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WESR-COHE

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Control of Hazardous Energy (COHE) — WESR

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Owner: PREI
Applies to: All hazardous energies (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, stored/latent)

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1. Purpose and Scope

This add-on defines minimum requirements to control hazardous energy during installation, commissioning, operation, service, maintenance and dismantling of plant and equipment. It integrates with WESR roles, processes and safety documents and **supersedes baseline WESR where this add-on is more stringent**. Local law and site rules that are more stringent take precedence.

Applicability: - All personnel performing tasks where unexpected energisation, start-up, movement or release of hazardous energy could cause harm.
- All sites and facilities operating under WESR, including customer and contractor activities within the WESR-controlled boundary.
- Interfaces with non-electrical trades and external parties where COHE risk exists.

Written Program:
Each site must maintain a written COHE program aligned with this add-on and local law. Map any regional/international standard used to the roles/competence in this add-on; identify and close gaps.

2. Principles & Accountability

- **Zero-energy is the default.** Isolate, dissipate, verify, and lockout before work.
- **Competence & equipment:** Only competent persons with suitable tools/PPE may perform COHE activities; required hardware is provided and maintained.
- **Management accountability:** PREI and delegates ensure implementation, competence, equipment provision and audit.
- **Stop-work authority:** Any person may refuse/stop work if controls are inadequate.

3. COHE Program Under WESR (Governance & Roles)

Roles (mapped to WESR): - **PREI** — Owns the site COHE program; appoints the **PCEI**; approves local procedures and deviations.
- **PCEI** — Controls the installation; plans/approves isolations; issues Safety Documents (e.g., PTW) and retains control until restoration.
- **D-PCEI** — Delegated control for a defined area/time; acts under PCEI governance.
- **PCWA** — Controls the work activity; performs on-site risk review (**RISK-W**); sets supplementary measures; briefs team; clears Safety Document.

- **Isolation Lead (IL)** — Person in charge of the lockout for the task; executes the isolation plan; applies primary locks/tags; completes the Isolation & Lockout Record; coordinates group lockout.
- **Isolation Verifier (IV)** — Independent verifier performing the **four-eyes** check on isolation points, tag/lock IDs, and **zero-energy verification**. IL and IV **must be different** people.
- **Lock User (LU)** — Worker applying a personal lock at the group lock station; signs on/off; works under PCWA control.

Safety Documents used for COHE:
- **PTW** — Permit-to-Work (default for dead/zero-energy work).
- **TEP** — Test & Energisation Plan (used with a **Sanction for Test** where primary precautions vary).
- **AA** — Access Agreement (for non-electrical tasks with residual energy risk near safeguarded areas).
- **Lockout Instruction (LI-HE-001)** — Written isolation plan listing every isolation point and verification method (mandatory for multi-point lockout or stored energy).

4. Competence, Training & Authorisation

- **IL & IV:** Skilled/competent for the energy type(s) involved; practically assessed to isolate, dissipate and verify zero energy.
- **PCWA:** Competent to set work boundaries, adjacent-hazard controls, and manage team briefings and suspensions.
- **PCEI/D-PCEI:** Appointed in writing with defined control areas.
- **LU:** Instructed and briefed; applies/removes own personal lock only.
- **Retraining & re-authorisation:** Periodic refreshers; event-driven re-authorisation after incidents, long absence, equipment upgrades, or procedure changes. Practical assessment must include complex/group lockout and zero-energy verification.

5. Energised/Active Systems Work (Exceptional Cases)

- **Default:** dead/zero-energy with verified absence of energy.
- If a task **cannot** be performed de-energised (e.g., functional measurement/setting), it must be justified in RAMS and authorised.

- **Requirements:** written instruction; formal risk assessment comparing de-energised vs energised approach; suitable PPE/tools; defined safe boundaries; explicit authorisation by the appointed authority; use of **TEP/SfT** where primary precautions vary.

- **Partial energy reduction** (e.g., hydraulic reduced pressure, arc-energy reduction mode) must provide **equivalent protection** and be documented in TEP.

6. Lockout/Tagout Program (All Energies)

Compliance rules: - No person may operate an energy-isolating device with a lock/tag attached, or remove another person's lock/tag, except under the authorised **absent-person** process.
- Communications do **not** replace physical isolation/locks/tags and verification.

Basic model: 1) **Shut down & isolate** all energy sources (positive isolations only; **emergency-stops are not isolations**).
2) **Secure against reconnection** at each isolation point using locks/tags per method selected.
3) **Release/dissipate stored energy** (mechanical, hydraulic, pneumatic, electrical, thermal, gravitational, chemical).
4) **Verify zero-energy** at appropriate test points (ensure no components between isolation and test point can re-energise).
5) **Define/mark the Lockout Boundary**; control adjacent systems as required.
6) **Group lockout:** use lockbox/hasps; each **LU** applies a personal lock to the group point; **IL** controls primary keys.

Methods: - **Individual control** — permitted only where a single easily controlled source remains under the worker's direct sight/arm's reach; otherwise **lockout**.
- **Single-point lockout** — allowed only if one isolation point and **no stored energy**; otherwise a **Lockout Instruction** is required.
- **Complex/group lockout** — requires a **Lockout Instruction (LI-HE-001)** listing every isolation point; **IL** applies control locks; **LUs** apply personal locks to the lockbox or all points.
- **Tagout** — used **only** where locking is physically impossible; must be approved; tags placed at the isolation point with wording **"DANGER — DO NOT OPERATE"**; equivalent controls in place.

Verification of zero-energy: - Test at each isolation in suitable position relative to the device; verify at the point of work and surrounding hazard zone.
- For rotating/moving systems: verify **no start on command**; apply **mechanical blocks/pins** as needed.
- Record instrument/tool IDs and self-checks where applicable (e.g., electrical **test-measure-test**).

Extended shutdowns & suspensions: - For holds and multi-shift outages, **maintain** the lockout; IL re-verifies before resuming work; keep primary keys controlled.

- **Suspensions:** leave the installation **"Made Safe"**; re-start requires re-confirmation and team re-brief.

Temporary release for testing/repositioning: - Identify the exact isolations to be restored in the TEP/Lockout Instruction.
- Clear personnel and remove personal locks from affected isolations before temporary re-energisation.
- After testing, **re-isolate, dissipate, verify**, and **re-apply** locks/tags before resuming work.

Absent-person lock removal: - Follow a documented process: confirm absence; attempt contact; notify line manager(s); obtain written authorisation; remove via controlled method; record and retain the form (**APLR-HE-001**).

7. Interlock/Safeguard Bypass (Authorised Temporary Measures)

- Bypass only with **equal or greater protection** established (e.g., physical prohibition of access/operation, temporary guarding, permit-controlled procedure).

- Use a **Safeguard/Interlock Bypass Authorisation (SIBA-HE-001)** stating reason, devices affected, safety impact, compensatory measures and posting location; remove on restoration.

- Short diagnostic tasks (e.g., voltage/IR inspection) may be managed under defined conditions and authorisation where the worker has sole control and barriers/distances/PPE are adequate.

8. Equipment Design & Labelling (COHE-by-Design)

- Specify/design **positive isolation points** for all energy forms; provide **lockable means** and **safe test points** for zero-energy verification.

- Provide drawings/schematics (electrical single-lines, P&IDs, hydraulic schematics, mechanical sketches) that **identify every isolation point** with unique IDs matching labels in the field.

- Include dissipaters/bleed-down/blocks for stored energy; document methods in O&M manuals.

- Label machines and isolation points with **unique designators and function**; maintain consistency between drawings and field labels.

9. Status Model & Communications

Standard statuses:
Isolated → Zero-Energy Verified → Work in Progress → Suspended (Made Safe) → Under Test (Controlled) → Ready for Energisation → Restored / Normal Operation.

Communication & control: - **Order/confirmation protocol** (speak-back/confirm) for critical steps.
- **Four-eyes check** for Lockout Instructions and switching/isolations before issue.
- **Single point of control (PCEI)** throughout; hand-backs documented.

10. Change Control & Records

- Use a **Change Log (CJL-HE-001)** for edits to this add-on, local procedures and forms; approvals by **PREI** (or delegate).

- Retain PTWs, Lockout Instructions, ILORs, TEPs, APLRs, SIBAs, audits, calibration certificates and training records per the records matrix (see Annexes).

Annexes (Forms & Checklists)

Annex A — Lockout Instruction (LI-HE-001)

Content: equipment/task; Lockout Boundary; isolation list (device ID, position, method); stored-energy controls; verification methods; cross-references to drawings; approvals.

Annex B — Isolation & Lockout Record (ILOR-HE-001)

Content: point-by-point confirmation; lock/tag IDs; zero-energy verification entries; barriers/guards; **four-eyes** sign-off; changes log.

Annex C — Group Lock Sign-On Sheet (GLSS-HE-001)

Content: roster of LUs; sign-on/off times and lock IDs; supervisor/PCWA check.

Annex D — Safeguard/Interlock Bypass Authorisation (SIBA-HE-001)

Content: reason; devices; compensatory measures; posting; restoration confirmation; validity window.

Annex E — Absent-Person Lock Removal (APLR-HE-001)

Content: contact attempts; managerial approvals; removal method; notification; record retention.

Annex F — On-Site Risk Review (RISK-W-HE-001)

Content: hazards; adjacent-system controls; PPE/tools; briefing record; SIMOPS coordination; language/communication plan.

Annex G — Test & Energisation Plan (TEP-HE-001)

Content: scope; points; ranges; observers; stop criteria; communications; post-test state; transition back to PTW/restoration.

Annex H — Equipment Design Checklist (EDC-HE-001)

Content: positive lockable isolations; test points; stored-energy dissipaters; labelling; drawings linkage.