

Healthcare Infrastructure Perspectives

How IT and facility professionals support the priorities of healthcare



We build what's next to light, power, and connect everyday spaces.

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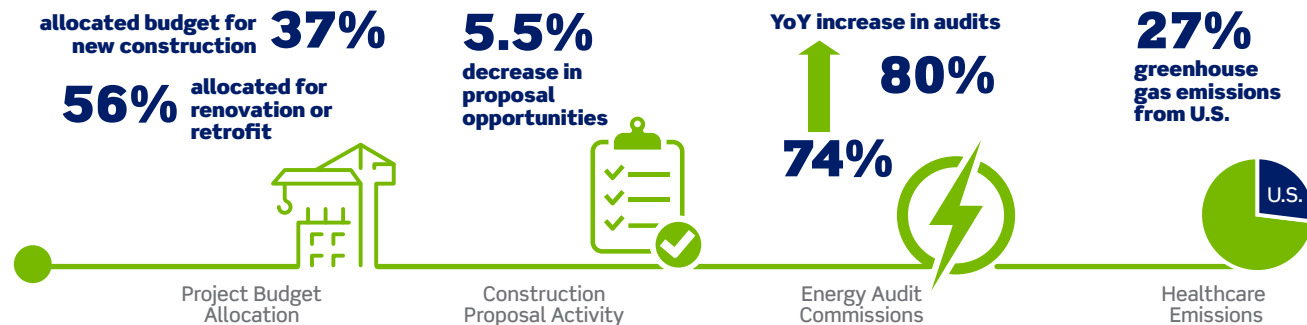
The healthcare industry is continuously evolving to meet the changing demands of patient standards. Hospital building managers are prioritizing the challenges of legacy infrastructure, sustainability goals, patient experience, preventative maintenance, and code compliance objectives.



Adopting the latest controls, lighting, electrical and network solutions can help alleviate the above changing demands as well as enable the goals of healthcare facility, IT and engineering stakeholders.

Legacy Infrastructure

Leveraging existing assets, building systems and technology can be a challenge, regardless of new construction or renovation activity. Whether your organization is breaking new ground on a facility, or you are retrofitting an existing building, challenges often arise when trying to ensure that updated technologies will work with old and new systems. **Facility managers often need to introduce new controls, lighting, electrical and network technologies, and should consider how to integrate these technologies with existing and legacy systems.**



Sustainability Goals

As the world and all industries continue to try to attain “sustainability” and “energy efficiency,” many are recognizing that one of the most important tools we have in reaching sustainable goals is measurement. If we cannot measure it, it cannot be managed effectively. Energy efficiency in healthcare buildings can be achieved, but many face integration issues among the three main utilities of gas, water, electricity and data, as it relates to measurement and verification of energy usage with metering analytics. **To tackle these issues, facility managers can and should install energy efficient hardware and apply best practice and industry standards, pull data via a trusted and secure network infrastructure, and gauge and track efficiencies.**

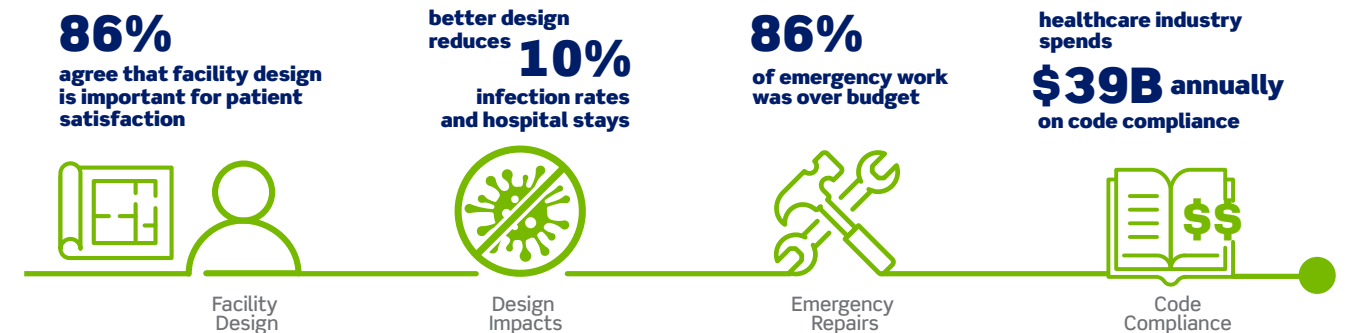
Patient Experience

With more and more competing healthcare facilities, patient experience is now a critical part of building design. Although there are many factors that play into what qualifies as a pleasant and recuperative stay, hospital design can severely impact a patient and family members’ comfort levels especially as it relates to features like lighting and connectivity. Design features like lighting and layout have the potential to impact safety, germ spread, and overall recovery time floor plan layout. Furthermore, technical amenities like strong network connectivity are crucial for patients and their families to communicate with those outside of the building.

Hospitals can work with contractors and manufacturers that represent solutions for lighting technology, hospital grade power and network connectivity in all spaces throughout a hospital.

Preventative Maintenance

While doctors and nurses focus on patient care, facility operators and professional contractors focus on facility care. Keeping these critical buildings properly maintained can be a challenge even within well-resourced organizations. However, emergency repair situations do occur which results in cost of overtime, hiring external contractors, material availability challenges and the inability to negotiate due to the immediacy of the issues. **Considering a proactive approach that includes scheduled shutdowns, planned work with proper resource allocation, identifying dependable suppliers and a comprehensive preventative maintenance schedule, can make a positive impact in the success of day-to-day hospital operations, and ultimately, in patient’s lives.**



Code Compliance

Although the term “code compliance” typically resonates as a tedious standard to meet in the minds of facility managers, it is of the utmost importance in hospital systems. The benefits and values of compliance ensure that hospital buildings and the systems within them are running smoothly, providing safety for patients and staff, while achieving organizational sustainability goals. **As building operators think about how to ensure code compliance and the latest industry standards, they can learn from vendor partners to stay up to date and knowledgeable about how code updates can lead to better buildings and better outcomes.**

Information Sources







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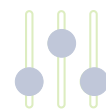
While the healthcare industry navigates the challenges outlined previously, they must find solutions that match the issues they face. Controls, Lighting, Electrical and Network Infrastructure all have varying abilities to satisfy at least one of the healthcare challenges related to legacy infrastructure, sustainability, patient experience, preventative maintenance, and code compliance, as reflected in the below chart.

Enabling Healthcare Goals with Controls, Lighting, Electrical and Network Infrastructure.

Solution	Legacy Infrastructure	Sustainability	Patient Experience	Preventative Maintenance	Code Compliance
 Controls	●	●	●	●	●
 Lighting	●	●	●	●	●
 Electrical	●	●	●	●	●
 Network	●	●	●	●	●

● Very Relevant ● Relevant ● Less Relevant

Healthcare Control Solutions



Leviton Control Solutions deliver scalable, spec-ready, and code-compliant functionality to healthcare spaces. Control solutions offer optimal patient comfort while enabling staff to provide the best clinical care from soft, ambient lighting in patient rooms and visitor areas to precision task lighting where and when it's needed.

Healthcare Electrical Solutions



Leviton Electrical Solutions offer safe and reliable delivery of power throughout the healthcare environment. Wiring devices which meet stringent hospital grade requirements and provide code compliant solutions are critical infrastructure elements.

Healthcare Lighting Solutions




Leviton Lighting Solutions brings a variety of options to illuminate the diversity of spaces in hospital locations. Leviton offers application specific and code compliant lighting for many healthcare environments.

Healthcare Network Solutions



Leviton Network Solutions supports healthcare networks with a selection of high-performance structured cabling products and systems. End-to-end system performance ensures users are connected, engaged and empowered throughout the building.

Controls, Lighting, Electrical and Network Application Benefits

Healthcare Space	Lighting & Controls	Electrical	Network
 INTENSIVE CARE UNITS	Offers controlled lighting to enable maximum patient comfort and help maintain biological rhythms in critically ill patients to improve clinical outcomes.	Redundant emergency back-up, surge protected and metered hospital grade electrical infrastructure to support ward-based, high dependency and intensive care equipment.	High-performance network connectivity for bedside devices to deliver care to critically ill patients including physiological monitors, ventilators, infusion pumps and bedside computer terminals.
 OPERATING ROOMS	Enables task-oriented work, providing ambient lighting, visual acuity and disinfection capability to reduce bacteria. Should also help limit plenum access points in surgery.	Ensures all medical equipment, devices and machinery receive reliable power offering an always on environment. Supports Isolated Power Systems and panels required for operation rooms.	High performance network infrastructure to support at hand information for patient data, hospital staff scheduling and emergency notifications and communications.
 EMERGENCY ROOMS	Offers adequate lighting design that improves security, productivity and can reduce errors and stress in fast-paced spaces. Considers supplemental illumination for busy trafficked areas.	Depends on reliable power to support life support equipment. Antimicrobial treated wiring devices to inhibit the growth bacteria and gasketed devices that reduce liquid intrusion during stringent cleaning.	Reliable IT systems to expedite urgent patient procedures, computerized clinical support systems, eHealth for electronic decision support, distal specialist consultation, and integrated patient-centered care.
 TELEMEDICINE AREAS	Adds dimming functionality to manually control overhead light to reduce eye strain. Offers ability to automatically turn lights off when not in use to remove the responsibility off the user.	Provide reliable power connections for telehealth with hospital grade and 4-in-1 receptacles.	High performance network to support telemedicine video monitoring, with appropriate lighting and accoustics to support IP-based low latency audio visual technology.
 MATERNITY ROOMS	Provides a lighting system that can be tailored to meet specific procedural requirements for labor and delivery. Offer adjustable options to encourage rest, recuperation, and a calm environment.	Reliable power for life support and monitoring equipment. Antimicrobial treated devices to reduce bacteria and gasketed outlets for stringent cleaning.	Provide network connectivity for electronic fetal monitoring, ultrasonography, blood pressure screening, and maternal/fetal pulse oximetry machines.
 PATIENT ROOMS	Creates a comfortable and healing environment with human-centric color tuning and circadian lighting to optimize patient comfort. Enables pillow control for patient convenience.	High availability of hospital and medical grade electrical infrastructure to support appliances, monitoring equipment, and ample receptacles for patient and visitor personal devices charging.	Reliable network performance for continuous uptime of Wi-Fi, IPTV and IP telephony services, room level automation, and PoE door access control systems. Important for patient monitoring alarms and real time data.
 MRI AREAS	Provides an appropriate level of controlled lighting that soothes, calms and enhances patient comfort pre and post examination. Colored lights and projections can create a more tranquil atmosphere.	Consideration of Non-Ferrous electrical receptacles ideal for use in high-magnetic field applications alongside safe and reliable primary/secondary power supply systems to support critical equipment.	High performance network connectivity to share medical images, improve efficiency of communication, and allow patients to have direct access to their imaging studies and reports.
 BEHAVIORAL CARE ROOMS	Offers options like dimming and tunable features ideal for patients ability to be receptive to therapy and treatment, alongside being ligature resistant.	Provides option to include Tamper Resistant Receptacles (TRR), Ground Fault Circuit Interrupters (GFCI), and Arc Fault Circuit Interrupters (AFCI) in all patient accessible areas of all psychiatric hospitals and wards.	Network availability and performance for video surveillance, patient monitoring and emergency communications.
 LOBBIES/WAITING AREAS	Creates a welcoming first impression. Greet guests with a safe and inviting atmosphere. Enhances the architecture of the space to create a comfortable transition from exterior spaces.	Offers substantial power availability in the form of USB charging ports, pop-up floor boxes. Uninterrupted and dedicated power at check-in desk.	Provides high performance connectivity to support guest Wi-Fi, digital signage, entertainment systems, and patient check-in applications and notifications.
 OUTDOOR/EXTERIOR AREAS	Provides insights into energy consumption to manage inefficient usage of utilities and building systems. Makes data-driven decisions on capital improvements, energy conservation initiatives, and preventative maintenance measures.	Satisfy newfound need for EV charging stations to support staff, visitors, and patients.	Enables cloud-based contactless entry systems that support digital room access. Supports IPV surveillance applications.

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Enhance patient experiences by:

- Promoting welcoming and safe environments
- Ensuring comfort and flexibility throughout stay
- Balancing patient experience and space functionality/efficiency
- Creating a conducive space for medical and administrative duties



LRTG ClearForm
LED Recessed
Type C



LPU LED
Under Cabinet
Lighting



Sapphire
Touch Screen



Outline LED
Recessed Type O



CRS Quick
Release LED
Pendants



GreenMAX DRC
Wireless



MD1U C84(G)
LED Medical



VRIG-4104
Behavioral
Health LED



Smart Wallbox
Sensor

HEALTHCARE LIGHTING & CONTROL SOLUTIONS

The following visualization suggests typical products and solutions that may be found relevant to each space.



CRU Cleanroom
LED Recessed



MD2-4190
LED Medical



MD1U
LED Recessed
Medical



GreenMAX DRC
Room Control
System



LRTF LED
Recessed

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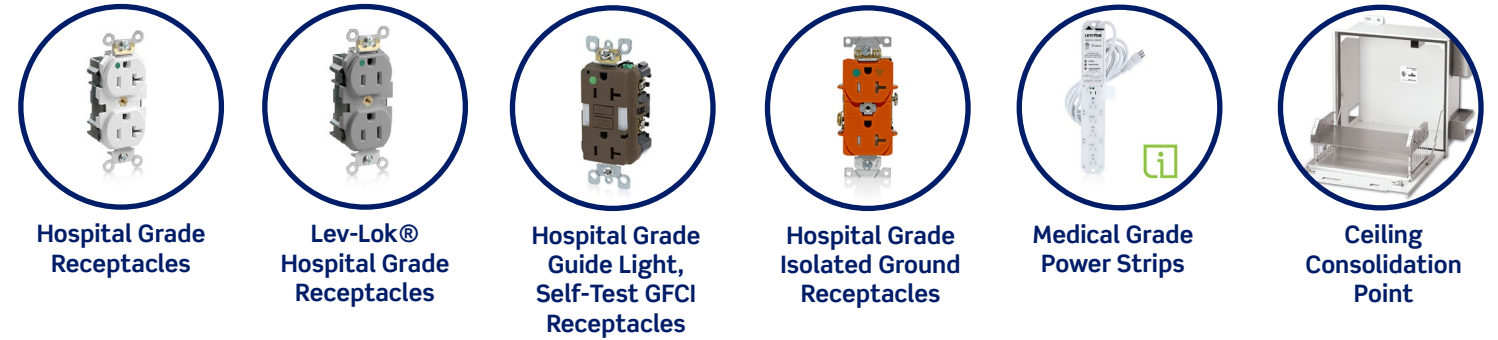
How IT and facility professionals support the priorities of healthcare

Enhancing patient experience by:

- Promoting accessibility in various patient environments
- Building sense of connectivity within hospital and outside
- Balancing patient experience and space functionality/efficiency
- Creating a reliable and high-tech space for hospital operations

HEALTHCARE ELECTRICAL & NETWORK SOLUTIONS

The following visualization suggests typical products and solutions that may be found relevant to each space.



The DNA of Successful Deployment and Remediation

Leverage partners to meet organizational objectives, on-time and under budget

● Hospital Stakeholders ● Leviton

CONSTRUCTION PHASES

REMEDATION PHASES

PHASE 1

Facility Needs Assessment

Discuss what is needed to best optimize and maintain the physical condition and value of facility, develop capital budgets and prioritize resources.

● Define use cases that meet organizational objectives.

PHASE 2

Pre-Construction and Design Phase

Review, revise and expand schematic plans and elevations to incorporate all the details and specifications required for construction.

● Operationalize requirements through programmatic and design development.

PHASE 3

Procurement Phase

Plan and acquire goods and services needed for construction, while considering timeline, quality of project and budget.

● Establish engineering efforts that leverage maximum acquired value of equipment, material and construction services.

PHASE 4

Construction Phase

Architect, engineers and project manager to perform quality control inspections, respond to Requests for Information (RFIs) and review and approve technical submittals.

● Realize benefits of planning that results in effective implementation, quality assurance, approvals, tracking of deviations and guaranteed delivery of contractor requirements.

Solve Organizational Challenges



Legacy Infrastructure



Sustainability Objectives



Patient Experience



Preventative Maintenance



Code Compliance

PHASE 5

Facility Operation

Following the conclusion of a project, continuously track and monitor efficiency of day-to-day operations to ensure needs are being met.

● Maximize facility uptime and minimize operational costs.

PHASE 6

Repairs and Maintenance

Continuously address and minimize need for repairs through preventative maintenance and strategic planning; use a thorough approach to repairs when needed, keeping a long-term building perspective in mind.

● Reduce capital expenditure related to maintenance and repair.

PHASE 7

Annual Needs Assessment

On a yearly basis, ensure teams are routinely communicating and monitoring for potential facility needs and repair priorities.

● Cyclical assessment and revision of organization goals and objectives.

Leviton Partner



Catalyst

● Understand objectives to advise possibilities and practical considerations.

● Advocate design and specifications with practical solutions to meet use case goals.

● Ensure integrity of design and construction intent are met during procurement with solutions that exceed requirements.

● Generate engineering submittals and solutions for vertically integrated supply chain.

● Ensure upgrade path and product life cycle outpaces emerging demands.

● Solutions that achieve predictive maintenance and operational efficiency goals, with life cycles that outlast their design intent.

● Act as a trusted advisor of compliance with new codes, standards and emerging technologies in order to enhance infrastructure to proactively address evolving operational requirements.



Successful partnerships with solution experts meshed with relevant project life cycle roadmaps can ensure successful remediation and deployment, that further translate into positive organizational growth and operations.



CONTROLS



LIGHTING



ELECTRICAL



NETWORK



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