DER Integration (P174)

One-Slide Overviews of Proposed 2026 Projects

EPRI

Objective and Outline

- Objective of this slide deck is to provide a brief overview of proposed 2026 projects in DER Integration Program (P174).
- Utilities are encouraged to contact the relevant project leads or the program manager for any questions or additional information regarding the proposed projects.

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- Grid Impact Analysis of DER (174A)
- Smart Inverters and Grid Support Technologies (174B)
- DERMS and Microgrid Integration (174C)
- Practices, Programs, and Economics (174D)
- Technology Transfer and Industry Engagement (174E)

Project Set 174A

Grid Impact Analysis of DER

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Back to Outline

Research Goals

- Understanding the power system impacts of DER
- Enabling higher DER levels while improving or maintaining safety, reliability, efficiency, and power quality
- Sharing research results to drive commercial engagement and innovation

174A 2026 Proposed Deliverables

174A-1		DER Grid Impacts Analysis Workshop – Peer Sharing Effective Practices
174A-2		DER Grid Impacts Analysis Tutorial: Fundamentals Overview
174A-3		DER Grid Impacts Analysis Tutorial: Case Study Working Session
174A-4		Agentic AI for Power System Study Automation
174A-5		Behind the Meter Energy Management System: Considering Co-located Generation, Storage, DR Markets
174A-6		T&D Coordination of DER Settings to Improve System Reliability (2026 Edition)
174A-7		Quantifying Hosting Capacity Impacts for Battery Energy Storage Systems under Flexible Interconnection
174A-8		DER Protection Working Group
174A-9		Distribution Network Model Requirements for DERMS
174A-10		Utility Microgrid Assessment Guide (4th Edition)
174A-11		DER Aggregation (DERa) Behaviors: Reassessing Interconnected DER
174A-12		Harmonic Impacts of DER: Myth vs. Fact

 Software

 Tech Update or Brief

 Whitepaper

 Workshop/Tutorial

DER Grid Impacts Analysis Workshop – Peer Sharing Effective Practices

Utility Need

Utilities are becoming more adept at studying DER, by necessity and also through creative studies. They can, and should, benchmark these practices to help the industry refine how to model and study DER at varying stages of complexity and DER vendor offerings.

Research Objective

Provide a workshop setting at the EPRI advisory meetings in February to allow utilities to share, benchmark, guide, and brainstorm study methods, results, and documentation.

Member Value

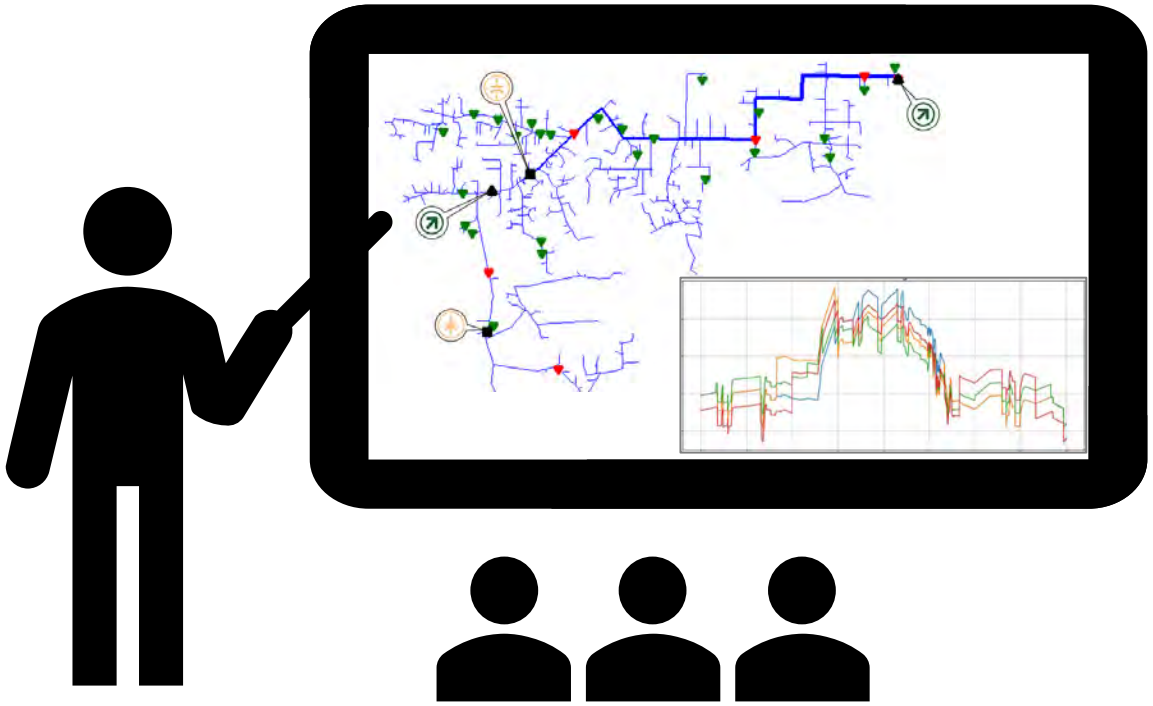
- Engage utility peers to identify, learn or develop innovative and more efficient DER study methods
- Improve utility DER study accuracy and efficiency by benchmarking existing or desired study methods
- Enable utilities to reference industry practices for stakeholder and regulatory awareness

Plan for 2026

- Outreach to highly engaged and proactive utilities doing grid studies with high-pen DER, to present recent efforts and improvements
- Plan and host session at February advisory on Wednesday afternoon

Deliverable	Workshop Q1
Coordination	-
Contact	Stephen Kerr
Reference	2025 and older workshop materials

DER Grid Impacts Analysis Tutorial: Fundamentals Overview



Utility Need

As DER volumes grow and the distribution grid becomes more directly impacted by them, utilities need a means of training employees either new to the topic of DER integration or the industry.

Research Objective

Provide a tutorial for distribution planners and DER integration engineers on key and fundamental grid impacts issues that arise when DER are added to radial distribution systems.

Member Value

- Enhanced grid reliability and safety through workforce development and engineering standardization
- Improved interconnection efficiency and customer relationship through proficient use of advanced study tools

Plan for 2026

- Review fundamental distribution grid operations changes from DER
- Identify tools that can be used for simple screening and grid impact analysis
- Identify and give examples of more complex study needs and methods

Deliverable	Tutorial Q2 (April 29 + 30)
Coordination	-
Contact	Stephen Kerr
Reference	2024 Tutorial, 2025 Tutorial

DER Grid Impacts Analysis Tutorial:
Case Study Working Session

Utility Need

As DER volumes grow and the distribution grid becomes more directly impacted by them, utilities need a means of training employees either new to the topic of DER integration or the industry.

Research Objective

Build on an overview tutorial for distribution planners and DER integration engineers by showing a realistic series of actual impact study methods.

Member Value

- Enhance practical skills for new and developing engineers with real-time, hands-on DER tool training
- Improve DER integration efficiency and reduce study iteration through advanced training methods

Plan for 2026

- Illustrate representative interconnection requests needing engineering review
- Walk through basic screening, power flow, and hosting capacity study methods with simple, tangible examples
- Showcase more in-depth, complex study methods for a larger or more impactful DER site

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Deliverable	Tutorial Q2 (May 13 + 14)
Coordination	-
Contact	Stephen Kerr
Reference	2025 Tutorial

Agentic AI for Power System Study Automation

2026 Edition

Utility Need

With the growing complexity of distribution systems, combined with engineering staffing constraints, utilities need more efficient methods to conduct DER interconnection grid impact studies.

Research Objective

Develop and demonstrate agentic AI solutions to automate DER interconnection grid impact studies, leveraging expert support informed by EPRI research and utility documentation.

Member Value

- Leverage utility engineer experience to inform Assistant Notebook, enabling DER grid impact study consistency through standardized, transparent and repeatable processes
- Accelerate workflow timelines and enhance engineering training through automation of study process scripts and task execution

Plan for 2026

- Integrate standardized LLM APIs with tools such as CYME and Synergi, enabling natural language prompts to automatically conduct studies for power flow, faults, and transient stability.
- Develop user context to empower AI assistants/agents with EPRI's expert knowledge and utility's specific requirement for best result

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Deliverable	Presentation Q4
Coordination	P174B, P200D, P200B
Contact	Wei Ren, Andres Ovalle
Reference	3002033986, 3002034145

Behind the Meter Energy Management System: Considering Co-located Generation, Storage, DR Markets

Utility Need

As medium- and heavy-duty EV adoption progresses, utilities require understanding of the projected operation of fleet charging sites to better prepare for their impact on distribution and transmission networks. This need is focused on planning for forecasted electrification and how to steer it.

Research Objective

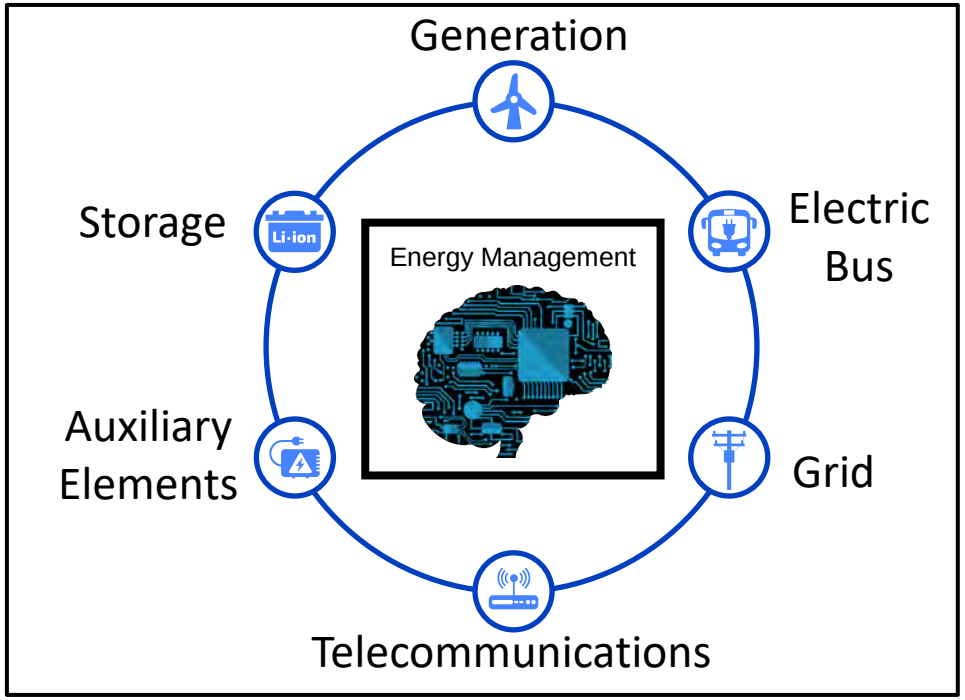
Develop an energy management system for an electric bus depot as a planning and scheduling tool. It evaluates co-located generation, storage, and demand response, with emphasis on forward-looking, medium-term scheduling (hourly to week-ahead) using forecasted fleet scenarios

Member Value

- Optimize fleet charging operations, reducing costs and enhancing network stability.
- Unlock demand response participation, increasing flexibility and revenue.
- Understand utility reward signals that can guide utility electrification planning and decision-making (e.g., tariffs, programs) toward grid-beneficial outcomes

Plan for 2026

- Transfer value from NYSERDA project insights into broadly reusable utility guidance on methods, algorithms, and workflows.
- Assess market participation and flexibility under projected fleet growth.
- Identify insights for planning anticipated electrification impacts on utility systems.



Deliverable	Tech Brief, Update or Report in Q4
Coordination	NYSERDA, P174C, P94
Contact	Daniel Pombo
Reference	Ongoing NYSERDA project, 3002031176

T&D Coordination of DER Settings to Improve System Reliability

2026 Edition

Utility Need

Growing penetration of DER is creating coordination challenges and bulk grid impacts that must be addressed across transmission and distribution systems. Proactive DER setting strategies are needed to enhance operations and improve overall system reliability.

Research Objective

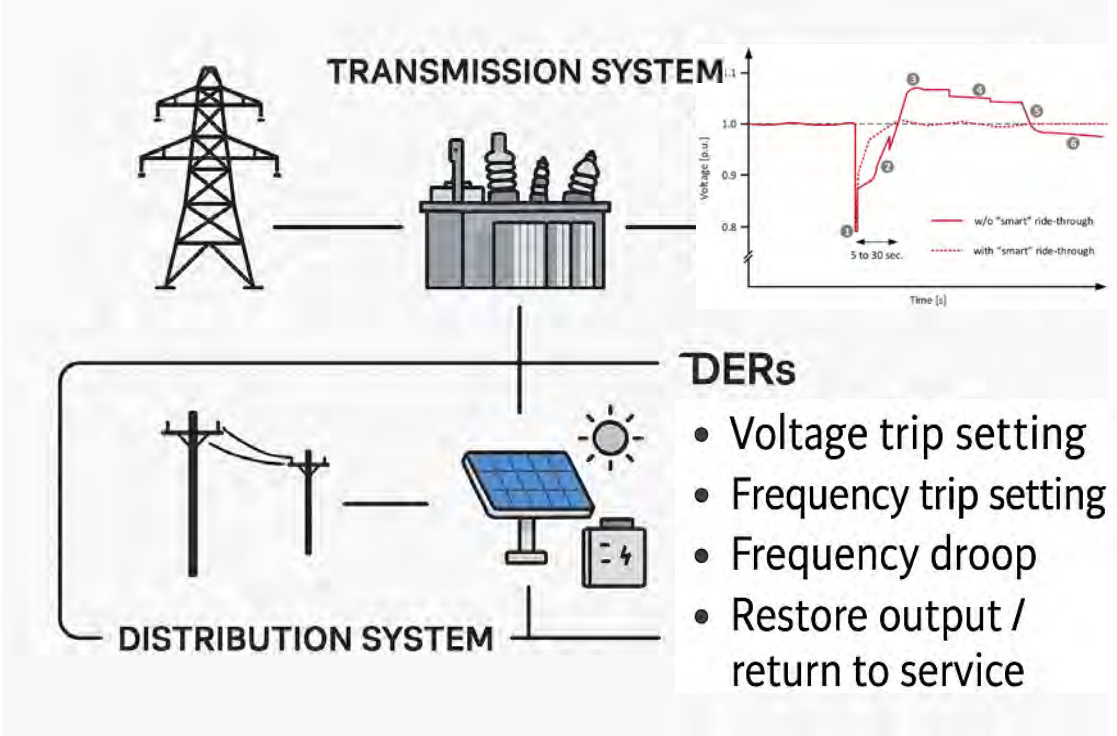
Develop knowledge and study methods to facilitate seamless coordination between transmission and distribution systems, with the goal of maintaining or improving overall grid reliability using DER.

Member Value

- Enhance grid reliability and predictability by optimizing DER settings, reducing operational disruptions and maintenance costs.
- Improve utility satisfaction rankings through proactive DER coordination, ensuring seamless T&D system integration.

Plan for 2026

- Build on awareness of industry grid events with respect to potential for both standards conflicts and improper DER configuration
- Recommended DER setting strategy enforced at Transmission level and compliant with IEEE 1547 at Distribution level
- Comparison to other system-centric policies and standards (such as European Requirements for Generators (RfG))



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Deliverable	Tech Brief in Q4
Coordination	P173, P40
Contact	Daniel Pombo, Wei Ren
Reference	2025 Report → 3002034110

Quantifying Hosting Capacity Impacts for Battery Energy Storage Systems under Flexible Interconnection

Utility Need

Utilities need to understand potential operating behaviors of battery energy storage systems (BESS) under Flexible Interconnection (FI) and the resulting impacts on the distribution grid. Utilities also need to understand how FI may affect hosting capacity and the ability to interconnect additional BESS installations.

Research Objective

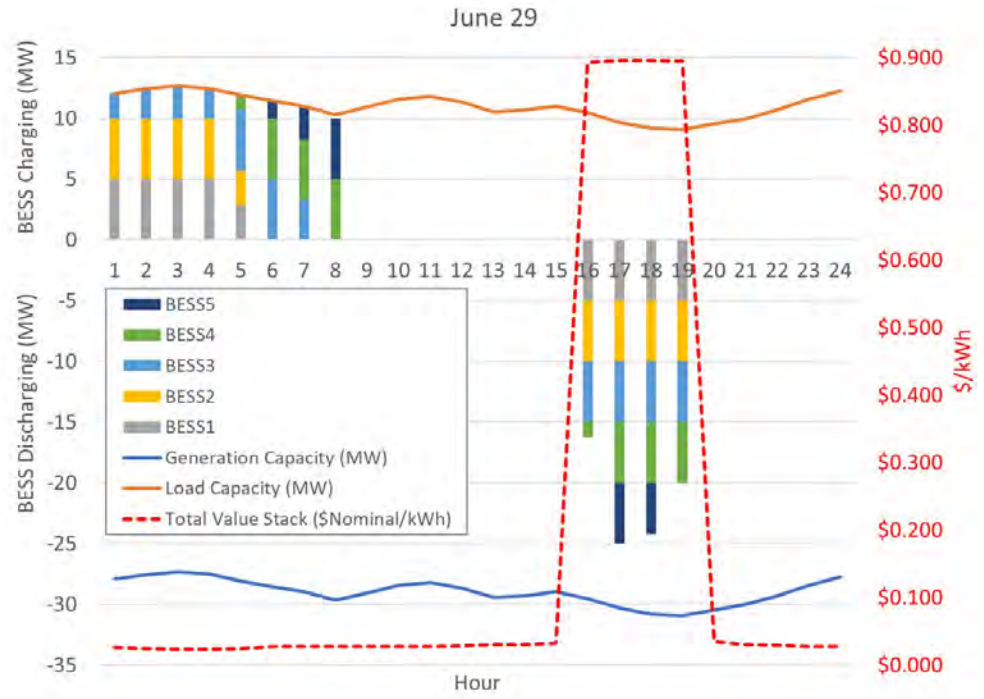
This work will improve analysis methods for FI use cases that coordinate multiple storage devices, accounting for technical, financial, and policy considerations. It will define BESS "curtailment" and demonstrate the impact of different FI schemes through simulation case studies, outlining considerations for cost-benefit analysis.

Member Value

- Reduce interconnection risk and grid impacts uncertainty by utilizing methods to identify and quantify BESS operation under FI schemes
- Enable higher BESS penetration through FI control without traditional upgrade investments

Plan for 2026

- Adapt existing FI analysis methods to simulate flexible BESS operation, considering technical, financial, and policy factors
- Modeling case study to investigate potential to install additional flexible BESS, compared to conventional interconnection practices



Deliverable	Tech Brief (Q4 2026)
Coordination	TBD
Contact	Peter Richardson
Reference	Recent FICS in New York (NYSERDA Project)

DER Protection Working Group

Utility Need

Increasing DER penetration on many distribution grids can challenge existing protection practices. Need better screening practices to improve study times and determine feasibility on new DER interconnections.

Research Objective

Understand protection screening and deployment challenges associated with DER deployment on distribution circuits.

Member Value

- Enable utilities to apply DER protection practices that are consistent, defensible, and aligned with evolving industry standards.
- Reduce risk of miscoordination events and post-interconnection rework through shared, field-informed protection approaches.

Plan for 2026

- Continue providing a forum for various utility participants to share challenges and practices related for DER protection.
- Identify protection topics that are top of mind at various utilities that can benefit from additional research.
- Support consistent and coordinated protection standards

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Deliverable	Monthly meetings
Coordination	P200D
Contact	Tom Key / Aadityaa Padmanabhan
Reference	Past Meeting Minutes

Distribution Network Model Requirements for DERMS

Utility Need

While utilities are deploying DERMS, they lack clear guidance on when feeder models are necessary versus when simpler methods will suffice. Over- or under-modeling creates operational risk, unnecessary curtailment, and stalled DERMS scaling. Utilities need confidence on what level of grid awareness is “good enough” for each DERMS function.

Research Objective

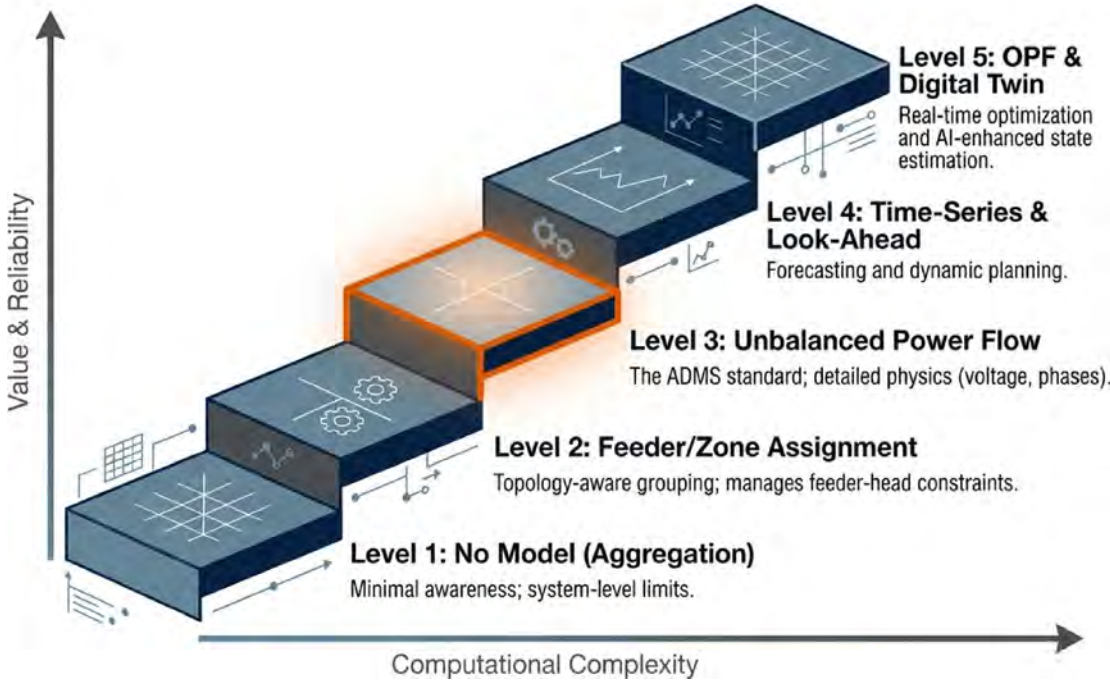
Define when Grid DERMS needs access to a network model. Establish a practical maturity ladder linking DERMS functions to model depth, data needs, and operational risk. Quantify how model and data accuracy affect envelopes, constraint management, and DER utilization.

Member Value

- Guidance to right-size modeling investments for DERMS deployment.
- Reduced risk of over-curtailment or unsafe dispatch driven by model uncertainty.
- Clear decision framework utilities can use for DERMS procurement.

Plan for 2026

- Document real-world utility and vendor practices across grid-focused DERMS deployments.
- Develop model-depth and data-readiness framework mapped to DERMS use cases.
- Deliver a member-ready technical report with decision frameworks, and lessons learned.



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Deliverable	Tech Brief, Q4
Coordination	P174C
Contact	Stephen Kerr, Ahmed Saad
Reference	-

Utility Microgrid Assessment Guide

4th Edition

Utility Need

Utilities need updated, practical guidance to assess and design microgrids that meet evolving performance, protection, and reliability standards in real-world applications.

Research Objective

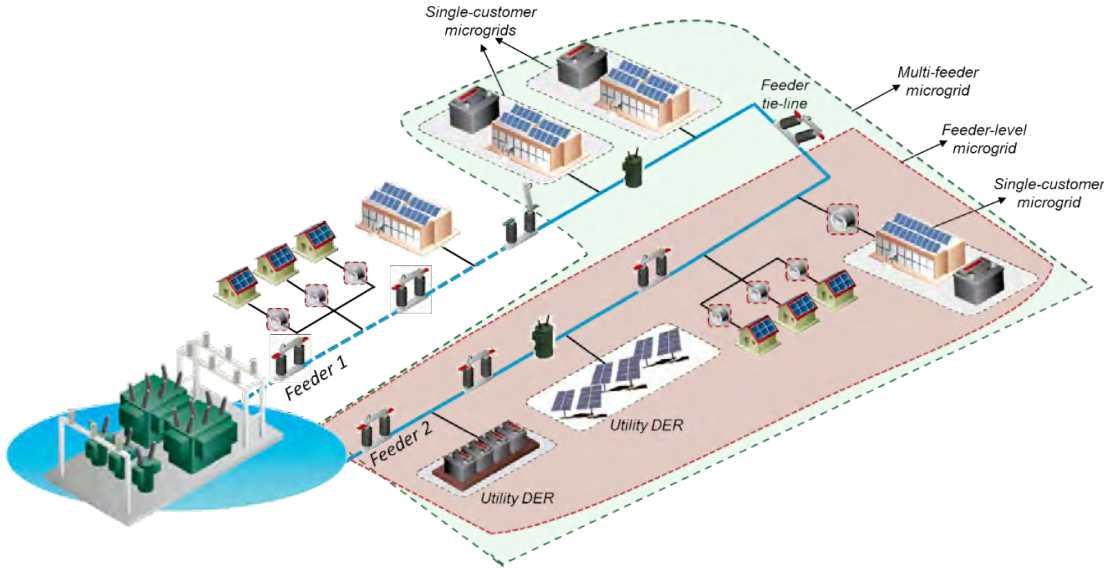
This project will update the 2023 guidebook (3rd Edition) with refined performance indices, design flowcharts, and real-world assessment examples using the VIPER study method to support more effective microgrid planning and evaluation.

Member Value

- Accelerate and improve microgrid planning decisions by using a clear, step-by-step framework for assessment, reducing troubleshooting and post-deployment issues
- Increase confidence in microgrid viability and protection strategies through refined assessment processes and clearly defined operation goals

Plan for 2026

- Review and synthesize recent field data and research findings to identify gaps in the 2023 VIPER guide.
- Update process flow charts, key performance indices, and acceptable value ranges for microgrid operation and protection.
- Demonstrate application of the updated methodology on realistic microgrid systems and conditions.



Deliverable	Guide/technical update
Coordination	P174C, P200D
Contact	Stephen Kerr
Reference	3002031069

DER Aggregation (DERa) Behaviors: Reassessing Interconnected DER

Utility Need

As DER increasingly participate in grid services through aggregation, utilities need new frameworks to re-assess grid impact after interconnection, particularly for DER that were originally fast-tracked as individual resources.

Research Objective

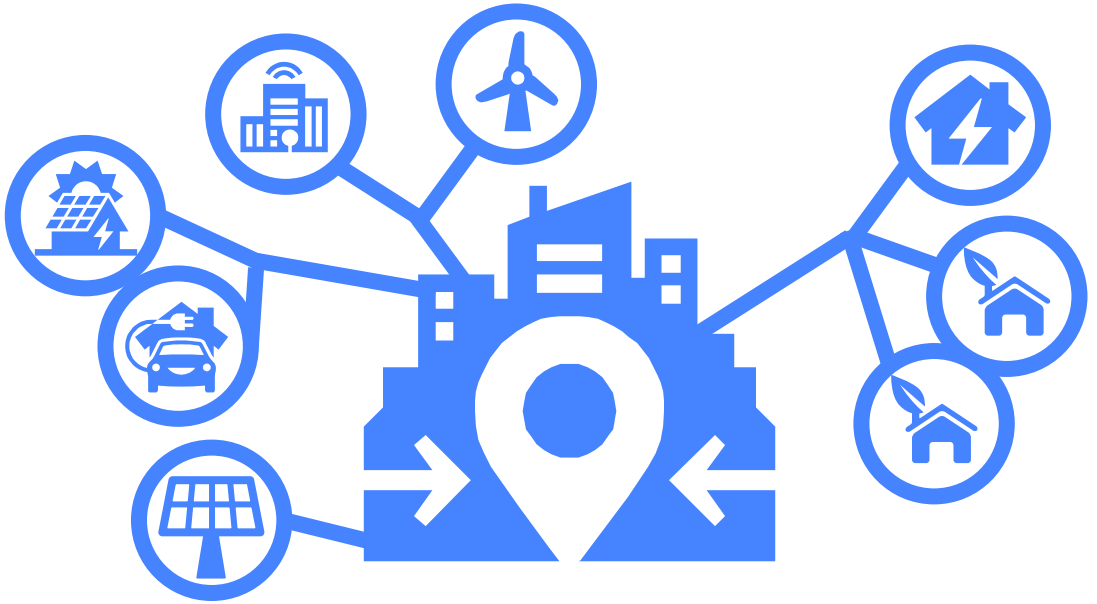
Develop practical methods to characterize, study, and manage post-interconnection DER aggregation behavior, enabling utilities to revise operational practices when DER later participate in aggregation.

Member Value

- Provide guidance for post-interconnection review when fast-tracked DER participate in aggregation or VPP programs.
- Reduce risk of unanticipated reliability impacts and regulatory exposure.
- Support operational and planning decisions by distinguishing feeder-level impacts of DER aggregations versus individual DER.

Plan for 2026

- Develop a post-interconnection screening methodology for DER aggregations based on grid sensitivity and coordinated dispatch behavior.
- Evaluate operational impacts of local versus aggregated control strategies and identify mitigation approaches for reliable grid operation.



Deliverable	Tech Brief, Q4
Coordination	P200C, P174D, P174C, P200E
Contact	Taehyung Kim, Wei Ren
Reference	3002024201, 3002024489, 3002027451

Harmonic Impacts of DER: Myth vs. Fact

Utility Need

Utilities need clarity on how inverter-based DERs actually generate and propagate harmonics on the distribution system. Utilities also need practical guidance for modeling, evaluating, and managing harmonics associated with modern DERs.

Research Objective

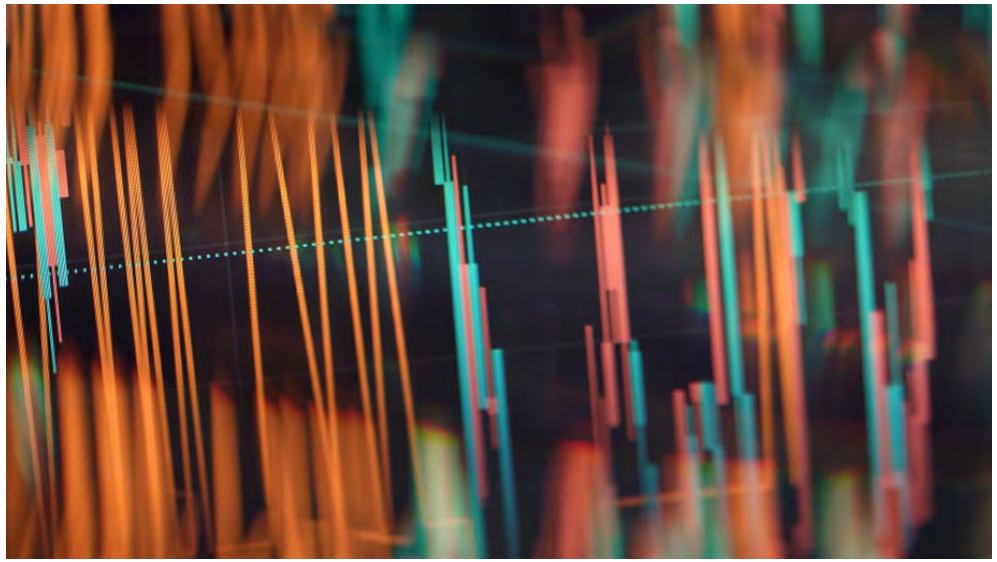
This project will provide a comprehensive technical brief that explains DER harmonic generation, modeling methods, aggregation behavior, and mitigation strategies. It will also deliver validated simulation insights and practical guidelines to help utilities properly assess and manage harmonics from modern inverter-based DER.

Member Value

- Improved accuracy and consistency in DER harmonic assessments, reducing unnecessary interconnection barriers or misapplied requirements.
- Access to clear, engineering-backed guidance for interpreting standards and for evaluating OEM inverter harmonic performance.

Plan for 2026

- Develop a technical brief addressing harmonic mechanisms, modeling approaches, aggregation, propagation, and mitigation.
- Define and explain relevant standards such as IEEE 1547, IEEE 519, and UL 1741, compared to similar international standards.
- Provide ongoing expert advisory support, including model selection guidance, simulation validation, and refinement of conclusions.



Deliverable	Technical Brief (Q1)
Coordination	P1
Contact	Wei Ren
Reference	-

Project Set 174B

Smart Inverters and Grid Support Technologies

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Technical Leader

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Back to Outline

Research Goals

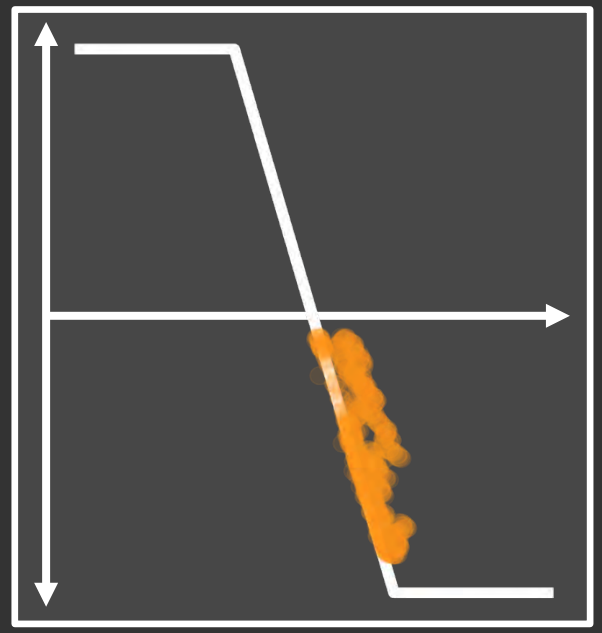
- Understanding capabilities and characteristics of new grid-following and grid-forming smart inverters and other grid-edge technologies
- Utilizing grid support functionalities to increase safe and reliable deployment of DERs
- Advancing steady-state, dynamic, and transient inverter models for more accurate system impact studies

Key Research Areas

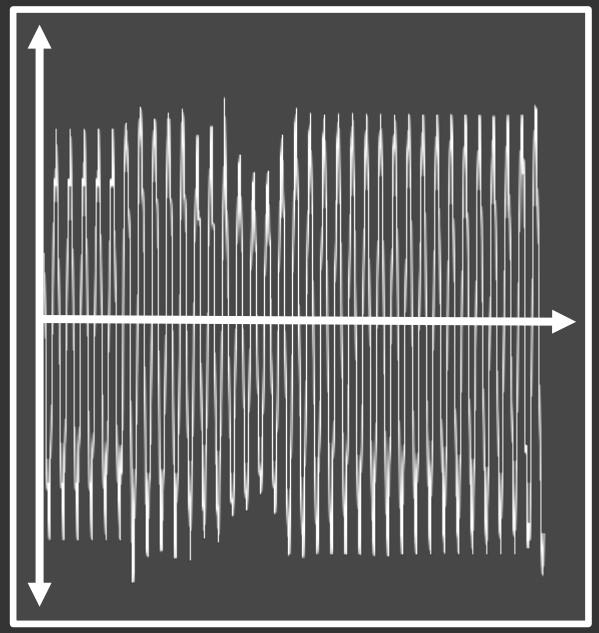
Laboratory Testing

Field Demonstrations

Steady-State & Dynamic Modeling & Analysis



Transient Modeling & Analysis



174B 2026 Proposed Deliverables

Tech Update	Power Plant Controller (PPC) Evaluation	Technology Evaluation
Software	Automated Conformity Assessment of DER Plant Design	
Whitepaper/Tech Brief	Tech Brief Series on Frequently Asked Questions	Advancing Technology Utilization
Tech Update	Grid-Forming DERs for Inverter-Dominated Power System	
Software	Agentic AI for Power System Study Automation (w/P174A, P200B, P200D)	
Workshop/Tutorial/Groups	Tutorials on Grid Following (GFL) and Grid Forming (GFM) Inverter Fundamentals, Grid Support Functions, Standards, Modelling, and EMT Analysis	Tutorials and Workshop
Workshop/Tutorial/Groups	10th Annual EPRI Smart Inverter Workshop	
Software	AI Assisted DER EMT Screening, Model Quality Check, and Verification	Model Development & Validation
Tech Update	DER Modeling for Short Circuit and Protection Studies (w/P200D)	
Tech Update	Assessment and Enhancement of DER Model Accuracy in Commercial Tools: CYME and Synergi	

Software Tech Update Whitepaper/Tech Brief Workshop/Tutorial/Groups

Power Plant Controller (PPC) Evaluation

Utility Need

To effectively design interconnection requirements and verification processes for large-scale DERs with plant power controllers (PPCs), utilities need to understand the PPC's role within the DER plant, its operating principles, configuration parameters, and the key factors influencing its performance.

Research Objective

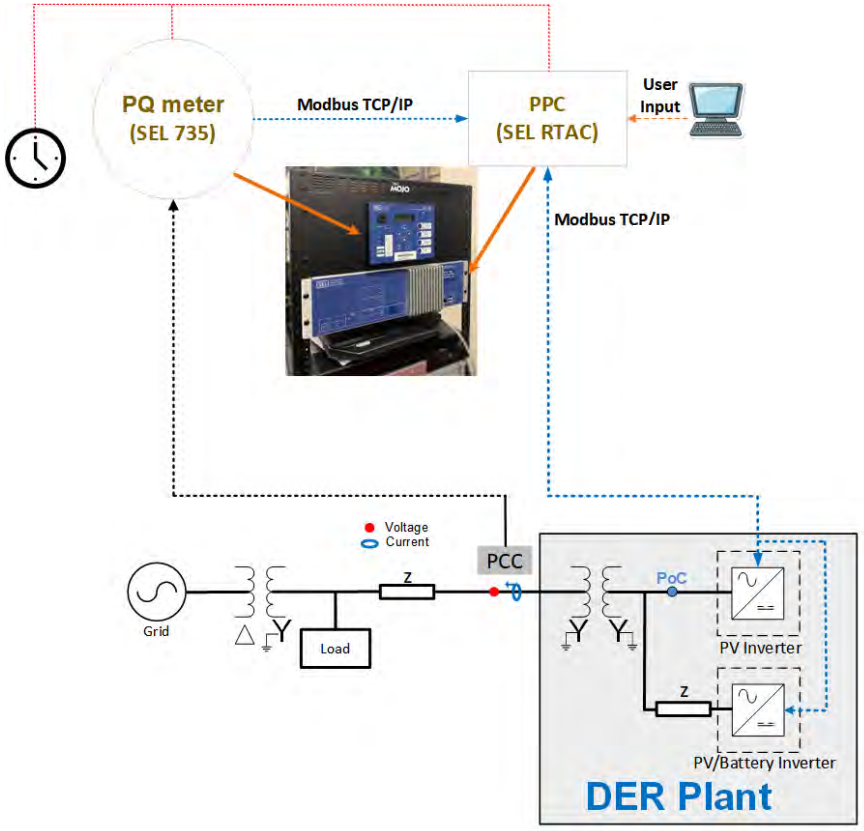
Comprehensive laboratory evaluation of PPC, focusing on its ability to coordinate multiple PV and energy storage inverters inside a DER plant, and effectiveness in satisfying plant compliance at PCC.

Member Value

Enhance the interconnection requirements and verification process for large-scale DER plants with PPCs managing multiple inverters, based on a deep understanding of their design and operation.

Plan for 2026

- Continue laboratory evaluation to assess more PPC functions beyond the ones available in SEL library, and with PPC controlling multiple inverters
- Develop guidance to update interconnection requirements and refine the verification and commissioning processes, addressing the unique characteristics of DER plants with PPC



Deliverable	Tech Update Q4
Participation	Input on concerns and practices
Coordination	-
Contact	Charles Brewster, Mo'ath Farraj
Reference	3002021709, 3002019881, 3002034019

Automated Conformity Assessment of DER Plant Design

Utility Need

Utilities lack a standardized and efficient method to verify DER plant designs against IEEE 1547-2018 during interconnection review. Current review processes are manual, costly, and prone to inconsistencies, especially for large-scale inverter-based DERs requiring EMT studies.

Research Objective

Develop an EMT simulation-based framework and toolkit to automate the conformity assessment of DER plant design with IEEE 1547-2018 standard and utility specific interconnection requirements.

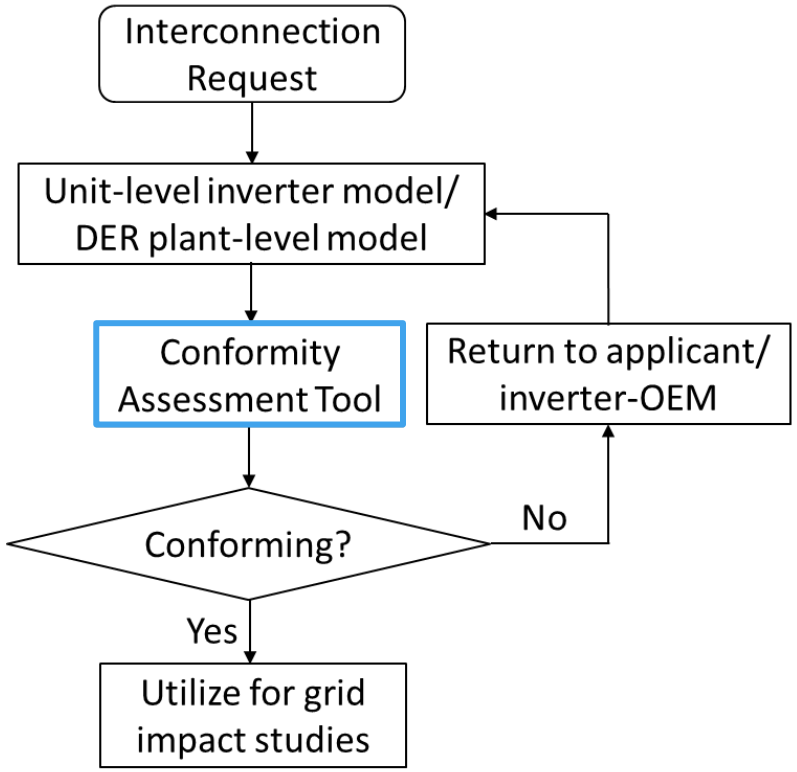
Member Value

- Standardize conformity assessment of DER plant design and significantly reduce manual efforts in interconnection reviews through automated assessment
- Proactive detection of non-conforming plant design before grid impact studies and interconnection approval

Plan for 2026

- Define EMT simulation-based conformity tests and pass/fail criteria based on IEEE 1547-2018 and IEEE 1547.1
- Develop processes to automate conformity assessment with commercial EMT tools
- Validate with EPRI's generic DER EMT modes and sample OEM model(s)

Approach



Deliverable	Software/scripts and user guide Q4
Participation	OEM model sharing, inputs and beta testing
Coordination	-
Contact	Nishant Bilakanti

Tech Brief Series on Frequently Asked Questions

Utility Need

Utility engineers often face challenges explaining technical topics to audiences without deep technical expertise. There is a growing need for concise, accessible materials to support both internal and external communication.

Research Objective

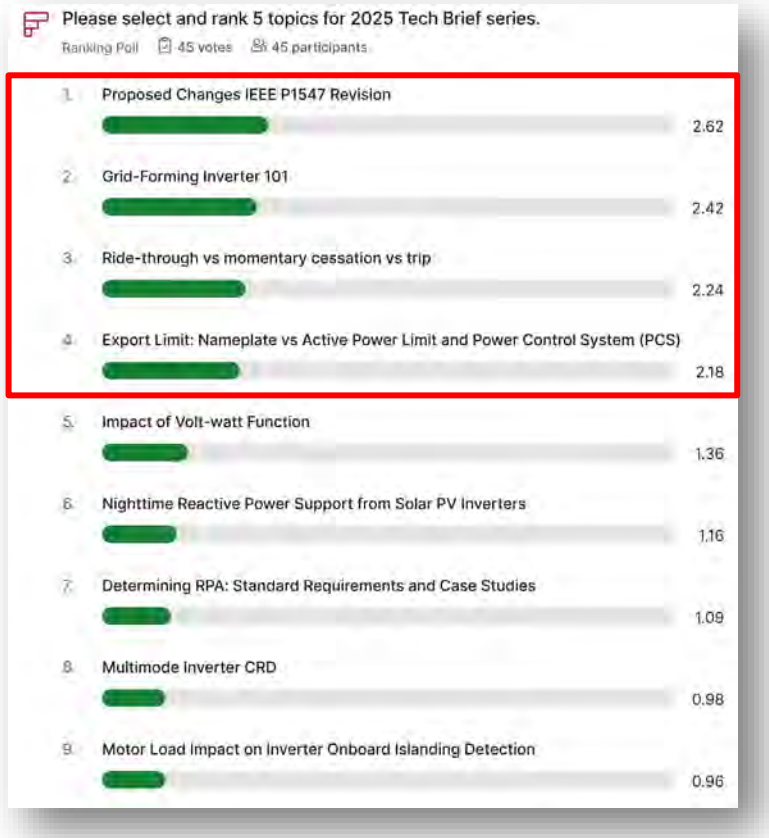
Create a series of short, easy-to-understand informational briefs addressing frequently asked questions and concerns about DER technologies, tailored for audiences without deep technical expertise.

Member Value

- Helps convey complex technical topics to upper management and external stakeholders efficiently to facilitate informed decision making

Plan for 2026

- Conduct member survey to identify top priority topics
- Develop multiple short informative tech briefs on the identified DER technology related topics



Deliverable	Tech briefs Q2-Q4
Participation	Input on tech brief topics
Coordination	-
Contact	Wenzong Wang
Reference	3002034011, 3002034012, 3002033781, 3002033780

Grid-Forming DERs for Inverter-Dominated Power System

Utility Need

Utilities need to address DER instability and power quality issues as distribution system becomes weaker with increasing penetration of grid-following (GFL) inverter-based DERs.

Research Objective

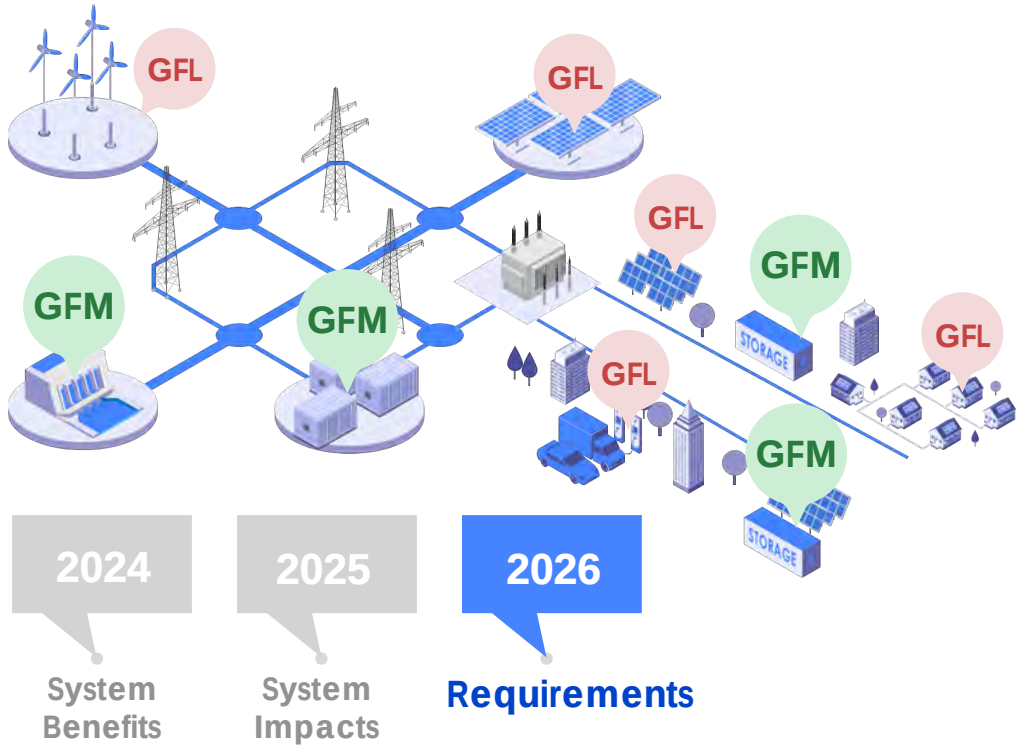
Assessing the benefits and impacts of grid-forming (GFM) DERs, and developing performance requirements to address challenges in inverter-dominated power systems.

Member Value

- Facilitate higher DER deployment in inverter-dominated systems while ensuring grid stability and power quality with minimal system upgrades
- Understand the role, benefits and challenges of GFM DERs in inverter-dominated power system
- Establish detailed performance requirements, mitigation strategies, and operational adjustments essential for the reliable integration of GFM DERs

Plan for 2026

- Continue analyzing potential negative system impacts of GFM DERs
- Develop GFM DER performance requirements based on literature review, gap analysis, and previous EPRI research results



Deliverable	Tech Update Q4
Participation	Participate in DiGFI interest group
Coordination	-
Contact	Wenzong Wang
Reference	3002030961, 3002034020

Agentic AI for Power System Study Automation

2026 Edition

Utility Need

With the growing complexity of distribution systems, combined with engineering staffing constraints, utilities need more efficient methods to conduct DER interconnection grid impact studies.

Research Objective

Develop and demonstrate agentic AI solutions to automate DER interconnection grid impact studies, leveraging expert support informed by EPRI research and utility documentation.

Member Value

- Leverage utility engineer experience to inform Assistant Notebook, enabling DER grid impact study consistency through standardized, transparent and repeatable processes
- Accelerate workflow timelines and enhance engineering training through automation of study process scripts and task execution

Plan for 2026

- Integrate standardized LLM APIs with tools such as CYME and Synergi, enabling natural language prompts to automatically conduct studies for power flow, faults, and transient stability
- Develop user context to empower AI assistants/agents with EPRI's expert knowledge and utility's specific requirement for best result

*image created through Gemini

Deliverable	Presentation Q4
Participation	Input on use cases and utility needs
Coordination	P174A, P200D, P200B
Contact	Wei Ren, Andres Ovalle, Yiwei Ma
Reference	3002033986, 3002034145

Tutorials on GFL and GFM Inverter Fundamentals, Grid Support Functions, Standards, Modeling, and EMT Analysis

Utility Need

Utilities need to upskill their engineering workforce to build in-house expertise, perform critical tasks effectively, and reduce reliance on external resources.

Research Objective

Train utility engineers on various topics to improve their knowledge and skills.

Member Value

- Continued workforce development for in-depth understanding and efficient utilization of GFL/GFM DER technologies to improve system performance and reliability
- Develop in-house capability and reduce dependency on external resources

Plan for 2026

- Offer the following tutorials for member utilities
  - Inverter fundamentals and grid support functions (8 hours, 2 in-person hosted by utilities and 1 online)
  - Inverter Modeling for Dynamic, Transient, and Protection Analysis (4 hours, online)
  - Grid Forming Inverter (4 hours, online)
  - DER EMT Modeling and Analysis (12 hours, online)

Deliverable	Tutorials Q1-Q3
Participation	Input on tutorial topics/scope
Coordination	-
Contact	Wenzong Wang
Reference	Previous tutorial materials (Link)

10th Annual EPRI Smart Inverter Workshop

Utility Need

Utilities need peer-to-peer knowledge and experience sharing to better adopt new smart inverter technologies and standards, as well as improve operational efficiency.

Research Objective

Organize a utility-only in-person event to enable peer-to-peer knowledge sharing and conversations to better understand challenges and potential solutions to adopt smart inverters and IEEE 1547-2018 standard.

Member Value

- Engage in peer-to-peer knowledge exchange to foster collaboration and accelerate learning
- Gain practical insights and lessons learned from various smart inverter PV, ESS, EV, microgrid demonstration projects

Plan for 2026

- Organize 10th EPRI Smart Inviter workshop on ***October 21-23, 2026***, to provide the platform for utilities to share experiences of deploying and operating smart inverters in the field
- Utility-only event to encourage open dialogue
- Arrange smart inverter lab demonstration for workshop in-person participants at EPRI's Knoxville, TN office

9th ERPI Smart Inverter Workshop in Knoxville, TN (2025)

Deliverable	Workshop Q4
Participation	Participate and present at the workshop
Coordination	-
Contact	Aminul Huque, Wenzong Wang
Reference	Previous workshop materials (Link)

AI Assisted DER EMT Screening, Model Quality Check, and Verification

Utility Need

Utilities require effective methods and tools to determine when EMT studies are needed, and to assess and verify DER EMT models before EMT studies.

Research Objective

Develop an LLM-powered agent that aims to automatically conduct DER EMT screening, model quality check, and model verification. The agent will recommend whether an EMT study is warranted and flag any model quality issues.

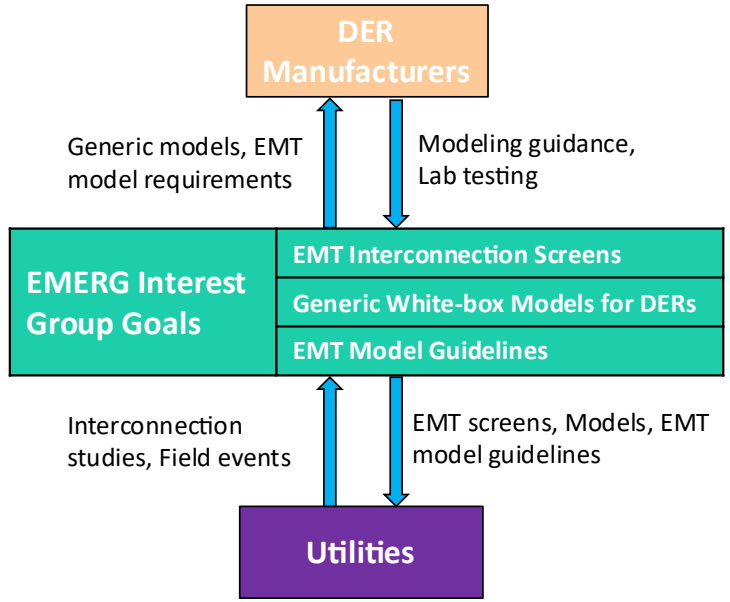
Member Value

Accelerate DER interconnection review and reduce engineering cost by pre-screening EMT analysis needs and performing model verification using an AI-based, automated tool.

Plan for 2026

- Integrate EMT screening methods with LLM-powered natural language interface for interactive use and result explanation
- Develop a prototype AI agent for EMT model quality check and verification

EMT DER Modeling and Analysis Industry Interest Group (EMERG)



Deliverable	Tech update Q4
Participation	Participate in EMERG interest group
Coordination	-
Contact	Nishant Bilakanti, Mo'ath Farraj
Reference	3002034017, 3002034018

DER Modeling for Short Circuit and Protection Studies

Utility Need

Accurately modeling DER behavior in short circuit studies is critical for protection coordination in distribution systems. Utilities need appropriate short circuit models of DERs for accurate short circuit results from simulations.

Research Objective

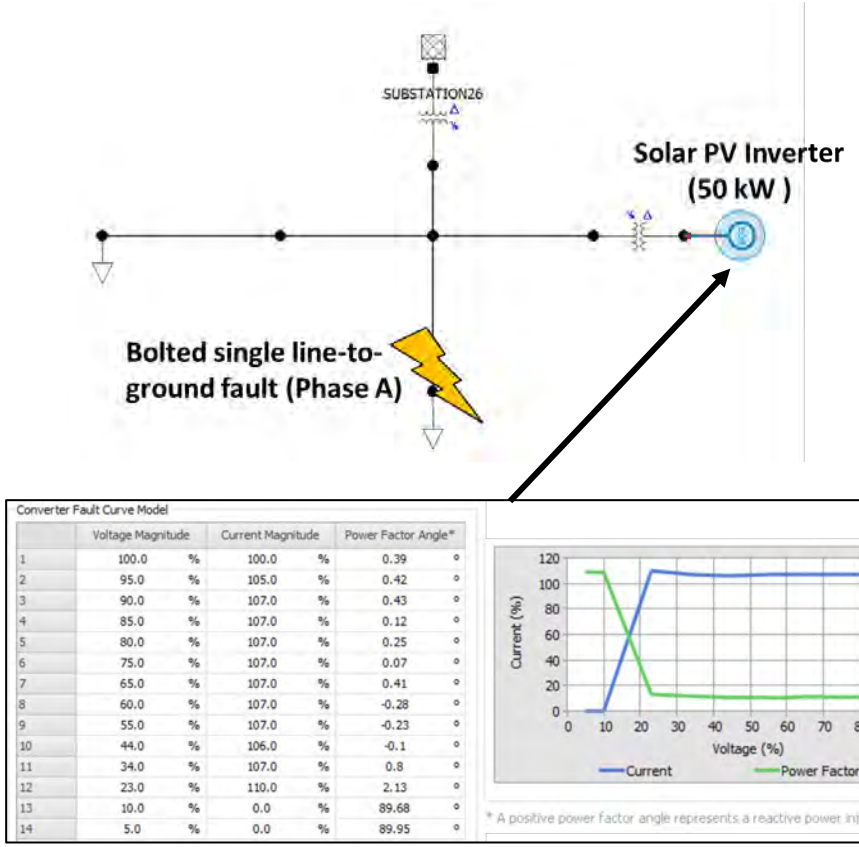
Evaluate short-circuit models for inverter-based DERs in common tools such as CYME, Synergi, CAPE, and ASPEN. Understand DER model capability and performance in simulation tools and provide guidance on DER model parameterization for short circuit studies.

Member Value

- Improve short-circuit and protection study accuracy by properly modeling and parameterizing DERs in commercial analysis tools
- Guidance to parameterize DER models using manufacturer data, lab test results, or generic DER characteristics for short-circuit studies

Plan for 2026

- Evaluate short-circuit characteristics and parameterization for additional DERs including multi-MW units
- Parameterize short-circuit models for inverter-based DERs using manufacturer data, lab test data, EMT simulations, and generic DER parameters and compare short-circuit test results



Deliverable	Tech Update Q3
Participation	OEM model sharing, inputs and beta testing
Coordination	P200D
Contact	Aadityaa Padmanabhan, Nishant Bilakanti
Reference	3002034010

Assessment and Enhancement of DER Model Accuracy in Commercial Tools: CYME and Synergi

Utility Need

Accurate DER models in distribution planning tools to represent IEEE 1547-2018 compliant DERs.

Research Objective

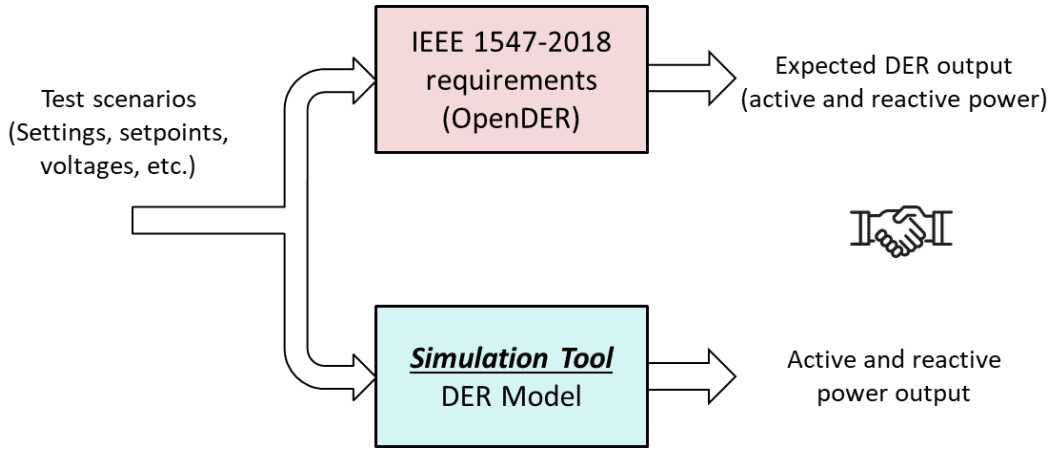
Confirm accuracy or identify gaps of DER models in CYME and Synergi.

Member Value

- Reduce DER interconnection costs by improving the accuracy of DER system impact studies with enhanced DER models
- Maximizing the benefits of smart inverter grid support functions through accurate analysis

Plan for 2026

- Improve the DER model verification framework to include more DER dynamic performance, such as enter service, abnormal voltage trip, etc.
- Continue to evaluate the accuracy of the library DER power flow and dynamic models in the latest releases of CYME and Synergi
- Share the findings with the tool developers to help them address the gaps



Deliverable	Tech Update Q2
Participation	Input on model concerns and evaluation needs
Coordination	-
Contact	Yiwei Ma
Reference	3002033460, 3002033459

Project Set 174C

DERMS and Microgrid Integration

Jackie Baum

Senior Team Lead

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Back to Outline

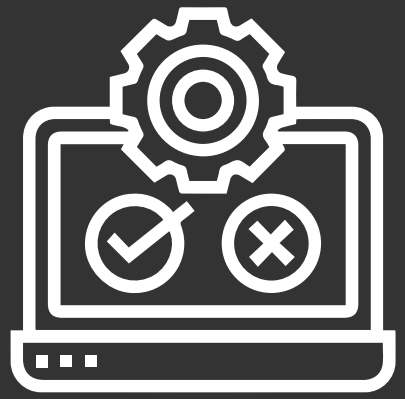
Research Goals

- Know if, when, and what kind of DER mgmt. tools are needed
- Establish proven technical requirements for DERMS components
- Guide utility transition to DSOs identifying capabilities, processes, tools, and data required
- Awareness and evaluation of commercial DER control systems

Key Research Areas

Benefits & Value Streams

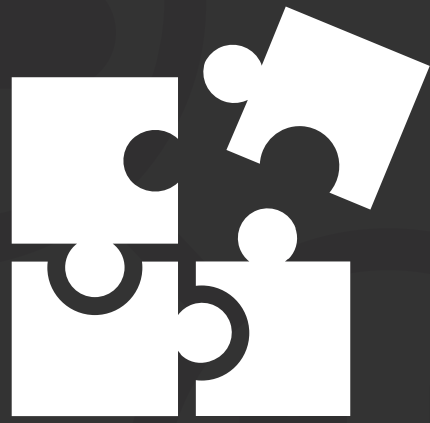
Use Cases & Requirements



Product Evaluations & Market Trends

Schneider Electric
ABB
smarter grid solutions
OSI
AutoGrid
opusone solutions

Architecture & Integration



Test Tools

174C 2026 Proposed Deliverables

	Utility Applications and Benchmarking DERMS Deployment Progress
	DERMS Interest Group
	DERMS Workshop
	Microgrid Commissioning Guidebook (w/ P94M)
	DER-Enhanced Distribution System Restoration Playbook (w/ P200C)
	Distribution Network Model Requirements for DERMS (w/ P174A)
	Unlocking Secure DER Integration — Interoperable & Cyber Resilient DER Workshop (w/ P161, P183)
	Role of DER Gateways in Integrating DER with Utility Operations (w/ P161D)
	DERMS Cost-Benefit Analysis Case Studies (w/ P174D)
	BTM Energy Management System: Considering Co-located Generation, Storage, DR Markets (w/ P174A)
	Change Management: Organizational Readiness for DERMS (w/ P174D)
	Distribution Operations with DER Guidebook (w/ P200C)
	Advancing Common File Format: Adoption and Enhancements

 Software

 Tech Update

 Whitepaper / Tech Brief

 Workshop/Interest Group

Utility Applications and Benchmarking DERMS Deployment Progress

Utility Need

Despite DERMS being an accepted terminology in the industry for a decade, only recently have trends stared to emerge for utility implementation, primarily driven by larger utilities. Several other utilities are interested in knowing the approaches used by the early adopters to implement the DERMS technology, prioritizing use cases based on operational and business needs as well as stakeholder expectations.

Research Objective

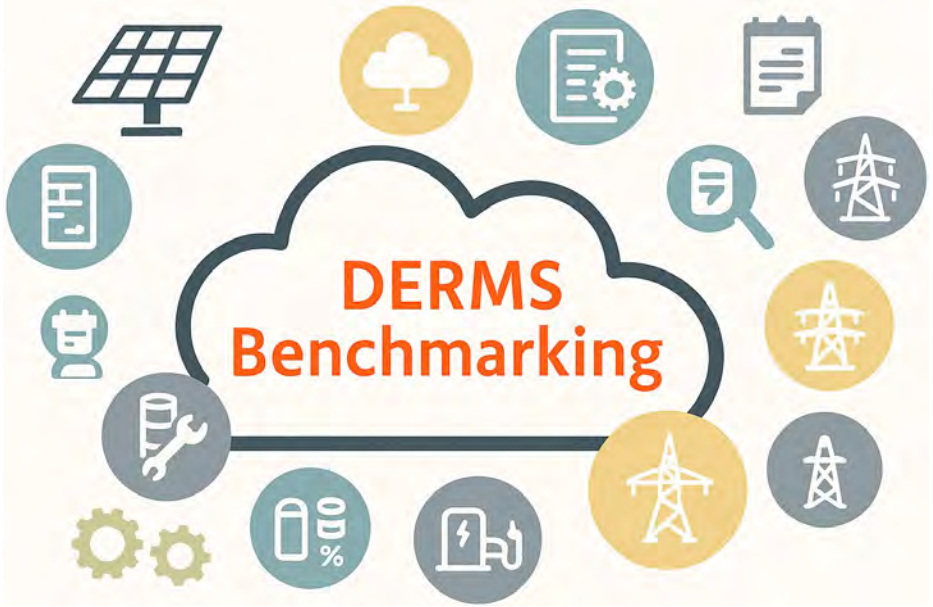
Document real-world case studies of DERMS implementation approaches at utilities. Create a revised list of use cases along with the implementation approaches and execution processes followed.

Member Value

- Provides practical insights and learnings from DERMS implementation to help create individual roadmaps. Enables scoping and implementing DER Management roll-outs more efficiently through peer learnings
- Documents real-world DERMS use cases and their corresponding implementation approaches

Plan for 2026

- Collect information from utilities based on a developed questionnaire and consolidated learnings from DERMS Interest Group.
- Collect and organize member experiences on DERMS selection and deployment.



Deliverable	Technical Brief
Participation	Utilities to provide input on DERMS rollout
Coordination	P174D, P200C
Contact	Abrez Mondal, Jackie Baum
Reference	Prior DERMS Interest Group

DERMS Interest Group

Utility Need

A trusted forum to share lessons learned, best practices, and challenges related to DERMS selection, testing, and deployment to accelerate successful implementation.

Research Objective

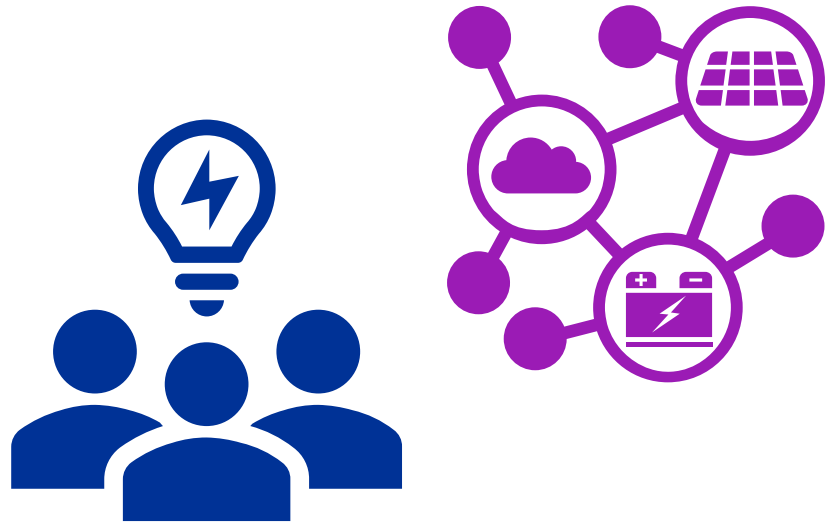
Facilitate a DERMS Interest Group that enables peer-to-peer knowledge exchange and provides practical guidance on DERMS procurement, verification, and integration.

Member Value

- Offers direct access to peer utility experiences and DERMS deployment insights.
- Reduces risk and cost by learning from real-world DERMS implementations.

Plan for 2026

- Continue recurring DERMS Interest Group with quarterly meetings and curated discussion topics.
- Collect and organize member experiences on DERMS selection and deployment.
- Plan and promote a DERMS-focused workshop for deeper engagement.



Deliverable	Quarterly Webinars (recordings)
Participation	Webinar and workshop attendance
Coordination	P174D, P200C
Contact	Jackie Baum
Reference	Prior DERMS Interest Group

DERMS Workshop

Utility Need

The role and capabilities of a Distributed Energy Resource Management System (DERMS) continue to evolve across the electric utility industry, shaped in part by shifting interconnection standards, grid codes, and regulatory policies. Vendors also offer wide variation in feature sets, adding complexity to how utilities evaluate and implement DERMS solutions. Utilities at all stages of DER management adoption need guidance on core functional requirements and operational practices for DERMS.

Research Objective

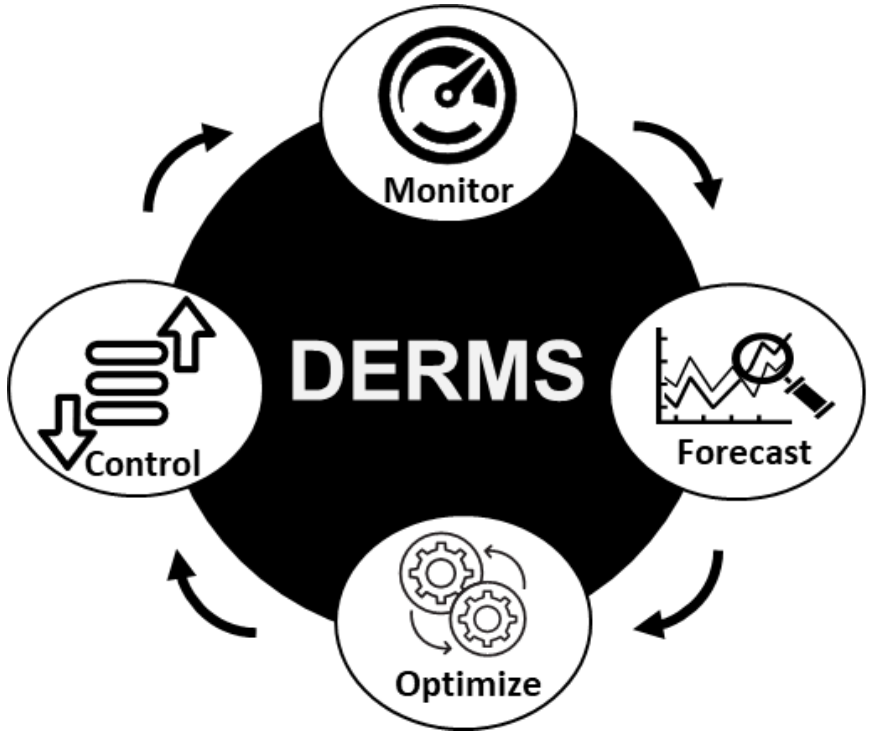
An interactive, utility-focused workshop that demystifies DERMS—from its origins and core functions to high-priority use cases, requirements, and industry trends. The session also highlights how EPRI's extensive research, insights, and independent testing capabilities can directly support utilities in shaping robust, future-ready DERMS strategies and roadmaps.

Member Value

- Provides common understanding about DERMS and related technologies
- Offers direct access to EPRI expertise and peer utility experiences related to DERMS applications, testing, and deployment insights.

Plan for 2026

- Offer a 1–2-day, virtual DERMS-focused workshop for deeper engagement with members.
- Demonstrate commercial DERMS testing in a laboratory environment with SPIDER tools.
- Update prior EPRI work on DERMS requirements and use cases.



Deliverable	Virtual Workshop (recordings)
Participation	Workshop attendance
Coordination	P174D, P200C
Contact	Abrez Mondal, Jackie Baum
Reference	Prior DERMS Interest Group

Microgrid Commissioning Guidebook

Utility Need

As microgrids grow more complex with grid-forming inverters and coordinated DERs, commissioning practices remain inconsistent and vendor-dependent, leading to avoidable failures and delays, particularly during initial energization and first islanding events.

Research Objective

Develop a standardized microgrid commissioning framework and procedures that enable consistent, testable, and well-documented microgrid commissioning across technologies, vendors, and utility organizations.

Member Value

- Reduce commissioning rework and delays through standardized, utility-validated commissioning expectations applied consistently across EPCs and vendors.
- Strengthen utility credibility and leadership by adopting industry-recognized commissioning practices referenced in regulatory and stakeholder engagements.

Plan for 2026

- Validate commissioning gaps, priority technologies, and common failure modes with participating utilities.
- Develop a standards-aligned public commissioning checklist and initiate the EPRI member guidebook scope and structure.
- Release a public microgrid commissioning checklist to improve baseline consistency and readiness.
- Deliver a guidebook with detailed procedures, templates, and documented lessons learned.

Deliverable	Public Technical Resource – Q3 Technical Report – Q4
Participation	Advisory reviews and contributions
Coordination	P94
Contact	Neil Shepard
Reference	Utility-Scale Microgrid Commissioning Lessons Learned: A Field-Guide for Design, Testing, and Operations

DER-Enhanced Distribution System Restoration Playbook

Utility Need

System restoration is already challenged by rising load and system complexity. DER should be a solution and not a barrier.

Research Objective

Develop and validate updated restoration playbooks that integrate Distributed Energy Resources (DERs) capabilities and limitations.

Member Value

- Enable faster, safer, and more resilient restoration strategies in grids with high DER penetration
- Addressing challenges such as DER disconnection/ reconnection, inverter behaviors, overvoltage, islanding risks, and lack of visibility/control of behind-the-meter DERs.

Plan for 2026

- Document utility examples and use cases of leveraging DER to aid in system restoration
- Provide guidance on revising operational practices to shift DER from a hinderance to a resource

Deliverable	Tech Brief Q3
Participation	Share use cases and success stories
Coordination	Joint with P200C
Contact	Nick Heine
Reference	

Distribution Network Model Requirements for DERMS

Utility Need

While utilities are deploying DERMS, they lack clear guidance on when feeder models are necessary versus when simpler methods will suffice. Over- or under-modeling creates operational risk, unnecessary curtailment, and stalled DERMS scaling. Utilities need confidence on what level of grid awareness is “good enough” for each DERMS function.

Research Objective

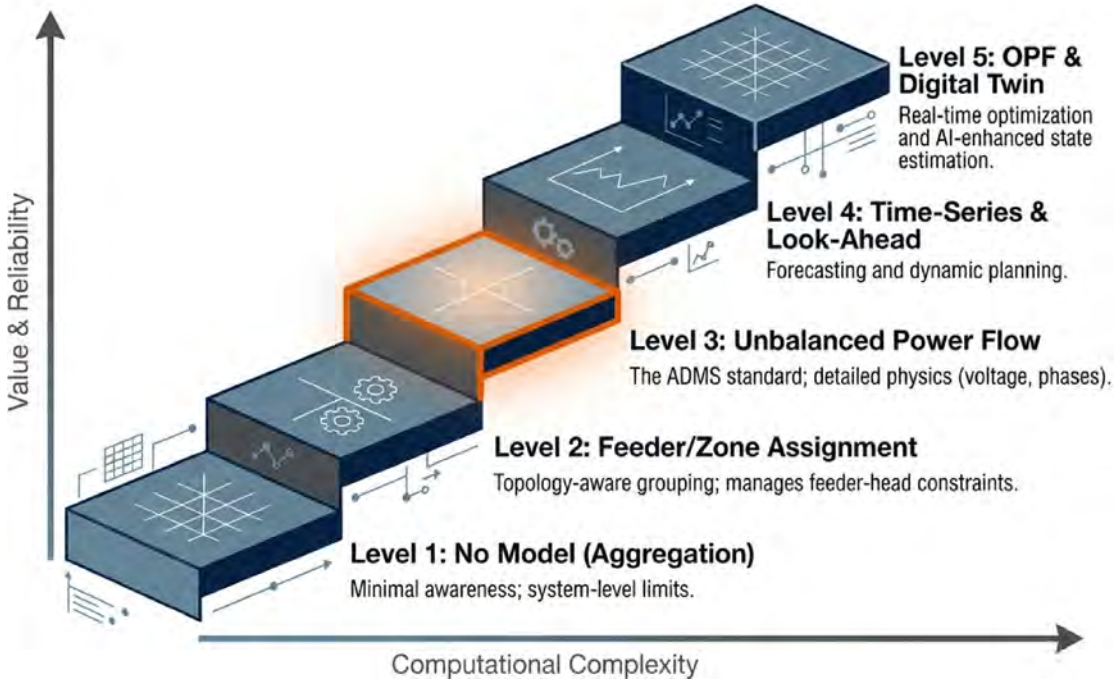
Define when Grid DERMS needs access to a network model. Establish a practical maturity ladder linking DERMS functions to model depth, data needs, and operational risk. Quantify how model and data accuracy affect envelopes, constraint management, and DER utilization.

Member Value

- Guidance to right-size modeling investments for DERMS deployment.
- Reduced risk of over-curtailment or unsafe dispatch driven by model uncertainty.
- Clear decision framework utilities can use for DERMS procurement.

Plan for 2026

- Document real-world utility and vendor practices across grid-focused DERMS deployments.
- Develop model-depth and data-readiness framework mapped to DERMS use cases.
- Deliver a member-ready technical report with decision frameworks, and lessons learned.



Deliverable	Tech Brief, Q4
Participation	Utility needs and evaluation of DERMS, known/experienced errors w.r.t. models and data
Coordination	P174A
Contact	Stephen Kerr, Ahmed Saad
Reference	-

Unlocking Secure DER Integration — Interoperable & Cyber Resilient DER Workshop

Utility Need

More utilities are looking to communicate with distributed energy resources (DERs) connected to their systems. While standards like IEEE 1547-2018 have paved the way for standardized communication interfaces and grid-supporting capabilities for DERs, interoperability issues persists. At the same time lack of guidance for secure integration of DERs and cybersecurity remain key challenges for utilities.

Research Objective

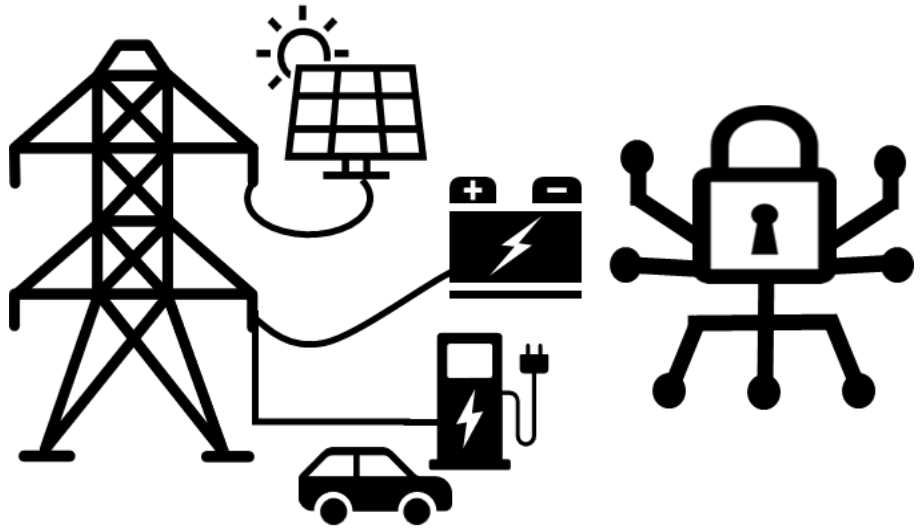
A workshop that provides basic understanding about various issues and topics related to DER interoperability and secure integration.

Member Value

- Provides in-depth understanding about a multi-disciplinary research area allowing more efficient utilization of new grid-edge capabilities.
- Offers information about existing and new tools and methodologies for secure DER integration boosting resilience and reliability.

Plan for 2026

- Offer an in-person workshop focused on dedicated topics across a wider (multi-program) advisor base.
- Showcase EPRI tools for DER integration and debugging (DER Gateway, cyber tools, protocol stacks etc.) through laboratory demonstration.



Deliverable	Workshop (recordings, presentations)
Participation	In-person Workshop attendance
Coordination	P161D, P183D
Contact	Abrez Mondal, Ben Ealey, Xavier Francia
Reference	2025 DER Gateway Workshop at Houston

Role of DER Gateways in Integrating DER with Utility Operations

Utility Need

DER Gateways are emerging as a critical component as the edge-most element for DER management housing features and logics that are valuable to the utility. As more utilities seek effective ways to communicate with DERs within their territories, some distribution utilities have already deployed DER Gateways and are actively using them for DER management and supporting grid operations.

Research Objective

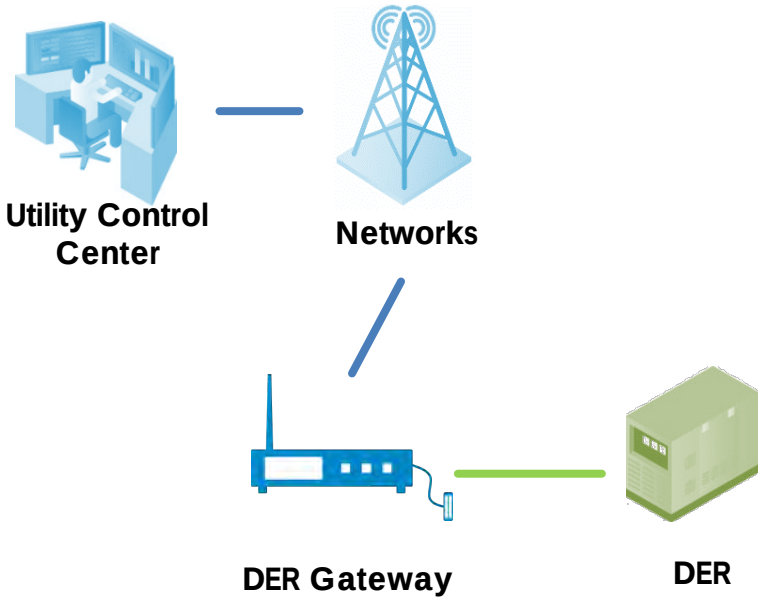
Demonstrate how DER gateways enable utility-specific grid-edge functions and document real-world deployment case studies. This work extends the 2025 utility use-cases with new examples, especially applications involving smart meters and AMI 2.0.

Member Value

- Clarifies the functional role of DER gateways in utility DERMS architectures.
- Provides practical insights from field deployments to guide gateway selection and integration.

Plan for 2026

- Update utility use cases and deployment examples for DER Gateways.
- Identify and engage with more utilities pursuing active gateway deployments.



Deliverable	Tech Update (Q3)
Participation	Provide case study examples from utilities
Coordination	P161D
Contact	Abrez Mondal , Ben Ealey
Reference	2025 Tech Brief

DERMS Cost-Benefit Analysis Case Studies

Utility Need

G&T utilities face increasing DER adoption across their member distribution utilities. As local power companies (LPCs) begin aggregating DERs like energy storage and preparing for partial-requirements models, G&Ts will need quantitative guidance on the value of DERMS investments—including how centralized DER dispatch, distribution-level DERMS, and coordinated G&T-LPC operations interact. Today, no common valuation method exists that reflects both G&T and distribution perspectives.

Research Objective

Develop case studies evaluating the costs and benefits of DERMS for G&T utilities and their distribution members. The research will quantify DERMS value in three contexts:

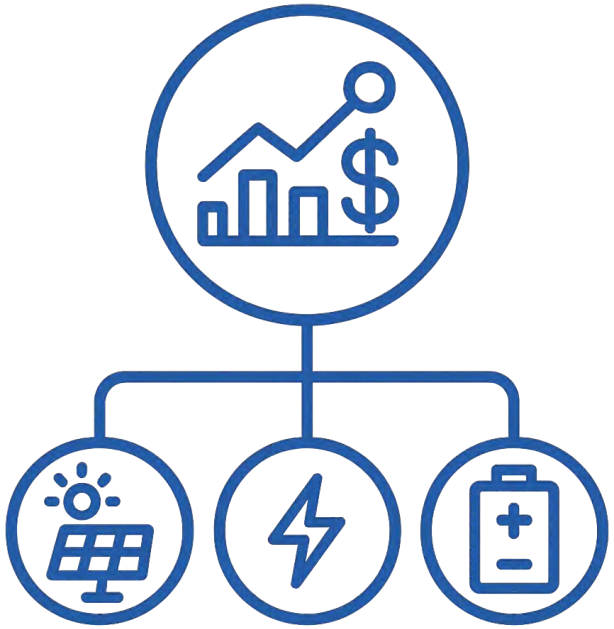
- Centralized G&T dispatch of aggregated DERs
- Distribution-level DER dispatch by LPCs
- Inter-operability and value sharing between G&T DERMS and distribution-level DERMS deployments

Member Value

- DERMS valuation tailored to G&T operational structures.
- Rationales for justifying DERMS investments, based on quantified system-wide benefits and an understanding of tradeoffs across centralized vs. distributed dispatch.
- Clear insights into future partial-requirements / co-supply models, supporting strategic planning for DER.
- A replicable CBA framework for other G&Ts and their member utilities.

Plan for 2026

- Develop G&T-focused DERMS valuation scenarios using EPRI's DERMS Value tool.
- Quantify value streams under centralized dispatch, distribution-level DER dispatch, and coordinated two-tier DERMS operations.
- Conduct case study analyses for selected G&Ts and member utilities.
- Document results with methodology, key findings, and decision frameworks for G&T utilities.



Deliverable	Tech Update (Q3)
Participation	Provide case study examples from utilities (TVA, PRPA)
Coordination	P174D
Contact	Tanguy Hubert, Jackie Baum
Reference	DERMS CBA

Behind the Meter Energy Management System: Considering Co-located Generation, Storage, DR Markets

Utility Need

As medium- and heavy-duty electric vehicle adoption progresses, utilities require understanding on the expected operation of fleet charging sites to better prepare for their impact on their networks.

Research Objective

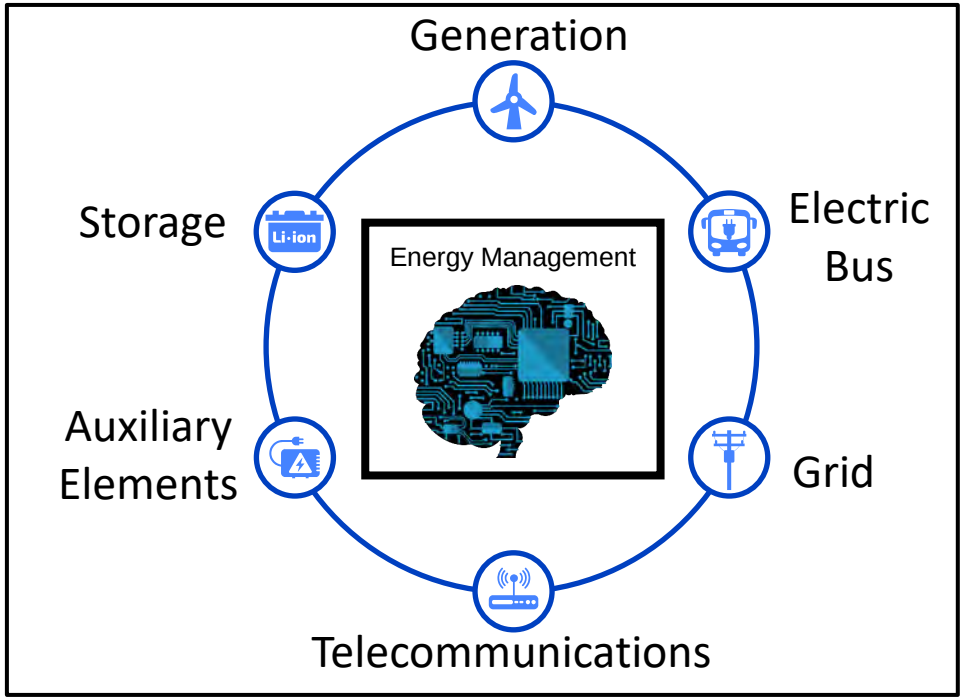
An energy management system for an existing electric bus depot is proposed. It considers factors like co-located generation, energy storage, and demand responsive schemes. A main focus is realistic fleet operation and site limitations for medium term scheduling (hourly, week-ahead).

Member Value

- Optimize fleet charging operations, reducing energy costs and enhancing network stability.
- Enable participation in demand response markets, increasing operational flexibility and revenue opportunities.

Plan for 2026

- Data collection, scope definition, optimal energy management formulation.
- Preliminary studies considering vehicles, generation and storage.
- Exploration of reasonable market participations and flexibility contribution.



Deliverable	Tech Update in Q4
Participation	Data sharing, EV fleet experiences
Coordination	NYSERDA, P174A
Contact	Daniel Pombo
Reference	Current NYSERDA project, 3002031176 (bus depot power flow study)

Change Management: Organizational Readiness for DERMS

Utility Need

Ensure DERMS objectives, implementation, and operation are aligned with utility staff skill sets and effectively coordinated across relevant utility departments.

Research Objective

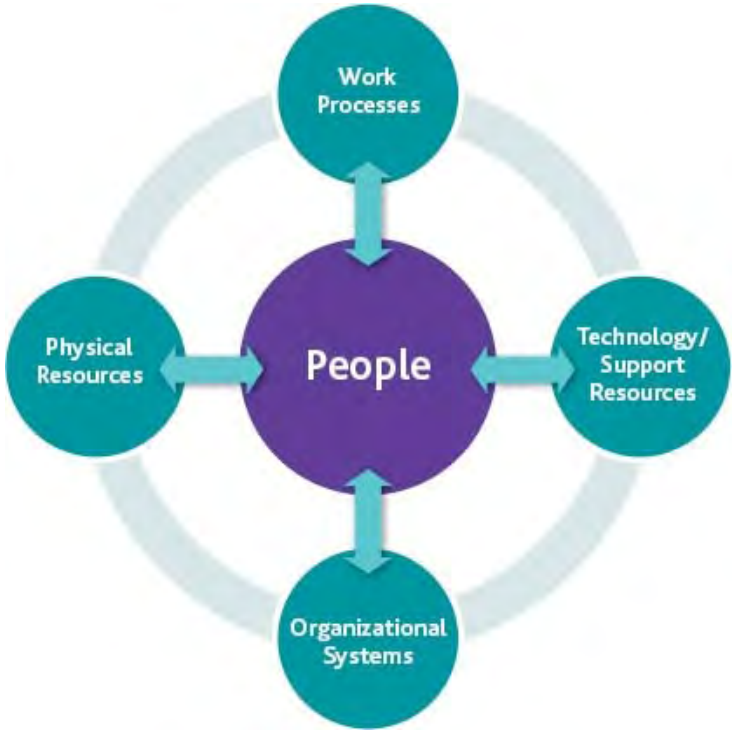
Develop a blueprint for establishing organizational change management supportive to DERMS adoption and integration.

Member Value

- Adapt utility organization and accompanying processes to incrementally, and ultimately, fully integrate DERMS into utility operations.

Plan for 2026

- Develop guidance, supported by case studies, on internal utility engagement, identifying key stakeholders and their roles/skillsets at different stages of DERMS implementation.
- Define the DERMS operator role (i.e., what the role practically entails, how it coordinates with existing roles and functions) and strategies for training DERMS operators.
- Explore cost allocation pathways.



Deliverable	Technical Update, Q4; *potential supplemental*
Participation	Survey and interview
Coordination	P174D, P200
Contact	Tanguy Hubert
Reference	N/A

Distribution Operations with DER Guidebook

Utility Need

DER integration is transitioning from ‘set it and forget it’ to a powerful operational asset. Practical guidance, recommended practices, and industry standards need to be documented in a centralized repository.

Research Objective

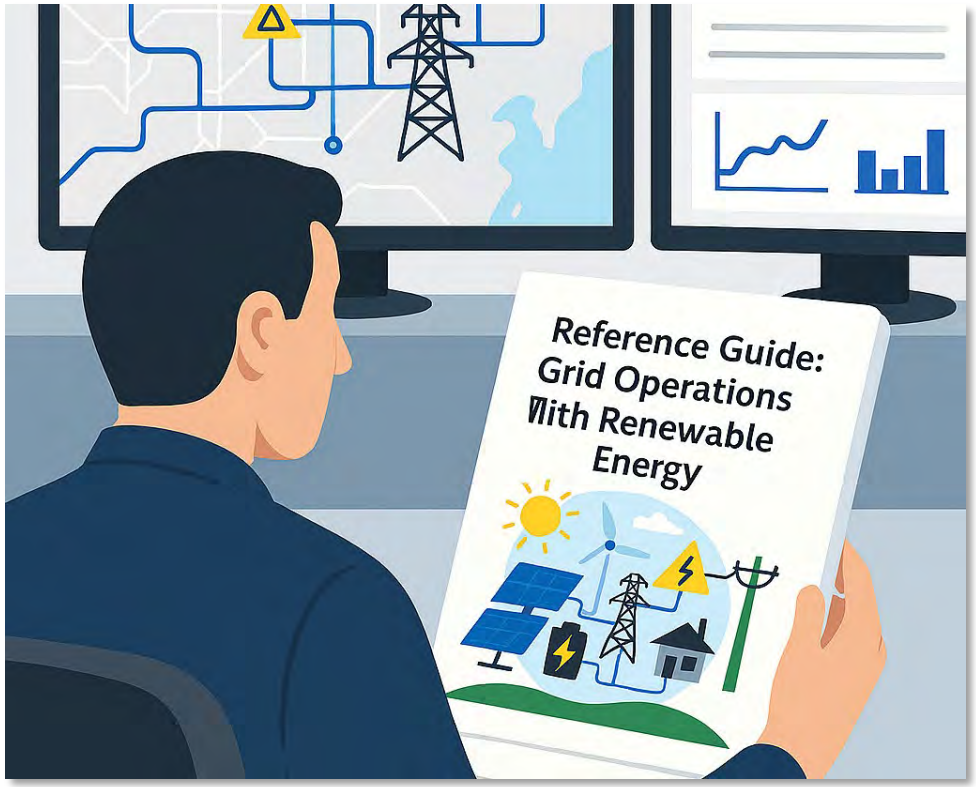
This project aims to further develop a comprehensive reference guide explicitly for Dx operators. This guidebook will include standardized definitions, descriptions, and operational guidelines for various DER technologies, enhancing operators' understanding of these resources within the distribution grid.

Member Value

- Provide clarity and consistency to improve onboarding, knowledge transfer, and decision making
- Enhance efficiency through scalable, repeatable processes and quick access support during unexpected situations

Plan for 2026

- Update the DER Guidebook with new chapters on DERMS integrations with IT/OT, microgrid operations, and interactions with DER Aggregators
- Updated chapter on the DERMS operator desk, focusing on identifying constraints (curtailment) and dispatch opportunities, including strategy, HMI, and operator functionality.



Deliverable	Tech Brief Q3
Participation	
Coordination	Joint with P200C, update to 2025 work
Contact	Nick Heine
Reference	3002033551

Advancing Common File Format: Adoption and Enhancements

Utility Need

Utilities require a consistent, efficient, and error-resistant method to communicate and verify DER settings to ensure safe, reliable interconnections as DER adoption accelerates.

Research Objective

Continue developing and promoting a standardized, machine-readable Common File Format (CFF) that streamlines the exchange, interpretation, and verification of DER settings across utilities, developers, and vendors. Promote usage as an industry best practice, including supporting tools.

Member Value

- Reduces engineering review time and cost through automation.
- Minimizes human error and associated operational risks by standardizing labels, units, and parameters.
- Enhances grid reliability and regulatory confidence by ensuring DERs are configured correctly.

Plan for 2026

- Regular sessions with the industry stakeholders for sharing experiences and for problem solving related to use of CFF.
- Enhance validation and automation tools for utilities to further accelerate CFF creation and setting verification.
- Grow and update the DER settings repository and incorporate member feedback to evolve CFF toward industry standardization.

Deliverable	Technical Update Q2
Participation	Open to the industry
Coordination	N/A
Contact	AHM Jakaria
Reference	3002025445

Project Set 174D

Practices, Programs, and Economics

Back to Outline

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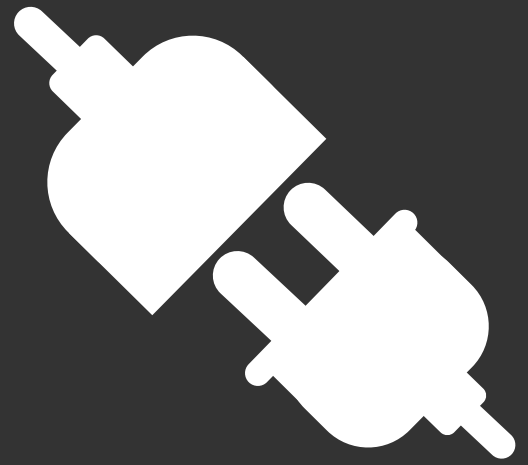
Research Goals

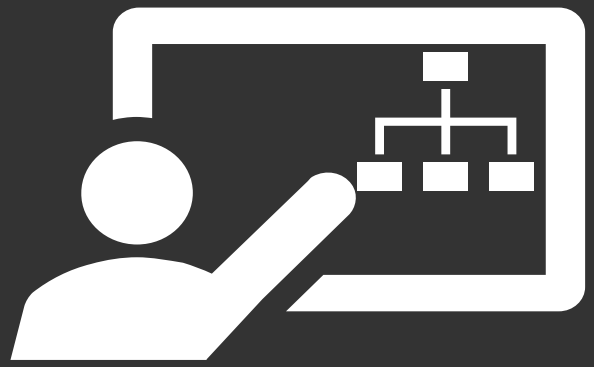
- Operational Excellence: Evolve utility interconnection, operational, business processes to better manage DER on distribution
- Strategy Development: Notify approaches and structures for new utility programs that leverage DER
- Value Optimization: Inform utility strategic planning with sound economic analysis of DER-grid interaction

Key Research Areas

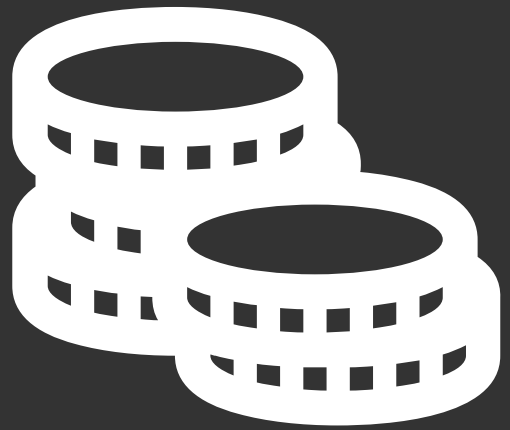
Operational & Interconnection Best Practices



Program Design Strategies & Business Models



Economic Analysis (Value of DER)



P174D 2026 Proposed Deliverables

- DER Interconnection Process Guidebook, 3rd Edition
- AI/LLM Applications for DER Interconnection Review
- GenAI-enabled DER Interconnection Tool (Chatbot)
- Workshop: Evolving DER Interconnection "Next" Practices
- Strategies for Operationalizing Utility DER Grid Flexibility Services
- Modern DER Aggregation Structures and Programs (w/P94)
- Workshop: Showcasing Real World NWA/DER Aggregation Project Results (w/200B & P94)
- Change Management: Organizational Readiness for DERMS (w/174C)
- DERMS CBA Case Studies joint w/174C
- Methods & Data for Economically Valuing DER/DG-based Grid Resilience
- Key Insights from DER-related Regulatory Actions

Interconnection & Operational Practices

Programs / Strategies

Economics

Software | Tech Update | Whitepaper | Tech Brief | Workshop

DER Interconnection Process Guidebook, 3rd Edition

Utility Need

One-stop destination for referencing technical and administrative utility DER interconnection best practices/approaches, as well as accompanying rules and standards.

Research Objective

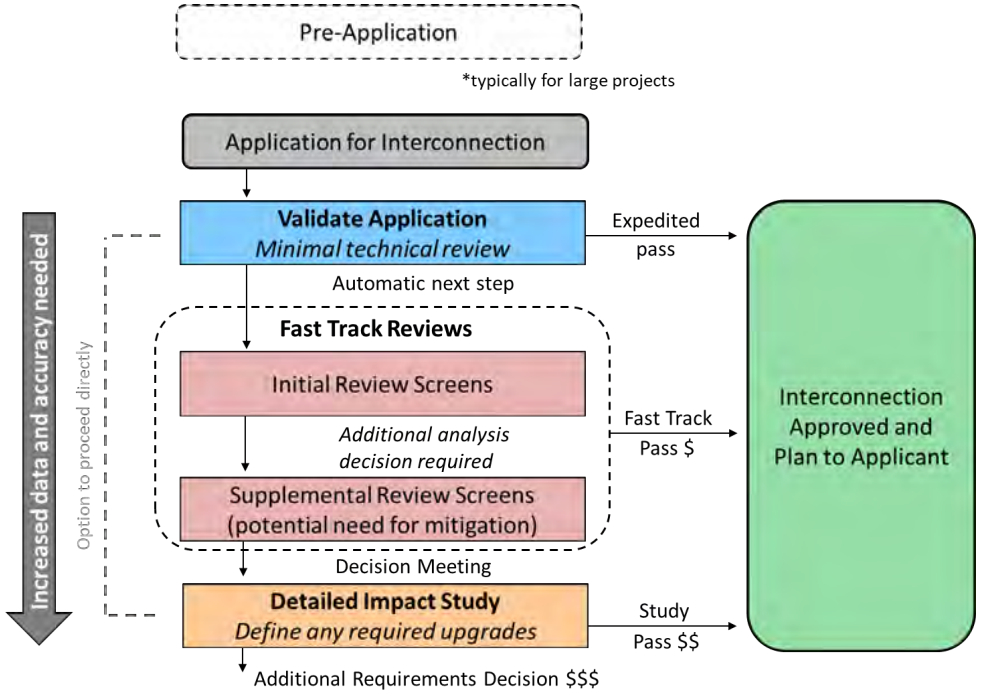
Benchmark utility operational, technical, and business processes for managing increasingly complex DER interconnections and rising grid penetrations. Pair procedural, data, staffing approaches with real-world utility case studies. Highlight useful tools, templates, tables; lessons, links to resources.

Member Value

- A comprehensive knowledge center for DER Interconnection:
  1. Improves the speed/reliability of interconnection technical review (OpEx reduction);
  2. Addresses rising application complexity/edge cases that comply w/1547-2018;
  3. Details exemplar DER interconnection program features.

Plan for 2026

- *Topical additions:* Review approaches for scheduled/flexibly interconnected DER, aggregations; procedural automation tactics; interconnection process KPIs/analytics for measuring organizational performance; interconnection IT infrastructure and DER data flows; utility interconnection department structures, people, and skillsets.



Deliverable	Website, Q4
Participation	Practice/data sharing & direction
Coordination	N/A
Contact	Dan Ernstmann
Reference	3002034006, DER Interconnection Web Hub

AI/LLM Applications for DER Interconnection Review

Utility Need

LLM applications in DER interconnection review can automate labor-intensive processes, reduce manual errors, and deliver a more streamlined/transparent experience.

Research Objective

Define/evaluate potential LLM applications to improve DER interconnection review processes, focusing on automation, compliance, and customer experience.

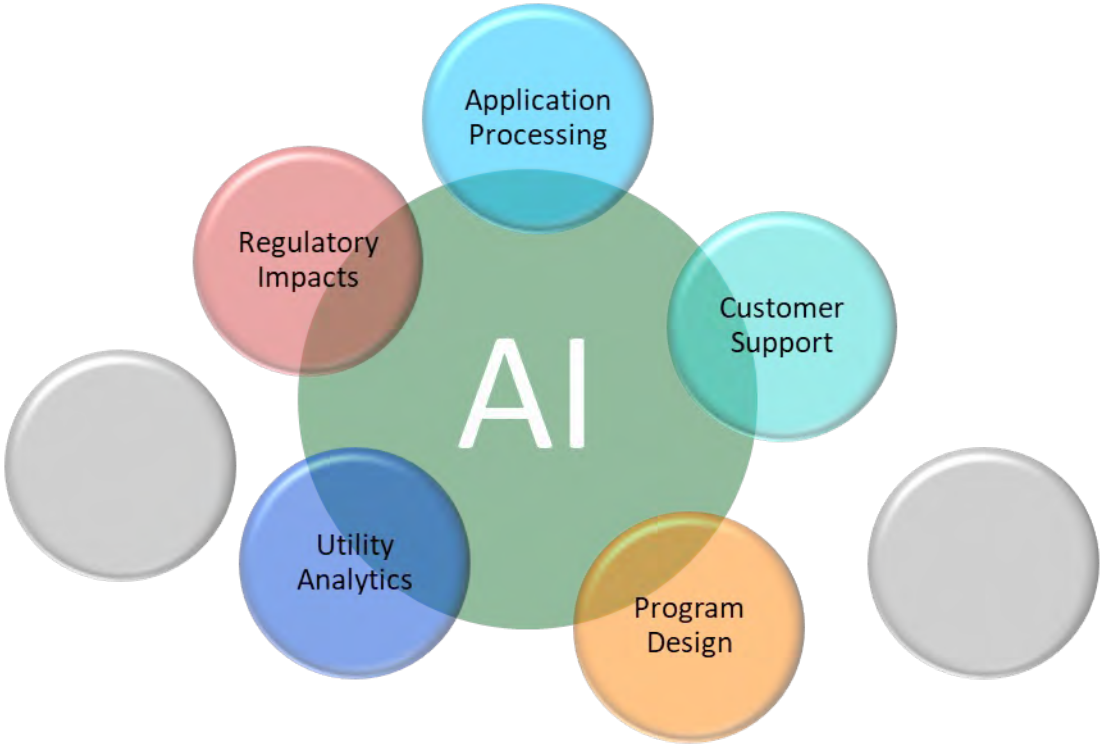
Member Value

- Decreased engineering time per interconnection application through improvements in process efficiency.
- Increased conversancy with AI/LLM applications and usability.

Plan for 2026

Assess interconnection-specific LLM use cases across interconnection categories:

- Doc. Automation – automated review of interconnection apps/compliance checks.
- Customer Support – LLM-enabled reports/knowledge sources for guiding customers through DER application processes.
- Program Design – Evaluation of regional data, customer portfolios, organizational objectives, electrification/DER forecasts to develop and assess customer programs.
- Regulatory Updates – Summaries/analysis related to regulatory developments (e.g., new programs/rules, tariffs).



Deliverable	Tech Update, Use Case Matrix, EPRI Prototype Dev Plan; Q4
Participation	Guidance
Coordination	TI
Contact	Dan Ernstmann
Reference	3002030341, 3002033420

GenAI-enabled DER Interconnection Tool (Chatbot)

Utility Need

Fast response, distilled, and specific answers to DER interconnection questions based on EPRI/industry research as well as documented utility experiences, ideas, and practices.

Research Objective

Help utility staff mine the reservoir of EPRI interconnection knowledge using Generative AI. Apply Retrieval-Augmented Generation (RAG) techniques and internally hosted open-source large language models (LLMs) to enable natural language queries from EPRI resources.

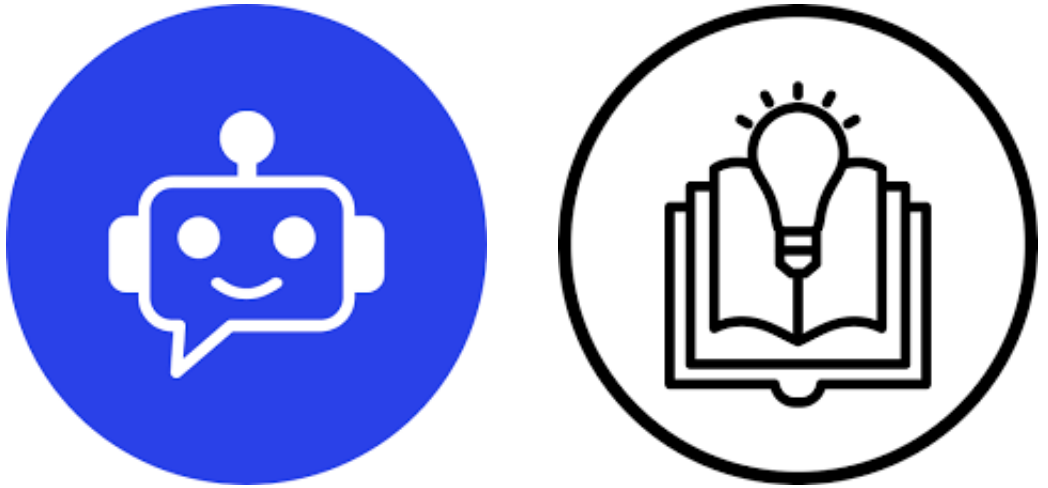
Member Value

Inquiry-specific answers from an archive of relevant reports, tech briefs, presentations, and Forum posts related to DER interconnection.

- Quickly inform/shape utility practices, processes, protocols, responses
- Identify research topics in need of (more) attention

Plan for 2026

- Create DER interconnection domain-specific tool, user guide.
- Provide assistance in chatbot application and use.



Deliverable	Domain-specific Chatbot (DER Interconnection), user guide; Q4
Participation	Full 174 Members
Coordination	TI EPRI Gen-AI
Contact	Nadav Enbar, Dan Ernstmann, Tom Key
Reference	3002033393 (Gen-AI Assisted Planning)

Workshop: Evolving DER Interconnection "Next" Practices

Utility Need

Utility/industry perspectives on optimal DER interconnection practices for addressing the “next” generation of industry challenges.

Research Objective

Facilitate interactive workshop examining DER interconnection challenges and corresponding best/next practices to raise awareness on how utility interconnection programs are evolving to meet flexibility, hi-pen scenarios, standards compliance needs; potential AI-driven advancements.

Member Value

- Explore how flexibility (import/export limits, scheduling, value stacking), aggregation, V2G, other pressing issues, are handled in DER interconnection review processes.
- Discuss how operational/procedural practices, technologies, and standards/certifications enable greater grid utilization for integrating DER.

Plan for 2026

- Profile real-world challenges and utility approaches to managing increasingly complex DER interconnection requests. Buttress conceptual material with case studies and discussion.
- *Topics:* AI/LLM in interconnection, managing DER aggregations and DERs providing grid services, streamlining review/technical analysis to accommodate import/export limiting and scheduling, updating protection practices, adoption of timely standards and certifications (e.g., 1547.10, UL 1741-SC, UL 3141).

Deliverable	Workshop and proceedings, Q3
Participation	Workshop participation
Coordination	N/A
Contact	Nadav Enbar
Reference	3002034022

Strategies for Operationalizing Utility DER Grid Flexibility Services

Utility Need

Utility programs and practices that leverage DERs for grid flexibility services can satisfy revenue generation, grid integration, market/regulatory compliance objectives.

Research Objective

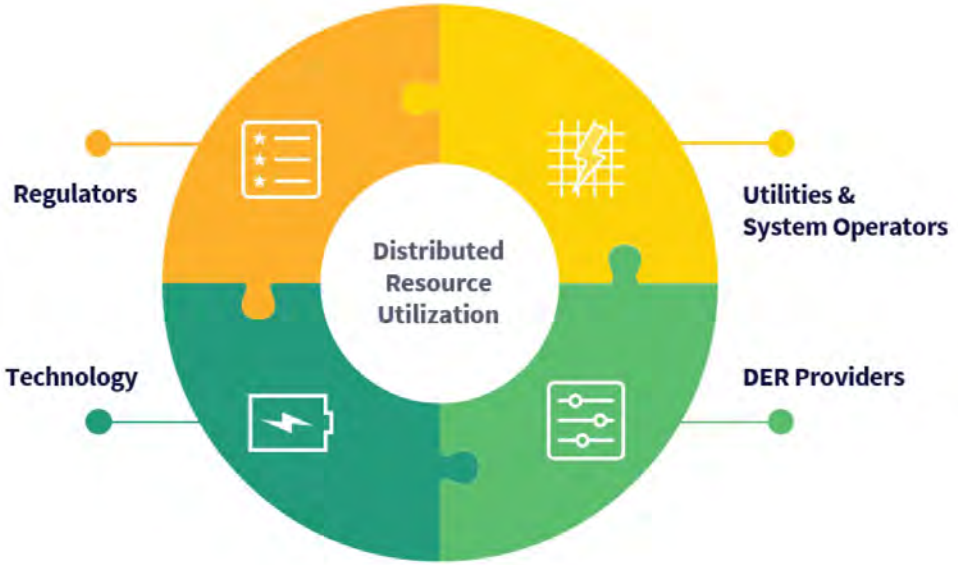
Document utility strategies and tactics for sourcing DER for distribution services, highlighting structural elements that enable DER flexibility.

Member Value

- Strategies/rationales for developing DER flexibility service products that increase system utilization, improve reliability, enable market participation.
- Guidance on the business arrangements needed to source flexibility/reliability services from individual and aggregated DER.

Plan for 2026

- Survey/intw utilities, conduct case study analysis, review regulatory outcomes to examine approaches, economics that support DER flexibility services to T&D.
- *Topics:* (1) Defining flexibility and its pathways, (2) Leveraging a marketplace platform (Piclo) for distribution services: field updates, (3) assessing the value of distribution services (based on real world data).



Deliverable	White papers, Q2 and Q4
Participation	Program/data sharing & direction
Coordination	P200B
Contact	Tanguy Hubert
Reference	3002027231

Modern DER Aggregation Structures and Programs

Utility Need

Develop proactive strategies for implementing DER aggregations in ways that provide both system-wide and targeted technical/economic benefits.

Research Objective

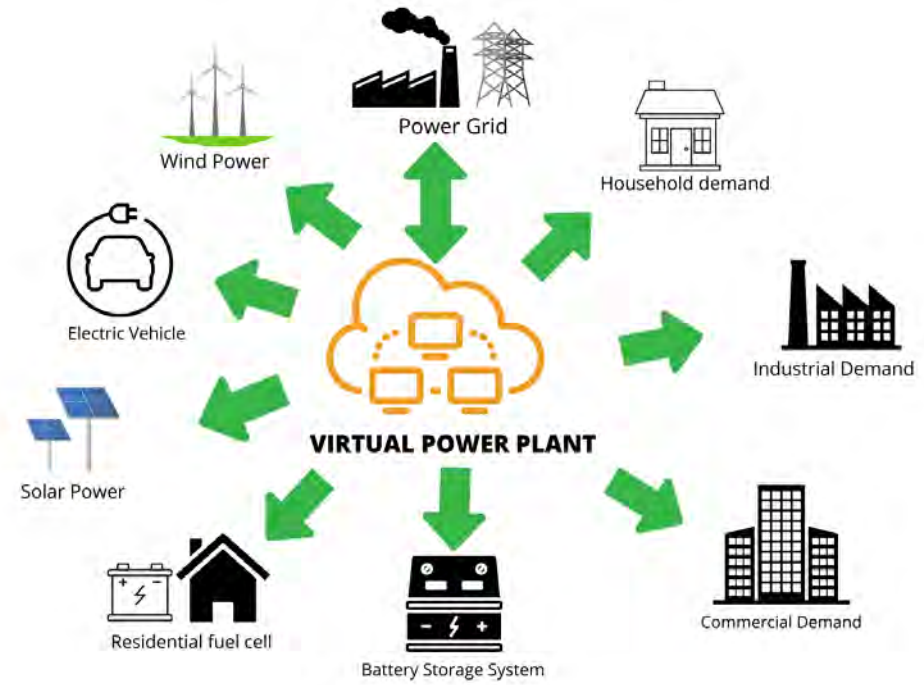
Demonstrate programmatic structures and requirements for DSO, Aggregator, others as FERC Order 2222 implementation becomes reality.

Member Value

- Demonstrate DER aggregation programmatic structures and strategies for realizing customer and grid benefits.
- Recognize the requirements for DSO, Aggregator, others as FERC Order 2222 implementation becomes reality.

Plan for 2026

- Discuss/illustrate DER aggregation operational scenarios, supported by case studies.
- Showcase network scenarios that illustrate "dispatch events" and animate the players (market, bid, aggregation, DSO, plant).



Deliverable	Technical Update, Q4
Participation	Program/data sharing & direction
Coordination	P94M
Contact	Nadav Enbar
Reference	3002030064, 3002034027

Workshop: Showcasing Real World NWA/DER Aggregation Project Results

Utility Need

Plug gaps in knowledge regarding the development, management, and evaluation of utility NWA and DER aggregation programs.

Research Objective

Examine the planning/design features and processes that translate to successful utility- and 3rd party-run NWA/DER aggregation programs. Assess the approaches that can optimize their value and be made extensible to different utility contexts/jurisdictions.

Member Value

- Learn from industry peers about NWA/DER aggregation program planning/ design approaches, implementations, techno-economic results, lessons learned.

Plan for 2026

- Conduct virtual workshop w/utility presentations on real-world experiences planning, siting, operating NWA and DER aggregation programs/projects.
- Utility-only, emphasis on case study-based outcomes and results
- *Sample topics:* Program structures (contract terms, service requirements, contingency planning); monitoring, control, communication approaches; cost-benefit assessment methods, analytics used to specify/measure operation/performance; experiences re: reliability/availability.

Deliverable	Workshop and proceedings, Q2
Participation	Workshop participation
Coordination	P200B, P94K
Contacts	Nadav Enbar, Russ Like
Reference	3002027698, 3002030316, 3002033367

Change Management: Organizational Readiness for DERMS

Utility Need

Ensure DERMS objectives, implementation, and operation are aligned with utility staff skill sets and effectively coordinated across relevant utility departments.

Research Objective

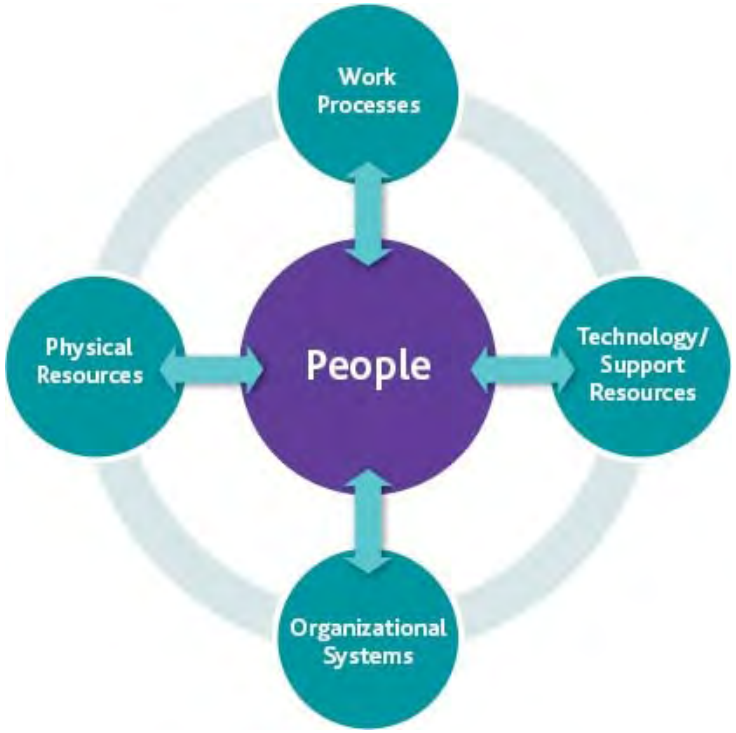
Develop a blueprint for establishing organizational change management supportive to DERMS adoption and integration.

Member Value

- Adapt utility organization and accompanying processes to incrementally, and ultimately, fully integrate DERMS into utility operations.

Plan for 2026

- Develop guidance, supported by case studies, on internal utility engagement, identifying key stakeholders and their roles/skillsets at different stages of DERMS implementation.
- Define the DERMS operator role (i.e., what the role practically entails, how it coordinates with existing roles and functions) and strategies for training DERMS operators.
- Explore cost allocation pathways.



Deliverable	Technical Update, Q4
Participation	Survey and interview
Coordination	P174C, P200
Contact	Tanguy Hubert
Reference	N/A

DERMS Cost-Benefit Analysis Case Studies

Utility Need

G&T utilities face increasing DER adoption across their member distribution utilities. As local power companies (LPCs) begin aggregating DERs and preparing for partial-requirements models, G&Ts will need quantitative guidance on the value of DERMS investments—including how centralized DER dispatch, distribution-level DERMS, and coordinated G&T-LPC operations interact. Today, no common valuation method exists that reflects both G&T and distribution perspectives.

Research Objective

Develop case studies evaluating the costs and benefits of DERMS for G&T utilities and their distribution members. The research will quantify DERMS value in three contexts:

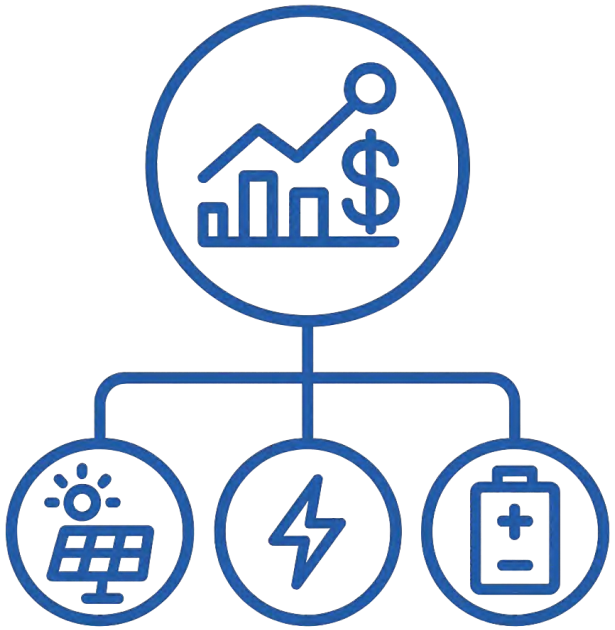
- Centralized G&T dispatch of aggregated DERs
- Distribution-level DER dispatch by LPCs
- Inter-operability and value sharing between G&T DERMS and distribution-level DERMS deployments

Member Value

- DERMS valuation tailored to G&T operational structures.
- Rationales for justifying DERMS investments, based on quantified system-wide benefits and an understanding of tradeoffs across centralized vs. distributed dispatch.
- Insights into future partial-requirements/co-supply models, supporting strategic planning for DER.
- A replicable CBA framework for other G&Ts and their member utilities.

Plan for 2026

- Develop G&T-focused DERMS valuation scenarios using EPRI's DERMS Value tool.
- Quantify value streams under centralized dispatch, distribution-level DER dispatch, and coordinated two-tier DERMS operations.
- Conduct case study analyses for selected G&Ts and member utilities.
- Document results with methodology, key findings, and decision frameworks for G&T utilities.



Deliverable	Tech Update (Q3)
Participation	Provide case study examples from utilities (TVA, PRPA)
Coordination	P174C
Contact	Tanguy Hubert, Jackie Baum
Reference	DERMS CBA

Methods & Data for Economically Valuing DER/DG-based Grid Resilience

Utility Need

Assess the economic proposition of investing in DG/DER-based solutions (utility- and 3rd-party-owned) in distribution system resilience planning.

Research Objective

Develop tools, frameworks, and accompanying data for determining the value of energy resilience from distributed generation resources.

Member Value

- Discern the range of DG/DER investment needed to provide essential energy-based services to a range of facilities and meet regulator scrutiny.
- Apply data-driven resilience estimates to resilience valuation approaches.

Plan for 2026

- Develop guidance on the application of model-based grid resilience approaches and valuation tools
  - **Willingness-to-Pay (WTP) Resilience Value Estimation Tool, v2.0**: Expand functional capability of tool to better estimate U.S. customer appetite for resilience based on demographics, income, outage exposure, other predictive factors; add datasets.
  - **Modular Template Framework, v3.0**: Enhance framework for determining DER resilience value at the microgrid/neighborhood level across different settings; build out approach for prioritizing resilience investments as part of grid planning.
  - **Resilience metrics**: Document resilience metric development efforts (EPRI, ARCHER, IEEE).

Deliverable	Tools, user guide, Technical Update, Q4
Participation	Value of Resilience Working Group (VRWG) involvement
Coordination	P262
Contact	Russel Like
Reference	3002027407

Key Insights from DER-related Regulatory Actions

Utility Need

Awareness/improved preparation to proactively address regulatory actions relevant to DER integration in a utility service territory.

Research Objective

Document selected regulatory activities (e.g., V2G, DER flexibility, grid services rulemaking/pilot mandates), recommend compliance approaches. Provide EPRI commentary and perspectives.

Member Value

- Learn about regulatory actions across utility jurisdictions that may be directly relevant to current/future local issues.
- Share regulatory experiences with other utilities with similar regulatory challenges.

Plan for 2026

- Examine selected regulatory topics/activities
- Participate in working groups to inform insights
- Issue quarterly briefs.

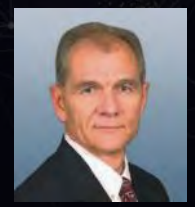
Deliverable	Quick Insights, throughout 2026
Participation	Via DER Forum, Suggestion Box, or directly
Coordination	IREC, RAP, others
Contact	Nadav Enbar
Reference	NY ITWG

Project Set 174E

Technology Transfer and Industry Engagement

Together...Shaping the Future of Electricity

Back to Outline



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174E: 2026 Technology Transfer and Industry Coordination

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Goals

Provide technical updates and resources on current integration issues, standards activities, and changes in technology, utility practices and regulatory environment.

Measures of Success

- Promote communication, member discussion, common integration issues
- Follow and influence evolving standards and interconnection practices
- Share Learnings from demonstrations, in case studies, and field experience
- Provide easy access to resources including Forum posts and Webcasts
- Facilitate discussion of problems and solutions related to DER decisions

Delivery Mechanisms/Areas

DER Resource Center

Webcasts and Interest Groups

DER Member Forum

Engineering Guide/Topical Updates

Plan for P174E 2026 Deliverables

	**DER Resource Center** – Finder, Calendar, Interconnection, DERMS RFPs, Analytics Tools, Practices Database, CCF Settings, My DER Profile, Newsletter, and Solar Data, (with links to DER groups and other tools)
	**DER Field Experience Interest Group** – Address current experience with both member and EPRI perspective
	**Engineering Guide on Storage and DER** – Apply existing 2025 guide, Tutorial/Tour, topical whitepaper
	**DER Integration Explainer** – Including newsletter, briefs and surveys on current topics.
	**DER Standards Support – IEEE 1547, 1547.7, 1547.4, 1547.10, PES Distribution SC**
	**Support Online DER Forum** – Maintain and promote *(w/P94)*

 Software

 Tech Update

 Whitepaper

 Tech Brief

 WebEx/Workshop

DER Resource Center

Utility Need

To ease access to current and past DER resources assist with member self-sufficiency.

Research Objective

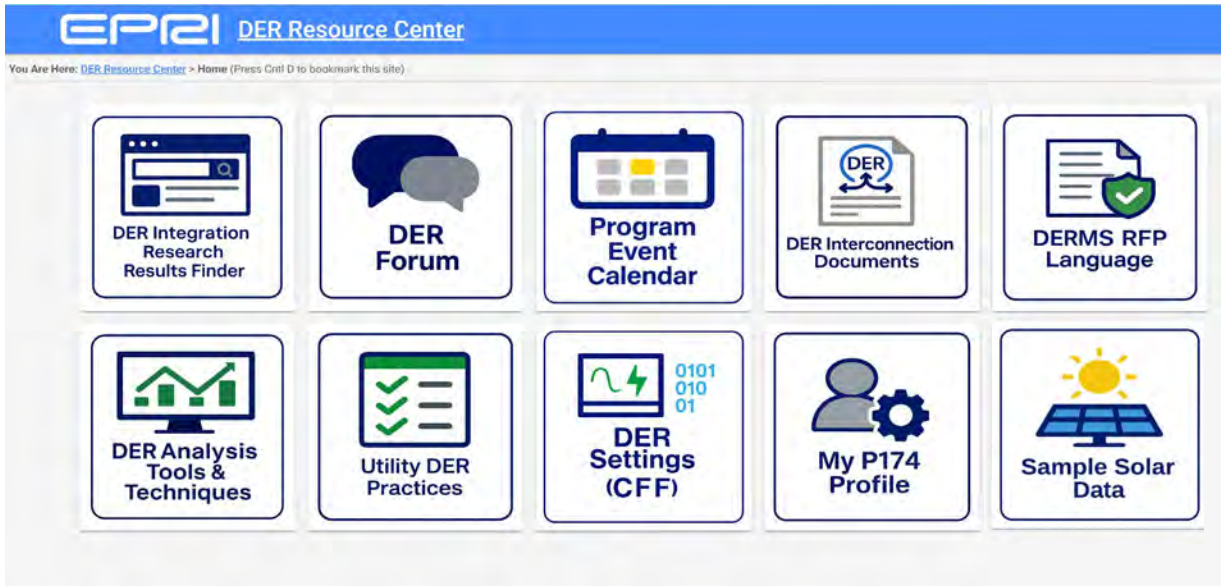
Provides one-stop destination for all program information as well as handy tools and sample utility documents.

Member Value

- **Improves operational efficiency** by centralizing DER tools, results, and utility practices in a searchable platform.
- **Reduces consulting and rework costs** by enabling staff to quickly locate vetted engineering guidance and examples.
- **Leverages accumulated technical knowledge** to support consistent, repeatable DER integration decisions over time.

Plan for 2026

- Continue to accumulate and maintain functionalities of searchable content repository, and newsletter.
- Add more options with cross reference between related topics, add tracking data other improvements.



Deliverable	Website (on-going, face lift in 2025)
Participation	Members at https://der.epri.com/
Coordination	Forum is with P94
Contact	tkey@epri.com
Reference	Accumulated history of DER resources

Easy access to integration of DER resources

DER Field Experience Interest Group (FEIG)

Utility Need
Share field experiences, receive immediate feedback and discuss lessons learned w.r.t. DER integration in utility industry. Informed practices/problem solving.

Research Objective
Identify current integration issues, find relevant utility experience, share learning and EPRI research perspectives.

Member Value
- **Reduces total cost of DER integration** by avoiding repeat mistakes through shared peer experience.
- **Provides early visibility into regulatory** trends and actions emerging across jurisdictions.
- **Accelerates adoption of proven practices** for operational decision-making.
- **Leverages collective technical expertise** from utilities with varying DER maturity to inform engineering judgment.

Plan for 2026
- Organize and conduct monthly sessions.
- Continue collecting topic-specific materials.
- Provide periodic summary of topics

#	Most Common FEIG Topics
9	*Impacts of reverse power*
7	*Microgrids applications, DERMS*
7	*Interconnections; EV, hosting, large loads*
6	*DTT/ Island Detection*
6	*PCS, Energy Storage, Export Limiting and Flexible Connects*
6	*PCC Recloser applications*
5	*Power quality experience*

Deliverable	Conduct FEIG (~ monthly)
Participation	Any invited utility persons
Coordination	As needed depending on the topic
Contact	tkey@epri.com
Reference	FEIG materials in DER.EPRI.com

Capture and share DER field experiences

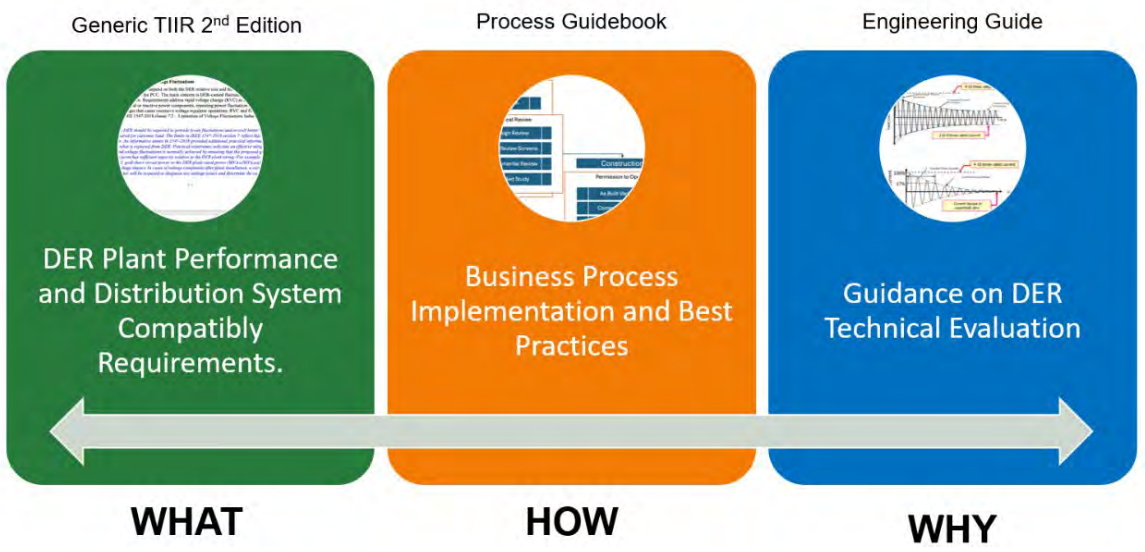
Engineering Guide on Storage and Distributed Generation

Utility Need
Desk reference and search capability for engineering guidance on DER integration and interconnection.

Research Objectives
Bring together the accumulating resources to support utility integration of DER, with increasing penetration levels and valuable field experience.

Member Value
- **Improves engineering efficiency** by centralizing DER integration and interconnection guidance in a single reference.
- **Reduces rework and consulting costs** through access to vetted practices, tools, and lessons learned.
- **Leverages accumulated engineering knowledge** to support consistent, high-quality DER decisions over time.

Plan for 2026
- Conduct tour of the guide in two Webex sessions, on 2/11, 3/10
- Collect input on the 2025 guide, suggested improvements and a record of any new links and related references.
- Align with related EPRI documents including TIIR, interconnection process guide, screening and technical evaluation materials



Deliverable	Technical Tour of 2025 Guide
Participation	Members
Coordination	Joint with energy storage program
Contact	tkey@epri.com
Reference	2025 Engineering Guide

A go-to destination for DER integration questions and discussions

P174E DER Integration “Explainer” Series

Utility Need

Introductory materials defining core DER Integration-related challenges, solutions, and perspectives supports consensus industry understanding and clarity.

Research Objective

Develop short, incisive briefs informed by prior EPRI research, that characterize key DER Integration issues accessible to multiple stakeholders (utility, regulatory, etc.). Establish member reference library for accessing more in-depth topical P174 research.

Member Value

- **Speeds understanding of complex DER topics** through concise, practical explainers.
- **Improves efficiency of engineering work** by guiding users to the most relevant Engineering Guide content and tools.
- **Leverages existing EPRI and utility knowledge** by distilling prior research into reusable technical overviews.

Plan for 2026

- Leverage AI/LLM to summarize foundational insights – based on existing P174 research – along with contemporary perspectives on a range of member-prioritized topics.
- Package insights in a consistent format which includes references to additional research offering deeper dive results/commentary.
- *Potential Topics*: DER & Grid Protection, DER Settings, DER-Grid Flexibility and Implementation, VPP Definition & Parameters, 1547 & Next Steps, PCS vs. Gateways vs. DERMS.

Deliverable	Various short explanatory resources
Participation	Program/data sharing & direction
Coordination	P174
Contact	Tom Key, Nadav Enbar
References	Variations of DTT in DER Interconnection; Reqt’s & Differences in Voltage RT, Momentary Cessation & Trip; PCS; Grid Forming Inverters

DER Integration Standards Support/Member Updates

Utility Need

Stay current on DER interconnection requirement standards as well as guides for screening and studies, security, energy storage, microgrids, et. Follow evolving protection standard for DER.

Research Objective

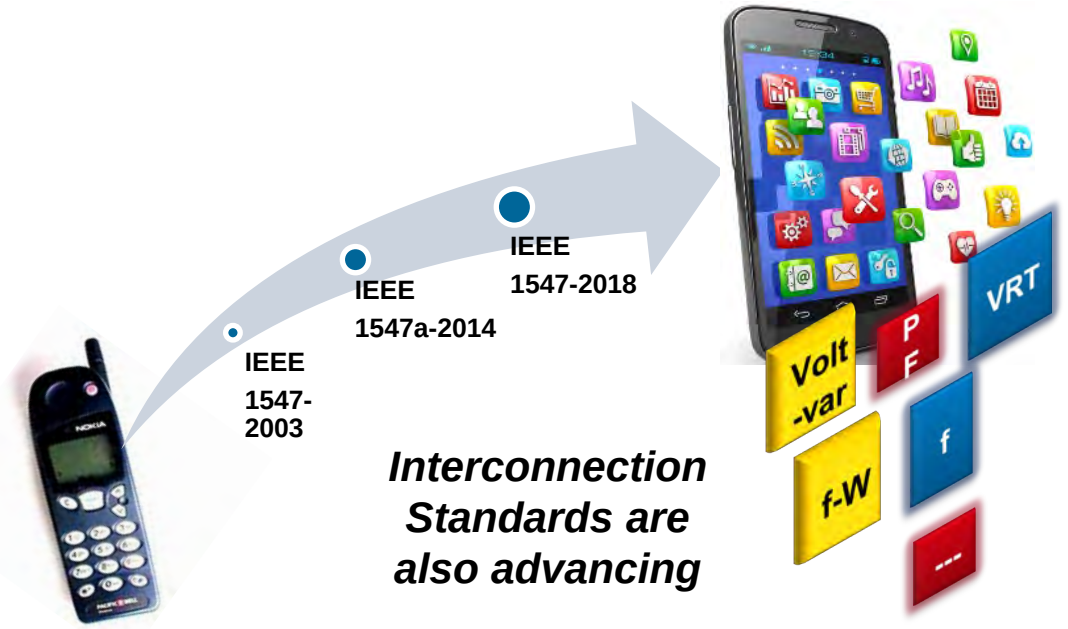
To participate, engage and in some cases lead DER related standards development activities, provide technical input informing the process and member related research activities. Also to organize and provide regular updates on standards activities.

Member Value

- **Speeds understanding of complex DER topics** through concise, practical explainers.
- **Improves efficiency of engineering work** by guiding users to the most relevant Engineering Guide content and tools.
- **Leverages existing EPRI and utility knowledge** by distilling prior research into reusable technical overviews.

Plan for 2026

- Ongoing engagement in IEEE 1547 series, UL as well as IEEE power system relaying committee.
- Incorporate relevant standard's activities in technical content.
- Provide regular Webex and newsletter updates.



Deliverable	Webex, email updates ~quarterly
Participation	Via tech transfer and directly
Coordination	Grid Ops IEEE 2800, also ICCT and EC
Contact	tkey@epri.com
Reference	Standards materials in Results Finder

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