

POST-CONFERENCE REPORT

UTA  Division for Enterprise Development

TSD S

56TH ANNUAL | TRANSMISSION &
SUBSTATION DESIGN & OPERATION SYMPOSIUM

SEPTEMBER 6 - 8, 2023 | EMBASSY SUITES DALLAS-FRISCO



The Annual Transmission & Substation Design & Operation Symposium (TSDOS) serves as a forum for utilities, engineers, suppliers, contractors, and consultants to present and discuss the most recent trends, challenges encountered, and solutions adopted in the industry. In addition, attendees and vendors gather to share ideas and experiences and to learn from case studies presented by experts in their fields. The 56th TSDOS was conducted as a hybrid event on Wednesday, September 5, 2023 – Friday, September 8, 2023, at the Embassy Suites & Spa in Frisco, Texas.

Over three days, twenty- one presentations were live streamed and included real-time Q&A. The remaining symposium sessions were recorded and available on-demand to attendees after the symposium on the TSDOS Attendee Hub. Attendees were able to earn 15 PDH credits, including 1 hour of Ethics. Attendees who joined us in Frisco for the symposium interacted with vendors on Wednesday and Thursday night during the hospitality event. Vendors demonstrated their products, shared documents, and networked with attendees.

2023 REGISTRATION CATEGORIES

- Attendee
- Virtual Attendee
- Vendor with Conference Registration
- Vendor
- Additional Vendor Booth Staff



In Memory of
DR. MO- SHING CHEN
1932 - May 2023

Chen was an outstanding professor and researcher who made numerous contributions to the field of energy systems, and TSDOS for many years.

2023 TSDOS ADVISORY BOARD MEMBERS

***MOHAMMED AHMED, P.E.**

Manager
American Electric Power

ANDREW ASTON, P.E.

Lead Substation Reliability Engineer
Oklahoma Gas and Electric

***KENNETH BOWEN, P.E.**

Manager, Transmission Planning
and Operations Engineering
CPS Energy

TIM CRONEMEYER

Station Manager
American Electric Power

***KRYSTAL DEVOS**

Engineer Sr.
American Electric Power

***REZA EBRAHIMIAN, Ph.D., P.E.**

Director, T&D Planning
Austin Energy

***MATT ESTRADA**

Station Manager
American Electric Power

TIM HARTZ, P.E.

Manager, Transmission Engineering
Brazos Electric Power Cooperative

JOE HAZLEWOOD

Transmission Equipment Support
Oncor Electric Delivery

***STAN KRAUSE, P.E.**

Utility Consultant

WEI-JEN LEE, Ph.D., P.E.

Electrical Engineering Professor and Interim Chair
The University of Texas at Arlington

JUAN MELENDEZ, P.E.

Substation Engineering Manager
Lower Colorado River Authority

MATTHEW MORRISON, P.E.

Transmission Standards Manager
Oncor Electric Delivery

***BECKY OVERDUYN, P.E.**

Manager
American Electric Power

EDUARDO RODRIGUEZ, P.E.

Operations Manager
Oncor Electric Delivery

***JUAN SANTIAGO SANTOS, Ph.D., P.E.**

Rayburn Electric Cooperative

***DAVID SOLIS**

ACT - SE ENGINEER
American Electric Power

JOHN SWIFT, P.E.

Director, Transmission Engineering
Oncor Electric Delivery

DAVID TURNER, P.E.

Utility Consultant

RANDY WEISS, P.E.

Engineering Supervisor
Lower Colorado River Authority

The University of Texas at Arlington
Conference and Event Management Team

CASSANDRA SMITH

Assistant Vice President

STACI MOORE

Manager

TERRE COLEMAN

Program Coordinator I

JONATHAN SWIFT

Program Coordinator II

**Not pictured.*





MICHAEL SIMS, P.E.

DIRECTOR OF COMPLIANCE & ENFORCEMENT
TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS

Michael Sims currently serves as the Director of Compliance and Enforcement with the Texas Board of Professional Engineers and Land Surveyors. He has been with the Board since June 2018. Michael previously was the Special Projects Manager and Manager of Environmental Permits within the Oil & Gas Division of the Railroad Commission of Texas and worked in Air Permits at the Texas Commission on Environmental Quality. He holds a B.S. in chemical engineering from the University of Texas at Austin and has been a licensed professional engineer since 2010.



PETER E. CROUCH, Ph.D.

COLLEGE OF ENGINEERING DEAN
THE UNIVERSITY OF TEXAS AT ARLINGTON

Peter E. Crouch joined UTA in August 2016 as dean of the nationally ranked College of Engineering and as a professor of electrical engineering. Since arriving, he has pursued vigorous support for the UTA President's strategic vision for The University of Texas at Arlington, and the powerful growth of the University and the College. Developing the strategic links between the College and its stakeholders, especially in the DFW metro area, is one of his most important goals.

In his previous roles, Crouch successfully enlisted the help and support of major corporations including Intel, Boeing, Northrop Grumman Corp., Motorola, and others to advance excellence in engineering education. At ASU, he worked closely with the university's leaders to secure the \$50 million naming gift for the Ira A. Fulton Schools of Engineering and helped lead the school into the top 50 in the U.S. News and World Report rankings.



CASSANDRA SMITH

ASSISTANT VICE PRESIDENT
DIVISION FOR ENTERPRISE DEVELOPMENT | THE UNIVERSITY OF TEXAS
AT ARLINGTON

Cassandra Smith is an accomplished official with a career spanning over 30 years in various leadership roles across multiple industries. Currently, she serves as the Assistant Vice President at The University of Texas at Arlington's Division for Enterprise Development, a position she has held for the past 17 years. In this capacity, she has been responsible for the strategic direction and operational management of the division, leading its growth and development in delivering innovative, high-quality education, training, and consulting services to businesses and individuals. Her background and leadership skills make her a valuable asset to any organization looking to grow and thrive in today's competitive marketplace.



JIM GREER, P.E.

EXECUTIVE VICE PRESIDENT AND CHIEF OPERATING OFFICER
ONCOR ELECTRIC DELIVERY

Jim Greer joined the Texas Utilities Company system in 1984 after completing his BS Electrical Engineering degree at The University of Texas at Arlington in 1984. In 1990, he obtained his MBA from Texas Christian University. He completed the Harvard Business School's Advanced Management Program in 2007. Jim has held a number of management and leadership positions at Oncor and its predecessor companies, spanning such areas as engineering, operations and governmental relations.

Jim has served as the Chief Operating Officer for Oncor Electric Delivery since 2011. In this role, Jim oversees all distribution and transmission facility planning, engineering, procurement, construction, maintenance and operations, as well as performance management and continuous improvement activities. Jim is currently serving as the President of the Texas Society of Professional Engineers, the Immediate Past President of the Association of Edison Illuminating Companies (AEIC), and serves on the Board of Downtown Dallas, Inc. and the Advisory Board of The University of Texas at Arlington. Jim is a registered Professional Engineer in the State of Texas, and served on the Texas Board of Professional Engineers (now TBPELS) for 10 years as an appointee of Governor Perry.

TEXAS INDUSTRY UPDATE



SYMPOSIUM SESSIONS

GENERAL

- Part II: Final Design, Commissioning and Operation Experience of Garland Power & Light's Lookout STATCOM
- Reliability Focused Load Outage Assessment Tool - SAIFI and SAIDI Improvements
- Extreme Weather, Climate Change, and the Bulk Power System - How Preparation Can Carry Operations Through Emergency Weather Situations
- Innovative Strategies for Resolving Electrical Clearance Conflicts in Transmission Lines
- Using Terrestrial Close Range Photogrammetry for Facility Ratings
- Transition and Integration: Fossil Fuel and Large- Scale Renewable Energy
- Texas Industry Update
- LCRA TSC Grounding System Upgrade
- Energized (Hot Work) Construction Sequence Planning...
- Performance of Lattice Steel Structures in Wildfires
- Professional Practice Update/Ethics

TRANSMISSION

- Prolonging the Lifespan of Aging Assets and Reducing Extreme Weather Risks
- Easement Widths for Transmission Lines
- The Development of LCRA TSC'S 138kV Standard Span Lengths Using Braced Post Assembly Capacities
- Preparing and Executing Disaster Response from Remote Locations: A GIS-Based Approach
- Twisted Pair Conductor Motion Mitigation
- Can Transmission Structure Costs Be Optimized by Limiting Foundation Diameters?
- High-Intensity Wind (HIW) Loads: An ASCE 74 Overview & Study
- Practical Calculation Methods for Predicting the Risk of VIV for Tubular Steel Poles
- Totally Tubular – Why Utilities Should Consider Tubular Steel Transmission Tower River Crossings
- Unexpected Vibrations (Fatigue Life Race – Tortoise Versus Hare)

SUBSTATION

- Progressing Toward Electrical Substation Decarbonization Through Alternative Designs
- Sharpening the Axe Before Cutting the Tree: A Preparation Guide to Testing High-Voltage Circuit Breakers
- The Importance of Online PD Monitoring in Gas Insulated Substations (GIS) An Overview
- Quantifying the Physical Resilience of Substations through a Performance-Based Scoring Metric
- Voltage on the Rise: Shunt Reactor Switching Needs Attention!
- The Journey of Switching from Traditional Design to BIM on Network Telecom Tower/Substation Projects
- Latest Advances in Physical Security for Substation and How Those are Reflected in IEEE, ASTM and UL Industry Standards
- Life Extension of Power Transformers Through Proper Moisture Management
- Project Execution Strategies for Future Synchronous Condensers
- LTC, DGA, & Oil Analysis

OPERATION/OTHER

- Virtual Substation Walkthrough, Asset Management and Asset Inventory Tool for Aging Infrastructure
- Utility Analytics to Support Transmission and Distribution Grid Operation in the Presence of EV and DER Penetration
- FACTS Devices: Past, Present, and Future Within Oncor Electric Delivery
- Vertical Limit - Fall Protection Challenges in Existing Transmission Structures
- Benefits and Effectiveness of Overhead Transmission Line Fault Locating
- Protective Relay Upgrade and Arc Flash Hazard Mitigation – Killing Two Birds with One Stone
- Empowering the Power Industry: Navigating Workforce Development and Training Challenges and Opportunities
- An Overview of Circuit Breaker Data Preparation for Breaker Duty Studies in Transmission Systems
- Forecasting, System Planning, and Budgeting for Electric Vehicle Integration
- An Xcel Energy Case Study – Identifying and Analyzing A Faulty Transformer

TSDOS by the numbers

1674 | Participants

1143 | Attendees



57 | Symposium Speakers



38 | Breakout Sessions & Workshops



100 | Vendors **431** | Vendor Staff



Over **35** Territory/Region and States, and 9 Countries Participated Worldwide

- » Canada
- » Cote d'Ivoire
- » Ghana
- » Kuwait
- » Nigeria
- » Saudi Arabia
- » Suriname
- » United Arab Emirates
- » United States Minor Outlying Islands

- | | | |
|----------------------|----------------|----------------|
| Alabama | Louisiana | Oklahoma |
| Arizona | Massachusetts | Pennsylvania |
| Arkansas | Michigan | Puerto Rico |
| California | Minnesota | South Carolina |
| Colorado | Mississippi | Tennessee |
| District of Columbia | Missouri | Texas |
| Florida | Montana | Utah |
| Georgia | New Mexico | Washington |
| Illinois | New York | West Virginia |
| Indiana | North Carolina | Wisconsin |
| Kansas | North Dakota | Wyoming |
| Kentucky | Ohio | |

935 TSDOS Total Mobile App Downloads

1226 Logins



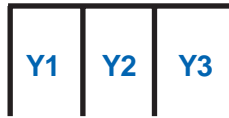
77% iOS

23% android

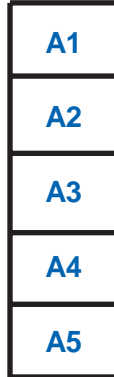
25 OUTDOOR VENDORS

G1-G2	3 Phase Technologies
F1 - F2	Center Phase Energy, LLC.
F3 - F4	EBR
A3 & B3	Great Southwestern Construction, Inc.
B1	Hubbell
A1 - A2	KD Johnson and Nucor Towers & Structures
G4	Kinectrics
C2 - C3	Leidos
C1	Megger
G3	Meyer Utility Structures
D4 - D5	Mustang Extreme
B2	Oberlender & Associates
Y3	Olsson
D3	Primary Utility Services, LLC
F5	PSC Primoris T&D
C4 - C5	Sabre Industries
B4 - B5	Surveying and Mapping, LLC.
E1	TE Connectivity
Y1 - Y2	TorcSill Foundations, LLC.
D1 - D2	United Rentals
E2 - E4	VAISALA and Butler & Land
A4 - A5	Valmont Utility and Preferred Sales Agency

Y1 - Y3



A1 - A5



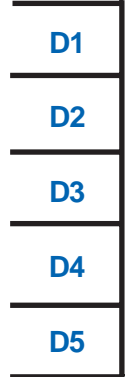
B1 - B5



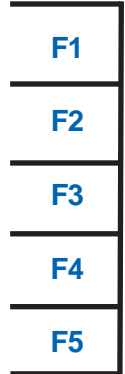
C1 - C5



D1 - D5



F1 - F5



PARKING GARAGE ENTRANCE

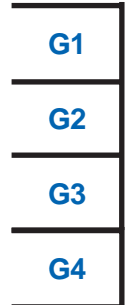


E1 - E4



This Vendor Map is also available on the TSDOS Mobile App.

G1 - G4



GRASS WALL

NOT TO SCALE

PARKWOOD BLVD.



84 INDOOR VENDORS Suite location accompanied with company name.

PENTHOUSE SUITES

14TH FLOOR SUITES

- 1428 Burns & McDonnell
- 1405 Sabre Industries

ATRIUM

- 6 Amico
- 1 Bowman
- 3 CHM Industries
- 8/9 DFI Piling
- 5 Drillers Choice
- 4 Kenner Innovative Design Systems, LLC.
- 2 O'Brien Right of Way Valuation
- 7 Spatial Business Systems

LOBBY

- » MICA Steelworks

FRISCO 3 & 4

- » DIS-TRAN Steel, LLC.
- » Keasler Associates
- » Prolec GE Waukesha

2ND FLOOR MEETING ROOMS

INDIAN TRAIL

- » Mesa Associates, Inc.

BUFFALO TRAIL

- » All-Pro Fasteners, Inc.

SHAWNEE TRAIL

- » GE Grid Solutions

2ND FLOOR SUITES

- 204 Bird Electric Enterprises, LLC.
- 206 Electrical Consultants, Inc.
- 209 kVP Energy Services
- 202/203 PSC Primoris T&D
- 201 SA-RA Group
- 205 Saber Power
- 207 Valmont Utility

3RD FLOOR SUITES

- 307 Actalent Services
- 308 Black & Veatch
- 328 Butler & Land Technologies, LLC.
- 327 Campos EPC
- 323 CEC
- 306 Crown Technical Systems
- 305 Custom Truck One Source
- 319 EBR
- 311/312 EHV Solutions
- 326 Force Electrical Services
- 321 Incab America, LLC.
- 316 Len T. Deloney Co. and Grid Structures
- 304 McCord Engineering, Inc.
- 315 Meyer Utility Structures
- 301/330 Newpark Mats & Integrated Services
- 329 Osmose
- 310 Power Consulting Associates
- 318 Schneider Engineering, LLC.
- 314 Sediver and Utility Sales Agents of North Texas
- 325 Southwire
- 313 Stanley Consultants
- 322 Sterling
- 309 Surveying and Mapping, LLC.

- 324 SynchroGrid, LLC.

- 320 Wesco
- 317 YAK ACCESS

4TH FLOOR SUITES

- 414 ASEC Engineers
- 423 Bell Lumber & Pole Company
- 429 Chain Electric Company
- 424 City Transformer
- 418 Doble Engineering and Energy Reps
- 401/430 Exo and Power Line Systems
- 415 Hawrylak & Associates, LLC.
- 427 HDR
- 408/409 Hubbell
- 426 Irby Utilities
- 419 J.H. Davidson & Associates, LLC.
- 422 Kiewit
- 428 Landpoint
- 412/413 MICHELS
- 424 Normandy Machine Co., Inc. and North American Substation Services
- 406 Parkline
- 425 Pike Electric
- 421 Power Standard
- 402/403 Sempco Surveying
- 416 Southeast Power Corporation
- 420 Spartan Infrastructure
- 407 T-CORR
- 302/303 Tapp, Inc. and Ampjack
- 411 Techline
- 405 TechServ
- 417 Terracon
- 404 Threaded Fasteners, Inc.
- 410 WATSON DRILL RIGS

PINNACLE SPONSOR



PLATINUM SPONSORS



CONFERENCE BAG SPONSOR



WIRELESS SPONSOR



PROGRAM SPONSOR



TITLE SPONSORS



BRONZE SPONSORS



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LANYARD SPONSOR



HOTEL KEYCARD SPONSOR



COFFEE (WITH SNACKS) BREAK SPONSOR



WINDOW CLING SPONSORS



MOBILE APP SLASH SCREEN SPONSOR



ELEVATOR GRAPHIC WRAP SPONSORS



CHARGING STATION SPONSORS



COFFEE (ONLY) BREAK SPONSORS



OUTDOOR TABLE SPONSOR



WATER BOTTLE SPONSORS



MOBILE APP BANNER AD SPONSORS



CONTRIBUTING SPONSORS



DOOR PRIZE SPONSORS





TSDOS



SAVE THE DATE

SEPTEMBER 4 - 6, 2024

Pre-Conference on September 3

EMBASSY SUITES DALLAS-FRISCO

tsdos.org | events@uta.edu

