

The Worldwide Smart Grid Market in 2011: A Reality Check and Five Year Outlook Through 2015

Volume 1: Global Survey of Utilities and Policy Makers / Mid-2011 Utility Investment Survey and Analysis / Smart Grid Opportunity Analysis

SAMPLE

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List of Topics Addressed In This Report*PUC Survey*

1a. Do/Will you require utilities to include a Dynamic Pricing model as part of their plan to install smart meters?

1b. If yes, which model will be used

1c. Which customer groups are affected? Check all that apply

1d. If you have authorized a pilot program for utilities to gauge customer acceptance of Dynamic Pricing models, please tell us how we can access the results of the program.

1e. If you have approved a “non-pilot” Dynamic Pricing rate schedule for any utilities, please identify those utilities. Also, please briefly identify any special provisions (e.g. opt out, etc) that are included.

2a. Do you have any conditions that must be met by utilities in order for them to receive approval to spend self funded Smart Grid money?

2b. If yes, which programs are affected?

2c. Briefly describe the conditions

2d. Condition applies to Capital Expenditures for

2e. Condition applies to O&M expenditures for

2f. Condition does not distinguish between capital and O&M

3a. Do/Will you require utilities to include renewable energy sources (solar, wind, bio-fuels, etc.) as part of their smart grid plans?

3b. If yes, please identify the renewable energy sources that are required or direct us to the appropriate PUC order(s).

4a. Will you require utilities to offer consumers a separate rate schedule for their Plug In Electric Vehicle (PEV) Program?

4b. Is this rate part of a pilot program?

Utility Survey

1. Are smart meters part of your utility's smart grid plan?
- 2a. Is Dynamic Pricing an integral part of your utility's smart meter implementation strategy?
- 2b. Has your utility conducted a pilot program (or is currently conducting a pilot program) to determine customer acceptance of a Dynamic Pricing model?
- 2c. Which pricing models are currently being offered in the pilot program, or are being planned?
- 2d. Which customer groups have participated or will participate in the pilot?
- 2e. When does your utility expect to have an approved full deployment Dynamic Pricing tariff available for the following
- 2f. Please provide the approximate number of smart meters that are currently fully deployed and estimate the total number of smart meters you anticipate being fully deployed by the end of 2013.
- 3a. Does your utility currently have Load Management (LM) / Demand Response (DR) programs in place?
- 3b. What programs do/will you offer? Indicate "D" for "doing now", "W" for "will offer", "N" for "no plans".
- 3c. Has your utility's implementation of smart grid initiatives provided opportunities for your LM/DR programs to expand?
- 3d. Are your LM/DR programs jointly utilizing any communication platforms with smart grid technology (e.g. using smart meter ZigBee to communicate with control switches)?
4. Is your utility considering a business venture into Home Area Networking or will you be a provider of usage data to others that provide HAN services to enhance customer engagement and improve your energy efficiency efforts?
- 5a. In your opinion, to-date, which smart grid initiatives have provided your utility with the greatest operating efficiencies for the investment? Please rank (1=most efficient, 6=least efficient) using each # only once.
- 5b. By YE 2015, which smart grid initiatives does your utility plan to implement through a pilot or full deployment?
- 5c. To-date, which drivers are behind the success of your utility's smart grid initiatives? Check all that apply.
- 5d. In your opinion, which ONE of the smart grid initiatives implemented by your utility has been slowest to develop?
- 5e. What do you attribute the reasons for the delay in implementation? Check all that apply.
- 5f. With regard to investing in the smart grid within your peer group (i.e. similar size/type), please provide your opinion on your utility's standing (Choose only ONE).
- 5g. Compared to your capital 2011 smart grid expenditures, does your utility expect an overall increase or decrease in these expenditures from 2012 through 2015?
- 6a. Does your utility plan on investing in Vehicle to Grid (V2G) technology
- 6b. Does your utility expect to implement a V2G pilot project?
- 6c. Does your utility plan on investing in Vehicle to Building (V2B) technology?
- 6d. Does your utility expect to implement a V2B pilot project?

Purpose

The purpose of this study is to determine market trends and usage patterns for various smart grid technologies and initiatives using the “facts on the ground” such as the implementation of electricity pricing models, demand response programs, and current/future smart meter deployment.

Methodology

The facts reported in this study are based on two surveys sent out by Newton-Evans over the course of the first and second quarters of 2011.

The first survey queried U.S. State Public Service Commissions, Policy Makers and Utility Regulatory Authorities on smart grid policy topics such as the implementation and type of dynamic pricing, requirements for renewable energy resources, rate schedules for plug-in vehicles, and other aspects. Responses were received from 41 of 51 utility commissions contacted. Additional secondary research on regulatory agencies outside the U.S. was also conducted to supplement this. There is some regulatory information concerning smart grid initiatives from Brazil, China, India and Mexico included in this volume.

The second survey queried electric utilities worldwide. Similar to the PSC survey, the utility survey also addressed plans for smart meters and associated dynamic pricing plans, the possibility of vehicle-to-grid (V2G) and/or vehicle-to-infrastructure, types of customer groups affected by pilot programs, etc. The survey also inquires into plans for and current implementations of smart grid technologies and features such as distribution automation, demand response and load management, smart meters, substation automation, SCADA, FDIR, home area networks, etc., in addition to the key drivers for success behind current initiatives. Utilities were also asked to identify which smart grid initiatives were slowest to develop and to indicate the reasons for this slow implementation. Responses were received from 112 electric utilities in 31 countries, representing approximately 150 million electricity end users.

List of PSC's who participated in our survey:

State 2010 Census Population

AL	4,779,736
AR	2,915,918
AZ	6,392,017
CA	37,253,956
DE	900,877
FL	18,801,310
GA	9,687,653
HI	1,360,301
IA	3,046,355
ID	1,567,582
IL	12,830,632
KS	2,853,118
KY	4,339,367
MA	6,547,629
MD	5,773,552
ME	1,328,361
MI	9,883,640
MO	5,988,927
MS	2,967,297
MT	989,415

State 2010 Census Population

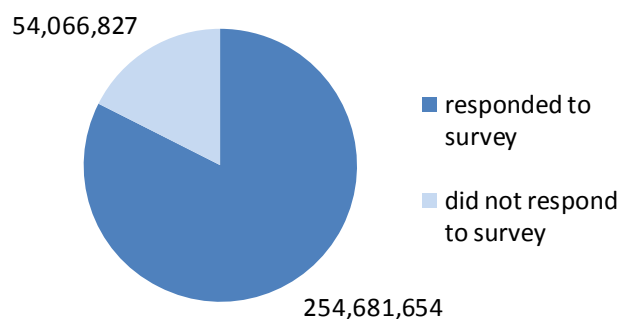
NC	9,535,483
ND	672,591
NE	1,826,341
NH	1,316,470
NJ	8,791,894
NV	2,700,551
NY	19,378,102
OH	11,536,504
OK	3,751,351
OR	3,831,074
PA	12,702,379
RI	1,052,567
SC	4,625,364
SD	814,180
TN	6,346,105
UT	2,763,885
VA	8,001,024
WA	6,724,540
WI	5,686,986
WV	1,852,994
WY	563,626

Did not participate:

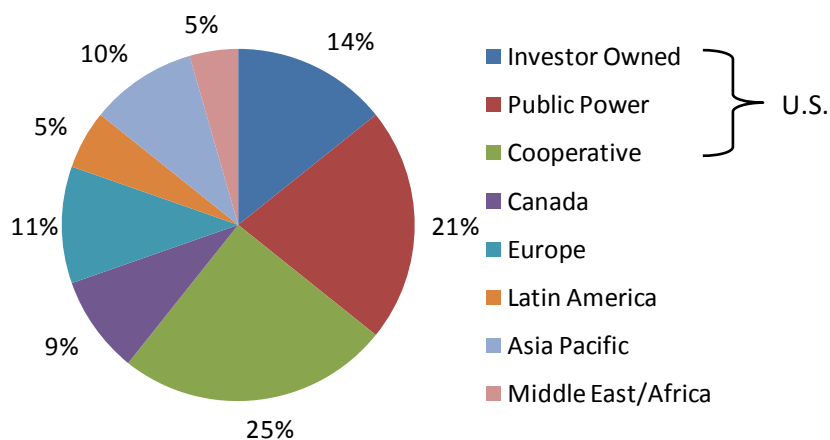
State 2010 Census Population

AK	710,231
CO	5,029,196
CT	3,574,097
DC	601,723
IN	6,483,802
LA	4,533,372
MN	5,303,925
NM	2,059,179
TX	25,145,561
VT	625,741

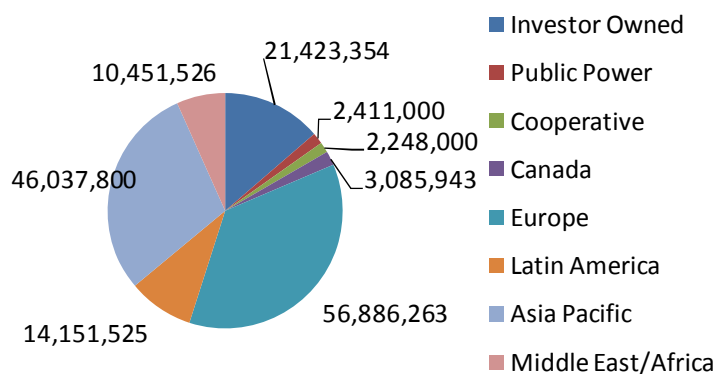
U.S. Population Represented In This Survey by Responding PSC's and Regulatory Agencies



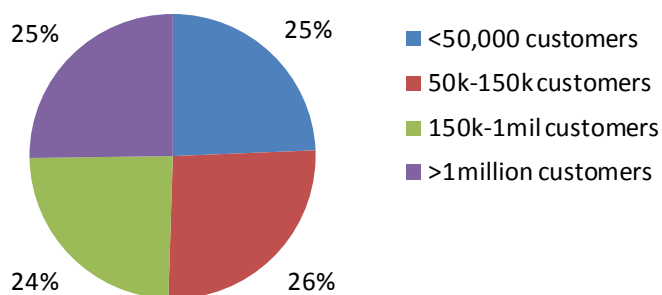
Percentage of Utility Respondents By Type of Utility



Number of Utility Customers Represented by Type of Utility



Percentage of Utility Respondents by Customer Size



Countries represented in the Utility survey:

Argentina
 Australia
 Bahamas
 Brazil
 Canada
 China
 Colombia
 Côte d'Ivoire
 Czech Republic
 Denmark
 Ecuador
 Finland
 Germany
 Greece
 Hungary
 India
 Ireland
 Japan
 Liechtenstein
 New Zealand
 Philippines
 Portugal
 Puerto Rico
 Saudi Arabia
 South Africa
 Spain
 Taiwan
 Thailand
 U.S.
 United Kingdom
 Zambia

Newton-Evans thanks the following utilities for participating in our survey:

U.S. Investor-Owned Utilities

Baltimore Gas & Electric
 Central Hudson G&E
 Central Vermont PSC
 Cleco Power LLC
 Commonwealth Edison
 Empire District Electric
 Oklahoma Gas & Electric
 Otter Tail Power Company
 Pepco
 Progress Energy Carolinas
 Progress Energy Florida
 PSE&G
 Public Service Co. of NH
 Southern Cal Edison
 Tucson Electric Power
 Westar Energy Inc.

U.S. Public Power Utilities

Alcoa, TN
 Anaheim, CA
 Anoka, MN
 Austin Energy
 Benton PUD
 Cleveland Utilities (TN)
 Clinton Utilities Board
 Dickson Electric System
 Eugene Water & Electric Bd.
 High Point, NC
 Johnson City Power Board
 Lakeland Electric
 Lansing Board of W&L
 Lenoir City Utilities Board
 Nashville Electric Service
 Owensboro Municipal Utilities
 Riverside Public Utilities
 Rochester Public Utilities
 Sacramento M.U.D.
 Salem Electric Dept.
 Santa Clara/Silicon Valley
 Springfield Utility Board
 St. Charles, IL
 Wisconsin Rapids WWLC

U.S. Cooperative Utilities

Blue Ridge EMC
 Cobb EMC
 Connexus Energy
 Cuivre River Electric Coop.
 Delaware Electric Coop.
 EnergyUnited EMC
 Hart EMC
 Iowa Lakes Electric Coop.
 Jackson EMC
 La Plata Electric Association
 Medina ECI
 Mid-Carolina ECI
 Middle Tennessee EMC
 Midwest Energy Coop.
 Mohave ECI
 Northeastern REMC
 Northern Virginia Electric Coop
 Pickwick Electric Cooperative
 Snapping Shoals EMC
 South Central Power Co.
 South Kentucky RECC
 Southeastern Electric Coop.
 Southern Maryland Electric Coop.
 Talquin Electric Coop.
 Tri-County Electric (TN)
 Verendrye Electric Coop.
 Wake Electric
 Withlacoochee River Electric Coop.

Canada

Enwin Utilities
 Fortis BC
 Hydro One Networks
 Hydro Ottawa
 Hydro-Sherbrooke
 Manitoba Hydro
 Maritime Electric
 Newfoundland Power
 Oakville Hydro
 PowerStream Inc.

Europe

CEPS	Czech Republic
EDP Distribuição	Portugal
ESB Ireland	Ireland
Fingrid Oyj	Finland
Greece Public Power Corp.	Greece
Iberdrola	Spain
Jersey Electricity	United Kingdom
Liechtensteinische Kraftwerke	Liechtenstein
MAVIR	Hungary
Oulun Energia	Finland
RWE Deutschland AG	Germany
SEAS-NVE	Denmark

Latin America

AES Eletropaulo	Brazil
Bahamas Electricity Corporation	Bahamas
EDENOR	Argentina
Emelgur SA	Ecuador
ISA	Colombia
Puerto Rico EPA	Puerto Rico

Asia Pacific

China Light & Power	China
ElectraNet	Australia
Ergon Energy	Australia
Essential Energy (Country Energy)	Australia
Hongkong Electric Company Ltd.	China
Kansai Electric Power	Japan
Meralco	Philippines
Taipower	Taiwan
Tata Power Company Ltd.	India
Thailand Provincial Elec. Auth.	Thailand
WEL Networks	New Zealand

Middle East/Africa

Cape Town Electricity Services	South Africa
Compagnie Ivoirienne d'Electricite	Côte d'Ivoire
Eskom	South Africa
Saudi Electricity Company	Saudi Arabia
ZESCO Ltd.	Zambia