

EUCG

2014

Annual
Membership
Report



EUCGTM
Your Energy Information Source



EUCG Board of Directors

George W. Sharp | President
American Electric Power
1 Riverside Plaza, 20th Floor
Columbus, OH 43215
614-716-6933
gwsharp@aep.com

Kathy Shoopman | Vice President
Tennessee Valley Authority
1101 Market Street
Chattanooga, TN 37402
423-751-6590
akshirle@tva.gov

Evelyn Grant | Treasurer
Lower Colorado River Authority
6549 Power Plant Rd.
LaGrange, TX 78945
979-249-8381
egrant@lcra.org

Bill Bunker | Secretary
PG&E
20818 Black Ranch Rd.
Burney, CA 96013
530-351-3187
wxbr@pge.com

Stephen Thornton | Marketing Director
Duke Energy
Progress Energy Building – PEB 7
410 S. Wilmington St.
Raleigh, NC 27601
919-546-4186
stephen.thornton@duke-energy.com

Stephanie Maggard | Emerging Issues
Director
PG&E
PO Box 770000 Mail Code N11E
San Francisco, CA 94177
415-973-2812
sam6@pge.com

Chris Utracki | Hydroelectric Committee Chair
Ontario Power Generation
14000 Niagara Parkway ND2
Niagara on the Lake, ON L0S 1J0
Canada
905-357-0322 x 6004
chris.utracki@opg.com

Jesse Medlock | T&D Committee Chair
Oncor
115 W. 7th Street, Ste. 1023
Ft. Worth, TX 76102
817-215-6810
jesse.medlock@oncor.com

Ed Taylor | Fossil Committee Chair
Ohio Valley Electric Corporation
3932 US Rte. 23
PO Box 468
Piketon, OH 45661
740-289-7219
etaylor@ovec.com

David Ward, Jr. | Nuclear Committee Chair
Duke Energy
526 S. Church Street
Charlotte, NC 28201
704-382-4943
dr.ward@duke-energy.com

Jacque Fuller | IT Committee Chair
Energy Northwest
PO Box 968
Richland, WA 99352
509-377-8757
jfuller@energy-northwest.com

EUCG A global association of
utility professionals and member
companies which is recognized as
the electric energy industry source
for performance information.

It is with great pride that we write to you as the EUCG Board of Directors in this Annual Membership Report. 2014 marked EUCG's 41st year since its inception in 1973. In 2014, we built upon the strong foundation of our past and made great strides for the future.

We want to thank you, the membership of EUCG for our success. EUCG, as a non profit, exists to serve you. Through your active participation, your voice controls the products, programs, and services that we undertake and offer. We are amazed at the quantity and quality of work products that come out of all of the EUCG committees. For a relatively small organization, we accomplish a lot both at the committee level and EUCG at-large. It is always very fulfilling to see much of this work on display at our Spring and Fall workshops. The presentations, panel discussions, and keynote speakers keep getting better and better. Additionally, the networking that occurs among our members is as valuable as the information shared in the formal sessions.

In 2014, our membership grew to 116 member companies with a member retention rate of over 96%, including members lost due to industry consolidations. We had the largest attendance since before the financial crisis at both workshops. Financially, EUCG has the highest level of cash reserves ever, and is well within the operating ratios of associations of similar size. Our financial stability will allow us to continue to make prudent investments in member products, programs, and services, like continuing to upgrade the EUCG website, enhancing the workshop experience, increasing member communications such as this Annual Report, and continuing to provide the industry's best data and benchmarking studies.

2015 promises to be an active year for EUCG and its committees. While many of our member companies belong to multiple committees at EUCG, not all do. We encourage you to take a look at the work products in all of our committees that are highlighted in this report. I am sure that you will find that they have all of the products and programs that you enjoy in your committee. Your company will surely benefit from a broad membership in EUCG.

Thank you again for your continued support of EUCG and we look forward to many more years of serving you.

Sincerely,

Your EUCG Board of Directors

George Sharp
Kathy Shoopman
Evelyn Grant
Bill Bumker
Stephen Thornton
Stephanie Maggard
Chris Utracki
Jesse Medlock
Ed Taylor
David Ward
Jacque Fuller

Nuclear Power

Nuclear energy is by far the largest clean-air energy source and is also a reliable energy source which produces around 11% of the world's electricity. The average nuclear energy facility is online 90 per cent of the time, generating on-demand electricity around the clock. Nuclear energy is a secure electricity source that is not subject to changing weather or climate conditions, unpredictable fuel cost fluctuations, or over-dependence on foreign suppliers.

Continued production of safe, reliable, and cost-effective nuclear energy are the cornerstones of the nuclear industry. The EUCG Nuclear Committee's Mission supports these efforts by providing members with timely, relevant and comprehensive cost data, and the forum to network to resolve industry business operation financial issues to enable sustainable performance improvements in nuclear power.

In 2014 the EUCG Nuclear Committee accomplished the following initiatives, as directed by the group's strategic plan:

- 1. Organization Structure with External Oversight and Input:**
Build a robust organizational infrastructure for the EUCG NC that provides independent industry level oversight to validate and focus the Committee's work plan.

This was accomplished by implementing an organizational structure that included a Chief Nuclear Officer (CNO) sponsor and an ongoing Executive Committee to help validate and steer the strategies and work plans to deliver relevant and sustainable solutions for the membership and the industry.





2. Issue Resolution: Institute the discipline to identify, scope out, and test issues to ensure that they are relevant to driving greater efficiency and certainty in nuclear operations and aligned to the EUCG Nuclear Committee Vision.

This was accomplished by developing a formal identification and resolution process by which members can present pertinent issues for review and possible adoption by the committee. Those issues that are approved are then addressed by a chartered task team with key milestone deliverables.

3. Data Access/Management: Continue to improve database products and services to enhance members' ability to enter and retrieve cost in the most efficient manner.

This was accomplished by completing a redesign and upgrade to both the data input and data output websites for the EUCG Nuclear Committee. The revised format uses the latest platform and allows members to interface in a more timely manner.

The EUCG Nuclear Committee is the most complete, accurate, and timely industry source for business operations cost data in the world. Data is provided directly by the operating company members and then reviewed and verified by industry peers before final release. The EUCG Nuclear Committee continues to provide the following nuclear industry cost information to our members:

- Nuclear Operating Cost which includes outage refuel details
- Nuclear Capital Cost which includes major projects
- Nuclear Staffing which includes regular employees and contractors
- Nuclear Industry Benchmark data which includes the annual Chief Nuclear Officer and Standard Benchmarking reports

The initial release of the previous year's reported data is available to the members in February and the comprehensive/detailed data is available in May. Members also have the ability to make ad-hoc data requests for special situations that may arise during the year.

The EUCG Nuclear Committee continues to provide networking opportunities for members to interface with their peers and discuss emerging nuclear business operations issues or items. These issues are presented before an audience that consists of representatives from all the nuclear operating companies in the United States and also from nuclear operating companies in France, Japan, Romania, Spain, Brazil, and China.

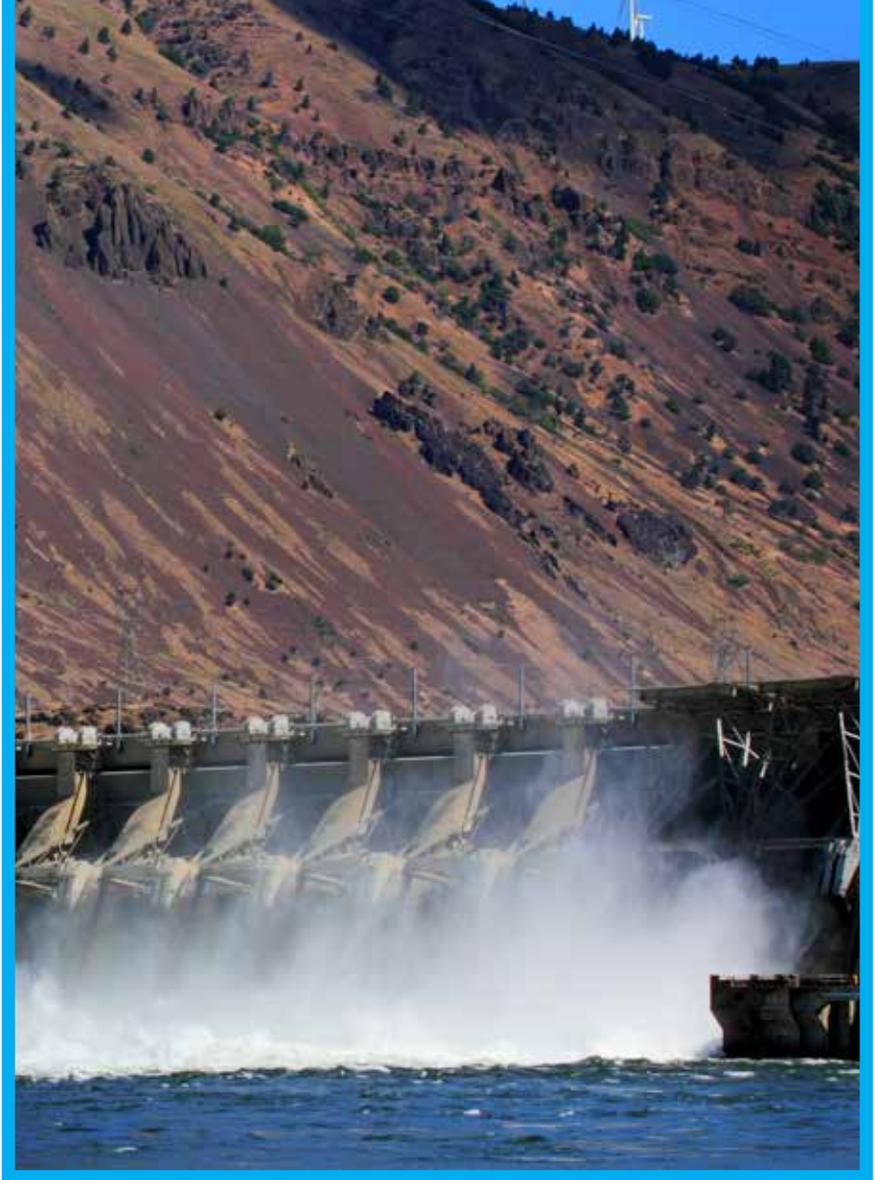
Nuclear Committee Members

Ameren Missouri USA
American Electric Power USA
Arizona Public Service Company USA
Asociación Nuclear Ascó-Vandellós Spain
Bruce Power Canada
Centrales Nucleares Almaraz-Trillo AIE Spain
CNNC Nuclear Power Operations Management Co. China
Comisión Federal de Electricidad Spain
CRIEPI Japan
Daya Bay Nuclear Power Operations and Management Co. China
Dominion Generation USA
DTE Energy USA
Duke Energy USA
Électricité de France France
Eletrobras Eletronuclear Brazil
El Paso Electric USA
Energy Northwest USA
Entergy Nuclear USA
Exelon USA
FirstEnergy Nuclear Operating Corp. USA
Institute of Nuclear Power Operations USA
Luminant USA
Nebraska Public Power District USA
NextEra Energy USA
Nuclear Energy Institute USA
Omaha Public Power District USA
Ontario Power Generation Canada
PG&E USA
PPL Susquehanna USA
PSEG USA
SCANA (South Carolina Electric & Gas) USA
SNN SA CNE PROD Cernavoda Romania
Southern Company USA
STP Nuclear Operating Co. USA
Tennessee Valley Authority USA
Wolf Creek Nuclear Operating USA
Xcel Energy USA

HydroPower

Hidropower supplies one seventh (3,500 TWh) of the world's electricity demand. Twenty percent of that energy is produced in Canada and the United States. Norway leads all the nations with 95% (120 TWh) of its electricity demand supplied by hydropower.

Clean and renewable hydropower is also the most cost competitive mode of generation. It creates economic growth and wealth for the nations that produce and use it. EUCG's Hydroelectric Productivity Committee (HPC) is proud to assist member companies in achieving excellence by providing relevant, accurate, and timely benchmark information on cost, performance, and best practices.



In 2014, EUCG's HPC continued its efforts on the Committee's three strategic focus areas:

- 1. to improve our Cost and Performance database,*
- 2. to provide effective products and forums that focus on optimizing members' operating performance, and*
- 3. to grow EUCG HPC coverage of the hydropower sector in terms of both installed capacity and number of utilities.*

It has been a privilege and pleasure to work on these objectives with this broadly diversified group of professionals covering all of North America, parts of Europe, and Africa. The Committee has made significant progress in all aspects of our mandate. We have improved consistency of reporting, made advances in analytical methods, provided reviews of lessons learned from the most challenging work assignments and events, and last but not least, on our way up, we have crossed over the 100,000 MW mark of generating capacity operated by HPC members.

Benchmarking is the main activity of the Committee. It is accomplished through:

- Annual cost and performance reports
- Web-based access to database for standard and custom reports
- Staffing and safety survey reports
- Ad hoc surveys run in response to member needs
- Discussions, presentations, and networking opportunities at the spring and fall workshops

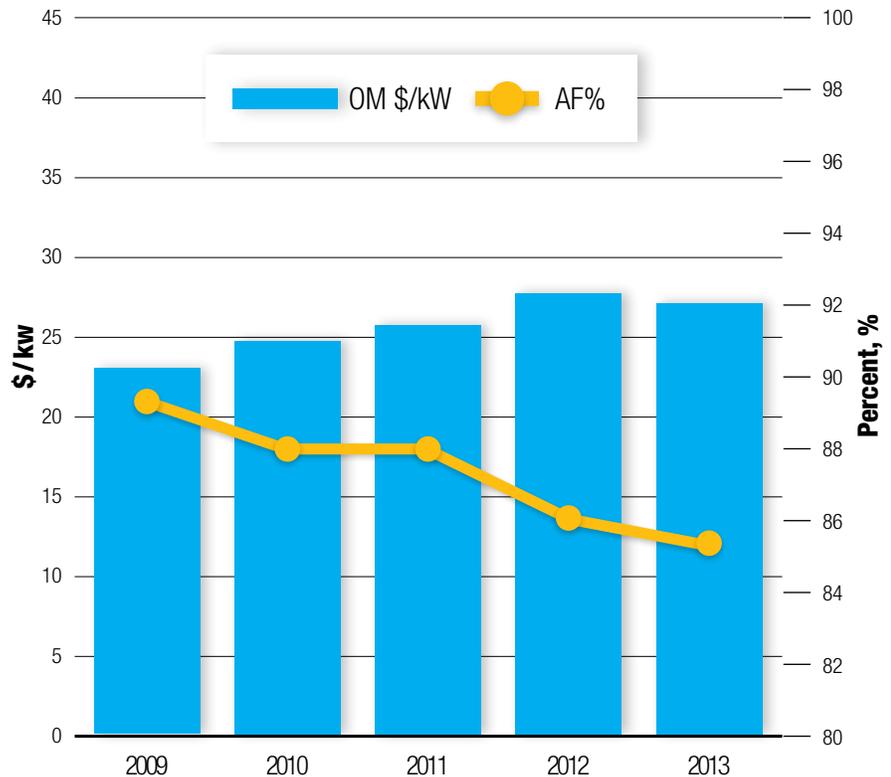
Cost and Performance data is collected in the HPC Database accessible to members on the web. Significant effort is given to maintaining high data quality. Peer data audits are conducted each year, which result not only in better data quality, but also better understanding of the different reporting methodologies used by member companies. Data quality is achieved through:

- Automatic data validity checks
- Peer data audit meetings
- Educated users (data audit meetings are the best learning experience)
- Continuous improvement of reporting standards
- Web access with quick turnaround time
- Centrally-controlled website and data security
- User-friendly interface that evolves with users' needs
- Very low cost of service

Two semi-annual workshops, held in spring and fall, provide the opportunities to discuss issues and practices with peers. The sessions link to numerical data, key performance indicators, and allow for open and honest discussions of pros and cons of embarking on specific tactics. It is like being in an MBA class, with the difference being that participants have many years of experience in the business and asking deeply penetrating questions.

One of the key competitive advantages of HPC membership is the committee's flexibility to address different topics and the speed with which one can obtain information directly from the source. Another, perhaps not immediately apparent, key competitive advantage is the fact that by being involved in the production and audit of information, committee members get a much better feel for what the performance numbers really mean and what the trends and sensitivities to other parameters (e.g. scale of operations) are.

Hydro Challenges: O&M Costs Are Up; Plant Availability is Down



Hydro Committee Members

- Bonneville Power Administration** USA
- Electricity Supply Board** Ireland
- Eugene Water & Electric Board** USA
- Exelon Power** USA
- Hydro Québec** Canada
- New Brunswick Power** Canada
- North American Hydro Eagle Creek** USA
- Oak Ridge National Laboratory** USA
- Ontario Power Generation** Canada
- Pacific Gas & Electric Company** USA
- Seattle City Light Company** USA
- Southern California Edison** USA
- Southern Company** USA
- Statkraft Energi AS** Norway
- Tacoma Power** USA
- Tennessee Valley Authority** USA
- U.S. Army Corps of Engineers** USA
- United States Bureau of Reclamation** USA
- Volta River Authority** Ghana

Fossil Power

Fossil generation is facing growing challenges due to changes in the energy marketplace and increasing environmental regulation. These challenges increase the pressure on fossil generation to decrease cost and increase generating efficiency. The opportunity to discuss these issues with other professionals in fossil generation and to share best practices is an important tool to have available when confronting these and other challenges facing the fossil industry. The EUCG Fossil Productivity committee provides regular forums to meet with other industry professionals to learn best practices and to participate in benchmarking which provides members with opportunities to learn ways to improve from other professionals who are experiencing the same challenges.

The EUCG Fossil Productivity Committee provides several different types of opportunities to learn best practices, and in all areas of fossil plant operations and maintenance.

Each year the committee performs annual surveys for standard operating metrics, as well as specialized surveys. The annual surveys are used to identify best performers who are then invited to share their methods with committee members at the semi-annual EUCG conferences. *Best Performers for 2014 are:*

Small Plant

Gallatin Fossil Plant
Tennessee Valley Authority

Large Plant

Bull Run Fossil Plant
Tennessee Valley Authority



The committee performed a plant operations staffing survey and a plant maintenance staffing survey during 2014. These surveys provided significant insights into how plants are organizing their workforces to better answer local needs in today's highly competitive energy market.

In addition to benchmarking opportunities, the EUCG Fossil Productivity Committee provides several different types of opportunities to learn best practices. The Spring and Fall EUCG Conferences in 2014 saw member-led panels discuss many topics of interest such as plant safety programs, operator training programs, outage planning strategies, work management systems, and problem solving utilizing plant teams. The

2014 Outage Forum saw panels and presentations on topics dealing with issues such as outage scheduling, measuring productivity improvements, and outage case studies. The presentations from the EUCG conferences and the Outage Forum are available on the EUCG website in the member area.

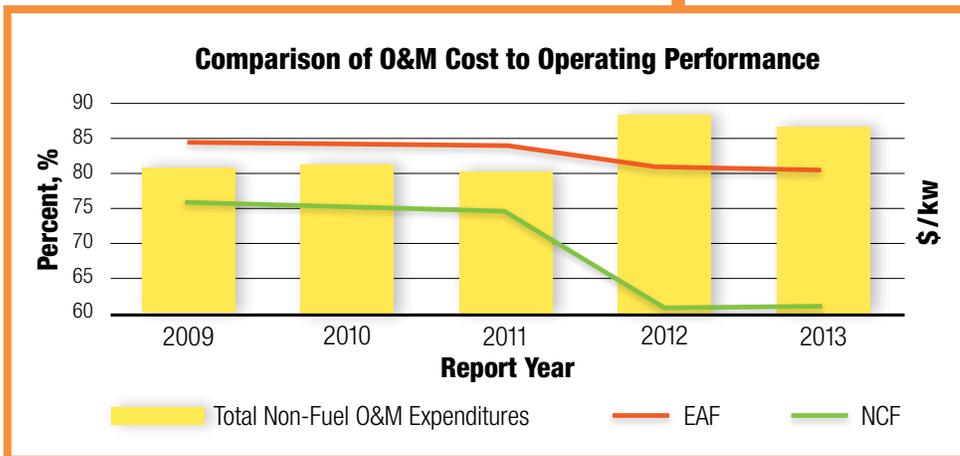
Finally, the EUCG Fossil Productivity Committee continues to look for ways to provide additional value to our members. The committee offered its first webcast this year on MATS compliance. Upcoming webcasts promise to provide more opportunities for committee members to share best practices.



The Impact of Operating Conditions on Cost Performance
The chart below indicates that Net Capacity Factor (NCF) fell by approximately 14% in 2012 and 2013 while Non-Fuel O&M Cost increased by over \$2.20/MWh. This comparison highlights how changes in market conditions impacting operating performance factors, such as NCF, will require fossil utility professionals to find effective methods to reduce Non-Fuel O&M Cost in future years while minimizing the negative impact on Equivalent Availability (EAF).

Fossil Committee Members

- | | |
|---|---|
| Ameren Missouri USA | Khanom Electric Thailand |
| American Electric Power USA | Lower Colorado River Authority USA |
| Austin Energy USA | NB Power Canada |
| Consumers Energy USA | NV Energy USA |
| CPS Energy USA | Ohio Valley Electric Corp. USA |
| DTE Energy USA | Omaha Public Power District USA |
| Exelon Generation USA | Owensboro Municipal Utilities USA |
| Israel Electric Corporation Israel | PG&E USA |
| | PSEG USA |
| | Salt River Project USA |
| | Southern Company USA |
| | Tampa Electric Power USA |
| | Tennessee Valley Authority USA |
| | Volta River Authority Ghana |



Transmission & Distribution

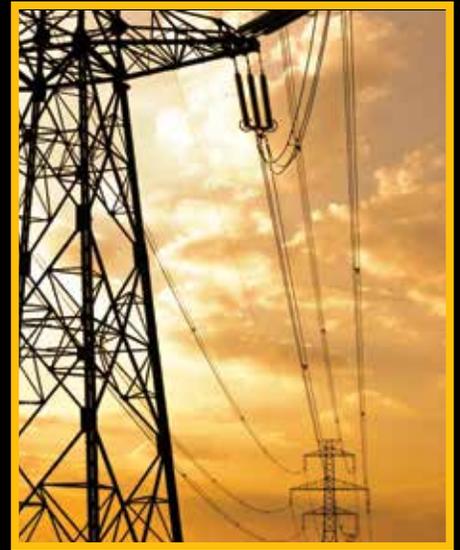
However and wherever the power is generated, it still must be delivered to your customers. For many, this will be over hundreds of miles across the Bulk Power System to local Distribution Systems. The technical challenges of keeping the grid up, losses and costs low, and power quality high are immense and growing. As the mix of generation changes and supply becomes distant relative to load, these challenges are increasing. Add to this the pressures to keep overall costs down with counter pressures to harden and modernize the grid, and the need for *benchmarking and identification of better practices becomes abundantly clear.*



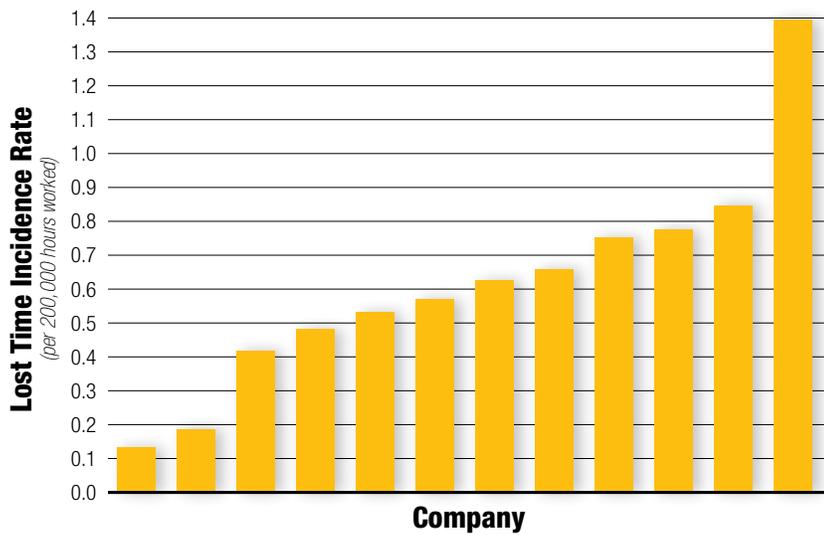
T&D Benchmarking is more important now than at any time in the last 40 years. The efficiencies and discipline required to control costs, maximize reliability, and maintain employee and public safety mandate that we collaborate and work together to identify and propagate that next “great idea” that will transform some aspect, however small, of our business practices such that the next incremental improvement is realized.

It is the leveraging of data networking and sharing of ideas that make the EUCG T&D Committee so valuable to its members. As a member, you do not just have access to current members and practices, you have access to more than a decade of best practices presentations. Data is available on a give-to-get basis.

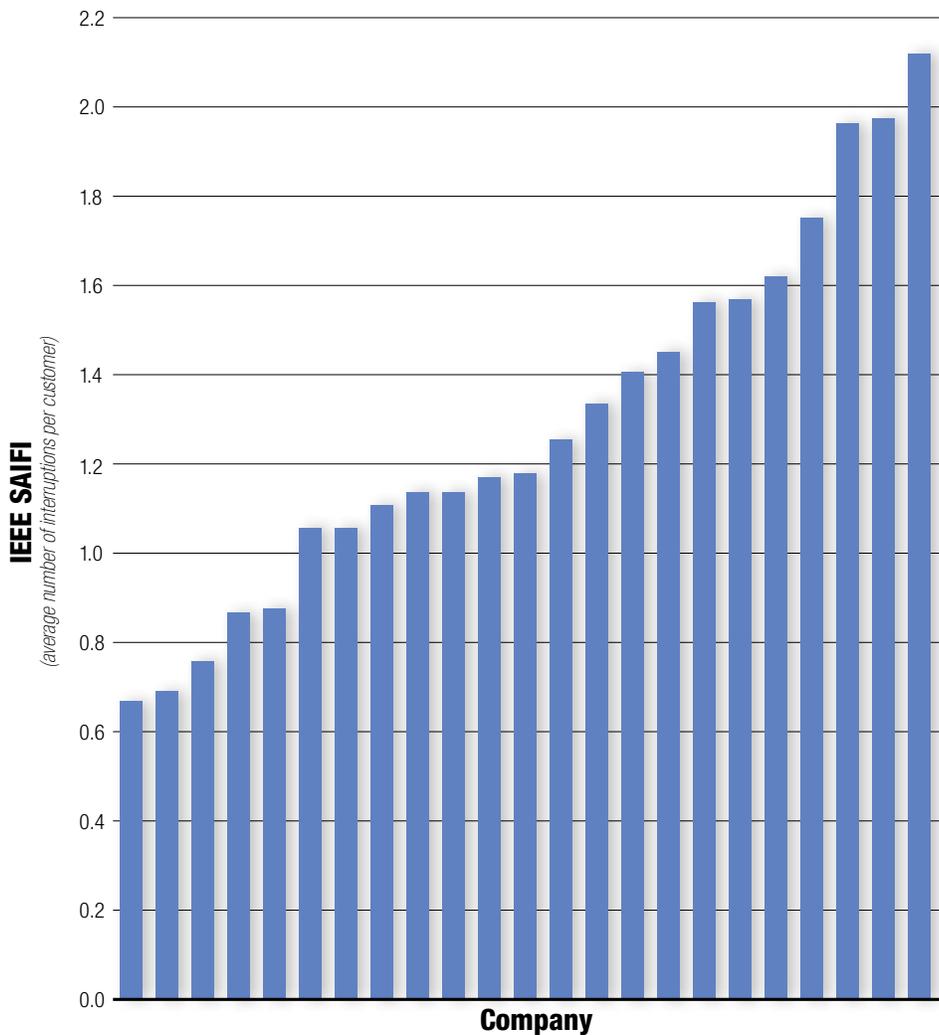
Our Safety and System Reliability data sets continue to evolve and improve as conditions warrant. We have recently re-opened our Transmission Cost Study and plan to reopen our Distribution Cost Study in 2015. All databases are, and will continue to be, professionally managed.



Distribution



IEEE SAIFI



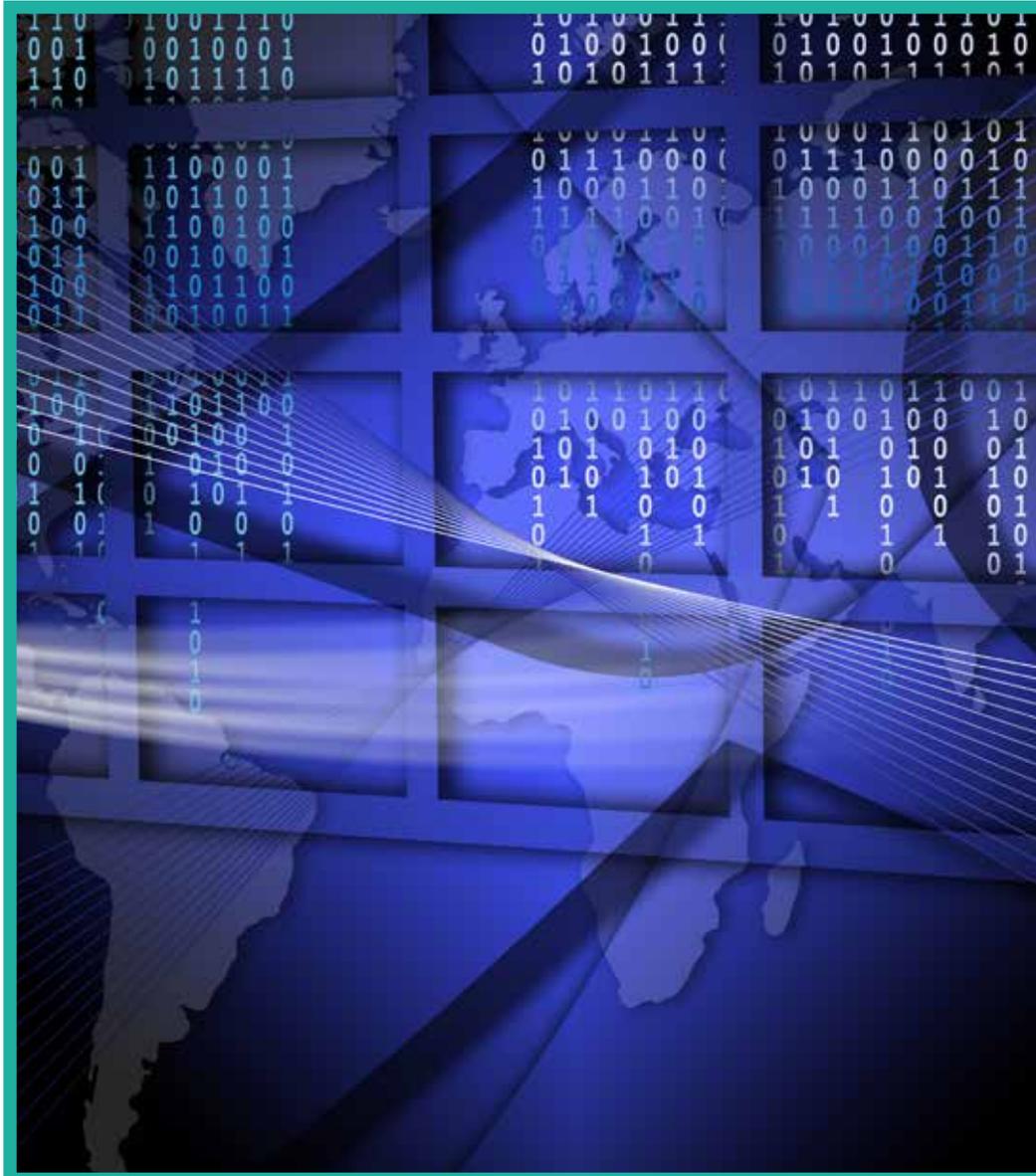
T&D Committee Members

- American Electric Power** USA
- American Transmission Company** USA
- Baltimore Gas & Electric** USA
- CenterPoint Energy** USA
- Consumers Energy** USA
- Commonwealth Edison** USA
- Duke Energy** USA
- Georgia Transmission Corp.** USA
- Ghana Grid Company** Ghana
- Manitoba Hydro** Canada
- Oncor Electric Delivery** USA
- PECO Energy** USA
- PG&E** USA
- PSEG** USA
- Salt River Project** USA
- Tampa Electric Company** USA
- Tennessee Valley Authority** USA

Data Base Services
provided by
Programming Plus+

Information Technology

With the growing demand for technological business solutions in a rapidly changing and ever more competitive electrical industry, the importance of IT, both as a business partner and a key enabler, cannot be understated. Moreover, these solutions have to be delivered cost-effectively and efficiently to maintain a competitive advantage in the markets. This is why the collaboration of IT committee members from all walks of life facing similar challenges is so valuable. Compared to other leading benchmarking firms, EUCG is the most cost-effective solution that does not compromise on quality.



The EUCG IT Committee has been in existence for 8 years during which time its numbers have grown to 11 active members, with representatives from both U.S. and Canadian utilities in the areas of nuclear, fossil, and hydroelectric power generation, as well as transmission and distribution companies. Typically, members work either in the IT or Finance function and have a well-rounded understanding of their respective businesses and the opportunities/challenges they face which tend to be common across all the participants. For example, in 2012, the growing threat from cyber security and the need to better track the associated costs and investments in this area led the IT Committee to add a separate reporting tower.



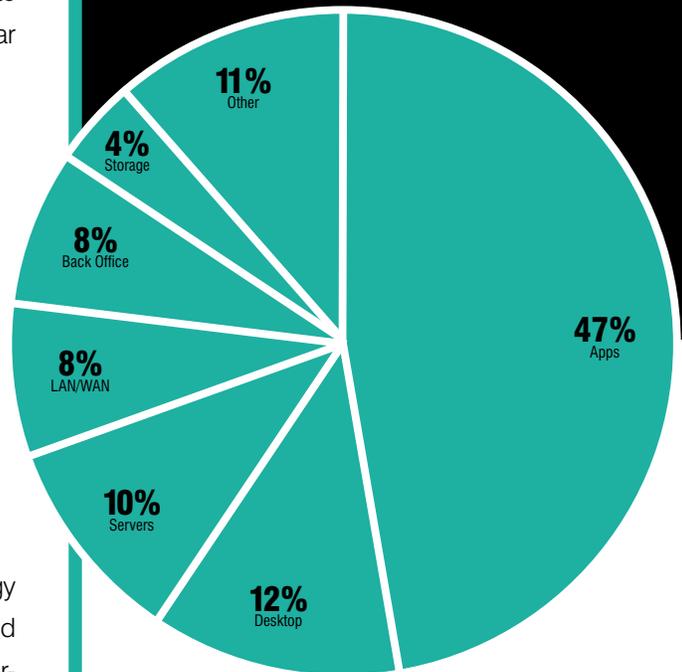
This data was captured beginning in 2013 and the results were recently published as part of the 2013 annual survey report. In addition, trend data provides a useful year-over-year comparison of IT costs and spending/expenses. More importantly, the granularity of the data capture provides members key insights into the towers and their year-over-year charge.

One of the more innovative changes that the IT committee has implemented over the last year is inviting key CIOs from leading utilities located in the vicinity of the semi-annual conferences. They share their unique insight and perspective on the ever-changing IT landscape and 'what keeps them awake at night'. The IT committee is fortunate to have had CIOs from Energy Northwest, South Texas Project, and Entergy attend and provide very interesting and contemporary outlooks on technological thought leadership which they believe is paving the way for future changes in our industry. Mini-surveys also offer a quick and simple way to

canvass the members to obtain a relevant pulse-check on key initiatives or programs. For 2015, one of the focus areas is Operational Technology and how this growing platform is beginning to integrate into the traditional world of Information Technology. Through open and interactive sessions during the semi-annual conferences, the IT committee has built a cohesive support network of knowledgeable, engaged representatives, and is well-positioned to continue to improve the accuracy and value of annual benchmarking data which our members have found extremely powerful back at their home locations.

2013 Total IT Cost Expenditure Percent by Tower

The pie-chart below shows the combined 2013 IT spending of all the survey participants by tower, with the Applications tower accounting for almost half the spending. 'Other' includes towers with smaller annual expenses including Help Desk, Security, Voice, and Mainframe.



IT Committee Members

- Energy Northwest** USA
- Tennessee Valley Authority** USA
- Omaha Public Power District** USA
- Oncor Electric Delivery** USA
- CenterPoint Energy** USA
- South Texas Project Nuclear Operating Co.** USA
- PSEG Nuclear** USA
- PPL Services** USA
- PG&E** USA
- Bruce Power** Canada
- Ontario Power Generation** Canada
- New Brunswick Power** Canada

Conference & Workshops



Spring Conference & Workshop Creating Connections — Bridging Networks | April 13–16, 2014

In 2014, EUCG had two tremendous conferences and workshops for our member companies. Our workshops have become “**can’t miss**” member events that deliver significant educational, training, and networking opportunities. While other associations have been severely impacted in recent years by the financial crisis and company imposed travel restrictions, EUCG’s workshops have continued to grow in size and quality. In fact, the workshops in 2014 were the most highly attended in the past seven years. Additionally, while we have always scored highly on conference evaluations from our attendees, 2014 saw the highest scores, in aggregate, that we have seen in many years.

We have listened to the membership and have continued to pick desirable locations for the workshops. Our Spring workshop was held in April in Tampa at the Westin Tampa Harbour Island. After a long and cold winter, the sunshine of Florida provided a wonderful backdrop for the workshop.

The committee sessions and presentations were top-notch and the networking and best practice sharing were second to none. Some members took the time to come to Tampa early or stayed a few days after the workshop to work some relaxation into the trip. We want to thank Duke Energy for their role as the host utility.

In September, we went to New Orleans for the Fall Workshop and Conference. The Hilton New Orleans Riverside was a great site for the workshop, as it was conveniently located by the famed French Quarter and overlooking the Mississippi River.



We would like to extend our thanks to Entergy for being the host utility. In a very well-received general session, our attendees learned about how the city of New Orleans rose out of the devastation of Hurricane Katrina to become an improved and more vibrant city. Attendees again learned from each other and the benchmarking studies conducted by EUCG. While great fun was had by all, every person went back to their jobs and companies with increased knowledge and data to help drive success in their companies.

In 2015, we will continue to raise the bar on our workshops to make sure that they deliver the content you desire. We will also continue to enhance our execution of all of the operational aspects of the meetings. In April 2015, we will be heading back to the Hilton Nashville Downtown in Nashville, Tennessee for our Spring Workshop. We will then head out west to the US Grant Hotel in San Diego for the Fall workshop in September. These two popular destinations will be sure to continue to increase attendance and opportunities to network with your colleagues from around the world. **So, join us in 2015 to learn, network, and better prepare for the work ahead.**

Fall Conference & Workshop September 21–24, 2014



Future Events



Spring Conference & Workshop April 12–15, 2015 Hilton Nashville Downtown Nashville, Tennessee



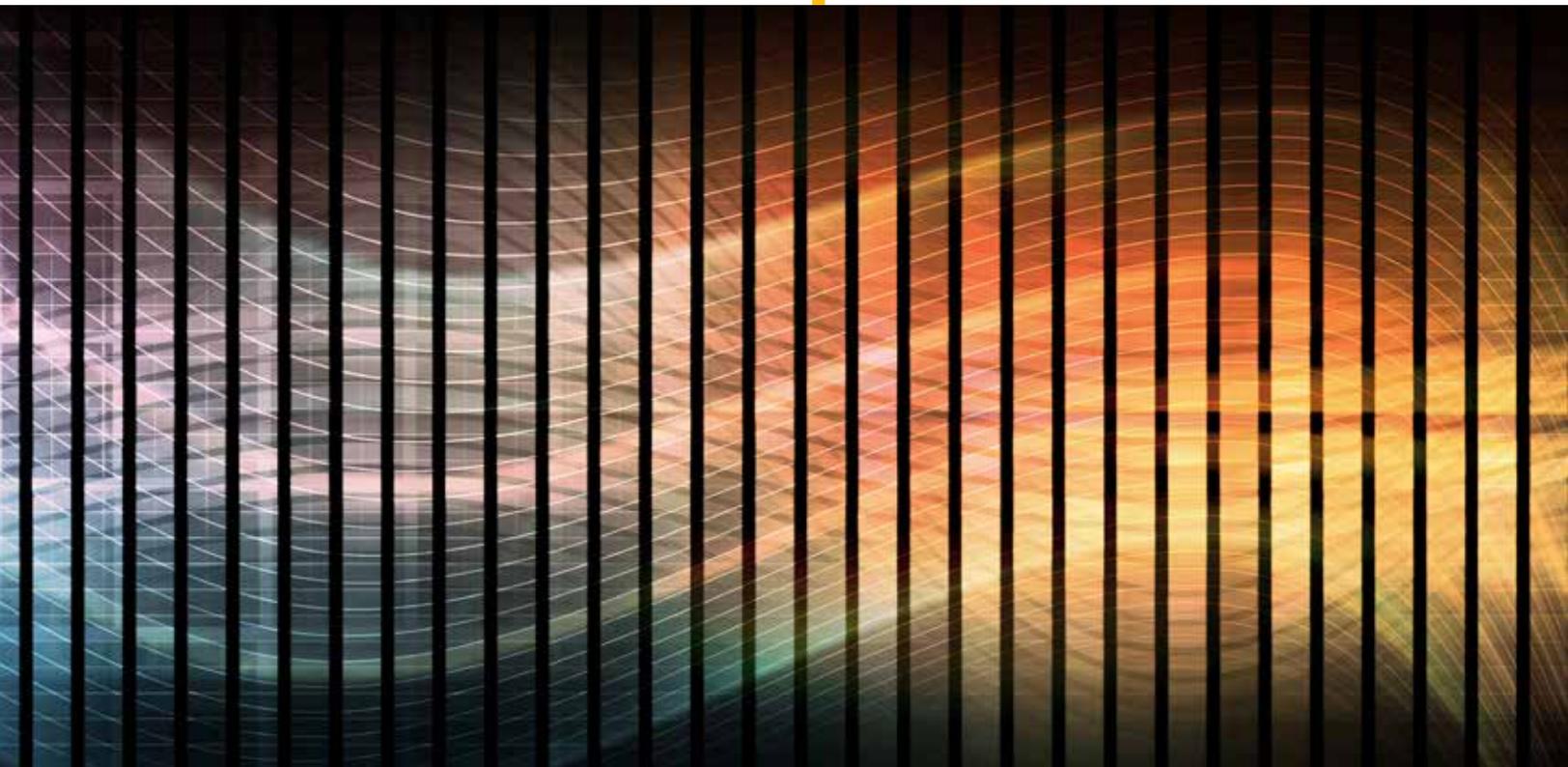
Fall Conference & Workshop September 20–23, 2015 The US Grant San Diego, California



EUCG[™]
Your Energy Information Source

12100 Sunset Hills Road
Suite 130
Reston, Virginia 20190

tel **703.234.4143**
fax **703.435.4390**
web **www.eucg.org**



Vision & Mission

EUCG, Inc. A global association of utility professionals and member companies which is recognized as the electric energy industry source for performance information.

To assist member companies in achieving excellence by providing relevant, accurate and timely benchmark information on cost, performance and best practices.