdom					
Utility:						
Point of Contact	Jeff Heathcote / +44 7739654801 / jeff.heathcote@siemens.com					
Project Name/Title	Siemens Smart Multi-Dwelling Unit Solution- Phase I					
Main Project Features	Smart-Metering facilities for consumers living in multi-dwelling units and improve metering connectivity across UK					
Number of Customers involved	2.3 million Households, 0.42 million Buildings					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Siemens, Big Six Energy Suppliers					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	June 2012	Q1 2014	June 2012	Not Specified		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software	Siemens				
	OEMs - Hardware	Siemens				
	Installation Agencies	Siemens				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)	• Physical Distance from Metering System to buildings • Difficulty in reaching specific Locations/Buildings • Fabric of the Building/ Construction				
How the above challenges were overcome	Zigbee Radio Technology and Broadband Over Powerline Technology				
Benefits to Customers	• Consistent Customer experience • Lowest total cost of ownership • Clear ownership model • Level Playing ground for all consumers				
Benefits to Utility	High Connectivity to all Multi-Dwelling units across UK and better metering facilities to reach all consumers- 100% metering in real-time				
Innovation factor	MDU Connectivity using ZIGBEE Radio Technology and BPL. In-Home Displays				
Potential for replication/larger roll out	The same model is already planned for other cities across Europe which is roughly around 5 million Households				
Business Case	Better Profits through Connectivity to all consumers ensuring real-time metering and billing experience				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
		✓			

Smart Grid Project Summary Report-53-UK						
Country:	United Kingdom					
Utility:						
Point of Contact	Jeff Heathcote / +44 7739654801 / jeff.heathcote@siemens.com					
Project Name/Title	Siemens Smart Multi-Dwelling Unit Solution- Phase II					
Main Project Features	Locating different MDUs and Scope/Size of MDU capacities in Great Britain					
Number of Customers involved	5 Million Households					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Siemens, Big Six Energy Suppliers					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	June 2012	Q1 2014	June 2012	Not Specified		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software	Siemens				
	OEMs - Hardware	Siemens				
	Installation Agencies	Siemens				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

<table>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="5">• Difficulty in reaching specific Locations/Buildings
• Fabric of the Building/ Construction
• Property Survey
• Coordination with landlords
• Permissions and Clearances</td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5">• Zigbee Radio Technology and Broadband Over Powerline Technology
• Positioning of WAN gateway
• HAN Network setup
•</td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Consistent Customer experience
• Lowest total cost of ownership
• Clear ownership model
• Level Playing ground for all consumers</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">High Connectivity to all Multi-Dwelling units across UK and better metering facilities to reach all consumers-100% metering in real-time</td></tr>
<tr><td>Innovation factor</td><td colspan="5">MDU Connectivity using ZIGBEE Radio Technology and BPL. In-Home Displays</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">The same model is already planned for other cities across Europe and helping in locating various MDUs</td></tr>
<tr><td>Business Case</td><td colspan="5">Better Profits through Connectivity to all consumers ensuring real-time metering and billing experience</td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2">✓</td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-54-USA						
Country:	USA					
Utility:						
Project Name/Title	Pacific Gas & Electric's Optimal Time Varying Pricing					
Main Project Features	• PG&E has created a program that gives customers the ability to opt-in to variable, time of day pricing on critical peak days.					
Number of Customers involved	120,000 residential customers, 536MWh					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	Nov 2012	Present	Nov 2012			
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during						

project implementation (if any)							
How the above challenges were overcome							
Benefits to Customers							
Benefits to Utility							
Innovation factor							
Potential for replication/larger roll out							
Business Case							
Any other important point							
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged	

Smart Grid Project Summary Report-55-USA						
Country:	USA					
Utility:						
Project Name/Title	Pacific Gas & Electric's Company's My Energy Tool					
Main Project Features	• PG&E has demonstrated value by creating programs that allow customers to engage and make personal decisions about their energy usage.					
Number of Customers involved	2.3 million customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2012	Present	2012			
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project						

implementation (if any)								
How the above challenges were overcome								
Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

Smart Grid Project Summary Report-56-USA						
Country:	USA					
Utility:						
Project Name/Title	Pacific Gas & Electric's Smart Grid					
Main Project Features	• PG&E SmartMeter • PG&E Home Energy Reports • PG&E Automated Demand Response • PG&E Intelligent Switch project					
Number of Customers involved	230,000 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	2012	Present	2012			
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during						

project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers					
Benefits to Utility					
Innovation factor					
Potential for replication/larger roll out					
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-57-USA						
Country:	USA					
Utility:	New Energy and Industrial Technology Development organization (NEDO), County of Maui					
Point of Contact	Emura Fumitoshi / +81-345643551 / fumitoshi.emura.zm@hitachi.com					
Project Name/Title	JUMPSmart Maui Project (JSM)					
Main Project Features	Smart Grid Technology for efficient use of RE and development of Electric Vehicle for implementation of low-carbon social infrastructure					
Number of Customers involved	300 Existing/New EV users					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	NEDO, United States Department of Energy					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	December 2011	December 2015	December 2011			
Project Executing Agencies	Consultants	Hawaiian Electric Company, Maui Electric Company, University of Hawaii, US National Research Laboratories				
	System Integrator (s)					
	OEMs - Software	Hitachi				
	OEMs - Hardware	Hitachi				
	Installation Agencies	Hitachi				
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Lower Energy Cost • Cleaner Environment				
Benefits to Utility	• Ecological Balance • Profits • Development of EV • Sustainable use of Renewable Energy				
Innovation factor	Use of EV Batteries in Smart Grid Technology and installation of EV Charging Points				
Potential for replication/larger roll out	Model can be applied to all other islands having a rich reserve of Renewable Energy.				
Business Case	Strengthen Government relations between USA and Japan for further associations.				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-58-USA						
Country:	USA					
Utility:	DSO- Public Service Company of New Mexico					
Point of Contact	Abraham Ellis / aellis@sandia.gov / 011-5058447717 / www.sandia.gov					
Project Name/Title	Advanced Building Scale Smart Grid Demonstration at Mesa del Sol					
Main Project Features	Demonstrate full integration of distributed resources and a commercial building including scheduling of net demand, demand response management and supply of electricity to the building					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Shimizu Corporation, Tokyo Gas, DSO, Sandia National Laboratories, US Department of Energy, NEDO					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	June 2010	Present	June 2010		-	Ongoing
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project						

implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Customer ability to dispatch net demand within a wide range • Market participation opportunities for consumers • High supply reliability to consumers				
Benefits to Utility	• Manage electricity and thermal demand • Improve supply reliability • Active distribution network resource				
Innovation factor	a) State-of-the-art BEMS in the building that controls all aspects of micro grid operations b) Transition of building from grid to islanded mode c) Microgrid (building) can control voltage & frequency d) Low cost secured communication				
Potential for replication/larger roll out	• LEED Gold certified • Medium scale high efficiency building recognized as a successful execution • Several levels of execution • Zero-cut-energy building : New Technology				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged

Smart Grid Project Summary Report-59-USA						
Country:	USA					
Utility:	United States Department of Energy					
Point of Contact	Polly Rosemond /+ 5046703567 / prosemond@entergy.com / www.entergy.com					
Project Name/Title	Entergy New Orleans ''SmartView" AMI Pilot Project					
Main Project Features	To test low-income customer response to certain DR programs enabled by AMI technology. It includes rebates and incentives for peak load reduction and load control					
Number of Customers involved	4689 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
	$ 5 million					
Funding Agencies	US Department of Energy					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	10th May 2010	30th September 2013	10th May 2010	30th September 2013	41 months	Project was completed according to schedule
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project	1. Variation in consumer motivation 2. Awareness in customers 3. Targeting low-income groups					

implementation (if any)					
How the above challenges were overcome	1. Use of modern equipment and machinery 2. AMI installation surveys 3. Successive training for devices and technology				
Benefits to Customers	AMI technology, More Awareness, Monetary Benefits, Better Quality of supply				
Benefits to Utility	Consumer Connectivity, Awareness in the community, Low consumption, Demand Management, Energy use impacts				
Innovation factor					
Potential for replication/larger roll out	Similar projects have been started related to ACLM & PTR program				
Business Case	Profits can be made through replication of similar projects and reduction in losses.				
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
	✓				

Smart Grid Project Summary Report-60-USA						
Country:	USA					
Utility:						
Point of Contact	Andrew L. Ott / ott@pjm.com / 6016664267 / www.pjm.com/markets-and -operations/rpm.aspx					
Project Name/Title	A capacity market that incentivizes smart and Green Technology investment					
Main Project Features	To create long term price signals to stimulate investments in the maintenance and development of generation, transmission and demand-side resources					
Number of Customers involved	61 million/ 5346 MW					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Alstom Grid, PJM					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	May 2011	May 2012	May 2011	May 2012	12 months	Project was completed on time
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project						

<table>
<tr><td>implementation (if any)</td><td colspan="5"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="5"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="5">• Low Cost of energy
• Better service</td></tr>
<tr><td>Benefits to Utility</td><td colspan="5">• Energy Efficiency
• Reduction in consumption
• Retail Customer Participation
• Fostering Competition</td></tr>
<tr><td>Innovation factor</td><td colspan="5">Reliability Price Model
Demand-side participation
Flexible products</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">By 2012 PJM had more committed DR resources than any other organized wholesale electricity market in USA.
Similar models is in the process of getting rolled out in other parts of USA</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-61-USA						
Country:	USA					
Utility:	Central Maine Power (CMP)					
Point of Contact	Leona M. Michelsen / leona.michelsen@cmpco.com					
Project Name/Title	Know Your Own Power					
Main Project Features	• A Price Comparison Report that compares costs from standard and time of use (TOU) pricing programs and suggests the most cost effective programs, based on historical usage • The option to download data in the Green Button format, an industry-led effort based on a common technical standard. • A service-layer product called Power House that engages 7th and 8th grade students in math and science curriculum using their family's household electricity usage data.					
Number of Customers involved	24000 customers(as on February 2014)					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Tendril Networks, Inc., Central Maine Power (CMP), Gulf of Maine Research Institute (GMRI)					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	June 2012	Target Based	June 2012	Ongoing		
Project Executing Agencies	Consultants	Tendril Networks, Inc., Central Maine Power (CMP), Gulf of Maine Research Institute (GMRI)				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					

Communication Technology Used	Last Mile/Access/NAN/FAN				
	Backhaul/WAN				
Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• In July 2013, CMP had 5,000 customers enrolled to access the Energy Manager web portal. In less than a year that number grew to 24,000 with as many as 175 customers enrolling daily. • Since December 2013, CMP has seen more than 7,000 visits to its "Download My Data" page where Green Button data is accessed. • Since the end of January 2014, CMP has seen more than 1,500 visits to the Price Comparison report, with nearly 500 downloads of the report. • GMRI has engaged hundreds of students in the Power House project.				
Benefits to Utility	• Based on the considerable enrollment in Energy Manager and interest in related products, CMP sees the potential for a large percentage of its customers to become better engaged. • Energy actions and tips that can be used to better manage use •				
Innovation factor	• The CMP tagline for promoting services that provide customers with access to data is "Know Your Own Power." With the growing selection of vehicles available to enjoy the benefit of smart meters, CMP has engaged and empowered its customers to make informed choices about their electricity usage. • CMP chose Tendril to provide the open software platform that serves as the basis of Energy Manager, as well as its open APIs to develop these other innovative applications				
Potential for replication/larger roll out	• In an effort to provide self-service channels for customers to conduct business, CMP will continue to synthesize data from its customer service department, satisfaction surveys and focus groups to develop value-add services that empower users. A future example of such an application is a bill alert system that uses smart meter data to let customers know when their electricity costs and consumption have reached a particular level. • Power House represents an important model for engaging the next generation of energy users. It is also an important tool for improving students' capacity for advanced reasoning and problem solving and can be easily replicated by other utilities.				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case	All features of the project did not work as envisaged	None of the features of the project work as envisaged

			for larger roll out		
	✓				

Smart Grid Project Summary Report-62-USA						
Country:	USA					
Utility:	Delmarva Power					
Point of Contact	Lyndsay Cherry/ lyndsay@smartmarkusa.com/ 615-864-7841/ www.delmarva.com					
Project Name/Title	Peak Energy Savings Credit (PESC)					
Main Project Features	• To help customers lessen their energy consumption during periods of high demand • Critical Peak Rebate					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
			Summer 2012	Present		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during project implementation (if any)	Multiple types of Customers (language, Education)					

How the above challenges were overcome	Multi-channel communication mode							
Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

Smart Grid Project Summary Report-63-USA						
Country:	USA					
Utility:	San Diego Gas and Electric (SDG&E)					
Point of Contact	Lee Krevat/ lkrevat@semprautilities.com/ 858-503-5411/ www.sdge.com					
Project Name/Title	Borrego Springs Micro grid Demonstration					
Main Project Features	• How to best respond to a system disturbance and maintain power to a local area, allowing customers to potentially "ride through" the disturbance by having enough local generation and local energy storage and utilizing customer participation to meet the critical energy demands of the area • Demonstrate the ability to achieve a 15% or greater reduction in feeder peak load • Develop information/tools addressing the impact of multiple DER technologies					
Number of Customers involved	60 Residential and some commercial customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies						
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
Project Executing Agencies	Consultants					
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					
Key Challenges faced during						

project implementation (if any)							
How the above challenges were overcome							
Benefits to Customers							
Benefits to Utility							
Innovation factor							
Potential for replication/larger roll out							
Business Case							
Any other important point							
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged	

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-64-USA</th></tr>
<tr><td>Country:</td><td colspan="7">USA</td></tr>
<tr><td>Utility:</td><td colspan="7">ComEd</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Laura Basili/ laura.basili@comed.com/ 6304372434/ www.comed.com</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">Commonwealth Edison AMI Deployment Outreach and Education Plan</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• To provide customers with instruction and information to enable and encourage them to quickly capture economic benefit and produce immediate bill savings
• Inform and engage media, local elected municipal and legislative officials and employees</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">114000</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td></td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">Illinois Science & Energy Innovation</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">ComEd, Illinois Science & Energy Innovation</td><td></td></tr>
<tr><td>System Integrator (s)</td><td></td></tr>
<tr><td>OEMs - Software</td><td></td></tr>
<tr><td>OEMs - Hardware</td><td></td></tr>
<tr><td>Installation Agencies</td><td></td></tr>
<tr><td>Other Agencies</td><td></td></tr>
<tr><td rowspan="2">Communication Technology Used</td><td colspan="2">Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td colspan="2">Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="7"></td></tr>
</table>

How the above challenges were overcome								
Benefits to Customers								
Benefits to Utility								
Innovation factor								
Potential for replication/larger roll out								
Business Case								
Any other important point								
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged		None of the features of the project work as envisaged		

<table>
<tr><th colspan="7">Smart Grid Project Summary Report-65-USA</th></tr>
<tr><td>Country:</td><td colspan="6">USA</td></tr>
<tr><td>Utility:</td><td colspan="6">Vermont Electric Power Company (VELCO)</td></tr>
<tr><td>Point of Contact</td><td colspan="6">Kerrick L. Johnson/ (+1) 802 770 6166/ kjohnson@velco.com</td></tr>
<tr><td>Project Name/Title</td><td colspan="6">Vermont Weather Analytics Center Project</td></tr>
<tr><td>Main Project Features</td><td colspan="6">• Renewable energy production and energy demand to make significant sensitivity to local, short term weather conditions
• Ability to accurately predict renewable power (i.e., wind and solar) and electricity demand with sufficient spatial and temporal precision and lead time
• Utilizing coupled models and leading-edge analytics to optimize integration of renewable generation resources
• Increase grid reliability
• Lower weather event-related operational costs
• Deep-thunder : creation of a Vermont specific version of IBM’s Deep Thunder predictive weather model to produce high resolution, accurate forecasts upto 48 hours in advance
• Demand Model : development of an advanced electric demand forecasts utilizing smart meter
• Renewable generation Model: production of generation forecasts for solar, wind and separately correlated hydro to improve power supply planning efficiency
• Renewable Integration Stochastic Engine : creation of a coupled model probabilistic framework that links and synthesizes the other models’ output to produce actionable information for synergistic use Vermont’s renewable generation, efficiency, demand response and transmission resources to achieve optimal system operations and value creation</td></tr>
<tr><td>Number of Customers involved</td><td colspan="6">~625000</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="4">Remarks/Explanatory Notes</td></tr>
<tr><td>$ 16.6 million</td><td></td><td colspan="4"></td></tr>
<tr><td>Funding Agencies</td><td colspan="6">Vermont Electric Power Company (VELCO), IBM</td></tr>
<tr><td rowspan="3">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td rowspan="2">Actual Duration (Months)</td><td rowspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>February 2014</td><td>February 2016</td><td>February 2014</td><td>ongoing</td><td></td><td></td></tr>
<tr><td></td><td>Consultants</td><td colspan="4">Vermont Electric Power Company (VELCO), IBM</td><td></td></tr>
</table>

Project Executing Agencies	System Integrator (s)				
	OEMs - Software				
	OEMs - Hardware				
	Installation Agencies				
	Other Agencies				
Communication Technology Used	Last Mile/Access/NAN/FAN				
	Backhaul/WAN				
Key Challenges faced during project implementation (if any)	• Quality and use of weather observations • Deploying updated weather model in the specific format and time after every change • Availability of power and demand data to enable operational updates • Utilization of procedures and information				
How the above challenges were overcome					
Benefits to Customers	• Safer energy • Cost reduction • Improvement in ecosystem impacts				
Benefits to Utility	• Improve grid resiliency • Unlock additional in-state renewable energy value • Better investments • Bolster regional policy advocacy to advance renewable energy integration • Achieve transmission reliability • Reduction in grid repair costs • Predictive weather capability				
Innovation factor	Vermont has the nation's first truly statewide smart grid comprised of near-ubiquitous smart metering utility fiber optic connectivity down to the distribution substation and an expansive wireless broadband platform which enables automation to remote areas and high-speed mobile application				
Potential for replication/larger roll out	• Achievement of 90% renewable energy use across all sectors by 2050 • Profits in billions through avoided costs • High protection in terms of Green House gases emission				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but	All features of the project did not work as envisaged	None of the features of the project work as envisaged

			no business case for larger roll out		
	✓				

Smart Grid Project Summary Report-66-USA						
Country:	USA					
Utility:	Los Alamos County Department of Public Utilities					
Point of Contact	Timothy A. Glasco/ (+1) 505 662 8148/ ta.glasco@lacnm.us/ www.Losalamosnm.Us/Utilities/Pages/Losalamossmartgrid.Aspx					
Project Name/Title	USA-Japan Demonstration Smart Grid Project In Los Alamos, New Mexico					
Main Project Features	• A 1 MW PV array which also included a test area consisting of solar panels from 10 different manufacturers for comparative purposes in various conditions • A 0.8MW lead-acid battery and a 1 MW sodium sulfur battery for use in PV output fluctuation smoothing and demand curve flattening, respectively • µEMS to create a demand 1-7 day load forecast based on historical use and weather forecast • A 1-7 day PV output schedule based on the same variables, a 1-day schedule for power flow to maintain supply-demand balance at the interconnection • A state of charge plan for the batteries based on the load and PV output forecasts, optimizing a schedule of battery output to maximize the tie-line load factor, and finally to issue demand/response commands depending on the status of the system • Smart House equipped with 3.4 KW PV array, 24KW-Hr Lithium ion electric vehicle battery, hybrid inverter, smart meter, three different Home Energy Management Systems (HEMS), and a variety of smart appliances • A residential demand response research project that incorporated various pricing incentives and penalties designed to determine the pricing model most likely to influence customer behavior during a demand response event					
Number of Customers involved	Demand response for 900 customers In-Home display for 100 customers					
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Los Alamos County Department of Public Utilities, Toshiba Corporation, Hitachi Ltd, KYOCERA Corporation, NGK Insulators					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	September 2012	April 2015	September 2012	ongoing		
	Consultants					

Project Executing Agencies	System Integrator (s)	Los Alamos County Department of Public Utilities, Toshiba Corporation, Hitachi Ltd, KYOCERA Corporation, NGK Insulators	
	OEMs - Software		
	OEMs - Hardware		
	Installation Agencies		
	Other Agencies		
Communication Technology Used	Last Mile/Access/NAN/FAN		
	Backhaul/WAN		
Key Challenges faced during project implementation (if any)			
How the above challenges were overcome			
Benefits to Customers	• Improving the quality of power • A high percentage of non-polluting renewable power • More effective future smart grid policy • Cost reduction • Better service and reduction in faults		
Benefits to Utility	• Providing new research information to the utility • Immediate benefits to the distribution system operator in the optimization of the addition of renewable energy to a residential microgrid • Shaving the electrical peak in the distribution system • Introducing demand response through dynamic pricing models in an attractive and non-threatening manner • Application of more suitable technology and standards in future smart microgrids		
Innovation factor	• In the Los Alamos Smart House demonstration project, three different prototype Home Energy Management Systems (HEMS) were employed, each focusing on a slightly different type of energy optimization. • The HEMS were designed to employ auto-scheduling and controlling demand of household appliances and distributed energy storage elements such as the battery and heat pump. • Transfer interception by fast PLC was also examined. Smooth transfer to and from independent operation from the utility grid was successfully demonstrated. • This communication between the µEMS and the HEMS asking for demand control from the utility side to the house is believed to be the earliest trial and demonstration of auto demand response, or “Open ADR.”		

<table>
<tr><td></td><td colspan="5">• The PV/smart grid project is the first international project in the US to demonstrate how to provide a significant proportion of renewable power on the electric grid to meet a community's residential needs</td></tr>
<tr><td>Potential for replication/larger roll out</td><td colspan="5">• Scope and success in penetrating a residential feeder with 75% renewable energy and demonstrating reliable operation with absorption of frequency and voltage fluctuations to provide reliable, high quality power in a manner completely seamless and invisible to the customers.
• Demand response pricing was effectively implemented with an exceptionally high level of customer participation.
• One category of participants effectively reduced peak loads by up to 10% in a milder summer climate without energy intensive appliances like air conditioners to turn off</td></tr>
<tr><td>Business Case</td><td colspan="5"></td></tr>
<tr><td>Any other important point</td><td colspan="5"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td>✓</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="8">Smart Grid Project Summary Report-67-USA</th></tr>
<tr><td>Country:</td><td colspan="7">USA</td></tr>
<tr><td>Utility:</td><td colspan="7">National Renewable Energy Laboratory/ US Department of Energy</td></tr>
<tr><td>Point of Contact</td><td colspan="7">Mackay Miller/ mackay.miller@nrel.gov</td></tr>
<tr><td>Project Name/Title</td><td colspan="7">4 California AMI Deployment
1) Sacramento Municipal Utility District (SMUD)
2) Glendale Water and Power (GWP)
3) Burbank Water and Power (BWP)
4) San Diego Gas and Electric (SDG&E)</td></tr>
<tr><td>Main Project Features</td><td colspan="7">• Smart grid investments supportive of conservation and renewable energy integration through :
a. In-house display system
b. AMI
c. Customer web portals
• To deal with regulatory issues</td></tr>
<tr><td>Number of Customers involved</td><td colspan="7">2.2 million customers</td></tr>
<tr><td rowspan="2">Project Cost (Currency: ….)</td><td>Estimated</td><td>Actual Cost</td><td colspan="5">Remarks/Explanatory Notes</td></tr>
<tr><td></td><td>$ 739 million</td><td colspan="5"></td></tr>
<tr><td>Funding Agencies</td><td colspan="7">National Renewable Energy Laboratory/ US Department of Energy</td></tr>
<tr><td rowspan="2">Project Duration</td><td colspan="2">Scheduled</td><td colspan="2">Actual</td><td>Actual Duration (Months)</td><td colspan="2">Remarks/Explanatory Notes</td></tr>
<tr><td>Start Date</td><td>End Date</td><td>Start Date</td><td>End Date</td><td></td><td colspan="2"></td></tr>
<tr><td></td><td>2008</td><td>2014</td><td>2008</td><td>2014</td><td>72</td><td colspan="2"></td></tr>
<tr><td rowspan="6">Project Executing Agencies</td><td>Consultants</td><td colspan="5" rowspan="6">National Renewable Energy Laboratory/ US Department of Energy</td><td colspan="2"></td></tr>
<tr><td>System Integrator (s)</td><td colspan="2"></td></tr>
<tr><td>OEMs - Software</td><td colspan="2"></td></tr>
<tr><td>OEMs - Hardware</td><td colspan="2"></td></tr>
<tr><td>Installation Agencies</td><td colspan="2"></td></tr>
<tr><td>Other Agencies</td><td colspan="2"></td></tr>
</table>

<table>
<tr><td rowspan="2">Communication Technology Used</td><td>Last Mile/Access/NAN/FAN</td><td colspan="5"></td></tr>
<tr><td>Backhaul/WAN</td><td colspan="5"></td></tr>
<tr><td>Key Challenges faced during project implementation (if any)</td><td colspan="6"></td></tr>
<tr><td>How the above challenges were overcome</td><td colspan="6"></td></tr>
<tr><td>Benefits to Customers</td><td colspan="6">• Better and faster restoration of service
• Greater customer control over usage
• Reduction in pollution
• Time based rates</td></tr>
<tr><td>Benefits to Utility</td><td colspan="6">• Faster outage detection
• Reduction in carbon dioxide emissions
• Reduction in costs- less onsite visits</td></tr>
<tr><td>Innovation factor</td><td colspan="6"></td></tr>
<tr><td>Potential for replication/larger roll out and Business Case</td><td colspan="6">• Revenue structure for future projects
• Roll-out on other areas in the basis of models followed in these 4 areas
• Encouraging private investment</td></tr>
<tr><td>Any other important point</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Overall Rating of the Project</td><td>Good Success</td><td>Moderate Success</td><td>Technologies Demonstrated successfully; but no business case for larger roll out</td><td>All features of the project did not work as envisaged</td><td>None of the features of the project work as envisaged</td></tr>
<tr><td colspan="2"></td><td></td><td></td><td></td></tr>
</table>

Smart Grid Project Summary Report-68-Vietnam						
Country:	Vietnam					
Utility:	Energy Conservation Center Ho Chi Minh City					
Point of Contact	Cuong The Diep/Energy Conservation Center Ho Chi Minh City/ (+84) 8 39 322 372/ thecuong@ecc-hcm.gov.vn/ www.ecc-hcm.gov.vn					
Project Name/Title	Grid Tied Solar System For Green School - A Pilot Project in Luong The Vinh School					
Main Project Features	• Enhance student awareness in energy savings and renewable energy whilst creating a showcase of a 2240Wp grid-tier solar system • Primary school students are educated on the facets of Renewable energy • Meeting the growing energy requirements • Practical examples to demonstrate the benefits and other nuances of energy efficiency and energy saving making Ho Chi Minh City a Green City • Generating funds and investments					
Number of Customers involved						
Project Cost (Currency: ….)	Estimated	Actual Cost	Remarks/Explanatory Notes			
Funding Agencies	Energy Conservation Center Ho Chi Minh City					
Project Duration	Scheduled		Actual		Actual Duration (Months)	Remarks/Explanatory Notes
	Start Date	End Date	Start Date	End Date		
	October 2014	December 2014	October 2014	December 2014		
Project Executing Agencies	Consultants	Energy Conservation Center Ho Chi Minh City- City administration				
	System Integrator (s)					
	OEMs - Software					
	OEMs - Hardware					
	Installation Agencies					
	Other Agencies					
Communication Technology Used	Last Mile/Access/NAN/FAN					
	Backhaul/WAN					

Key Challenges faced during project implementation (if any)					
How the above challenges were overcome					
Benefits to Customers	• Electricity to classrooms from solar energy • Reduction in CO_2 emissions by 1.75 tonnes/year • Energy savings • Cost Reduction- Reduction in monthly bills				
Benefits to Utility	• Develop Renewable energy resources • Meeting the existing demands • Generating investments • 9.6 kWh/day electricity generation from solar energy • Community awareness				
Innovation factor					
Potential for replication/larger roll out	Project can be a model for private investments in the renewable energy sector which is still not developed in Vietnam Increasing the purchasing power of poor Vietnamese people in future through cost reduction Targeting proportion of production of electricity from renewable energy upto 4.5% by 2020 and 6% by 2030				
Business Case					
Any other important point					
Overall Rating of the Project	Good Success	Moderate Success	Technologies Demonstrated successfully; but no business case for larger roll out	All features of the project did not work as envisaged	None of the features of the project work as envisaged
		✓			

List of Other Smart Grid Projects in Europe