



Open Power AI Consortium Member Representative Committee Meeting



October 2025

Agenda

Thursday, August 21, 2025		
Time (EST)	Topic	Lead
11:00 am	Welcome & Key Updates • Meeting Overview • Work Groups • What's Coming?	Jeremy Renshaw, EPRI
11:05 am	AI for Automating Rate Cases	Khalid Behairy, Deloitte
11:25 am	AI Activities at SHI	Ganesh Tyagali, SHI
11:45 am	IP Framework Update	Jacqueline Rosati, EPRI
11:50 am	AI in PCM Challenge	Alvaro Porras, EPRI
11:55 am	AI Sustainability White Papers	Brenda Brickhouse, EPRI
12:00 pm	Adjourn	All

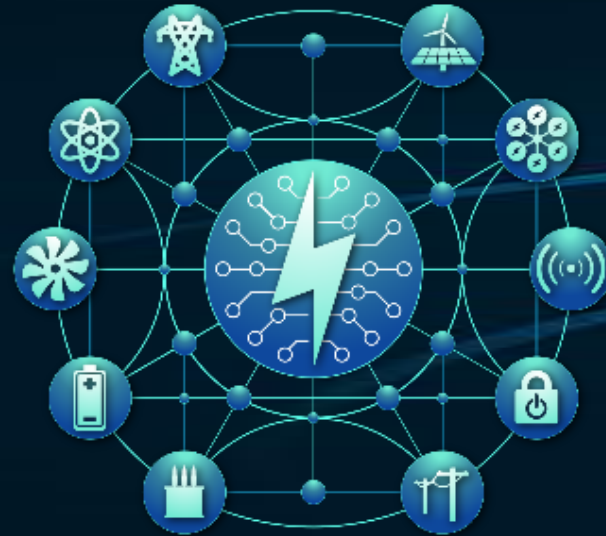
Open Power AI Consortium

Creating an ecosystem for stakeholders to identify, develop, validate, and deploy AI solutions to transform the electric sector

Develop AI Models,
Data & Roadmaps

Create an AI
Sandbox

Implementation and
Lessons Learned



**OPEN POWER
AI CONSORTIUM**

>200 Members

>100 MOU/Requests
In-Process

>300 Use cases
identified

OPAI Participants

AI and Energy Technology Partners



Academia & Other Strategic Partners



Energy Partners



OPAI Work Status - Initial Priorities for the Three Work Groups



Electric DSM WG

Lead: Ben Sooter



AI Use Case WG

Lead: Adrian Kelly



Deployment WG

Lead: Jason Hollern

What Do We Need from You?

- Fill out the MRC Survey
 - <https://www.surveymonkey.com/r/participantsurvey>
 - Assign staff to Work Groups (if not done)
- Share public examples of relevant use cases
 - Proposed
 - Ongoing
 - Completed
- Reach out to jrenshaw@epri.com to speak in future meetings



**Participant
Survey QR Code**

Data Readiness White Paper

How can we properly leverage data to support AI initiatives?



EPRI



2025 White Paper

AI Readiness in Utilities: Turning Data into Strategic Advantage



The first in a series of guidance documents to accelerate AI implementation

AI for Automating Rate Cases (Deloitte)

The Deloitte logo, featuring the word "Deloitte" in a bold, black, sans-serif font, followed by a small green dot.

AI Activities at SHI (SHI)

The SHI logo, featuring a stylized "SHI" in a bold, black, sans-serif font, preceded by a circular icon with a gradient from red to yellow to green.



**Imagine.
Experiment.
Adopt.**

Work Order Scheduling and Operations

10/21/25

How organizations solve what's next with SHI

Customer Profile

Global Telecommunications Company

Customer Outcome

Enabling 30% faster project delivery.
Automated dispatch and task sequencing for 12,000 technicians nationwide.
Improved efficiency and reduced delays.
Seamless integration with existing tools.

Why SHI

Deep Telco expertise.
Proven AI capabilities and expertise.
Strategic NVIDIA partnership for advanced solutions.
Ability to integrate with existing systems, saving time and cost.
Consultative approach tailored to customer's needs.

Partners

NVIDIA



Why SHI: Transforming Field Operations: Enabling 30% faster project delivery and increased user experience through AI-driven automation for Telco giant.



Problem

The customer faced lengthy and complex project planning cycles due to inefficient, out-of-sequence dispatching across multiple systems for 12,000 field technicians nationwide.

Critical field projects were slowed by manual scheduling, fragmented workflows, and no real-time integration with essential data - such as permits, weather, or safety requirements.

Existing workflows were difficult to optimize without costly system overhauls, impacting both operational efficiency and customer satisfaction.



Solution

To deliver a cutting-edge, AI-powered solution to transform field operations.

Leveraging deep telecommunications expertise and a strategic partnership with NVIDIA, SHI seamlessly integrated the NVIDIA cuOpt system into existing tools - without disrupting workflows.

SHI's AI Lab and data scientists collaborated closely with the customer to automate and optimize task sequencing, enabling real-time data integration and streamlined dispatch for 12,000 field technicians nationwide.

This innovative approach empowered the organization to achieve new levels of speed, accuracy, and efficiency.



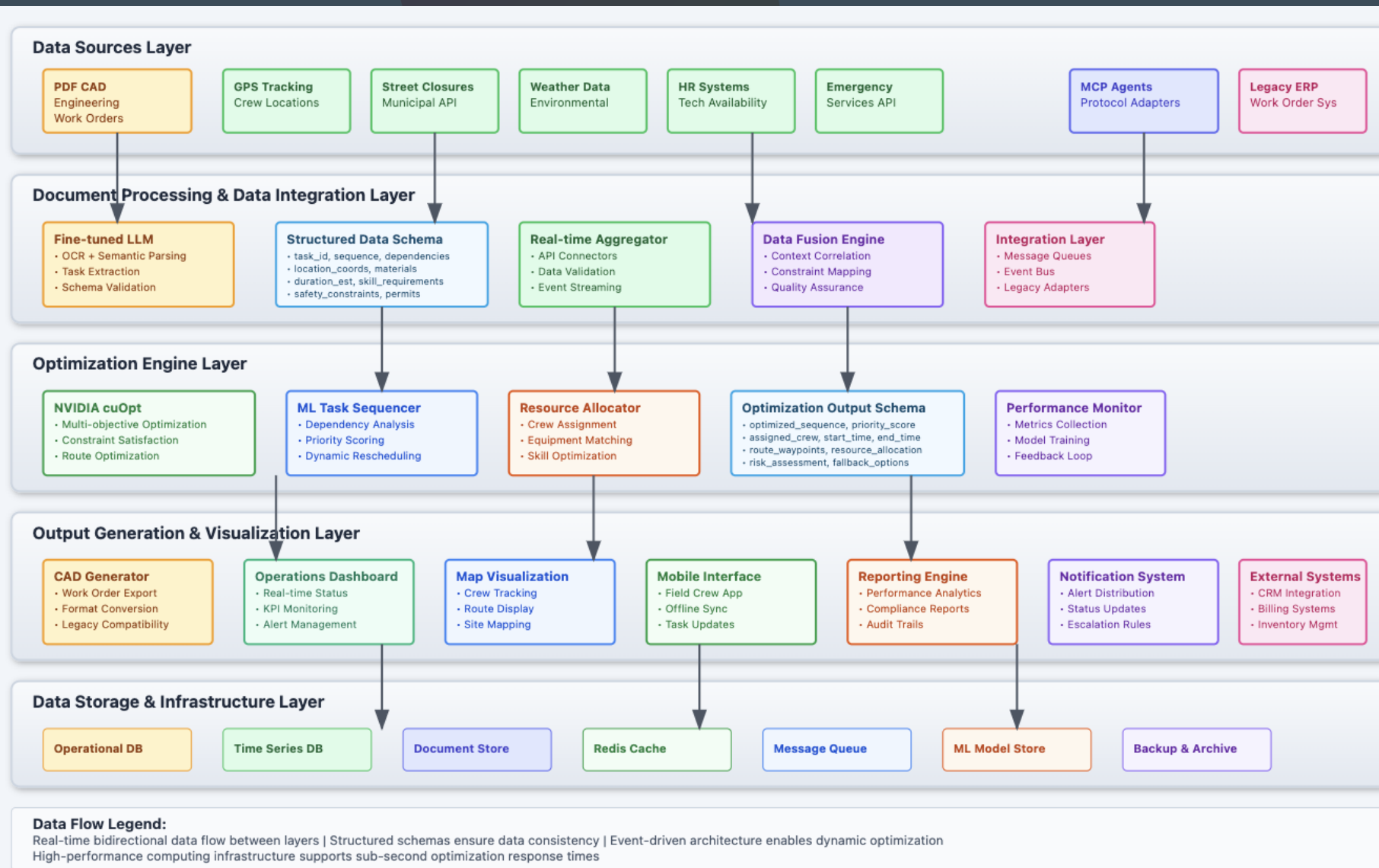
Impact

By deploying an advanced AI-driven solution, the customer is positioned to dramatically accelerate project planning and execution, enabling field operations to move from concept to completion with greater efficiency.

Seamless integration with existing tools eliminated the need for costly rebuilds and minimized operational disruption, ensuring uninterrupted business continuity.

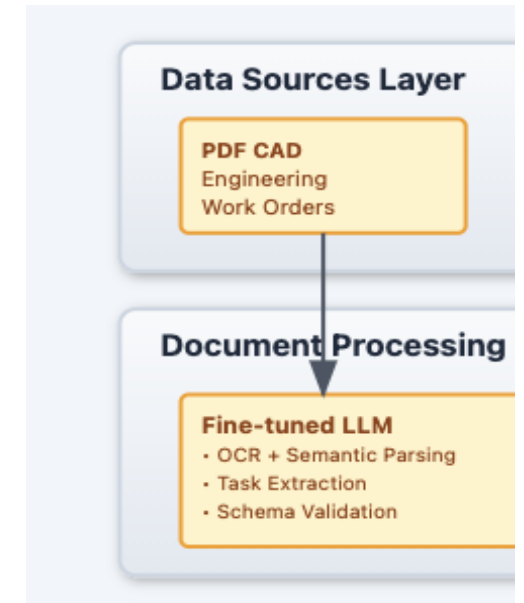
The scalable solution has established a five-year value trajectory, empowering ongoing process improvements, accelerating innovation, and positioning the customer to confidently pursue new strategic initiatives - all while significantly enhancing the customer's end-user experience.

System Architecture of the Solution

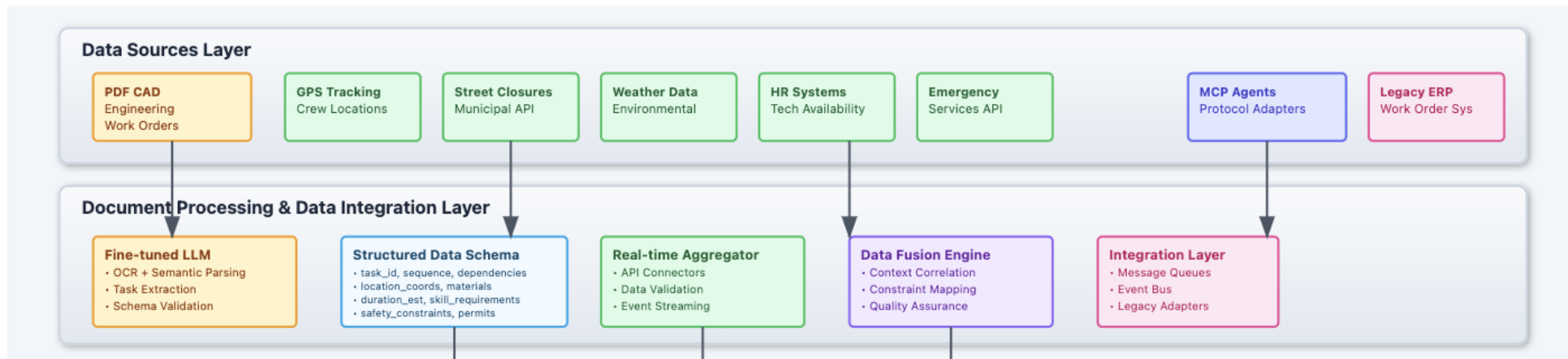


Document Processing Layer

- The document ingestion component utilizes a fine-tuned large language model specifically trained on Engineering Work Order (EWO) documentation. This component extracts structured data from PDF engineering work orders, identifying task sequences, material requirements, location specifications, and technical parameters. The system employs optical character recognition combined with semantic parsing to handle both text and diagram elements within the CAD drawings.
- The extracted data undergoes validation against predefined schemas that represent standard telecommunications work order formats. This ensures consistency and enables downstream processing components to operate reliably with the structured information.



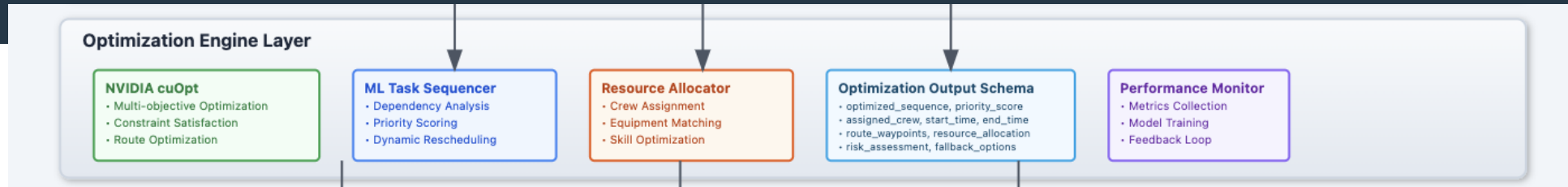
Real-Time Data Integration Layer



- Multiple data streams feed into the system through dedicated API connectors and MCP (Model Context Protocol) agents. These include GPS tracking systems for crew locations, municipal databases for street closure information, human resources systems for technician availability and skill mapping, weather service APIs for environmental conditions, and emergency services coordination systems for safety considerations.
- Each data source maintains its own connector service with built-in retry logic, data validation, and caching mechanisms to ensure reliable data flow even during network interruptions or service outages.

Optimization Engine

NVIDIA cuOpt



- The core optimization component leverages NVIDIA cuOpt libraries/engine combined with custom machine learning algorithms, as needed for task sequencing and resource allocation. The system considers multiple constraint types including temporal dependencies between tasks, resource availability, geographical proximity, weather conditions, and regulatory requirements.
- The optimization engine processes these constraints through a multi-objective optimization framework that balances efficiency, safety, customer impact, and resource utilization. Advanced scheduling algorithms account for dynamic changes in conditions and can trigger re-optimization when significant disruptions occur.

Optimization Engine Output

Work Order: EWO-2025-001

Title: Fiber Cable Installation - Bayview Ave
Location: Bayview Ave, Beverly, MA
Date: June 30, 2025
Generated: 10:45 AM EDT

Original Work Order Analysis

Extracted Tasks from CAD Document

The AI Document Intelligence Engine processed the CAD drawing and identified the following key tasks:

- 1. Site Survey & Safety Setup - 30 minutes
- 2. Permit Verification - 15 minutes
- 3. Traffic Control Setup - 45 minutes
- 4. Excavation Planning - 15 minutes
- 5. Trench Digging (120ft) - 2.5 hours
- 6. Utility Locating Verification - 30 minutes
- 7. Conduit Installation - 1 hour
- 8. Fiber Cable Placement - 1.5 hours
- 9. Splice Enclosure Installation - 45 minutes
- 10. Fiber Splicing - 2 hours
- 11. Signal Testing - 30 minutes
- 12. Site Restoration - 1 hour
- 13. Documentation & Cleanup - 30 minutes

Original Estimated Duration: 11.5 hours
Original Resource Requirement: 4 technicians

Real-Time Data Integration Impact

Current Conditions (10:45 AM)

- Weather: Light rain expected 2:00-4:00 PM (40% chance)
- Traffic: Mission St experiencing moderate delays (+15 min travel time)
- Street Permits: Active until 6:00 PM
- Emergency Services: Fire station drill 12:00-1:00 PM (affects response times)

Resource Availability

- Mike Chen (Senior Tech): Available 8:00 AM - 5:00 PM
- Sarah Johnson (Splice Specialist): Available 9:00 AM - 4:00 PM
- David Rodriguez (Excavation): Available 7:30 AM - 3:30 PM
- Alex Thompson (Fiber Tech): Available 10:00 AM - 6:00 PM
- Equipment: All required equipment available at depot (15 min transport)

Municipal Data

- Street Closure: Pre-approved for Mission St (one lane)
- Utility Conflicts: Gas line clearance required (already obtained)
- Parking Restrictions: Temporary no-parking 8:00 AM - 6:00 PM

NVIDIA cuOpt Optimization Results

Optimization Objectives

- 1. Minimize Total Duration (Priority: High)
- 2. Avoid Weather Conflicts (Priority: High)
- 3. Optimize Resource Utilization (Priority: Medium)
- 4. Minimize Travel Time (Priority: Medium)

Optimization Score: 96.2%

Key Improvements:

- Duration Reduced: 11.5 hours → 8.5 hours (26% improvement)
- Resource Efficiency: 4 technicians → 3 technicians + 1 specialist
- Weather Risk Mitigation: Outdoor tasks scheduled before rain
- Dependency Optimization: Parallel task execution where possible

Optimized Task Sequence

Phase 1: Site Preparation (8:00 AM - 9:15 AM)

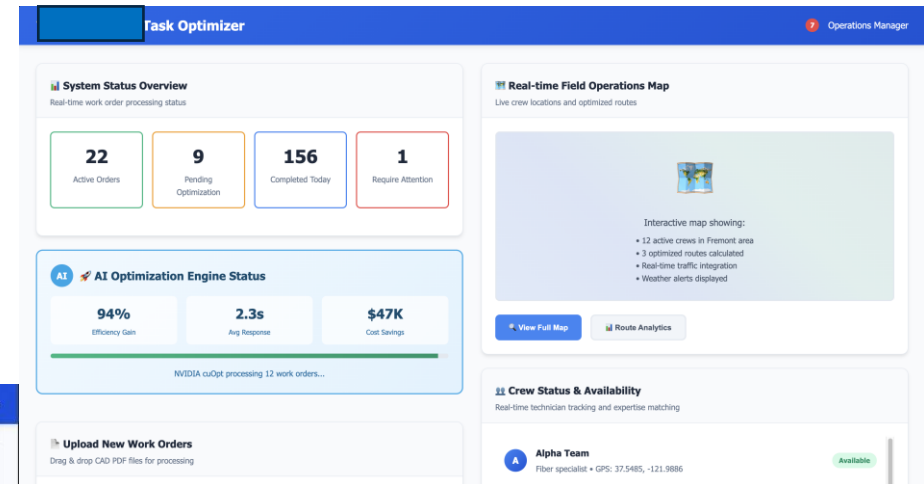
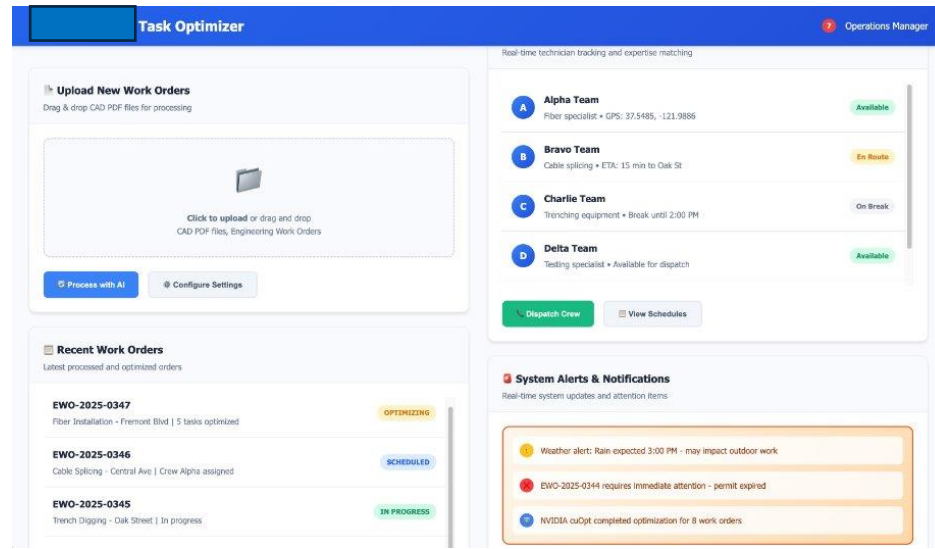
Task ID	Task Name	Technician	Start Time	Duration	Dependencies	Equipment
T001	Site Survey & Safety Setup	Mike Chen	8:00 AM	30 min	None	Safety equipment, Survey tools
T002	Permit Verification	Sarah Johnson	8:15 AM	15 min	None	Permit documents
T003	Traffic Control Setup	David Rodriguez	8:30 AM	45 min	T001	Traffic barriers, Signage

Optimization Notes:



Output Generation and Visualization

- The system generates Interactive dashboards provide real-time visibility into work progress, resource allocation, and performance metrics. The visualization component includes mapping interfaces that display crew locations, work sites, and optimized routing information.



AI Applications in Sustainability

Monthly challenges

Questions informed by advisors



RESEARCH UPDATE

AI Applications in Sustainability

Prompt Research Results: May 2025

Member advisors to P198 demonstrated interest in better understanding prompt engineering and AI performance in sustainability-related tasks. In response EPRI researchers are initiating a monthly AI challenge series, where each month we will build a prompt, evaluate AI responses, then engage in rounds of prompt iteration to build accuracy and refine the response.

During the month of May, researchers were tasked to leverage AI to identify the top three sustainability trends for North American electric utility companies. The final AI-generated response from this effort is below, and the prompt evolutions are in the subsequent pages.

EPRI researchers have not modified the AI-generated content, citations, or grammar, but have formatted the response to fit this document. This information is provided for demonstration use only, EPRI makes no endorsement nor recommendation with regards to the services utilized, nor does it warrant or otherwise guarantee the accuracy or suitability of any of the provided information. As such, EPRI recommends that the information presented in the following AI-generated responses is not used without the appropriate verification. EPRI does not permit that the content contained within the AI-generated responses be attributed, or cited to, EPRI.

Topic/Question:

WHAT ARE THE TOP 3 SUSTAINABILITY TRENDS IN 2025 IN THE ENERGY UTILITY SECTOR?

SELECTED AI-GENERATED RESPONSE

(from ONE initial prompt/THREE follow-up questions):

Top Sustainability Trends and Reporting Implications for Energy Utilities in North America (2025)

As the energy sector accelerates its transition to a low-carbon future, sustainability teams must adapt to emerging trends that are reshaping both operational strategies and reporting expectations. Based on insights from the U.S. Department of Energy, International Energy Agency, and Utility Dive, the following three trends are expected to significantly impact utility sustainability functions and disclosures in 2025:

1. Grid Modernization and Resilience Amid Electrification

- Trend Overview
- Implications for Sustainability Teams

Answers reviewed by EPRI SMEs

Final AI responses provided

AI Application in Sustainability

Prompt evolution provided

Coming Soon

- Identification of challenges faced
- Final summary of lessons learned

2. Accelerated Deployment of Clean Energy Technologies

- Trend Overview**
Federal and state incentives are driving rapid deployment of renewables, storage, and emerging technologies like hydrogen and carbon capture.
- Implications for Sustainability Teams**
 - Evaluate lifecycle emissions and supply chain sustainability.
 - Guide investment decisions based on technology readiness.
- Reporting and Disclosure Impact**
 - Detailed disclosures on emissions reductions by technology.
 - Lifecycle and supply chain transparency in ESG reports.
 - Alignment with Science-Based Targets (SBTi) and net-zero pathways.

3. Industrial Decarbonization and Scope 3 Emissions Accountability

- Trend Overview**
Utilities are expected to support industrial decarbonization and account for Scope 3 emissions from supply chains and downstream energy use.
- Implications for Sustainability Teams**
 - Engage industrial customers in electrification and efficiency programs.
 - Expand emissions tracking beyond internal operations.
- Reporting and Disclosure Impact**
 - Quantification and disclosure of Scope 3 emissions per GHG Protocol.
 - Metrics on customer engagement and supplier sustainability.
 - Emphasis on value chain collaboration in ESG narratives.

PROMPT NOTES AND EVOLUTIONS

Prompt #1

Framework: CRAFT

- Context:** The Electric Power Research Institute (EPRI) is conducting research to identify the top three sustainability trends related to energy utilities in North America in 2025.
- Role:** As the researcher, you are responsible for creating a report
- Action:** Write a report on the top three sustainability trends in 2025, including a description of why they are relevant to the energy utility sector.
- Format:** Write a one-page report on the trends.
- Target Audience:** Energy utility sustainability personnel.

Notes and Prompt Evolutions

- Ran the same prompt multiple times. While the general content themes were similar, each response differed in the titles and support text for the top three trends, and each query cited different sources.
- Researchers noted that in each instance, a maximum of two sources were cited. A decision was made to attempt to force Copilot to reference more sources and provide more examples of citations to support the identification of trends across an entire industry.

Prompt #2

(Changes from first prompt highlighted in yellow.)

Framework: CRAFT

- Context:** The Electric Power Research Institute (EPRI) is conducting research to identify the top three sustainability trends **that may impact** energy utilities in North America in 2025.

Prompt #3/Follow-up #2:

Integrate the latest response on reporting and disclosure into the final response on the top three sustainability trends.

This follow-up merged the segmented responses into one response, roughly page in length, maintaining the fact that researchers had deemed appropriate from Prompt #3.

Researchers noted that this response no longer included references or citations. A follow-up question asked model to produce a list of relevant sources that support its response.

Prompt #3/Follow-up #3:

Add a list of relevant resources that support your response.

This follow-up question provides an additional copy of the full "report" generated in the last follow-up question, while also providing a list of "Key Supporting Resources."

Researchers made the professional decision to end further questioning of the AI model and evaluate the content of the final response.

2 | AI Challenge: May 2025

May 2025

3 | AI Challenge: May 2025

May 2025

Monthly Challenges

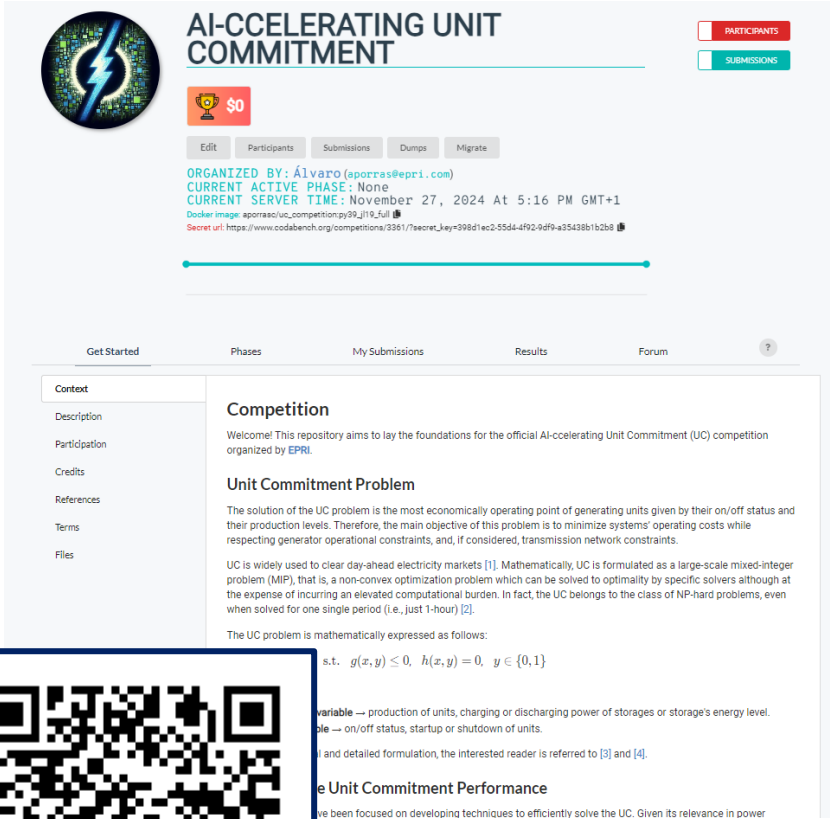
Recent Queries

- Report changes to decarbonization targets and goals over the last 2 years
- Provide metrics to track progress on an energy utility company's biodiversity
- Explain the concept of double materiality and why it is relevant to the energy utility industry
- EPRI member company scores for CDP, MSCI, and Sustainalytics

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AI-cceelerating Production Cost Modeling Competition



Why it Matters:

Production cost modeling is vital for power system planning, but it's computationally demanding.

The AI Advantage:

AI can dramatically speed up production cost modeling by reducing computational load potentially without sacrificing accuracy, especially in long-term planning.

Competition Goal:

- Develop AI models that accelerate production cost modeling
- Real-world scenarios from the Irish Power System
- Submit AI agents for evaluation
- In-depth analysis of results post-launch

Scan to access competition [website](#)



Competition Launch: November 3rd