dorm dao | Oregon

Presented By: Katie Lucca & Miles Saunders-Ruesz

Powerledger

General Background on Protocol

PowerLedger is a blockchain enabled energy trading platform that enables peer-to-peer (P2P) energy transactions and Energy Attribute Certificate (EAC) trading, promoting renewable energy adoption and efficiency (Mauro, 2023).[1] Moreover, PowerLedger offers a suite of software solutions to track and trace where energy is generated and where it is consumed, streamlining the energy trading process, encouraging local trading, and ensuring that EACs are backed one to one to their real world counterparts. The goal of PowerLedger is to create the infrastructure to democratize global energy markets utilizing blockchain technology so renewable energy is more accessible to everyday consumers. In an industry currently wrought with double accounting issues and information asymmetry, PowerLedger creates a marketplace to hold users and generators of energy accountable, ultimately reducing global reliance on fossil fuels.

PowerLedger has transitioned from the Ethereum-based blockchain to a customized permissioned Solana blockchain launched on mainnet in July of 2023. The PowerLedger platform utilizes a dual token system. There is the publicly traded market token called POWR and an ecosystem token pegged to the user's respective domestic currency called Sparkz. PowerLedger's native token, POWR, acts as both an access permission token and an incentive token. This means that the POWR token grants access to the platform's applications, enables P2P trading, and is used as gas for transactions on the network by application hosts. EACs are traded using the POWR token. Both buying and selling energy on the application host-generated platform occurs using the Sparkz currency. PowerLedger was able to secure a banking on-ramp in 2017, enabling fiat conversion with Sparkz.

Energy is a force, and it cannot be stored. When it is created it has to be used immediately, and supply must equal demand at all times. Imbalances in supply and demand contribute to wear and tear on the grid's physical infrastructure (excess supply) and rolling blackouts (excess demand). One example of an imbalance is generating energy in one market and claiming it in another (i.e., through trading of Renewable Energy Certificates). Due to the nature of energy, in most cases, energy cannot be traced precisely from its source to its end point. The best way to trace the generation of energy is through flow tracing, which tracks the type of energy generated at each generator in a given area against the accompanying transmission

[1] Mauro, *What is Power Ledger? All You Need to Know About POWR*, Gate.io, September 2023 https://www.gate.io/learn/articles/what-is-PowerLedger/718

and distribution system.[2] This gives a rough estimate of the types of energy flowing through the grid. The lack of accuracy in tracking power sources can lead, intentionally or unintentionally, to double counting, which is a form of greenwashing. PowerLedger facilitates energy tracking and trading through use of ledgers and smart meters that communicate with the blockchain in order to account for the amount of renewable energy provided to the grid. P2P trading enabled by PowerLedger's platform provides a unique and efficient way to scale local energy generation that currently does not exist in traditional markets, enhancing local grid resiliency and accessibility.

Macro Factors Impacting Protocol

PowerLedger is steering through a dynamic and evolving energy landscape, marked by significant opportunities and challenges in its mission to transform energy trading and consumption through blockchain technology. On one hand, the global momentum towards renewable energy sources presents a fertile ground for PowerLedger's blockchain-based P2P energy trading platform.[3] This shift is driven by a growing worldwide commitment to sustainable and environmentally friendly energy solutions, with countries and corporations increasingly investing in renewable energy. PowerLedger's strategic emphasis on the green energy trading market is particularly advantageous, given the sector's rapid expansion, reduced monopolistic control, and support from many regulators, governments, and organizations. This alignment with the growing trend towards sustainability not only facilitates PowerLedger's entry into the energy market but also underscores its potential to lead in the space of decentralized energy solutions.

Conversely, PowerLedger faces several headwinds that could impact its widespread adoption and operational scalability. The transition to a grid capable of managing decentralized, renewable energy sources requires significant infrastructure upgrades. Moreover, the regulatory landscape for blockchain and cryptocurrency, which are central to PowerLedger's platform, remains uncertain and varies greatly across jurisdictions. Some countries have imposed restrictions on tokenization, posing barriers to PowerLedger's model. Furthermore, the inherently centralized nature of current energy distribution systems means that PowerLedger's success is contingent upon cooperation with traditional utility companies. These entities, which control

[2] Corradi, *How to trace back the origin of electricity*, April 2021
[3] IRENA (2020), Innovation landscape brief: Peer-to-peer electricity trading, International Renewable Energy Agency, Abu Dhabi.

essential infrastructure, vary in their openness to integrating P2P trading platforms, making collaboration a crucial yet challenging aspect of PowerLedger's strategy. Additionally, navigating diverse regulatory and operational frameworks in different regions complicates the task of achieving universal adoption of PowerLedger's technology.

The Team

Dr Jemma Green (Executive Chairman & Co-founder)
In addition to PowerLedger, she operates on the board of Water Corporation in Perth, Australia, and serves as Chairman of Climate-KIC Australia, a group working on innovating climate change solutions. She holds a Masters in Sustainability Leadership at the University of Cambridge, and a Doctor of Philosophy (PhD) with the Sustainability Policy Institute at Curtin University.

John Bulich (Technical Director & Co-founder)
Director at Ledger Assets, a company developing blockchain applications for photo verification, medical uses, power, and asset sharing. He was a Director at WA Property Investments for 22 years working on property development, securities trading, and portfolio management.

Vinod Tiwari (Global Head of Business Development & Partnerships)
Has forged a successful career with General Electric where he twice won the President's Club award for performance excellence. Vinod has held many senior roles within the Australian energy sector, previously as the COO of Regen Power, General Manager Sales at Perth Energy and Senior Advisor at Future Effect.

Dr Vivek Bhandari (Chief Technology Officer)
He has led the digitalization of projects globally, along with mega projects in energy and sustainability across Asia, North America, Europe and Australia. Vivek has held leadership positions at Fortune 200 companies as well as budding startups.

Fiona Tiller (CEO of TraceX)
As CEO of TraceX, Fiona has worked with customers in the US, EU, and APAC markets to define and build a scalable Environmental Commodities marketplace. Before joining PowerLedger, Fiona spent 15 years leading retail, corporate and institutional products in the Financial Services industry where she provided customers with the data and tools they needed to optimize the financial performance of their business.

General Auditing Background for Protocol

No information found.

Specific on What Protocol Does

PowerLedger acts as a transformative bridge in the energy sector, positioning itself as "middleware" between the current highly centralized energy systems and the decentralized, open-source systems envisioned by blockchain advocates. The platform's innovative use of smart meters in customer homes allows for the tracking of energy consumption and production in real-time, facilitating a more transparent and efficient energy market.

The PowerLedger ecosystem encompasses a suite of products designed to empower communities, ensure grid stability, and optimize the use of energy resources:

xGrid: This application enables electricity customers to trade solar power across the grid, offering agile, real-time pricing that benefits customers, retailers, and the distribution network. xGrid allows for the sale of solar-generated energy to others on the same grid, regardless of whether they share the same electricity utility, thanks to the blockchain's ability to accurately track these transactions.

uGrid: Targeted at embedded networks and microgrids, uGrid facilitates low-cost electricity metering, rapid micro-transactions, and microgrid management. It's particularly useful in densely populated environments like apartment blocks or shopping centers, where it can manage energy flows and enable electricity trading within the community. The system ensures fair and transparent calculation and distribution of energy costs and benefits, promoting the use of renewable energy within these communities.

TraceX: As a digital marketplace for trading Energy Attribute Certificates (EACs) — including Renewable Energy Certificates (RECs), Guarantees of Origin (GOs), and carbon credits — TraceX streamlines the buying and selling of these certificates. It supports the industry-led initiative EnergyTag, aiming to create a market for hourly electricity certificates, thereby facilitating regulatory compliance and sustainability targets for generators, utilities, and organizations.

Why the Protocol Offering Matters to Consumers

The PowerLedger blockchain is significant for consumers due to its innovative approach to energy trading and management, bringing transparency, efficiency, and control directly into the hands of the consumer. Here's why the PowerLedger ecosystem matters:

1. Empowering Consumers with Choice and Control: PowerLedger's platform allows consumers to specifically choose the type of clean energy they use. This level of transparency and choice enables consumers to actively participate in the green energy movement, aligning their energy consumption with their environmental values.
2. Enabling Peer-to-Peer Energy Trading: With applications like xGrid and uGrid, PowerLedger facilitates the direct trading of energy between producers and consumers within the same grid or microgrids. This peer-to-peer (P2P) model not only optimizes energy consumption but also allows consumers to monetize excess energy generated from renewable sources, such as rooftop solar panels, by selling it to neighbors or other community members.
3. Enhancing Energy Efficiency and Savings: By optimizing the use of distributed energy resources, PowerLedger helps consumers reduce their energy bills. The system's ability to conduct real-time transactions and manage microgrids leads to more efficient energy distribution, reducing wastage and lowering costs for consumers.
4. Promoting Sustainable and Renewable Energy: Through TraceX, PowerLedger creates a marketplace for trading Energy Attribute Certificates (EACs), including Renewable Energy Certificates (RECs) and carbon credits. This not only provides an additional revenue stream for renewable energy producers but also enables consumers and businesses to meet regulatory obligations and sustainability targets in a transparent and efficient manner.
5. Integrating with Current Systems: PowerLedger acts as a "middleware" that bridges the gap between the highly centralized current energy systems and the ideal decentralized, open-source systems that blockchain technology advocates for. By using smart meters to accurately track energy production and consumption, PowerLedger ensures fairness and transparency in the energy market, making it a viable and attractive option for consumers.
6. Supporting Community Energy Initiatives: PowerLedger's platform is particularly beneficial for community energy projects, enabling apartment

buildings, shopping centers, and other community-based entities to manage their energy needs more effectively. This communal approach fosters a sense of responsibility and cooperation among community members, promoting sustainable energy use and savings at a local level.

In essence, the PowerLedger blockchain matters to consumers because it democratizes energy markets, making renewable energy more accessible, promoting sustainability, and providing consumers with greater control over their energy usage and costs. This innovative approach to energy management represents a shift towards a more sustainable, efficient, and consumer-centric energy landscape.

Protocol Versus Competitors Chart

LO3 Energy and Grid+ were major competitors in 2018; both have since pivoted to completely different industries (LO3 Energy to website hosting, Grid+ to hardware wallets). This illustrates how difficult it is to succeed as an energy trading blockchain.

Name	Features	Utilizes Blockchain	P2P	Geographic Scope
PowerLedger	- Energy tracking and trading platform - TraceX marketplace facilitates trading of EACs	Yes	Yes	Global
Flett Exchange	- Largest, most active environmental exchange for solar-based RECs - Customers can sell their home solar through RECs on company's platform - Most cost effective way to sell on platform requires customers to manually	No	No	Regional

	enter meter readings monthly or quarterly			
Sonnen	- Solar generation created, shared, and consumed with their battery products - 24/7 access to clean stored energy through battery products - Utilizes Virtual Power Plant concept by linking batteries	Yes	Yes	Global
Suncontract	- Energy trading marketplace similar to PowerLedger - Only serves Slovenia	Yes	Yes	Regional

Protocol Go To Market Strategy Versus Competitors

Focus on Renewable Energy and Decentralization
PowerLedger has positioned itself strongly in the renewable energy sector, advocating for the democratization of energy markets. PowerLedger offers solutions tailored to different needs of the market, as evidenced by xGrid, uGrid, and TracecX. Competitors typically offer one of those offerings (i.e., Flett Exchange with RECs) or only serve a specific market (i.e., Suncontract with Slovenian focus). PowerLedger's focus on renewable energy offerings align with global trends towards sustainability and may appeal to a growing segment of environmentally conscious consumers, producers and regulators.

Strategic Partnerships and Pilots
One of PowerLedger's core strategies is to establish partnerships with utility companies, renewable energy producers, and government bodies across different regions. Through pilot projects and trials, PowerLedger demonstrates the efficacy and benefits of its platform in real-world settings, which helps in building credibility and showcasing the platform's potential to disrupt traditional energy markets at an individual and institutional level.

Market Diversification
While initially focusing on the Australian market, PowerLedger has expanded globally, targeting markets in Asia, Europe, and North America. This geographical diversification helps mitigate risks associated with regulatory changes or market dynamics in any single region. Competitors may not have as broad a reach, limiting their growth potential and market impact.

Community Engagement and Education
PowerLedger places a strong emphasis on community engagement and education. By informing communities about the benefits of renewable energy and decentralized energy trading, PowerLedger builds grassroots support that can drive adoption. This approach may contrast with competitors who focus primarily on technical solutions without engaging end-users and communities to the same extent.

One standout initiative is the launch of an 'Energy Community' project in Almócita, Spain, marking one of the first "collective self-consumption" initiatives in the country. This project, in partnership with Fenie Energía and Albedo Solar, allows households with rooftop solar to generate greater income from their surplus energy. It also enables residents without solar panels to purchase renewable energy from their neighbors and the municipality at a lower price than the grid, fostering local energy communities with access to affordable and sustainable energy (PowerLedger, 2022).[4]

In summary, PowerLedger's go-to-market strategy is multifaceted, combining technological innovation with strategic partnerships, regulatory engagement, and a strong focus on renewable energy and market education. These elements together form a comprehensive approach aimed at overcoming the barriers to entry in the energy sector and differentiating PowerLedger from its competitors in the blockchain-based energy trading landscape.

How Token Extracts Value

Transaction Fee Model
The PowerLedger blockchain incorporates a small transaction fee at the layer one level to compensate validators, deter network spam, and ensure long-term economic

[4] PowerLedger.io, *PowerLedger launches one of it's first 'Energy Community' projects in Spain,*

stability by securing a minimum fee per transaction paid out in POWR. Additionally, applications on the PowerLedger platform can set their own fee structures, such as an annual license fee plus a usage fee per kWh for peer-to-peer energy trading apps, or a transaction percentage fee for energy attribute certificate marketplaces. This approach simplifies energy trading, directly linking transaction fees to energy exchanges, enhancing user convenience, and safeguarding transaction security and integrity.

Security and Trust
Holding POWR tokens is also a way for participants to demonstrate their commitment to the platform, acting as a stake to ensure compliant behavior within the ecosystem. This staking mechanism adds a layer of security and trust to the platform, as it incentivizes participants to act in the best interest of the community.

Sparkz Generation
POWR tokens are used to generate Sparkz, which are pegged to the local currency and used for energy transactions within the platform. This mechanism ensures that the internal economy of PowerLedger is stable and scalable, making energy trading accessible and efficient for participants. As energy trading volume picks up, the need for sparkz to fund local energy markets places buying pressure on POWR.

Governance and Development
POWR tokens may also be used in governance decisions, allowing token holders to vote on important matters such as platform updates and development directions. This participatory approach ensures that the platform evolves in a way that benefits its users and stakeholders.

Incentives and Rewards
PowerLedger may reward participants with POWR tokens for contributing to the platform, such as through the generation of renewable energy, provision of grid services and connection with charities and organizations. These incentives encourage the adoption of sustainable energy solutions and active participation in the PowerLedger ecosystem.

In summary, the value extraction mechanism of the PowerLedger token (POWR) is built around its utility within the energy trading platform, its role in ensuring platform security and trust, its governance functions, and the market dynamics of supply and demand. As the PowerLedger platform continues to grow and facilitate

more energy transactions, the intrinsic value of POWR tokens is likely to be influenced by these factors.

Tokenomics/Vesting Schedule

963 million Native Tokens

Initial programmed inflation rate of 1.25% per year

Reducing by 15% per year until it reaches the terminal programmed inflation rate of 0.75%

Modeling/Ratio Analysis

The global blockchain in energy market size was valued at USD 7.05 billion in 2023 and is anticipated to grow at a compound annual growth rate (CAGR) of 78.32% from 2023 to 2030[5], estimated to reach 1.285 Trillion by 2032. With a current market cap of 186.21 million PowerLedger holds a market share of 0.026% with Microsoft, Accenture and IBM being some of the most dominant key players in the industry (internal use of blockchain).

PowerLedger Mcap / Total Market size

Assuming the market share of PowerLedger remains the same and does not grow, a conservative idea of POWR's marketcap in 2032 is $33.280 billion. The present value of 33.280 billion discounted back 8 years at a 20% discount rate (the typical rate for the blockchain industry) gives us a present value of approximately 5.646 billion. The present value does not include a terminal value, which likely would increase PowerLedger's value to over 5.646 billion.

[5] Straits Research, *Blockchain In Energy Market Size, Share & Trends Analysis Report By Type*

Road Map

Although the team has not released a comprehensive roadmap for the near future, we expect their efforts to continue focusing on onboarding utilities, companies, governments, and everyday individuals through those institutions.

Investment Thesis

According to the IPCC, the increase in global natural disaster frequency and intensity is driven by the overabundance of greenhouse gasses (GHGs) in the atmosphere[6]. Fossil fuels are the primary emitters of GHGs. Fossil fuels are used in a variety of industries but most emissions are found in the energy sector. Thus, to significantly reduce GHGs, the energy sector must shift away from fossil fuels toward renewable or clean energy sources. The current energy grid, which comprises the transmission and distribution system connecting energy generators and consumers across the U.S., is deteriorating due decades of deferred maintenance. In addition, variable forms of energy, such as solar and wind, purchased in one energy market and sold in another, add more strain on the system, as it creates imbalances between supply and demand within each market. The Inflation Reduction Act, or IRA, was passed in the U.S. in 2022 to spur investment in clean energy, accelerate the transition away from fossil fuels, and update the grid to handle renewable energy. Regulatory bodies overseeing utilities are actively searching for ways to safely and securely add renewable energy generation to the grid. The need to transition from fossil fuels and the recent legislation encouraging that transition illustrates the importance of creating a marketplace for energy trading at the local level. PowerLedger's offerings facilitate a way for utilities and other entities (companies, microgrids, etc.) to achieve net-zero and support a clean energy future in a more streamlined and transparent manner than through traditional avenues. At the individual level, PowerLedger provides a marketplace for prosumers to sell their excess renewable energy to local consumers, making renewables more accessible and their local grid more resilient.

The blockchain-based energy industry has an estimated CAGR of 77%. PowerLedger already has a variety of offerings to maximize its value within the industry, including peer-to-peer energy trading and EAC trading. The PowerLedger team is fully doxxed

[6] IPCC, *Climate change 2023 synthesis report*, Summary for policymakers, Intergovernmental report on climate change, 2023.

and has deep experience in energy, sustainability, blockchain, and trading environmental commodities. The extremely high industry growth rate, established offerings, and team experience indicates that PowerLedger is positioned to drastically increase market share and to be a leader in the blockchain-based energy industry in the space.

Fund Recommendation

- Purchase 2 ETH of $POWR at $0.48

Sources

Corradi, How to trace back the origin of electricity, April 2021

IPCC, Climate change 2023 synthesis report, Summary for policymakers, Intergovernmental report on climate change, 2023.

IRENA (2020), Innovation landscape brief: Peer-to-peer electricity trading, International Renewable Energy Agency, Abu Dhabi.

Mauro, What is Power Ledger? All You Need to Know About POWR, Gate.io, September 2023 https://www.gate.io/learn/articles/what-is-PowerLedger/718

PowerLedger.io, PowerLedger launches one of it's first ‘Energy Community’ projects in Spain,

Straits Research, Blockchain In Energy Market Size, Share & Trends Analysis Report By Type