

2025 IEEE Rural Electric Power Conference (REPC 2025)

**Westminster, Colorado, USA
29 April - 1 May 2025**



**IEEE Catalog Number: CFP25RUE-POD
ISBN: 979-8-3315-9940-9**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***** *This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25RUE-POD
ISBN (Print-On-Demand):	979-8-3315-9940-9
ISBN (Online):	979-8-3315-9939-3
ISSN:	0734-7464

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

2025 IEEE Rural Electric Power Conference (REPC)

REPC 2025

Table of Contents

Preface	vii
Schedule	viii
Executive Committee	xi
Committee Members	xii
Sponsors, Vendors, and Exhibitors	xv

2025 IEEE Rural Electric Power Conference

TCC Evaluation Method for Evaluating Arc Flash and Arc Blast Hazard at Low Voltages and First-Degree Burns	1
<i>Christopher Lee Brooks (Brooks Consulting LLC, CO)</i>	
Arc Flash: Not How or Why, But WHEN to Complete an Assessment on an Electrical Distribution System	10
<i>Christopher Smart (Finley Engineering Company, Missouri)</i>	
Aggregate Modeling of Behind-the-Meter Solar Photovoltaic Systems and Defining Critical Penetration Thresholds for Distribution Fault Studies	15
<i>Jack Carnovale (University of Pittsburgh, USA), Robert Kerestes (University of Pittsburgh, USA), Greg Shirek (Milsoft Utility Solutions, USA), and Wayne Carr (Milsoft Utility Solutions, USA)</i>	
The Value of Early Student Interventions in Building the Future Rural Energy Workforce	23
<i>Sean A. Kufel (PSE, Ohio) and Kristi Leonard-Webber (BB2C, Ohio)</i>	
Utility Distribution and Power Transformer Planning Practices Surveys and Proposed Planning Guidance Considering Future EV Adoptions	27
<i>Justin McCann (West Kentucky Rural Electric Cooperative Corporation, USA) and Yuan Liao (University of Kentucky, USA)</i>	
Identifying Road Speeds and Analyzing Trajectories: GPS-Based Response Time Insights for Electrical Grid Metrics	37
<i>Weston Mueller (Powder River Energy Corporation, WY)</i>	
Proof of Concept: Utilizing Artificial Intelligence with Ground Level Imagery to Identify and Inventory Rural Electric Utility Overhead Infrastructure	41
<i>Wayne Ferguson (Mesa Associates, Inc., USA) and Justin McCann (West Kentucky Rural Electric Cooperative Corporation, USA)</i>	
Using Artificial Intelligence to Improve Reliability and Operational Efficiency of Small-Scale Hydroelectric Distributed Generation	48
<i>Arjun Bhattacharyya (The University of Tennessee, USA) and Srijib Mukherjee (Oak Ridge National Laboratory, USA)</i>	

Synchrophasor-Based Islanding Detection for Distributed Generation Applications	54
<i>Timothy Clements (NEI Electric Power Engineering, USA), Victoria Ibarra (NEI Electric Power Engineering, USA), Sophie Halter (NEI Electric Power Engineering, USA), Andrew Spero (NEI Electric Power Engineering, USA), Colin Hovden (NEI Electric Power Engineering, USA), Caileighan Hoyt (NEI Electric Power Engineering, USA), and Carson Bates (NEI Electric Power Engineering, USA)</i>	
Lesson Learned through Operation and Maintenance of Distribution Electric Grid Connected Utility-Scale Wind Energy Generation Projects	70
<i>Srikanth Madala (Bluestem Energy Solutions, USA) and Carlos Mendoza (Bluestem Energy Solutions, USA)</i>	
Practical Considerations for Appropriate Arrester Selection	79
<i>Chaitali Naik (NEI Electric Power Engineering, USA), Chad Brotherton (NEI Electric Power Engineering, USA), Carson Bates (NEI Electric Power Engineering, USA), and Eric Senkowicz (NEI Electric Power Engineering, USA)</i>	
Author Index	87