

VOLT/VAR OPTIMIZATION:

Practical Considerations & Case Studies

May 1-2, 2017
Atlanta Marriott Suites Midtown
Atlanta, GA

Case Studies Include

Con Edison
National Grid
Morristown Utility
Systems
Duke Energy



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OVERVIEW

Have you wondered how much energy could be saved by reducing energy losses by a small amount? As pressure increases for utilities to modernize their grids, industry experts are recognizing the significant energy savings and reliability benefits available through use of Volt/VAR Optimization (VVO). VVO systems have the ability to significantly improve power quality, lower line losses and reduce peak demand compared to traditional methods. Navigant Research predicts that global annual revenue from dynamic Volt/VAR control architecture (DVCA) will grow from \$734.1 million in 2014 to \$2.9 billion in 2023.

This conference will present the economic case for Volt/VAR optimization. Con Edison, National Grid, Duke Energy, and Morristown Utility Systems will provide case studies of their VVO programs. The president of Beckwith Electric will discuss advances in LTC/voltage regulator and capacitor controls for distribution Volt/VAR control applications. A VVO specialist will discuss methodologies of measuring the results of a dynamic voltage reduction. A panel of experts will discuss VVO practical considerations.

Don't miss the opportunity to attend this industry event and hear energy leaders, utilities and providers discuss the latest VVO technologies, systems and success stories.

LEARNING OUTCOMES

- Discuss the economic case for VVO
- Describe advances in LTC/Voltage regulator and capacitor controls for distribution volt-VAR control applications
- Explain National Grid's Rhode Island VVO pilot
- Describe how Con Ed implemented their volt/VAR optimization program
- Address increasing PV penetration and efficiency
- Discuss Morristown Utility System's CLVR program
- Assess Duke Energy's smart grid technologies
- Review practical considerations for VVO with a panel of experts



"Excellent forum to learn methods and practices and how other are applying VVO & CVR. Great balance of utility case studies and vendor technology presentation. Was worth the trip."

Principle Technology Engineer, Connexus Energy



"The information provided at this summit will help our utility move towards achieving real results that will benefit both our customers and company."

Engineer II, San Diego Gas & Electric

AGENDA

MONDAY, MAY 1, 2017

7:30 - 8:00 am **Registration & Continental Breakfast**

8:00 - 9:00 am **An Economic Case for Volt/VAR Reduction**

Optimizing reactive power flows and voltage levels on a distribution power system extend far beyond the obvious operational benefits of decreasing system losses, improving power factors and leveling feeder voltage profiles. In addition to these enhancements in operating efficiencies, the monetary benefit of implementing this strategy can be quite significant.

In this presentation, Mr. Bowles will review his utility’s experience in Volt/VAR management with an in-depth look at the resulting monetary benefit for CUB and its ratepayers.

Ernie Bowles, Asst. General Manager; Director – Eng. & Operations, Clinton Utilities

9:00 - 10:00 am **Advances in LTC/Voltage Regulator and Capacitor Controls for Distribution Volt/VAR Control Applications**

This presentation covers:

- Advances in LTC/Voltage regulator and capacitor controls used in distribution volt/VAR control applications in reducing line losses and providing flat voltage profile
- A smart voltage reduction technique to achieve maximum Conservation Voltage Reduction (CVR)
- How these techniques can be applied as a primary way of providing Volt/VAR control when no communication to the field devices is available or as a backup Volt/VAR control method when communications fail

Murty Yalla, President, Beckwith Electric Co. Inc

10:00 - 10:30 am **Networking Break**

10:30 - 11:30 am **National Grid’s Rhode Island Pilot**

This presentation will provide a summary of National Grid’s Rhode Island VVO pilot, including:

- Program overview: Locations and catalysts
- Results to date: Greater than 3% demand reductions
- Major challenges: Communications, organizational logistics
- Areas of future investigations: AMI/DER/Non-wire alternatives

James Perkinson, Manager - Advanced Grid Engineering, National Grid



11:30 am - 12:30 pm **Group Luncheon**

12:30 - 1:30 pm **Con Edison’s VVO for Peak Demand Reduction**

This presentation will discuss important aspects of Con Edison’s VVO, including:

- Application of VVO for peak demand reduction
- How we implemented VVO
- Challenges with VVO
- Methods used to lift low voltage areas
- Measurement and verification

Jin Jin Huang, Senior Engineer, Con Edison



“This was a well-organized conference overall and very good presentations. Had lots of time for questions. Very helpful.”

Engineer Supervisor – Planning, NES

AGENDA

MONDAY, MAY 1, 2017 (CONTINUED)

1:30 - 2:15 pm



Morristown Utility Systems

Morristown Utility Systems in Morristown, TN implemented one of the first closed loop voltage reduction program (CLVR) to curtail its peak demand while simultaneously improving overall system reliability. Morristown used CLVR along with a real-time, event driven fiber optic based AMI system to reduce peak electrical demand and annual energy consumption through automated, real-time voltage reduction. This presentation will discuss:

- The latest updates regarding the CLVR program
- How utilities can integrate voltage regulation with an AMI, SCADA and OMS systems to achieve better peak load reduction and use granular data to optimize operational efficiency
- Process evolution, challenges in documenting CVR effectiveness, lessons learned, and next steps
- The added benefits enabled by fiber optic infrastructure will also be presented

Jody Wigington, General Manager/CEO, Morristown Utility Systems

2:15 - 2:45 pm

Networking Break

2:45 - 3:30 pm

Increasing PV Penetration and Efficiency with Distributed Grid Edge Control

Solar variability of high PV penetration causes large voltage fluctuations in the grid which degrades power quality, customer satisfaction, risks to utility infrastructure, customer equipment and utility employees working in the field. The lack of voltage margins due to voltage fluctuation limits PV penetration. These voltage fluctuations cause wear and tear on the automatic voltage regulation equipment, which results in higher O&M costs for the equipment. As PV solar penetration levels increase and more inverters are connected to utility networks, grid events that cause a sudden loss of solar generation pose a threat to utility system stability, and destabilize the grid.

One method to solve these challenges is through the deployment of utility owned assets Secondary Var Controllers (SVCs). This session will discuss a deployment using these devices with more than 90% of PV penetration (4.3MW residential PV generation) as well as 60 ENGO units in two circuits at HECO (12.47 kV Kailua substation).

Guillaume Dufossé, Chief Executive Officer, Varentec

3:30 - 5:00 pm

PANEL: VVO Practical Considerations

Moderator: Vince Martinelli, Vice President of Product Management, Gridco Systems

Jin Jin Huang, Senior Engineer, Con Edison

James Perkinson, Manager- Advanced Grid Engineering, National Grid

Ernie Bowles, Asst. General Manager; Director – Eng. & Operations, Clinton Utilities

Guillaume Dufossé, Chief Executive Officer, Varentec

AGENDA

TUESDAY, MAY 2, 2017

8:30 – 9:00 am

Continental Breakfast

9:00 - 10:00 am

Methodologies of Measuring the Results of a Dynamic Voltage Reduction

- Discuss different methodologies for measuring performance of a Volt/VAR system
- Discuss how baselines are determined
- How to adjust those baselines during peak events
- How to calculate the savings, and produce reports that would indicate both MW savings and cost savings
- Discuss the possibilities of marketing these savings a resource for recurring revenue

Don Bowman, Manager of Engineering, Wake Electric

10:00 - 10:30 am

Networking Break

10:30 am - 12:00 pm

Duke Energy

Duke Energy deployed a variety of smart grid technologies, including advanced metering infrastructure (AMI) with an upgraded meter data management system (MDMS), distribution automation, integrated Volt/VAR control (IVVC), a new distribution management system (DMS), and a customer web portal. This presentation will discuss:



- Duke's current projects
- Insights and lessons from implementing a large variety of technologies
- Operating philosophies across multiple service areas, along with exploring ways to model
- Distributed energy resources in DMS
- Project scoping, project success criteria, and lessons learned through field testing

Martin Garvin, PE, Lead Engineer, Duke Energy

Will Armstrong, PE, Senior Engineer, Duke Energy

12:00 pm

Conference Adjourns

SPEAKERS

Will Armstrong, PE, Senior Engineer, Duke Energy

Ernie Bowles, Asst. General Manager; Director – Eng. & Operations, Clinton Utilities

Don Bowman, Manager of Engineering, Wake Electric

Guillaume Dufossé, Chief Executive Officer, Varentec

Martin Garvin, PE, Lead Engineer, Duke Energy

Jin Jin Huang, Senior Engineer, Con Edison

Vince Martinelli, Vice President of Product Management, Gridco Systems

James Perkinson, Manager- Advanced Grid Engineering, National Grid

Jody Wigington, General Manager/CEO, Morristown Utility Systems

Murty Yalla, President, Beckwith Electric Co. Inc.

INSTRUCTIONAL METHODS

Case studies, PowerPoint presentations, and classroom exercises will be used

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the conference to be eligible for continuing education credit.

IACET CREDITS



EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 0.9 CEUs for the conference.

EVENT LOCATION

A room block has been reserved at the Atlanta Marriott Suites Midtown, 35 14th Street NE, Atlanta, GA 30309, for the nights of April 30 – May 2, 2017. Room rates are US \$179 plus applicable tax. Call **1-404-876-8888** or for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is April 17, 2017 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

REGISTER 3, SEND THE 4TH FREE

Any organization wishing to send multiple attendees to these conferences may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

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Please contact Erin Burba at eburba@euci.com or 720-988-1260 for more information.

REGISTRATION INFORMATION

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f: 303-741-0849

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PLEASE SELECT

- VOLT/VAR OPTIMIZATION CONFERENCE**
MAY 1-2, 2017: US \$1395
EARLY BIRD ON OR BEFORE APRIL 14, 2017: US \$1195
- I'M SORRY I CANNOT ATTEND, BUT PLEASE SEND ME A LINK TO THE CONFERENCE PROCEEDINGS FOR US \$295.

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Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before March 31, 2017 in order to be refunded and will be subject to a US \$195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of conference cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800. EUCI reserves the right to alter this program without prior notice.

