# EED Article 12 Compliance Playbook

A tactical guide to meeting EU Directive 2023/1791 reporting obligations for data centres — scope, indicators, deadlines, and where each data point lives in your operations stack.

## Executive Summary

The recast EU Energy Efficiency Directive (2023/1791), adopted in October 2023, introduces the first EU-wide mandatory transparency regime for data centre energy performance. Article 12 requires operators of data centres with **installed IT power demand ≥ 500 kW** to report annually on a defined set of energy, water, and resource performance indicators. Commission Delegated Regulation (EU) 2024/1364 of 14 March 2024 specifies the indicators, the calculation methodology, and the reporting channel.

The first reporting period covered calendar year 2023, with reports due 15 September 2024. Subsequent reports cover the previous calendar year and are due **15 May annually**. Reports are submitted to the **European Database on Data Centre Energy Performance**, managed by the European Commission's Joint Research Centre (JRC), and select indicators are published in aggregate form.

This playbook tells you:

- Whether your facility is in scope (the 500 kW test, with examples)
- Exactly which indicators you must report and what each one means
- Where the data lives in a typical operations stack (BMS / utility meter / DCIM / operations records)
- How Rackvio's three-state capacity model and energy reporting map to the IT-side indicators — and which indicators require systems Rackvio does not replace
- A six-month readiness checklist
- The most common reporting gaps first-time filers hit

If you operate data centres in the EU at or above the threshold, this is not optional and the indicators are well-defined. The work is in collecting the data on a consistent cadence and translating between source systems with different units, time bases, and ownership boundaries.

## Are You In Scope?

The threshold is **500 kW of installed IT power demand**. Three rules:

1. **"IT power" is the load drawn by IT equipment** — servers, network gear, storage. It is **not** total facility power (which would include cooling, lighting, UPS losses).
2. **"Installed" is the maximum instantaneous load** observed over the calendar year, not nameplate sum and not annual average.
3. **The unit of accounting is the data centre site.** A 400 kW site and a 300 kW site operated by the same company report separately, not as a 700 kW combined entity.

### Worked examples

| Facility profile | IT load (max) | In scope? |
|---|---|---|
| 50-rack colo, average 6 kW/rack, peak 8 kW/rack | 400 kW | No |
| 80-rack colo, average 5 kW/rack, peak 6.5 kW/rack | 520 kW | Yes |
| Single-tenant 1 MW IT-load private data centre | 1000 kW | Yes |
| Two sites of 300 kW each, same operator | 300+300 kW | No (each below threshold) |
| Multi-tenant building: 600 kW IT, 200 kW small operator | 600 / 200 kW | Large operator yes; small operator no |

### Special cases

- **Edge sites under 500 kW** are out of scope of mandatory reporting today but are likely to come into scope in future amendments.
- **HPC / AI training pods with very high density** typically clear the threshold easily and should expect close scrutiny on PUE.
- **Co-location facilities** report the operator-level indicators; tenant-side IT operations are not separately reported by the colo.

## What You Must Report

Reporting indicators are defined in Annexes II and III of Delegated Regulation 2024/1364 (Annex I covers facility identification), aligned with the EN 50600-4 series for DCIM energy management. Three categories.

### Category 1 — Identification and capacity

| Indicator | Unit | Notes |
|---|---|---|
| Site name, address, operator | text | Per-site |
| Year of first operation | year | Used in age-based exemptions for new-build PUE targets |
| Total floor space | m² | Computer rooms only — not offices, loading docks, etc. |
| Total IT power demand (max) | kW | The threshold variable; maximum across the year |
| Total contracted IT power | kW | What customers have signed for (relevant for colos) |
| Total available IT power (design) | kW | The site's design rating |

### Category 2 — Energy and resources (annual totals)

| Indicator | Unit | Notes |
|---|---|---|
| Total facility energy consumption | kWh / year | Everything — IT + cooling + lighting + UPS losses + auxiliary |
| IT equipment energy consumption | kWh / year | Server + network + storage only |
| Cooling energy consumption | kWh / year | Chillers, CRACs, pumps, dry coolers |
| Lighting + other auxiliary energy | kWh / year | Lights, security, BMS itself, etc. |
| Water consumption | $m^3$ / year | Cooling tower make-up, humidification |
| Waste heat recovered | kWh / year | Reused energy delivered to external networks or applications |
| Renewable energy used (on-site + PPA) | kWh / year | Broken out by source |
| Connection to district heating | yes/no, kW | Heat reuse channel |

### Category 3 — Computed metrics

| Metric | Formula | Target (new builds, indicative) |
|---|---|---|
| PUE | total facility energy / IT equipment energy | ≤ 1.3 |
| WUE | water consumption / IT equipment energy | site-dependent |
| ERF | reused energy / IT equipment energy | as high as practical |
| REF | renewable energy / total facility energy | as high as practical |
| CUE | (total facility energy × grid emission factor) / IT equipment energy | as low as practical |

PUE, WUE, ERF, REF are the headline metrics most operators already track. CUE is newer in regulatory reporting and depends on local grid carbon intensity (often pulled from official national disclosure).

## Where the Data Lives

The complete EED report draws from three operationally distinct data sources. Knowing which one owns which indicator is half the work of preparing for reporting.

| Indicator | Authoritative source |
|---|---|
| Total facility energy (kWh) | Utility revenue meter, sub-metered facility breakdown |
| Cooling energy (kWh) | BMS sub-meter on chiller/CRAC circuits |
| Lighting + auxiliary (kWh) | BMS sub-meter or estimated by load schedule |
| **IT equipment energy (kWh)** | **DCIM with ongoing power-state tracking → Rackvio** |
| **IT installed power (max kW)** | **DCIM, three-state capacity model → Rackvio** |
| **Contracted IT power (kW)** | **DCIM contract linkage → Rackvio sold capacity** |
| **Available IT power (kW, design)** | **DCIM physical rated capacity → Rackvio** |
| **Floor space (m²)** | **DCIM site/room model → Rackvio** |
| Water consumption (m³) | Plumbing meter, BMS |
| Waste heat recovered (kWh) | Heat-recovery meter, third-party network operator |
| Renewable energy (kWh) | PPA records, on-site generation meter, REC registry |
| Grid emission factor | National regulator publication (per country / year) |

**Rackvio is the system of record for the bold rows above.** It is not the system of record for facility-side energy (which is utility + BMS) or for water, heat recovery, and renewable accounting (which are usually separate operational systems).

## How Rackvio Supports EED Reporting

The three-state capacity model that Rackvio implements as part of its Cloud Growth and Enterprise tiers maintains the underlying data structures that the IT-side EED indicators require. Specifically:

### Indicators Rackvio provides directly

- **Total IT installed power (kW):** the consumed value across the hierarchy aggregated to building level. Maximum-over-year requires retaining periodic snapshots; today this is a current-state value plus operator records of historical peaks.
- **Total contracted IT power (kW):** the sum of sold capacity across customer contract records at the site. This is the same data the colo billing team already uses for invoicing.
- **Total available IT power (design, kW):** the physical rated capacity of the site's power hierarchy, stored as a first-class field on every node.
- **Per-tenant consumption (monthly, kW):** the contracted vs. consumed breakdown by cabinet, with the recoverable delta computed. Useful for tenant reporting under co-location arrangements.
- **Floor space (m²):** the room dimensions in the site model. Reports include the gross IT-room area broken out by room and building.

### Indicators Rackvio assists with (provides the IT-side denominator)

- **PUE:** Rackvio provides the IT-energy denominator. The facility-energy numerator comes from your utility meter or BMS. Rackvio's reporting view can be combined with an externally supplied facility kWh value to

compute PUE; deeper BMS-side integration that automates the facility-energy ingest is on the product roadmap.

- **CUE:** same dependency. Once the grid emission factor for your region is supplied (typically as an annual constant published by the national regulator), CUE follows from the same data structures as PUE.
- **WUE:** Rackvio provides the IT-energy denominator; water meter readings come from facility instrumentation.
- **ERF:** Rackvio provides the IT-energy denominator; waste heat output is measured by the heat recovery system.

> **Note on temporal granularity.** The 2024/1364 indicators require **annual totals** of energy and water; hourly resolution is not required for current EED submissions. Rackvio's per-node consumed-kW values change continuously as telemetry updates; aggregated kWh-over-time series (hourly / daily / monthly totals for full-year integration) is delivered today via continuous snapshot retention in operator-managed dashboards. Native long-horizon time-series storage with hourly granularity inside Rackvio is a Phase 5.5 roadmap item — operators today typically pair Rackvio's per-site IT load with their utility-meter or BMS-exported kWh totals to produce the annual indicator.

#### Indicators Rackvio does not cover

- **Water consumption** (no water modeling in Rackvio)
- **Waste heat recovered** (no thermal output measurement)
- **Renewable energy sources** (no PPA or generation accounting)
- **Grid emission factor** (external regulatory data)

These should be sourced from your facilities, sustainability, or finance systems and combined with the IT-side indicators Rackvio provides in your EED report submission.

#### Industry Benchmark Reference

For sanity-checking your computed indicators against industry-typical values:

| Indicator | Industry-typical range (mixed enterprise / colo) | Notes |
|---|---|---|
| PUE — legacy facility (built pre-2015) | 1.7 – 2.2 | Most retrofit candidates land here |
| PUE — well-operated current facility | 1.3 – 1.6 | Uptime Institute reports industry average has held ~1.55 for several years |
| PUE — new build (2026+, EED indicative target) | ≤ 1.3 | EED preferred for new ≥1 MW sites |
| PUE — hyperscale / AI training pod | 1.05 – 1.20 | Direct-liquid cooling enables sub-1.10 figures |
| WUE — water-cooled facility | 0.5 – 1.8 L/kWh | Highly geography-dependent |
| WUE — air-cooled / closed-loop | < 0.1 L/kWh | Effectively zero water draw |
| ERF — no heat reuse | 0 | Default for most facilities |
| ERF — district heating integrated | 0.1 – 0.4 | Northern Europe leading the deployment |
| REF — grid-mix dependent | 0.2 – 0.8 | Reflects regional grid composition + on-site PPA |

These are illustrative ranges drawn from Uptime Institute and EU Code of Conduct data, intended as red-flag thresholds, not regulatory benchmarks. EED does not (yet) set hard-fail PUE targets for existing facilities; the targets above are guidance.

## Common Reporting Gaps

The five gaps that trip up first-time filers most often.

### 1. Threshold confusion (IT power, not facility power)

Operators occasionally apply the 500 kW threshold to total facility power, which includes cooling and overhead. Some facilities under 500 kW IT power but with PUE >2.0 have total facility power above 500 kW and incorrectly conclude they are in scope. Others under-report by applying the threshold per building rather than per data centre site. **Apply the threshold to maximum IT power observed over the reporting year, at the site level.**

### 2. Calendar-year alignment

The reporting year is the **calendar year** (1 Jan – 31 Dec). Operators with non-calendar fiscal years frequently submit fiscal-year data on the first attempt. The Delegated Regulation requires calendar-year alignment.

### 3. Maximum vs. average IT load

The threshold indicator is **maximum** installed IT power, not average. A site that averages 480 kW but peaks at 540 kW is in scope. Operators tracking only monthly averages miss the threshold determination.

### 4. Co-location sub-metering ownership

In a multi-tenant colo, the operator must report the **total IT power** of the facility — which includes all tenants. Tenants do not file individually. The colo therefore needs metering at the tenant-handoff (outlet, branch circuit, or PDU level) — not at the whole-facility level alone. Operators relying on aggregate utility meters often discover at reporting time that they cannot separate IT from cooling within their available telemetry.

#### 5. Multi-site rollup

EED reports are **per data centre site**, not per legal entity, not per region. An operator with three EU sites of 600 kW each files three reports, not one. Each report has its own indicators, its own PUE, its own EU Database entry.

## Readiness Checklist

The reporting period is the calendar year and the deadline is 15 May of the following year — a 4.5-month window between period end and submission. Realistically, the instrumentation and scope work should be in place **during** the reporting year, not after; the post-period months are for calculation, reconciliation, and submission. The phases below assume the reporting year is `Y` and the submission deadline is 15 May of `Y+1`.

#### Phase 1 — During year Y (any time before 31 December)

- [ ] Confirm each site's maximum IT power (kW) is being tracked from instrumentation, not estimated. If you cannot produce this number from telemetry today, the gap is your first project — and it must be closed before year-end of the reporting period.
- [ ] List which sites cross the 500 kW threshold. Confirm legal entity and operator-of-record per site.
- [ ] Map every required indicator to its authoritative data source. Identify gaps where the source either does not exist or is not exporting at the required granularity.

#### Phase 2 — During year Y (instrumentation)

- [ ] Confirm IT power telemetry at every in-scope site. Where intelligent rack PDUs are absent, source telemetry from branch-circuit BMS meters or facility sub-meters.
- [ ] Confirm cooling and auxiliary sub-metering on the BMS side. If your BMS reports total-facility-only, that is a reporting blocker.
- [ ] Confirm water meter and (where applicable) heat recovery output meter availability.
- [ ] Identify the data steward (named human) for each indicator.

#### Phase 3 — January / February of year Y+1 — calculation and review

- [ ] Compute draft indicators for the reporting period.
- [ ] Compute PUE, WUE, ERF, REF, CUE from the underlying values. Sanity-check against industry medians (well-operated mixed-load facilities typically land at PUE 1.3–1.6; legacy facilities at 1.7–2.0; AI training pods 1.05–1.20).
- [ ] Cross-check IT energy values against monthly utility bills for the year. Discrepancies above 5% indicate a metering boundary error.
- [ ] Identify which indicators you will mark confidential at submission. The EU Database allows business-sensitive indicators to be submitted but excluded from public aggregate display; consult the JRC platform's current per-indicator disclosure rules.

**Phase 4 — April of year Y+1 — submission preparation**

- [ ] Register your data centre in the **European Database on Data Centre Energy Performance** if not already registered.
- [ ] Prepare the submission file per the EU Database format (XML or web-form, per the platform's published spec).
- [ ] Internal sign-off: facilities lead, sustainability lead, legal counsel.

**Submission — by 15 May of year Y+1**

- [ ] Submit. Retain the acknowledgement.

## Reporting Cadence and Channel

- **Reporting period:** 1 January – 31 December (calendar year).
- **Submission deadline:** 15 May of the following year.
- **Submission channel:** European Database on Data Centre Energy Performance (managed by the European Commission, hosted by the Joint Research Centre). Direct submission by the operator; some Member States provide a national intermediary channel.
- **Public disclosure:** Selected indicators are made publicly available in the EU Database. Some indicators can be marked confidential at submission and excluded from public view in the first reporting cycle; consult the JRC platform's per-indicator disclosure rules.
- **Penalties for non-compliance:** Set by Member State implementation. Most Member States impose administrative fines for missed deadlines or material misstatements. Reputational risk from public disclosure of poor performance is typically the larger near-term consequence.

## References


- **Directive (EU) 2023/1791** — Energy Efficiency Directive (recast), particularly Article 12. Official Journal of the European Union, 20 September 2023.
- **Commission Delegated Regulation (EU) 2024/1364** — first reporting scheme for data centres. Official Journal of the European Union, 14 March 2024.
- **European Database on Data Centre Energy Performance** — operated by JRC. Submission portal and per-indicator definitions.
- **EN 50600-4 series** — DCIM energy management standards referenced by the Delegated Regulation.
- **EU Code of Conduct on Data Centre Energy Efficiency** — voluntary programme with practice guidelines that informed the EED indicator selection.


## Next Steps

- **Map your sites against the 500 kW threshold** before any other work. The list of in-scope sites determines the entire reporting workload.
- **Read the companion paper** *The Stranded Power Problem* for the underlying capacity model that produces the IT-side energy data structures required for EED indicators.
- **Bring an inventory CSV to a working session** if you'd like Rackvio to map your existing telemetry to the required indicators and identify gaps before the next deadline. Book at rackvio.com/demo.

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