VECKTA

Q2 2025

Onsite Energy Market Review

VECKTA.COM

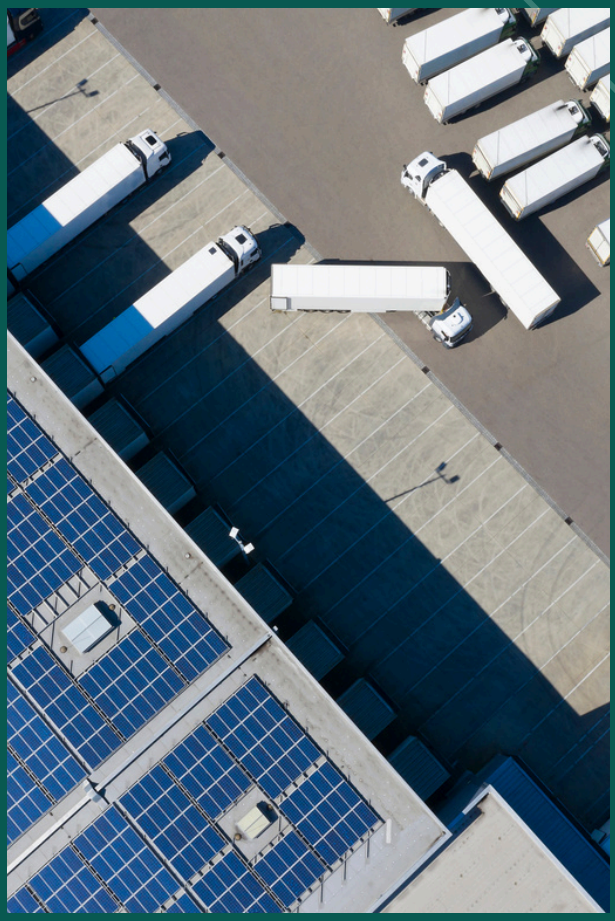
Table of Contents

Summary

The New Energy Era

The convergence of soaring electricity demand, failing grid infrastructure, and rising energy costs is creating an unprecedented opportunity for onsite energy solutions.

The U.S. power grid is experiencing its most severe stress test in decades as electricity demand reaches a 30-year high with peak loads projected to climb another 15-18% by 2034, driven primarily by AI and data center growth. Meanwhile, the infrastructure supporting this demand is crumbling—earning a D+ rating from the American Society of Civil Engineers, with 70% of transmission lines over 25 years old and critical transformers averaging 40 years. Power outages have surged dramatically, with duration rising sixfold from 2000-2014 and nearly doubling again by 2021, now costing the U.S. economy $150 billion annually and individual industries up to $3 million per hour in losses.



Solar and wind remain "the lowest-cost and quickest-to-deploy generation resource" even without tax credits, while equipment costs continue falling—PV systems down 82% since 2010 and battery prices down 89%. Corporate sustainability commitments remain strong, with 87% of companies maintaining or increasing their budgets in 2025 and nearly 90% viewing sustainability as a long-term value driver. The real opportunity lies in addressing soft costs, which represent around 40% of project expenses and have historically been masked by generous subsidies. Companies that act now benefit from mature technology costs, available financing, and the ability to avoid future rate increases. The convergence of technology maturity, economic competitiveness, and grid vulnerability creates a compelling window for strategic energy investments that deliver immediate value and long-term competitive advantage.

Macro Pressures

Converging market forces are fundamentally reshaping energy economics, making grid dependence a growing liability and onsite energy systems an essential business strategy.

1 Energy availability impacting operational success

Energy security has become a critical differentiator as companies compete for reliable, affordable power access in an increasingly constrained market. Businesses that can guarantee their energy supply gain significant operational advantages.

2 Rapidly rising utility energy rates

Commercial electricity rates have surged 22.9% and industrial rates have jumped 30.1% over the past four years as utilities scramble to fund massive infrastructure upgrades and respond to extreme weather damage. This dramatic rate escalation puts companies on an unpredictable trajectory of utility pricing.

3 Explosive load growth threatens reliable supply

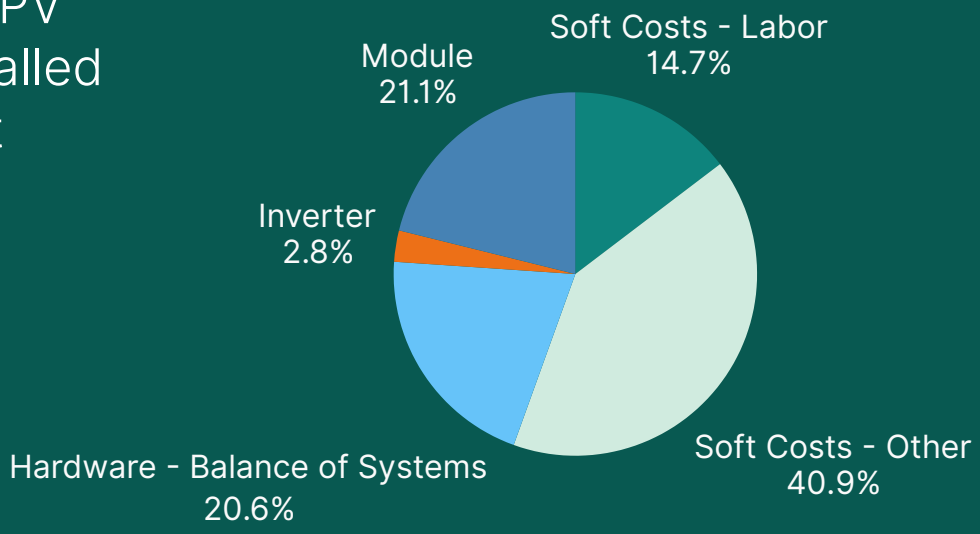
Peak electricity demand is projected to increase 15%-18% by 2034. This demand surge is pushing an already strained grid beyond its capacity limits, creating supply shortages that threaten business continuity for grid-dependent operations.

4 Growing electrification of C&I processes

The adoption of robotics, advanced manufacturing technologies, EVs, and digital systems is driving up electricity consumption across C&I operations. Companies integrating these technologies face the dual challenge of securing adequate electrical capacity while managing soaring energy costs.

System Prices

Commercial PV Rooftop Installed System Cost Breakdown



Sample C&I System Pricing - Reported Industry Averages

Rooftop PV
Source: Solar Energy Industries Association and Wood MacKenzie. Down from $1.51/W in Q2 2024.

$ 1.47 / WATT

Installed Battery
1800 kW/7200 kWh lithium ion battery in 2023
Source: NREL

$ 687.5 / KWH

Sample C&I System Pricing - VECKTA Marketplace

Rooftop PV
Ranges from $1.14/W - $1.42/W

$ 1.14 / WATT

Carport PV
Has fallen from around $3.25/Watt in 2023

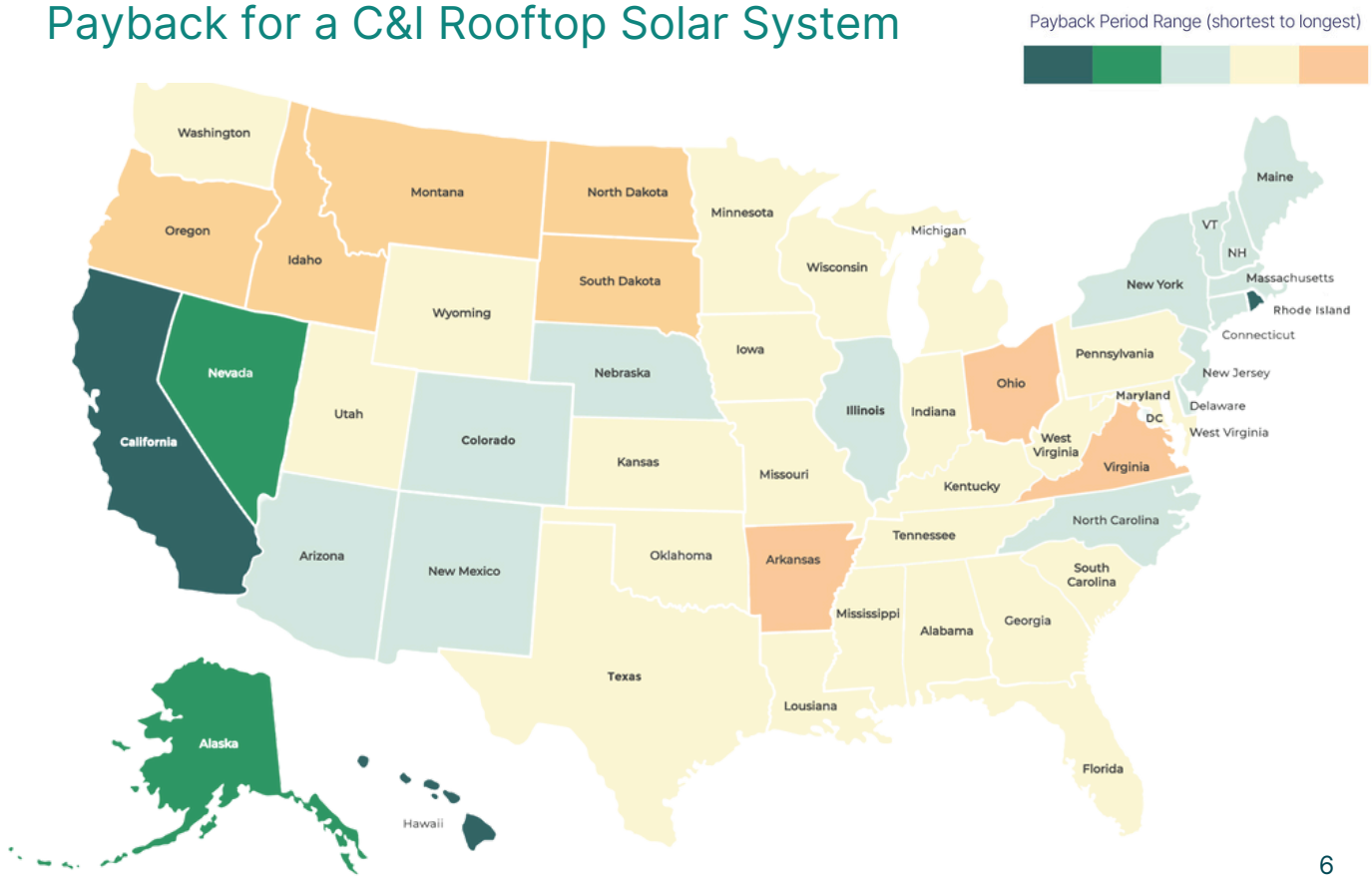
$ 2.24 /WATT

Sample Bid Pricing

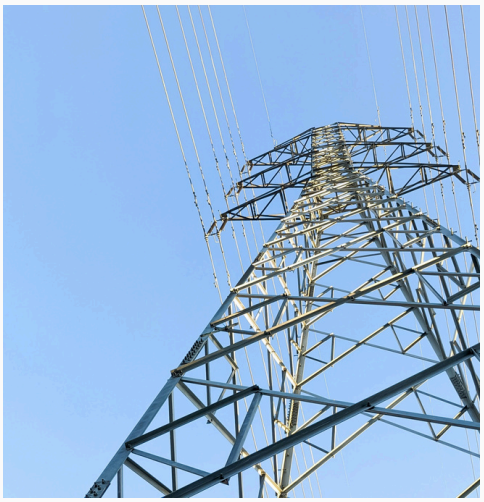
System pricing varies between developers and markets, putting businesses at a disadvantage unless they run a wide-reaching competitive process. VECKTA has a unique inside view into market dynamics and pricing through its marketplace. Here is a snapshot of the top four VECKTA-recommended bids for a rooftop solar system in Florida.

	Developer 1	Developer 2	Developer 3	Developer 4
Proposed Capacity (kW)	1,880kWdc	1,900kWdc	1,171kWdc	1,321kWdc
Pre-Incentive CAPEX	$2,799,132	$2,805,130	$1,518,330	$2,434,565
$/kW	$1,489/kW	$1,476/kW	$1,294/kW	$1,843/kW

Payback for a C&I Rooftop Solar System



Onsite Energy Cost Drivers



1. Utility Tariffs
2. Energy Consumption Profile
3. Project Soft Costs
4. Incentives and Regulations
5. Outages and Power Quality
6. Financing Structure
7. Equipment Costs
8. Labor Costs

Market Adoption

Commercial solar achieved an all-time high for first-quarter installations by adding 486 megawatts (DC), up 4% from Q1 2024, according to Wood Mackenzie. A surge in California's NEM 2.0 installations fueled this growth, with legacy states such as Illinois and New York contributing substantial volumes of new capacity. Newer markets such as Pennsylvania and Texas also contributed to this solid Q1 performance.

We expect onsite energy system deployment to be aggressive through the next two years, followed by sustained momentum driven by mounting cost, reliability, and energy security pain points, and progress in streamlined processes and permitting. VECKTA analysis shows tariffs having a minimal impact on overall system costs.

Utility Tariffs

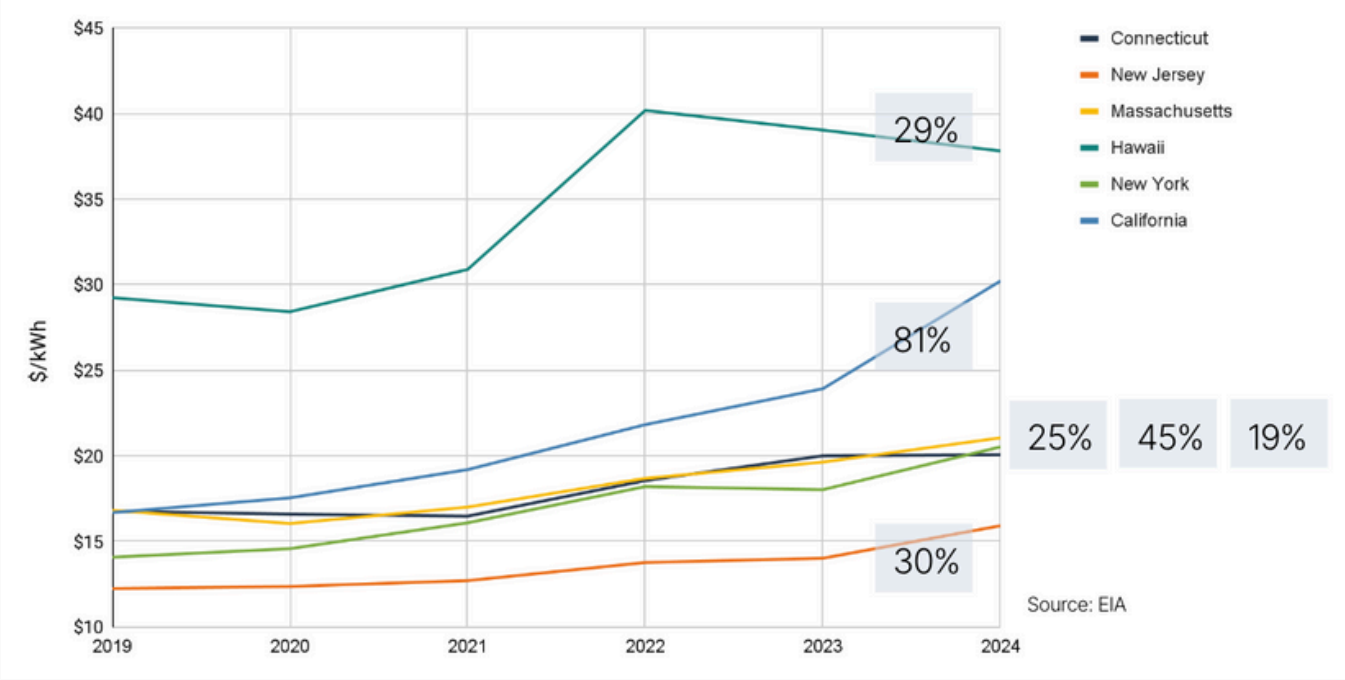
Energy Rates are Rising at Increasing Rates

Rising utility rates are creating unprecedented cost pressures for businesses across all sectors, with commercial electricity rates surging 22.9% and industrial rates jumping 30.1% on average over just the past four years as utilities scramble to fund massive infrastructure upgrades and weather-related repairs. This dramatic escalation shows no signs of slowing, with utilities already requesting $29 billion in additional rate increases in the first half of 2025 alone, affecting over 40 million Americans.

For businesses, these relentless rate hikes translate directly into squeezed profit margins, higher operational costs, and reduced competitiveness—particularly for energy-intensive industries like manufacturing, data centers, and cold storage facilities, where electricity can represent a significant portion of operating expenses.

The think tank, Energy Innovation, projects electricity prices will rise by 25% by 2030 and 74% by 2035 nationally, assuming no further rule changes or vindictiveness. The unpredictable trajectory of future rate increases makes long-term financial planning increasingly difficult, forcing companies to either absorb mounting energy costs or pass them on to customers, potentially pricing themselves out of competitive markets.

Sample Commercial Rate Increases
2019-2024



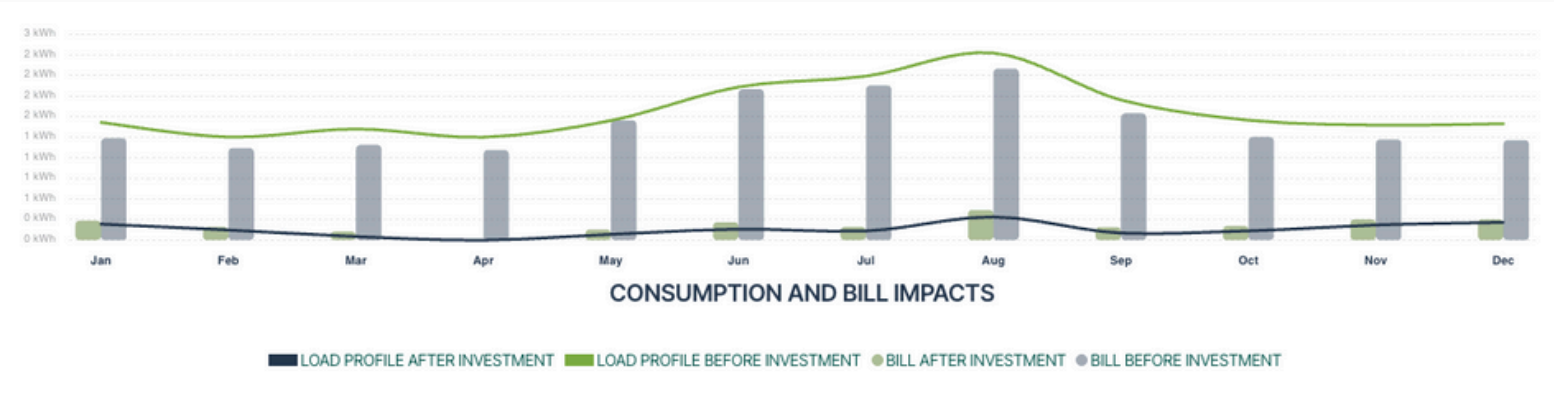
Energy Consumption Profile

Total energy demand and when and how much is used determine total energy costs and the impact that onsite generation and storage can have.

Buildings consume approximately 75% of U.S. electricity and drive as much as 80% of peak power demand in some regions. Although buildings are the primary driver of electricity demand, they can also play a part in addressing peak demand issues. Electrical loads in many buildings are flexible and, through advanced controls, can be managed to operate at specific times and at different output levels. The estimated technical energy savings potential for sensors and controls is nearly 30% in the commercial sector alone.

Today, behind-the-meter distributed energy resources — including energy efficiency, demand response, solar PV, EVs, and battery storage—are typically valued, scheduled, implemented, and managed separately. There's tremendous upside and opportunity in better coordinating these assets.

Sample Benefit of Onsite Generation to Load and Billing

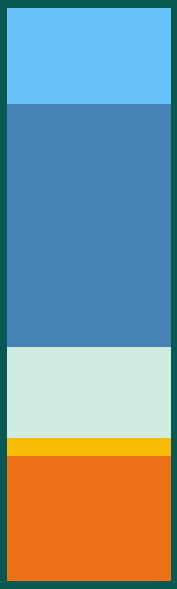


Project Soft Costs

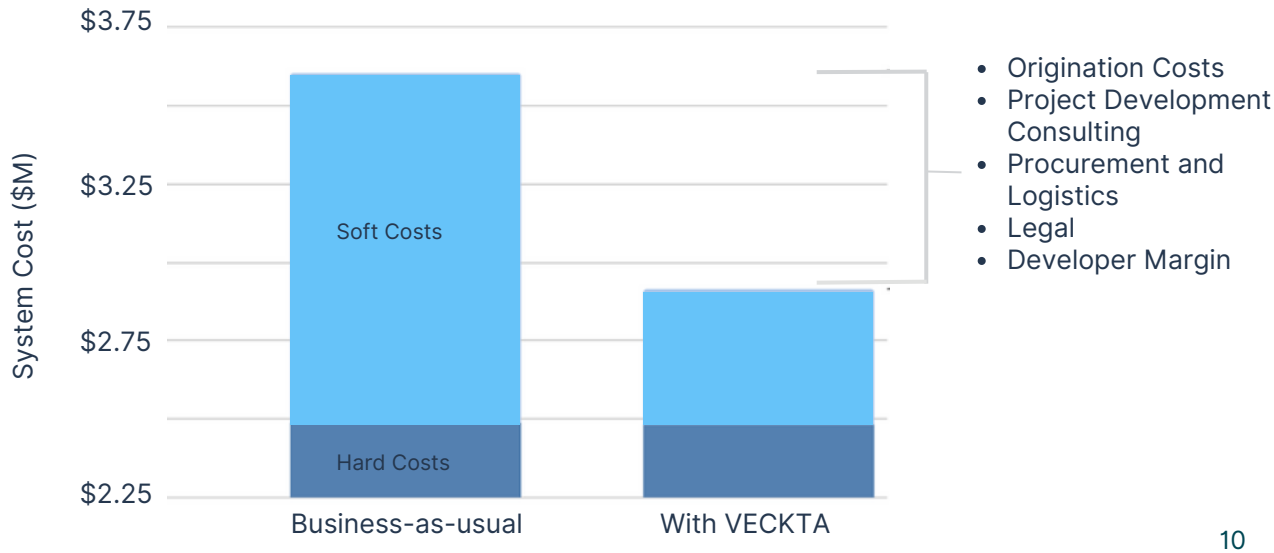
Non-labor soft costs represent an area for margin improvement, accounting for 40% of commercial system costs on average.

Non-labor soft costs encompass everything beyond hardware—including data analysis, system modeling, planning, design, permitting, interconnection applications, sales processes, procurement, legal fees, and often multiple layers of developer markups. While solar panel costs have plummeted 82% since 2010 and battery prices have dropped 89%, project costs haven't declined proportionally because these soft cost inefficiencies have historically been masked by generous tax credits that could absorb development bloat.

As subsidies face potential reduction, every excess dollar of soft cost comes directly off a project's return on investment, forcing the industry toward a long-overdue reckoning that prioritizes streamlined processes, automated permitting systems, and leaner development structures that can deliver competitive returns without relying on tax credit cushions.



Source: NREL

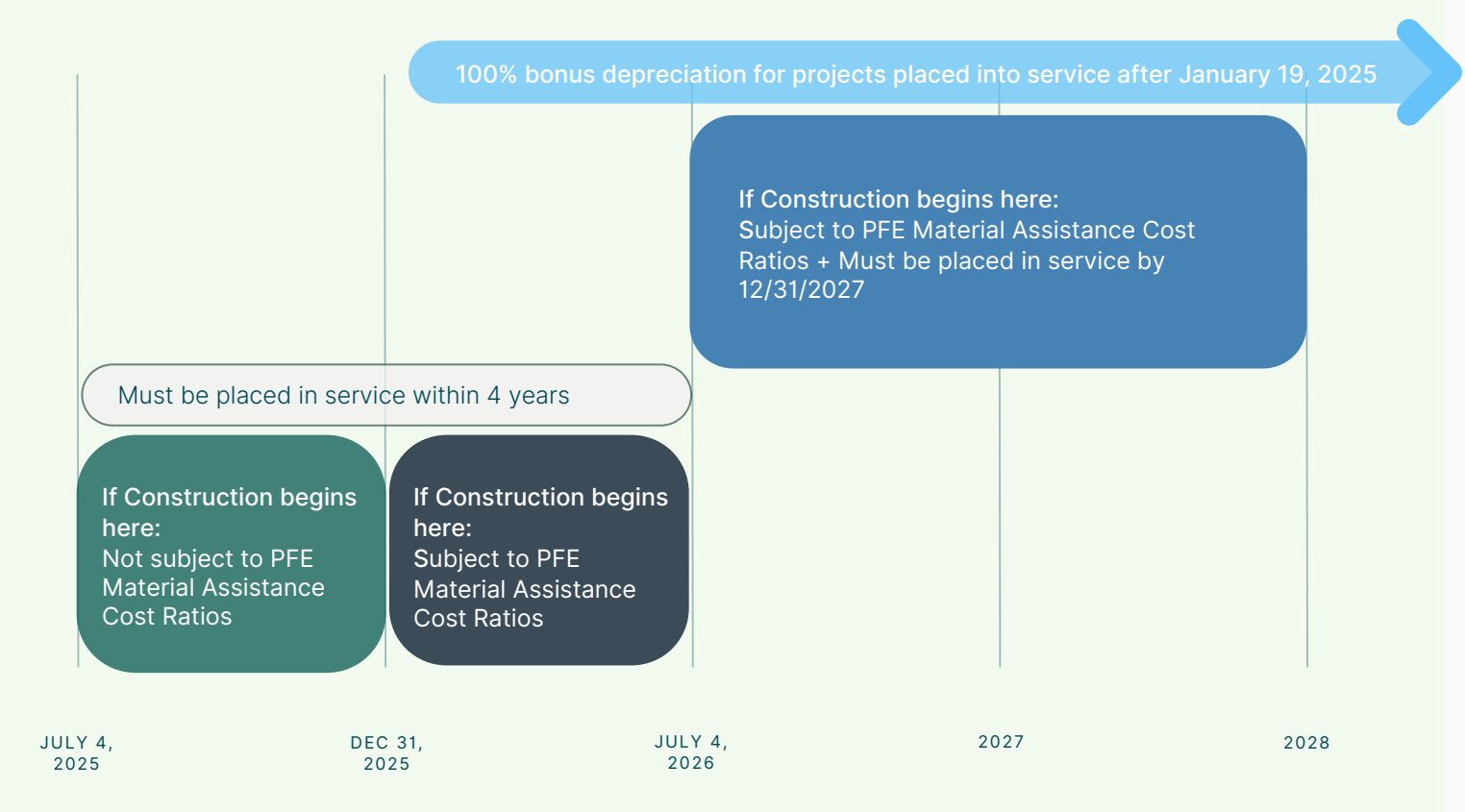


Incentives and Regulations

Incentives and regulations are not the primary driver of onsite energy system economics. Before 2020, when utility energy rates were relatively stable, incentives did in fact have an outsized impact, but that is no longer the case. And while regulations are a factor in considering financial risk and exposure to penalties, they are not yet a major driver. In the U.S., the major federal incentive is the Investment Tax Credit (ITC), which provides a tax credit of 30% of the cost of a system to the system owner. On July 4, 2025, the Trump Administration passed the One Big Beautiful Bill Act that places new deadlines and restrictions around the ITC for various clean energy technologies.

Battery storage incentives remain intact, but face the Prohibited Foreign Entity restriction, which, as of the date of this report, the administration is still determining the specifics around. The Act reinstates 100% bonus depreciation, allowing businesses to depreciate 100% of the asset in year one. This represents a significant improvement from the phase-down period, where depreciation was 40% this year and scheduled to drop to 20% next year, then to zero. This change improves project economics in many cases by providing substantial upfront tax benefits. The solar ITC faces the following new provisions and sunsetting schedule.

Sunsetting Federal Solar Investment Tax Credit



Impact of ITC Elimination

Analysis: Impact on System Economics

Analysis across three industry segments—supermarket, cold chain logistics, and manufacturing—reveals several key findings that should encourage business leaders. Near-term project economics actually improve due to the maintained tax credits through 2027 combined with 100% bonus depreciation benefits.

The post-2027 impact proves largely manageable because rising utility costs continue at 4-5% annually, equipment price reductions persist, and significant soft cost compression opportunities exist. According to NREL studies, around 40% of total project costs are non-labor soft costs, representing a major optimization opportunity.

Systems can be optimized by reducing solar sizing by between 8% and 12% while maintaining battery storage sizing, helping offset the loss of solar tax credits while maintaining overall project viability.

	PV	BESS (kWh)	Financials	Pre-OBBB	Today	Post-2027	Post-2027 (Optimized)
Supermarket (California)	709 kW	1,757 kWh	NPV ($)	$4,267,636	$4,305,122	$4,369,055	$4,593,264
			Payback (years)	2.76	2.49	3.36	3.21
			IRR (%)	29.7%	31.2% 🟢	28.3% 🟢	30.2% 🟢
Cold-Chain Logistics (Nevada)	984 kW	80 kWh	NPV ($)	$986,628	$1,020,190	$624,171	$673,708
			Payback (years)	5.21	5.14	8.07	7.94
			IRR (%)	16.9%	17.6% 🟢	12.9% 🔴	13.1% 🔴
Manufacturing (Massachusetts)	603 kW	215 kWh	NPV ($)	$1,003,891	$1,024,188	$951,856	$986,183
			Payback (years)	5.22	5.17	6.43	6.20
			IRR (%)	17.6%	18.3% 🟢	16.1% 🟠	16.8% 🟠

Analysis: Portfolio-Wide Impact

Our analysis of three large portfolios shows varying but manageable impact. We analyzed a supermarket chain across 27 states, cold chain operations across 37 states, and manufacturing facilities across 28 states. Supermarket and cold chain logistics see overall impact largely unchanged, while manufacturing experiences a 29% reduction in net present value but remains economically viable. The impact proves less severe than expected, largely due to the previous end date of the ITC, the 100% bonus depreciation, and portfolio optimization strategies that maximize economics across multiple projects, spreading risk and optimizing timing.

Outages and Power Quality

America's electricity delivery infrastructure is experiencing a systemic crisis that poses significant risks to business operations and profitability. The U.S. grid has earned a failing D+ grade from the American Society of Civil Engineers—down from C- in 2020—revealing that while public attention focuses on power generation debates, the fundamental problem lies in a transmission and distribution system built for a different century. Research shows that businesses can no longer afford to remain passive ratepayers funding a broken system and must take control through onsite energy solutions to protect their operations, profits, and competitive position.

Grid Age and Hardening Challenges

The American electrical grid requires a massive upgrade with over 60 million distribution transformers averaging 40+ years old—well past their 25-year life expectancy—and 70% of transmission lines exceeding 25 years of age. The infrastructure crisis is compounded by supply chain constraints that have driven transformer prices up 60%-80% since 2020, with lead times now exceeding 120 weeks, creating a gridlock that prevents timely repairs and upgrades. Analysis reveals that 92% of service disruptions occur in the distribution system, where aging wood poles and outdated circuit breakers (60% are over 30 years old) create cascading failure points that building codes don't require utilities to upgrade, perpetuating a cycle of vulnerability and expensive emergency repairs.

Rising Costs

Utilities requested $13.51 billion in rate increases in 2023 alone to fund infrastructure upgrades and extreme weather preparedness. The increasing utility rates of the last four years have been primarily due to addressing a $578 billion funding gap between current spending and actual infrastructure needs. This represents a devastating reversal of the traditional energy economics equation: while the cost of generating electricity continues to decrease through renewable adoption, the cost of delivering that power is sharply rising.

Outages and Quality Issues

American businesses face escalating reliability challenges as the United States experiences more electric outages than any other developed nation, with outage duration increasing sixfold from 2000 to 2014 and nearly doubling again from 2013 to 2021. The average annual outage duration has risen from under four hours in 2015 to over seven hours in 2021, driven largely by extreme weather events, which now account for 83% of major outages between 2000 and 2021.

Weather-related incidents affecting the grid have grown two to three times in less than 20 years, according to EIA data, as aging infrastructure struggles with increasingly severe climate impacts—for example, temperatures above 100 degrees F can reduce power line capacity by up to 7% below normal design ratings just as heat waves spike demand for air conditioning. The Department of Energy estimates these power outages cost the American economy $150 billion annually, with individual industries facing substantial hourly losses: auto manufacturing up to $3 million, energy companies $2.48 million, telecommunications $2 million, retail $1.1 million, and healthcare $636,000, often with additional equipment damage costs. These disruptions create operational risks that directly impact profit margins, supply chain stability, sustainability goals, and competitive positioning—making reliability concerns a critical factor when evaluating investments in onsite energy systems that can provide operational continuity and returns over 20-30 years.

Financing Structure

Comparing Financing Options for 3.6MW Solar and 300 kW/4hr Battery for California Industrial Site

Companies predominantly choose between three financing models for onsite energy, each offering different risk-reward profiles: self-financing provides the highest returns and control, debt financing optimizes cash flow while maintaining strong returns, and Power Purchase Agreements (PPA) eliminate capital requirements while transferring risk to energy partners. Each approach delivers immediate benefits—tax credits, carbon reductions, cost certainty, operational resilience, and brand differentiation—while providing long-term protection against utility-rate volatility.

Financing Cost Comparison from VECKTA Platform

Self-Financed

Using your own capital means full ownership, no interest costs, and potentially faster payback—maximizing your savings while keeping you in complete control.

NPV: $12,362,749

Debt-Financed

Leveraging debt can deliver excellent payback and robust savings. Competitive loan rates let you spread costs over time, preserving cash flow and enhancing your financial benefits.

NPV: $13,289,210

PPA

A Power Purchase Agreement requires no upfront investment and offers predictable energy costs. Enjoy immediate savings so you can focus on your core business.

NPV: $9,629,268

It is likely that the best-priced proposals in our marketplace will come at or below $0.1285/kW.h.

Equipment and Labor Costs

While PV module prices are generally falling, they can still fluctuate due to supply chain disruptions, changes in demand, and policy changes. Some analysts predict that international PV module prices may rise slightly by the end of 2025, while others suggest that prices will remain on a downward trend. Many installers are warehousing equipment to protect against inflationary tariff pricing.

Battery storage systems are expected to fall by nearly 70% compared to 2020 prices, according to NREL analysis. Last year, battery prices fell by 40% to $165/KWh compared to 2023 — the biggest drop since 2017, according to Bloomberg New Energy Finance. Prices are expected to continue to fall given strong market demand in states like Texas and California and the federal ITC remaining intact.

Labor costs make up between 10% and 20% of total solar project costs, with 15% being the average. To. qualify for the maximum IRA tax credits, developers are required to comply with prevailing wages. As these credits sunset, labor would no longer require prevailing wages and we expect to see the labor costs fall by between 20%-40%, resulting in a 2%-5% total cost reduction depending on project size, location, and workforce composition. It's important to note that the workforce suffers in this scenario.

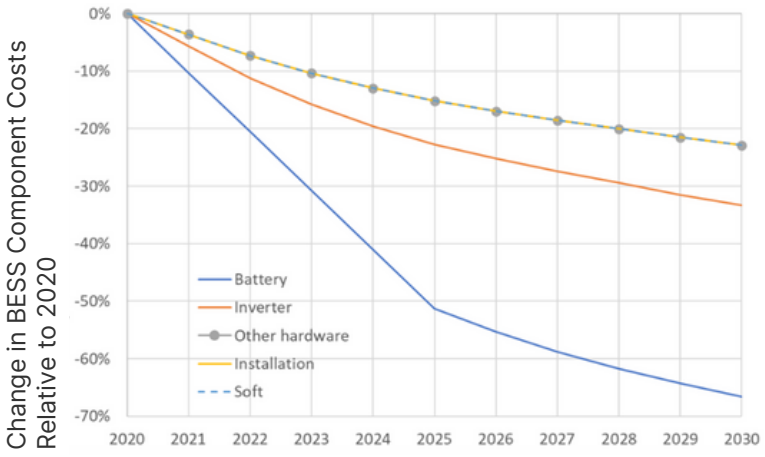
Solar Installed System Cost Forecast

Direct Capital Cost $/Wdc

	Base	Moderate	Conservative
Inverter	$0.05	$0.05	$0.06
BOS Equip	$0.37	$0.17	$0.26
Install Labor	$0.16	$0.10	$0.15
Instl Margin	$0.29	$0.20	$0.27
Module	$0.37	$0.32	$0.39

Source: NREL

Changes in Projected Component Costs for Commercial Battery Storage Systems



Source: NREL and BNEF

Navigating the Market

Rising utility costs continue driving the fundamental business case as equipment costs decline and substantial soft cost reduction opportunities emerge. The chaos in the energy market is creating opportunities for businesses that can move strategically and swiftly. The question isn't whether the energy transition will continue—it's whether businesses will position themselves to benefit from it. Companies that act decisively now, with comprehensive strategies that extend beyond immediate incentives, will emerge as leaders in the new energy economy.

Maximize the Opportunity Through 2025

When the solar tax credit, which is still available in the short term, is combined with the new provision, the business cases for onsite energy projects become more favorable than prior to the OBBBA. The most critical immediate step involves keeping current projects moving at a brisk pace to free up resources for broader portfolio planning. Simultaneously, businesses should develop a rollout strategy quickly while maintaining flexibility for changing market conditions.

Taking groups of projects to market, especially those in the same state or utility territory, creates economies of scale and streamlined processes. Running these processes in parallel allows companies to configure, procure, negotiate, and award contracts in under six months for each group.

This rinse-and-repeat approach maximizes the time available before 2027 while focusing on the most resilient projects that can withstand the loss of tax credits post-2027. The goal is to create a sustainable pipeline that extends beyond the immediate incentive period.

To comply with Foreign Entities of Concern and material cost ratio provisions, verify that suppliers cover all bases to prevent costly compliance failures. Losing tax credits due to non-compliance after project deployment represents one of the worst possible outcomes for any energy initiative.

Pursue Battery Storage

In markets with higher grid resilience concerns and high Time of Use rates, battery storage systems should be considered. Battery costs continue declining while tax credits and incentives remain for storage systems. State, local, and utility incentives continue driving battery economics, making energy storage increasingly important for comprehensive energy strategies.

Business Cases Remain Strong

Even without solar tax credits, the business case for onsite energy remains compelling. Continuing utility rate increases, equipment cost reductions, soft cost compression opportunities, and growing grid reliability concerns all support the long-term viability of commercial energy projects.

Portfolio-Level Strategy

While certain periods may require fast-paced execution, building a portfolio-wide strategy remains critical to avoid costly missteps. The market continues evolving rapidly, making it essential to start planning now with a flexible strategy that can adapt to changing conditions.

The Source for Onsite Energy

VECKTA stands at the forefront of enterprise energy transformation, modernizing how organizations plan, optimize, and deploy onsite energy solutions. Our end-to-end onsite energy procurement platform combines advanced site assessment and system configuration capabilities with a global supplier marketplace, enabling enterprises to make confident, data-driven decisions about their energy future.

In a landscape marked by increasing complexity and urgency, VECKTA eliminates unnecessary time and costs in deploying clean, affordable, and reliable energy systems. By streamlining portfolio-wide analysis and connecting organizations with pre-qualified suppliers, we reduce project risks while cutting system costs by up to 40% and development time by 90%.

Get in touch!

619-268-1025

energyaction@veckta.com

veckta.com