

An Approach for Energy Trading for Community Solar Using Blockchain Transactive Energy

Municipal and State Energy Edge Forum

04/25/2024 (Slides R1 5/2/24)

Municipal & State Energy Edge Forum connects industry experts, attorneys, policy makers, consultants, governments, universities and organizations together to collaborate on today's most effective approaches for advancing clean energy. The goal of Municipal & State Energy Edge Forum is to create an environment that facilitates the policies, programs and projects for a sustainable energy future.

<https://mseforum.com/>

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A) INTRODUCTION

1) TRCSS: Introduction & References

- TRCSS: An early-stage startup nonprofit.

Mission Statement:

Trinity River Community Solar Systems (TRCSS) is a 501c3 non-profit created to develop & design renewable and sustainable energy resources for communities that cannot provide those resources on their own. Our focus includes those experiencing energy poverty in North Central Texas.

- Community Solar:

System size: Generally 100 kW to <10 MW

Participation: Buy-in or subscription

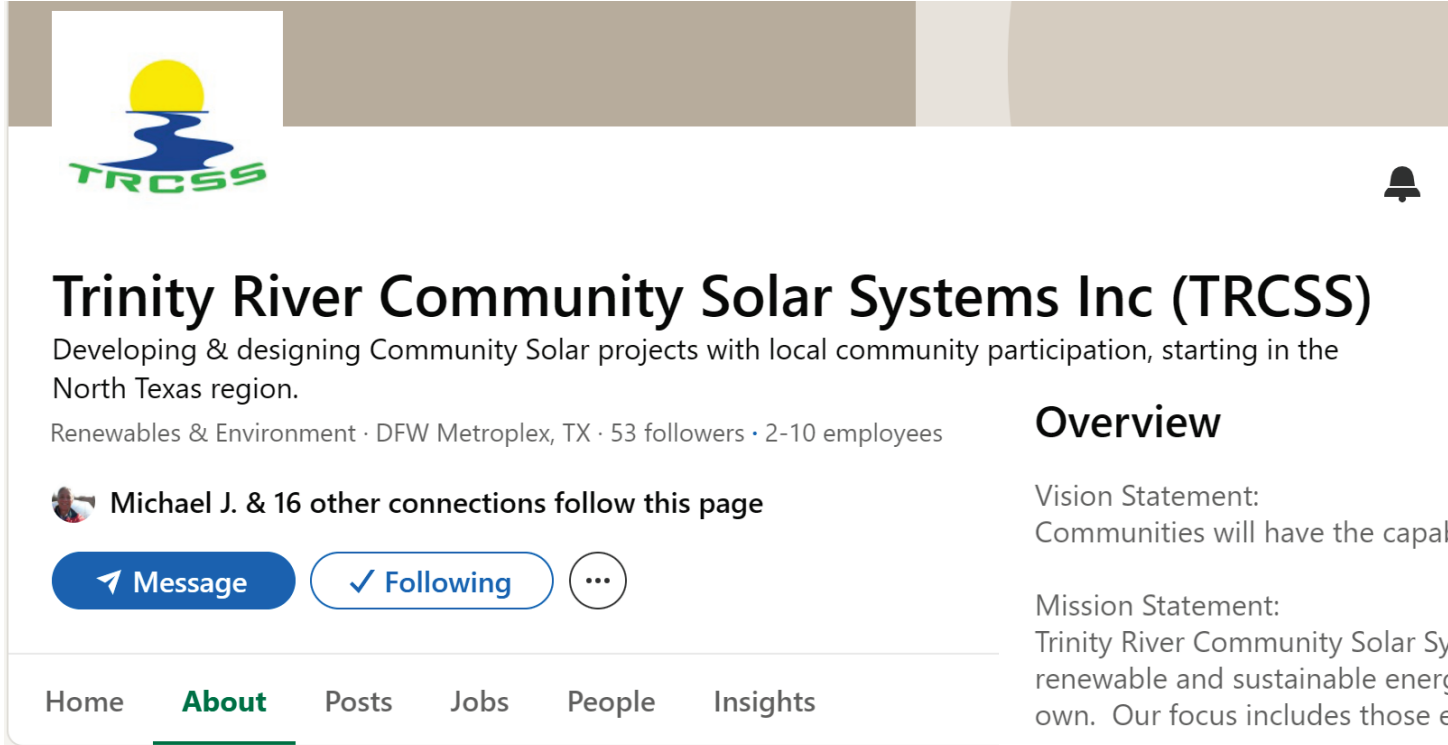
Geographic scope: “Local” (by some definition)

Interconnection: Usually at the Distribution Grid level (as opposed to the higher voltage Transmission Grid)



TRCSS: Website

- LinkedIn Business Page: <https://www.linkedin.com/company/trinity-river-community-solar-systems-inc-trcss> :



The screenshot shows the LinkedIn profile for Trinity River Community Solar Systems Inc (TRCSS). The profile picture is the TRCSS logo, which features a yellow sun over a blue river with the letters 'TRCSS' in green below it. The page title is 'Trinity River Community Solar Systems Inc (TRCSS)'. Below the title is the description: 'Developing & designing Community Solar projects with local community participation, starting in the North Texas region.' It also lists 'Renewables & Environment · DFW Metroplex, TX · 53 followers · 2-10 employees'. There are buttons for 'Message', 'Following', and a menu icon. The navigation bar at the bottom includes 'Home', 'About', 'Posts', 'Jobs', 'People', and 'Insights', with 'About' being the active tab.

Overview

Vision Statement:

Communities will have the capability to develop energy resources using sustainable technologies.

Mission Statement:

Trinity River Community Solar Systems (TRCSS) is a 501c3 non-profit created to develop & design renewable and sustainable energy resources for communities that cannot provide those resources on their own. Our focus includes those experiencing energy poverty in North Central Texas.

Motto:

Community Solar for ALL

Values:

Expertise • Honesty • Integrity • Transparency



TRCSS: Videos

- TRCSS YouTube channel:

<https://www.youtube.com/@TrinityRiverCSS>



Trinity River Community Solar Systems

@TrinityRiverCSS · 7 subscribers · 2 videos

More about this channel >

[linkedin.com/company/trinity-river-community-solar-systems-inc-trcss](https://www.linkedin.com/company/trinity-river-community-solar-systems-inc-trcss)

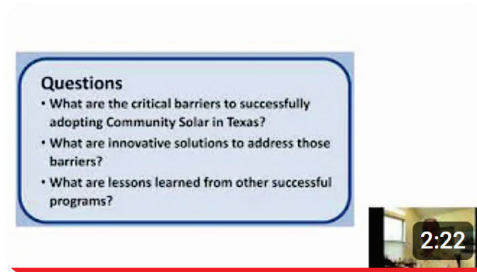
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Animated Elevator Pitch V5

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**TRCSS Poster Presentation:
Aggregated Community Solar +...**

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B) ADER: Aggregated DERs in ERCOT

1) Introduction

Part of TRCSS' approach for Energy Trading for Community Solar Using Blockchain Transactive Energy in the Electric Reliability Council of Texas (ERCOT) competitive/deregulate areas is to utilize the ability to combine relatively small Community Solar systems up to a large enough aggregation to participate in wholesale market programs through the Aggregated Distributed Energy Resources (ADER) Pilot Program administered by the Public Utility Council of Texas (PUCT).

- PUCT filings are under docket 53911: Aggregate Distributed Energy Resource (ADER) ERCOT Pilot Project:

<https://interchange.puc.texas.gov/search/filings/?UtilityType=A&ControlNumber=53911>

These begin with a Control Number Request 7/28/2022 through the latest 4/24/2024

- ERCOT information is posted on the “Aggregate Distributed Energy Resource (ADER) Pilot Project website:

<https://www.ercot.com/mktrules/pilots/ader>



ADER: Scope

Background:

- This pilot project is focused on ADERs, which will consist of aggregations of many individual sites that can inject or withdraw power from the grid in response to an ERCOT instruction.
- The pilot project would give ERCOT time to develop full framework for ADER participation while allowing some avenue for participation.
- Consistent with past pilot projects, rules for this pilot project would be established in a “governing document,” including exemptions from existing ERCOT rules. ...

Multi-Phase Pilot Project Proposal ...

Purpose of the Pilot Project in Phase 1 ...

Ref: ADER Pilot Project Presentation to the October 17, 2022 Reliability and Markets Committee

<https://www.ercot.com/files/docs/2022/11/01/ADER-Pilot-Project-Presentation-to-the-October-17--2022-Reliability-and-Markets-Committee.pptx>

Aggregate Distributed Energy Resource (ADER) Pilot Project:

<https://www.ercot.com/mktrules/pilots/ader>



ADER: Scope, continued

Key Features for Phase 1:

- Initial system-wide participation will be limited to 80 MW of registered capacity and 40 MW of Non-Spin. These limits will initially be used to establish limits by Load Zone and by Qualified Scheduling Entity (QSE) to allow for diverse geographical and technology participation.
- Participation limits may be increased, at ERCOT's sole discretion and in consultation with the ADER Task Force (Board approval not required to adjust participation limits). ...

Timeline for the Pilot:

Phase 1:

- November 2022: ERCOT to begin accepting forms from QSEs, DSPs and Resource Entities. ...

ERCOT expects that the pilot project will need to continue for a minimum of three years, across all phases, to allow for incorporation of any ERCOT system upgrades, testing of customer migration, and qualifying Resources for multiple ERCOT services, as determined to be allowable while maintaining grid reliability. ...

Ref: same as previous slide



2) Quarterly Meeting Agenda

In order to illustrate the current status of the PUCT project, here's the agenda for the Quarterly Meeting scheduled for April 25, 2024; online via Teams:

1. Welcome, Antitrust Compliance Reminder and Logistics
2. Introductions and Roll Call
3. Update from ERCOT
4. Discussion of Next Steps to Enable Participation in Phase 2 and Beyond
5. Discussion of Regulatory or Legislative Initiatives
6. Identification of Any Issue Needing Commission Action
7. Task Force Member Announcements
8. Public Comment²
9. Date and Topics for Next Meeting
10. Adjourn

<https://interchange.puc.texas.gov/search/documents/?controlNumber=53911&itemNumber=75>



Quarterly Meeting Agenda, continued

The meetings are open to the public and recordings are available:

“1 The meeting may be accessed via Teams at Meeting ID: 287 883 308 236, Passcode: qnrT2i. A recording of the meeting will be archived on the ADER Task Force YouTube channel at <http://www.youtube.com/@texasadertaskforce8290> .

2 Any person who wishes to comment at the meeting can do so by using the raise hand feature on Teams when Agenda Item 7 is reached. Public comments have a time limit of 5 minutes each and may be permitted at discretion of the chair to keep meetings on schedule. If the number of public comments is limited due to time requirements, comments may be filed in PUCT Project No. 53911.”



3) Year 2 Task Force Members

In order to illustrate the makeup of the Task Force, here's the year 2 Task Force Roster:

Transmission and Distribution Service Providers

1. Jason M. Ryan, CenterPoint Energy, Chair
2. Alejandro Ramirez, AEP
3. Wayne Callender, CPS Energy
4. John Padalino, Bandera Electric Cooperative
5. Martha Henson, Oncor

Retail Electric Providers

1. Arushi Sharma Frank, Tesla, Vice-Chair
2. Jaden Crawford, David Energy
3. Rajiv Shah, Octopus Energy
4. Ned Bonskowski, Vistra
5. Resmi Surendran, Shell

ADER Providers

1. Amy Heart, SunRun
2. Meredith Roberts, Generac (*replacing J.T. Thompson*)
3. Joel Yu, Enchanted Rock
4. John Bonnin, AutoGrid
5. Matthew Boms, Texas Advanced Energy Business Alliance (TAEBA) (*replacing Micalah Spenrath*)

Technical Expertise/Institutions

1. Carmen Best, Recurve
2. Erik Ela, Electric Power Research Institute (EPRI)
3. Margo Weisz, Texas Energy Poverty Research Institute (TEPRI)
4. Miroslav Begovic, Texas A&M University
5. Scott Hinson, Pecan Street

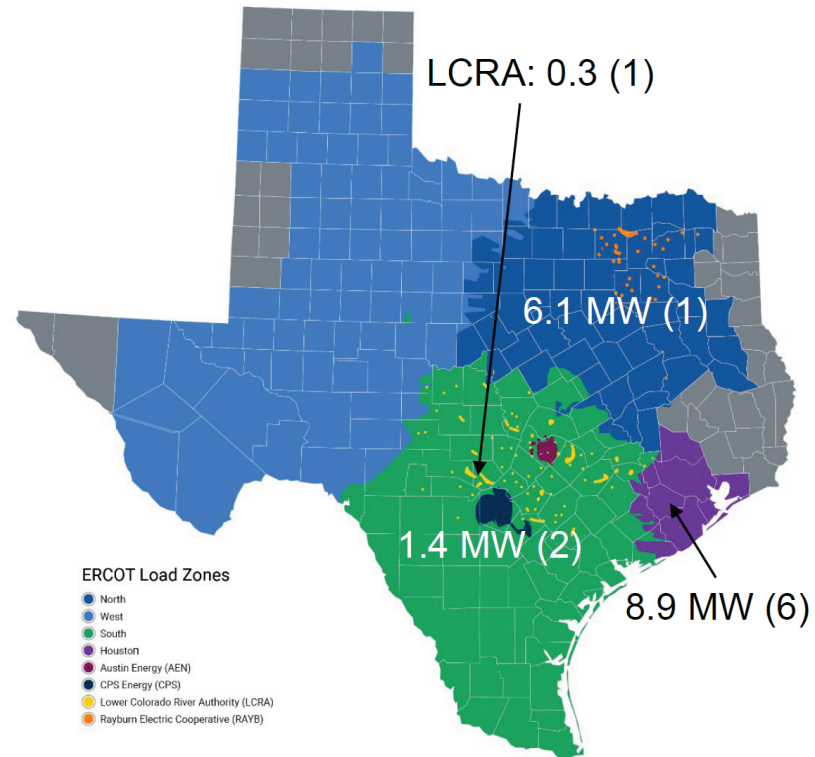
<https://interchange.puc.texas.gov/search/documents/?controlNumber=53911&itemNumber=73>



4) Status Update Presentation

This slide from the posted presentation shows a map of the Pilot Project status overview:

- There are currently 2 ADERs that have been qualified to participate in the wholesale electric market with participation starting in late August, 2023.
 - 16.7 MW capability for energy
 - 7.1 MW capability for Non-Spinning Reserve Service (Non-Spin)
- ERCOT has accepted 8 additional Details of the Aggregation (DOTA) forms. These potential ADERs are in various stages of registration and qualification and cannot fully participate at this time.
- Following slides will outline further activities and discussions with stakeholders that have taken place this quarter.



DOTA energy capability and ADER count for 10 ADERs with approved DOTA forms

PUBLIC



2



Status Update Presentation, continued

Participation limits tracking as of – April 15, 2024. North Central Texas, including the Dallas Fort Worth Metroplex where TRCSS is focusing, is in Load Zone (LZ) North:

		LZ AEN	LZ CPS	LZ HOUSTON	LZ LCRA	LZ NORTH	LZ RAYBN	LZ SOUTH	LZ WEST	ERCOT-WIDE
Energy	Limit (MW)	2.8	5.3	20.3	3.1	28.7	1.2	10.3	8.2	80.0
	Approved (MW)	0.0	0.0	8.9	0.3	6.1	0.0	1.4	0.0	16.7
	Unused (MW)	2.8	5.3	11.4	2.8	22.6	1.2	8.9	8.2	63.3
	% Full	0%	0%	44%	10%	21%	0%	14%	0%	21%
Non-Spin	Limit (MW)	1.4	2.7	10.1	1.6	14.3	0.6	5.2	4.1	40.0
	Approved (MW)	0.0	0.0	3.7	0.0	3.0	0.0	0.4	0.0	7.1
	Unused (MW)	1.4	2.7	6.4	1.6	11.3	0.6	4.8	4.1	32.9
	% Full	0%	0%	37%	0%	21%	0%	8%	0%	18%
ECSR	Limit (MW)	1.4	2.7	10.1	1.6	14.3	0.6	5.2	4.1	40.0
	Approved (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unused (MW)	1.4	2.7	10.1	1.6	14.3	0.6	5.2	4.1	40.0
	% Full	0%	0%	0%	0%	0%	0%	0%	0%	0%



Status Update Presentation, continued

Reference for the posted presentation:

<https://interchange.puc.texas.gov/search/documents/?controlNumber=53911&itemNumber=74>



5) Tesla Energy Update Presentation

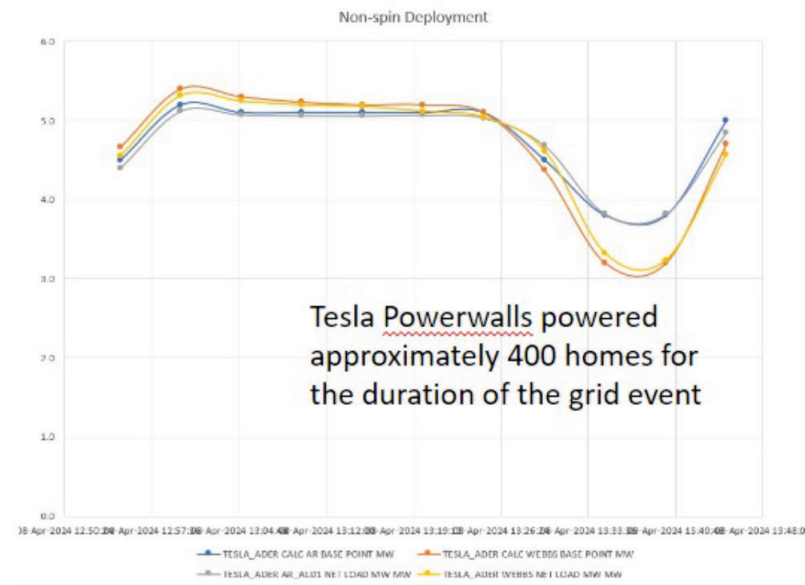
Tesla Energy was the first ADER participant and has been reporting on its implementation, which is generally referred to as the Tesla Energy Virtual Power Plant (VPP) and has been reported on in the national renewable energy press. From an update just filed for the Quarterly Meeting:

<https://interchange.puc.texas.gov/search/documents/?controlNumber=53911&itemNumber=76>

Solar Eclipse Deployment: Tesla's ADERs were deployed for Non-spinning Reserve Service

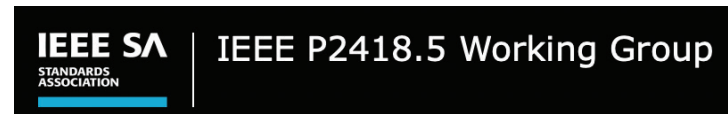


As the solar eclipse extinguished solar generation across Texas, Tesla Electric's Aggregations of distributed residential storage responded in seconds, precisely when called upon by the System operator.



C) IEEE Blockchain In Energy: 1) P2418.5 Working Group

- TRCSS has been participating in the IEEE P2418.5 Blockchain In Energy Proposed Standard Working Group and Use Cases Task Force as part of TRCSS' efforts to stay current with developments in standardization.



Scope: This standard provides an open, common, and interoperable reference framework model for distributed ledger technology (DLT), such as blockchain in the energy sector. It also covers three aspects: 1) Serve as a guideline for Blockchain DLT use cases in Electrical Power industry; Oil and; energy Gas value industry chain, covering the Renewable energy industry and their renewable related sources services of generation. 2) Create standards on reference architecture framework, including interoperability, terminology, functionality, and system interfaces for blockchain DLT applications in the energy sector by building an open protocol and technology agnostic layered framework. 3) Evaluate and provide guidelines on scalability, performance, security, and interoperability through evaluation of consensus algorithm, smart contracts, and type of blockchain DLT implementation, etc. for the Energy sector.

<https://sagroups.ieee.org/2418-5/>



2) IEEE Blockchain-Enabled Transactive Energy Page

/ Home / Verticals / Blockchain-Enabled Transactive Energy

Blockchain-Enabled Transactive Energy

Introduction

Blockchain-enabled transacted energy (BCTE) is a technology that has the potential to create an open, trusted, and transparent energy marketplace. This is important to society as it has the potential to lower the cost of renewable energy investments, improve our ability to combat climate change, encourage more participants into the renewables market, and increase the amount of innovation through transparent standards and access to the grid. IEEE, as the world's premier professional organization, is well-positioned to lead this work by applying institutional knowledge of well over a hundred years of experience in the power and energy vertical and through its leadership in establishing best practices, architectures, frameworks, and standards that are critical to the design and development of this global technology.

Currently, there is very little being done to standardize, organize and advance the application of BCTE. Any efforts in this regard are being dominated by stakeholders that have biased points of view and that are mostly producing proprietary solutions. While this work is valuable in developing standards, it takes the credibility of a trusted independent voice to create standards that can jumpstart a rapid advance in technological development by marshaling important stakeholder groups. Therefore, based on its history, core competencies, and vast professional network, IEEE is in a great position to lead the design of BCTE and help move the global capabilities forward.

Guide to Transactive Energy: What Everyone Needs to Know

Energy efficiency is more important than ever before. High electricity demand, aging power grids, and climate disasters are straining our current energy system. As a result, more people are looking to optimize energy usage—and transactive energy may offer an answer.

<https://blockchain.ieee.org/verticals/transactive-energy>



3) IEEE Blockchain Transactive Energy Position Paper and Announcements

IEEE Blockchain Transactive Energy Position Paper and Announcements

Completing this form will give you access to the position paper, and add you to a list to receive email updates on IEEE Blockchain Transactive Energy.

The Position Paper describes the basic framework and principles for using blockchain technology in power and energy domains with the emerging participatory grid. A key goal is the development of the most promising global Transactive Energy use cases which can be advanced toward broader commercialization using blockchain technology. The group's long-term goal is to build a new IEEE community/initiative around the topic of Blockchain Transactive Energy. We hope that those who are interested in the white paper will also be interested in the projects and events that this new community initiates. We will send occasional emails about these new projects and events and you can unsubscribe from these emails at any time.

First Name:

Last Name:

Email Address:

I Agree to the [IEEE Privacy Policy](#):

Submit

<https://engage.ieee.org/IEEE-Blockchain-Transactive-Energy-Position-Paper-Sign-Up.html>



4) IEEE Guide to Transactive Energy: What Everyone Needs to Know

Energy efficiency is more important than ever before. High electricity demand, aging power grids, and climate disasters are straining our current energy system. As a result, more people are looking to optimize energy usage—and transactive energy may offer an answer.

A [transactive energy framework](#) can help everyone from consumers to corporations benefit from improved energy efficiency and profit in the process. Learn more about how this system works, its economic benefits, and more in this guide to transactive energy.

Pros and Cons of Transactive Energy

If you are unfamiliar with the term, you might ask [what is transactive energy](#)? Transactive energy systems make it easier for anyone to trade and sell energy, whether they are an individual consumer, a micro-grid, or a major power company. Although this system promotes energy efficiency, it also faces significant implementation challenges. But let's go over the advantages first.

.....

Learn More about Transactive Energy

As seen in this guide to transactive energy, a decentralized energy framework holds value for individual consumers and business stakeholders alike. If you want to learn more about transactive energy, read this [position paper](#) from the IEEE Blockchain Initiative.

Interested in learning more about blockchain and transactive energy? Get involved with [IEEE Blockchain-Enabled Transactive Energy \(BCTE\)](#). This program is series of regionally diverse virtual forums addressing Blockchain-enabled transactive energy in the domain of electrical power and energy application development. To learn more about IEEE Blockchain, join the [IEEE Blockchain Technical Community](#) to stay informed of latest activities.

<https://blockchain.ieee.org/verticals/transactive-energy/topics>



D) Web 3 and Decentralization Resources: 1) Social Media: Anthony Day

Blockchain Won't Save the World Podcast with Anthony Day (also available on Apple & Google):

<https://open.spotify.com/show/16sxcLtLUqOY2o85geleQ2>

Anthony Day posts on LinkedIn:

<https://www.linkedin.com/feed/update/urn:li:activity:7189227841908105216/>

Examples:

- S4E7 Chainstack: Integrating Every Blockchain “Want to meet the man who's trying to integrate ALL the Blockchains? That's no mean feat. Jan-Jaap Jager is transforming Web3 and making it easier for anyone to build Dapps on one or many different chains ...”

- S4E5 Filecoin & a DePIN Masterclass ... “Decentralised Physical Infrastructure Networks: In short, the democratisation of compute, storage, communication and more. Optimising existing industrial-grade infrastructure and also allowing individuals to participate in a P2P sharing economy. Sound interesting and disruptive? It is.”

- S1E2 Blockchain Architecture ... ““Not the Podcast we want, but the Podcast we need right now”... The legendary Blockchain Beard Guy, Kris Bennett, talks through his Blockchain Origin story, the basics of Blockchain Architecture, his favourite use cases and key learnings for developing and scaling enterprise platforms.”

- S1E1 The ‘Set Up’ – 10 Things I’ve Learned About Blockchain “ “Welcome to the first ever edition of Blockchain Won't Save the World. This episode covers why I believe Blockchain has a marketing problem and how I plan to set the record straight. I'll share the topics that you, the community, most want me to cover in future episodes ...



2) Texas Blockchain Council



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Making Texas a Leader in Bitcoin, Blockchain & Digital Asset Innovation

The Texas Blockchain Council is a nonprofit industry association working to make the State of Texas the jurisdiction of choice for bitcoin, blockchain, and digital asset innovation.

[https://www.youtube.com/@txblockchain /videos](https://www.youtube.com/@txblockchain/videos)



3) Global Blockchain Business Council

Global Blockchain Business Council: <https://www.gbbsc.io/>

Developing the next multi trillion dollar industry through education, partnership and standards

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INITIATIVES



InterWork Alliance



BITA Standards Council



Food for Crisis



U.S. Blockchain Coalition



Blockchain Law



GBBC Giving



Post Trade Distributed Ledger



GBBC Financial Services

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Infographics

GLOBAL STANDARDS MAPPING INITIATIVE (GSMI)



GSMI 4.0



Regulatory Map



4) NFTs: Non-Fungible Tokens

Potential Uses:

- Fundraising rewards (not under securities regulations)
- Participation tracking (securities)

Background reference:

- 5 NFT Guides and Resources for Beginners to Understand Non-Fungible Tokens:

<https://www.makeuseof.com/nft-guides-and-resources-for-beginners-to-understand-nonfungible-tokens/>

Wallet example:

- MetaMask: <https://metamask.io/>

Marketplace example:

- OpenSea: <https://opensea.io/>

Application example:

- Dallas Mavericks basketball:

<https://www.mavs.com/nft-faq/>

<https://www.mavscollectibles.com/>



E) Powerledger: 1) References

<https://www.powerledger.io/>



Platform Solutions Clients About Media Blockchain Contact

Stake POWR



The power behind new energy. Powerledger develops software solutions for tracking, tracing and trading of renewable energy. We believe in the democratisation of power, for a sustainable future.

<https://www.linkedin.com/company/power-ledger/posts/?feedView=all>

Powerledger

Track, Trace, Trade every kilowatt hour of energy.

Software Development · Zug · 20K followers · 11-50 employees

<https://www.linkedin.com/in/dr-vivek-bhandari/recent-activity/all/>

Vivek Bhandari, PhD, PE (He/Him) · 1st

Technologist - Software | Blockchain | Energy | AI | Forbes

Perth, Western Australia, Australia · [Contact info](#)

4,464 followers · [500+ connections](#)



2) Light Paper

https://assets.website-files.com/612e1d86b8aa434030a7da5c/64f1a32db7bd18d4e09bc6b0_powerledger-lightpaper.pdf

Executive Summary:

In our ongoing commitment to innovation and sustainability, Powerledger proudly introduces a groundbreaking update to our blockchain framework. We have transitioned to a high-performance public blockchain, offering low transaction costs, exceptional scalability and remarkable energy efficiency. By introducing a dynamic transaction fee system, we are making it simpler for energy applications to use the blockchain while retaining the utility of the POWR token. Our ecosystem is poised for future growth and cross-chain compatibility, fostering a vibrant community of developers and entrepreneurs. With this transformation, we are driving the transition towards a decentralised and sustainable energy future.

Introduction:

This document is an incremental update to the original Powerledger whitepaper issued in 2017. This revision underscores evolutionary modifications we have implemented through extensive research and development within Powerledger's blockchain components. These adjustments highlight our ongoing work to develop a distributed power system that is resilient, low-cost, and carbon free. Our refined blockchain framework is part of constructing a platform for tracking and trading energy and environmental commodities that is more streamlined, scalable and based on cutting-edge technologies.



3) Applications

GBBC Virtual Members Forum 2024: Accelerating energy transition with Powerledger's public blockchain, 2/19/24:

Powerledger's Co-founder and Chairman, Dr. Jemma Green, and CTO, Dr. Vivek Bhandari, recently joined the GBBC Virtual Members Forum to discuss how Powerledger's public blockchain is at the forefront of driving the energy transition. Dr. Jemma Green took a deep dive into the journey of Powerledger's public blockchain, elucidating the reasons behind making this innovative technology available for public use. With a focus on high scalability, low cost, and energy efficiency, Dr. Jemma explained how the Powerledger's applications supported by its blockchain solve some of the most pressing challenges in the energy sector.

<https://www.powerledger.io/media/gbbc-virtual-members-forum-2024-accelerating-energy-transition-with-powerledgers-public-blockchain>

A closer look: The critical role of Powerledger's blockchain in peer-to-peer energy trading, 4/4/24:

Powerledger's public blockchain boasts high scalability, capable of handling tens of thousands of energy transactions per second, making it ideal for managing peer-to-peer transactions within large energy communities.



Applications, continued

Powerledger and MYTILINEOS collaborate for clean energy PPA tracking and smart sourcing, 4/17/24:

Powerledger in partnership with MYTILINEOS through Protergia to introduce, for the first time, one of its kind energy provenance tracking and tracing solutions in Greece.

With the Powerledger platform, MYTILINEOS' and Protergia's consumers can now track, trace and visualise where their energy comes from in near real-time and track their carbon footprint granularly every 5-15 minutes. Simultaneously, MYTILINEOS' and Protergia's consumers can take action on their energy consumption, shifting it to a time with a greener energy supply or investing in storage solutions. Powerledger's platform can also help them make smarter procurement decisions, such as when and with whom it would make sense to sign Power Purchase Agreements (PPAs) that contribute to a more hybrid energy portfolio, adapting better to their energy needs.

As part of the partnership, the two companies are also delivering smart solutions like green energy tracking and price discovery for EV charging points.

<https://www.powerledger.io/media/powerledger-and-mytilineos-collaborate-for-clean-energy-ppa-tracking-and-smart-sourcing>



Applications, continued



Media at Powerledger

<https://www.powerledger.io/media>

Blockchain

- Media categories
- Multimedia/video
- Articles
- Reports
- News
- Blockchain**
- Forbes
- Announcements
- All

April 4, 2024



A closer look: The critical role of Powerledger's blockchain in peer-to-peer energy trading

Powerledger's public blockchain boasts high scalability, capable of handling tens of thousands of energy transactions per second, making it ideal for managing peer-to-peer transactions within large energy communities.

March 20, 2024



Decoding Powerledger's validator framework and the potential of Proof-of-Stake blockchain

Explore Powerledger's Proof-of-Stake blockchain potential through validation.

March 15, 2024



Powerledger unveils xGrid 2.0: Energy trading just got better, faster, and more user-friendly.

Transforming energy trading with intuitive UI, granular energy tracking, flexible PPA choices, seamless API integration, all empowered by a robust public blockchain.



Applications, continued



Stake POWR



Powerledger Blockchain is Now Public

With a mission to make energy green and affordable, we present our first ever public blockchain, Powerledger Chain. Our energy-efficient third-generation blockchain facilitates the development of highly scalable decentralised apps to handle thousands of transactions per second at a low cost.

Build innovative decentralised apps for a sustainable energy future.

Explore more →

As any followers of Powerledger will know, blockchain and its associated cryptocurrency POWR are important cornerstones in our conception of the decentralised grid. As Powerledger has grown, its ambitions have expanded too; from proving it can work in principle, to getting ready to work at scale. That is why we have evolved our blockchain to incorporate the next generation blockchain technology. One of these changes is to use a blockchain that can handle a much higher throughput of transactions, and this is why we have migrated to a Solana-based blockchain.

<https://www.powerledger.io/blockchain-technology>



F) Dione Protocol: 1) References

<https://www.dioneprotocol.com/>



Dione

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Docs ▾

Projects ▾

Apps ▾

Merch

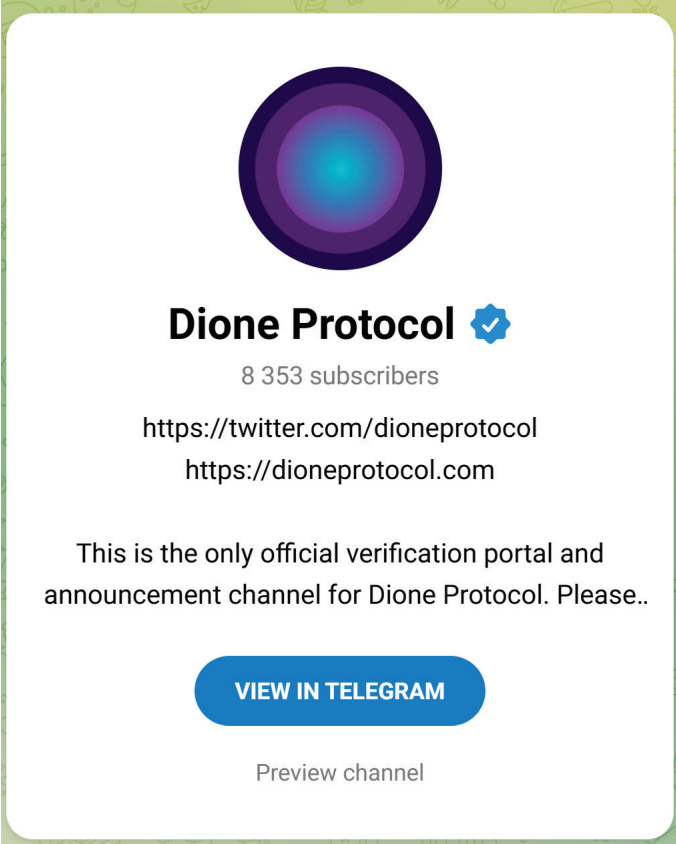
Log In

Powering the crypto revolution with clean energy
Building a sustainable future with eco-friendly and innovative blockchain technologies.



References, continued

Telegram: <https://t.co/eVOOZgK7ub>



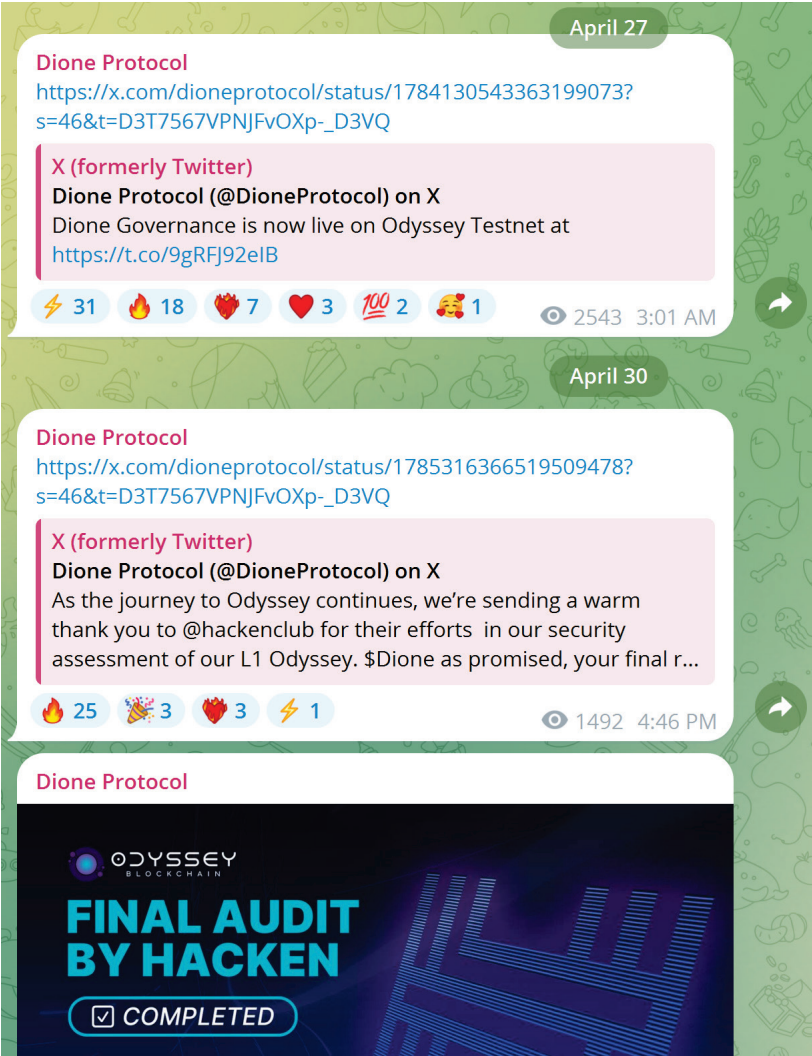
Dione Protocol ✓
8 353 subscribers

<https://twitter.com/dioneprotocol>
<https://dioneprotocol.com>

This is the only official verification portal and announcement channel for Dione Protocol. Please..

VIEW IN TELEGRAM

Preview channel



April 27

Dione Protocol
https://x.com/dioneprotocol/status/1784130543363199073?s=46&t=D3T7567VPNJFvOXp-_D3VQ

X (formerly Twitter)
Dione Protocol (@DioneProtocol) on X
Dione Governance is now live on Odyssey Testnet at <https://t.co/9gRFJ92eIB>

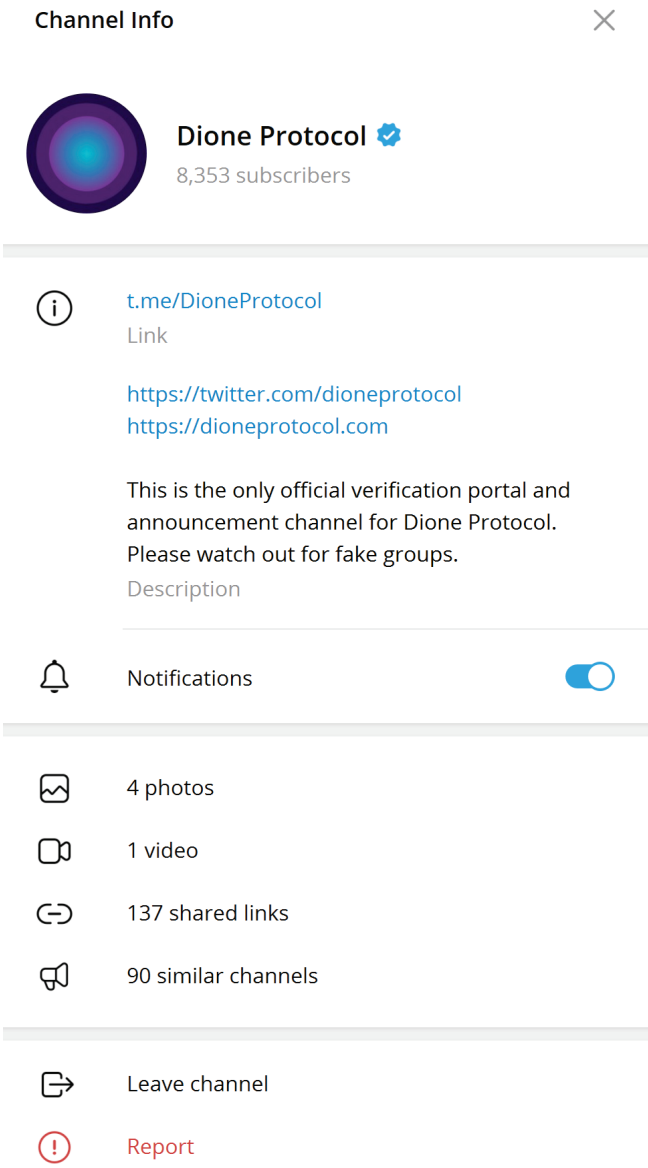
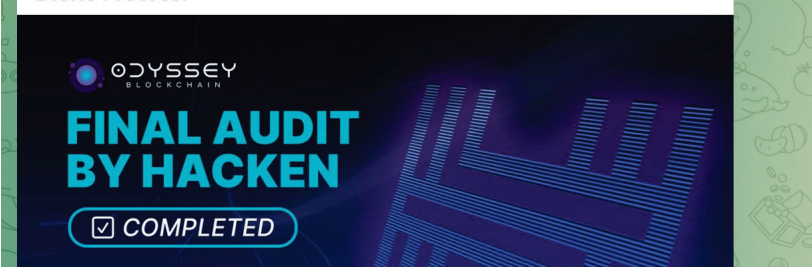
⚡ 31 🔥 18 ❤️ 7 🍷 3 🎉 2 🤖 1 👁️ 2543 3:01 AM

April 30


Dione Protocol
https://x.com/dioneprotocol/status/1785316366519509478?s=46&t=D3T7567VPNJFvOXp-_D3VQ


X (formerly Twitter)
Dione Protocol (@DioneProtocol) on X
As the journey to Odyssey continues, we're sending a warm thank you to @hackenclub for their efforts in our security assessment of our L1 Odyssey. \$Dione as promised, your final r...

🔥 25 🎉 3 ❤️ 3 ⚡ 1 👁️ 1492 4:46 PM



Channel Info ✕


 **Dione Protocol** ✓
8,353 subscribers


 t.me/DioneProtocol
Link


<https://twitter.com/dioneprotocol>
<https://dioneprotocol.com>


This is the only official verification portal and announcement channel for Dione Protocol. Please watch out for fake groups.


Description


 Notifications


 4 photos

 1 video

 137 shared links

 90 similar channels

 Leave channel

 Report



2) Whitepaper

<https://dione-protocol.gitbook.io/dione-whitepaper/abstract>

Abstract:

Using the Blockchain Technology to Democratize Green Energy

The World consumed more than 23,000 TWh of electricity in 2021 and approximately 80% of this was generated by using non-renewable energy sources, including coal, natural gas, and wood. This is nearly a 91% increase from the net consumption in the year 2000.

It is quite damaging to the Net Zero by 2050 Scenario presented by the International Energy Agency and if we continue using the same amount of non-renewable sources, there is a high probability that we will not hit the target.

Therefore, we aim to provide a solution that will reduce the barriers to entry in this industry and most importantly, enable retail customers to set up their “green energy” businesses.

To provide this feasibility, we are developing a blockchain-based platform that would incentivize everyone on the system to use green energy and make the processes and the associated supply chains more efficient and transparent for the end-users, utilities, investors, and regulators.



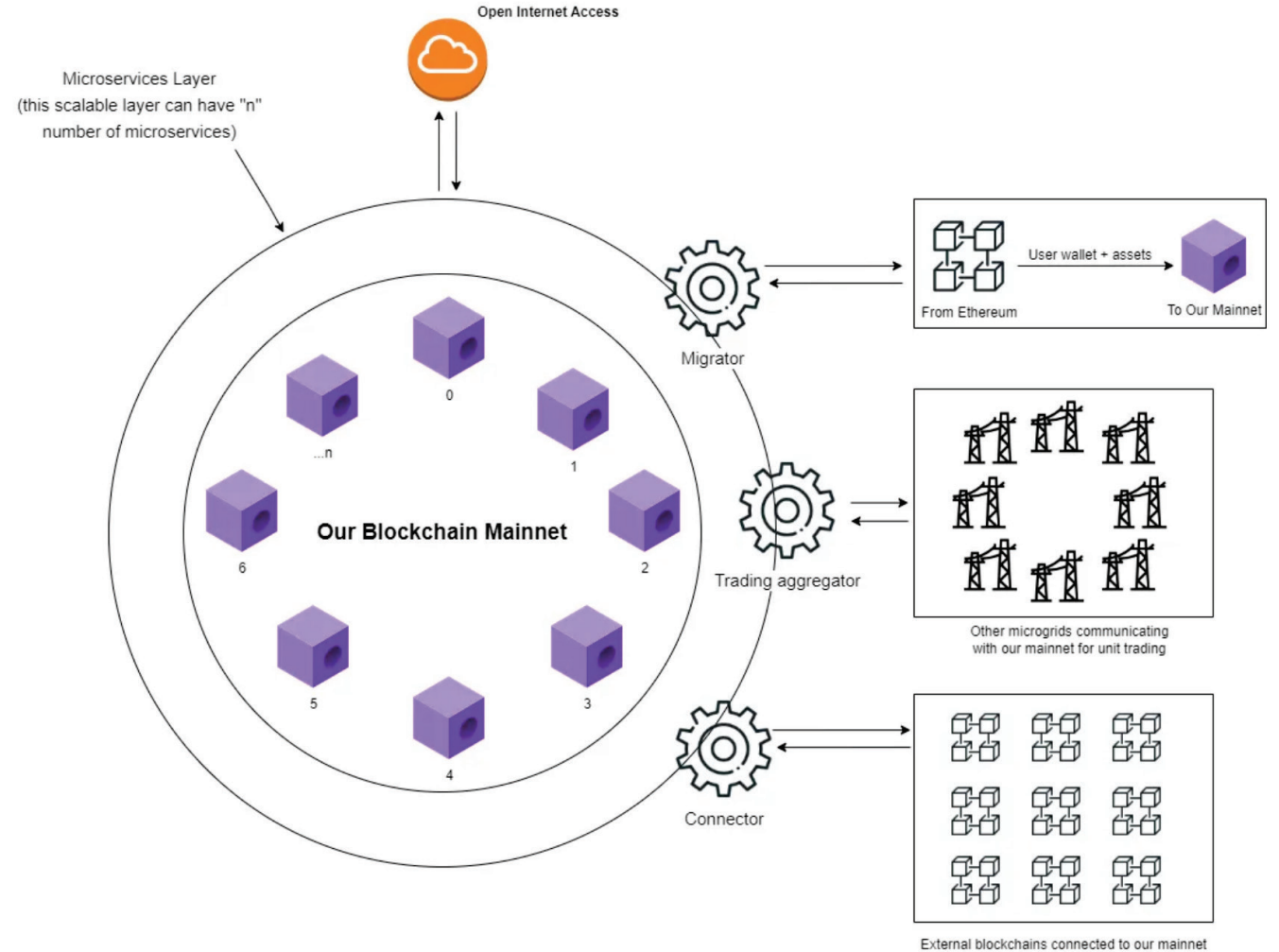
3) Projects

The green energy marketplace: Nebra by Dione, Inspired by the Nebra Sky. What is Nebra?

Nebra is a decentralized energy trading platform powered by the Dione Protocol blockchain. It aims to make renewable energy more accessible and affordable for everyone; It works by connecting energy producers and consumers on a peer-to-peer (P2P) basis. This allows producers to sell their excess energy directly to consumers, bypassing the traditional energy grid. This can lead to significant savings for both producers and consumers.

<https://www.dioneprotocol.com/nebra>

<https://medium.com/@dioneprotocol/nebra-powered-by-dione-219047088c81>



Projects, continued

Odyssey Roadmap

DESIGN

DESIGN

BUILD

✓ Design UIs for Blockchain Explorer

INTEGRATE

✓ Design UIs for Blockchain Bridge

COMPLETE

✓ Design UI for API Subscriptions

DEPLOY

✓ Development of Blockchain Explorer Front end (React) commences

DOCUMENT

✓ Fork EVM Blockchain code via Go-Ethereum.

✓ Customize PoS Consensus Algorithm to align with Dione Whitepaper/backoffice needs

✓ Customize additional architecture mechanisms of EVM Chain to align with whitepaper needs

Technical Doc

Faucet

Bridge

Explorer

<https://www.dioneprotocol.com/odyssey>



Projects, continued

Blockchain

Project Orion

Experience the true potential of blockchain technology, with Odyssey validators hosted on Starlink Satellites.

What is Orion?

Orion, developed by Dione Protocol, is a remote validator that is designed to be powered by renewable energy sources. It leverages the global satellite internet infrastructure provided by Starlink to achieve unparalleled connectivity, allowing it to operate seamlessly in remote and hard-to-reach locations. Furthermore, Orion is integrated with solar panels to harness clean energy from the sun, making it the first truly climate net-positive blockchain.

Whitepaper

<https://www.dioneprotocol.com/orion>



Projects, continued

Example: 4/20/24:

<https://twitter.com/dioneprotocol/status/1781753568418058367>

“Dione has now been added to three new @CoinMarketCap official categories.

- 1) Energy- #2 ranked in the world
- 2) Layer-1
- 3) DePIN (Decentralized Physical Infrastructure Networks)

Bridging the gap, strengthening our global grip, underlying our tenacity and our will to shine. In 3 new categories, #2 in Energy, only 1 \$Dione

Comment: CMC lists companies:

- <https://coinmarketcap.com/view/energy/>
- <https://coinmarketcap.com/view/layer-1/>
- <https://coinmarketcap.com/view/depin/>

