Notice of NIST AI Risk Management Framework Support

Physical-Layer Governance for High-Density AI Infrastructure

Standard Referenced: NIST AI Risk Management Framework — RMF 1.0
Governing Entity: QH8 Technologies
Applicable QH8 Standards: v008-OBSIDIAN / v012-EQUILIBRIUM / v012-POLARIZATION
Scope: Physical-state governance, operational evidence, and infrastructure risk control for high-density AI compute environments

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Purpose of This Notice

This notice explains how QH8 Technologies' physical-state governance architecture supports the risk-management principles described in the NIST AI Risk Management Framework — RMF 1.0.

The NIST AI RMF is commonly used by enterprises, public-sector organizations, financial institutions, and critical infrastructure operators to structure AI risk management. Most AI risk programs focus on models, software, data quality, cybersecurity, and organizational controls.

QH8 addresses a different but essential layer: the physical infrastructure that allows AI systems to operate.

High-density AI infrastructure introduces physical risks that software-only controls do not fully address. These risks include thermal instability, transient electrical stress, power-distribution instability, hidden degradation, cooling dependency, and limited visibility into how hardware was physically operated over time.

QH8 provides a deterministic physical-layer governance and evidence framework designed to support institutional risk review, infrastructure governance, underwriting evaluation, technical audit preparation, and executive accountability.

This notice does not represent certification, endorsement, or approval by NIST or any government agency.

Alignment Overview

QH8 Technologies provides physical-state governance for high-density AI hardware and related infrastructure.

Through the combined use of v008-OBSIDIAN, v012-EQUILIBRIUM, and v012-POLARIZATION, QH8 helps organizations identify, monitor, record, and manage physical risks that can affect AI infrastructure reliability and asset integrity.

This notice maps QH8 capabilities to the four core NIST AI RMF functions:

GOVERN
MAP
MEASURE
MANAGE

QH8 does not replace an organization's AI governance program. It strengthens the infrastructure layer beneath that program.

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1. GOVERN

Institutional Governance of Physical Infrastructure Risk

The GOVERN function emphasizes accountability, risk ownership, organizational controls, and risk-aware decision-making.

For high-density AI infrastructure, governance cannot stop at the software layer. The physical assets supporting AI workloads must also be governed through clear operating limits, evidence records, and accountability structures.

QH8 Support

QH8 establishes a physical-state governance framework for critical AI infrastructure.

Under this framework:

- High-density compute assets are governed against defined physical operating envelopes
- Physical-state risk is treated as an executive governance issue, not only an engineering issue
- Hardware behavior is monitored independently of workload intent

- Boundary events and enforcement actions can be recorded for review
- Physical infrastructure risk becomes visible to operators, executives, insurers, and auditors

This helps organizations demonstrate that infrastructure risk is actively governed rather than passively monitored.

Governance Value

QH8 supports institutional governance by creating a structured link between physical infrastructure behavior and executive risk oversight.

This is especially important where AI infrastructure supports mission-critical workloads, regulated operations, financial exposure, customer obligations, or national infrastructure.

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2. MAP

Understanding the Physical Context of AI Risk

The MAP function focuses on identifying the context in which AI systems operate and understanding the risks that emerge from that context.

AI workloads do not exist only as software. They create real physical effects inside facilities, racks, power systems, cooling systems, GPUs, memory stacks, and advanced silicon packages.

As AI density increases, workload behavior can translate into physical stress.

QH8 Support

QH8 maps the relationship between AI workload behavior and physical infrastructure conditions.

This includes visibility into:

- Power behavior
- Thermal behavior
- Load-transition behavior
- Junction temperature states
- Thermal gradients
- Power-distribution stability
- Boundary-event history

- High-density rack operating conditions

QH8 helps identify risks that may not be visible through software monitoring, OEM dashboards, or standard facility telemetry.

Risk-Mapping Value

QH8 supports a more complete AI risk map by connecting digital workload demand to physical infrastructure stress.

This allows organizations to evaluate AI infrastructure risk not only by software behavior, but by the physical conditions created during operation.

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3. MEASURE

Traceability, Evidence, and Physical-State Review

The MEASURE function emphasizes observation, traceability, evaluation, and evidence-based risk review.

For high-density AI infrastructure, measurement must include more than uptime, temperature averages, or vendor-generated logs. Many physical risks occur through short-duration events, cumulative stress, and boundary conditions that may not be visible in standard reports.

QH8 Support

QH8 generates tamper-evident operational records tied to physical-state governance.

These records may include:

- Timestamped operating-state data
- Physical boundary-event records
- Enforcement-event records
- Thermal and electrical behavior indicators
- Power-distribution stability markers
- SHA-256 cryptographic hash-chain references
- Registry status indicators
- Exportable evidence summaries

These records are designed to support review by technical teams, risk committees, insurers, auditors, and executive governance functions.

Measurement Value

QH8 supports evidence-based infrastructure review by making physical-state risk observable and traceable over time.

This allows stakeholders to assess how AI infrastructure was governed, not only whether a system remained online.

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4. MANAGE

Active Physical Risk Control

The MANAGE function focuses on prioritizing, responding to, and reducing identified risks.

In high-density AI infrastructure, risk management must occur before physical instability becomes damage, downtime, warranty exposure, or insurance loss.

Reactive cooling and post-event alerts are necessary but not sufficient. They respond after stress appears. QH8 is designed to support earlier physical-state governance.

QH8 Support

QH8 supports active physical risk management through deterministic operating-envelope governance.

The framework is designed to:

- Detect destabilizing physical behavior
- Govern power and thermal state transitions
- Reduce unmanaged transient exposure
- Support boundary enforcement before instability persists
- Record physical-state events for later review
- Strengthen continuity for high-density AI workloads

The v008-OBSIDIAN layer supports QH8’s power-thermal co-governance architecture by helping detect and respond to destabilizing physical behavior at the infrastructure layer.

Risk-Management Value

QH8 helps shift infrastructure risk management from reactive response to governed physical control.

This strengthens the organization's ability to manage physical operating risk in high-density AI environments.

QH8 Physical-Layer Support for NIST AI RMF Functions

NIST AI RMF Function	Primary Risk Focus	QH8 Physical-Layer Support
GOVERN	Accountability, policies, risk ownership	Physical-state governance framework for high-density infrastructure
MAP	Contextual risk identification	Mapping of workload-driven thermal and electrical infrastructure stress
MEASURE	Traceability and evidence	Tamper-evident operational records and physical-state evidence
MANAGE	Active risk mitigation	Deterministic operating-envelope governance and boundary-event control

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Registry Status and Operational Evidence

Facilities and assets operating under the QH8 Registry are recorded as governed in accordance with applicable QH8 physical-state standards.

Registry participation may indicate that an asset is connected to a QH8 governance and evidence framework supporting:

- Operating-envelope review
- Physical-state traceability
- Boundary-event documentation
- Tamper-evident operational records

- Infrastructure risk reporting
- Independent evidence generation
- Technical audit preparation
- Insurance and underwriting review

Registry status does not represent legal certification, government approval, or regulatory compliance confirmation.

It indicates that the asset is governed under the applicable QH8 physical-state framework.

How QH8 Supports Institutional AI Risk Governance

QH8 strengthens AI risk governance by addressing the physical infrastructure layer beneath AI systems.

This is relevant for organizations that need to show:

- How AI infrastructure is physically operated
- Whether critical assets remain within defined operating limits
- How thermal and electrical risks are identified and managed
- Whether physical-state events are recorded and reviewable
- How infrastructure risk is governed independently of tenant software or proprietary workloads

This allows organizations to extend AI governance beyond software controls and into the physical systems that support compute operations.

Non-Invasive Verification

QH8 is designed to support physical-state verification without requiring access to proprietary AI models, source code, customer data, or tenant workloads.

This is important for multi-tenant data centers, sovereign AI environments, enterprise AI infrastructure, and regulated facilities.

QH8 focuses on physical infrastructure behavior rather than application logic.

This allows organizations to improve infrastructure governance while preserving operational confidentiality and intellectual property boundaries.

Governance Use Cases

QH8 physical-state governance and operational evidence may support:

- AI data-center risk governance
- High-density rack infrastructure review
- Insurance underwriting evaluation
- Technical audit preparation
- Warranty and vendor review
- Facility risk management
- Executive infrastructure reporting
- Critical infrastructure oversight
- Asset-condition documentation
- Operational resilience planning

QH8 does not replace legal counsel, insurers, auditors, regulators, or internal compliance teams.

It provides a technical evidence layer that can support their review.

Verification Status

Deployment Status: Phase I deployment completed for v008–v010 architecture layers.

Further technical validation, datasets, deployment evidence, and verification tooling may be made available under NDA.

Disclaimer

This notice describes how QH8 Technologies' physical-state governance architecture may support the principles and functions of the NIST AI Risk Management Framework — RMF 1.0.

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