

HEALTHCARE SUSTAINABILITY LEADERSHIP

Providence St. Joseph Energy Assessment Portfolio Western United States

Mazzetti is working on a program to perform energy assessments for selected Providence St. Joseph's Western facilities (20+) across California, Washington, Oregon, Alaska, Montana and Texas. The facilities being prioritized are the organization's highest energy consuming buildings. All energy measures within a 7-year simple payback period are being evaluated; these typically include BAS controls upgrades/tuning, room ventilation studies, chiller optimization, AHU scheduling, OR airflow setbacks, correcting overrides and HVAC equipment replacements, lighting retrofits, as well as decarbonizing technologies as they support PSJH's energy and carbon goals.

Kaiser Permanente Northern California Energy Program California

Kaiser Permanente entrusted Mazzetti to build an energy conservation program for its Northern California medical sites, the primary focus being HVAC energy improvement. The goal was to reduce EUI (kBtu/SF) by 10 % over 10 years by 2020. To date, we have developed energy business cases at over 20 sites (with 10 more in progress). We've performed energy audits at all 20 sites to identify potential retrocommissioning and energy efficiency measures. Additionally, Mazzetti has assumed the role of energy consultant and engineer of record on all construction projects during the design phase. We develop design drawings and specifications for construction and write new sequences of operations for the building management system to implement. We have also largely participated in the project management of the construction phase--managing quotes and site walks with the contractors, applying for utility incentives, and submitting required documents for city permits.



UCSF Parnassus Helen Diller Medical Center San Francisco, CA

Mazzetti has a robust history working with the University of California (UC), campus-wide. Most recently we were selected (in partnership with Arup) as the lead MEP engineers for UC San Francisco (UCSF)'s new hospital--Helen Diller Medical Center at Parnassus Heights (Parnassus Heights). The new hospital is projected to be a 16-story, 955,000sf facility, opening in 2030.

We were selected primarily due to our reputation for highly collaborative delivery and innovative solutions. The UC System is committed to becoming carbon neutral by 2025. Having recently delivered the 1st LEED Platinum Children's Hospital on the West Coast, we are well equipped to help the UC System reach their goal. Towards this, we have started our internal and external stakeholder communications. This early engagement will continue throughout the course of the project, appropriately, as we explore and implement design solutions.



CEC Grant: "Decarbonizing Healthcare" California

In May, Mazzetti was awarded a grant from the California Energy Commission (CEC) to create an online and printed guidebook exploring ways to decarbonize healthcare facilities and large commercial buildings. The grant funding will be used for the R&D and deployment of innovative approaches and technologies that support decarbonization. The focus is to reduce the carbon intensity on HVAC and hot water systems. In recent years, Mazzetti has seen more healthcare clients lay out roadmaps to carbon neutrality, and has helped a few clients determine strategies to do so along the way. This grant will further what is possible to support our clients' visions and to drive more widespread adoption of energy efficient solutions for natural gas end uses.



Kaiser Permanente Richmond Medical Center Microgrid Richmond, CA

Kaiser Permanente (KP), the nation's largest integrated healthcare system, seeks to achieve carbon neutrality by 2020 and carbon positive by 2025. Towards this, KP is exploring the use of renewable microgrids, a groundbreaking step towards providing cleaner energy generation and reducing consumption.

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Kaiser Richmond Medical Center is the first hospital in California to implement a renewable energy-fueled microgrid – an energy system that collects, stores, and releases energy on demand. The California Energy Commission’s Electric Program Investment Charge (EPIC) program, provided a \$4.77 million grant to fund this project. Mazzetti worked directly with Charge Bliss, the primary energy consultant and developer, to design and engineer the microgrid. KP Richmond Medical Center’s microgrid is a 250-kilowatt solar panel, installed atop the center’s 5-level parking garage. The microgrid supplements the hospital’s electrical demand with cleaner energy, augmenting energy loads at peak hours, offsetting the need for power from the grid, and reducing consumption by at least 365,000 kilowatt-hours annually. The microgrid is able to store one megawatt-hour of energy in batteries, and, if a power outage were to occur, the microgrid will furnish power to the 50-bed acute care facility, allowing the hospital to operate as an “island” (supporting critical systems for up to three hours). This project further demonstrates KP’s commitment to influence innovative change, providing cleaner solutions while positively impacting its bottom line. It’s also a potential model for future healthcare infrastructure and the benefits of “islanding” as a reliable back-up power source. Given unpredictable climatic events, often resulting in mass power outages, the priority of alternative, local power sources increases. Pending the performance of this project, the Office of Statewide Health Planning and Development (OSHPD) will evaluate and determine feasibility to allow microgrids for other hospitals in California.

UC Davis Energy Roadmap Sacramento, CA

University of California (UC) Davis set a goal to achieve carbon neutrality by 2025. Mazzetti collaborated with Perkins+Will to develop strategies to position UC Davis favorably to meet this goal. Strategies included:

- Identifying significant energy reductions across the entire portfolio of buildings to meet EUI targets.
- Establishing EUI targets to ensure high performance coupled with low energy usage for new buildings, and offsetting methodologies through renewable energy means.

A subsequent web-based sustainability tool was developed for the campus that demonstrates the energy consumption, renewable energy generation, and resulting net carbon emissions in real time based on information inputs at the campus and building-level.

REHVA-ASHRAE Guidebook

In recognition of recent findings from the IPCC, the World Health Organization is in the process of adopting aggressive actions to encourage global healthcare facilities to approach net zero energy. REHVA and ASHRAE collaborated on a new book, aimed at helping international health facility designers and operators to get closer to the goal of net zero hospitals.

Mazzetti co-created the REHVA-ASHRAE Guidebook to guide a path toward zero-energy hospitals. It is in publication currently and includes best practices from around the world to reduce energy consumption of all types. It has a particular relevance to driving down the energy consumption of existing buildings. We worked heavily with Kaiser Permanente’s engineering team to author this guide. This guidebook will provide a terrific starting point for the development of the California Guidebook.

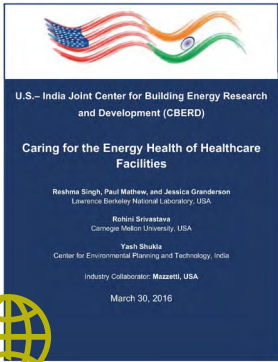


National Academies of Sciences, Engineering & Medicine Research Paper

NASEM is organizing a meeting with thinkers and funders in the fall, and they have asked our team (Mazzetti, with co-authors Don Berwick of IHI and Eric Berzon of Kaiser) to prepare a paper to jump-start the discussions in this meeting. The paper will provide background on the issue of health care’s carbon footprint and then explore potential interventions that NASEM could make to accelerate change. We will explore traditional sustainability strategies, potential changes to clinical practice, and financial opportunities.

To prepare this paper, we assembled three cohorts of experts – traditional sustainability professionals, clinical experts, and finance experts. Each group participated in three, two-hour brainstorming sessions, spaced two weeks apart. The sessions focused on the barriers to improvement, the opportunities for improvement, and the things the NASEM can do to help.

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“Caring for Energy Health of Healthcare Facilities”
Mazzetti regularly collaborates with Lawrence Berkeley National Laboratory (Berkeley Labs) to research and

develop energy-use reduction strategies for the built environment. This research paper focused specifically on healthcare facilities and the use of energy information systems (EIS). In brief, EIS enables significant energy savings by tracking energy use, identifying consumption patterns, and benchmarking performance against similar buildings, thereby identifying improvement opportunities. This research and resulting paper was made possible by the U.S.-India Joint Center for Building Energy Research & Development (CBERD), created through the Partnership to Accelerate Clean Energy (PACE) agreement between the United States and India. CBERD is a research and development (R&D) center with over 30 institutional and industry partners from both nations. CBERD aims to build upon a foundation of collaborative knowledge, tools, and technologies, and human capabilities that will increase development of high-performance buildings.



“Cultivating a Growth Mindset – Understanding new ways to provide emergency power to healthcare facilities”
(Originally published for Canadian Healthcare Facilities: Journal of Canadian Healthcare Engineering

Society. Volume 39. Issue 2. p.18 – 19)
The silent operation of a hospital microgrid illustrates a paradigm shift. The rapid advancement of technology is forcing people to reevaluate the opportunities and, resultantly, regulations for how power is provided to critical facilities like hospitals. Code-making organizations, hospital facility planners and teams must understand how the combination of economics and technological advancements has bent the concept of ‘emergency power’ to the breaking point. For the sake of the safety of healthcare facilities and the benefit of patients, new ways of thinking about, and designing for, emergency power generation are required. We’ve demonstrated how we don’t “settle” for status quo, as we know we can push for a better, cleaner solution as it pertains to powering the built environment. We will collaborate with PIIC members and innovate together to reach net zero.



“Maintaining Crucial Power – Fuel cells and microgrids help bolster hospital resiliency”
(Originally published for ASHE’s Health Facilities Management, June 25, 2020.)
The U.S. has been experiencing increasingly numerous

and intense weather events, and scientists say this trend will only accelerate in years to come. Resiliency has become an elevated priority for building owners. We feel strongly, to achieve greater resiliency, particularly as it pertains to power, sustainability and resiliency must be in concert. We have opportunities, today, to leverage new technology—fuel cells and microgrids—to not only increase power resiliency, while decreasing our environmental footprint. These are solutions we will explore with PIIC members.