

**NC STATE UNIVERSITY**

Office of Professional Development



# **93<sup>rd</sup> Annual NC Electric Meter School and Grid Technology Conference**

Embassy Suites  
Kingston Plantation  
Myrtle Beach, South Carolina  
June 8-12, 2025

Offered by the Office of Professional Development  
North Carolina State University, Raleigh, North Carolina



*Electricity metering has been in existence for over 100 years. Metering has continued to evolve in functionality and complexity over this period. The NC Meter School has long served the purpose of providing a place where the metering discipline, skills, changes, products, and practices are learned and discussed. The industry has progressed with today's technology, and metering interfaces have become varied and often directly related to other grid technologies. The NC Electric Meter School and Grid Technology Conference will continue to be current and proactive.*

**Scan the QR code to access the full schedule on your phone**



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# General Information

**The North Carolina Electric Meter School and Grid Technology Conference** includes topics and products related to electric metering and the electrical grid as follows:

## **Electricity Metering**

All aspects of metering to include installation, removal, testing, maintenance, and management practices. Examples may include any metering quantity measurement for revenue or other operational purposes.

## **Revenue**

Tariffs, rate practices, and other aspects associated with the accurate measurement of electricity. Examples may include any method or equipment to read, record, and/or verify accurate metering.

## **Communications**

Remote communications, including many forms and technology options, related to metering and/or other electrical equipment operations. Examples may include metering and other electrical grid hardware that requires communications between devices or from field to host. May also include modems, fiber, cellular, local, or other means of communications media or methods; tools or equipment.

## **IT/Computer/Programmable Devices**

Metering and other grid operational/support systems or equipment. Examples may include metering devices and associated equipment to upload/download programs/configurations; diagnostic equipment; and associated tools and methods.

## **Security**

Physical, cyber, and data protection options to safeguard the revenue and operational integrity of the electrical system. Examples may include pre- and post-energy tampering security methods and systems.

## **Renewable/Alternative Energy**

Metering interfaces to measure power at these different types of facilities. Examples may include solar, wind or other alternative means of generation.

## **Generation, Transmission, and Distribution**

Equipment and practices associated with any aspect of the electric grid, including but not limited to AMI (advanced metering infrastructure). Examples may include relay; substation; metered data from generation, transmission, and other distribution/grid management systems.

## **Customer Service**

Services or equipment to provide enhanced customer service options for the customer that may be from within the meter or associated metering data, or other services past the meter. Examples may include metering data or pre-pay.

# Conference Information

## Reference Standard Calibration Check

An added benefit is being offered to you during the conference at no additional charge. After registering, and while attending the conference, please stop by the **Pembroke** room reserved by Radian Research to have your reference standard(s) tested against a Radian NIST traceable 0.01% reference standard. You will receive a printed and/or electronic “Report of Calibration” which provides the accuracy of your standard at all common loading conditions.

## Banquet

A special 93<sup>rd</sup> anniversary banquet for conference participants and their guests will be held on Wednesday evening, June 11, at the Embassy Suites. The banquet is included in the registration fee. Guest tickets are available at \$85 each. Youth tickets for those ages 15-18 are available for \$55 each. Tickets for children **up to age 14** are available at no fee. Dress is casual. A social will begin at 6 p.m. in Somerset, followed by the banquet at 7 p.m. in Kensington. Purchase tickets by 5 p.m. on Monday

## Room Assignments

General Session (Monday).....	Kensington ABC
General Session (Thursday 11:15 a.m. - noon).....	Kensington ABC
Single Phase.....	Kensington C
Polyphase.....	Kensington A
Advanced.....	Kensington B (Monday-Wednesday)
Management.....	Windsor C
Basic Substation & Distribution.....	Windsor B
Advanced Substation & Distribution.....	Windsor A
Advanced/Management Combined (Thursday, 8-11 a.m.).....	Kensington B
Emerging Technologies.....	Somerset
Engineering.....	Hampton
Exhibitors.....	Kensington DEFG/Hall
Lunches.....	Palladium (Brighton), Black Drum
Calibration (Monday-Wednesday).....	Radian Research Pembroke
Manufacturer Programming Session & Hands-on Testing (Tuesday & Wednesday).....	Oxford, Pembroke, Eton, Winchester, Harrow

## Special thanks to:

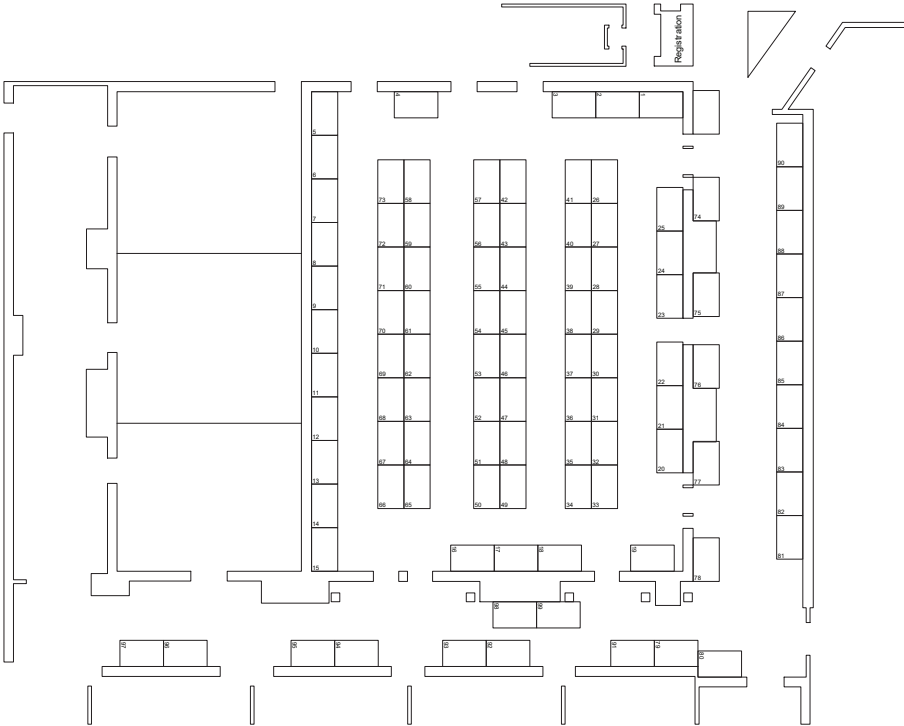
- **Radian Research** for providing notepads
- **TESCO** for providing lanyards and banquet entertainment

## Special thanks to the networking socials sponsors:

- |                     |                                   |
|---------------------|-----------------------------------|
| • <b>Reinhausen</b> | • <b>Utility Sales Associates</b> |
| • <b>NTS</b>        | • <b>Hubble Aclara</b>            |
| • <b>SAMSCO</b>     | • <b>TESCO</b>                    |
| • <b>Sensus</b>     |                                   |

# Floor Plans

## Embassy Suites Exhibit Booth Floor Plan



## Exhibitor booth locations

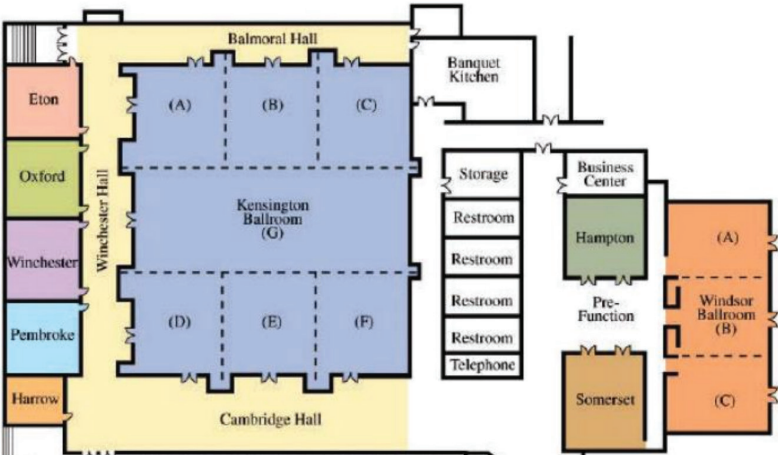
ABB Inc.	17, 91	G&W Electric	10
Allegiant Utility Services	62	GE Vernova	30
American Meter Program Services	95	HB NEXT	1
Arteche	81	Honeywell	94
Atlantic Power Sales	16	Hubbell EIG	51
Blue Ridge Power Equipment Sales	55	Hubbell Incorporated	31, 32, 33
Border States Electric	15	Hubbell Utility Solutions	20
Brooks Utility Products	26, 27	Inner-Tite Corp.	78
Chapman Company	49	Irby Utilities	63
CLD Services Inc.	9	Itron	14
DNV	69	Jake Rudisill Associates	28, 29
DRG Technical Solutions	37	JST	99
Eaton	13	Landis+Gyr	45
ECE	52	Marwell Corporation	59
Electrical Grid Monitoring USA Inc.	36	McCall-Thomas Engineering	87
Energy Reps	53	Megger	68
ENSALES INC	23, 24	Milbank Manufacturing Co	2
EUS	46	MinMax Technologies	65
FirstPower Group LLC	38		

# Floor Plans

## Exhibitor booth locations (Continued)

National Transformer Sales	44	SensorLink Corporation	34
NexGen Utility Sales	42	Sensus	21
NovaTech Automation	3	Sicame North America	73
NRTC	40	Siemens	25
nVent	47	Sterling Padlocks	83
Paradoxe Corporation	56	Synergy Systems Inc	61
Peak Demand Inc	64	Tantalus Systems Corp	35
Phoenix Contact USA, Inc.	66	TE Connectivity	39
Powersolve Corporation	93	TESCO	4, 5, 6, 7
PowerTech	18, 19	Texas Meter & Device Co.	70
PREFERRED SALES AGENCY	80	The Durham Company	77
Probewell Lab	54	TransData	22
PSP Products	60	Transformer Maintenance	
QEI, LLC	11	& Service, Inc.	57
R.W. Chapman Co.	48	TSTM Inc.	58
Radian Research, Inc.	84, 88, 89, 90	Utlii-Server	8
Reinhausen Manufacturing Inc	74	Utility Sales Associates LLC	75
RITZ	43	Vision Metering. LLC	82
Roxtec USA	72	W R Daniel & Associates	85, 86
S&N Communications	76	Wasion Americas Inc.	71
Safegrid Oy	41	Wesco	12
Schneider Electric	67		
Schweitzer Engineering Laboratories	50		

## Embassy Suites Meeting Room Floor Plan



# Conference Schedule

## Sunday, June 8, 2025

- 2 p.m.                      Begin Vendor Set-up – Embassy Suites, Kensington Ballroom
- 5–7 p.m.                   Registration – Embassy Suites Lobby
- 6–7 p.m.                   Welcome Reception – Kensington Ballroom

## Monday, June 9, 2025

### General Session - Kensington ABC

- Presiding:                Greg Johnson, Alabama Power
- 9 a.m.                    **Welcome to the School**  
Greg Johnson, Alabama Power
- 9:10 a.m.                **Presentation of Colors**
- 9:15 a.m.                **Opening Comments**  
Connie McElroy-Bacon, Conference Manager,  
NC State University
- 9:30 a.m.                **Welcome from NC State University Continuing Education**  
Savannah Vince, Associate Director, NC State Continuing and  
Lifelong Education
- 9:45 a.m.                **Theft and Tampering Awareness Training for Electric Utility  
Companies**  
Jason Parker, Duke Energy
- 10:45 a.m.              **Break**
- 11 a.m.                   **Back-to-Back Hurricane Response - Impact on Metering**  
Tiffany Dennison, Duke Energy
- Noon                     **Lunch**
- Presiding:                Greg Johnson, Alabama Power
- 1 p.m.                    **Hurricane Response**  
Brandon Ashley, Dominion Energy
- 2:30 p.m.                **Break**
- 2:45 p.m.                **Management Visit Vendors - Exhibit Hall**  
**Single Phase, Polyphase, Advanced, Basic Substation &  
Distribution, Advanced Substation & Distribution, and  
Emerging Technologies Sessions Begin**
- 4 p.m.                    **Adjourn / Networking Social in the Exhibit Area**



# Conference Schedule

## Monday (continued)

### Track Sessions Begin

#### SINGLE PHASE - KENSINGTON C

- Presiding: Rodney Brown, Dominion Energy
- 2:45 p.m. **History of Electricity Metering**  
Joel Canine, Radian Research
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### POLYPHASE - KENSINGTON A

- Presiding: Chad Cooper, Dominion Energy
- 2:45 p.m. **Polyphase Meter Applications**  
Michael Corbin, US Electric Solutions
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### ADVANCED - KENSINGTON B

- Presiding: Josh McDonald, Rappahannock Electric Coop
- 2:45 p.m. **Quadrant Metering**  
TBA
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### MANAGEMENT

- 2:45 p.m. **Visit Vendors**
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### SUBSTATION & DISTRIBUTION BASIC - WINDSOR B

- Presiding: Curtis Craig, Retired
- 2 p.m. **Introduction to Substations I: Equipment**  
Court Weathers, Booth & Associates LLC
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### SUBSTATION & DISTRIBUTION ADVANCED - WINDSOR A

- Presiding: John MacLaga, Wilson Energy
- 2:45 p.m. **Lightning Round**  
John MacLaga, Wilson Energy
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

#### EMERGING TECHNOLOGIES - SOMERSET

- Presiding: Jason Parker Duke Energy
- 2:45 p.m. **Microgrids - Powering your World, Sustainably**  
Priyanka Kolte, Vincent Duong, ABB Inc.
- 4 p.m. **Adjourn / Networking Social in the Exhibit Area**

# Conference Schedule

## Tuesday, June 10, 2025

### SINGLE PHASE - KENSINGTON C

Presiding: George Leach, NOVEC

8 a.m. **Basic Electricity**  
Will Elliott, Aclara Meters

9 a.m. **Math for Metering**  
Michael Corbin, US Electric Solutions

10 a.m. **Break**

10:15 a.m. **Single Phase Meter Theory**  
Perry Lawton, TESCO

11 a.m. **Watthour Meter Principles and Components**  
Tom Van Valkenburg, Radian Research

Noon **Lunch**

Presiding: Bill Hardy, Power Measurements, LLC

1 p.m. **Introduction to Watthour Meter Testing**  
Steve Hudson, Radian Research

2 p.m. **Visit Vendors - Exhibit Hall**

3 p.m. **Break**

3:15 p.m. **Hands-On: Meter Testing and Site Testing**  
Harold Kennedy, TESCO

4:15 p.m. **Adjourn/Networking Social in the Exhibit Area**

### POLYPHASE - KENSINGTON A

Presiding: Jean Kretzschmar, SAMSCO

8 a.m. **AC Theory**  
Randy Campbell, Radian Research

9 a.m. **Instrument Transformer Basics - Focus on Accurate Metering**  
Frank Lopez, GE Instrument Transformers

10 a.m. **Break**

10:15 a.m. **Ratio, Burden, and Admittance Testing**  
John Williams, TESCO

11 a.m. **Current Transformer Basics**  
Jon Rennie, Peak Demand Inc.

Noon **Lunch**

Presiding: Jean Kretzschmar, SAMSCO

2 p.m. **Visit Vendors - Exhibit Hall**

2:15 p.m. **ANSI Meter Forms and Wiring Diagrams**  
John Williams, TESCO

3:30 p.m. **Break**

3:45 p.m. **Practical Use of Vectors**  
Will Elliott, Aclara Meters

4:15 p.m. **Adjourn/Networking Social - Exhibit Hall**

### ADVANCED - KENSINGTON B

Presiding: Brandon Carroll, NTS

8 a.m. **Meter Technician's Role in AMI**  
Silvia Rodriguez, WeProject, Inc.

8:45 a.m. **Meter Site Design**  
Steve Hudson, Radian Research

9:30 a.m. **Mitigating Risks for an AMI Deployment**  
Randy Campbell, Radian Research

# Conference Schedule

## Tuesday (continued)

- 10 a.m. **Break**
- 10:30 a.m. **ANSI C12 Changes That May Impact You for 2025 and Beyond**  
Joel Canine, Radian Research
- 11:15 a.m. **Finding Lost Revenue Via Meter Site Analysis (Fun with Vectors)**  
Ryan Moffitt, Radian Research
- Noon **Lunch**
- Presiding: TBA
- 1 p.m. **AMI, Leveraging the Investment**  
Jerry Smith, Dominion Energy
- 1:45 p.m. **Enabling Affordable DER Interconnection via Meter Socket Adapters**  
Dan Falcone, ConnectDER
- 2:30 p.m. **Break**
- 3 p.m. **Programming Meters**  
Ametek - Kensington B  
Electro Industries - Eton  
Satec - Oxford  
Transdata - Pembroke  
Schneider - Winchester  
SEL - Harrow
- 4:15 p.m. **Adjourn/Networking Social in the Exhibit Area**

### MANAGEMENT - WINDSOR C

- Presiding: Kenneth McCraw, Duke Energy
- 8 a.m. **AMI Deployment Lessons Learned from an Industry Veteran**  
Scott Mossbrooks, Wesco

- 8:45 a.m. **Maintaining Your AMI System, Best Practices**  
Silvia Rodriguez, WeProject, Inc.
- 9:30 a.m. **Leveraging AMI Data to Improve Grid Resiliency While Optimizing the Network**  
Raymond Kasten, Southwire LLC
- 10 a.m. **Break**
- 10:30 a.m. **KYZ Pulse Metering in the AMI era - New Trends**  
Bill Brayden, Brayden Automation Corp/Solid State Instruments
- 11:15 a.m. **Making the AMI Case for Small Utilities**  
Jon Scott, TESCO
- Noon **Lunch**
- Presiding: Silvia Rodriguez, WeProject, Inc.
- 1 p.m. **Mitigating Risks for an AMI Deployment**  
Randy Campbell, Radian Research
- 1:45 p.m. **Planning for Maximizing the Value of Smart Grid Investments**  
Joshua Pepple, NRTC
- 2:30 p.m. **Break - Exhibit Hall**
- 2:45 p.m. **Modernizing the Grid by Harnessing the Power of Data**  
John O'Leary, Tantalus
- 3:30 p.m. **Case Study-Switching Between the Grid and Backup Power**  
John Williams, TESCO

# Conference Schedule

## Tuesday (continued)

4:15 p.m. **Adjourn/Networking  
Social in the Exhibit Area**

**SUBSTATION & DISTRIBUTION  
BASIC - WINDSOR B**

Presiding: Preston Fry, RW Chapman

8 a.m. **Bushing Current  
Transformer - Specifying  
for Metering and Relaying**  
Frank Lopez, GE Instrument  
Transformers

8:45 a.m. **Distribution Reclosers &  
Controls**  
Roger Munay, Eaton

9:30 a.m. **Substation Print Reading**  
Kiran Ravikumar, Schweitzer  
Engineering Labs

10 a.m. **Break**

10:30 a.m. **Regulators - Basic Theory  
and Operation**  
Joe Robb, TMS

11:15 a.m. **Regulators - Maintenance**  
Joe Robb, TMS

Noon **Lunch**

Presiding: Dee Byrd, W.R. Daniel

1 p.m. **Introduction to Distribution  
Reclosing**  
Luke Booth, Schweizer  
Engineering Labs

1:45 p.m. **Introduction to Differential  
Protection**  
Luke Booth, Schweizer  
Engineering Labs

2:30 p.m. **Break - Exhibit Hall**

2:45 p.m. **Introduction to  
Substations II: Protection**  
Court Weathers, Booth &  
Associates, LLC

4:15 p.m. **Adjourn/Networking  
Social in the Exhibit Area**

**SUBSTATION & DISTRIBUTION  
ADVANCED - WINDSOR A**

Presiding: Bill Jordan, Booth &  
Associates

8 a.m. **Virtualizing Protection and  
Control**  
Yacine Mallem, ABB

8:45 a.m. **Protecting Substations  
from environmental Issues**  
Ben Ellis, Roxtec

9:30 a.m. **High Voltage Instrument  
Transformers**  
Michael Griffin, Ritz  
Instrument Transformers

10 a.m. **Break**

10:30 a.m. **Update to CIP014-3  
Physical Security**  
Joel Valley, Fayetteville  
PWC

11:15 a.m. **Dashboard Analytics for  
Substation Inspections**  
Dr. Nand Singh, MinMax  
Technologies, LLC

Noon **Lunch**

Presiding: Rick Anderson, Retired

1 p.m. **Preventing Reclosing for  
Underground Faults**  
Kiran Ravikumar, Schweitzer  
Engineering Labs

# Conference Schedule

## Tuesday (continued)

- 1:45 p.m. **Unlock the Power of Digital Substations**  
Vincent Duong & Priyanka Kolte, ABB Inc.
- 2:30 p.m. **Break - Exhibit Hall**
- 2:45 p.m. **Perimeter Security Design, Barriers, Procedures, Evolving Solutions Incorporating ASTM**  
Trisha Hunt, Amico Security
- 3:30 p.m. **Automated Line and Maintenance Patrol Using Vehicle-Mounted Infrared Camera Systems**  
Dusty Birge, Fast Forward
- 4:15 p.m. **Adjourn/Networking Social in the Exhibit Area**

### EMERGING TECHNOLOGIES - SOMERSET

- Presiding: Tim Stankiewicz, Fayetteville PWC
- 8 a.m. **Analytics for Meter Data**  
Zack Horton, Booth & Associates LLC
- 8:45 a.m. **How Our Utility Handles 5G Antenna Installations and Safety**  
Wesley Jacobs & Tim Stankiewicz, Fayetteville PWC
- 9:30 a.m. **Empowering Utility Workflows, the Benefits and Trends of Mobile Device Options**  
David Schamber, Radian Research

- 10:15 a.m. **Break**
- 10:30 a.m. **Unlocking the Power of AMI with Analytics**  
Shane Powell, Alabama Power
- 11:15 a.m. **The Value of DER/ Distribution Management Leveraging Metering**  
Mike Vecchi, Landis+Gyr
- Noon **Lunch**
- Presiding: Christine Cole, ITRON
- 1 p.m. **Impacts of Residential EV Charging on Utility Operations**  
Eric Lambert, Aclara Meters
- 1:45 p.m. **Vegetation Management – More Than Imagery, Technologies for Enhancing Veg Management Programs to Protect the Grid**  
Jim Baehr, Electrical Grid Monitoring
- 2:30 p.m. **Break - Exhibit Hall**
- 2:45 p.m. **Planning and Preparing: Putting the Right Resources in Place Before We Need Them**  
Joshua Pepple, NRTC
- 3:30 p.m. **Fiber Optic Infrastructure & Technologies**  
Andy Gibson & Joe Phillips, S&N Communications
- 4:15 p.m. **Adjourn/Networking Social in the Exhibit Area**

# Conference Schedule

## Tuesday (continued)

### ENGINEERING - HAMPTON

- Presiding: Karl Repko, Reinhausen Manufacturing
- 8 a.m. **Understanding & Refining the Use of SCADA Indication Points in a Modern Electrical Distribution System**  
Mark Ballentine, McCall Thomas Engineering
- 8:45 a.m. **How does IPsec Encryption Work?**  
Andy Gould, Schweitzer Engineering Labs
- 9:30 a.m. **The Art of Transformer Care: A Guide for Engineers**  
Chris Lowery, Reinhausen Manufacturing
- 10:15 a.m. **Break**
- 10:30 a.m. **Utilizing Advanced Analytics for Reliability Analysis**  
Michael F. Watson, Empiric LLC
- 11:15 a.m. **Engineering Ethics**  
David Evans, NC Board of Examiners for Engineers and Surveyors
- Noon **Lunch**
- Presiding: To Be Announced
- 1 p.m. **Engineering Ethics**  
David Evans, NC Board of Examiners for Engineers and Surveyors
- 1:45 p.m. **DC Traceability**  
Joel Canine, Radian Research

- 2:30 p.m. **Break - Exhibit Hall**
- 2:45 p.m. **Topic: To Be Announced**  
Speaker TBA, Hitachi Energy
- 3:30 p.m. **Transformer Life Extension Thru LTC Retrofit.**  
Karl Repko, Reinhausen Manufacturing
- 4:15 p.m. **Adjourn/Networking Social - Exhibit Hall**

## Wednesday, June 11, 2025

### SINGLE PHASE - KENSINGTON C

#### Vendor Room Assignment Below

- 8 a.m. **Programming Meters-Session 1**  
Aclara-Kensington C  
Itron - Eton  
L&G - Oxford  
Honeywell-Kensington A  
Sensus-Harrow
- 9:45 a.m. **Break**
- 10 a.m. **Programming Meters-Session 2**  
Aclara-Kensington C  
Itron - Eton  
L&G - Oxford  
Honeywell-Kensington A  
Sensus-Harrow
- Noon **Lunch**
- Presiding: Frank Lopez, GE Instrument Transformers
- 1 p.m. **Topic: To Be Announced**  
Perry Lawton, TESCO
- 2 p.m. **Break**

# Conference Schedule

## Wednesday (continued)

2:15 p.m. **Instrument Transformer Basics - Understanding All Nameplate Ratings.**  
Frank Lopez, GE Instrument Transformers

3:15 p.m. **Introduction to Vector Diagrams**  
Steve Hudson, Radian Research

4:15 p.m. **Adjourn**

6 p.m. **Networking Social-Somerset**

7 p.m. **Banquet-Kensington Ballroom**

### POLYPHASE - KENSINGTON A

#### Vendor Room Assignment Below

Presiding: Raeann Miller, Radian Research

8 a.m. **Programming Meters Session 1**  
Aclara - Kensington C  
Itron - Eton  
L&G - Oxford  
Honeywell -Kensington A  
Sensus - Harrow

9:45 a.m. **Break**

10 a.m. **Programming Meters-Session 2**  
Aclara - Kensington C;  
Itron - Eton; L&G - Oxford;  
Honeywell - Kensington A  
Sensus - Harrow

Noon **Lunch**

Presiding: Jacobi Smith, NTS

1 p.m. **KYZ Pulse Metering**  
Bill Brayden, Brayden Automation Corp/Solid State Instruments

2 p.m. **Break**

2:15 p.m. **Hands on Testing**  
Radian Research-Pembroke  
TESCO-Eton  
Probewell-Oxford

4:15 p.m. **Adjourn**

6 p.m. **Networking Social-Somerset**

7 p.m. **Banquet-Kensington Ballroom**

### ADVANCED - KENSINGTON B

Presiding: Jean Kretzschmar, SAMSCO

8 a.m. **Functional Testing: The New Face of Meter Testing**  
John Williams TESCO

8:45 a.m. **Site Inspections - Looking for Dangerous Installations and Incorrect Billing**  
Tom Lawton TESCO

9:30 a.m. **Improving Meter Shop Efficiency**  
Randy Campbell, Radian Research

10:15 a.m. **Break**

10:30 a.m. **ANSI Standards: A New Generation of Standards is Coming**  
Bill Hardy, Power Measurements LLC - (retired)

# Conference Schedule

## Wednesday (continued)

11:15 a.m.	<b>Lessons Learned from AMI Deployments and Asset Management Readiness</b> Jon Scott TESCO	9:30 a.m.	<b>Equipment and Instrumentation Repair Tracking Management</b> David Schamber, Radian Research
Noon	<b>Lunch</b>	10:15 a.m.	<b>Break</b>
Presiding:	Mike Doggett, Chapman Company	10:30 a.m.	<b>Fair Value of DER's on Utility Distribution Networks</b> Robbie Astrop, Electric Power Engineers
1 p.m.	<b>Testing High Revenue Meters</b> David Schamber, Radian Research	11:15 a.m.	<b>Power Quality Analysis</b> Adam Hinkebein, PowerSlide
1:45 p.m.	<b>Time of Use and Load Profile</b> Bryan Seal, Itron	Noon	<b>Lunch</b>
2:30 p.m.	<b>Break</b>	Presiding:	Christine Cole, ITRON
2:45 p.m.	<b>Modernizing Meter Shops with Software Workflows</b> Tom Van Valkenburg, Radian Research	1 p.m.	<b>Meter Service Shops of the Future</b> Tom Lawton TESCO
3:30 p.m.	<b>New ANSI Standard + Application In the Field</b> Tom Lawton, TESCO	1:45 p.m.	<b>Why Grid Reliability Demands New Approaches and Tools</b> James Hobbs, Safegrid Oy Research
4:15 p.m.	<b>Adjourn</b>	2:30 p.m.	<b>Break</b>
6 p.m.	<b>Networking Social Somerset</b>	2:45 p.m.	<b>Panel Discussion - Data Center Impacts</b> Jeff Lewis, PowerTech, Duke Rep Dominion Rep, Clare Bargerstock, NOVEC, & Josh McDonald, Rappannock Electric Coop
7 p.m.	<b>Banquet - Kensington Ballroom</b>	4:15 p.m.	<b>Adjourn</b>
<b>MANAGEMENT - WINDSOR C</b>		6 p.m.	<b>Networking Social Somerset</b>
Presiding:	Steve Cauble, Duke Energy	7 p.m.	<b>Banquet - Kensington Ballroom</b>
8 a.m.	<b>Cyber Security for Metering and Distribution</b> Perry Lawton, TESCO		
8:45 a.m.	<b>Safety in Field Metering Equipment</b> Steve Hudson, Radian Research		



# Conference Schedule

## Wednesday (continued)

### **SUBSTATION & DISTRIBUTION BASIC - WINDSOR B**

Presiding: Daniel Dye NTS

8 a.m. **Sizing Instrument Transformers for the Most Accurate Metering Performance**  
Michael Griffin, Ritz  
Instrument Transformers

8:45 a.m. **Metering Different Bus Arrangements**  
Nathaniel Dunn, Schneider Electric

9:30 a.m. **Sizing Distribution Transformers for C&I Customers**  
Bill Jordan, Booth and Associates LLC

10:15 a.m. **Break**

10:30 a.m. **Recloser - Basic Theory and Operation**  
Joe Robb, TMS

11:15 a.m. **Recloser - Maintenance**  
Joe Robb, TMS

Noon **Lunch**

Presiding: Court Weathers, Booth & Associates

1 p.m. **Fundamentals of Ethernet Communications**  
Andy Gould, Schweitzer Engineering Labs

1:45 p.m. **Introduction to DNP3 Protocol**  
Andy Gould Schweitzer Engineering Labs

2:30 p.m. **Break**

2:45 p.m. **IEEE 837 Standard for Qualifying Permanent Connections used in Substation Grounding**  
Dan Holm, nVent

4:15 p.m. **Adjourn**

6 p.m. **Networking Social Somerset**

7 p.m. **Banquet - Kensington Ballroom**

### **SUBSTATION & DISTRIBUTION ADVANCED - WINDSOR A**

Presiding: Court Weathers, Booth & Associates

8 a.m. **Electric Vehicle Impacts to the Distribution System**  
Brad Carroll, DRG Technical Solutions

8:45 a.m. **Digital Secondary Substations - A Practical Analysis**  
Derrick Wood, Booth & Associates

9:30 a.m. **Visit Vendors**

10:15 a.m. **Break**

10:30 a.m. **Substation Oil Containment Through the Years**  
Bill Gannon, SPI

11:15 a.m. **Overvoltage Protection of Underbuild Distribution**  
Court Weathers, Booth & Associates

Noon **Lunch**

# Conference Schedule

## Wednesday (continued)

Presiding:	Dee Byrd, W.R. Daniel	10:30 a.m.	<b>High Density Coordination with Communications</b> Kiran Ravikumar, Schweitzer Engineering Labs
1 p.m.	<b>Event Analysis Advanced</b> Kiran Ravikumar, Schweitzer Engineering Labs	11:15 a.m.	<b>Leveraging Artificial Intelligence and Machine Learning for Fault Prediction</b> Yacine Mallem, ABB
1:45 p.m.	<b>Critical Load Monitoring Through Transformers</b> Ed Kobeszka, Ubicquia	Noon	<b>Lunch</b>
2:30 p.m.	<b>Break</b>	Presiding:	James Tramal, TESCO
2:45 p.m.	<b>Fast Bus Tripping</b>	1 p.m.	<b>Deploying of a PLTE Utility Communications Network</b> Hernan Nucci, WESCO
3:30 p.m.	<b>Distribution Automation and FLISR</b> Andy Gould, Schweitzer Engineering Labs	1:45 p.m.	<b>EV Charging: 30kW to 30MW</b> Bill Hardy, Power Measurements LLC - (retired)
4:15 p.m.	<b>Adjourn</b>	2:30 p.m.	<b>Break</b>
6 p.m.	<b>Networking Social Somerset</b>	2:45 p.m.	<b>Pros and Cons of Cellular AMI, RF, and Power Line Carriers</b> Jon Scott, TESCO
7 p.m.	<b>Banquet - Kensington Ballroom</b>	3:30 p.m.	<b>From Hype to Reality: Generative AI's Role in Electric Utility Transformation</b> Alnoor Ebrahim, Southern Cross Inc.
<b>EMERGING TECHNOLOGIES - SOMERSET</b>			
Presiding:	Christine Cole, ITRON	4:15 p.m.	<b>Adjourn</b>
8 a.m.	<b>AMI 2.0+ Protecting Core Utility Operations</b> Mike Vecchi, Landis+Gyr	6 p.m.	<b>Networking Social Somerset</b>
8:45 a.m.	<b>AMI At Light Speed -- Leveraging Fiber Back-haul for AMI</b> Bryan Seal, ITRON	7 p.m.	<b>Banquet - Kensington Ballroom</b>
9:30 a.m.	<b>Dynamic Band Width Voltage Regulation With Distributed Energy Resources</b> Roger Mundy, Eaton		
10:15 a.m.	<b>Break</b>		

# Conference Schedule

## Thursday, June 12, 2025

### **SINGLE PHASE - KENSINGTON C**

- Presiding: Scott Finley, NTS
- 8 a.m. **Introduction to Self Contained Meter Sockets**  
Mark Barker, The Durham Company
- 9 a.m. **Single Phase Meter Theory: Energy/Power, Power Triangle, Single Phase Self Contained Meter Forms**  
Bryan Seal ITRON
- 10 a.m. **Street Light Watthour Testing**  
Ryan Moffitt, Radian Research
- 10:45 a.m. **Break**
- 11:15 a.m. **All Sessions Combine into General Session**

### **POLYPHASE - KENSINGTON A**

- Presiding: Greg Johnson, Alabama Power
- 8 a.m. **Detecting False Energy Metering**  
Luke Booth, Schweitzer Engineering Laboratories
- 9 a.m. **In Service Testing Problems and Processes**  
Ryan Moffitt, Radian Research

- 10:15 a.m. **4 Quadrant Metering**  
Nathaniel Dunn, Schneider Electric
- 10:45 a.m. **Break**
- 11:15 a.m. **All Sessions Combine into General Session**

### **ADVANCED/MANAGEMENT/ COMBINED SESSION - KENSINGTON B**

- Presiding: Jeff Lewis, PowerTech
- 8 a.m. **ANSI C12 Changes That May Impact You for 2025 and Beyond**  
Joel Canine, Radian Research
- 8:45 a.m. **DER Installations & Customer Experience**  
Nora Lardner, ConnectDER & SunRun
- 9:30 a.m. **Transforming Vehicle-to-Grid Challenges into Opportunities**  
Serena Kim, NC State University
- 10:15 a.m. **Increasing Energy Demands and Impact on Meter Services**  
Tom Lawton, TESCO
- 10:45 a.m. **Break**
- 11:15 a.m. **All Sessions Combine into General Session**



# Conference Schedule

## Thursday (continued)

### **SUBSTATION & DISTRIBUTION BASIC - WINDSOR B**

Presiding: Dee Byrd, W.R. Daniel

8 a.m. **Key Elements of  
Distribution Design (NESC)**  
Bill Jordan, Booth &  
Associates

8:45 a.m. **Arc Flash Analysis and Why  
You Care**  
Matt Ward, McCall-Thomas  
Engineering

9:30 a.m. **IEEE 80 Guide for Safety in  
AC Substation Grounding  
with Focus on Reducing  
Step & Touch Potential  
Hazards**  
Dan Holm, nVent

10:15 a.m. **Microprocessor-Based Relay  
Testing Principles**  
Luke Booth, Schweitzer  
Engineering Labs

10:45 a.m. **Break**

11:15 a.m. **All Sessions Combine into  
General Session**

### **SUBSTATION & DISTRIBUTION EQUIPMENT - ADVANCED - WINDSOR A**

Presiding: John Maclaga, Wilson Energy

8 a.m. **Effect of Grounding on  
Sweep Frequency Response  
Analysis C57.149**  
Wesley Schrom PE, Carolina  
Dielectric Maintenance  
Testing Co

8:45 a.m. **Using Mobile DGA to  
Safeguard Equipment and  
Personnel**  
Lisa Ellison, Jake Rudisill  
Associates

9:30 a.m. **Primary and Secondary  
Transformer Cellular Based  
Monitoring**  
JT Thompson, Edge Zero

10:15 a.m. **Troubleshooting Recloser  
Lockout**  
Kiran Ravikumar, Schweitzer  
Engineering Labs

10:45 a.m. **Break**

11:15 a.m. **All Sessions Combine into  
General Session**

### **EMERGING TECHNOLOGIES - SOMERSET**

Presiding: Clare Bargerstock, NOVEC

8 a.m. **Updating Utility  
Maintenance at The Grid  
Edge**  
Jim Fisher, ITRON

8:45 a.m. **Fiber Optic Sensing  
Applications**  
Andy Gibson, S&N  
Communications, Mark Boxer,  
OFS Optics

9:30 a.m. **Distribution Operation  
Training Simulator -  
Overview and Benefits**  
Parag Parikh & Mike Adams,  
Hitachi Energy

10:15 a.m. **In Home Communications:  
Does it "Matter"?**  
Derl Rhoades, Sensus, a  
Xylem Brand

10:45 a.m. **Break**

# Conference Schedule

## Thursday (continued)

### General Session - Kensington ABC

Presiding: Greg Johnson, Alabama Power

11:15 a.m.	<b>Safety: What Have We Forgotten?</b> J.T. Jacobs, Virginia, Maryland & Delaware Association of Electric Cooperatives	Noon	<b>Participant Feedback on the School</b>  <b>Closing Comments</b>  <b>Adjourn</b>
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**Thank you for attending the 93rd Annual  
North Carolina Electric Meter School  
and Grid Technology Conference! Please  
take a moment to tell us about your  
experience by June 26th:**



# Sessions

## Manufacturer Programming Sessions & Hands-On Testing Sessions

### TUESDAY, JUNE 10

8 a.m.		Eton
		Oxford
	Radian Research-Calibration Check	Pembroke
	Schneider	Winchester
		Harrow
10 a.m.		Eton
		Oxford
	Radian Research-Calibration Check	Pembroke
		Winchester
		Harrow
1 p.m.		Eton
		Oxford
	Radian Research-Calibration Check	Pembroke
		Winchester
		Harrow
3 p.m.	Programming Session-Electro Industries	Eton
	Programming Session-Satec	Oxford
	Programming Session-Transdata	Pembroke
	Programming Session-Schneider	Winchester
	Programming Session-SEL	Harrow
	Programming Session-Ametek	Kensington B
5 p.m.	Adjourn	

# Sessions (Continued)

## Manufacturer Programming Sessions & Hands-On Testing Sessions

### WEDNESDAY, JUNE 11

8 a.m.	Ittron - Meter Programming	Eton
	Aclara - Meter Programming	Kensington C
	L&G - Meter Programming	Oxford
	Radian Research-Calibration Check	Pembroke
	TESCO	Winchester
	Honeywell-Meter Programming	Kensington A
10 a.m.	Senus-Meter Programming	Harrow
	Ittron - Meter Programming	Eton
	Aclara - Meter Programming	Kensington C
	L&G - Meter Programming	Oxford
	Radian Research-Calibration Check	Pembroke
	TESCO	Winchester
1 p.m.	Honeywell-Meter Programming	Kensington A
	Sensus - Meter Programming	Harrow
		Eton
		Oxford
	Radian Research Calibration Check	Pembroke
		Winchester
2:15 p.m.		Harrow
	Hands-on Testing-TESCO	Eton
		Harrow
	Hands On Testing-Probewell	Oxford
	Hands On Testing - Radian Research	Pembroke
		Winchester
All Week 5 p.m.	Radian Research-Calibration Check	Pembroke
	Adjourn	

# Conference Support

## 2025 Program Committee

Alkire, Ryan.....	GE Vernova, Tampa, FL	Leach, George.....	Northern Virginia Electric Cooperative, Manassas, VA
Anderson, Rick.....	Fayetteville PWC (Retired), Wake Forest, NC	Lewis, Jeff.....	PowerTech LLC, Lexington, NC
Bargerstock, Clare...	Northern Virginia Electric Cooperative, Manassas, VA	Lopez, Frank.....	GE Instruments Transformers, Odessa, FL
Barker, Mark.....	The Durham Company, Lebanon, MO	Maclaga, John.....	City of Wilson, Wilson, NC
Brown, Rodney.....	Dominion Energy, Richmond, VA	McCraw, Kenneth...	Duke Energy, Salisbury, NC
Byrd, Dee.....	WR Daniel & Associates. Winston- Salem, NC	McDonald, Josh.....	Rappahannock Electric Coop, Fredericksburg, VA
Candler, Nick.....	The Durham Company, Lebanon, MO	McElroy-Bacon.....	Connie, McElroy-Bacon Consulting Services, Raleigh, NC
Cable, Steven.....	Duke Energy, Salisbury, NC	Miller, Raeann.....	Radian Research, Lafayette, IN
Cole, Christine.....	Itron, Clayton, NC	Mossbrooks, Scott.....	WESCO, Flowery Branch, GA
Cooper, Chad.....	Dominion Energy, West Columbia, SC	Munay, Roger.....	PowerTech, Hickory, NC
Corbin, Michael.....	Raleigh, NC	Overbee, Timothy.....	Duke Energy, Pine Level, NC
Craig, Curtis.....	Shenandoah Valley Electric Cooperative (Retired), Verona, VA	Pampanelli, Tina.....	Itron, Liberty Lake, WA
Dempsey, Sean.....	Honeywell, Raleigh, NC	Parker, Jason.....	Duke Energy, Garner, NC
Edwards, Garey.....	City of High Point (Retired), Albemarle, NC	Pest, Mark .....	nVent, Solon, OH
Ellison, Lisa ...	Jake Rudisill Associates, Cary, NC	Plexico, Ben.....	Harvey Plexico Inc., Columbia SC
Erbe, Elliott.....	Utility Sales LLC, Midlothian, VA	Prashad, Dale.....	Aclara, St. Louis, MO
Farmer, Kyle.....	Marwell Corporation, Radford, VA	Repko Karl.....	Reinhausen Manufacturing, Charlotte, NC
Finley, Scott.....	NTS, Raleigh, NC	Ring, Dale.....	McCall-Thomas Engineering, Orangeburg, SC
Furr, Brad...	Utility Sales Associates, Nags Head NC	Rodriguez, Silvia.....	WeProject Inc., Raleigh, NC
Green, Jimmy.....	Brunswick Electric, Shallotte, NC	Shoaf, Craig.....	NTS, Raleigh, NC
Grubbs, Jimmy.....	SCE&G (Retired), Gilbert, SC	Shumar, Jay.....	Schneider Electric, Holly Springs, NC
Hardy, Bill ...	Power Measurements LLC, Haymarket, VA	Stankiewicz, Tim.....	Fayetteville PWC, Fayetteville, NC
Horton, Tony.....	Duke Energy (Retired), Wendell, NC	Tippette, William...	Utility Sales Associates LLC, Midlothian, VA
Hudson, Steve.....	Powermetrix, Knoxville, TN	Valley, Joel.....	Fayetteville PWC, Fayetteville, NC
Jehle, Brian .....	TESCO, Bristol, PA	White, Vernon.....	TESCO, Bristol, PA
Johnson, Greg.....	Alabama Power, Montgomery, AL	Whitmore, Bob.....	Radian Research, Newland, NC
Jordan, Bill ...	Booth Associates, Raleigh, NC	Wilcox, Robert.....	Rappahannock Electric Cooperative (Retired), Fredericksburg, VA
Kretschmar, Jeane..	SAMSCO, Boiling Springs, SC	Williams, Dean.....	Duke Energy (Retired), Myrtle Beach, SC
Kretschmar, John...	SAMSCO, Boiling Springs, SC	Williams, Nicki.....	Reinhausen Manufacturing, Charlotte, NC
Lawton, Tom.....	TESCO, Bristol, PA	Wilson, Robert.....	ENSALES Inc., Buelaville, NC



# Hall of Fame

The Hall of Fame award is given for outstanding contributions and dedicated services, which ensure the continued success of the North Carolina Meter School.

## 1981

Ed Ruggles, NC State University (Deceased)  
Bert W. Blake, CP&L (Deceased)  
Edwin W. Winkler, NC State University, (Deceased)  
William A. Keller, Duncan Electric (Deceased)  
George B. Hoadley, NC State University (Deceased)

## 1982

William J. Perry, CP&L (Deceased)  
Donald Eggleston, Duke Power (Deceased)

## 1983

Herbert B. Adams, VEPCO (Deceased)  
Walter Hodde, Sangamo Weston (Retired)  
Norman R. Bell, NC State University (Deceased)

## 1984

Brian C. Fetner, SCE&G (Deceased)  
D.K. Woodard, General Electric (Deceased)

## 1985

Vernon E. Bobo, Duke Power (Retired)  
Edward Kennedy, Santee Cooper (Retired)  
C.L. McKenzie, CP&L (Retired)

## 1986

No Inductees

## 1987

Rick Anderson, P.E., Fayetteville Public Works (Retired)  
David B. Stansel, NC State University (Deceased)

## 1988

Richard P. Dorton, VEPCO (Deceased)  
Lee Monroe, Duke Power (Retired)

## 1989

Robert W. Cox, General Electric (Deceased)  
Lloyd Jordan, General Electric (Deceased)

## 1990

Bob Kelly, R.W. Chapman (Deceased)  
Ed Manning, NC State University (Deceased)

## 1991

Earl Garthright, VA/NC Power (Deceased)  
J.J. Perry, Jr., J.J. Perry Company (Deceased)  
Connie McElroy-Bacon, NC State University

## 1992

No Inductees

## 1993

John Sutton, P.E., NC State University (Retired)  
Ralph West, Duke Power (Retired)

## 1994

Jack Tanner, Tanner & Tanner, Inc. (Deceased)

## 1995

No Inductees

## 1996

Luther Herman, NC State University (Deceased)  
Donald Stanley, City of Wilson (Deceased)

## 1997

David A. Springs, P.E., Central Electric Power Cooperative (Retired)  
Joyce Tanner, Tanner & Tanner, Inc. (Retired)

## 1998

No Inductees

## 1999

Jimmy Grubbs, SCE&G (Retired)  
Gene Schickedanz, Durham Co. (Deceased)

## 2000

Randy Riley, Landis+Gyr (Retired)  
Larry Waters, General Electric (Retired)

## 2001

John Carr, UTEC (Retired)  
Dean Williams, Duke Energy (Retired)

## 2002

Clare Bargerstock, Northern Virginia Electric Cooperative  
Del Weers, ITEC (Deceased)

## 2003

Tony Horton, Duke Energy (Retired)

## 2004

Brooks Kirby, City of Morganton

## 2005

Cindy S. Allen, NC State University (Retired)

## 2006

Tom Van Valkenburgh, Watthour Engineering

## 2007

Jeff Lewis, PowerTech LLC  
Bob Wilcox, Rappahannock Electric Cooperative (Retired)

## 2008

Craig Shoaf, National Transformer Sales

## 2009

Greg Tyre, The Durham Company (Retired)

## 2010

Scott Mossbrooks, WESCO

## 2011

Brian Giusani, Audio Visual Services Coastal  
Kenneth McCraw, Duke Energy

## 2012

John Cochran, ITEC (Retired)  
James Green, Brunswick EMC

## 2013

No Inductees

## 2014

No Inductees

## 2015

Mike Byrd, ElectriCities of NC (Retired)  
Bill Hardy, TESCO – The Eastern Specialty Company  
Chuck Robertson, SCE&G (Retired)

## 2016

Curtis Craig, Shenandoah Valley Electric Cooperative (Retired)

## 2017

Rusty Mutschink, Central Electric Power Cooperative  
Tim Overbee, Duke Energy

## 2018

Vernon White, TESCO – The Eastern Specialty Company

## 2019

Sean Dempsey, Honeywell

## 2020

Canceled due to COVID-19

## 2021

No Inductees

## 2022

Chad Cooper, Dominion Energy  
Tom Lawton, TESCO

## 2023

John Maclaga, City of Wilson

## 2024

Raeann Miller, Radian Research

**Notes**

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**Notes**

[illegible]



**Save the Date!**

**94<sup>th</sup> Annual  
NC Electric Meter School and  
Grid Technology Conference**

**June 7-11, 2026**

**Embassy Suites Kingston Plantation  
Myrtle Beach, SC**