



# THE RESILIENT RENEWABLE **ELECTRIC** PLANET (R2eP) CONFERENCE

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FEBRUARY 5-6, 2024  
PJM HEADQUARTERS

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A photograph of a city skyline at dusk, with buildings illuminated and a river in the foreground. The sky is a deep blue with some clouds.

# AGENDA

**Hosted by:**  
EIS Council and PJM Interconnection

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# TOMORROW'S GRID: GREENER · RESILIENT · ROBUST

Where are we today?  
What will it take to get there?

## Background: Expanding Challenges

### The Grid in Transition

The Bulk Power System is in transition, with exceptionally rapid growth in renewable generation creating new and increasing reliability and resilience challenges.

### Interdependency-driven Infrastructure Fragility

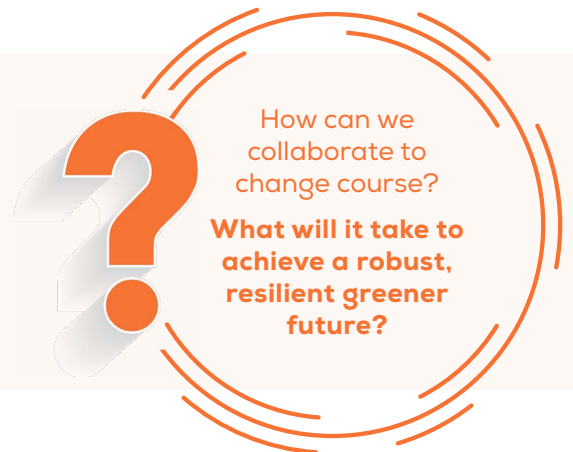
In parallel, the last decade has seen unprecedented growth in complex interdependencies spanning all infrastructures and supply chains, on a global scale. With the electricity, communication, finance, data center, transportation, gas, water, food and security sectors today tightly interconnected, disruption of any major element of these mutually interdependent systems could quickly cascade, putting societal continuity at risk.

### Expanding, Extreme Global Threats

These grid transition and interdependency challenges are taking place as war, returning to the European continent, risks global destabilization; as we see expanding cyber and thermonuclear risks and increasing extreme weather disasters; with unanticipated, planetary-scale supply chain disruptions, growing tensions in the South China Sea and other extreme, Black Sky hazards.

### This Combination

The grid in transition - at a time of expanding, extreme hazards and complex interdependencies - has become a serious concern for societal resilience, **raising a key question for the electric sector and its public and private sector partners:**





# R2eP Conference Goals and Expectations

## Context

Today we are facing growing challenges to the network of fragile, interdependent infrastructures that sustains our lives, risking irreversible, systemic disruption of modern civilization.



## Goal

Addressing the need for robust resilience for our interconnected infrastructures, from the e-sector perspective.

## Anticipated Results

The ideas, recommendations and follow-up efforts that come out of R2eP will be integrated into planning for the Human Continuity Project®, which is structured to host and catalyze resilience for our tightly interdependent, global civilization.



# R2eP Conference | Key Elements

## E-Sector Resilience and Reliability Needs:

Following on from the R2P Conference cohosted by EIS Council and Imperial College London last spring, R2eP will explore this question for the electric sector.

Leaders from across the electric sector and its partners will facilitate open discussion, focusing on action-oriented options for a robust, resilient greener future. Including:

- Blackstart planning
- Funding options for resilience-prioritized investment
- Black Sky hazard vulnerability testing
- Legislative and regulatory policy initiatives

The conference will also explore the implications of these and related options for interdependent sectors: government, finance, transportation, energy and lifeline utilities.

## Real-time Test and Demo of the BSX™ Pilot 2 Multi-State Comm Network | Phase 1 of a provisional Energy Sector Web™ (ESW™)

Exelon, Dominion Energy and PJM have collaborated with EIS Council to create an integrated multi-state emergency comm network using their corporate dark fiber assets, interconnecting with distributed fixed and mobile phone systems provided by the BSX system.

**This unique multi-state voice and data network will be tested during the R2eP Conference.**

This conference has been planned as an opportunity to inaugurate focused, value-added Black Sky resilience planning for the electric sector and its partners. Delegates are urged to suggest ongoing working groups which will emerge from the conference as focus groups to develop recommendations in each key resilience area.

These working groups will have an opportunity to share their efforts as part of the planned Resilient Renewable Society Summit, London, Sept. 2024.

# R2eP Agenda

DAY 1

MONDAY  
FEB. 5

 **PJM Learning Center**

**Resiliency and Reliability Fundamentals: Redundancy, Blackstart and Policy-Enablers**

**Note:** All panel discussions will be in **open interview format**, with **all** delegates invited to comment throughout each session.

**08:00 Reception & Continental Breakfast**

**08:30 Welcome**

**Goals and Context of the R2eP Conference, and for Day One**

**EIS Council Update**

**EIS Council's Mission:** Hosting and catalyzing collaborative, all sector, international, solution-oriented resilience planning, development and implementation. The focus: mitigating and preparing for catastrophic events disrupting across our civilization's fast-evolving, complex, tightly interdependent infrastructures and supply chains.

**Where We Were (Pre-COVID). Where We Are.  
The Vision Going Forward: The Human Continuity Project®**

**Manu Asthana**

President & CEO, PJM Interconnection

**Avi Schnurr**

President & CEO, EIS Council

**HUMAN  
CONTINUITY  
PROJECT®** 

**Session 1: Challenges**

Black Sky-class threats vs resilience. Where are we?

**08:50 Black Sky Panel**

**Black Sky Threat Protection and Testing**

Are Black Sky threats increasing/proliferating?  
Where are the most urgent protection gaps?  
What would it take to encourage best practices to be more widely implemented?

**Panel Host / Interviewer:**

**Jim Robb**

CEO NERC

**Panelists:**

**Scott Aaronson**

Vice President, Security and Preparedness, EEI

**Jason Regg**

Vice President Security and Resilience,  
Tennessee Valley Authority (TVA)

**Manny Cancel**

Senior Vice President & CEO, Electricity  
Information Sharing and Analysis Center  
(E-ISAC)

**9:20- 09:35 Breather**

**09:35 Facilitated Plenary Discussion - Redundancy**

**Finding the Right Balance Between Resilience vs Efficiency, and Implications for Investment in Redundancy**

What is the role of hardware and labor redundancy in resilience? How can the balance be shifted toward resilience? Where can we find current examples (e.g., Ukraine?)

**Facilitators**

**Wanda Reder (Panel Host)**  
CEO, GridPartners

**Mike Bryson**  
Senior Vice President - Operations PJM Interconnection

**Thomas J. (Tom) Galloway**  
President, CEO, North American Transmission Forum (NATF)

**10:15 Coffee Break**

**10:40 Facilitated Plenary Discussion - Blackstart**

How robust are today's, and tomorrow's, blackstart capabilities?

**What will it take to change course toward more robust capabilities?**

**Featuring:**

**EPRO® Handbook V**  
Blackstart restoration for a greener grid

**Facilitators:**

**Dr. Paul Stockton**  
Editor in Chief, EPRO Handbook V (Blackstart); Former US Assistant Secretary of Defense for Homeland Defense and America's Security Affairs

**Dr. Chris Beck**  
Chief Scientist and Vice President for Policy EIS Council

**Celeste Fay**  
Principal, Thorndike Energy

**Kyle Hannah**  
Director Electric Transmission Strategic Initiatives, Dominion Energy

**Steve Naumann**  
Electric Utility Consultant, former Vice President, Transmission and NERC Policy for Exelon

**11:20 The Policy Panel**

What is the impact of current public and private sector policies on resilience and reliability? Do current policies work for or against a sound transition? What changes would help?

**Kevin Curtis (Panel Host)**  
Executive Vice President, Quanta Technology

**Lauren Wisniewski**  
Executive Vice President, Quanta Technology

**Darlene Philips**  
Executive Director Operations, PJM

**12:20 Lunch**

## Session 2: Opportunities

For the e-sector and its partners: Where are there opportunities for legislative, regulatory and corporate policy changes to have practical, positive impacts on resilience and reliability?

### 13:20 Facilitated Plenary Discussion - Getting Practical

What policy changes could create a continuing, evolving, **robust** and **resilient** e-sector-led infrastructure ecosystem

What policy approaches could shift the economic and technical framework for the e-sector and its partners and suppliers to increase resilience and reliability, with modest cost impacts for (a) the legacy grid, and (b) the transition to renewable generation?

#### Facilitators:

##### **Stevens & Lee (Panel Host)**

Of Counsel, Former Chair/Commissioner  
PA PUC

##### **Stephen M. DeFrank**

Chairman of Pennsylvania Public Utility  
Commission

##### **Richard Mroz**

Managing Director of Resolute Strategies.  
Former President of the New Jersey Board  
of Public Utilities (NJBPU)

##### **Thomas O'Brien**

Senior Vice President and Chief Information  
Officer at PJM Interconnection

##### **Professor Stephen E. Flynn**

Founding Director, Global Resilience Institute  
Northeastern University

### 14:20 Breather

### 14:35 The Emergency Management - Critical Infrastructure Panel

How can blackstart-class resilience and reliability collaboration be fast-tracked across the e-sector's partners and suppliers?

Could emergency management agencies become primary hosts for Black Sky-class collaborative planning across critical infrastructures? What do first steps look like?

#### Interviewer:

##### **Budge Currier**

Assistant Director, Public Safety  
Communications, California Office of  
Emergency Services (Cal OES)

#### Panelists:

##### **Naomi Etzion**

Head of Power System Dynamics Dept.  
NOGA - Israeli Independent System  
Operator

##### **Adam Ingram**

Business Continuity Manager, Duquesne  
Light Company

##### **Gary Soto-Fernandez**

Systems Operator, Project Director; Luma,  
Puerto Rico

### 15:15 Coffee Break

### 15:40 Earth EX Live!

The future of EARTH EX®. From the largest international resilience exercise to real time webinar to a GINOM®-powered massive multiplayer online all-sector exercise

##### **Ranger Dorn**

Exercise Director, EIS Council

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**16:00 Day One Working Groups:  
Resiliency and Reliability Challenges and Opportunities: Redundancy, Blackstart, and Enabling Policy**

Small groups will gather in different available regions of the auditorium or in chair groupings outside to consider specific areas e-sector Black Sky resiliency challenges

**Working Group Mission: (A) What are the changes needed?  
(B) How could a policy reboot help?**

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- |   |                                       |
|---|---------------------------------------|
| 1. More Robust Blackstart During the DER Transition | <b>Facilitator: Dr. Paul Stockton</b> |
| 2. Labor and Hardware Redundancy                    | <b>Facilitator: Wanda Reder</b>       |
| 3. Emergency Management & CI Protection             | <b>Facilitator: Ranger Dorn</b>       |
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**17:00 Facilitated Plenary Discussion: Takeaway From Day One Working Groups**

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**17:10 Day One Panels Conclude**

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**19:00 Reception and Dinner, Sponsored by PJM**

160 N Gulph Rd  
King of Prussia, PA 19406  
Private dining room on the 2nd floor

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**DAY 2**

**TUESDAY**

**FEB. 6**

 **PJM Learning Center**

**Resiliency and Reliability Fundamentals: All-Sector Black Sky Communications, and the Data Center / E-Sector / Finance Sector Interdependencies**

Note: All panel discussions will be in **open interview format**, with **all** delegates invited to comment throughout each session.

**08:00 Continental Breakfast**

**08:30 Welcome**

Day 2 Context and Overview | The Human Continuity Project®.

Systems engineering-driven multi-sector resilience planning for Black Sky catastrophes

**Manu Asthana**

President & CEO, PJM Interconnection

**Avi Schnurr**

President & CEO, EIS Council

**Session 3: Critical Tools and Capabilities for Black Sky-class Blackstart - Communications, Black Sky-class Emergency Power" Cells and Chaos Management**

Black Sky scenario exercises in recent years have concluded that in an extreme, long duration blackstart scenario, an emergency communication spanning all power companies, critical load, lifeline infrastructure facilities and government agencies will be essential. Long duration also implies the need for a long duration emergency power configuration, and chaos management

**What will it take to meet these needs? What near term options are available?**

**09:00 Black Sky Panel - Black Sky-class Blackstart Communications for the Energy Sector.**

(a) BSX and BNET Status

(b) The Energy Sector Web™ (ESW™) Opportunity: Where are we today, and what did it take to get here? Process highlights in developing the 1st operational stage of the Energy Sector Web™ (ESW™) (formerly "BSX Pilot 2")

(c) SPECIAL EVENT: ENERGY SECTOR WEB DEMO

**Scott Blevins (Panel Host)**

Coordinator, Communications Sector, EIS Council

**Dr. Ehud (Udi) Ganani**

Vice President for Strategic Programs, EIS

**Thomas O'Brien**

Senior Vice President and Chief Information Officer at PJM Interconnection

**Timothy Schwartz**

Sr Manager, EMS Operations and Transmission Operations Support, Exelon

**09:45 Breather**

**10:00 ESW™ Part II: Where Do We Want to Be Tomorrow?**

Mapping next step options for evolution of the Energy Sector Web™ (ESW™)

**Dr. Ehud (Udi) Ganani**

Vice President for Strategic Programs, EIS

**Scott Blevins**

Coordinator, Communications Sector, EIS Council

**Jason Regg**

Vice President Security and Resilience, Tennessee Valley Authority (TVA)

**10:40 Coffee Break**



<p><b>11:10 Chaos Management: GINOM® Update</b></p> <p><b>The Chaos Management Panel: GINOM Update</b></p> <p>What will it take to manage the countless cross-sector interdependency disruptions expected in a Black Sky-class blackstart scenario?</p>	<p><b>Panelists:</b></p> <hr/> <p><b>Dr. Ehud (Udi) Ganani (Panel Host)</b> Vice President for Strategic Programs, EIS</p> <hr/> <p><b>Yosi Shneck</b> CEO &amp; Founder, YSICONS, Former SVP, CIO &amp; CISO at Israel Electric Corporation (IEC)</p> <hr/> <p><b>Naomi Etzion</b> Head of Power System Dynamics Dept. NOGA - Israeli Independent System Operator</p> <hr/> <p><b>Avner Hilu</b> GINOM® Project Manager, EIS</p>
<p><b>11:55 Community Engagement</b></p>	<p><b>Keynote Speaker:</b></p> <hr/> <p><b>Brig Gen (Ret) Michael J. "Apollo" Lovell</b> Executive Director for Joint Base San Antonio's Electromagnetic Defense Initiative</p>
<p><b>12:15 Generative AI; Cybersecurity Implications for Critical Infrastructures</b></p>	<p><b>Yosi Shneck</b> CEO &amp; Founder, YSICONS, Former SVP, CIO &amp; CISO at Israel Electric (IEC)</p>
<p><b>12:30 Lunch</b></p>	
<p><b>13:30 Risk &amp; Opportunity   Addressing the Complex Interdependencies Spanning the Electric, Finance and Information Technology (IT) Sectors</b></p> <p><b>Part I: Black Sky Resilience Strategies for the Electric / Data Sector Nexus</b></p>	<p><b>Kevin Curtis (Panel Host)</b> Executive Vice President, Quanta Technology</p> <hr/> <p><b>Kenneth S. Seiler</b> Sr. Vice President - Planning, PJM Interconnection</p> <hr/> <p><b>Davidson Scott</b> Vice President Engineering Electromagnetic Associates</p> <hr/> <p><b>Richard Mroz</b> Managing Director of Resolute Strategies. Former President of the New Jersey Board of Public Utilities (NJBPU)</p>
<p><b>14:00 Part II: Black Sky Resilience Strategies for the Electric / Finance Sector Nexus</b></p>	<p><b>Panelists:</b></p> <hr/> <p><b>Paul Williams (Panel Host)</b> Managing Director at Phoenix Resilience, United Kingdom. Former Head of Operational Risk &amp; Resilience Division, Bank of England</p> <hr/> <p><b>Susan Rogers</b> Executive Director Operational &amp; Cyber Resilience, Sumitomo Mitsui Banking Corporation</p> <hr/> <p><b>Carl Coscia</b> PJM's VP, Chief Risk Officer, Risk Management</p>

**14:50 Breather**

**Session 4: Where Do We Go from Here?**

The ideas, opportunities and recommendations that emerge from the R2eP Conference will be integrated into the Human Continuity Project®. What are the key takeaways?

**15:15 Day Two Working Groups:**

**The Path Toward Implementing Black sky Communications, and Addressing E-sector/Data center/Finance Sector Interdependencies**

Small groups will gather in different available regions of the auditorium or in chair groupings outside to consider specific areas e-sector Black Sky resiliency challenges

**Working group mission: (A) What are the changes needed? (B) How could a policy reboot help?**

- |   |                                      |
|---|--------------------------------------|
| 1. Next steps for the Energy Sector Web™ (ESW™)                             | <b>Scott Belvines</b>                |
| 2. Cyber Preparedness   | <b>Yosi Shneck</b>                   |
| 3. EMP Preparedness   | <b>Dr. Chris Beck</b>                |
| 4. Next steps for the Human Continuity Project®                             | <b>Dr. Ehud Ganani + Avi Schnurr</b> |
| 5. Energy Sector Web  | <b>Scott Belvines</b>                |
| 6. Black Sky resilience engagement strategies for the e-/IT finance sectors | <b>Paul Williams</b>                 |

**15:55 Coffee Break**

**16:20 Takeaways from Day Two Working Groups, and Moving on to the Human Continuity Project®**

**16:45 R2eP 2024 Review and Wrap**