

The profitability puzzle – finding profit in the energy transition

The Swedish electricity sector faces a complex puzzle: changes such as more intermittent renewable energy production, electrification, an expected surge in demand and fluctuating electricity prices are jumbling the pieces of the puzzle. As we strive for a green and reliable electricity system, laying these puzzle pieces in their rightful places becomes a significant challenge.

In the transformation of our energy system, the energy industry actors must navigate the changes while ensuring profitability and bankability for implementing green technologies like renewables and storage assets. This makes exploring new business models, and innovative revenue generation approaches that support this transformation more crucial than ever. This includes aligning and combining different trading methods and electricity management to achieve financial viability.

Long-term contracts for trading electricity, both in financial markets and bilaterally, have played vital roles in managing price risks and enabling hedging against market uncertainties. Bilateral power purchase agreements (PPAs) have been game-changers for Nordic wind park developers over the past decade. They have provided a means to secure the revenue necessary for financing the construction and operation of wind parks.

Battery storage systems are key pieces in the energy puzzle, assisting in balancing the supply and demand of electricity, smoothing out the fluctuations

associated with renewable energy sources and contributing to grid stability. Traditionally, these systems have found profitability in balancing markets, where support services are traded in real-time. However, as more participants enter the market, it may become saturated, resembling an overcrowded room where growing space becomes challenging. Exploring less saturated and deep markets, such as the day-ahead market, could present further opportunities in the future.

However, in the trading of electricity, different risks and challenges arise. When entering into long-term contracts, the price levels set of the contracts are crucial for profitability since they determine revenue and project viability. Strategic pricing mitigates risks and fosters a favorable investment environment for long-term profitability. Battery storage also allows for risk mitigation, however, results have shown that their profitability is currently limited in day-ahead markets. This could, however, change if investment costs decrease or market conditions change.

As the energy sector continues to transform, the puzzle of profitability offers an opportunity for actors to integrate trading and energy solutions for revenue stacking in order to support the deployment of green technologies, and in many ways depending on risk appetite. By assembling these puzzle pieces, we take significant steps toward reaching our climate goals and building a sustainable future for future generations.

This popular science article is derived from the master thesis: *“Powering up profits – Integrating Power Purchase Agreements and Battery Systems for Nordic Power Futures”* written by Ellen Jinglöv and William Thorwaldson (2023)