Call for Contributions

Note: ***On-site and Virtual Options***
To accommodate many situations, we are offering the option for either physical presence or virtual participation. We would be delighted if all authors managed to attend in person but are aware that special circumstances are best handled by having flexible options.

Submission:
1. Inform the Chair about the Title of your Contribution
2. Submission URL:
https://www.iariasubmit.org/conferences/submit/newcontribution.php?event=ENERGY+2027+Special
Please select Track Preference as **FLAREGRID**

Special track

FLAREGRID: Wildfire Grid Interactions, Risk Prediction, and Resilient Energy Infrastructure

Chairs

Prof. Dr. Vivian Sultan, California State University, Los Angeles, USA
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along with

ENERGY 2027: The Seventeenth International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies
May 23 - 27, 2026 - Venice, Italy
https://www.iaria.org/conferences2027/ENERGY27.html

Wildfires and extreme weather are no longer isolated environmental hazards. They have become systemic threats to energy infrastructure, grid reliability, and public safety. California January 2025 Eaton and Palisades fires demonstrated how fast-moving fire fronts can damage distribution assets, disrupt substations, and cascade into widespread outages. These events revealed a critical gap: wildfire science and power system engineering still operate in parallel rather than as an integrated discipline.

Grid models often treat wildfires as external disturbances. Wildfire models rarely incorporate grid stress, operational constraints, or infrastructure behavior. This separation limits our ability to anticipate cascading failures, identify vulnerable components, and design proactive mitigation strategies.

This special track brings these domains together. We focus on integrated, interdisciplinary research that couples wildfire prediction, power grid modeling, GIS-based infrastructure analysis, and data-driven risk assessment. The emphasis is on engineering realism, open data, and operator relevance.

Objectives of the Special Track

- Advance integrated wildfire–grid modeling frameworks that treat environmental hazards and grid behavior as a coupled system
- Create systems that enable “what-if” scenario calculations and create strategies for resilient operation regimes
- Promote engineering-based impact assessment, including power flow, overloads, and stress propagation under wildfire conditions

- Encourage the use of open-source geospatial data and tools for infrastructure reconstruction and analysis
- Support predictive and scenario-based approaches, including future climate conditions and extreme events
- Foster international collaboration across power systems, wildfire science, GIS, and AI
- Enable research outputs suitable for funding proposals, joint projects, and researcher exchange initiatives

Topics of Interest

Submissions may address, but are not limited to, the following topics:

Wildfire–Grid Interaction Modeling
- *Coupled wildfire prediction and power grid simulation*
- *Modeling the technical and operational impacts of wildfire exposure*
- *Linking grid stress conditions (e.g., peak loading, congestion) to wildfire ignition and spread probability*

Power Systems and Grid Resilience
- *Identification of vulnerable transmission and distribution components*
- *Power flow, contingency, and worst-case analysis under wildfire conditions*
- *Resilience metrics and stress indicators for wildfire-prone grids*
- *Systems for resilient control, service restoration, and resilient-by-design approaches*
- *Grid restoration approaches (black start, rebuilding strategies)*

GIS, Open Data, and Infrastructure Reconstruction
- *Reconstruction of electrical networks using open data (e.g., OpenStreetMap)*
- *GIS-based storage, querying, and spatial analysis of grid and wildfire data*
- *Inferring infrastructure topology where official utility data is unavailable*

Prediction, AI, and Risk Analytics
- *Machine learning and statistical models integrating environmental and grid data*
- *Scenario-based forecasting of wildfire-related grid impacts*
- *Uncertainty-aware, explainable, and risk-based AI approaches*

Visualization and Decision Support
- *Operator-oriented visualization tools and dashboards*
- *Interfaces aligned with control-room workflows and practices*
- *Translating complex model outputs into actionable operational insights*

Research Platforms and Collaboration
- *Systems supporting NDA-based or sensitive-data workflows*
- *Platforms designed for international collaboration and joint supervision*
- *Case studies aligned with national and international*

Important Datelines

Inform the Chair as soon as you decide to contribute.
Submission: April 3, 2027
Notification: April 23, 2027
Registration: May 5, 2027
Camera-ready: May 5, 2027

Contribution Types
- Regular papers [in the proceedings, digital library]
- Short papers (work in progress) [in the proceedings, digital library]
- Posters: two pages [in the proceedings, digital library]
- Posters: slide only [slide-deck posted on www.iaria.org]
- Presentations: slide only [slide-deck posted on www.iaria.org]

- Demos: two pages [posted on www.iaria.org]

Paper Format
- See: http://www.iaria.org/format.html
- Before submission, please check and comply with the editorial rules: http://www.iaria.org/editorialrules.html

Publications
- Extended versions of selected papers will be published in IARIA Journals: http://www.iariajournals.org
- Print proceedings will be available via Curran Associates, Inc.: http://www.proceedings.com/9769.html
- Articles will be archived in the free access ThinkMind Digital Library: http://www.thinkmind.org

Papers Submission

https://www.iariasubmit.org/conferences/submit/newcontribution.php?event=ENERGY+2027+Special
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Registration
- Each accepted paper needs at least one full registration, before the camera-ready manuscript can be included in the proceedings.
- Registration fees are available at http://www.iaria.org/registration.html

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