OUR WORLD HAS CHANGED FROM ONE OF INFINITE POSSIBILITIES AND LIMITLESS RESOURCES TO ONE OF LIMITLESS POSSIBILITIES AND LIMITED RESOURCES.
TOGETHER WE CAN LOOK AT BUILDINGS DIFFERENTLY, INNOVATE AND BE ECONOMICALLY, ENVIRONMENTALLY AND SOCIALLY RESPONSIBLE IN OUR CHOICES.
In response, we’ve organized specialized sustainable design services that create enduring value through reducing cost, optimizing energy and water consumption and creating durable, lasting and respected buildings.

By looking at building in the long view—from pre-design through redevelopment—we uncover new possibilities for achieving cost savings, improving the environmental impact and taking seriously our shared civic and social responsibility.
GREEN DECISIONS ARE MOST EFFECTIVE PRIOR TO CAPITAL SPENDING
As projects are planned, CannonDesign helps clients with a wide range of services beyond building design—from infrastructure master plans to site selection and analysis.

More broadly, we work with clients both to develop portfolio-specific green building practices and standards and to train staff in effectively applying them.

The world population will likely increase to 9,200,000,000 in 2050. This almost 40% increase means we must change the way we plan our cities, our buildings and our infrastructure across the developed and developing regions of the world.

UNITED NATIONS POPULATION DIVISION, 2007

OUR SERVICES

– Energy and Sustainability Masterplans
– Building Site and Climate Analysis
– Conceptual Design Energy Modeling
– Combined Heating and Power (CHP)/Cogeneration Analysis
– Performance Standards Development
– Education and Learning Program Development and Delivery

BENEFIT YOU

– We help you take a strategic approach to managing infrastructure, resources and costs.
– As well-informed leaders you are better able to direct real estate and facilities departments to make long-term cost-saving decisions.
– By planning sustainably, your facilities or real estate departments become an integral part of your social responsibility policies.
GREEN HOMES FOR CHICAGO

Mayor Richard M. Daley wants Chicago to be the greenest big city in the world. Individual projects can certainly help demonstrate this commitment, but the Mayor charged his Department of Environment with thinking broadly about policy initiatives. A major step in achieving the greenest city goal: working with our team to create incentives for building green housing at all residential market levels.

SUSTAINABILITY AWARDS

Financial Times and Urban Land Institute: Sustainable Cities Award

1,130 tons of CO₂ emission reduction
34,060 gallons of stormwater runoff reduction
10,850 gallons of potable water use reduction

ANNUAL CITYWIDE IMPACT OF GREEN HOMES IMPROVEMENTS (THROUGH 2009)

THE CHICAGO GREEN HOMES PROGRAM HELPS US WORK WITH HOMEOWNERS, BUILDERS AND DEVELOPERS TO SHOW THEM HOW THEIR PROJECTS CAN HELP IMPROVE THE QUALITY OF LIFE FOR ALL RESIDENTS OF CHICAGO.

HONORABLE RICHARD M. DALEY, CHICAGO’S MAYOR

CASE STUDY

SERVICES PROVIDED

Consulting Services
Education and Learning Program
Consulting
Environmental Impact Reporting
Green Urban Planning
Green Standards Development
BUFFALO PUBLIC SCHOOLS
COMPREHENSIVE FACILITY ASSESSMENT

New York state law mandates that all school districts conduct building surveys every five years. Our process uses detailed data collection techniques to document the condition of each facility on a system-by-system and room-by-room basis—providing Buffalo Public Schools (BPS) with a complete database of assets. This information enables BPS to identify and reduce the extent of deferred maintenance, prioritize needs and develop short- and long-term capital budgets.

Our customized online tool helps reduce time spent on finding problems to afford more time for solving them. By updating the data regularly, BPS can experience significant long-run cost savings in energy management, maintenance and operations.
INFORMED DESIGN AND BUILDING ADD UP TO RESOURCE SAVINGS
 Researchers have created a method for projecting and evaluating up to 37 distinct environmental impacts that result from building construction.

**Since we have methods for measuring these impacts, we must now work to manage them effectively.**

GROUP OF CONSTRUCTION RESEARCH AND INNOVATION (GRIC), POLYTECHNIC UNIVERSITY OF CATALONIA

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**OUR SERVICES**

- Computational Fluid Dynamics (CFD) Modeling
- Lighting/Daylighting Analysis
- Thermal Comfort Analysis
- Building Envelope Analysis and Commissioning
- HVAC Load Calculations
- Renewable Energy Modeling and Screening
- LEED® Commissioning
- New Building Commissioning
- LEED® Administration Sustainability Consulting
- A/E Consulting and Peer Review

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**BENEFIT YOU**

- You can make informed decisions about building systems based on both first-cost and lifecycle payback considerations.
- Your real estate holdings can be evaluated according to short- and long-term asset value as they are designed and built.
- An integrated process enables the project team to meet high performance goals and achieve sizable energy reductions.

Once a project starts, CannonDesign’s sustainability expertise reinforces the design of high-performance buildings. Our systems analysis, commissioning and consulting expertise supports the architectural and engineering design across a wide range of building types from the earliest stages of design through occupancy.
HERMAN MILLER
CONVIA SHOWROOM

How does a company sell a product that redefines the way office workers can control their environment?

We helped Herman Miller design a showroom in which responsible lighting and electricity use are foremost in every visitor’s mind as they tour through a wildly varied collection of the workstations, private offices, conference rooms and amenity spaces that make up today’s workplace.

Product display is at the heart of a showroom, and this project immerses visitors in a Convia system that offers highly programmable, easy-to-use controls of electrical zones. Our sustainability services worked to enhance the technology: from maximizing daylight harvesting to demonstrate the effectiveness of Convia’s controls to commissioning the showroom’s systems so they operate according to the design standards.

SERVICES PROVIDED

- Lighting/Daylighting Analysis
- Thermal Comfort Analysis
- Commissioning

The design optimizes daylighting in a wide range of settings—from private offices to conference rooms, from workstations to open teaming areas.

SUSTAINABILITY AWARDS

- CoreNet Global: Sustainable Leadership Awards Commendation
- Interiors & Sources: Top Ten LEED® Projects

80% of occupied building area that is daylit
88% of construction waste diverted from landfill

65% of occupied building area with access to views

22% of materials with a recycled content
SMARTLY MANAGED FACILITIES CREATE LONG-RUN BENEFITS
Cities occupy 2% of the world’s land mass yet contribute more than 66% of global greenhouse gas emissions. This disproportionate relationship can be significantly improved through retro-commissioning and energy efficiency improvements in our current built environment.

**BENEFIT YOU**

- We identify intelligent short-term and long-term savings in your operating expenses, utility consumption and greenhouse gas emissions.
- By seeking out and solving building problems before they happen, we help you improve operational efficiency.
- Our consistent, cost-effective methods of measuring and verifying your building systems lead to greater occupant comfort, productivity and satisfaction.

**OUR SERVICES**

- Detailed Energy Modeling
- Existing Building Calibrated Energy Modeling
- Re-Commissioning
- Continuous Commissioning
- Building Operation Assessment
- Preventative Maintenance Program Development
- Energy Audits (American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Levels 1, 2 and 3)
- Utility Bill Analysis
- Demand Response Analysis
- LEED® Commissioning
- New Building Commissioning
- LEED® Administration/Consulting
- A/E Consulting and Peer Review

As their facilities are put in action, building owners turn to CannonDesign to ensure that energy, lighting, heating, cooling, ventilation and power systems are performing up to current design standards as well as to re-engineer under performing systems for more efficient operation.
CAMILLE KENDALL ACADEMIC CENTER

With a goal of being recognized as a national model for a green university, the University System of Maryland treats sustainability as serious business. When the opportunity arose to create a new academic center on USM’s Shady Grove campus, we designed an energy- and resource-efficient building that responds to evolving curricula and technology with a humane learning environment.

THE SUCCESS OF THIS BUILDING IS THE RESULT OF GOOD PLANNING AND TREMENDOUS COLLABORATION WITHIN THE PROJECT TEAM. THE RESULT IS A GREAT BUILDING WE ARE PROUD OF, APPRECIATED BY OUR FACULTY, STUDENTS AND STAFF.

SCOTT LUPIN, DIRECTOR, UNIVERSITY OF MARYLAND OFFICE OF SUSTAINABILITY

CannonDesign provided post-occupancy commissioning to ensure that building systems would operate according to the modeled standard.

- Energy Savings were 25% below LEED® Baseline Models
- Potable Water Use was 44% below LEED® Baseline Models

SERVICES PROVIDED
- Lighting/Daylighting Analysis
- Thermal Comfort Analysis
- Commissioning
- LEED® Administration/Consulting
$97,000 - $127,000 ANNUAL SAVINGS TO THE UNIVERSITY DUE TO CANNONDESIGN’S MEASUREMENT AND VERIFICATION SERVICES

- 75% of construction waste diverted from landfill
- 75% of spaces have access to natural daylight
- 40% of materials manufactured within 500 miles
- 25% reduction of storm water runoff
Over a series of projects spanning the Advocate Lutheran General Hospital campus, our team has provided design and consulting services. CannonDesign hosted a series of sustainability workshops with hospital administration, and they embraced the subject as an inherent piece of their operations. Patient satisfaction is at 73%, its highest point on-record, and energy savings from the most recent new project on campus is approaching $200,000 a year.

The new Patient Care Tower is the first LEED® Gold hospital in the Midwestern United States.

1,000,000 gallons of water are saved annually from treating water with pulsed-power cooling tower.

SERVICES PROVIDED

- Lighting/Daylighting Analysis
- Building Operation Assessment
- Green Standards Development
- LEED® Administration

$190,000 ANNUAL ENERGY SAVINGS IN NEW PATIENT CARE TOWER
As a client of ours for more than twenty-five years, A.E. Stevenson High School has a campus our architecture/engineering team knows and loves. By leading the school through LEED®-EB certification, we became more intimate with campus operations—from helping Stevenson conduct an occupant comfort survey to coauthoring a green standard that allowed the school administration to refine its purchasing policies. The process even offered an educational opportunity as students helped lead the process for calculating the school’s on-site stormwater management.
A STRONG VISION ALLOWS BUILDINGS TO THRIVE AGAIN AND AGAIN
When a building has out-lived its intended purpose, many of our opportunistic clients look to redevelop or adapt for a new use. CannonDesign supports these value-added developments with broad consulting services from conducting condition assessments to sourcing and supporting applications for grants and tax credits.

**OUR SERVICES**
- Facility Condition Assessments
- Retro-Commissioning Study
- Grant/Tax Credit Submittals

**BENEFIT YOU**
- Our thorough analysis of buildings helps you unlock added value and development opportunities in overlooked assets.
- Inherently, we look at both long-term asset value and payback time frames in helping you evaluate project costs and benefits.
- We augment the benefits of redevelopment by helping you seek out government and utility incentives.

A 2004 report projected that building owners in the United States alone will demolish and replace 82,000,000,000 square feet of buildings (or approximately one-third of the current total building stock) by 2030.

**Re-imagining existing buildings offers a strategy for reducing demolition waste and preventing greenhouse gas emissions from new construction.**

*BROOKINGS INSTITUTION AND NATIONAL TRUST FOR HISTORIC PRESERVATION*
REDEVELOPMENT

ST. LOUIS POWERHOUSE

Constructed in 1928, the Power House provided coal-fired steam heat to a dozen downtown buildings until the City of St. Louis decommissioned the building in 1980. CannonDesign purchased and re-developed the building and reinforced our commitment to triple-bottom line solutions: simultaneously developing a cost-effective new office, reducing our ecological footprint by preserving a landmark building and embodying our cultural commitment to the urban renewal of St. Louis.

100% of the existing walls, floors, and roof were reused
75% of the space has access to natural daylight
30% reduction in water usage
38% of energy savings below ASHRAE Standard

$1.7 MILLION FEDERAL AND STATE TAX CREDITS ON $7 MILLION PROJECT

The empty volume created by the building’s relatively small floorplate and grand height of its interior that had confounded developers for many years, allowed the project team to develop one of the signature elements of the project: a curvilinear structure that created within the power house’s now restored shell.

SERVICES PROVIDED

Facility Condition Assessments
Lighting/Daylighting Analysis
Grant/Tax Credit Submittals
LEED® Administration
LEED® Commissioning

SUSTAINABILITY AWARDS

Green GOOD Design Award, The European Centre for Architecture Art Design and Urban Studies and The Chicago Athenaeum

By purchasing and adapting a historic downtown power plant, CannonDesign capitalized on generous tax credits and incentives for historic preservation and energy efficient design.
THIS PROJECT DEMONSTRATES THE NOTION THAT THE MOST SUSTAINABLE BUILDING IS THE ONE NOT BUILT. IF SUSTAINABILITY EMPHASIZES ‘LEAVE NO FOOTSTEPS,’ THIS ONE SEEMS TO DANCE.

CONTRACT MAGAZINE, SUSTAINABLE DESIGN AWARD JURY
SUSTAINABILITY SERVICES

BUILDING OPERATIONS CONSULTING

Building Operation Assessment Reviews building operations, including energy management and facility maintenance policies, compares to industry standards and develops plan for operational improvements and cost savings

Preventative Maintenance Program Development Works with operations staff to create a long-term strategy for maintaining building systems at optimal performance levels

CONSULTING SERVICES

A/E Consulting and Peer Review Collaborates with A/E teams outside CannonDesign to establish design strategies that improve building performance and offers periodic review of design documents to ensure strategy compliance

Education and Learning Program Consulting Works with public and private-sector clients to teach facilities or real estate staff about green building programs or develops client-specific staff training and education programs

Green Standards Development Authors sustainable design standards in collaboration with clients that meet each client’s specialized needs

LEED® Administration/Consulting Manages the documentation required by the USGBC for submitting projects for certification across any of the available LEED® classifications

COMMISSIONING

Continuous Commissioning Monitors building system performance on an ongoing basis using building automation systems and develops program to maintain system performance

New Building Commissioning Spans from planning through occupancy, commissioning agent documents owner’s performance requirements and verifies that the building meets these measures

Re-Commissioning Re-evaluates the systems in an existing building for compliance with the owner’s performance expectations and identifies systems that require corrective action

Retro-Commissioning Implementation Assistance Confirms results of retro-commissioning study by assisting building operators with plans to set recommended energy-saving measures into action

Retro-Commissioning Study Audits an existing building’s energy use and systems, recommends energy-saving measures using a payback analysis

COMPREHENSIVE FACILITY OPTIMIZATION

Building Condition Surveys Evaluates the condition of the major building and site systems and conducts a room-by-room analysis of architectural features and finishes within a individual facility or across a multi-building campus

Facility Benchmarking and Assessment Drawing on both proprietary and publicly accessible research on a range of sustainability measures across a wide range of building types, develops comparisons and standards to inform capital and O and M spending

Space Utilization Studies Examines the current occupancy and usage within a building or across a real estate portfolio to optimize facility efficiency, operations, maintenance and other related measures

Computer-aided Facility Management Database Development Tailors a Web-based facility management tool for the needs of facilities management and ownership teams to establish long-term priorities according to owner-specified measures

Post-Occupancy Evaluations Uses a consistent set of measures and customized tools to examine a building's performance as it is in operation according to quantitative measures and qualitative user survey evidence

ENERGY ANALYSIS

Combined Heating and Power (CHP)/Cogeneration Analysis Assesses validity of implementing large-scale systems integration and energy feedback across a campus or group of buildings

Demand Response Analysis Reviews a building’s energy use with the goal of achieving energy savings and incentives for participating in public utility peak-shaving energy use programs

Energy Audits (ASHRAE 1, 2 and 3) Audits that range from one-day walk-through assessments to an intermediate energy survey and analysis to a detailed economic and engineering analysis of capital improvement projects

Energy Masterplans Develops short- and long-term strategies for energy use across a campus or group of buildings

Utility Bill Analysis Reviews a facility’s energy and water usage rates, offers benchmark comparisons with utility use at similar facilities and develops before-and-after analysis of conservation opportunities

ENERGY MODELING

Conceptual Design Energy Modeling Develops and tests energy use factors as design decisions are made to establish a concept that meets the owner’s program needs and energy use expectations

Detailed Energy Modeling Creates a comprehensive analysis of a building’s energy use and evaluates against an established baseline comparison to estimate total expected savings in energy costs

Existing Building Calibrated Energy Modeling Employs a detailed energy model to compare expected energy performance against actual usage to bring to light untapped savings

Renewable Energy Modeling and Screening Determines the appropriateness of applying a renewable energy technology to a given building and calculates anticipated energy usage based on applying these technologies
TEAM EXPERTISE

Joe Cassata AIA
Director of Comprehensive Facilities Optimization

With a diversified background and over two decades of professional experience, Joe Cassata has developed an efficient, consistent framework for conducting building condition assessments and has spearheaded the transfer of building condition data into customized Web-based databases for clients of all sizes. This suite of services helps allow owners to manage and evaluate properties effectively throughout all stages of the building lifecycle. Joe is also one of CannonDesign’s most accomplished project managers. His expertise in technical detailing, project organization and execution, along with a thorough knowledge of the contract administration process, provides Joe with the ability to successfully manage scheduling and budgetary issues on projects of all types, including educational, municipal and commercial.

Patrick Dempsey LEED® AP BD+C
Director of Energy Services

One of CannonDesign’s chief advocates for high-performance building design, Patrick has an extensive background in mechanical and energy engineering and strong expertise in using industry-leading energy modeling software, and he holds the ASHRAE certification for Building Energy Modeling Professionals. Patrick has supported the development of energy services across the building lifecycle, driving CannonDesign to provide a range of services from parametric modeling of early design concepts to measurement & verification as part of a commissioning process. His projects span a wide array of building types, including work for corporate clients, commercial real estate companies, universities, school districts and healthcare systems, and he has consulted on a number of the firm’s milestone projects, including the world’s first known data center to achieve LEED®-Gold certification and multiple net-zero and near-net-zero designs.

Michael Eardley PE, LEED® AP, CCP, CDT
Director of Commissioning Services

With extensive commissioning experience with a variety of client and project types, Mike Eardley leads CannonDesign’s Commissioning Group. Mike combines this expertise with an in-depth knowledge of energy design and studies and HVAC engineering to offer a comprehensive expert skill set to any project. Mike holds commissioning certifications from both the Building Commissioning Association and the Association of Energy Engineers. He is active in professional associations from the local to national levels, in areas ranging from commissioning to engineering, energy efficiency, and sustainability. He has project experience covering over a million square feet of LEED® registered and certified buildings in roles including commissioning, measurement and verification, and project management.