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## **First Announcement**

# **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

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## **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.

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## 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 Speech:	Details to be announced
Keynote Speeches:	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 CO<sub>2</sub> 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
- CO<sub>2</sub> 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)**

Visiting SwRI Research Facilities:

- STEP 10 MWe Pilot Plant Demonstrating a Supercritical Carbon Dioxide Brayton Cycle
- Hydrogen Storage and Large Hydrogen-Fueled Engine Research
- Solar Photovoltaic and Battery Energy Storage Facility
- Chemical Engineering Research Including CO<sub>2</sub> Utilization and Mineralization

- Turbomachinery Research Including Hydrogen and CO<sub>2</sub> Compression, Gas Turbine Combustion Research

\* The maximum number of participants is 100\*\*.

\*\* This offer is on a first-come-first-served basis.

Details to be announced

## **Social Event (Optional)**

Visiting San Antonio Missions (UNESCO World Heritage Site) with Lunch.

\* The maximum number of participants is 100\*\*.

\*\* This offer is on a first-come-first-served basis.

Details to be announced

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## Program

Program may be subject to change according to the registration of speakers and participants.

### **Monday, May 13, 2024**

#### **Welcome Reception**

Registration and Welcome Reception in the evening

### **Tuesday, May 14, 2024**

#### **Opening Session**

Opening Address: To Be Determined

Welcome Speech: To Be Determined

Keynote Speeches: To Be Determined

#### **Technical Session 1: Advanced Power Cycles**

#### **Technical Session 2: Energy Transport**

#### **(Poster Session)**

To Be Determined

#### **Official Dinner**

### **Wednesday, May 15, 2024**

#### **Technical Session 3: Energy Storage**

#### **Technical Session 4: Cross-Cutting Decarbonization Technologies**

#### **Technical Session 5: Resilience**

#### **Panel Session, Special Session, (Poster Session)**

To Be Determined

### **Thursday, May 16, 2024**

#### **Technical Visit (Optional) a.m.**

SwRI Research Facilities:

- STEP 10 MWe Pilot Plant Demonstrating a Supercritical Carbon Dioxide Brayton Cycle
- Hydrogen Storage and Large Hydrogen-Fueled Engine Research
- Solar Photovoltaic and Battery Energy Storage Facility
- Chemical Engineering Research Including CO<sub>2</sub> Utilization and Mineralization
- Turbomachinery Research Including Hydrogen and CO<sub>2</sub> Compression and Gas Turbine Combustion Research

Details to Be Announced

#### **Social Event (Optional) p.m.**

San Antonio Missions (UNESCO World Heritage Site) with Lunch

Details to Be Announced



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## Call for Papers

<<Abstract Submission: No later than ~~March 31, 2024~~>>

~~Abstract Submission Due Date Extended until March 15, 2024~~

**Abstract Submission Due Date Re-Extended until March 31, 2024**

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.

<https://www.iere.jp/events/workshop/2024-sanantonio/forspeakers.html>

- Change of presentation session (oral or poster) may be requested depending on the number of submitted abstracts.
- Abstract will be posted on 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.

<< **Presentation Slides Submission: No later than April 21, 2024**>>

You are kindly requested to submit presentation slides (PowerPoint) via E-mail.

- The official language of the IERE Workshop is English.

Also, you are kindly requested to submit Speaker’s Information via E-mail by **April 21, 2024**.

Note: Presentation Slides will be open to all participants of this workshop and IERE members on the IERE website. If you do not wish to have your presentation slides made public, please contact the IERE Central Office.



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## Registration

Total number of participants is limited to 100 persons.

If possible, please register using the method (a) below. If you are unable to use Google Forms due to limitations in your system environment or other reasons, please register using method (b) below.

(a) On-Line Registration (Google Forms)

URL: <https://forms.gle/hTTcjPBsa7Ya8LLS6>

or

(b) Submit a Registration Form (Format 1) to IERE Central Office via E-mail

Photos and videos taken by IERE at this Event will be used for publication on websites and/or in magazines. Therefore, at the time of your application of the registration, IERE deems you have granted IERE the right to use the above photos or videos.

## Registration Fee

The Registration fee will cover attendance at both workshop days (include lunches & refreshments at coffee breaks), welcome reception on May 13, official dinner on May 14 and conference package:

<b>IERE Members:</b>	<b>USD 1,000</b>
<b>Non-IERE Members:</b>	<b>USD 1,500</b>
<b>Academic Participants:</b>	<b>USD 1,000</b>
<b>Students:</b>	<b>USD 750</b>

### Recommended Options

**Technical Visit (Optional) May 16 a.m.: Free of Charge**

· To Be Determined

\*The maximum number of participants is up to 100.

\*\* This offer is on a first-come-first-served basis.

**Social Event (Optional) May 16 p.m.: USD 75**

· To Be Determined

\*The maximum number of participants is up to 100.

\*\* This offer is on a first-come-first-served basis.

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## Payment

On-Line Credit Card Payment and Bank Transfer are available.

Deadline: **April 21, 2024**

### (a) On-Line Credit Card Payment

URL: [https://www.iere.jp/Payment/paypal\\_24WS.html](https://www.iere.jp/Payment/paypal_24WS.html)

### (b) Bank Transfer

Name of the Bank:	MUFG Bank, Ltd.										
Name of the Branch:	Seijo branch										
Name of the account:	IERE										
Account Number:	0068198										
Bank address:	15-1 Seijo 6-chome, Setagaya-ku, Tokyo, 157-0066 JAPAN										
SWIFT code:	<table border="1"><tr><td>B</td><td>O</td><td>T</td><td>K</td><td></td><td>J</td><td>P</td><td></td><td>J</td><td>T</td></tr></table>	B	O	T	K		J	P		J	T
B	O	T	K		J	P		J	T		

## VISA

For participants from some countries needing a VISA to enter US, please check the below or consult with travel agent in your country for the details.

URL: <https://travel.state.gov/content/travel/en/us-visas.html>

If you need an Invitation Letter\*, please send 'Invitation Letter for VISA Request Form' to IERE Central Office via E-mail by **March 31, 2024**.

\* SwRI will be able to issue an invitation letter for participants who need to apply for Visa. It will take approximately 1-2 weeks for SwRI to prepare this after receiving all information, so please submit the form as soon as possible.

Disclaimer: SwRI reserves the right to fulfill or decline, at SwRI's discretion, requests for letters of invitation for visa application support purpose.

## Submission Items & Deadlines

### For Participants [including Speakers]

Items	Format No.	Deadline/ Limitation	To:
Registration Form	1	April 21, 2024 Limited to 100 Participants	<a href="mailto:register(at)iere.jp">register(at)iere.jp</a> [Please substitute (at) with @]
Invitation Letter for VISA Request Form (If necessary)	2	March 31, 2024 (It takes 1-2 weeks to issue)	Ditto
Registration Fee	—	April 21, 2024 Limited to 100 Participants	Please refer to Page 8
Technical Visits Fee [optional]	—	Limited to 100 Participants	Ditto
Social Event Fee [optional]	—	Limited to 100 Participants	Ditto
Hotel accommodation reservations at special rates		April 28, 2024	Please refer to Page 14

The formats (No. 1 and 2) can be downloaded from IERE website.

URL: <https://www.iere.jp/events/workshop/2024-sanantonio/register.html>

### For Speakers

Items	Format No.	Deadline	To:
Abstract	3	March 31, 2024	<a href="mailto:register(at)iere.jp">register(at)iere.jp</a> [Please substitute (at) with @]
Speaker's Information	4	April 21, 2024	
Presentation Slides (PowerPoint File)	—	April 21, 2024	

The formats (No. 3 and 4) can be downloaded from IERE website.

URL: <https://www.iere.jp/events/workshop/2024-sanantonio/forspeakers.html>

Speakers are kindly requested to submit their Speaker's Information and Presentation Slides (PowerPoint File) by **April 21, 2024**.

Note: Presentation Slides will be open to all participants of this workshop and IERE members on the IERE website. If you do not wish to have your presentation slides made public, please contact the IERE Central Office.

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## 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:

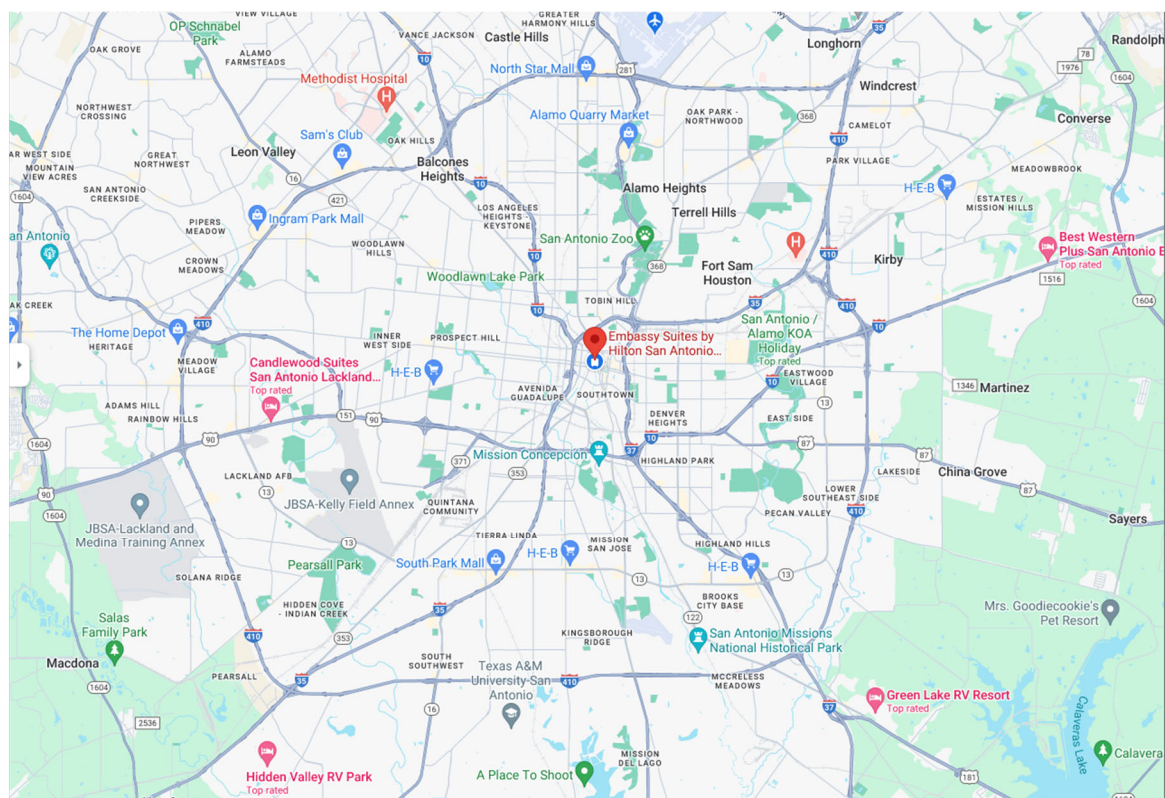
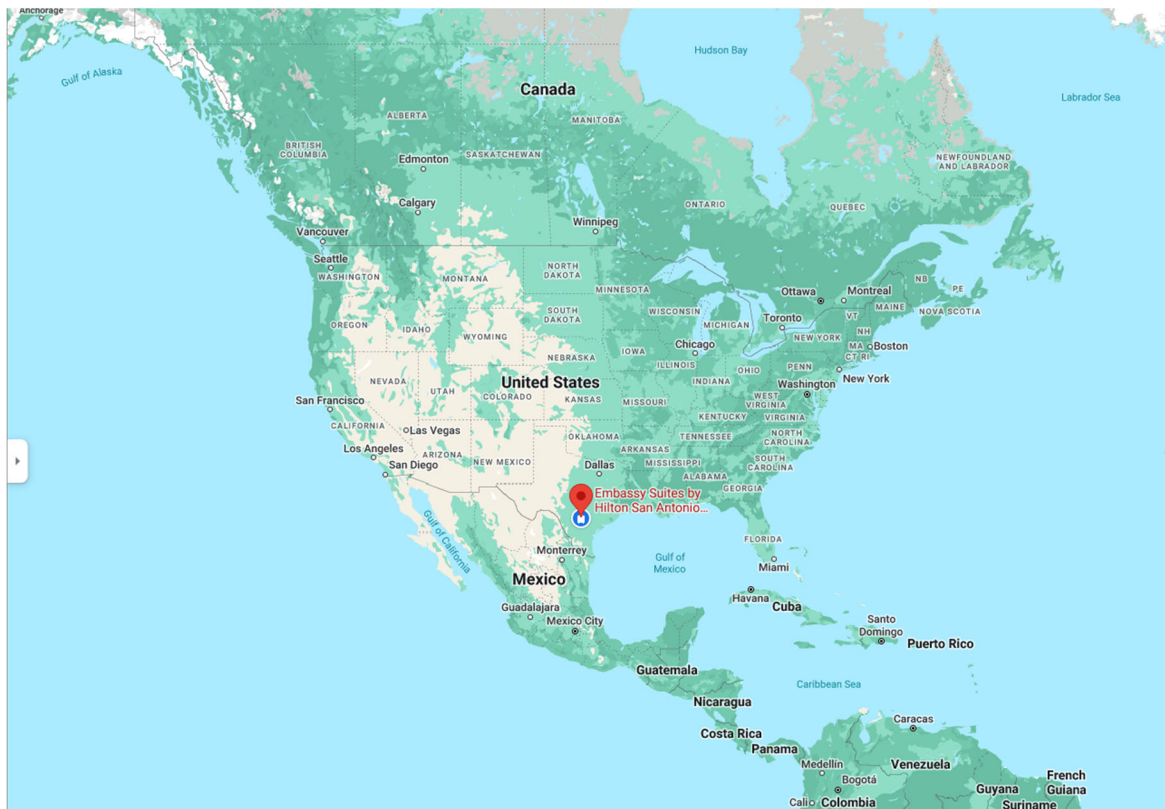
<https://www.hilton.com/en/hotels/sateses-embassy-suites-san-antonio-riverwalk-downtown/>





## Location of Embassy Suites by Hilton San Antonio Riverwalk Downtown

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



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## Accommodations

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/>

Rooms of the Embassy Suites by Hilton San Antonio Riverwalk Downtown at special rate of USD 229 per night (included full/hot breakfast at hotel restaurant) has been available for conference participants between May 12-16, 2024. The reservation cut off date is April 28, 2024; after this date the hotel will only be able to offer this rate based upon availability.

- Visit this website for reservation at special rate or call reservations at +1-800-362-2779 and reference the special rate code of 915.

<https://www.hilton.com/en/book/reservation/deeplink/?ctyhocn=SATESES&groupCode=CES915&arrivaldate=2024-05-12&departuredate=2024-05-17&cid=OM,WW,HILTONLINK,EN,DirectLink&fromId=HILTONLINKDIRECT>

If the above long URL does not work correctly, please use a shortened URL.

<https://bit.ly/3vjmIMl>

\* Please make reservations as early as possible if you need. These will be allocated on a first come first served basis.

\*\* Please be sure to read cancellation policy of the form before application.

### IERE Members List (as of March 1, 2024)

Australia	CSIRO		
Canada	Hydro-Québec	Powertech Labs	
China	CEPRI	GPG	NARI
Czech	CEZ		
Finland	Vaisala		
France	Enedis	ENGIE	
Germany	E.ON	EnBW	RWE TI
Hong Kong SAR	CLP		
Indonesia	PLN		
Israel	IEC		
Japan	Chubu EPCO	Chugoku EPCO	CRIEPI
	FEPC	Fuji Electric	Hitachi
	Hokkaido EPCO	Hokuriku EPCO	IHI
	J-POWER	JAPC	Kansai EPCO
	Kyushu EPCO	MHI	Mitsubishi Electric
	NGK	Sumitomo Electric	Shikoku EPCO
	Tohoku EPCO	TEPCO	TOSHIBA
Malaysia	TNB		
Mexico	INEEL	Prolec GE	
Netherlands	TenneT		
Norway	SINTEF		
Pakistan	Karachi Electric		
Philippines	APC	MERALCO	
Singapore	SPPA		
South Africa	Eskom	PIESA	
South Korea	Hyundai Electric	KEPCO	KERI
	KOMIPO	KOWEPO	LS Electric
Spain	NATURGY		
Taiwan	TPC		
US	EPRI	SwRI	





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## 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/>

IERE Central Office  
2-11-1 Iwado Kita, Komae-shi  
Tokyo 201-8511 JAPAN

Phone: +81-3-5438-1717

Fax: +81-3-3488-5100

<https://www.iere.jp>

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