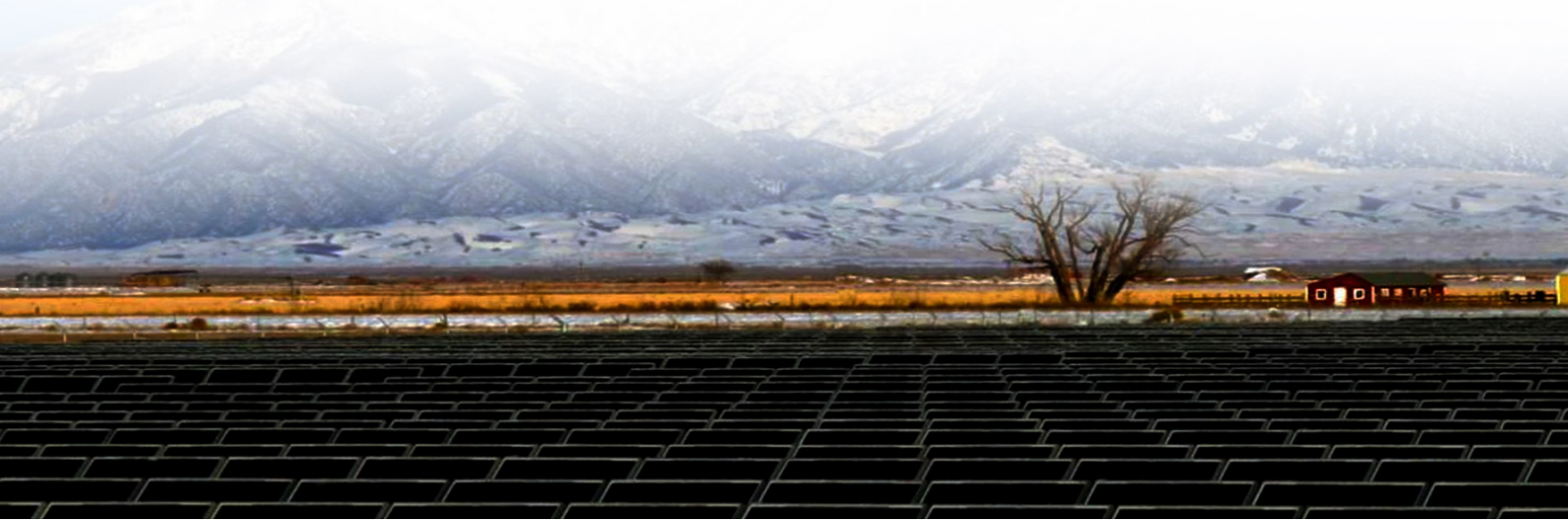
Investment ratio of wind solar and storage



Overview

Bank financing for low-carbon energy supply technologies reached 89% of that for fossil fuels in 2023 – meaning that for every dollar that went to oil, natural gas and coal, 89 cents went into things like wind, solar and grids.

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The energy industry is shifting more of its investment into cleaner sources of supply. Bank financing for low-carbon energy supply technologies reached 89% of that for fossil fuels in 2023 – meaning that for every dollar that went to oil, natural gas and coal, 89 cents went into things like wind.

The authors present a theoretical framework to calculate how storage affects the energy return on energy investment (EROI) ratios of wind and solar resources. Our methods identify conditions under which it is more energetically favorable to store energy than it is to simply curtail electricity.

We present a theoretical framework to calculate how storage affects the energy return on energy investment (EROI) ratios of wind and solar resources. Our methods identify conditions under which it is more energetically favorable to store energy than it is to simply curtail electricity production.What will energy investment look like in 2025?

In 2025, global energy investment is expected to reach $3.3 trillion — the highest level ever recorded, according to the IEA World Energy Investment Report 2025. Clean energy will account for two-thirds of that total, led by investment in solar, battery storage, and electrification technologies spanning transport, infrastructure, and industry.

Does energy return on investment include energy content?

It does not include any energy content of the fuel. The explanation, equations, and founded values are presented in the Supplementary Information Note 3. Approximating more sustainable power systems, a ratio, energy return on investment (EROI), is defined as a partial analysis of net energy analysis.

What is the low-carbon to fossil-fuel energy supply investment ratio (Esir)?

The low-carbon to fossil-fuel Energy Supply Investment Ratio (ESIR) continued to increase from 1:1 in 2022 to 1.11:1 in 2023. This measure is derived from capital spending on energy infrastructure. Among banks, the low-carbon to fossil-fuel Energy Supply Banking Ratio (ESBR) increased from 0.74:1 in 2022 to 0.89:1 in 2023.

What is energy return on investment (EROI)?

Energy return on investment (EROI) has been widely used as a metric indicator in energy studies. Fundamentally, it is the ratio of the energy output of a system or a technology to the energy invested in building and operating that system or technology.

Investment ratio of wind solar and storage

[Global Renewable Surge: How Wind, Solar]

The world is witnessing an energy revolution. As traditional coal plants grow older, we're seeing a rapid increase in the use of ...

[One Big Beautiful Bill New Law Disrupts Clean ...]

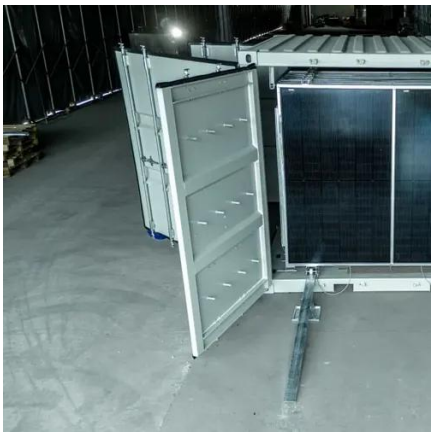
Storage and Other Technologies Eligible for the ITC and PTC Non-solar and wind technologies (e.g., storage, hydropower, and ...

[Senate Joins House in Targeting Solar and ...]

Notably, the Senate's 2026-2028 phase-out and elimination of the wind and energy tax credits does not apply to energy storage ...

[Solar, battery storage to lead new U.S. generating capacity ...]

Battery storage. In 2025, capacity growth from battery storage could set a record as we expect 18.2 GW of utility-scale battery storage to be added to the grid. U.S. battery storage already ...



[2026 Renewable Energy Industry Outlook , Deloitte Insights]

Still, renewables dominated US capacity growth, accounting for 93% of additions (30.2 gigawatts) through September 2025, with solar and storage making up 83%. 2.

[Mind the gap: Comparing the net value of geothermal, wind, solar...]

We begin with a comparison of historical price data (in $/MWh) from power purchase agreements (PPAs) for geothermal, wind, solar, and solar + storage plants in the ...

[2026 Renewable Energy Industry Outlook , Deloitte Insights]

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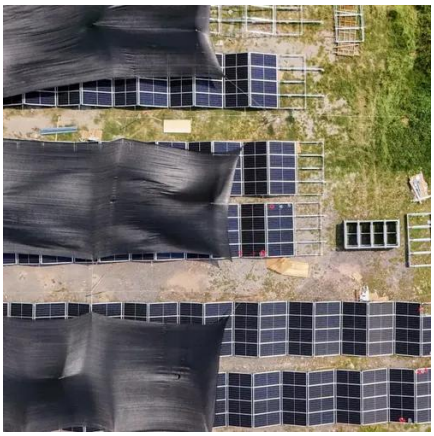
[Solar Energy Vs Wind Energy: Complete 2025 Comparison Guide]

Compare solar and wind energy efficiency, costs, and environmental impact. Expert analysis helps you choose the best renewable energy for your home or business in 2025.



[Systemwide energy return on investment in a sustainable ...]

Energy return on investment (EROI) has been widely used as a metric indicator in energy studies. Fundamentally, it is the ratio of the energy output of a system or a technology ...

[Senate Bill Pulls Some Punches, but Would Still ...]

The Senate version of the Bill would adopt a two-track phase-out schedule for the PTC and the ITC: one schedule for solar and wind ...

[7 Top-Performing Clean Energy ETFs]

Clean energy exchange-traded funds (ETFs) are investment funds focused on holding the shares of companies investing in cleaner and alternative energy sources, such as ...

[2025 Sustainable Energy in America Factbook]

Renewable energy sources met a record volume of US energy demand in 2024. The combined contribution of wind, solar, biomass, waste-to-energy, geothermal and hydropower rose at the ...

[How power storage affects the return on energy investment ratios ...]

Authors present a theoretical framework to calculate how storage affects the energy return on energy investment (EROI) ratios of wind and solar resources.

[Cost and Performance Characteristics of New Generating ...]

Total overnight cost for wind and solar PV technologies in the table are the average input value across all 25 electricity market regions, as weighted by the respective capacity of that type ...

[Levelized Costs of New Generation Resources in the Annual ...]

A solar PV-battery (PV-battery) hybrid system is a single-axis PV system coupled with a four-hour battery storage system. Costs are expressed in terms of net AC (alternating current) power ...

[Levelized Costs of New Generation Resources in the Annual ...]

However, we assume that battery storage in the solar photovolataic (PV) hybrid system recharges exclusively from the co-located solar facility, and so it is eligible for the ITC with the same ...

[Senate Finance Committee reduces House IRA ...]

Wind and solar projects must begin construction by the end of 2025 to qualify for the Inflation Reduction Act's full 45Y and 48E tax ...

[Third Annual Energy Supply Investment and Banking Ratios]

Bank financing for low-carbon energy supply technologies reached 89% of that for fossil fuels in 2023 - meaning that for every dollar that went to oil, natural gas and coal, 89 cents went into ...

[The energetic implications of curtailing versus storing solar]

We present a theoretical framework to calculate how storage affects the energy return on energy investment (EROI) ratios of wind and solar resources. Our methods identify conditions under ...

[IEA World Energy Investment Report 2025: Where ...]

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[US Renewable Energy Market: Q3 2025 Analysis]

Our latest Q3 2025 U.S. Renewable Energy Pulse examines key trends shaping the sector, including capacity additions, component pricing, ...

[A provincial analysis on wind and solar investment needs towards ...]

In this paper, RE investment needs cover the projected investments of grid-connected non-hydro renewable energy, including rooftop photovoltaics (PV), PV storage, ...

[IEA World Energy Investment Report 2025: Where is global ...]

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[US Renewable Energy Market: Q3 2025 Analysis , Morningstar]

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[Mind the gap: Comparing the net value of geothermal, wind, ...]

We begin with a comparison of historical price data (in $/MWh) from power purchase agreements (PPAs) for geothermal, wind, solar, and solar + storage plants in the ...

[A Summary of the Tax Credit Implications of the ...]

Leasing Arrangements for Wind and Solar Key takeaway: For tax years beginning after the enactment of the OBBBA, no ITCs or PTCs ...

[The Impact of Wind and Solar on the Value of Energy Storage]

Abstract Electricity storage technologies can potentially act as an enabling technology for increased penetration for variable generation (VG) sources, such as solar and wind. However, ...

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