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Investing in energy efficiency

Low-cost, high impact solutions for climate transition

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Energy efficiency solutions provide highly resilient investment opportunities despite shifting policy landscapes. Regardless of regulatory changes, these solutions continue to generate cost savings, enhance operational efficiencies, and improve financial performance for businesses and consumers.

We believe Nuveen's private equity impact platform is uniquely positioned to invest in energy efficiency, leveraging deep sector expertise across real assets, an established history of investing in the energy efficiency space, and a focus on supporting strategic growth and value creation.

KEY TAKEAWAYS:

- **Resilience:** in an uncertain political environment, companies that drive energy efficiency present a resilient sector for investment due to their ability to drive cost savings while also reducing greenhouse gas emissions.
- **Low capital intensity:** behavioral adjustments and smart technologies can optimize energy consumption and reduce costs without the need for major infrastructure investments or overhauls.
- **New innovations:** innovations such as Energy-as-a-Service, AI-driven energy management, and advanced building materials are driving new opportunities for energy efficiency improvements.
- **Rapid impact:** unlike supply-side renewable energy projects, demand-side energy efficiency improvements require lower investment and provide rapid financial and environmental benefits.
- **High scalability:** solutions such as smart thermostats, LED lighting, and advanced HVAC systems are easily scalable across different industries and geographies.
- **Disinflationary impact:** as businesses spend less on energy, they face lower operating expenses. This can limit the need to raise prices on goods and services, helping to contain inflationary pressures.

THE COST OF ENERGY WASTE AND RISKS OF INACTION

A significant portion of energy is lost due to outdated infrastructure, inefficient industrial processes, and poor energy management, leading to unnecessary waste, higher costs, and avoidable environmental harm. Buildings, for example, consume excessive energy due to poor insulation, inefficient heating and cooling systems, and excessive lighting use.

The consequences of this inefficiency are substantial:

- **Rising energy costs:** businesses and households face higher utility bills due to wasted energy, which strains budgets and reduces profitability.
- **Grid instability and energy shortages:** as electricity demand grows, inefficiencies put unnecessary stress on power grids, increasing the risk of shortages and blackouts.
- **Higher carbon emissions:** inefficient energy use leads to greater reliance on fossil fuels, making emissions reductions more challenging and slowing the transition to a low carbon future.
- **Regulatory and market risks:** in general, federal and local authorities across developed markets are tightening energy efficiency standards. Organizations that fail to act risk non-compliance, financial penalties, and reputational damage in a sustainability-focused market.

ENERGY EFFICIENCY AS A SOLUTION

What is energy efficiency?

- Energy efficiency refers to demand-side initiatives to use less energy in particular tasks. This can be achieved through technological improvements, better energy management practices, and behavioral changes. By optimizing energy use, energy efficiency reduces waste, lowers costs, and minimizes environmental impact.
- Unlike energy conservation, which focuses on reducing overall energy consumption, energy efficiency enables individuals and businesses to maintain productivity and comfort while using less energy. Common examples of energy efficiency include LED lighting, high-performance insulation, and smart thermostats that optimize heating and cooling.

A step towards decarbonization

Energy efficiency is widely regarded as a cost-effective and relatively quick means to reduce greenhouse gas emissions and advance toward a low carbon economy.

- Unlike large-scale renewable energy projects such as solar farms or wind turbines, energy efficiency improvements—such as building retrofits, smart grid technologies, and behavioral adjustments—require relatively low investment while yielding significant environmental and financial benefits. By optimizing energy use, businesses and households can cut energy costs, reduce demand on power grids, and lower carbon emissions without waiting for new supply-side renewables infrastructure to be developed.
- Energy efficiency solutions not only mitigate climate change but also provide direct economic benefits. Households and businesses that invest in energy-efficient appliances, smart thermostats, and advanced industrial equipment see immediate reductions in energy bills.
- Additionally, reducing overall energy demand alleviates stress on power grids, helping utilities maintain reliability while integrating more renewable energy sources.

Common challenges

While energy efficiency presents compelling benefits, we recognize key challenges that must be carefully understood and managed to ensure successful implementation:

- **Lack of awareness and incentives:** many businesses and consumers are unaware of available financial incentives or the long-term cost savings of energy efficiency improvements.
- **Upfront costs and payback periods:** while energy efficiency measures provide long-term savings, the initial investment can be a barrier for households and businesses.

- **Infrastructure and retrofitting challenges:** older buildings and industrial facilities often require extensive retrofits to improve energy efficiency.
- **Measurement and verification:** quantifying the impact of energy efficiency measures can be complex, requiring standardized reporting and monitoring systems.

INNOVATIONS ON THE HORIZON

As energy efficiency continues to evolve, new business models and technological solutions are emerging to drive further progress. Some key innovations include:

- **Energy-as-a-Service (EaaS):** this model allows businesses to adopt energy efficiency measures without upfront capital investment. Through performance-based contracts, service providers implement efficiency upgrades and customers pay based on the savings generated.
- **AI and smart energy management:** artificial intelligence and machine learning are optimizing energy consumption in real time. AI-driven energy management platforms analyze patterns, predict peak demand, and automate energy savings in buildings and industrial facilities.
- **Advanced building materials:** new insulation materials, wall curtain technologies, and energy-efficient roofing solutions are making buildings more sustainable with minimal energy input.

Case study: LONGEVITY PARTNERS

Forty percent of global carbon emissions come from the real estate sector. Longevity Partners provides energy and sustainability consultancy services to real estate owners. The company specializes in helping owners understand the carbon footprint of their assets and develop strategies to implement energy-efficient upgrades. By improving building performance and securing sustainability certifications, Longevity Partners helps clients reduce their environmental footprint while enhancing asset value.

Nuveen PE Impact Value Add: As one of the largest real estate owners and operators in the world[1], Nuveen provides unique "voice of the customer" and engages to increase Longevity's service offerings to the broader Nuveen platform. Further, Nuveen PE impact is working with Longevity to tie the company's work to tangible outcomes by developing a methodology to track and estimate CO_2 emission reductions achieved by their clients over time.

Case study: Power TakeOff

The energy transition will require utility grids to be more resilient, as the demand for grid powered energy has increased much faster than their ability to interconnect, causing unexpected power outages and increases in retail energy costs. Power TakeOff (PTO) helps mitigate this issue by helping utilities find energy efficiency opportunities at scale leveraging a proprietary AI / ML algorithm on utility smart meter data with a focus on small- and medium-size businesses and public institutions. PTO operates on a pay-for-performance basis, resulting in verifiable energy savings that benefit the company, its clients, and the environment. PTO has realized well over 100 GWh of savings since inception.

Nuveen PE Impact Value Add: Nuveen is working with PTO to partner with our commercial real estate team to identify energy efficiency opportunities at scale, helping our real estate portfolio find meaningful savings while helping PTO increase revenue from utility clients.

FOCUS AREAS

We continue to be excited by the opportunities we see in the energy efficiency space, particularly those with the following characteristics:

- "Picks-and-shovels" business services that generate revenues directly from energy efficiency capital spending.
- Software solutions that leverage AI, IoT, or data analytics to optimize energy use, provide real-time monitoring, and provide measurable cost and energy savings to the end consumer.
- Energy-as-a-Service (EaaS) models that solve the upfront capital challenge for end users, offer strong recurring revenue streams, and align incentives between providers and customers.
- Green materials and retrofit-focused solutions that enhance existing infrastructure in older buildings and industrial facilities with minimal disruption.

For more information, please visit us at nuveen.com.

Endnotes

Sources

1 As of 31 Dec 2023. https://www.nuveen.com/en-us/about-us/investment-specialists/nuveen-real-estate

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