

The Electric Infrastructure Security (EIS) Council

Spring 2017



Mission

EIS Council hosts national and international collaboration on resilience and whole community restoration and response planning, addressing severe, national and global-scale hazards to lifeline infrastructures.

The Electric Infrastructure Security (EIS) Council, Inc., is a 501(c)3 non-profit, non-government organization. Employee Identification Number 27-0713559

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Managing Emerging Catastrophic Risks to Lifeline Infrastructures

Expanding technology has brought us extraordinary new capabilities, and the powerful lifeline infrastructures that sustain our world.

As emerging subcontinent-scale hazards increase, building plans to manage them has become an urgent priority for societal health, and national continuity.

The stakes have never been higher.



The interdependent production and distribution of goods and services, and the high tech marketplace they depend on have become the complex, vital “DNA” of the industrial world

The Challenge

Near-universal access to instantaneous communication, unprecedented information resources and a vast network of goods and services are changing our world at an extraordinary pace.

In parallel, complex new market structures have evolved that reflect, nourish and manage this remarkable system.

Today, these two robust, dynamic and interdependent systems have become the “DNA” of the modern world, inextricably intertwined – the vast array of goods and services and the evolving markets that support them. Our global economy and the societies it supports are utterly dependent on these twinned, spiraling structures. Nearly everything, including our access to clean water, food, medicine and other lifeline infrastructures, depends on them.

Both are heavily dependent on technology.

And on their foundation: **electricity**.

While electric utilities and other lifeline infrastructures are regularly faced with a range of conventional hazards, concerns have grown over emerging, uniquely severe “Black Sky hazards.” Malicious threats – EMP, cyber and coordinated physical attack on key power grid nodes; and natural hazards – extreme terrestrial weather, severe solar storms and large regional earthquakes, could cause widely distributed grid damage, resulting in long duration, subcontinent scale power outages and cascading failure of all other lifeline infrastructures.

Recovery from such extended outages will require well-coordinated resilience investment and restoration and response planning by electric utilities and other infrastructure sectors, corporations, state and federal government agencies and mass-care NGOs.

Without such planning, Black Sky hazards will have catastrophic impact, on unprecedented scales.

EIS Council is committed to working with public and private sectors to help host this planning, and address the unique and critical challenge represented by Black Sky hazards.

“Risk is like fire:

If controlled it will help you;
if uncontrolled it will rise up
and destroy you.”

– President Theodore Roosevelt



Meeting the Challenge: **Black Sky Hazard Coordination and Planning**

Two dimensions of effort will be vital to meeting the challenge of Black Sky hazards.

As the bedrock that supports modern society, electric utilities have a unique and critical role in Black Sky-focused resilience and restoration. At the same time, electric sector planning and investment for such scenarios can only be effective if other lifeline utilities, corporate sectors, state and federal government agencies and mass care NGOs build plans to provide the reduced but essential support that will be essential in these extreme scenarios.

But while these two dimensions of effort are essential, progress has historically been slow, due to structural challenges that affect them both.

Electric Sector Resilience Planning and Coordination

Electricity is provided in the continental United States by three “Electric Interconnections” or power grids, owned and operated by an expanding, diverse mix of corporate and public entities. And while the electric sector will need focused coordination to communicate, motivate and quickly implement Black Sky investment and planning, its complex, diverse management structure presents challenges for such coordination. Existing sector-wide coordination bodies, which do an excellent job of addressing a wide range of urgent

business concerns, have limited time to focus on the comprehensive sector-wide and broad, cross-sector detailed planning essential for Black Sky hazards.

Cross Sector Coordination

Without normal operation of our delicate societal product/market “DNA,” cross sector interdependencies will stall operation of all the lifeline infrastructures that feed, clothe, fuel and house us. Continuity of such services in Black Sky environments, at least at reduced levels, will require a carefully planned multi-sector network – an alternate, operational emergency “DNA” designed to allow the minimal infrastructure functionality needed during restoration and recovery from an extended outage. State and federal government agencies and mass care NGOs are not tasked, today, to drive the wide-scale, Black Sky-focused, multi-sector coordination essential to developing this alternate structure.

NGOs like EIS Council can be an essential catalyst and host in addressing complex societal problems requiring coordination and planning spanning a wide range of sectors.



EIS Council's Role: Hosting complex, multi-sector coordination and planning

Increasingly, NGOs like EIS Council are being seen as an important catalyst and host in addressing complex societal problems, where coordination and planning spanning a wide range of sectors and stakeholders are essential.

Partnering with many infrastructure sectors and their government and mass care NGO partners, EIS Council has begun taking such a role.

With excellent participation by the critical sectors, new structures are now taking shape to host steady, rapid progress in preparing for Black Sky hazards.



The 1st Volume of the EPRO HANDBOOK video was published and distributed at the first EPRO SECTOR Executive Committee meeting.

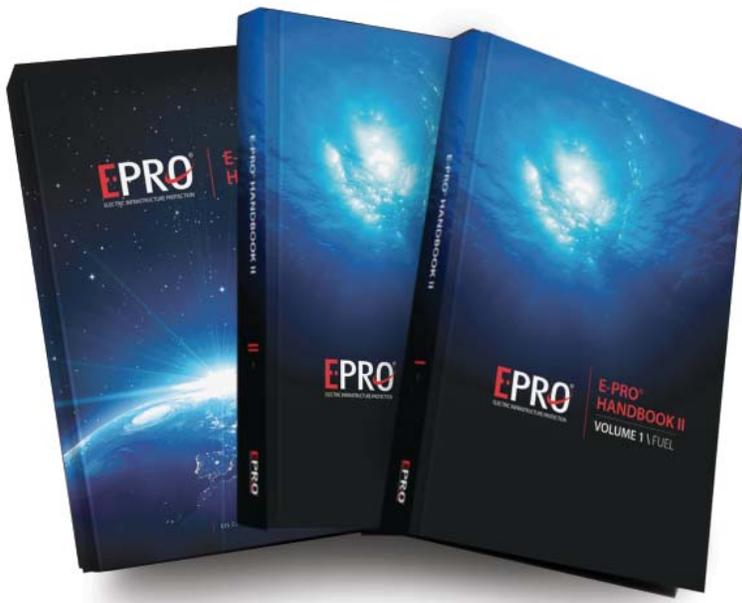
EIS Council's Hosted Projects, Tools and Initiatives

Working in collaboration with infrastructure sectors, government and mass care NGO stakeholders in the United States, the United Kingdom, Israel and other nations, EIS Council is hosting and developing an expanding menu of projects and tools as a framework for essential Black Sky resilience and recovery planning and coordination.



|| The Electric Infrastructure Protection (EPRO®) Resource Family

The EPRO Resource Family is the core of this framework, with three different elements serving different, synergistic functions.



The EPRO Handbook Series

An expanding resource for Black Sky resilient strategies and best practices.

The EPRO Handbook Series provides peer-reviewed, collaborative recommendations for Black Sky hazard resilience strategies and specific plans and approaches. Handbook I and the two-volume Handbook II have been published, and additional Handbooks are in development.

1. **EPRO I** (Published, now in 3rd printing)
Reviews Black Sky hazards, and recommends strategies and specific measures for electric sector EMP protection and all-hazard emergency response planning.
2. **EPRO II** (Published, in two volumes)
Black Sky resilience and operational strategies and plans for the Oil and Natural Gas Subsector (Vol. 1, “Fuel”) and the Water Sector (Vol. 2, “Water”).
3. **EPRO EMP** (Planned publication date: December 2017)
An expanded treatment of EMP protection methodologies for electric utilities, formulated as a voluntary, peer-reviewed specification, in sufficient detail for implementation by power system engineers.
4. **EPRO III** (Planned publication date: July, 2017).
Recommendations for adapting existing government and corporate frameworks to enable operational planning and real-time coordination for Black Sky restoration support. EPRO III will also include recommended architectures for a corresponding BSX Black Sky Emergency Communication and Coordination System, with embedded situational awareness and emergency communications, designed for severe, extended outage scenarios. For more information, see the BSX summary, below.

The EPRO® SECTOR Project

The “implementation arm” of the EPRO Resource Family.

EPRO® SECTOR Executive Committee: This Executive Committee brings together senior representatives of lifeline utilities, corporations, government agencies, NGOs and other stakeholders to host cross-sector coordination of resilience, restoration support and recovery planning, focused on Black Sky hazards.

Sector Steering Committees: EPRO SECTOR is expanding this year to include Sector Steering Committees, designed to host sector by sector development of BLACK SKY PLAYBOOKS, including three fundamental elements:

1. Black Sky Service Levels: Preplanned, reduced service levels for Black Sky environments, designed to allow for realistic but acceptable, prioritized support levels, to adequately meet the minimum requirements of other lifeline utility, government and mass care NGO sectors, affected populations and other critical stakeholders.
2. Sector Internal Requirements: Specific plans and recommended best practices, designed to make possible designated Black Sky service levels, given that the sector’s external requirements for support from other sectors are met.
3. Sector External Requirements: The sector’s requirements for external support, at those minimal levels that will be essential – working with the sector’s internal requirements – to make possible the sector’s Black Sky service levels.



Left: EPRO SECTOR Executive Committee Chair Terry Boston, at EPRO SECTOR Executive Committee Summer, 2015 in the U.S. Capitol Building | **Right:** EPRO SECTOR Executive Committee members



A scene from the EPRO Black Sky Exercise video materials, simulating the FEMA National Response Coordination Center

EPRO® BLACK SKY EVENT SIMULATION PROJECT (“BLACK SKY EXERCISE”)

The EPRO Resource Family “laboratory”

The EPRO Black Sky Event Simulation (“Black Sky Exercise”) Project provides a forum for utility, corporate, state and federal government and mass care NGO sectors to evaluate and develop resilience, restoration and response measures for these unique, severe scenarios.

Using video simulation as a foundation, this facilitated tabletop exercise format provides a framework for a realistic assessment of Black Sky events, impacts and response efforts. Black Sky is now in use by a range of utilities, government agencies and other stakeholders.

Next Steps: Updated video materials are planned to support Black Sky exercises for western states, expected to begin in summer, 2017.

Materials supporting a Black Sky Israel exercise were completed in 2016, and utilized at a high level exercise, jointly hosted by EIS Council and the Interdisciplinary Institute’s International Institute of Counter Terrorism, the Lauder School of Governance, Diplomacy and Strategy, and the School of Sustainability.

In the longer term, expanded and updated video and facilitation materials are now being planned, for the U.S., Israel and the U.K., as part of a multi-year exercise series of unprecedented scale. EMERGENCY ALL-SECTOR RESPONSE TRANSNATIONAL HAZARD EXERCISE – EARTH EX™ – now in an early planning stage, will use Black Sky table top exercise materials to support a multi-phase effort, building toward functional and full-scale, multi-sector, international Black Sky exercises in coming years.



Working in tandem with the other projects and initiatives hosted by EIS Council, the EPRO RESOURCE FAMILY is designed as an “engine” to foster concrete steps toward implementation of Black Sky playbooks, by lifeline utilities and their government, corporate and NGO partners.

II The ELECTRIC INFRASTRUCTURE SECURITY SUMMIT (EISS) Series

Inaugurated in London on September 20, 2010, the EIS Summit Series has become the primary forum for international infrastructure security cooperation and coordination in addressing “Black Sky” hazards – events that severely disrupt the normal functioning of our critical infrastructures. Attendees at the summit include senior national and international government and NGO representatives, energy and insurance sector executives and leading scientists from more than 20 nations.



Top: Terry Boston, then CEO of PJM, the world's largest electricity transmission company and market (on right), at EPRO Black Sky Exercise, Summer 2015. | Bottom: EIS Summit is hosted alternately in the U.S. Capitol and the Houses of Parliament, Westminster Palace, London, where EISS VII will take place.

Taking place annually in the summer and hosted alternately in Westminster Palace or the U.S. Capitol Building, the EIS Summit is also timed to take place on a day adjacent to one of the biannual EPRO ESC meetings, providing a broader context for both events.

EISS VII took place in Westminster Palace, London, on July 18, 2016, with the EPRO SECTOR Executive Committee meeting, as part of the summit, on the following day. EISS VIII will take place on July 24-25, in the U.S. Capitol Building, Washington D.C.

III Other Black Sky Protection Initiatives

Resilience

As concerns grow over severe Black Sky hazards, lifeline utilities and State and Federal government agencies have begun partnering with EIS Council and exploring a range of opportunities to mitigate such extreme events.

Resilience planning and investment represent the foundation on which any such mitigation efforts must be built. EIS Council is currently hosting two major resilience initiatives:

1. The BLACK SKY / BLACK START PROTECTION INITIATIVE™

The Black Start system, while vital to allow for restart of segments of the power grid in typical power outage scenarios, was not designed to address Black Sky Hazards.

The BLACK SKY / BLACK START PROTECTION INITIATIVE (BSPI™) examines Black Sky-associated limitations of the Black Start system, along with recommended enhancements and system architecture adaptations, as a starting point to consider upgrades to that system to address the extreme hazard scenarios represented by Black Sky Hazards.



2. E-THREAT PROTECTION FOR INFRASTRUCTURE CONTINUITY (EPIC) ISRAEL II Project

In EPIC Israel II, EIS Council is advising Israel Electric Corporation (IEC), helping the IEC team plan protection of Israel’s civilian national electric grid against Electromagnetic threats, including EMP and Severe Space Weather. The IEC team, working with EIS Council advisors, is developing protection strategies and specific measures to build resilience against these hazards, and will also provide a framework for associated maintenance, training, restoration and recovery.



Restoration and Response

Given the growing risk and potentially devastating impact of E-threats, coordinated cyber and physical attacks, large-footprint earthquakes and other manmade and natural hazards, extraordinarily broad and inclusive partnerships will be required to ensure adequate emergency response.

EIS Council is working with utility, government and NGO partners to develop a menu of focused Black Sky hazard tools, helping define and plan services and resources that will be essential to support restoration and response missions.

1. The CERTIFIED POWER RECOVERY (CPR™) ENGINEERING TEAM INITIATIVE™

In long duration outage scenarios, critical technical support personnel will be a vital asset. Yet trained power system engineers, as just one example, are a scarce resource even under non-stressing, normal conditions.

One highly leveraging approach to address this need is to build plans for supplementing staff, to address such emergencies, from outside the power industry. Similar to utility Mutual Assistance programs, CPR expands such approaches to provide a “surge capability” that can draw from outside the industry, to support black sky scenarios or other conditions where the scope of outages will limit sharing of scarce personnel from within the utility sector.

The CPR Engineering Team Initiative lays out examples or templates for such a mechanism. Based on plans for advance certification and periodic training of engineers with expertise in the appropriate disciplines, the CPR model would provide a capability for added engineering and technician staff, to expand the capabilities of, and be closely directed and utilized by, the normal, internal corporate engineering teams that will be in very short supply for such emergencies.

2. The NATIONAL EMERGENCY POWER COMMISSION™ (NEPC™)

In Black Sky Hazard scenarios, an adequate national inventory of emergency generators, plans for emergency fuel distribution and associated technical support represent one of the most urgent needs to sustain and restore service from critical lifeline utilities. This will also be essential for emergency response agencies, and for support services from NGOs and other critical institutions. The NEPC Initiative is designed to host planning by multiple agencies, in all levels of government, to develop this capability.

3. The NATIONAL EMERGENCY UTILITY CONSUMABLES COMMISSION (NEUCC)

The National Emergency Utility Consumables Commission is designed as a parallel initiative to NEPC. In Black Sky environments, water and wastewater utilities, natural gas producers and other essential service providers can only sustain critical, minimal service if they can be assured of carefully defined, periodic delivery of essential consumables. NEUCC will host planning with relevant government agencies, utility sectors and chemical manufacturing and distribution industry associations and companies, to develop this capability as a distributed, nationwide resource.



4. BLACK SKY EMERGENCY COMMUNICATION AND COORDINATION (BSX™) ARCHITECTURE PROJECT

The Black Sky Emergency Communication and Coordination (BSX™) Architecture Project is developing options for a national communication and coordination / situational awareness system designed for use in extended, multi-region power outages. BSX is designed to support the need for a very widely deployed, interoperable communication, coordination and decision support system that can operate with no external power for many weeks, and without requiring use of the nation's existing telecommunications backbone.

