



Energy Efficiency for Businesses

How to increase energy efficiency across companies to reduce costs, save energy, and build resilience.

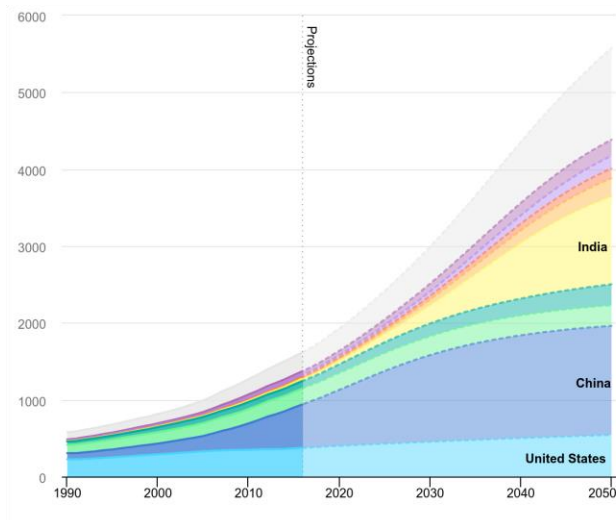


The urgency: Energy demand is skyrocketing, threatening grid reliability for companies and their customers.

- Electricity consumption from data centers, AI, and cryptocurrency sectors is set to double by 2026.
- Energy use of air conditioners and cooling is set to more than triple by 2050 – consuming as much electricity as all of China and India today.

- **The current energy system is highly inefficient** – with almost two-thirds of all energy (worth \$4.6 trillion) wasted every year.
- **Progress on energy efficiency is slowing** – The global rate of progress in energy intensity fell by 50% from 2022 to 2024.

Global air conditioner stock, 1990–2050



IEA, Global air conditioner stock, 1990-2050, IEA, Paris <https://www.iea.org/data-and-statistics/charts/global-air-conditioner-stock-1990-2050>, Licence: CC BY 4.0

Energy efficiency is the solution.

We have a bold opportunity to reverse this trend and reduce energy use while expanding the global economy.



Energy efficiency is the low hanging fruit of the energy transition.

Solutions to reduce costs are available today: reduce load, add efficient equipment.

Benefits of Energy Efficiency

- **Lower operating costs** creates competitive advantage, enabling companies to keep prices low.
- Reducing load while meeting increasing demand **boosts power reliability and relieves stress on utilities.**
- **Reduce climate resilience risks**
- **Improve air quality, worker and community health**, reducing the 11 million premature deaths per year due to air pollution.
- Doubling energy efficiency can generate **40% of emission reductions** required by the Paris Agreement.
- Boost profitability, unlock new markets and future-proof your business.



Buildings & Appliances

Sector key takeaways

Reduce load

- Behavioral changes such as adjusting temperature, turning off unused equipment, and monitoring energy consumption can reduce building energy intensity by 15%

Efficient equipment

- Upgrading HVAC, electrifying heat, and retrofitting lighting, walls and windows can reduce intensity 22%
- Replacing old appliances and equipment with efficient models would save \$1.5 Trillion globally
- Excess heat is 2,860 TWh/y in the EU, much of this excess heat could be captured and reused

The opportunity

- Businesses can reduce energy by 31% without reducing output, saving \$2 trillion a year by applying available technologies and measures
- Green buildings increase lease-up rates by up to 20%, decrease vacancy rates by 4%
- Adoption of up-to-date building codes ensures the energy efficiency of new and renovated buildings- the 2021 International Energy Conservation Code leads to efficiency gains of 9.4% over the 2018 edition



Industry

Sector key takeaways

Reduce load

- A basic energy audit can identify efficiency measures that can lead to energy savings of 5%-10%
- By combining AI with a digital BMS, HVAC energy costs can be reduced up to 25%

Efficient equipment

- High-efficiency motors and related interventions can save 20% - 30% of energy used to drive powertrains
- Adding variable speed drives on motors in the EU industrial sector alone can lead to more than €10 billion in savings in electricity costs

The opportunity

- Excess heat is the world's largest untapped energy source Capturing it means more value for what you are already paying for
- One factory was able to reduce energy consumption by 30% by simply shutting off machines during off-production hours
- Retrofits can cut energy use by 30%-60% and efficient new builds can save 40%-90%



Transport

Sector key takeaways

Reduce load

- Switching from fossil fuels to electric transport decreases overall primary energy demand and reduces reliance on volatile fuel sources
- Electric vehicles can provide flexible energy sources that grids can leverage, increasing grid reliability and decreasing energy costs

Efficient equipment

- Between 2010 and 2021, the energy intensity of passenger transport improved at an annual rate of 1.6%, but freight transport only improved 0.4%

The opportunity

- Efficiency and lightweighting steps could cut energy consumption per mile in half over the next 30 years, saving more than \$200 billion annually, and reducing investment in the grid and charger buildout needed to support electric mobility
- A combination of energy efficiency measures and low-carbon approaches can reduce transport consumption by about 27 EJ by 2050 – equivalent to one third of the US total energy demand



Electricity & Data Centers

Sector key takeaways

Reduce load

- 200 GW of load flexibility potential will exist in the U.S. by 2030, worth more than \$15 billion annually in avoided system costs

Efficient equipment

- Server utilization is often only 5%–15%, and even in idle states consume 30%–40% of their maximum power, leading to significant energy waste

The opportunity

- Using AI to dynamically adjust cooling in response to real-time weather conditions achieved a 9% increase in energy efficiency
- Energy-saving retrofits for existing data centers can save 25% for small to medium-sized data centers, 13% for large data centers, and 7% for extra-large data centers



Call to Action

1. Join a Mission Efficiency taskforce and elevate energy efficiency
2. Develop tangible energy efficiency improvement goals for your company
3. Call on other businesses governments to make energy efficiency a priority at COP30

Learn More: Global Energy Efficiency Initiatives

- [Mission Efficiency](#)
- [Energy Efficiency Movement](#)
- [IEA Energy Efficiency Hub](#)
- [Nairobi Business Leaders Action Plan](#)

Energy Efficiency Resources



Buildings

- [Business Case for Energy Efficiency in Buildings, IMT](#)
Overview of the financial arithmetic of energy savings, avoided operating costs, net income, value, and a summary of case study data on real projects and companies.
- [Transforming Energy Demand Selected interventions for Buildings, WEF](#)
Analysis of interventions and potential benefits of commercial building retrofits.
- [Net Zero Appliance NDC Toolkit, CLASP](#)
Learn how (and why) to maximize the potential of appliance efficiency in NDCs.
- [The world's largest untapped energy source: Excess Heat, Danfoss](#)
How to leverage heat recovery technologies that already exist in buildings.
- [Best Practices for Achieving Zero Over Time for Building Portfolios, RMI](#)
How to apply a zero-over-time (ZOT) approach for commercial building portfolios.
- [How Economics Can Help Corporate Capital Budgeting: The Case of Sustainable Energy Upgrades, UC Berkeley](#)
Solve the shortcomings of capital budgeting for energy efficiency projects – including how to properly value upgrades, energy savings, and the cost of inaction.
- [Aurubis AG and Wärme Hamburg GmbH to further expand Germany's largest industrial heat system](#)
CO2-free industrial heat generation from copper production for an additional 20,000 households .
- [What is the worlds' largest deep lake water cooling system like? - Enwave Energy Corporation](#)
How to use cold water to take away warmth-sustainable, low-carbon, and energy-sharing.

Energy Efficiency Resources



Industry

- [The case for Industrial Energy Efficiency, Energy Efficiency Movement](#)
Three measures (connecting assets, adding heat pumps, and smarter buildings) could deliver around 70% of energy efficiency benefits available to industry.
- [Competitive decarbonization, Danfoss](#)
Manufacturing can double the value added from each unit of energy via cost-efficient energy efficiency measures and technologies – and electrify 78% of energy use.
- [Profitably Decarbonizing Heavy Transport and Industrial Heat, RMI](#)
Decarbonizing heavy transport and industrial heat can be profitable, creating new opportunities and business models.

Energy Efficiency Resources



Transport

- [Valuing Improvements in Electric Vehicle Efficiency, NRDC and EPRI](#)
How future vehicle improvements – additional and complimentary to electrification – can double US vehicle efficiency if implemented by automakers.
- [Charging the EV Transition – 2024 EV100 Annual Report, The Climate Group](#)
A snapshot of progress from EV100's 128 corporate members (and counting) – including their 231,000 new EVs and 5,000 new charging units in 2023 alone.
- [How Fleets and Utilities Can Work Together to Unlock Electrified Transportation, RMI](#)
How business fleets and electric utilities can efficiently plan for electric vehicles and their charging needs, including with RMI's GridUp tool in the US.
- [Research and tools on freight efficiency for business fleets, NACFE](#)
Analysis of 86 technologies and practices for freight efficiency, how specific businesses are using them, and how more can get involved.

Energy Efficiency Resources



Electricity & Data Centers

- [Powering the Data-Center Boom with Low-Carbon Solutions, RMI](#)
A global, system-wide perspective on efficiency solutions for data centers, which could save businesses up to 70 percent of their associated energy use.
- [Electricity Load Growth Does Not Have to Undermine Climate Goals, RMI](#)
How utilities and decision-makers can meet 78 percent of this decade's US electricity load growth with efficient solutions — including virtual power plants, grid-enhancing technologies, and more.
- [Digital twins for digital infrastructure: the key to optimizing data center operations, Koomey and Freund](#)
A digital solution to a digital problem, with three business case studies that have paid for themselves in less than a year.
- [The National Potential for Load Flexibility, VALUE AND MARKET POTENTIAL THROUGH 2030, Battle Group](#)
Examines how "Load flexibility" will address new challenges of an evolving power system
- [How Data Centers Can Set the Stage for Larger Loads to Come, RMI](#)
How data centers can set a precedent for how to handle load growth in a way that supports the grid and ensures reliable, resilient, carbon-free electricity.