LiteSource Healthcare Emergency Lighting Guide:
Central Battery Systems vs. Distributed Inverters in Hospitals

Every hospital needs emergency power, but how you supply it is a design choice. Here are some guidelines to help understand the system options and where to apply them.

How the Two Architectures Work

	Central Battery System	Distributed Inverters
What it is	One room-sized inverter & battery bank feeds multiple emergency circuits.	Small inverters serve a single circuit or even a single luminaire.
Transfer time	2–50ms ("no-break" models ≤2ms).[1]	0–10ms for fixture/mini packs.
Monitoring	All batteries in one place—easy to inspect or integrate with BMS.	Networked units can self-report; otherwise you walk the floors.
Space & HVAC	Needs a dedicated, conditioned battery room.	Fits in ceiling, closet, or fixture—minimal HVAC impact.

Which One Fits Where?

Scenario	Central Battery System	Distributed Inverters
New tower with >50 emergency & task fixtures per floor	Lower $-per-fixture, single test point.	—
Phased renovation of scattered wings	—	No need to pull new homeruns; add units as spaces convert.
Areas where any outage is unacceptable (ORs, ICUs)	"No-break" models guarantee <2ms transfer.	Fixture-level packs also give 0-ms for normally-off luminaires.
Outpatient wings or mobile units	Extra inverter capacity can be reserved.	Remote additions avoid oversizing the main battery room.
Budget considerations	CapEx efficiency offsets future labor.	Enables budget-conscious upgrades over time.

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What Each Feature Means in Practice

Spec Category	Central Battery System	Distributed Inverters
Maintenance hub: Where batteries live & get serviced	One secure room, for faster inspections, cheaper HVAC.	Spread across floors for minimal disruption to occupied spaces.
Testing workload: Labor to perform NFPA tests	Remote panel automates 30-s/90-min tests; single log download.	Walk-throughs add labor, unless units have self-test & Wi-Fi/BACnet.
Single-point failure: What happens if an inverter fails	N+1 strings or bypass cabinet keeps lights on hospital-wide.	Failure isolated to one zone or fixture—rest stay lit.
Expansion & moves: Adding loads later	Reserve 10% spare kW; pull new circuit to inverter cabinet.	Add another unit locally—no upgrades to a central system needed
Energy efficiency: % of input power delivered to loads	Up to 98% efficiency on high-efficiency PWM units.[2]	94-97% (smaller form factors run slightly warmer)

Code & Compliance Essentials

NFPA 101 Life-Safety Code: Life-safety and Category 1 patient-care luminaires must relight within 10s and stay on ≥90min.[3]

NFPA 99 Essential Electrical System (EES): Splits loads into Life-Safety, Critical, and Equipment branches that must auto-transfer in priority order.[4]

NEC Article 517: Requires separate automatic-transfer switches (ATS) and wiring methods for each branch.[5]

Joint Commission: Expects monthly 30-s functional tests and annual 90-min load tests—records are auditable.[6]

Plain-Language Spec Checklist

UL924 + NFPA110 Type U labels on all inverters.

10s / 90min performance clearly stated in submittal.

Self-test & remote reporting so you're not clipboard-walking every month.

Spare capacity (≈10%) for future beds or luminaires.

NEMA 3R/4 options if units land in damp mechanical rooms.

Compatible dimming: Verify inverter can power LED drivers on emergency circuit.

[1]Isolite – E3MINI: Smart Mini Inverter Whitepaper, p. 3 – NFPA 101 10 s / 90 min requirement. www.isolite.com/downloads/E3MINI-ISOLITE-Whitepaper.pdf [2]Consulting-Specifying Engineer – "Compare Emergency Illumination Systems for Life Safety," Apr 2024. www.csemag.com/articles/compare-emergency-illumination-systems-for-life-safety/ [3]Myers EPS Illuminator EM Central Lighting Inverter – 98 % efficient typical. www.myerseps.com/product/illuminator-em/ [4]NFPA 99 blog – "Dissecting the Essential Electrical System (EES) in Healthcare Facilities. www.nfpa.org/news-blogs-and-articles/blogs/2019/09/17/dissecting-the-essential-electrical-system-ees-in-healthcare-facilities [5]HFMMagazine – "Understanding NEC Article 517 and its Health-Care Applications." https://www.hfmmagazine.com/understanding-nec-and-its-health-care-applications [6]Joint Commission FAQ #000001256 – monthly 30-s & annual 90-min inverter tests. www.jointcommission.org/standards/standard-faqs/home-care/environment-of-care-ec/000001256/

Why Healthcare Facilities Choose LiteSource.

Single-Source – Complete line of inverters and backup power options.

Code Expertise – We translate requirements into clear fixture specs.

Fast Quotes – Clear accurate quotations delivered quickly.

Support & Service – Dedicated lighting specialists from design to post-install.

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