Energy and Emergency Planning Integration Crosswalk (EEPIC)

Prepared for the Midwestern Governors Association by Converge Strategies

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About this Material

The effort to create this framework stems from the Midwestern Governors Association (MGA) recognizing a need for enhanced state coordination and alignment in emergency planning, particularly in response to grid events. MGA aimed to develop a resource that encompasses existing state plans and policies addressing these challenges. This effort builds off the success of the MID-GRID initiative that sought to unify and enhance state energy resilience efforts.

This framework was created over the course of two years by pooling expertise from Midwestern states, including state energy offices, electric sector representatives, and emergency management authorities, who advised on the content and challenges that should be addressed. Their input was provided during meetings and workshops convened over the course of a year.

The goal of this effort is to align policy and regulatory and operational strategies into a framework that supports energy security, maximizes the impact of energy policies, enhances resilience, and promotes development in the Midwestern region.

ABOUT MIDWESTERN GOVERNORS ASSOCIATION

The Midwestern Governors Association (MGA) is a non-profit, bipartisan organization that brings together governors and their staff to address public policy issues of significance to the region. The MGA provides governors and state staff with the opportunity to foster regional development and exchange best practices.

Learn more about MGA at https://midwesterngovernors.org/.

ABOUT CONVERGE STRATEGIES, LLC

Converge Strategies, LLC (CSL) is a consulting company focused on the intersection of energy, resilience, and national security. CSL works with civilian and military partners to develop new approaches to energy resilience policy and planning in the face of rapidly evolving threats, vulnerable infrastructure, and determined adversaries.

Learn more about CSL at www.convergestrategies.com.

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NAVIGATION | While each module can stand on its own, or be reviewed in sequential order, users must work through the User Guide and Implementation Plan prior to beginning work in any module.

INSTRUCTIONS | Use this framework as a way to orient yourself with state, utility, and grid operator protocols. While it will not address all the unique roles and responsibilities of every stakeholder, the framework will help readers understand different types of organizations and their decision making processes.

List of Abbreviations

Abbreviation	Definition
BES	Bulk Electric System
BtM	Behind-the-Meter
CESER	Office of Cybersecurity, Energy Security, and Emergency Response
COG	Continuity of Government
DER	Distributed Energy Resource
DHS	Department of Homeland Security
DOE	Department of Energy
DOT	Department of Transportation
EEPIC	Emergency and Emergency Planning Integration Crosswalk
EM	Emergency Management
EMA	State Emergency Management Agency
EOP	Emergency Operations Plan
ETR	Estimated Time of Restoration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
IBR	Inverter-Based Resource
IOUs	Investor-Owned Utilities
IPP	Independent Power Producer

IRA	Inherent Risk Assessment
IRP	Integrated Resource Plan
ISO	Independent System Operator
LEO	Law Enforcement Officer
LTE	Long-Term Evolution
MGA	Midwestern Governors Association
NARUC	National Association of Regulatory Utility Commissioners
NERC	North American Electric Reliability Corporation
POIA	Power Outage Incident Annex
PSAP	Public Safety Answering Point
PUC/PSC	Public Utilities/Service Commission
RSC	Regional State Committee
RTO	Regional Transmission Organization
SCADA	Supervisory Control and Data Acquisition
SEO	State Energy Office
SEP	State Energy Plan
SESP	State Energy Security Plan
T&D	Transmission and Distribution
THIRA	Threat and Hazard Identification and Risk Assessment
VPP	Virtual Power Plant
VRA	Vulnerability and Risk Assessment

Introduction

EXECUTIVE SUMMARY

The rapid transformation of the electric grid, combined with a growing number of threats, requires a more sophisticated approach to energy security. MGA created the State Energy and Emergency Planning Coordination project to improve emergency planning and preparedness for regional grid emergencies.

This product – the Energy and Emergency Planning Integration Framework (EEPIC) – is designed to support multi-stakeholder planning and increase energy security at the state and regional scales, not to replace existing plans required for state agencies or utilities under statute or regulation. It provides a structured approach for developing new state energy strategies and for aligning existing planning processes with policy priorities.

Objectives

SUPPORT ALIGNMENT

Align Governors' policy, regulatory, planning, operational, and legislative capabilities to support state energy strategy.

MAXIMIZE IMPACT

Improve energy policy decision-making to support energy resilience, equity, and economic development.

BUILD CAPABILITY

Improve interregional resource planning to accelerate investment in priority infrastructure and reduce grid vulnerabilities.

PURPOSE

KEY TERM: ENERGY SECURITY. Defined by the International Energy Agency as "uninterrupted access to energy at affordable prices," and rests on the three pillars: reliability, the ability of the energy supply to meet the power requirements of all sectors; resilience, the ability to mitigate and respond to interruptions; and efficiency, using just enough energy to power any process.

The Midwest electric grid is facing unprecedented electricity demand growth, increasingly frequent and severe weather, and the growing threat of physical and cyber attacks.

Energy security planning requires a collaborative and integrated approach to mitigate the breadth of risks confronting the electric grid that no single entity can fully address. Building a complete understanding of current grid conditions and future risk projections requires improved visibility into a variety of planning processes that currently reside in multiple public and private sector organizations. Utilities and energy service companies provide electricity to consumers, regional grid operators maintain the reliability of the bulk power system, and states have responsibility for public health and safety and for electricity sector regulation and policy.

The purpose of the EEPIC Framework is to enable states to align their policy goals through a more collaborative and holistic approach to state energy security policy and emergency operations planning. Each module of the framework is designed to guide users through a specific aspect of energy security with the goal of creating tailored but scalable approaches to planning.

User Guide

Review Existing Plans and Map Stakeholders

EXISTING PLANS | The EEPIC Framework builds on plans, policies, and procedures developed by state utility commissions, energy offices, and emergency management agencies **(See Annex C)**. Users should identify and review current documents to ensure alignment.

STAKEHOLDERS | There are many public and private sector organizations that influence energy security planning **(See Annex B)**. Users should identify the stakeholders that require sustained engagement and partnership as part of the planning and integration process.

Navigating the Framework

STEP 1 — Energy Strategy Crosswalk

Before proceeding to individual modules, users should develop a State Energy Security Strategy utilizing the provided **Crosswalk.** The Strategy should set priorities and guide planning decisions for each of the modules to follow.

STEP 2 — Module Selection

Each of the four planning modules can function as a stand-alone guide, or they can be used together to develop a consolidated energy security resource. Interpret the module(s) using your chosen Strategy as a guide.

STEP 3 — Planning Review

Reference existing plans and policies while navigating the modules to identify areas of alignment and gaps based on users' interpretation of the modules and the chosen Strategy. This can result in new or updated plans or policies.

STEP 4 — Integrated Planning

The completed framework module should serve as a guide for future efforts related to mid- and long-term infrastructure planning, state energy policy development, and emergency response planning.

Special Considerations

Sector-Focused

Energy security includes considerations for infrastructure, assets, and integrated systems that extend beyond electricity, such as natural gas, liquid fuels (e.g., LNG, propane, etc.) and oil. For the purpose of this framework, the planning and analysis will be limited to the electricity sector, with consideration given to other infrastructure sectors as part of the **Interdependency Planning Module**.

Data Sharing

Several planning modules in the EEPIC benefit from planners having access to information that is not publicly available because it is proprietary or protected from disclosure. While this information would be beneficial to the analysis, it is not required. Users should engage through existing processes or use resources such as the **NARUC Grid Data Sharing Playbook** to share information that would advance energy security planning.

Resource Adequacy

Resource adequacy is defined as, "the ability of the electric grid to satisfy the end-user demand at any time" This Framework doesn't include a resource adequacy module since there are multiple well-established methods and processes to assess it. However, each module will identify the resource adequacy impacts of each topic area.

State Energy Strategy

State Priorities

Given the complex nature of the electricity grid and the diversity of public and private stakeholders, it is essential to determine what guiding principle will drive legislation, policy, regulation, planning, operations, and the allocation of scarce financial resources. Below are three strategies, each with specific benefits to all stakeholders, that can be applied to the energy security planning process to serve as a driver for the grid transformation. While most states will select a single strategy to guide the framework, these strategies are not mutually exclusive; a state can weight elements of more than one where its priorities call for it. Modules are written per-strategy for clarity, so states blending strategies should apply the relevant guidance from each rather than treating any one module's strategy framing as exhaustive.

Strategy Descriptions

Diversification

Using diversification as the primary driver of an energy security strategy reduces dependence on any single energy source, thereby enhancing the stability, resilience, sustainability, and reliability of energy infrastructure. The presence of multiple energy sources on a system mitigates multiple levels of risks, especially those associated with supply chain, price volatility, and regulatory changes.

Economics

Economics as a driver of energy security leverages the financial perspective for risk mitigation by prioritizing investment in infrastructure and specific energy sources. This approach may stem from communities that rely on a particular energy asset, or the private or public sector priorities.

Resilience

Resilience promotes an energy security strategy that leverages the innovative use of technologies, tools, and processes to reduce risk and enhance the security of the system. The level of resilience and the methods needed to achieve it are determined through analysis of current vulnerabilities and future threats, as driven by infrastructure needs, laws, or regulatory requirements.

STATE GUIDANCE | Review existing variables highlighted below to understand what drives decisions.

Policies

The state policies, legislation, and that regulations govern electric grid operations.

Plans

Local, state, and regional planning resources and processes.

Stakeholders

Public and private entities and personnel needed to build and operate the grid.

Funding

Investment from ratepayers, private organizations, and government sources.

EEPIC Framework Modules

OVERVIEW

Given the many facets of energy security and energy emergencies, the EEPIC Framework focuses on specific challenges associated with the subsets of plans, procedures, and activities. The MGA State Energy and Emergency Planning Coordination Group identified four specific topic areas that are central to state planning where improved alignment could maximize the effectiveness of the framework. The four modules below are designed to address each topic.

PLANNING MODULES

MODULE 1: Design and Integration

Design and integration refers to the ability of the infrastructure planning process to align between state policy, regulatory requirements, utility design, and independent system/regional transmission operators (ISO/RTO) priorities. This can shape properly scaled transmission and distribution infrastructure design and performance requirements. The framework will provide guidelines for building uniform infrastructure design criteria that consider multiple organizational priorities and processes.

MODULE 2: Energy Risk and Criticality

Energy risk and criticality is the potential for energy infrastructure to be impacted by a broad range of hazards, as well as the relative importance of assets to the reliable operation of the grid. This includes susceptibility to hazards, impacts of a disruption on connected systems, presence or lack of redundancy, and the asset's historical performance. The framework will suggest how organizations can develop shared, standardized assessment methods to address system-level risk.

MODULE 3: Restoration Prioritization

Restoration priorities determine how, when, and to whom energy will be restored, considering the availability of capacity, resources, and infrastructure. States, RTOs, and utilities have different prioritization and response plans, some of which depend on one another. Additionally, organizations may not be aware of how these priorities and plans affect them. This framework will share insights for building an energy security prioritization method, incorporating successful resource planning and emergency response.

MODULE 4: Interdependency Planning

Interdependency planning helps regions develop robust emergency response plans, as energy is crucial to other critical lifelines (e.g., natural gas, water, communications, transportation). Understanding how these sectors interact is key to achieving regional resilience. This framework will help users establish requirements within their organization and suggest methods for interdependency mapping with external partners and systems.

Strategy: Diversification

STATE OBJECTIVES

SPREAD OUT RISK	CLEAN ENERGY	SYSTEM OF SYSTEMS
Increase redundancy of the energy system through scaled, balanced investment to reduce the risk of state dependence on a single energy source, fuel type, or physical asset, that, if left unaddressed, could become a single point of failure in a system.	Provide legislative, regulatory, or economic incentives to drive investment in clean energy resources as a means of building optionality into the capacity portfolio. Effective Implementation should include multiple resource types.	Adopt a "tactical" approach to segment energy systems through the deployment of microgrids, behind-the-meter generation, long duration energy storage, and flexible power, such as vehicle-to-grid technology, for transportation electrification.

Advantages. Opportunity for carbon reduction, community-scale projects and improved reliability.

Drawbacks. Fewer energy market incentives and more complex deployment with utilities.

POLICY LEVERS

State Energy Office

Integration of redundancy and balancing of the capacity resource mix into the State Energy Security Plan (SESP).

State Legislation

Provide grant funding and tax incentives for distributed energy resource deployment and permitting.

Emergency Mgmt

Explore diverse technical solutions for risk mitigation and deployment of behind the meter (BtM) assets supporting critical loads.

Regulators

Support regulation to simplify the deployment of a wider variety of energy resources to inform rate-based investment.

Owner/ Operator

Develop Integrated Resource Plans (IRP) that focus on infrastructure diversification and deployment of distributed energy resources (DER).

MODULE NAVIGATION

Design and Integration. Create and implement criteria for microgrid design and DER integration.

Energy Risk and Criticality Module. Identify risks that are directly addressable through added redundancy, as well as identifying critical assets to support.

Restoration Prioritization. Look for opportunities to co-locate new energy resources with critical loads.

Interdependency. Seek ways to reduce dependencies on bulk fuel infrastructure (i.e., oil or natural gas).

Strategy: Economics

STATE OBJECTIVES

LOW COST OF ENERGY	LARGE LOAD CUSTOMERS	LARGE SCALE INVESTMENT
Leverage energy and wholesale market competition to keep the cost of electricity as low as possible in order to minimize financial impacts to consumers and incentivize business investments in the state.	Position the state to receive a larger share of projected load growth in business sectors, including data centers and manufacturing, by maximizing the amount of energy available to current and future customers.	Drive additional public and private investment in infrastructure in order to successfully implement the strategy at scale. Lowest cost of energy delivery model will require balanced investment.

Advantages. Lower overall cost to consumers can drive population and business growth.

Drawbacks. Less incentive for reliability and resilience. Diminished investor-owned utilities (IOUs) due to increased market competition.

POLICY LEVERS

State Energy Office

Increase emphasis on transmission and bulk fuel delivery capabilities in the State Energy Security Plan (SESP).

State Legislation

Focus on expediting siting and permitting of Bulk Electric System (BES) assets to accelerate and scale development.

Emergency Mgmt

Integrate large energy loads and capacity resources into risk planning to support effective restoration prioritization.

Regulators

Align regulations with organized markets for large-scale energy deployment and minimal impact to ratepayers.

Owner/ Operator

Utilize integrated resource plans (IRPs) to align utility transmission and generation to ISO planning for cost effectiveness.

MODULE NAVIGATION

Design and Integration. Maximize the use of grid enhancing technologies to harness energy from existing infrastructure at lower costs.

Energy Risk and Criticality Module. Identify and emphasize the risks to bulk fuel delivery systems (i.e. natural gas, storage) and large capacity resources.

Restoration Prioritization. Incorporate key economic loads into planning for major events to limit business disruptions and incentivize reserve margins.

Interdependency. Improve joint planning for gas/electric system coordination and interregional transmission connections.

Strategy: Resilience

STATE OBJECTIVES

ALL HAZARDS	CRITICAL LIFELINES	ASSET HARDENING
Improve the survivability of the electric grid to a full range of natural and man made threats. Tight integration of security systems and protocols between public and private sector, with special consideration for state-specific threats.	Identify and integrate the specific community lifelines that will reduce the human toll of energy emergencies (i.e. public health, public safety) to support disaster response operations and planning form the city level to the state level.	Upgrade current assets and construct additional infrastructure designed for the purpose of withstanding the impacts of severe weather events and targeted cyber and physical attacks on essential systems.

Advantages. Higher system reliability and much lower risk of widespread, long-duration grid outage.

Drawbacks. Market structures don't currently incentivize resilience and costs can be higher.

POLICY LEVERS

State Energy Office

Use Vulnerability and Risk Assessment (VRA) as a targeting mechanism for infrastructure investment.

State Legislation

Leverage state funding and grant programs to defray the costs of resilient infrastructure investments and balance benefits.

Emergency Mgmt

Provide insight to community lifeline planning methods and support capture of federal grants for infrastructure.

Regulators

Enable ideas such as performance - based regulation to support reliability and resilience outcomes and investment.

Owner/ Operator

Develop Integrated Resource Plans (IRP) that emphasize system survivability and support of state security priorities.

MODULE NAVIGATION

Design and Integration. Develop enhanced infrastructure requirements for threat-specific risks.

Energy Risk and Criticality Module. Make concrete connections between risk and investment, including reducing the criticality of assets through hardening.

Restoration Prioritization. Identify energy loads and customer types that support public health and safety.

Interdependency. Emphasize connections between systems with the greatest human impact (i.e. water/wastewater, communications).