TA-14 / FLAGSHIP MANUFACTURER + WARRANTY BRIEF

THE HVAC SYSTEM THAT REMEMBERS ITS ENTIRE LIFE

A lifetime record of measured equipment reality, system-issued diagnostic determinations, authorized interventions, and outcomes that remain independently examinable.

FROM COMMISSIONING TO RETIREMENT

Technical architecture / Evidence governance / Manufacturer reliability / Warranty accountability

TA14 AUTHORITY GOVERNANCE INSTITUTION | NOVEMBER 2026

A lifetime record, not a one-time service ticket.

Four commercial users. One independently traceable history of what the equipment actually did.

THE CURRENT GAP

Installation records, annual service observations, contractor notes, and warranty claim files are often fragmented.

THE TA-14 RESPONSE

Commission once; preserve the baseline; append each examination, DDD, authorized intervention, and measured outcome.

THE POTENTIAL RETURN

More reliable field intelligence, portable customer records, informed claims review, and fewer unsupported interventions.

THE CENTRAL PROPOSITION

An HVAC system should carry its own traceable evidence history - from first installation to final retirement - without requiring the next technician to reconstruct what happened.

Two nodes reveal the air-side thermal reality.

EIN acquisition and EIR custody preserve the measurements before the Analyzer interprets them.

RETURN / ENTERING COIL

Dry bulb, wet bulb, airflow (CFM), static pressure, moisture and source metadata.



SUPPLY / LEAVING COIL

Leaving-air conditions and the measured change in moist-air enthalpy.

THERMAL PERFORMANCE

Dry-air mass flow × return-to-supply moist-air enthalpy change estimates total air-side cooling capacity.

ADDITIONAL EVIDENCE

Electrical currents, line temperatures, coil photos, metering-device identity, CO2, particulates, and radon where available.

Model + serial: a verifiable equipment passport.

Manufacturer reference data must be matched to the exact equipment configuration, not guessed.

TECHNICIAN CAPTURE

Model and serial number; installed motors, capacitors, metering device; coil photographs; probe placement; real operating context.

SPECIFICATION RESOLUTION

Verify manufacturer and revision; obtain rated electrical values, refrigerant type, applicable component ratings and operating requirements.

EVIDENCE QUALITY GATE

Distinguish verified manufacturer data, field-observed components, substitutions, ambiguous matches, and missing information.

MANUFACTURER ACCESS MAKES THIS STRONGER

A structured, licensed manufacturer specification feed could reduce equipment-identity ambiguity. Any unmatched or superseded specification remains explicit uncertainty; the system must not silently fill the gap.

Reality must never be rewritten by optimization.

An auditable decision requires separate records for observations, meaning, proposed changes and actual outcomes.

01 / REALITY + RECORD

Original measurements, inspection images, equipment identity and frozen baseline.

02 / INTERPRETATION + DDD

Evidence-supported findings about equipment condition, deviations and uncertainty.

03 / OPTIMIZATION + PROPOSAL

Corrective alternatives, expected benefit, NIRET status, constraints and requested actions.

04 / OUTCOME UNDERSTANDING

Post-action measurements, remaining variance, actual effects and a new evidence cycle.

AEA ENFORCES THE BOUNDARY BETWEEN PROPOSED ACTION AND PHYSICAL CONSEQUENCE.

The technician documents. The system determines.

The technician collects physical evidence and explains the examination; the DDD is not technician-authored.

TECHNICIAN: PHYSICAL WORK

Place probes, inspect coils and metering device, document installed components, upload authentic photographs, follow the guided 14-step examination, and perform authorized repairs.

ANALYZER: DETERMINATION

Validate the frozen baseline, compare verified manufacturer requirements with measured reality, identify deviations and uncertainty, then issue a governed Declared Diagnostic Determination.

REQUIRED SERVICE SEQUENCE

HPR-BL → **NIRET** → **DDD** → **AUTHORIZED WORK** → **HPR-V**

A valid DDD can conclude that no corrective or refrigerant intervention is warranted.

One system. Multiple independent evidence checks.

Hypothetical demonstration only - not actual device readings, certified equipment specifications or a completed DDD.

EVIDENCE	ILLUSTRATIVE OBSERVATION	INTERPRETATION BOUNDARY
Installed system	Nominal 5-ton split system	Equipment identity must be verified
Measured return airflow	1,600 CFM	Compare with model-specific requirements
Return / supply enthalpy	30.5 / 22.5 BTU per lb dry air	8.0 BTU/lb difference
Illustrative air-side capacity	~57,600 BTU/h	Using simplified 4.5 × CFM × delta h
Blower electrical reading	8.1 A	Interpret only against actual verified motor rating
Evaporator inspection	Photo evidence: condition documented	Physical evidence; photo authenticity still checked

DDD EXAMPLE: Measured coil capacity is estimated. Charge condition remains UNDETERMINED until applicable evidence and test criteria are satisfied.

Performance is measurable. Charge still requires proof.

Air-side capacity gives a meaningful performance measure; it does not alone identify refrigerant charge.

AIR-SIDE COOLING CAPACITY / SIMPLIFIED FIELD APPROXIMATION

$$Q \approx 4.5 \times CFM \times (h_{return} - h_{supply})$$

The actual method must account for dry-air mass flow, air density, measurement uncertainty, humidity, sensor location and data quality.

WHAT THE MEASUREMENTS SUPPORT

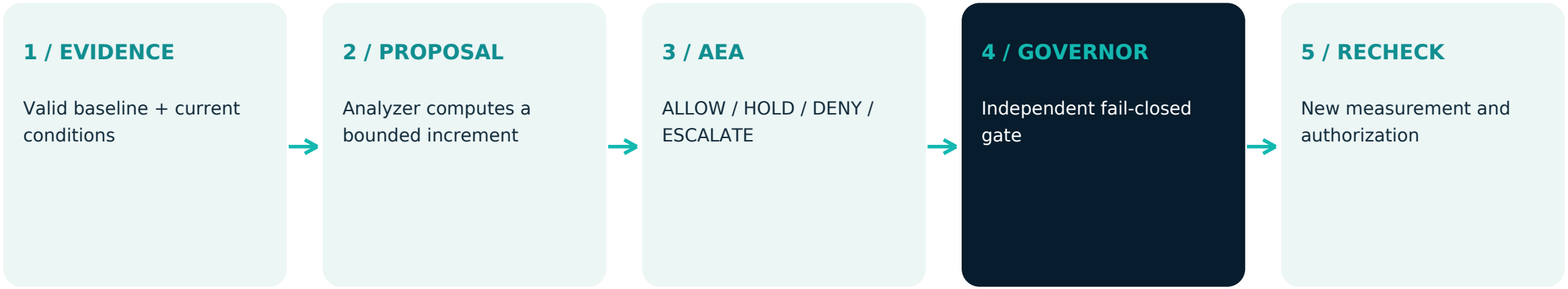
A measured capacity estimate, longitudinal performance comparisons, efficiency analysis and investigation of documented abnormalities.

WHAT THEY DO NOT AUTOMATICALLY PROVE

A unique refrigerant charge, the cause of a fault, safe autonomous dosing, or superiority over manufacturer-prescribed charging methods.

The Analyzer proposes. AEA authorizes. The Governor enforces.

An intentional separation of diagnostic intelligence, execution authority and physical interlock.



PHYSICAL SAFETY IS NOT OPTIONAL

A valve that closes when power or authorization is lost must be physically designed, independently tested and validated against failure modes. Qualified personnel, manufacturer requirements and emergency-stop access remain essential.

What Year 0 knew. What Year 7 can reveal.

Each examination appends evidence without altering the original commissioning record.

YEAR 0

COMMISSION

Installed state, verified specs, baseline capacity and DDD

→

YEAR 1

RE-EXAMINE

Measured drift, component condition, corrective record

→

YEAR 3

TRACK

Service continuity, component history, repeated deviation

→

YEAR 7

UNDERSTAND

Longitudinal trends, context, failure investigation

TA-14 AUTHORITY CLOUD / LONGITUDINAL CUSTODY

Sealed records, versioned corrections, field provenance, equipment identity, consented access and reviewable changes. Manufacturers could analyze de-identified cohorts by model, geography, climate, configuration and operating history.

Turn field history into an examinable reliability dataset.

Examples of research questions a manufacturer could ask with sufficiently representative, consented records.

INSTALLATION QUALITY

Which documented installation conditions predict later service demands or abnormal performance drift?

COMPONENT PERFORMANCE

Which models, configurations or replacement parts show recurring changes in measured operation?

GEOGRAPHIC + CLIMATE PATTERNS

How does performance vary with climate, runtime, humidity and equipment age after controlling for confounders?

WARRANTY INVESTIGATION

What records support or contradict a proposed causal explanation of a failure, without assuming causation from correlation?

Document the starting condition. Separate later events.

Illustrative claim pathway - actual coverage depends on the contract, governing law and evidence.

INITIAL EXAMINATION

A capacitor is found outside verified specifications. The finding and equipment identity are preserved, without presuming who pays.

CORRECTIVE WORK

A qualified technician completes an authorized repair. Post-intervention evidence confirms the recorded condition after the work.

LATER FAILURE

A separate component fails unexpectedly. The warranty administrator reviews the applicable contract and traceable history.

FAIRNESS BY EVIDENCE, NOT AUTOMATIC EXCLUSION

A missed annual visit does not automatically void a manufacturer warranty. A TA-14 finding does not independently determine liability or coverage. A defensible program enables review, dispute resolution and proportionate access to underlying evidence.

A bounded evaluation manufacturers can actually approve.

Pilot structure proposed for discussion - scope, cost, data rights and acceptance criteria must be agreed.

PHASE 1 / DESIGN

Select equipment models, calibration standards, record schema, manufacturer references, custody controls and consent.

PHASE 2 / FIELD

Commission a bounded set of units, preserve baseline evidence, document service events and independently examine anomalies.

PHASE 3 / REVIEW

Evaluate record completeness, repeatability, data quality, installation verification and usable reliability insights.

SUGGESTED PILOT SCORECARD

Record completeness · Manufacturer-spec match rate · Sensor agreement / uncertainty · DDD reproducibility · Provenance integrity · Authorized-action correctness · Partner review time · Findings requiring independent physical validation

TA-14 / FOUNDING INSTITUTIONAL EVALUATION

THE NEXT STEP IS NOT AN ENDORSEMENT. IT IS AN EXAMINATION.

TA14 Authority Governance Institution invites HVAC manufacturers, warranty providers, technical researchers and service partners to examine a bounded lifetime-equipment evidence pilot.

FOUR PILOT QUESTIONS

Can the system preserve verifiable commissioning evidence? Can successive examinations quantify drift? Can an independent reviewer trace each DDD and proposed intervention? Can a consenting manufacturer obtain useful fleet intelligence without compromising homeowner privacy?

TA14 Authority Governance Institution

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No admissible evidence. No admissible execution.