SUNCONTRACT

WHITEPAPER

An energy trading platform that utilises blockchain technology to create a new disruptive model for buying and selling electricity

CRYP2NOVA

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SOMETHING TO THINK ABOUT

The Earth is 4.6 billion years old. Let's scale that down to 46 years. We've been here for 4 hours. Our industrial revolution began 1 minute ago. In that time we've destroyed more than 50% of the world's rain forests. (Greenpeace)

This isn't sustainable.

Let us make a difference.
We believe sustainability isn't just a trend. It should not be a job left to the next generation. We see it as our mission. Now and in the future.

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ABSTRACT

SunContract disrupts the energy sector with a new business model, supported by the blockchain technology. Blockchain takes over the role of the middle man as a technology infrastructure, which can be trusted by default since any and all transactions on the blockchain are peer-to-peer reviewable. SunContract is a platform that directly connects electricity producers and consumers into an electricity pool based on smart contracts, which is a new, exciting and positive approach toward peer to peer electricity trading.

SunContract's vision is to support a global self-sufficient energy community based on renewable energy and peer-to-peer energy trading based on the blockchain and smart contracts. By creating such an ecosystem, SunContract would like to contribute to greater independence when it comes to energy.

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INTRODUCTION

SunContract is a project that connects three areas with enormous potential: electricity, blockchain and people. Growth and development in each of these fields is important for the quality of our lives. But joined together into a new, disruptive model of energy trading, they have the power to make our planet a better place to live in. Supporting SunContract means supporting sustainability because it brings together energy producers and consumers with common interests: to save money and to create a decentralized, smart and clean future.

Electricity is one of the cornerstones for a modern society to function. Households, hospitals, air traffic systems, road infrastructures, communication and financial service industries are all dependent on electricity. The renewable energy market is developing fast, due to increasing energy demands and greater awareness of climate changes. This consequently opens new and interesting opportunities. Research by Bloomberg New Energy Finance [1] shows that by 2040 more than 60% of total investment into the energy sector will go into renewables, which means that the total global investment will be $11.4 trillion of which $7.8 trillion will go into renewable energies and only $3.2 trillion into fossil fuel energy. This is a significant increase of investments into the renewable energy sector, especially into wind and solar power energy; the latter two, according to Bloomberg, amount to more than 65% of total investment into renewables.

In its current state, the energy market is facing challenges in the form of centralized conventional power stations that often require high costs of energy transmission over long distances. The existing electricity model with its infrastructure will not be able to cope with the increasing electricity demand that is expected to more than double by 2050. A change of the model is necessary with a shift to decentralized energy production supported by renewable energy. There has already been some movement

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towards renewable and sustainable distributed energy systems in recent years. Let's look at an example from the USA and the research done by Rocky Mountain Institute. Projections in figure 1 show that in 2015 roughly 15% of the total power generated in the USA was from wind and solar power. By 2050, it is expected to be around 71% and if you add other renewable energy sources like hydro, geothermal power and biomass it could go as high as 80%.

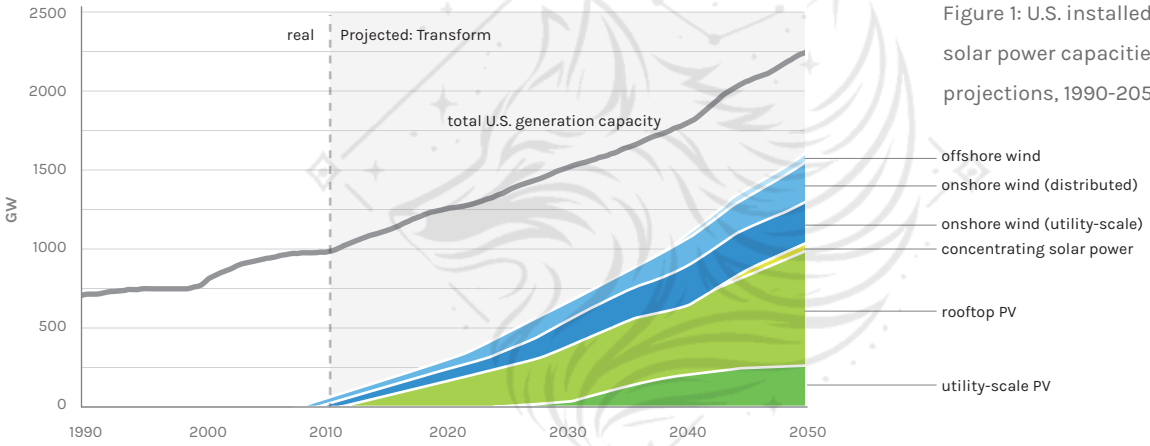


Figure 1: U.S. installed wind and solar power capacities and projections, 1990-2050 [2]

Renewable energy obtained mostly from hydro, wind and solar power will definitely help pave the way to a cleaner, more sustainable energy future.

Figure 2 shows the price and efficiency of solar panels. It is clear that over the past few years the cost of solar energy systems has dropped significantly, giving easier access to affordable, clean energy. With renewable resources, energy production became more decentralized, local and moved closer to consumption points. A distributed energy system generates power on-site, at the point of consumption and therefore significantly decreases the cost, complexity, interdependencies and inefficiencies associated with transmission and distribution.

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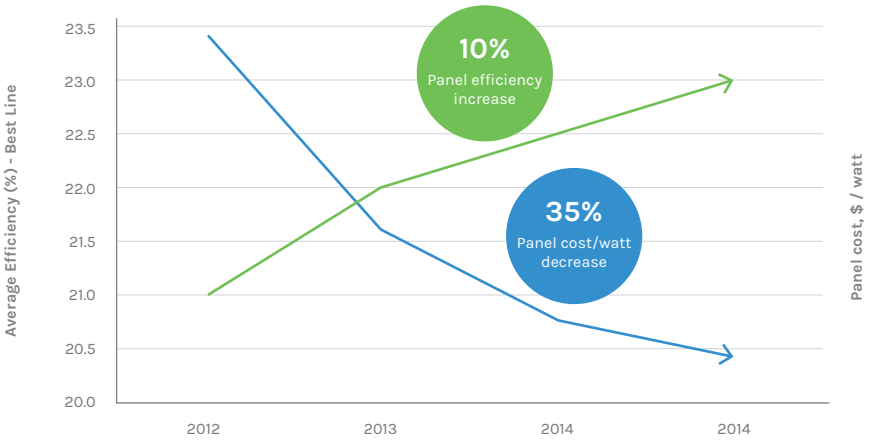


Figure 2: Panel efficiency and price [3]

Blockchain technology offers great potential too. It fits perfectly into the renewable energy sector because it enables direct (peer-to-peer) services closer to consumers and producers and offers transparency and local energy self-sustainability. We offer you the opportunity to be a part of SunContract. With this project we could build the largest electrical power pool that will enable energy self-sufficient entities and financial benefits by combining the best features of two seemingly very different, areas. Using the advantages of blockchain technology to disrupt services in the energy sector is an innovative and thrilling prospect.

SUNCONTRACT IS DEDICATED TO:

- Create a digitally-tradable crypto-token for energy trading;
- Enable personal contribution for improving the global situation;
- Support self-consumption and self-sufficiency;
- Take the full potential of local renewable resources;
- Take advantage of blockchain technologies;
- Enable transparent transactions between producers and consumers through the Pool, based on smart-contracts;
- Lowering costs by reducing or outright eliminating the role of the middleman;
- Strengthen the cryptocurrency network;
- Connect people worldwide, borderless;
- Take an important step towards reducing global warming.

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SunContract project aims to create a sun-driven economy. Our team has remarkable ideas on how to integrate blockchain technology into the energy sector, improve services and increase economic, environmental and social benefits. The funds we gather will allow us to develop and implement a variety of innovations that we are planning for this sector in the near future. This is a truly big opportunity in the energy market with the potential to reward all participants; the consumer with lower costs and cleaner energy, producers with better compensation for the electricity they produce and SunContract by the growth of the network.

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OPPORTUNITY

Our team has been active both on energy and IT markets for years. We are well aware of opportunities and have the knowledge and innovative ideas for new perspective services that can be implemented with block-chain technology.

With economic growth and development the need for electricity also increases. An estimation presented during the Event Horizon 2017 in Vienna (Energy Blockchain Conference) predicted that in 30 years the existing levels of energy will only suffice to maintain the existing infrastructure, given the population growth and the fact that more and more products use electricity as their primary source. And when energy storage and the automobile industry reach the break-through point, electricity consumption is expected to double. Figure 3 shows the increasing demand for electric vehicles, which will be a significant factor in increased demand.

There is no question about demand: it is huge. Over and above that, there is the gap between retail price and bulk price of electricity to consider as well. On average, only one third of the retail electricity price is on the energy itself, the rest are different charges that increase your bill, such as; distribution charge, customer charge, state tax adjustment charge,

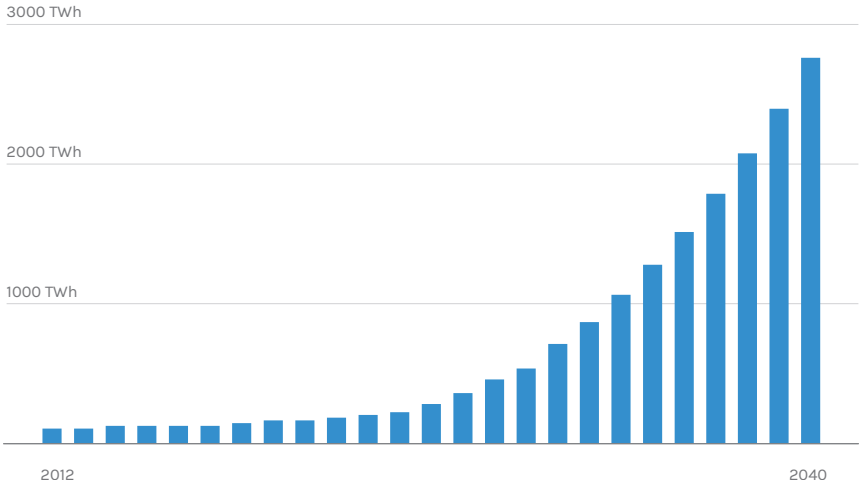


Figure 3: Power demand for electric vehicles; projection till 2040 [4]

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consumer education charge and some others. Introducing blockchain into the energy market means reducing costs by diminishing the effect and cost of the middleman. It also means optimizing consumption and production of electricity and thus transferring the added-value directly to consumers and producers.

The goal of SunContract is to replace the existing middleman role with blockchain technology in order to connect independent power producers (supply) and power consumers (demand) through the SunContract Pool via smart contracts. Smart contracts are blockchain-based programs that aim to provide trust and security superior to traditional contract law and to reduce other transaction costs associated with contracting while also saving a lot of time, since they are executed as soon as agreed by all participants. When connecting the energy sector and cryptographic infrastructure, a lot of room is opened up for business process optimisation, as well as more transparent and efficient functioning within the energy sector. With this new approach, the retail price of electricity can be diminished and that gives us an opportunity to reach a sizeable market share.

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THE VISION

Our primary objective and long term goal is energy peer to peer trading (P2P). But in order to achieve that level in energetics, a few other implications need to be addressed, starting with the **SunContract Energy Pool**. How the energy sector and blockchain technology fit together perfectly can be seen through the following analysis:

COMBINING 5 T'S AND 5 D'S

The five T's represent the fundamental features of blockchain that are crucial for implementation on the energy market:

TRUST	DIGITALIZATION
TRANSPARENCY	DECARBONIZATION
TRACEABILITY	DEREGULATION
TIME STAMP	DECENTRALIZATION
TRANSACTION	DEMOCRATIZATION



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TRUST

With blockchain technology there is no need for a trusted 3rd party to oversee energy transactions or any other services. Rules are autonomously proposed and communicated. The use of smart contracts enables all included parties to trust the technology and not rely on each other. This removes uncertainty and improves the service.

TRANSPARENCY

All transactions are public and once on the blockchain cannot be altered in any way. This ensures a healthy business environment for all participants, for energy producers and consumers alike.

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TRACEABILITY

Every transaction written on the blockchain can be traced back to the address from which it was executed. The identity of the users is never in jeopardy as it is only possible to trace the address and not the person behind it.

TIME STAMP

Blockchain also puts a time stamp on every transaction which means that you can at any time check the exact moment of transaction execution.

TRANSACTION

Transactions made through blockchain are trustworthy, transparent, traceable and time stamped, which makes them better, cheaper and generally more efficient than existing ones.

The five D's represent the features of renewable solar energy that can be achieved with the blockchain technology:

DIGITIZATION

With digitalization of electricity trading on the blockchain it becomes more flexible, transparent and traceable.

DECARBONIZATION

The rate of decarbonization needs to be accelerated in order to achieve the greenhouse gas (GHG) emissions target set by the U.S. and Europe at 80% by 2050 [5] and in order to achieve this goal we need to increase the utilization of renewables.

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DEREGULATION

The energy industry does not yet provide a level playing field. Conventional energy is subsidized in many markets and consumer segments. A conducive policy framework is a prerequisite for clean energy. Government energy policies should foster innovation as well as investment in utility-scale technologies to phase out carbon-intensive production facilities. The potential of solar and other renewables can only be realized with regulatory support in the direction of renewable energy and self-sustainability.

DECENTRALIZATION

Decentralization is the process of redistributing or dispersing functions, powers, people or things away from a central location or authority. In energy sector this definition fits perfectly and gives back power to the people-literally and figuratively, by enabling each and everybody to make

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a change for and by themselves.

DEMOCRATIZATION

Democratization of energy supply facilitates access to power as well as flexibility to choose the source of power. Distributed generation of electrical energy is an efficient mechanism to democratize supply across markets.

SunContract's disruptive model joins together the best features of blockchain technology (5 T's) and renewable energy (5 D's) to create an entirely new service that will revolutionize the existing market! If we are to reach a P2P level of energy trading, we need to establish the platform that represents the basis. This is why our focus is directed at the **SunContract Energy Pool**, which is the first and most important step towards our long term goal. Here we present independent solar power producers an opportunity to join SunContract Energy Pool and provide clean energy to power consumers that are connected to the Pool.

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HOW DOES IT WORK?

We will start by developing new services which will optimise energy trading.

Firstly, we will establish the SunContract Energy pool. The idea is to join together electrical power producers and consumers and enable them to trade electricity through the Pool. After successful registration everybody can join the Pool. But in order to actually trade electricity one would need to obtain SunContract tokens (SNC). SNC's will be issued at the SunContract token sale as a software and energy licence to use the Energy Pool.

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This is a simplified example of how SunContract Energy Pool could work:

CONSUMER

First of all, registration through the mobile app is necessary to enter the Pool. Registration will be fast and easy and will enable quick and simple smart contract signing. This is all the consumer needs to do in order to start buying electricity from the Pool. If person A already has SNC from their participation in the ICO, he or she can simply use them to obtain electricity from the Pool. Other users will have to buy SNC on the exchange in order to buy electricity from the Pool. The app will allow this transformation automatically. Due to huge potential of electricity demand worldwide and competitive electricity price in the Pool, the demand for coins will grow constantly and with it also their value.

PRODUCER

Person B has a solar power plant and he is a producer of clean renewable energy. He is currently selling his electricity to huge trading companies, where his position to negotiate is weaker. By joining the Pool, he could get better compensation for his energy. He receives tokens, which can then be traded on the exchange to get fiat currencies. The app will have an option to automatically transform tokens to Euro, Dollars or any other currencies to minimize the producer's risk.

A crucial aspect in developing a Suncontract Energy Pool is a mobile app. SunContract is already developing an app in order to make it user friendly and simple. In order to be a part of the Pool you have to register through this app. Once the registration is complete you join the SunContract community and can immediately enjoy all the benefits offered, being a power producer, consumer or both (prosumer).

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SUNCONTRACT TOKENS (SNC)

By participating in the token sale you will receive SNC tokens. As the only crypto currency we accept on the token sale is Ether, we decided to fix the amount of SNCs to the Ethers we gather. The basis for token issuance is set at a ratio of 10,000 SNCs per 1 ETH.

How many tokens you get depends on the timing of your participation.

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BOUNTY

The share of the tokens for each bounty participant will be as big as his or her contribution. The more effort one puts into promoting SunContract, the bigger the reward. A bounty will be distributed for different participation methods, such as:

- signature campaign participants at Bitcointalk.org
- following and promoting SunContract Twitter account
- publishing and posting SunContract on blogs
- topic translating.

EARLY BIRD BONUS

We decided to reward early participants. The sooner you join, the greater the bonus that will be appointed to you. We will use the following schedule:

- pre-sale; 11,600 SNCs for 1 ETH
- week 1; 11,500 SNCs for 1 ETH
- week 2; 11,000 SNCs for 1 ETH
- week 3; 10,500 SNCs for 1 ETH
- week 4; 10,000 SNCs for 1 ETH

The price of one SNC will initially be determined in accordance with the amount of funds raised through the token sale. After the token sale is concluded, SNC will also be available on the cryptocurrency exchanges, where the price will be determined according to market mechanisms.

SunContract will issue as many SNC's as needed to cover all of the ETHs gathered at the token sale (the cap is set at 100,000 ETH). This amount of tokens will then represent the base for issuing additional tokens for team members, bounties and referrals. 80% of the total SNC's number will be held by token sale participants, the rest (20%) will be appointed to the team of developers, advisers, escrows, bounties and other costs of token sale execution. We offer a boost to the amount of your tokens through participation in the Bounty or Referral scheme. No new tokens will be created after the token distribution is finished.

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HOW TOKEN SALE FUNDS WILL BE USED

- 50% development
- 25% marketing and sales
- 15% operations
- 10% legal

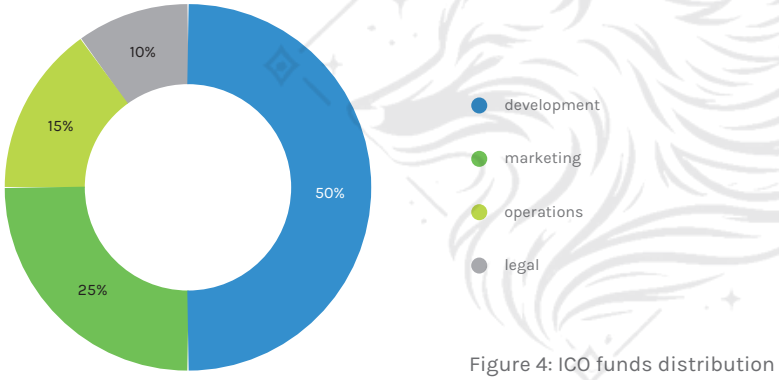


Figure 4: ICO funds distribution

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The funds will be used for development, marketing, operations, legal, governmental duties and other expenses that will occur in next few years and are needed for developing and running the project.

1. The process of Token Sale will start according to the project start strategy.
2. During the crowdfunding process, a link will be posted on our SunContract webpage. We will have full transparency regarding the amount and type of funds we gather on our "scale of gathered funds".
3. No later than 30 days after the conclusion of the token sale, our SNC tokens will be distributed to token sale participants, which includesSNC tokens as a reward. If the token sale fails to reach our minimum threshold, all funds will be reimbursed.

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ROADMAP

SUNCONTRACT P2P PLATFORM

Based on a phased approach, the SunContract P2P Platform will connect energy producers and consumers. Users will be able to trade electricity directly; the final price and quantity will be determined by trading algorithms based on auction clearings on the Blockchain. The producer and consumer will determine the bid and the asking price of electricity, at which they would be willing to sell or buy, and trading algorithm and smart contracts will do the matching and settlement. The minimum and maximum prices of electricity will be determined by the contracts for electricity sold and bought outside the pool.

During phase one, the SunContract Platform will be developed for direct selling, purchasing and balancing responsibilities. Later, additional functionalities will be added and upgraded to the SunContract Platform in order to cover ambitious objectives such as operating the flexibility market, or assets visualization across the value chain (substations, lines, EV chargers or electrification of heating).

IMPLEMENTING THE P2P PLATFORM ON A NATIONAL LEVEL

Rules for trading, purchasing and supplying, contract signing, invoice issuing differ from country to country. Therefore, a business process with a user friendly interface that is compatible with national regulatory framework will have to be accomplished.

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COMMERCIALIZING THE P2P PLATFORM

Once the successful implementation in Slovenia is completed, our ambition is to export the country model feature, customized for the adopting country.

The SunContract P2P Platform aims to offer attractive services and products in the context of P2P availability and future requirements. For this stage a new level of features for the platform will be integrated, offering end-users the options to easily engage into the flexibility market.

A decentralized energy market requires energy producers, consumers and load balancing. Using advancements on smart-grids, end-user customers of the SunContract Platform will also aid the balancing of the electricity grid through demand response. For example, the agreements regarding the time frame for charging your electric car, the grid operator thus has more flexibility to manage and regulate electricity flow. And for these services they could get compensation from grid operator.

INCREASING THE TRADING VOLUME OF P2P PLATFORM WITH RENEWABLES AND ENERGY STORAGE

Investments into renewables and energy storage could increase self-sufficiency and flexibility of the SunContract ecosystem and increase the trading volume inside the SunContract Pool. Platform users could by themselves ensure the storage of excess electricity during low demand and the option to release it as demand rises.

INCREASING THE MARKET SHARE

At this stage, the platform will be fully established and our ambition is to engage with new partners across the value chain, from academia to transnational grid operators. We would like them to use a robust business model while contributing to a broader use of the Blockchain within the energy market.

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FURTHER SERVICES DEVELOPMENT

We envision the Blockchain enabling a trusted environment for Grid management with assets management, dynamic monitoring, coordination of loads, micro-grid management, smart substation automation and metering management all having a role to play. The SunContract platform, through the Pool of actual partners and acting as an aggregate of distributed producers and consumers, could enter into such services for providing grid capacity operation.

		I	II	III
10.000	**SunContract P2P Platform**			
	Trading Market	5,000		
	Flexibility Market		5,000	
10.000-20.000	**Implementing the P2P Platform on a national level**			
	Trading Market	5,000		
	Flexibility Market		5,000	
20.000-40.000	**Commercializing the P2P Platform**			
	Commercializing the P2P Platform on an international level	15,000		
	Demand Response Services		5,000	
40.000-60.000	**Increasing the trading volume of SunContract Platform with renewables and energy storage**		20,000	
60.000-70.000	**Increasing market share, acqusitions and expansions**		10,000	
70.000-100.000	**Further grid services development**			
	Digitalisation of Assets			3,000
	Microgrid Management			15,000
	Smart Substation services			10,000
	Metering and visualization			2,000

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1. phase Q1 2018 - Q4 2018

2. phase Q4 2018 - Q4 2019

3. phase 2019-2021

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CONCLUSION

SunContract employs an international team with vision, expertise, innovative thinking, openness, management skills, marketing knowledge, developers coming from various backgrounds from IT, energy sectors, finance, blockchain, and more. With blockchain technology evolving at this rapid pace, we see its implementation into the energy sector as unavoidable. Being the first in the market, plugging the crypto-world into electricity is a great opportunity that you should not miss.

Welcome to the electro-blockchain revolution.

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