

Global CAPEX and O&M Expenditure Outlook for Electric Power T&D

Investments: 2013-2014

Funding Outlook for Smart Grid Development
Based on Summer 2013 Survey Results



©July 2013

SAMPLE

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Introduction

This report is Newton-Evans Research Company's 5th survey-based study of planned capital expenditures and operations & Maintenance budgets related to worldwide smart grid and T&D spending. The 2013 survey was conducted between April and July, and out of the international and North American utilities contacted, Newton-Evans received 85 responses from 30 countries. The survey results are the basis for the narrative summaries, charts and tables of information contained in this report. This report is a follow up to four previous studies on CAPEX and O&M budgets published in December 2008, June 2009, January 2010 and April 2011. The December 2008 report included survey data collected from 112 utility officials; June 2009 had 118, January 2010 had 93, and April 2011 had 108 responses. Findings from all of these earlier surveys are compared with this new round of findings throughout this report as applicable.

In addition to requesting information regarding capital investment and operations and maintenance budgets for 2013 and 2014, the newest survey also queried respondents on five possible rationales for budget changes: Regulatory Mandates, Smart Grid Initiatives, Government Stimulus Bills, Economic Outlook/Revenue Forecast, and Stimulus project completed/funding depleted. Information on planned capital and O&M expenditure ranges for T&D activities were solicited at the end of the survey.

The findings continue to support a view marked by moderate growth for electric power T&D CAPEX experienced since 2010, but continuing low growth for OPEX. We anticipate good growth during 2013 and into 2014.

The advanced economies of the world remain generally upbeat regarding their CAPEX budget outlooks. Among North American utilities there remain substantial differences in budget outlooks based upon the type of electric utility responding to the survey (investor-owned, public, and cooperative. Importantly, international utilities reported a higher rate of plans to move ahead with smart grid initiatives than did their colleagues in the North American power industry. Please see page 109 "*Final Viewpoint: Global Economic Outlook and the Findings of the Newton-Evans' CAPEX Study of Electric Power T&D Investment*" for additional economic insights and observations into the forecast for planned T&D investments.

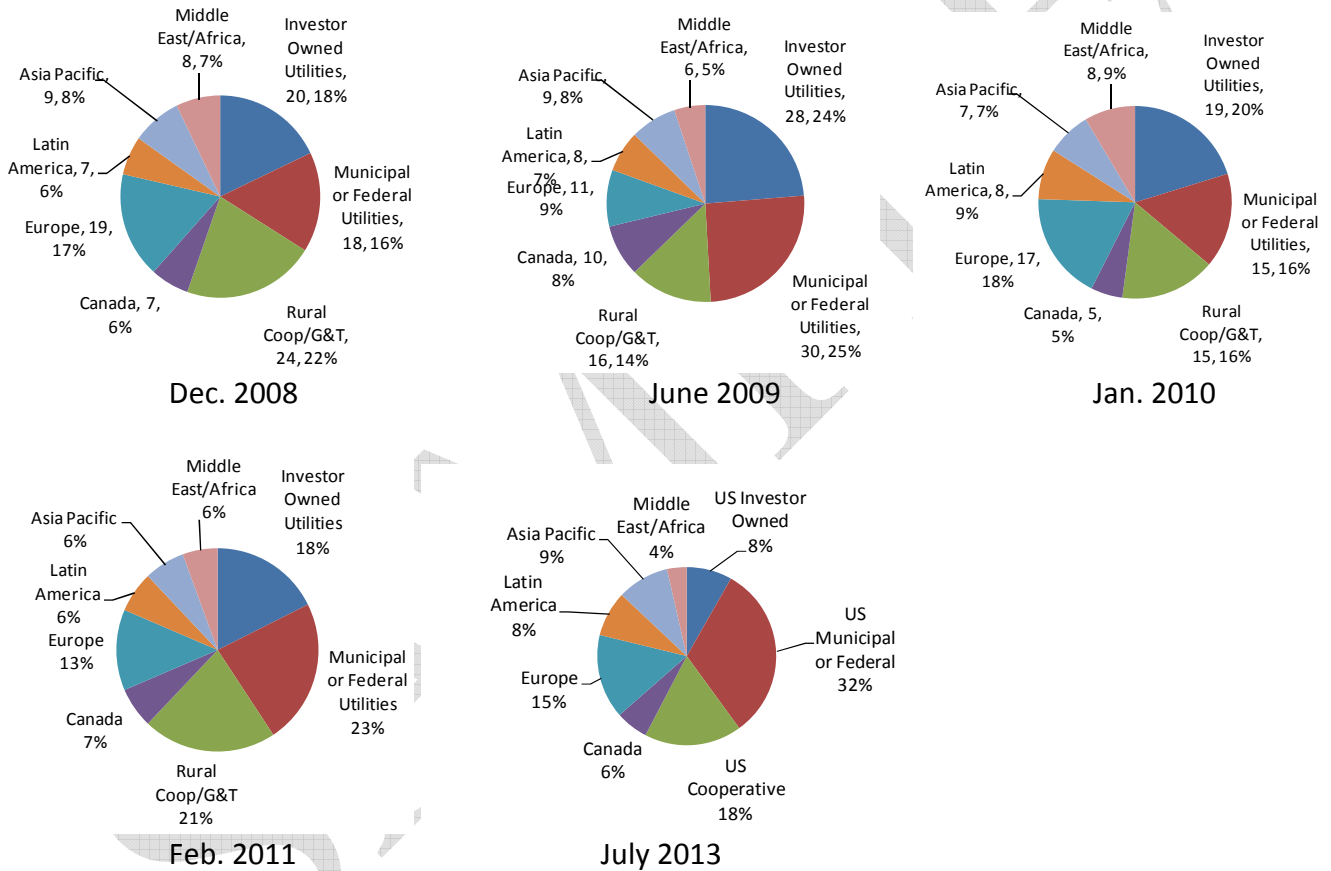
The latest survey was directed to upper level managers and senior staff directly involved with transmission and distribution planning, as these officials were most likely to be involved in some or all aspects of formulating the T&D budget and planning for smart grid initiatives within the utility.

The 2013 Newton-Evans survey was designed to obtain information from a T&D operations and engineering perspective. Budget information requests were made for the following: SCADA, EMS and DMS Outlook, Substation Automation and Integration, Protection and Control,

Distribution Automation, Transmission Infrastructure, Distribution Infrastructure, Automated Meter Reading and Advanced Metering Infrastructure, and Cybersecurity on the Operations and Enterprise level.

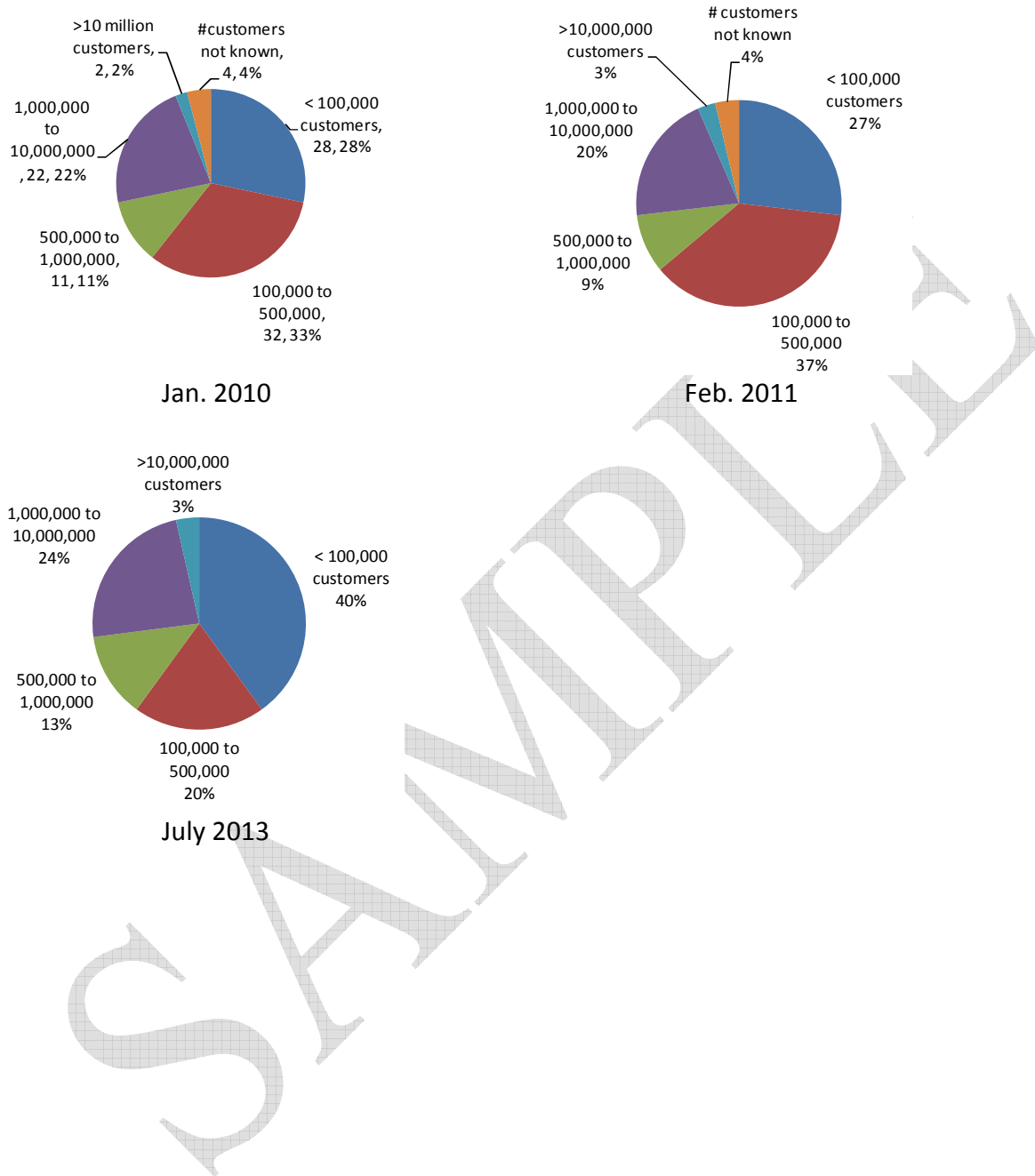
Figures 1-1 and 1-2 provide the reader with information concerning the make-up of the utility respondent base for this survey. The representative sample for this new study did not vary by more than a few percentage points in any category when compared to participation in the earlier surveys.

Figure 1-1. Sample Distribution by Type and Region of Utility



North America: Investor Owned, Municipal or Federal, Rural Coops & G&Ts, Canada
 International: Europe, Latin America, Asia Pacific, Middle East/Africa

Figure 1-2. Sample Distribution by Size of Utility (estimated number of customers/end users.)



EMS, SCADA and DMS

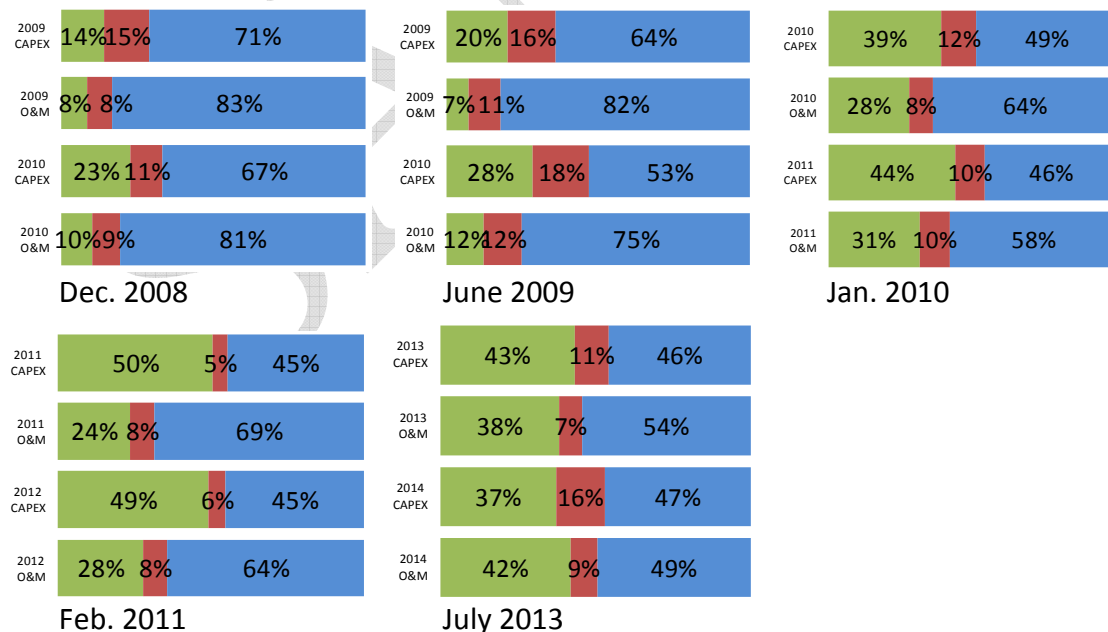
July 2013 Observations: Forty-three percent of the utility respondents in the new study indicated that CAPEX for control systems will increase in 2013 over 2012. International respondents were more positive on CAPEX increases than were their North American counterparts (55% to 37% seeing an uptick in CAPEX here).

April 2011 Observations: Half of all responding utilities indicated that Capital Expenditures for control systems in 2011 and 2012 will increase over the amounts forecasted in 2010. While fewer and fewer utilities show a CAPEX decrease, O&M budgets for EMS, SCADA and DMS are not likely to increase as much as had been reported in the earlier 2010 survey.

January 2010 Observations: The outlook is much brighter relative to the findings reported in both earlier studies. 39% reported an increase expected in the 2010 CAPEX budget for control systems. Only 12% (11 utilities) reported a decrease in planned spending here. Currently, the outlook for 2011 is even more positive among these respondents. For O&M there is less of a change noted. While 28% anticipate increased budgets this year, 64% see the same level of spending and eight percent reported a decreased level of O&M spending.

June 2009 Observations: In the previous study, only 14% of utilities had indicated an increase in 2009 CAPEX compared with 20% in the new survey. 2010 CAPEX plans went up as well to 28% of utilities planning an increase as of June 2009 compared to 23% reported in December of 2008.

Figure 1-3. Budget Outlook for EMS, SCADA and DMS Increase Decrease No Change



SECTION I

Section one of the report provides details on the seven categories of T&D budgets related to automation and infrastructure budgets for 2013 and 2014. The phrasing of the key question providing information in the section was as follows:

“Using 2012 as a baseline, please compare your expenditures in 2012 to your planned expenditures in 2013 and 2014 for the following categories”

The categories included:

- A. SCADA/EMS/DMS Systems
- B. Substation Automation/Integration
- C. Protection and Control
- D. Distribution Automation
- E. AMR/AMI
- F. Transmission Infrastructure
- G. Distribution Infrastructure
- H. Operational Cybersecurity
- I. Enterprise Cybersecurity

A. SCADA/EMS/DMS Systems

1. 2013 CAPEX Plans

July 2013 Observations: [SAMPLE] respondents provided their outlook on CAPEX for T&D control systems. We expect the global market values for operational control systems to reach at least \$[SAMPLE] and possibly be as high as \$[SAMPLE] in 2013. Importantly, [SAMPLE] % of international utilities indicated a likely increase in CAPEX compared with only [SAMPLE] % of North American utilities.

April 2011 Observations: Half of all the utilities responding to this survey reported that CAPEX spending for control systems will increase in 2011. This is 11% higher than was reported last year. This increase is more likely to show up in U.S. investor owned utilities, sixty-seven percent of which indicated that their CAPEX budget for control systems would increase. Out of nine transmission-only utilities, only three indicated an increase while 1 reported a decrease. Note that none of the “distribution-only” utilities reported any planned decreases.

January 2010 Observations: Overall, the 92 respondents to this survey reported significant changes in their outlook for control systems budgets. Thirty-nine percent reported likelihood of increases, with only 12% forecasting lower spending approvals. About one-half saw no change in January of 2010. International utilities were more likely to report increases here than were their North American counterparts (by 45% to 30%).

Of 54 North American replies, 16 (30%) reported increased CAPEX budgets for control systems in 2010. Thirteen percent replied that budgets were down from the prior period. Investor-owned utilities (IOUs) and Canadian utilities were more likely to be reporting increased levels of CAPEX spending for control systems in 2010 than were their counterparts in public power or the electric cooperative communities.

Fifty-three percent of the 38 international utilities reported increased CAPEX budgets, with each of the four regions reporting by at least a 3:1 ratio for budget increases over budget decreases. The Asia-Pacific subgroup of seven respondents was relatively more likely to report increased CAPEX budgets for SCADA/EMS/DMS.

Seven of 14 “transmission only” utilities reported increases, with only one citing decreased CAPEX for SCADA/EMS and DMS. Nine of 21 distribution-only utilities reported increases, with four others stating lower CAPEX for 2010. Mixed T&D utilities were more likely to report no change in their CAPEX budget outlook for control systems.

June 2009 Observations: There were a total of 114 respondents to this section of the June survey. The Newton-Evans’ estimate for 2008 remained at \$525-575 million. The important

observation here is that the changes noted by respondents were more likely to be increases rather than decreases in CAPEX spending for control systems.

In North America, more respondents indicated some level of change in budgets for control systems than in the earlier study. An increase from 12% to 20% was noted among those who foresee increased CAPEX budgets, while 21% reported a decreased outlook compared with 17% in December 2008.

Increases in CAPEX budgets for control systems appear to be on the horizon for reporting sites in Asia-Pacific and Middle East/Africa countries. Less positive outlooks were reported from European and Latin American utility officials.

2011 CAPEX

SCADA/EMS/OMS

Global Summary

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

North America

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

International

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

A. SCADA/EMS/DMS Systems Outlook

2. 2013 O&M Budget Outlook

July 2013 Observations: [SAMPLE] percent of all respondents expect 2013 O&M budgets to be increased over last year. International utilities were [SAMPLE] such increases by [SAMPLE] % to [SAMPLE] % for North American respondents.

April 2011 Observations: Slightly less than one quarter of all 102 respondents reported an increase in O&M spending for 2011. Similar to 2010, 8% of all respondents indicated a decrease.

The overall picture for North American utilities looks the same had been reported in 2010, with just under one quarter indicating an increase, and most of that coming from IOUs. However, 7 out of 22 Cooperatives surveyed also said their O&M budgets were on the rise for 2011.

Just over one fourth of International utilities reported plans for an increase in their 2011 O&M spending levels. Eighty-five percent of European respondents said there would be no change from previous spending levels, but none of the utilities surveyed in Latin America or Asia Pacific reported any planned decreases in O&M budgets for control systems.

January 2010 Observations: More than one quarter of the 86 respondents indicated an uptick on O&M spending for 2010. Eight percent replied that the budget had been cut by some amount. Nearly two-thirds reported no change from the budget level that had been planned early in 2009 for 2010.

Less than one quarter of the North American respondents indicated growth in O&M budgets. IOUs were somewhat more likely to indicate growth than were their colleagues in other sub-segments, but three of the IOUs also reported decreased levels of spending.

More than one third of the international respondents indicated that O&M budgets for control systems had increased somewhat for 2010. Most of the European respondents replied with “no change” to the O&M budget.

Transmission utilities were more likely than either distribution only or mixed T&D utilities to cite an increased level of O&M budgets for their control systems. None of the transmission entities reported any decrease.

June 2009 Observations: Not much change was noted on this summary level, with 112 reporting utilities from more than 30 countries. There was a three percent increase in those viewing a decreased O&M budget for control systems during the remaining months of 2009.

The increases in IOUs reporting a cutback in 2009 control systems O&M spending is significant (from 16% six month ago to 25% in June) as were similar reports from public utilities and from cooperatives.

The drop in those citing an increase in O&M budgets for control systems in 2009 was noted, as was the increase in those anticipating no change in the near term.

2013 O&M

SCADA/EMS/OMS

Global Summary

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

North America

	increase	decrease	no change	total
Investor Owned Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Public Power Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Rural Electric Coop	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Canada Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
North America Total	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

International

	increase	decrease	no change	total
Europe	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Latin America	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Asia Pacific	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Middle East / Africa	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
International Total	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

A. SCADA/EMS/DMS Systems

3. 2014 CAPEX Plans

July 2013 Observations: [SAMPLE] percent of all respondents to this question see another increase in CAPEX from 2013-2014, including [SAMPLE] % from international utilities and [SAMPLE] % of North American respondents.

April 2011 Observations: Almost half of all survey respondents this year reported an increase in CAPEX for control systems in 2012. This is up 5% from the previous study. More of this growth is noticeable internationally, where 5 out of 7 utilities in the Asia Pacific region and 4 out of 7 in Latin America reported an increase.

In North America, 61% of IOUs said CAPEX budgets for control systems would go up. Approximately the same proportion of Cooperatives also indicated an increase. Three IOUs reported a decrease in 2012 CAPEX budgets for control systems.

January 2010 Observations: More than 40% of the 91 respondents to 2011 CAPEX investments indicated that the current outlook was for some level of additional increases. Only 10% indicated a downward trend, while 46% thought in January 2010 that 2011 CAPEX for control systems would remain steady.

Nearly two-thirds of the 19 IOUs participating in this part of the survey reported plans for higher levels of investments for control-center bases systems. Only three of 54 North American respondents believed that CAPEX budgets for next year would be cut.

The respondents from more than 30 countries, representing 37 major and mid-size utilities were likely to continue to point to an increase in the level of CAPEX funding planned for 2011. This was especially true in two regions (AP and MEA) wherein 10 of 14 respondents indicated a likely increase in CAPEX for control systems.

Distribution-only utilities were the sub-group most likely to report planned CAPEX changes either higher (10 of 20 respondents) or lower (3 of 20 respondents).

June 2009 Observations: More observers reported changes – *both positive and negative* – to 2010 CAPEX budgets than was reported in the earlier study.

Overall, there were more officials indicating decreases in CAPEX budgets for next year than there were those reporting expected increases for control systems. Just over one quarter of IOUs indicated an increase in CAPEX for SCADA/EMS/DMS in 2010; this is up from 16% reported in the Dec. 2008 study.

There were 42 international utilities replying to this section of the survey. Note that only among the North American segment were there significant changes indicating cutbacks in CAPEX budgets for control systems anticipated in 2010. Asia Pacific and MEA respondents were much more positive in their views for CAPEX budgets for 2010.

2014 CAPEX

SCADA/EMS/OMS

Global Summary

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

North America

	increase	decrease	no change	total
Investor Owned Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Public Power Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Rural Electric Coop	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Canada Utility	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
North America Total	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

International

	increase	decrease	no change	total
Europe	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Latin America	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Asia Pacific	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
Middle East / Africa	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
International Total	[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
	[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

A. SCADA/EMS/DMS Systems

4. 2014 O&M Budget Outlook

July 2013 Observations: [SAMPLE] percent of respondents indicated expectations for CAPEX increases for control systems in 2014, including [SAMPLE] % of international respondents and [SAMPLE] % of North American respondents.

April 2011 Observations: The overall picture for 2012 O&M spending on control systems is similar to the 2010 findings. Twenty-eight percent of all survey respondents anticipate an increase, while sixty-four percent said there would be no change in O&M amounts from what was forecast in 2010.

In North America, just over one quarter indicated control system O&M increases in 2012. Public Power utilities showed the least amount of potential growth, with just 4 out of 25 reporting an increase and 80% reporting “no change.” Three IOUs indicated there would be a decrease in 2012 O&M spending for control systems.

Internationally, 10 out of 31 utilities said they expect an increase in control system O&M budgets for 2012. Only one European utility reported an increase, while the majority of utilities in Latin America and Asia Pacific said an increase was likely.

January 2010 Observations: The majority (58%) of the 86 replies received indicated no change to the anticipated 2011 O&M budget for control systems. There was a three-to-one rate of those who foresee increases over decreases in the 2011 budget.

IOUs were more upbeat compared with their North American colleagues in other utilities concerning possible increases in the 2011 O&M budget for control systems. Most of the other subgroups reported that the budget here would remain at current levels.

Thirty-eight percent of the 34 international utilities replying indicated increases were likely for 2011 O&M spending on control systems. Only five suggested a likely drop in the budget allocation.

Transmission-only utility officials were somewhat more likely to indicate an increase in the 2011 O&M budget for control systems (43%) than were their counterparts at distribution-only utilities (37%) or mixed T&D utilities (26%).

June 2009 Observations: Relatively minor changes in responses were noted in the newer survey.

The IOUs, public power and cooperatives reporting here were more likely to see a decrease in O&M budgets for control systems next year than was reported in the earlier study. However, nearly 80% reported “no change” from earlier plans.

Relatively small changes were reported, with more positive outlooks in the MEA and Asia Pacific regions than reported from respondents in North America, Latin America and Europe.

2014 O&M

SCADA/EMS/OMS

Global Summary

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

North America

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

International

increase	decrease	no change	total
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%
[SAMPLE]	[SAMPLE]	[SAMPLE]	TOTAL
[SAMPLE] %	[SAMPLE] %	[SAMPLE] %	100%

SECTION IV

This section of the report looks at plans for smart grid pilot projects. More specifically, electric utilities were asked two yes/no questions:

“Are you currently self-funding a smart grid pilot project?”

and:

“Are there plans to start a new smart grid pilot project?”

This was followed by a multiple choice, “check all that apply” question asking utilities to select the area of focus for their pilot projects: Distribution Automation, Substation Automation, Smart Meters, Wireless Area Protocol, Synchrophasors, Demand Response, or “Other.”

Twenty-six percent of all utilities surveyed said they are currently self-funding a smart grid pilot project. Public Power Utilities in the U.S. and utilities in the Middle East/Africa region are more likely to be currently involved in a pilot project. Only one out of nine European utilities is self-funding for smart grid pilot projects.

Overall, 53% of respondents were planning to start a new pilot project. Of those, an overwhelming majority indicated 2013 as a start date.

July 2013 Observations: This year [SAMPLE] % of the utilities we surveyed said they are currently funding a smart grid project by themselves, and 62% said they have plans to start a new smart grid project between 2013 and 2015. [SAMPLE] have plans to start a new project, but [SAMPLE] indicated they are funding it themselves.

Across North America, [SAMPLE] seems to be a popular area of focus. [SAMPLE] focus on [SAMPLE]; [SAMPLE] % of Public Power Utilities, [SAMPLE] % of Cooperatives, and [SAMPLE] % of Canadian utilities. Internationally, utilities in Latin America and Asia Pacific favor [SAMPLE] as an area of smart grid focus.

April 2011 Observations: Only [SAMPLE] % of 87 utilities responding to this question reported that they are self-funding a smart grid pilot project. North American utilities were more likely to be doing this (30%) than International utilities (17%). Ten out of twenty-two Public Power utilities are currently self-funding a pilot program. Only 11% of IOUs are in the midst of a pilot project, but 67% of them have plans to start one most likely by year-end 2011.

Internationally, more utilities have plans for future pilot projects down the road and fewer (17%) are currently self-funding a program. Only one European utility we surveyed is currently

involved in a smart grid pilot project, but three out of four utilities in the Middle East/Africa region are currently self-funding a pilot program.

When asked “what year will the pilot take place?” 84% of all utilities surveyed indicated 2011 as a start date. Five other utilities mentioned 2012.

As a follow up question, respondents were asked to “check all that apply” for the following areas of smart grid that are or will be part of their pilot program: distribution automation, substation automation, smart meters, wireless area protocol, synchrophasors, demand response, or “other.” [SAMPLE] was the most commonly indicated aspect of smart grid to be implemented in pilot projects. Seventy percent of survey respondents noted that their pilot projects currently involve or will involve [SAMPLE]. The next most common was [SAMPLE]; 58% of utilities indicated that their pilot program does or will involve smart meters. [SAMPLE] was the third most popular choice, with 39% of all 74 utility respondents saying [SAMPLE] is or will be a part of their smart grid pilot. It is important to note that over one quarter of all respondents said [SAMPLE] was integral to their pilot project.

The group of responses by North American utilities reflects the same pattern noted overall; [SAMPLE] is heavily involved, followed by [SAMPLE] and then [SAMPLE]. None of the North American utilities responding to this survey indicated [SAMPLE] implementation in pilot programs. All of the Canadian utility respondents and 73% of IOUs reported that [SAMPLE] was part of their focus. Just over 50% of public power utilities selected [SAMPLE]; more public power utilities (67%) indicated they were [SAMPLE] than any other category of smart grid topics.

Out of all 21 international utility respondents, just over three quarters indicated [SAMPLE] as a part of their smart grid pilot, while 71% said [SAMPLE] also a focus. Two out of the three utilities in the Middle East/Africa region that answered this question said [SAMPLE] were part of their projects. Utilities in Europe and the Asia Pacific region seemed more likely to be implementing [SAMPLE] in pilot projects.

SECTION V

CAPEX and O&M Spending Levels for T&D: Insights from the Survey Respondents

For the third time in this series of tracking studies, we requested utility officials to provide some fairly broad indication of spending on transmission and distribution topics (automation, infrastructure or all of T&D). About 75% of the survey participants provided at least some information concerning budget ranges for T&D investments (CAPEX and O&M budgets).

The surveyed utilities in this year's study encompassing retail activities (and some providers of electricity to retailers) that amount to the equivalent of 150 million customers – about a 9% sample of the global estimated number of electric power consumers of about 1,600 million (Newton-Evans' estimate).

Based on the data reported by this sample, Newton-Evans Research continues to believe that its range estimates of total T&D CAPEX spending are in the "right ballpark" of \$[SAMPLE] worldwide, with the variance being large because of the continuing economic volatility in some parts of the world and lack of transparency in reporting from some state-owned utilities. This would translate into total electric power industry CAPEX values of better than \$[SAMPLE], with [SAMPLE] spent on power plant construction, retrofits and upgrades. Keep in mind that total annual sales in the global electric power industry are now likely to have exceeded \$[SAMPLE] as of 2012, and with some countries subsidizing electric power, the true "retail value" of revenues is very likely to be somewhat higher, perhaps as much as 15-20% higher.

Newton-Evans' staff also reviewed the total CAPEX budgets for many of these respondent utilities. We believe that T&D CAPEX remains in the 10%-20% range for many of the sample "vertically-integrated" utilities, wherein the bulk of spending is for power generation (infrastructure, operations, automation). Clearly, for *T&D-only* utilities, the T&D combined CAPEX percentage will be approaching 100% of the available CAPEX budget.

Summary of CAPEX investments and outlook for category-specific spending in 2013

Smart Grid Component and Infrastructure Category	Increase (2013 to 2014)	Decrease (2013 to 2014)	No Change (2013 to 2014)	North American 2013 Investment Range (MUSD)	Global 2013 Investment Range (Millions of USD)
EMS/SCADA	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Substation Automation & Integration	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Protection & Control Relays	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Distribution Automation & Field IEDs	%	%	%	[\$SAMPLE]	[\$SAMPLE]
A M I	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Transmission	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Distribution	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Cybersecurity – Operations	%	%	%	[\$SAMPLE]	[\$SAMPLE]
Cybersecurity - Enterprise	%	%	%	[\$SAMPLE]	[\$SAMPLE]

We wish to thank the following electric utilities from 30 countries who allowed their officials to participate in this survey:

North America

Canada	FortisBC Inc.	USA	Loup Public Power District
Canada	Hydro-Sherbrooke	USA	MidAmerican Energy
Canada	London Hydro	USA	Mid-Carolina ECI
Canada	Maritime Electric	USA	Middle Tennessee EMC
Canada	PowerStream Inc.	USA	Midwest Energy Inc.
USA	Alcoa, TN	USA	Nashville Electric Service
USA	Austin Energy	USA	North Little Rock
USA	City of Riverside Public Utilities	USA	NOVEC
USA	Clark Public Utilities	USA	NPPD
USA	Cleveland Utilities	USA	Orange and Rockland
USA	Clinton Utilities Board	USA	Otter Tail Power Company
USA	Cowlitz PUD	USA	Pickwick Electric Coperative
USA	Dahlberg Light & Power Co.	USA	Portland General Electric
USA	Duck River EMC	USA	Progress Energy Carolinas
USA	east ky power	USA	PSEG
USA	EnergyUnited	USA	Roseville, CA
USA	Eugene Water and Electric Board	USA	Rutherford EMC
USA	Farmington Electric (NM)	USA	SalemElectric Dept.
USA	Frankfort Plant Board	USA	Salt River Project
USA	Glendale Water & Power	USA	San Diego Gas & Electric
USA	High Point NC	USA	Santa Clara, CA
USA	Holy Cross Energy	USA	SMEPA (South Miss. EPA)
USA	Huntsville Electric	USA	SMUD
USA	Jackson EMC	USA	South Kentucky RECC
USA	kenergy corp	USA	Tennessee Valley Authority
USA	Lafayette Utilities System	USA	Empire District Electric Company
USA	Lenoir City Utilities Board	USA	United Power, Inc.

International

Argentina	Entidad Binacional Yacyreta
Australia	Essential Energy
Australia	Power and Water Corporation
Australia	Transend Networks Pty Ltd
Austria	Energie AG Netz GmbH
Brasil	AES Eletropaulo
Canada	FortisBC Inc.
Canada	Hydro-Sherbrooke
Canada	London Hydro
Canada	Maritime Electric
Canada	PowerStream Inc.
Costa Rica	Empresa Propietaria de la Red EPR
Czech Republic	CEPS, a.s.
Denmark	DONG Energy Power Distribution
El Salvador	AES El Salvador
Finland	Oulun Energia Siirto ja Jakelu Oy
Germany	LEW Verteilnetz GmbH
Greece	ADMIE S.A. (IPTO)
Guatemala	EEGSA
India	Reliance Infra
India	The Tata Power Company Limited, Mumbai
Ireland	ESB Networks
Malaysia	Sarawak Energy Berhad
Netherlands	TenneT
Norway	Statnett
Panama	ETESA
Philippines	Meralco
POLAND	ENERGA-OPERATOR SA
Portugal	REN
Puerto Rico	PREPA
Qatar	KAHRAMAA
Slovenia	ELES
South Africa	City of Cape Town
Switzerland	EKZ
Thailand	EGAT
ZAMBIA	ZESCO LTD