



Preliminary Announcement

Call for Papers

2024 IERE-SwRI San Antonio Energy Transition Workshop

Enabling Technologies for the Energy Transition

In-Person Event



Downtown San Antonio, Texas, US

San Antonio, Texas, US May 13–16, 2024

Organized by IERE and SwRI





Enabling Technologies for the Energy Transition

About the theme

The world is seeking various technological pathways to support the decarbonization of the electricity, mobility, and industrial sectors. These technologies span power generation, energy transport, and storage applications with multiple objectives to maintain low costs and high reliability and resiliency of a decarbonized energy system. Due to this diversity of applications, objectives, energy resources, and sociopolitical constraints across the globe, the "best" technology combination is also expected to vary for each situation. This workshop therefore addresses a broad range of enabling technologies addressing themes of advanced power cycles, energy transport, cross-cutting decarbonization technologies with non-power generation industries, and resilience.

Who should attend?

The workshop is intended for experts actively involved in the selected themes, from IERE members and non-members, as well as all those interested in the evolution of the electrical power industry and the technology development and business development opportunities associated to this evolution. IERE and SwRI will invite prominent speakers for keynote speeches.





Schedule Outline:

Monday,	May 13, 2024	Welcome Reception
Tuesday,	May 14, 2024	2024 IERE-SwRI San Antonio Energy Transition Workshop
		Official Dinner
Wednesday,	May 15, 2024	2024 IERE-SwRI San Antonio Energy Transition Workshop
Thursday,	May 16, 2024	Technical Tour (Optional)
		Social Event (Optional)

Program and Session Themes:

Session structure and speakers are subject to change according to the submission of contributions.

Opening Session:

Opening Address:	Details to be announced
Welcome Address:	Details to be announced
Keynote Addresses:	Details to be announced

Technical Session 1: Advanced Power Cycles

Advanced Power Cycles include innovations in thermodynamic cycles for improving cost, performance, or carbon emissions of thermal power generation systems. Power cycle innovations are being developed for implementation across many heat sources, including fossil-fired, concentrating solar, geothermal, advanced nuclear, industrial waste heat, and decarbonized fuels. Advanced power cycles also include integration with multiple heat sources or power generation systems hybridized with heat or other shaft power uses.

Potential topics include:

- Low-carbon power generation
- · Combined heat and power or other hybrid systems
- Carbon capture for power generation
- Gas and steam turbine systems
- Conversion to decarbonized fuels
- Supercritical CO2 power systems
- Thermodynamic cycles for renewable generation
- · Cycle performance improvements
- Novel applications

Technical Session 2: Energy Transport

Energy transport infrastructure and requirements are a strong economic driver that ultimately affects the cost and reliability of electricity. This infrastructure includes transport of energy (typically in chemical form) before conversion to electricity as well as the electrical transmission





and distribution infrastructure connecting to end use. Transport of carbon dioxide for sequestration or utilization is also a necessary consideration for generation systems utilizing carbon capture. Finally, transport of energy is inherent in many mobility applications.

Potential topics include:

- Pipeline transport efficiency, reliability, and leak reduction
- Pipeline pumping and compression
- Fuel transport including LNG, hydrogen, ammonia
- Transport of hydrogen and hydrogen carriers
- Hydrogen carriers
- CO2 transport
- Thermal energy transport
- Energy transport in mobility applications

Technical Session 3: Energy Storage

Near-term decarbonization of electricity is heavily based on the significant installation of variable renewable power generation from wind and solar resources, resulting in supply-demand mismatches and the need for peaker plants and large-scale energy storage to meet 24/7 demand. Energy storage requirements include short-term storage <10 hours, long-duration storage of 10+ hours to weeks, and even seasonal storage. These technologies may include electrochemical batteries or other thermal, mechanical, or chemical energy storage systems.

Potential topics include:

- Energy storage technoeconomics and applications
- · Grid batteries including flow batteries
- Pumped hydro energy storage
- · Compressed air or liquid air energy storage
- Thermal energy storage
- Liquid air energy storage
- Hydrogen and e-fuels
- Hybrid energy storage + generation systems

Technical Session 4: Cross-Cutting Decarbonization Technologies

Many technologies for supporting the decarbonization of electricity generation have crossover applications for industrial applications including the manufacturing of petrochemical products, mineral and metals processing, cement, food and beverage, pulp and paper, and other industries. These systems incorporate high energy requirements, 24/7 operation, and high thermal needs that currently drive significant carbon emissions. Electrification of many industrial energy inputs will also drive unique power generation and energy storage/transport requirements.

Potential topics include:

- Carbon capture
- Onsite power generation for industry
- · Decarbonized fuels for industry
- Industrial waste heat recovery



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Electrification of industrial heat Thermal storage

Technical Session 5: Resilience

In a modern "always-on" economy, a successful energy transition must meet consumer electricity demands with resilience in addition to reducing climate impacts. Resilience of the electric grid is closely related to yet distinct from its reliability. Reliability is about (reducing) the probability of a power interruption whereas resilience is about handling the interruption. Thus, resilience involves resistance to disruption as well as the ability to recover quickly and effectively. In this session, we seek innovative and practical approaches to enhance the resiliency of the power system. This is a broad area, so contributions may include a range of solutions, such as:

- Devices and technologies
- Control systems
- Communications and monitoring
- Integration approaches
- Rules of thumb and case studies
- Coupling of critical infrastructure
- Multi-entity interaction
- · Methods to quantify and visualize cyber-physical metrics of resilience
- · Data analytics and AI/ML to monitor and improve resilience

Panel Session

Details to be announced

Special Session

Details to be announced

Poster Session

Details to be announced

Closing Remarks

Details to be announced

Technical Tour (Optional)

Details to be announced

Social Event (Optional)

Details to be announced





Call for Papers <<Abstract Submission: No later than <u>February 16, 2024</u>>>

You are kindly invited to submit abstracts for the Oral Session or Poster Session for the 2024 San Antonio Energy Transition Workshop by e-mail.

to: register (at) iere.jp [Please substitute "(at)" with "@"]

As for the **format of the abstract**, please refer to "Events" page on IERE website. <u>https://www.iere.jp/events/workshop/2024-sanantonio/forspeakers.html</u>

- Change of presentation session (oral or poster) may be requested depending on the number of submitted abstracts.
- Abstract will be posted the IERE website and open to the public.
- Presentation Slides will be posted the IERE website and open to IERE members and Workshop participants.
- The official language of the IERE Workshop is English.

Registration

Detailed information on Registration will be announced in the First and Second Announcements, which will be delivered later.

Registration Fee

The Registration fee will be informed later.

- Accommodation and travel costs will be borne by the participants.

Details including cancellation policy will be announced in the First and Second Announcements.





Conference Venue & Accommodations

Conference Venue

Embassy Suites by Hilton San Antonio Riverwalk Downtown, Texas, US Location: 125 E. Houston Street, San Antonio, Texas, 78205, USA website:

https://www.hilton.com/en/hotels/sateses-embassy-suites-san-antonio-riverwalk-downtown/









Location of Embassy Suites by Hilton San Antonio Riverwalk Downtown

https://maps.app.goo.gl/x9bzsREThfEaJLgD7









Accommodations

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Rooms at special rates will be prepared for conference participants by the Hotel. These will be allocated on a first come first served basis. Details will be announced in the First and Second Announcements.





About IERE

IERE is an organization for exchanging electricity and energy related cutting-edge technologies and R&D information among its members from the electricity and energy supply industry, equipment provider businesses, academic research, government, etc. This unique platform is of great help for executives, senior managers, engineers, and researchers who are responsible for R&D and solutions. It is a worldwide, non-profit organization, established as "International Electric Research Exchange" in 1968.

https://www.iere.jp

About SwRI

Southwest Research Institute (SwRI), headquartered in San Antonio, Texas, is an independent and nonprofit applied research and development (R&D) organization. Founded in 1947 by oil businessman Tom Slick, it provides contract research and development services to government and industrial clients.

SwRI's core values are rooted in a commitment to the mission statement of benefiting government, industry, and the public through innovative science and technology. The core values start with all employees and extend to clients and its impact in the greater community through integrity, innovation, people and stewardship.

Integrity Fulfilling the mission and serving clients with excellence, honesty, and accountability.

Innovation Solving problems and creating value with novel ideas and multidisciplinary collaborations.

People Fostering an employee-centric culture in a safe, inclusive, healthy, and supportive workplace.

Stewardship Caring for communities and protecting the environment now and for the future.

https://www.swri.org/

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