

**SIEMENS**

*Ingenuity for life*



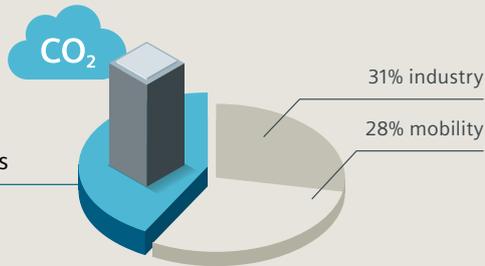
Transform your buildings into high-performing assets  
Creating perfect places to perform

[siemens.com/perfect-places/energyconsulting](https://www.siemens.com/perfect-places/energyconsulting)

# The building efficiency imperative

41%

buildings' share of global emissions



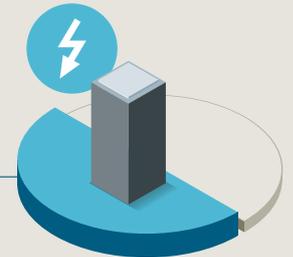
500



climate laws passed in 66 of the world's largest emitting countries.

50%

of the energy consumed by buildings is wasted.



Real estate is often the

2nd

largest expense on organizations' income statements.



Up to 80% of building costs come from operations.



30% maintenance



40% energy



Volatile energy prices drive new requirements in strategic energy procurement.



Increasing cost pressure calls for optimized energy procurement, energy efficiency and consumption control.



Increasing environmental and non-financial reporting regulations demand new capabilities in energy efficiency and carbon management.



Meeting the new types of competitive disruption demands new cost efficiencies and a greener market image.

Real estate is often the secondlargest expense on organizations' income statements, and energy frequently accounts for 30 percent of the lifecycle costs of a building. Siemens is the trusted advisor of public and commercial organizations around the world that want to transform their buildings and infrastructure into high-performing assets.

We deliver building Performance and Advisory Services that maximize building efficiency while minimizing operating costs and reducing the ecological footprint. By improving buildings' performance, we create perfect places for people to work, to live, to learn or to play. And for organizations to fulfill their mission.

# Performance and Advisory Services from Siemens

With most buildings wasting up to 50 percent of the energy they consume, energy and water efficiency is now recognized as an effective driver of value creation. Creating perfect places involves managing buildings' resources and costs more effectively. This requires a long-term, holistic approach – and a partner who understands the constraints and opportunities for organizations that want to monitor, improve and report on the efficiency of their facilities. From single buildings to campuses and geographically distributed facilities, we have all the services needed to meet board and building manager level goals across the public, corporate and institutional investment real estate sectors.

## Siemens – your partner of choice to create perfect places

Our comprehensive building Performance and Advisory Services were designed to meet the individual needs of organizations – whatever their size, complexity or efficiency maturity. Our end-to-end building efficiency optimization capability encompasses assessing your energy and water consumption and supply, and helping you define, finance, implement, monitor, benchmark and report on suitable improvement measures across your facilities.

**The result? Efficiency, compliance and sustainability that continue to improve over time.**



## Improve your financial, regulatory and reputational position

- Optimize energy consumption and supply
- Lower OPEX and improve CAPEX allocation
- Increase cash flow with performance-based financing
- Improve budget forecasting
- Reduce compliance-related obsolescence risks
- Slow down building technology refresh cycles
- Manage and report on performance against targets more easily
- Lower carbon footprint and leverage tax incentives

## Industry standard energy and sustainability management

Standardized energy management frameworks improve transparency and governance over efficiency programs. Our expertise encompasses ISO 50001 and DIN EN 16247-1, as well as audits, energy and water master planning.

Our recommendations are backed by in-depth technology know-how and efficiency program expertise, as well as powerful data analytics capabilities, enabling you to reliably prioritize your investments based on sustainability objectives, predictable ROI and resource availability.

# Take the lead in sustainable public real estate management



Award-winning energy performance overhaul at 87 schools in Sosnowiec, Poland

Improving building performance can be a critical success factor that allows public entities to meet the growing pressure to improve their service quality and efficiency – in a context of shrinking public funding.

Public institutions are challenged to implement and finance building sustainability optimization programs in the light of budgetary pressures and stringent procurement, compliance and internal budgeting rules. However, as many are owner-occupiers, they are also in a unique position to benefit from asset-value increases, cost savings and productivity improvements.

We help public customers to utilize public funds more effectively and to become role models in the adoption and application of sustainability principles and standards. Our scalable solutions and services lower upfront investments, improve resource efficiency and reduce operating costs and the carbon footprint.

Efficiency projects can deliver an internal ROI of up to 40 percent, which can then be reinvested into improving service levels.

**Good to know:**

A one percent increase in returns on public real estate assets worldwide would generate gains equal to roughly one percent of the global GDP.

## For a more sustainable learning future

When the city of Sosnowiec set itself the ambitious goal of improving the energy efficiency at 87 schools in 10 months, it wasn't just about cutting costs – though these were running high due to heating systems that were hard to control at the room level. It was also about providing a more comfortable classroom environment so pupils could concentrate better.

Siemens' strategic consulting, technology and performance-based financing expertise helped Sosnowiec achieve both, with guaranteed yearly heating and electricity savings of 21 percent and 31 percent and emission reductions of 5,220 tons. An achievement that was rewarded by the European Energy Service Award – and higher grades all round.

### A 10-year savings guarantee from a single partner:

- Energy Performance Contracting and interim financing
- Modernization of heating systems and switchgear
- Modernization of lighting
- Installation of a remote room temperature control system
- Implementation of Navigator – the cloud-based energy and sustainability platform that monitors all buildings
- User training via ESCO



### Reduce budget pressure and improve service levels

We turn public buildings into assets that operate more economically and reliably. Our operational expertise – gained from more than 7,500 efficiency projects – helps improve the predictability of infrastructure performance, which relieves OPEX and budget pressure.

Upfront CAPEX needs are reduced for projects financed “off-balance sheet” through Energy Performance Contracting and long-term financing options.

### Demonstrate accountability through sound governance

Our global network of experts is on hand to translate the complex and evolving landscape of mandatory and voluntary standards into short- and long-term preparedness plans, within which compliance risks and changes can be monitored, managed and reported on more systematically and efficiently.

### Drive sustainability into the core of your mission

We help public organizations champion a more sustainable, transparent approach to managing real estate and public budgets. Through proactive carbon reduction and management, they can show leadership, demonstrate performance and drive the behavior change that's critical to meeting their sustainability targets.

# Meet stakeholders' needs reliably and sustainably



2 million kWh

guaranteed savings  
in annual energy  
consumption



30%

energy  
savings



61%

reduced water  
consumption in Proton  
Therapy Center

At Taiwan's Chang Gung Memorial hospital, caring for patients goes hand in hand with caring for the environment.

Pursuing energy and water efficiency today is as much about establishing green credentials as it is about stripping costs from operations.

With soaring electricity and water prices, consumption control is a business necessity. But with energy and water use concentrated in different areas across departments and facilities, the first challenge faced by most organizations is to understand where – and how efficiently – energy and water are procured, delivered and consumed.

At Siemens, we help facility managers gain a transparent view of all energy and water costs and develop a realistic roadmap of improvements. The results we deliver go beyond lower operating costs and an improved bottom line: With facilities operating more economically and reliably, stakeholders' expectations are also met more consistently.

Building efficiency improvements can reduce operating costs by 30 percent and increase productivity by 5–15 percent depending on the measures implemented.

**Good to know:**

Building system inefficiencies and unregulated energy use can make actual energy consumption up to 120 percent higher than the building design predictions.

## Medical excellence meets environmental diligence

The Chang Gung Memorial Hospital is one of the most distinguished medical operators in Taiwan, serving over 28,000 outpatients a day across eight sites. The clinical complex mirrors its environmental focus, with wings extending like windmill sails into the surrounding green landscape.

The hospital sought to generate substantial cost and emissions savings by reducing its power, heat and water consumption at its Proton and Radio Therapy Center. The implementation

of a strategic plan developed with Siemens led to significant utility and operating cost savings – and an LEED NC Healthcare Supplement Platinum certification.

**Certification and efficiency improvements:**

- LEED NC Healthcare Supplement Platinum consultancy work, including building energy modeling and acoustic application

- Installation of a central control and building management system
- Ice storage control
- VAV on-demand control
- 30 percent energy savings based on EAc1 results (simulated by eQUEST)
- Integrated with lighting control and submetering systems



### Optimize building performance

Our expertise – supported by data-driven services and analytics capabilities – provides a transparent view of consumption, supply costs and environmental KPIs.

This enables the most critical sites or equipment to be prioritized based on budget cycles and evolving business needs, and timely maintenance and ongoing optimization activities to be initiated – with a positive impact on resource deployment efficiency and infrastructure refresh cycles.

### Turn compliance into building value

With the right partner, organizations can reduce compliance-related building obsolescence and depreciation risks.

Our broad regulatory expertise ensures ongoing compliance with international energy and CO<sub>2</sub> standards, which protects a building's value over time, and helps capture opportunities from regulations and tax incentives on local and regional levels.

### Improve workplace quality and productivity

By adding our experts' critical skills to their operations, building managers can reduce the risk, impact and cost of efficiency-related business disruptions. Our services and extensive building operational expertise optimize staff and asset deployment and productivity across sites, while increasing their ability to meet their stakeholders' expectations more reliably.

# Decouple business growth from carbon footprint



Marriott's ambitious energy efficiency program proves that cutting costs doesn't mean cutting comfort.

81 percent of CEOs believe that the sustainability reputation of their company is important in the consumers' purchasing decision.

Organizations that own or lease real estate are increasingly fighting on multiple fronts to match the new pace of service and business model innovation; respond to regulatory and public expectations for resource conservation and emissions reduction and to reduce the strain built assets place on their balance sheet. This is compounded by an often complex legacy building landscape, fragmented energy and water procurement and lack of building performance data.

At Siemens, we help corporations release funds for their core business through group-wide building performance and governance improvement programs that sustainably reduce the costs and risks of managing distributed buildings, and support business and sustainability goals.

Improving a building's green credentials can increase its value by up to 30 percent.

**Good to know:**

The real estate portfolio represents the third most expensive or valuable single asset for most organizations.

## Green comfort for Marriott guests

3,900 hotels and 18 brands in 72 countries make Marriott one of the largest hotel chains in the world. To sharpen its competitive edge, the company committed to an ambitious energy efficiency program. Its goal: to reduce water and electricity by 20 percent by 2020 at participating hotels. In addition, Marriott aims to reduce CO<sub>2</sub> emissions by 10 percent at every single location.

The Charles de Gaulle Airport Marriott Hotel in France piloted the project with impressive results: Energy costs and CO<sub>2</sub> emissions were reduced by 15 percent. The 15 other hotels in the program are expected to deliver similar results.

**The program at a glance:**

- On-site audits to determine individual measurement criteria
- Optimization of building management systems and processes according to these criteria
- Ongoing remote monitoring and optimization by Siemens experts
- Installation of green building monitors to provide employees and guests with insights into current energy consumption and raise awareness about energy-efficient behaviors



### Free up capital and resources

Take a strategic approach to building performance management to reduce supply and demand costs, lower OPEX and prioritize CAPEX.

Our services help maximize the ROI of efficiency programs and reduce the ongoing costs and efforts of managing and optimizing assets.

And with performance-based financing options, capital efficiency also improves.

### Turn compliance into building value

Strengthen your reputation by showing leadership in energy efficiency standards.

Our expertise in developing corporate energy and environmental management systems helps manage local risks and regulation changes more efficiently. And our data analytics capabilities help meet or exceed global and regional compliance and reporting standards.

### Support corporate sustainability goals

Unlock long-term business value by increasing efficiency across your buildings' lifecycle.

With transparent, measurable goals and monitoring systems in place to drive resource conservation, you'll capture all the growth opportunities that an improved bottom line and proven sustainability track record can offer.

# Increase your competitive edge with real estate portfolio decarbonization



Up to 58%

heat savings



Up to 45%

power savings



13,000 tpa

targeted CO<sub>2</sub> reduction across 1,000 buildings

Credit Suisse Asset Management Global Real Estate now assesses and actively manages energy and CO<sub>2</sub> at new investment properties.

Portfolio decarbonization refers to systematic efforts by investors to align their investment portfolios with the goals of a low-carbon economy. It includes, but is not limited to, efforts to reduce the carbon footprint of investment portfolios and encouraging companies and other entities to reduce their emissions and support the transition to a low-carbon economy.

As more and more countries put a price on carbon, real estate assets' return on investment increasingly depends on their performance against energy and carbon indicators. As a result, improving building efficiency is as much about reducing the risks associated with carbon regulations and meeting fiduciary duties as it is about maximizing the opportunities associated with the transition to a low-carbon economy and delivering on beneficiary expectations.

From reducing energy and operating costs for tenants to slowing down asset depreciation and reducing compliance-related brown risks, we help real estate investors keep their investments attractive to premium tenants and buyers and leverage their building assets' performance to boost their sustainability credentials and market trust.

Greener buildings command up to 17 percent higher rent and deliver 23 percent higher occupancy rates.

**Good to know:**

A coalition of 25 institutional investors has committed to the decarbonization of assets worth over \$600 billion.

## A responsible approach to real estate investment

As one of Europe's largest providers of real estate investment products, Credit Suisse Asset Management Global Real Estate was seeking to maximize the profitability and competitiveness of some 1,000 properties in Switzerland.

Based on a clear strategy of increasing the value of assets, fostering the customer's market reputation and meeting or exceeding environmental regulations, a comprehensive solution was implemented to improve the energy efficiency of the building portfolio and reduce its carbon footprint by at least 10 percent, or about 13,000 tons of CO<sub>2</sub> across all buildings.

As a result of extensive operational optimization and energy controlling measures, the Foyer office building in Zug, Switzerland, has been awarded the greenproperty®, Minergie-Eco and Leadership in Energy and Environmental Design (LEED) Platinum

certificates – with a significant impact on the sustainability credentials and added value of Credit Suisse Asset Management Global Real Estate's real estate assets.

### Setting the course for an ambitious five-year plan:

- Definition and implementation of a five-year building performance optimization action plan for 100 large properties, including online connection to the Siemens Operation Center in Steinhausen, Switzerland

- Remote energy monitoring and control of the 100 properties (including all greenproperty® and LEED-certified buildings)
- "Quick check" operational and energy management optimization of about 900 additional properties over five years
- Carbon due diligence audits of buildings being considered for acquisition



### Increase asset value

Institutional real estate investors that embrace building efficiency keep building assets attractive to premium tenants and buyers, which increases net operating income and profitability over the life of the assets.

Our Performance and Advisory Services support a portfolio approach that maximizes the cost effectiveness of energy efficiency improvements – backed by performance guarantees and financing options.

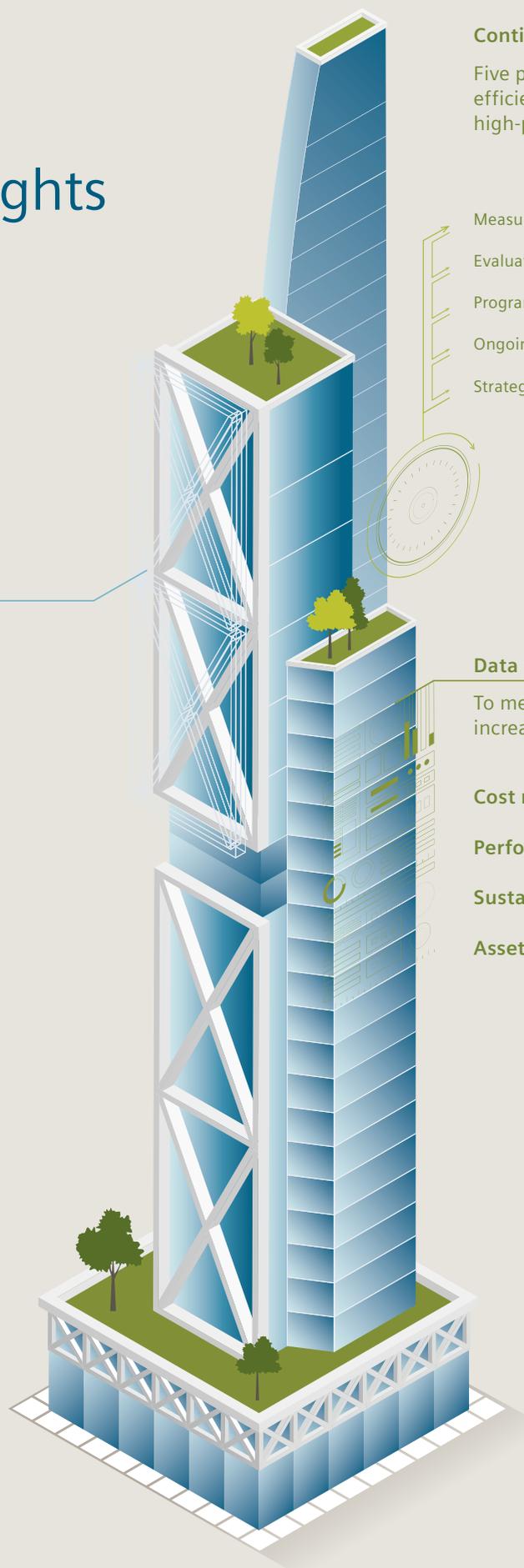
### Compliance and beyond

Our green building expertise is built on a long track record of successful certification projects worldwide. This enables us to advise on and implement best practices that keep buildings compliant with local, regional and international requirements. With assets operating at maximum efficiency levels, obsolescence risk against competing buildings is reduced – at the asset and portfolio levels.

### Foster market trust

Our customers trust our expertise and market reputation to improve their real estate portfolio's marketability. We help them leverage building asset performance to positively impact sustainability credentials and market trust. Our audit and analytics capability ensures that assets perform and comply over their lifecycle and reduces brown risk, enabling investors to consistently deliver on their promises.

# From big data to building economic insights



## Continuous data analysis

Five phases lead to energy-efficient, sustainable and high-performing buildings

Measurement and reporting

Evaluation and assessment

Program implementation

Ongoing services and optimization

Strategy and planning

## Siemens

Improving building performance

7,421

buildings optimized

13.96

million tons less CO<sub>2</sub> emitted into the atmosphere each year

2

billion € in energy cost savings

>35,000

buildings serviced

## Data transparency

To meet challenges and increase competitiveness

Cost reduction

Performance increase

Sustainability

Asset value increase

Data in buildings is plentiful. The key challenge is to harness and make sense of it.

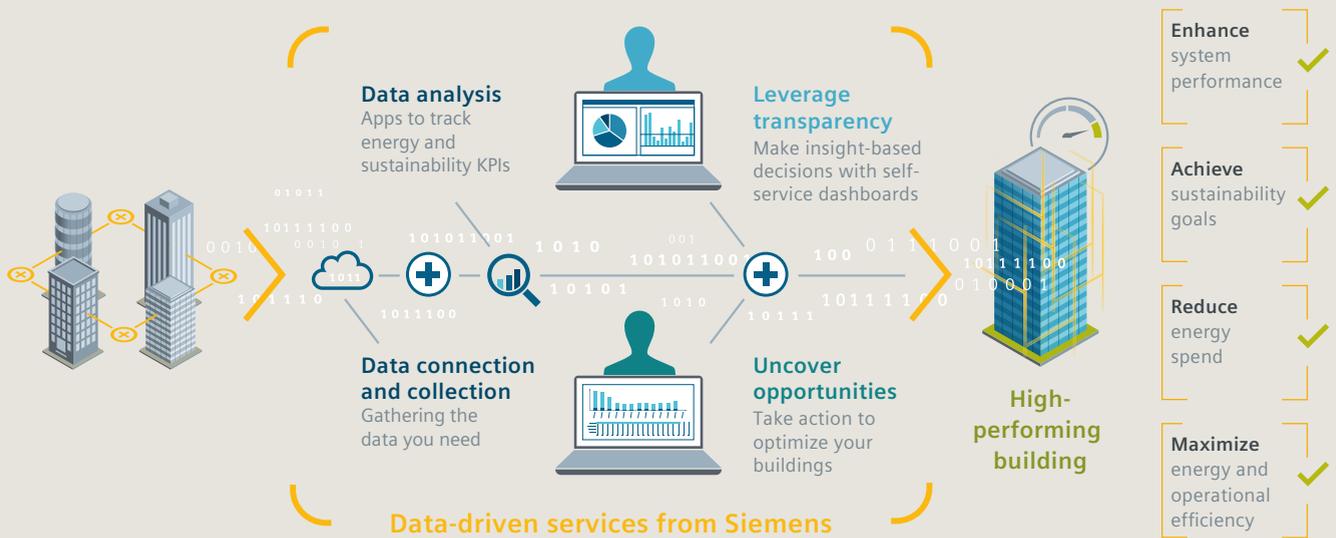
Siemens brings powerful data acquisition and analytics capabilities that help inform appropriate real estate decisions – from lease renegotiation to asset acquisition and divestment strategies.

# Leverage key building analytics

- Ranked in the top three energy management software solutions by Verdantix in 2015
- Improve building, equipment and service performance predictability
- Maximize energy supply and demand savings
- Speed up time-to-value and keep your performance on track
- Meet energy and carbon auditing and reporting requirements
- Align your organization with your sustainability goals

## Navigator – the cloud-based energy and sustainability platform

Turning data into results across your entire building portfolio



Transparency and direct communication of successes and lessons learned can generate 10 to 15 percent more energy and water savings.

### Smarter insights for smarter operations

Navigator provides centralized energy and sustainability performance intelligence. It's the cloud-based energy and sustainability platform of choice for organizations that want to gain transparency and control over the performance of their energy, sustainability and efficiency projects. Its intuitive self-service portal provides users with end-to-end insights into demand and supply costs, risks, trends and carbon emissions – and into the ROI of efficiency improvement initiatives.

Thanks to the key insights into building analytics it unlocks, Navigator is the foundation of our suite of Performance and Advisory Services. Our team of experts draw from these insights and their extensive expertise in building operations and energy management. They continually identify, benchmark and prioritize new improvement opportunities for operational building efficiency programs. Their goal: to drive user awareness and continually optimize your energy and operational building efficiency programs, enabling you to get the most out of your assets.

When building technology creates perfect places – that's Ingenuity for life.

Never too cold. Never too warm.  
Always safe. Always secure.

With our knowledge and technology,  
our products, our solutions and our services,  
we turn places into perfect places.

We create perfect places for their users'  
needs – for every stage of life.

#CreatingPerfectPlaces  
[siemens.com/perfect-places](https://www.siemens.com/perfect-places)

**Published by**  
**Siemens Switzerland Ltd 2017**

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(Status 06/2017)

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