

VECKTA

**Energy Transition  
Winners & Losers -  
Optimizing Your  
Energy Future With  
Onsite Energy Systems**



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# Section 1: The Status Quo Energy System is Failing Us

Energy is the lifeblood of our economies, businesses and communities. As we electrify everything, access to affordable, secure and cleaner energy is becoming increasingly critical.

So how do businesses win during this ongoing transition to ensure a sustainable and profitable future?

## Take a Look at Energy Costs

The centralized grid, utility business model has proven to be progressively insufficient for the growing needs of businesses globally. According to the [California Public Utilities Commission](#), between 2020 and 2021 alone, the commercial and industrial utility electricity rates increased by 30%.

California is expected to spend over \$10B on the [undergrounding of existing power lines](#), and somewhere between 20B to 45B to maintain the [Diablo Canyon power plant](#) over the next decade. It is consumers like you and your business, the rate payers, that pay for such investments. California is not the only state to suffer the cost of increasing electricity rates. Commercial and industrial users in Texas saw a whopping [71% increase in their average electricity bills in 2021!](#)

To provide context to this, here are the annual rate increases over the next three years for three businesses of different scales:

Customer Industry	Utility Costs Today	Utility	Annual Rate increases over the next 3 years
Manufacturing	\$480k monthly // \$5.6M p.a.	Southern California Edison	19%
F&B Processing	\$100k monthly // \$1.2M p.a.	Pacific Gas & Electric	13%
Brewery	\$16k monthly // \$192k p.a.	San Diego Gas & Electric	23%

<sup>1</sup>Source: [EIA.gov](#)

There are numerous factors contributing to this massive increase in cost, but the factors that have most heavily influenced this acceleration in costs are:

- **Supply and Demand:** Fluctuations in global oil, gas, and coal markets, as well as changes in renewable energy capacity, have affected energy supply and demand dynamics.
- **Infrastructure and Maintenance Costs:** Investments in energy infrastructure, transmission, and distribution networks are contributing significantly to cost increases. Power generation and grid infrastructure is aging and not designed for today's energy market needs. To highlight just how old, the typical service life of an electrical substation is 30 years, while the average age of all substations on the US grid is around 50 years. This infrastructure needs to be upgraded, replaced and maintained, and energy users will pay for it through their bills.
- **Environmental Regulations and Carbon Pricing:** The implementation of environmental regulations, such as carbon pricing mechanisms or emissions reduction targets are leading to increased costs for fossil fuel-based energy sources.
- **Supply disruptions:** Geopolitical events and shifts in global energy policies have impacted costs, with two very prominent events being COVID-19 and the Russia-Ukraine conflict.
- **Changing weather conditions:** Climate change and extreme weather events can damage energy infrastructure, leading to repair costs / knock-on impacts like wildfires, and require increased investment in resilient systems.

2021 - 2023



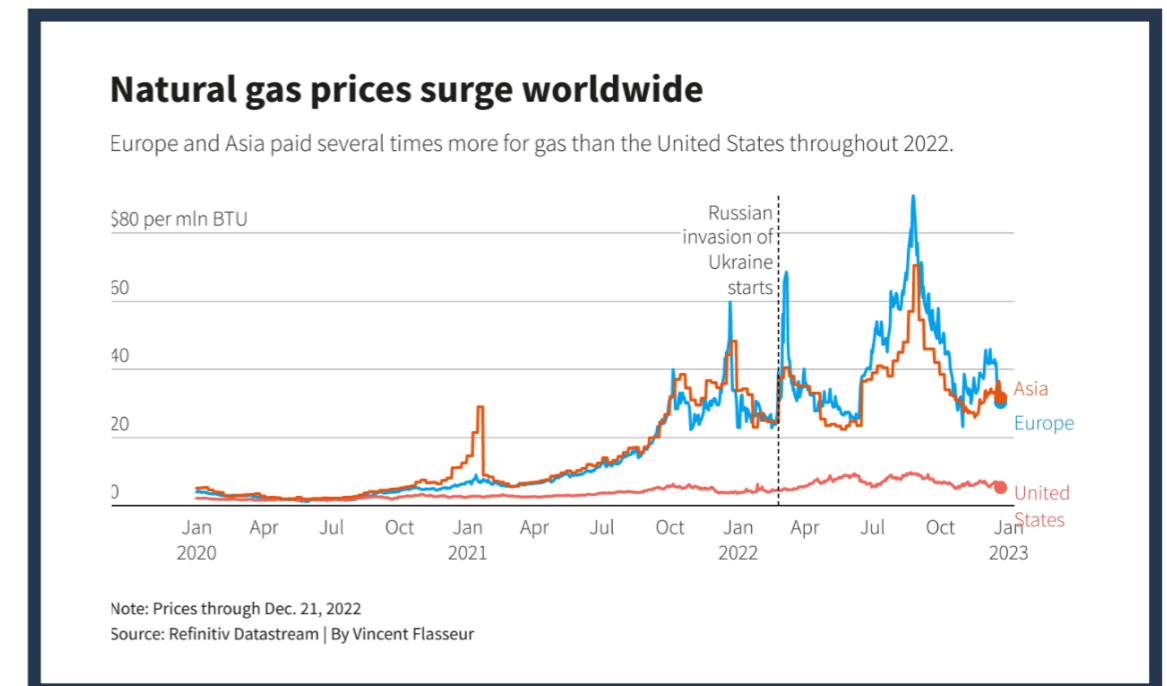
*"If the energy prices stay so elevated that part of European industry becomes structurally uncompetitive, factories will shut down and move to the U.S. where there is an abundance of cheap shale energy."*

**Daniel Kral**  
Senior Economist  
at Oxford Economics

businesses by the German Chambers of Commerce and industry (DIHK) showed.

Moreover, 17% of auto sector companies said they were planning to move some production out of the country.

We have the technology, capabilities and capital here in the US to ensure our manufacturers don't suffer the same fate, and are able to thrive. We need only anticipate and address the challenges of the coming energy transition.



## Energy Security & Reliability

The [U.S. Department of Energy's annual report](#) indicates a disturbing reduction in grid reliability and power quality. Annually, businesses in the U.S. suffer losses of approximately \$150 billion due to power outages, resulting in decreased productivity, asset damage and revenue loss. Furthermore, power quality also has significant impacts on business continuity, equipment longevity and more. Two standout examples:

- Delta Airlines lost \$150 million due to a power outage at its Atlanta operations center, shutting down its computer network.
- Samsung lost \$270 million due to shutting down its semiconductor plant in Austin as a result of power outages caused by the Texas freeze of February 2021.

## Sustainability - Company Value & Goodwill

Market competitiveness has also been linked with carbon emissions, with a study by MSCI showing a **12% drop in market cap** for companies that increased carbon emissions.

The status quo of our current energy system is failing us, and the utilities aren't able to move fast enough to address the problem. This is most apparent in the slow speed at which grid carbon intensity is decreasing.

Businesses want a solution that gives them the freedom to control their own destiny when it comes to the carbon impact of their energy consumption.

In an era where sustainability is a key consideration for stakeholders, businesses are finding that their environmental impact can significantly affect their financial performance. Beyond company valuation, companies face the following risks if they do not adapt to deliver their products in more sustainable ways:

- **Loss of contracts:** More buyers are demanding their supply chain (Scope 3) meet carbon reduction targets. Companies that have incorporated sustainability into their operations will have an ongoing competitive advantage.
- **Reduced access to competitive capital:** Financial institutions are increasingly only willing to lend to and invest in businesses that show they have a strategy to deliver more sustainable outcomes.
- **Negative press & brand perception:** Consumers and employees want to buy from and work for businesses that are committed to socially and environmentally sustainable outcomes.

## Section 2: What is The Cost of Inaction During the Energy Transition? It could be Massive.

For all the reasons mentioned, businesses have recognized the need for a shift in their energy strategies, but often find themselves caught in indecision and inaction. [A recent report by Accenture](#) highlighted that an overwhelming 93% of enterprises are unlikely to achieve their net-zero goals if they don't at least double the pace of emissions reduction by 2030.

Further, the analysis of 21 key indicators within [CDP's climate change questionnaire](#) found that only 81 companies (0.4%) disclosed to all relevant indicators of businesses have a credible energy transition plan in place.



This is understandable. Up until the last decade, business leaders have largely had access to affordable and reliable power through their utility and grid connections. Energy has been a single line item in the budget that had **stability** and **predictability**.

Business leaders globally have not needed Energy Experts and now there is a shortage of talent.

The typical response to the energy transition has been one of three actions:

**1. Hiring a consultant** – This is an expensive endeavor and typically generates a snapshot in time strategy, which is outdated as soon as it is received – months or years after being commissioned.

This approach often looks at financial or technical outcomes, rarely both together and in a holistic and strategic way. Studies are often manual and excel based. With hundreds of thousands of variables that need to be considered, spreadsheet-led approaches fail to identify the optimal solution, despite it being presented confidently in a beautiful report. Once business leaders receive their glossy deck/report they are then expected to turn the findings into action on their own – or pay for more consultation.

For a business that has rarely/never procured an energy solution, what does success look like? What are the financing mechanisms, performance warranties, responsibilities, contract terms, and technical specifications? How do you get apples-apples bids to begin comparing your options? The list goes on.

**2. Direct to supplier** – Business leaders are being approached daily by suppliers in the market trying to sell them a specific and often biased solution, to align with their capabilities. They are being sold the optimal solution **for the supplier**, NOT the optimal solution **for business needs and objectives**. Business leaders receive multiple unsolicited proposals, each offering different systems, commercial structures, warranties and much more, and as a result they don't know who to believe, trust, or how to compare the options. Today there is an information asymmetry problem – suppliers know too much and buyers (energy-consuming businesses) know too little.

## Information Asymmetry in the Energy Marketplace



In both of these scenarios, the most common outcomes are:

- Indecision and inaction; or
- Substandard outcomes buyers are stuck with for 10+ years.

**3. Renewable energy credits (RECs) / virtual power purchase agreements (VPPAs)** – not knowing what to do and with market expectations/internal goals looming, companies resort to hitting the easy button. RECs and VPPAs are contractual mechanisms whereby one can offset emissions:

**RECs** - are tradable certificates that represent the environmental attributes of one megawatt-hour (MWh) of electricity generated from renewable energy source. When renewable energy is generated, such as solar or wind power, the associated REC certifies that a specific quantity of clean energy has been produced. RECs are typically bought and sold on voluntary or compliance markets. The purchase of RECs allows companies to claim the environmental benefits associated with renewable energy without physically consuming the electricity generated and offsetting their own emissions.

**VPPAs** - is a contract between a buyer and a renewable energy project developer or generator. In a VPPA, the business agrees to purchase the environmental attributes and associated renewable energy generation from the project, while the physical electricity is delivered to the grid. It allows the buyer to claim the renewable energy's environmental benefits, such as reducing greenhouse gas emissions, without physically receiving or consuming the electricity. In both cases, businesses can claim to have reduced their emissions.

### The Downside of RECs & VPPAs

- Businesses are being called out for **greenwashing**.
- Businesses gain no operational benefits from these mechanisms – if the grid goes down, the power goes off.
- The costs of RECs and VPPAs are escalating as demand outstrips supply. According to the American Clean Power report, 2022 was a record year for corporate energy procurement, with almost 20 GW of clean energy being purchased. This is a clear indication that companies are taking their commitment to sustainability seriously. However, despite this surge in demand, there is a mismatch between supply and demand, which is driving up the prices of VPPAs by almost 30%. This trend is expected to continue, posing a challenge for corporations that want to reach their emission reduction goals without incurring additional costs. In addition to the price hikes, there are also risks associated with delays in delivery due to long interconnection queues and permit issues.
- In the case of RECs, businesses are still exposed to energy rate escalations, as well as having to buy RECs, also escalating in price – a double whammy.

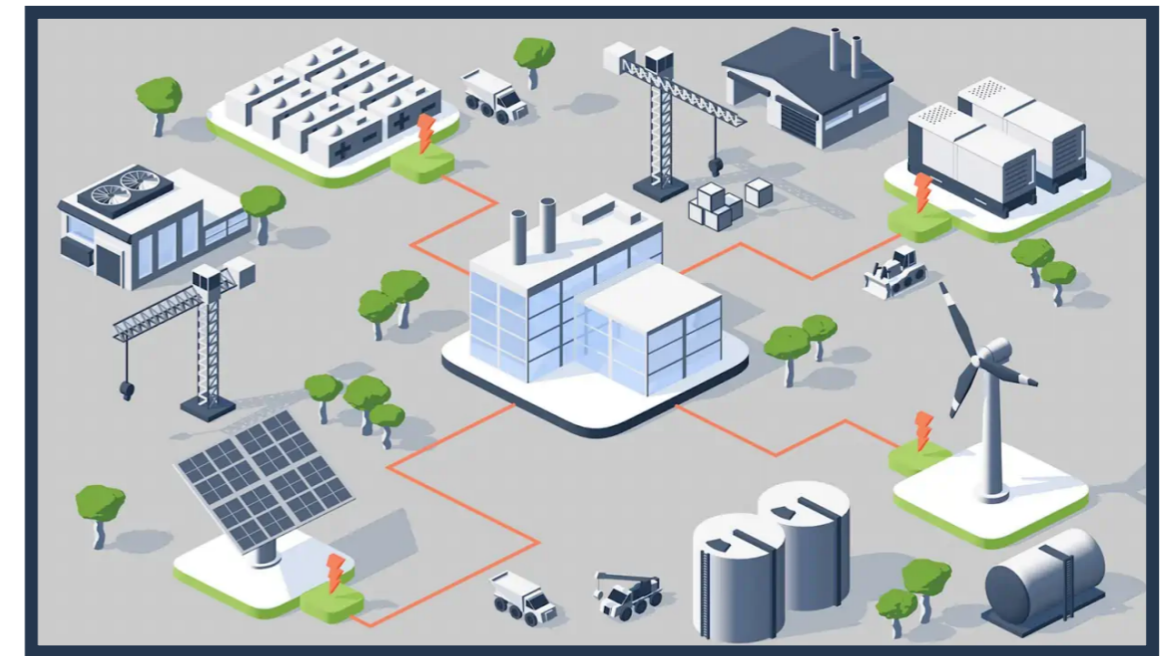
These factors could potentially damage business reputation and leave business leaders exposed to financial risks. It's therefore essential for business leaders to proactively explore their options and seek alternative solutions.

## Section 3: The Four Dimensional Energy Future

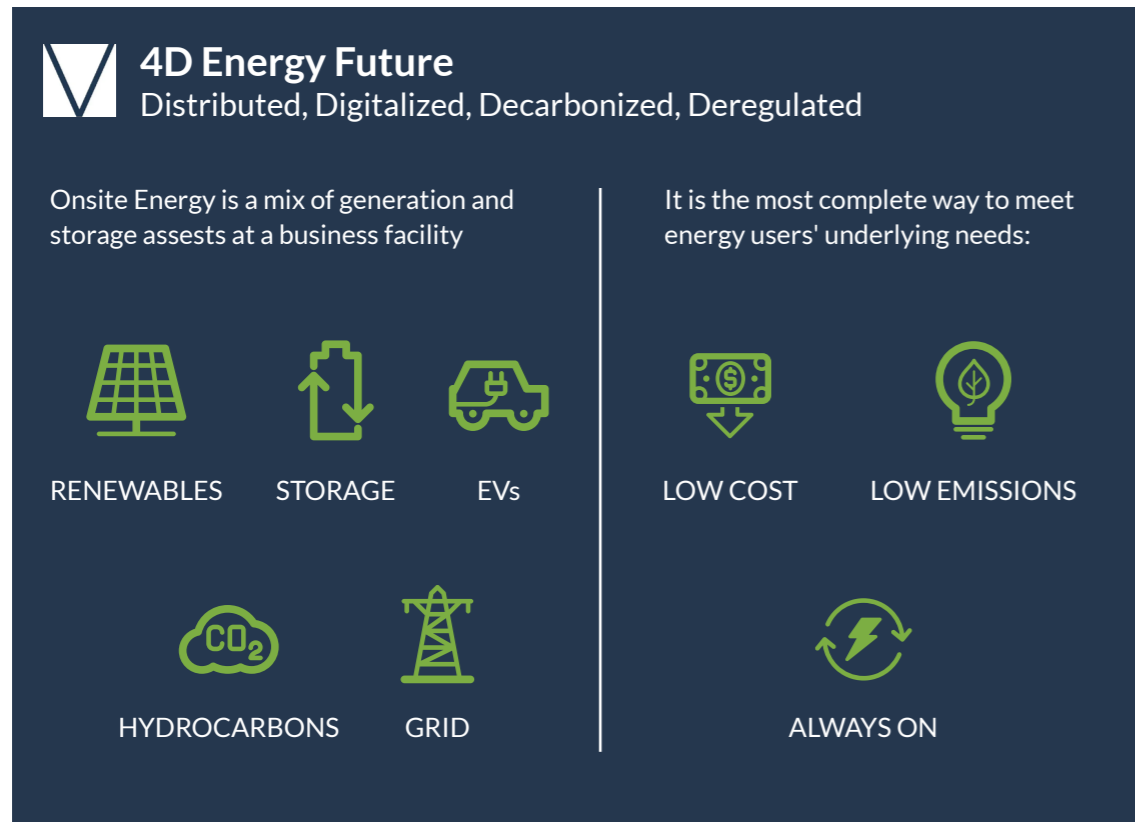
The future of energy is poised to be distributed, digitalized, decarbonized, and deregulated (4Ds). The 4D energy future represents a shift from the traditional centralized energy systems to a more distributed and flexible model. In this future, energy is diversified and decentralized with energy being generated and stored right where it is needed – at a business facility.

### DISTRIBUTED, DIGITALIZED, DECARBONIZED, AND DEREGULATED

Energy infrastructure is interconnected, allowing for the efficient sharing and trading of electricity between businesses and communities. Digitization plays a crucial role, enabling smart grids, advanced monitoring systems, and predictive analytics to optimize energy production, distribution, and consumption.



Such solutions, known as onsite energy systems, distributed energy systems and microgrids are often hybrid solutions combining various technologies, such as solar photovoltaics, wind turbines, battery energy storage, electric vehicle charging infrastructure, gas turbines, fuel cells and more, and can be connected to the grid with the ability to disconnect and go into “island-mode” if/when needed. These systems are often coordinated and orchestrated by a controller, and can provide more affordable, reliable, and cleaner energy solutions, when configured and deployed correctly.



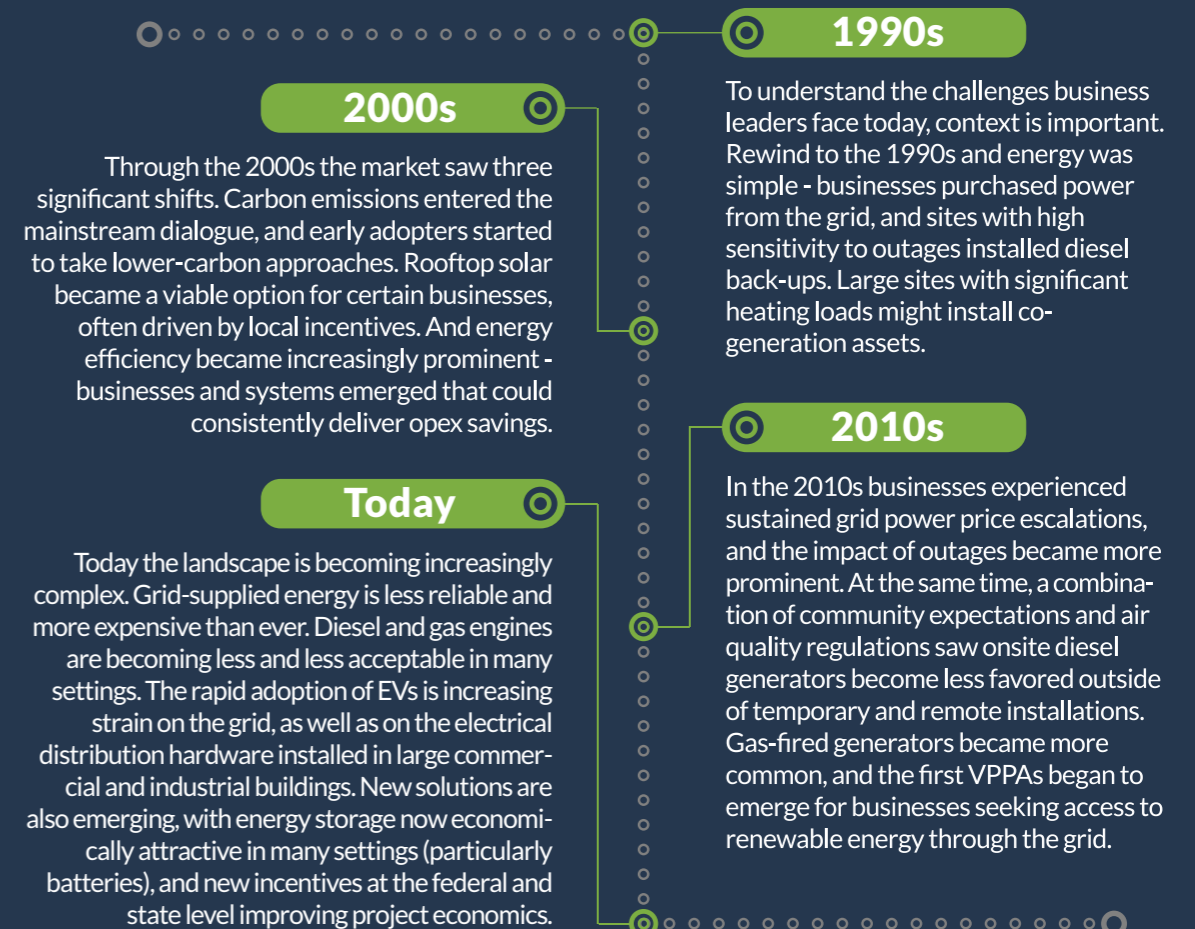
To learn more about these systems, here are several good references:

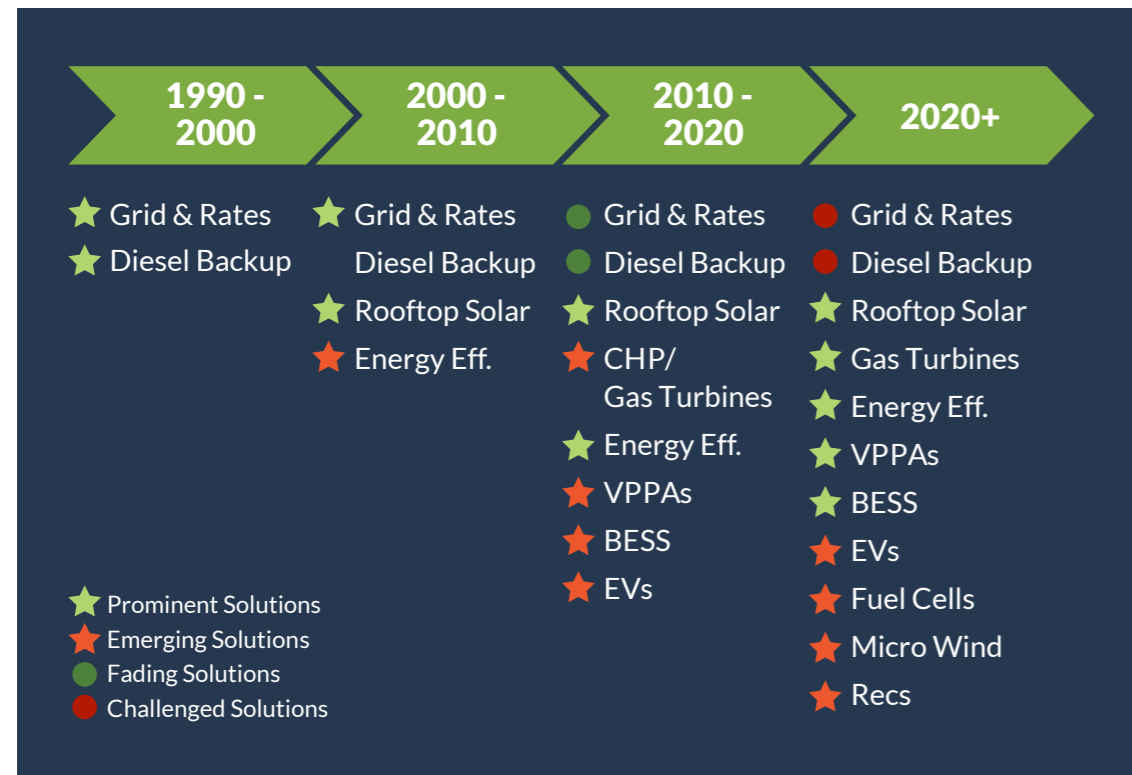
- [How do microgrids work](#)
- [Who can benefit from a microgrid](#)
- [How microgrids reduce energy costs](#)
- [Microgrids for industrial sites](#)
- [Commercial & industrial microgrids](#)
- [Key factors to consider when developing an onsite energy solution](#)

## Section 4: Navigating the Complexities

The traditional reliance on grid power is facing significant challenges as we move towards a more electrified, digitized and sustainable energy future. Historically, businesses relied on fossil fuel-powered grid electricity, with backup diesel generators for critical operations. However, as energy consumption and sustainability have become more prominent, forward-thinking businesses adopted rooftop solar and energy efficiency programs to reduce costs and emissions. While initial investments in renewables were often limited by returns on investment, declining solar costs, incentives and utility tariff increases have slowly shifted the landscape.

### Trends in Industrial Energy Supply - The Last 30 Years





Today, the energy market is at a critical juncture, with escalating utility prices and grid reliability concerns. California regulations are changing to limit the financial viability of solar-only solutions, making behind-the-meter solar-only generation less financially attractive. As we've seen, California is a leader in this space and many states quickly follow. Simultaneously, environmental concerns, permitting challenges, and operational costs associated with diesel backups have made them less desirable.

Onsite energy solutions, especially with the declining cost and increasing capabilities of battery storage and smart controllers, have become more compelling. Businesses can now combine solar with storage and many other technologies to achieve cost savings, increased self-consumption, improved power quality, and greater resilience. Onsite hybrid energy solutions, preceded by energy efficiency projects, are becoming more common.

As the demand for electric vehicles and fleets grows, the grid's ability to handle additional load demand becomes strained, necessitating the deployment of onsite generation and storage assets for businesses to remain functional and economically viable.

## Section 5: Three Energy Transition Misconceptions

Today, for many business leaders there are several misconceptions that are limiting their energy transition strategies.

### 1. Solar Only = Holy Grail Solution

While a valuable resource and an important component of onsite energy solutions, solar alone, no longer performs well as a standalone technology solution. Businesses often make the mistake of solely relying on rooftop solar installations and considering their energy goals fulfilled. However, the true value of solar is limited when considered in isolation.

Solar energy generation aligns with the grid's cheapest and cleanest periods, and recent net metering ([NEM3.0](#)) regulatory changes in CA (meaning others will likely follow) are starting to restrict the ability to feed excess solar power back into the grid.

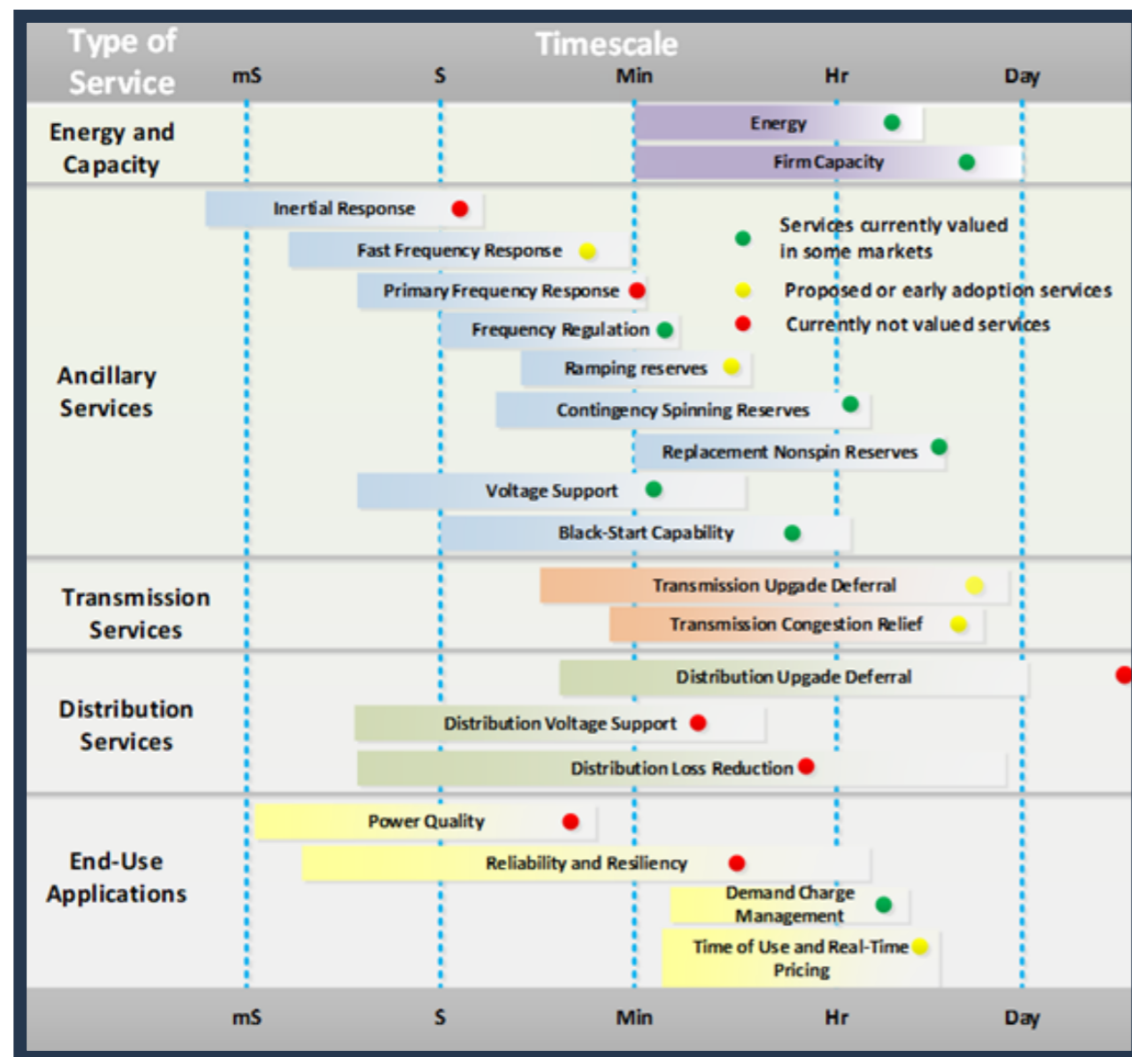
Furthermore, it is important to dispel the misconception that solar panels alone can provide power during grid outages. Without a properly designed solution that incorporates energy storage and the capability to disconnect (island) from the grid, solar power also gets turned off during such events. This safety measure prevents the risk of solar energy being inadvertently back-fed onto the grid during repairs, but stops you from using your solar power when the grid goes down.

### 2. Batteries = Too Expensive

Contrary to this belief, extensive research conducted by BloombergNEF has revealed a remarkable **80%+** reduction in battery storage costs over the past decade. This significant cost decline demonstrates the increasing affordability of battery technology.



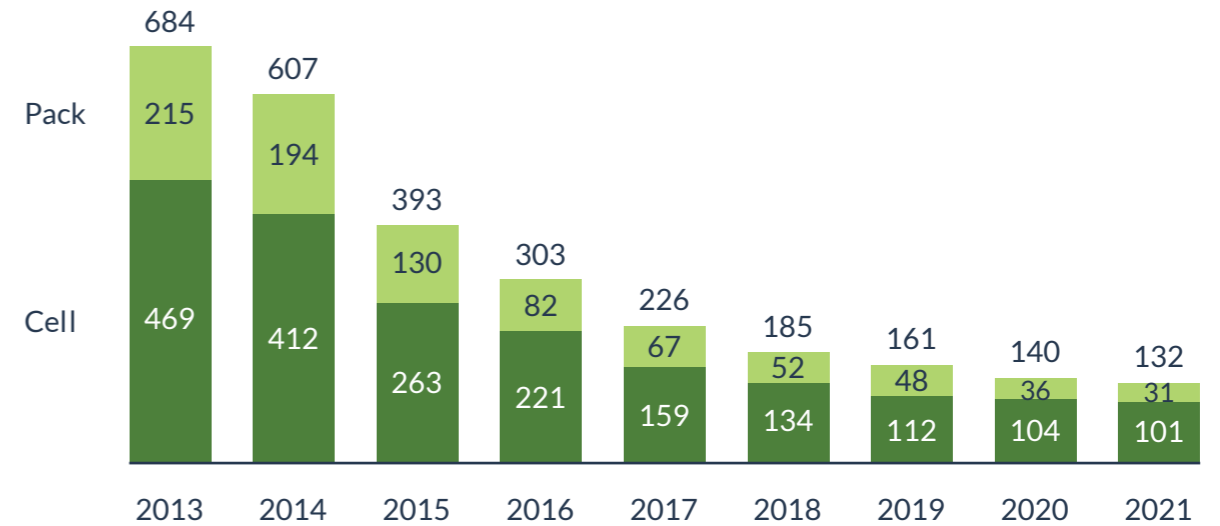
It is crucial to recognize the immense value that battery storage can unlock. By efficiently capturing and storing excess energy, battery systems enable various benefits, such as load shifting, peak demand management, grid stabilization, and increased self-consumption of renewable energy. These advantages can lead to significant cost savings, improved energy management, and enhanced resilience for businesses and consumers alike. It is imperative to dispel the notion that battery energy storage is unaffordable and instead acknowledge its growing accessibility and substantial value proposition in the evolving energy landscape.



NREL - Energy Storage Valuation: A Review of Use Cases and Modeling Tools, June 2022.

Figure 1: Volume-Weighted Average Pack and Cell Price Split

real 2021 \$/kWh



Source: BloombergNEF

### 3. Sustainability = Lower Profitability

Lastly, many believe sustainability must come at the expense of profitability. However, when an energy transition plan is proactively developed, deployed and monitored, sustainable outcomes often lead to more profitable outcomes.

With incentives such as the Inflation Reduction Act in the US and the Green Deal in Europe there are very attractive commercial mechanisms to see high returns on investments and payback periods typically in the 1-5 year ranges, and in some cases less than a year.

It must also be known that for businesses that do not want to deploy any capital, there are alternative commercial models where businesses can access these solutions for zero money down. Leading developers will offer Energy as a Service (EaaS) contracts - they will finance, own and operate the asset and deliver guaranteed energy typically at a price less than what you pay today, locked in for the life of the contract (typically 10-30 years).

## Section 6: Transformation with a Purpose

Today the market is stuck in a status quo service-led mentality. The National Renewable Energy Laboratory has assessed that between 24-43% of onsite energy or microgrid project costs are soft costs – sales, marketing, consulting, engineering, procurement, negotiations, and contracts.

All the technologies and services exist in the market today for businesses to realize incredible returns, but business leaders need to be armed with the data, intelligence, options and value-based outcomes to move forward with confidence.

We need to utilize the power of enabling technologies to simplify and make sense of this complex landscape. Leading businesses are executing energy transition strategies within the following framework:

- **Plan** - baseline the business situation today (where do you consume energy, at what cost, emissions and operational risks), identify where the greatest returns on investment can be achieved, understand the options available and develop the optimal energy transition roadmap. Then deep dive on the highest priority opportunities to configure the optimal solutions with sufficient levels of technical and financial detail to effectively enroll internal stakeholders and take the opportunity to market for quotes.
- **Deploy** – utilize a vibrant and competitive [marketplace](#) of suppliers to source competitive and transparent value-based solutions. Leveraging technology to develop a Request For Proposal that asks the right questions of the best suppliers in the market to ensure proposals can be compared, ranked, negotiated and confidently awarded.
- **Manage and monitor** – it is essential that solutions are monitored to verify they operate as t designed, to deliver the best business outcomes. This data can be used to manage performance guarantees, capitalize on alternative attributes, track progress against the strategic plan and report progress internally and externally.

Done right, commercial and industrial businesses can deploy resources with precision, slash wasted time and costs to achieve desired goals.

## Section 7: The Technology Enabled Marketplace Approach

VECKTA provides the end-to-end unbiased software platform and expert team that enables business leaders to design, deploy and monitor their energy transition strategy. An interactive, multi-stakeholder interface centralizes data, planning, decision-making, execution, monitoring and reporting to ensure business objectives are exceeded.

Commercial and industrial business leaders have access to VECKTA to maximize their returns on investment and get independent and solution-agnostic insights and results.

An optimized transformation can only be achieved through a co-creative and purposeful transition. This will be achieved through providing business leaders with actionable data and intelligence focused on long term, high return on investment and value based outcomes.

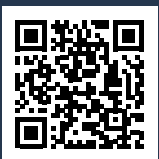
## Conclusion

With any transition, there are winners and losers. Business leaders who recognize the opportunity, will realize sustainable and profitable outcomes today and for decades to come. Which side of the transition do you want to be on - the winners or losers?

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