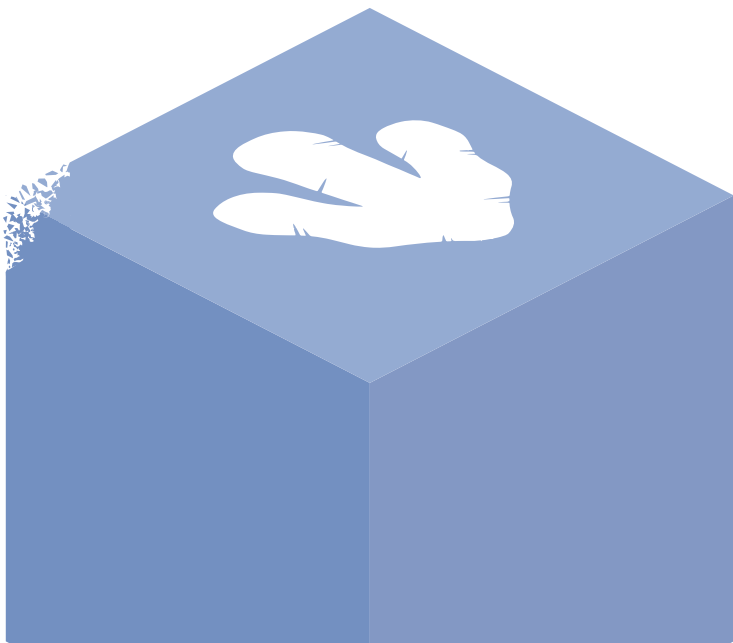
Digital Energy Currency (DEC)

The Natural Gas Reserve Backed Cryptocurrency Facilitating Clean Energy to Power the Blockchain Economy.

Author: Mohamed El-Masri

WHITEPAPER

CONTENTS



ABSTRACT

This white paper ("White Paper") will focus on the market challenges facing natural gas operators and the operational inefficiencies faced by blockchain data miners. By marrying the two, we can fill a significant market-gap for natural gas resources and meet the needs of an energy-hungry sector emerging from a digital economy.

This White Paper will hone in on the current natural gas business practices, to explain how we can radically shift the go-to-market approach of natural gas operators from selling gas into a physical pipeline to a digital pipeline where computing power is needed. Digital pipelines can be placed on-site and are free from the heavy infrastructure traditionally required to take gas to market. We introduce the Digital Energy Currency (DEC) token that is issued as a Smart Off-take Agreements (SOTA) on the PermianChain platform to create an on-site remote digital gas-to-power marketplace.

Holders of the DEC token carry a digital receipt that proves ownership to a certain volume of proven natural gas reserves (after being transferred and converted into electricity). The SOTA tokenization process transfers the rights of every kilowatt-hour generated by the volume of natural gas that is registered on the PermianChain platform into a digital energy currency (i.e. ERC20), ensuring that token holders can efficiently buy and sell computing power on a dedicated digital platform.

INTRODUCTION

Natural gas (also called fossil gas; sometimes just gas), is a naturally occurring hydrocarbon gas mixture consisting primarily of methane, but commonly including varying amounts of other higher alkanes, and sometimes a small percentage of carbon dioxide, nitrogen, hydrogen sulphide, or helium. Natural gas is a clean source of energy that can be used to power homes and industrial manufacturing operations. It is one of the primary energy sources in the world, representing roughly 1/5 of the world's energy requirements. After processing, it's still referred to as natural gas, but it becomes a flexible energy currency and even after much of it has been converted into electricity, natural gas still makes up 15% of energy used by consumers for cooking and heating (end use energy).

Natural gas trading is characterized by a high upfront capital expenditure that requires companies to build suitable infrastructure such as pipelines which are sunk capital investments. It is also characterized by a large number of intermediaries and back office costs that the blockchain could possibly mitigate. Blockchain technology has great potential for the oil and gas sector, offering the ability to optimize business models and cover the entire spectrum of energy trading. The path that natural gas takes is complicated and includes sourcing of the commodities from producers, transporting them by land and sea, storing them in terminals, tanks and warehouses, blending them to meet ever-varying customer specifications and delivering them to the right places at the right time. Blockchain offers the opportunity to manage all of these activities with a single approach, potentially reducing costs right across the industry.

Blockchain offers a new way to conduct and record transactions, like sending money. In a traditional exchange, central authorities (e.g. banks) verify and log transactions. Blockchain removes the need for a central authority and ledger; instead, the ledger is held, shared, and validated across a distributed network of computers running a particular blockchain software. The decentralised nature of the blockchain means that the blockchain network would require a "consensus mechanism" where all computers around the world that are running the network vote on network decisions and validate transactions through a process called "mining". Blockchain mining uses up a lot of electricity and requires consistent low-cost energy to maintain profitable operations since miners on the blockchain network are paid/ rewarded with the digital currency of the blockchain network which they operate on.

For the sake of this White Paper we will focus on the Bitcoin network, which consumes approximately 0.1% to 0.3% of the world's energy production, roughly between 35 and 41 terawatt-hour (TWh) per year. With over 153 billion cubic feet of natural gas being flared (wasted, burnt into the atmosphere) or stranded (left in the ground) globally, there is an opportunity to direct previously wasted natural gas resources to where blockchain computing power is needed to keep the Bitcoin network running while simultaneously conserving energy and increasing the oil and gas sector's profitability.

NATURAL GAS ENERGY CURRENCY

Natural gas can be used with very minimal processing, it is often considered a primary energy source, but since it's delivering energy services (i.e. powering homes and appliances, end use energy) it could be considered an energy currency. A straight-forward definition of an energy currency is electricity, since electricity is what is required to power (pay for) the use of laptops, cellphones, home appliances, etc. Natural gas, as a primary energy source, can be transferred and converted into electricity. This phenomenon makes natural gas resources, which are clean and flexible a viable resource for electricity generation. An energy currency is simply a transformed form of energy that came from a primary source, but is easier to use, transport, or store.

This model of energy currency is an intermediate step which works best with electricity. Electricity is flexible, easy to use for just about anything, and is made specifically for the transportation and use of energy. Electricity will never run out because the electrons aren't getting used up; they're just carrying energy by moving. More energy can always be put into the same electrons over and over again, and taken out to use for more energy services.

NATURAL GAS ENERGY DISTRIBUTION

When energy is produced as electricity, gasoline, liquefied natural gas or any other form, it requires transportation to where it can be made useful. Traditionally, natural gas is distributed through dedicated pipelines to where it can be refined for end use. The enormous cost of constructing these pipelines limits their use to locations where very large volumes of product are to be moved for an extended period of time, and the payback period for them is typically 15-20 years. Electricity can be distributed through the electrical grid which is what we call the network of wires that transmits and distributes this electricity. This grid includes both large high and low-voltage power lines, along with numerous substations that efficiently transmit this power to consumers.

The Problems

Integration, long-term contracts, and opacity

The process leading of extraction, transportation and trading of natural gas is lengthy and requires upstream integration, joint ventures, pre-payments on offtake agreements and technical support requirements. Streamlining this approach through a blockchain-enabled digital platform that enforces the functionalities of smart contracts and distributed ledger technology (described below) would be a significant benefit for oil and gas companies.

Trading firms aim to maximize the price differential between the price they pay for [untransformed] commodities and the revenue they earn by selling [transformed] commodities. Minimizing the overall cost of acquiring commodities is therefore a priority. They work with producers to secure long-term, cost-effective supply. However, getting gas to market requires significant initial capital expenditure for most oil gas companies.

By eliminating the need for transportation and selling of natural gas through pipelines and instead bringing the market for natural gas on-site, natural gas operators can transfer and convert their natural gas energy sources into electricity and direct this energy source to power blockchain computing systems (i.e., bitcoin mining) that are placed in modular and remote shipping containers. This creates the digital energy currency use case.

Long-term power purchase arrangements (PPA) are known as a form of offtake agreement, usually used for purchasing electricity between utility companies and electricity generation facilities, in our case, natural gas operators adopt electricity generation as a line of business. Conflicts related to offtake agreements can arise from termination, price review negotiations, unforeseen events, compliance, regulations, accountability, dispute resolution, and more. All are major challenges to consider for energy trading. The lack of transparency throughout the supply chain, from extraction, power generation to trading, can lead to the mismanagement and misappropriation of revenues. Ongoing reporting obligations (such as Canada's Extractive Sector Transparency Measures Act) can be a significant burden to some of the sector's small and mid-sized enterprises (SMEs). We believe that there is an opportunity to deliver a more straight-forward, streamlined approach that would generate higher net benefits from stranded and/or wasted natural gas resources.

Natural gas waste and inefficiency

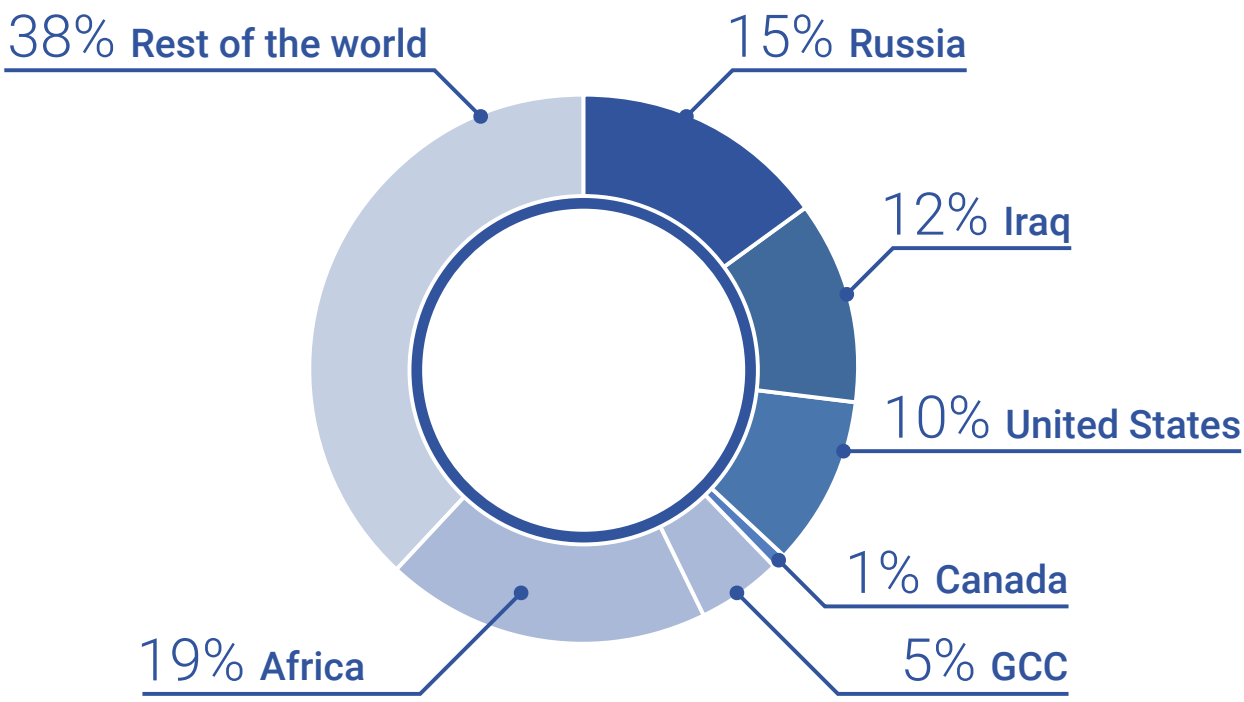
There are two main ways that natural gas is wasted:

1. the controlled release of produced gas into the atmosphere, commonly known as flared gas, burning gas into the atmosphere; and

2. stranded natural gas, which is untapped gas that cannot be extracted due to logistical and economic barriers.

In many cases, the high cost associated with investing in gas pipelines and the associated infrastructure that would be required to take gas to market, makes it less costly to burn the gas onsite or just leave it stranded. Moreover, an investment into gas pipelines is a sunk cost, irrecoverable in many cases. There are approximately 150 billion cubic meters of natural gas being flared around the world, costing the industry over US$16 billion. That is a considerable opportunity cost.

Figure 1: Global gas flaring volumes



GCC = Gulf Cooperation Council (Saudi Arabia, UAE, Kuwait, Bahrain, Oman, and Qatar).
Source: World Bank, NOAA, Colorado School of Mines, GGFR Rounded numbers.
www.worldbank.org/en/programs/gasflaringreduction#7.

Data Center Energy Consumption

Commercial data centres currently consume more than two percent of the world's electricity. With global data traffic more than doubling every four years, data centres are a key focus for energy efficiency to minimize costs and environmental impact. In 2017, Microsoft launched its first data centre farm powered entirely by natural gas to make its data centres more cost-effective and energy efficient. This is part of the cloud giant's efforts to cut its dependence on the electrical grid. The commercial data centres used by companies like Microsoft tend to consume much more energy than data centres used for Bitcoin mining and require more sophisticated equipment to comply with higher industry standards. Unlike enterprise servers where it is difficult (if not impossible) to draw a one-to-one correlation between server energy use and financial return, this correlation is readily obtainable from blockchain computing and Bitcoin mining operations. This is possible, in part, because while enterprise servers will handle a multitude of different applications, the Bitcoin mining servers are designed to do only one thing: —mine Bitcoin. Understanding the influencing parameters when planning a new mining data centre will provide valuable data and analysis techniques to maximize the owner's return on investment .

Bitcoin mining is a reasonable gateway to enter the data centre powering business for natural gas exploration and production companies. By commissioning mining data centres we can mitigate risk from trial and error with straight-forward and less complex operational requirements using standard mining server design such as application specific integrated circuits (ASICs), standard data centre structure and envelope (i.e., containerized units), straight-forward cooling and air distribution using standard cooling equipment. Additionally, it is easier to account for energy consumption and upfront cost by analysis on location, system type and server performance.

The reason we believe data centres should continue to be a key focus of the PermianChain's marketplace and why natural gas operators with power generation capabilities should serve these businesses is because we can see an untapped market to account for the significant opportunity cost associated with the natural gas industry.

- Data centres require locations for scalable operations;
- Data centres can be managed remotely with scheduled maintenance requirements or onsite management in case of emergencies; and
- The world's growing need for data centres will continue as long as digital technology and the internet continue to grow. Bitcoin mining as a subset of data centre operations is a viable source of revenue, but requires clean source of low-cost electricity, which natural gas operators can supply.

The continued growth of artificial intelligence, internet-of-things, and everything digital seems inevitable. The world will need to conserve energy and manage resources efficiently to allow for advancements in digital technology. The year 2020 will see approximately US$20 billion capital expenditure for data centers worldwide , and they are expected to consume 73 billion kilowatts. These data centres require physical locations, ongoing flow of electricity and efficiency that reduces down time and less reliance on the electrical grids.

THE BLOCKCHAIN SOLUTION

Smart Contracts

By eliminating the need for transportation and bringing the market onsite, natural gas operators can transfer and convert their previously wasted natural gas into electricity and use that energy currency to power blockchain computing systems (i.e., Bitcoin mining).

Imagine a group of companies that want to trade oil and gas with one another. Normally they would exchange paperwork and keep their own lists of trades. If they could move to a blockchain-based system for trading their oil and gas, they could potentially reduce paperwork and have more robust record-keeping that could be used to enhance trade analysis. Even further, if that blockchain-based system comes with a marketplace that has demand for efficient low-cost electricity we can serve a niche market without the need for high capital expenditure to bring gas to market.

Many conglomerates are formed with ambition to replace paper trading systems with blockchain trading systems. They generally do not aim to tokenize real-world assets directly, but rather to use a blockchain system to trade real-world assets. The PermianChain's DEC-SOTA application is a hybrid of the old paper record approach and the new blockchain approach. The DEC tokens only have value within the context of a contractual system involving all of the participants.

Now let's add fungible and tradeable smart contracts to such a system. A smart contract is a set of promises, specified in digital form—specifically as a distributed application—including protocols within which the parties perform on these promises. The SOTA is intended to function as a smart contract that facilitates transactions between natural gas producers and data mining companies to enforce trading of field-generated electricity. SOTA's benefits allow companies to cut costs on legal barriers allowing well-enforced cross-border transactions and provides encrypted digital

signature capabilities. SOTAs can be programmed using Solidity language on the Ethereum network. The deployment and compatibility of SOTAs on the PermianChain platform will allow buyers and holders of Digital Energy Currency (DEC) tokens to exercise their purchases instantaneously. Each SOTA transaction will be registered on the PermianChain and immutable on the Ethereum distributed ledger technology. Further reporting from other relevant resulting data are also published on the PermianChain platform using IBM's Hyperledger, an enterprise and private blockchain solution.

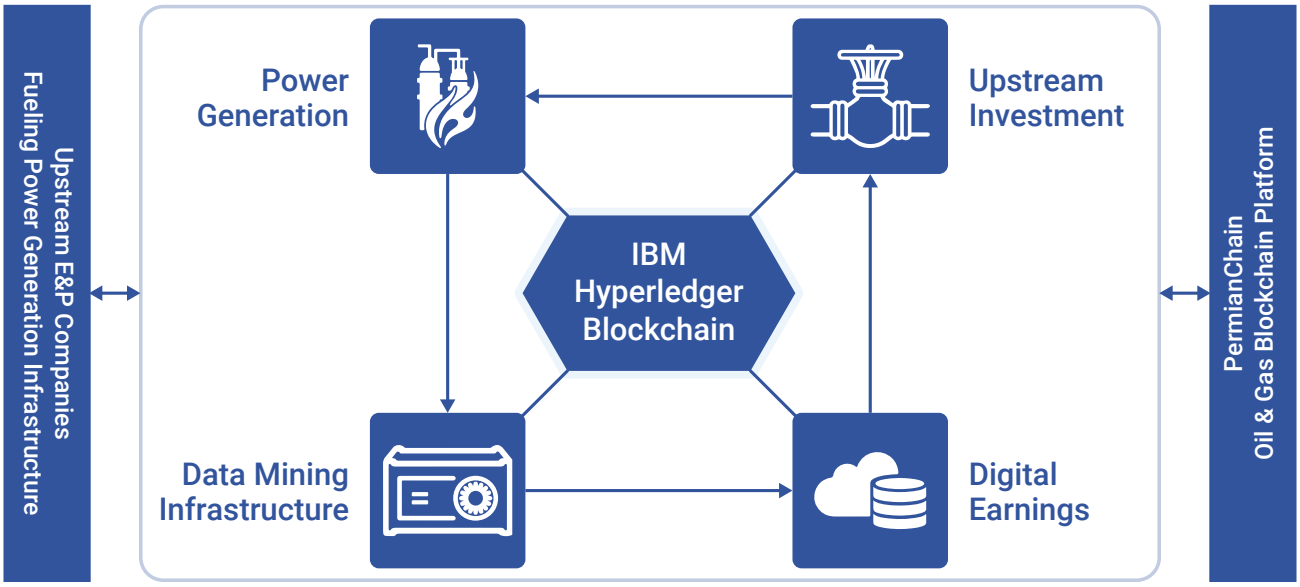
PermianChain's blockchain-enabled energy marketplace offers a trading system with immutable receipts to data mining companies that are looking for a cleaner and more economic source of electricity from natural gas operators. It allows independent oil and gas companies to sell and monetize proven gas reserves. By using a blockchain, suppliers can dramatically reduce their operational expenses by effectively eliminating the need for brokers.

Natural Gas-Powered Data Mining

With the advancement of digital infrastructures and enhanced transaction protocols, high performance computing and data mining hardware can be used by oil and gas operators to implement an oil and gas blockchain-integrated framework (OGBiF), creating a new business-model for oil and gas. This business model make efficient use of excess or wasted natural gas, transforming it into electricity that can be used to power mining data centres that house blockchain computing servers for data mining operations. The blockchain computing data mining operations receive miner fees and transactions fees in the form of digital currency (i.e. Bitcoin) directly to the mining company's digital wallet. Oil and gas operators can utilize this business model to:

- Register natural gas reserves and monetize energy on the PermianChain blockchain;
- Receive Bitcoins as an auxiliary source of revenue which can be liquidated to translate into cash-flows for operational expenses and/or distributed to shareholders as dividends; and
- Sell their field-generated electricity to third-party Bitcoin mining companies that are seeking locations and lower-cost electricit.

Figure 2: Oil and Gas Blockchain-integrated Framework (OGBiF)



By deploying on-site power-generation infrastructure to convert natural gas to electricity, we can power on-site data centres for various data mining operations and make efficient use of natural gas that would otherwise be wasted, increasing netback and net benefit. By using SOTA, we can create a new market for natural gas trading in the form of electricity. Bitcoin miners can now purchase cost-effective electricity, and producers can meet regulations on wasted natural gas while monetising their natural gas resources.

Pilot project

PermianChain is now testing a pilot project with Brox Energy Operations Ltd. (“Brox”) an Alberta-based energy company which has deployed a 700-kilowatt Bitcoin mining data centres using around 105,000 cubic feet of natural gas per day to power 193 ASICs. The wellsite consists of a total 700 million cubic feet of natural gas reserves which are being tokenized by PermianChain under the DEC.

This proof of concept is now being registered on the PermianChain platform to allow Brox to sell natural gas reserves in the form of kilowatts to third party bitcoin miners who wish to participate in co-location space (placing their own servers in Brox-owned data centres) or to deploy their own mining data centres on locations operated by Brox while purchasing on-site field-generated electricity using SOTA frameworks under the DEC smart contract.

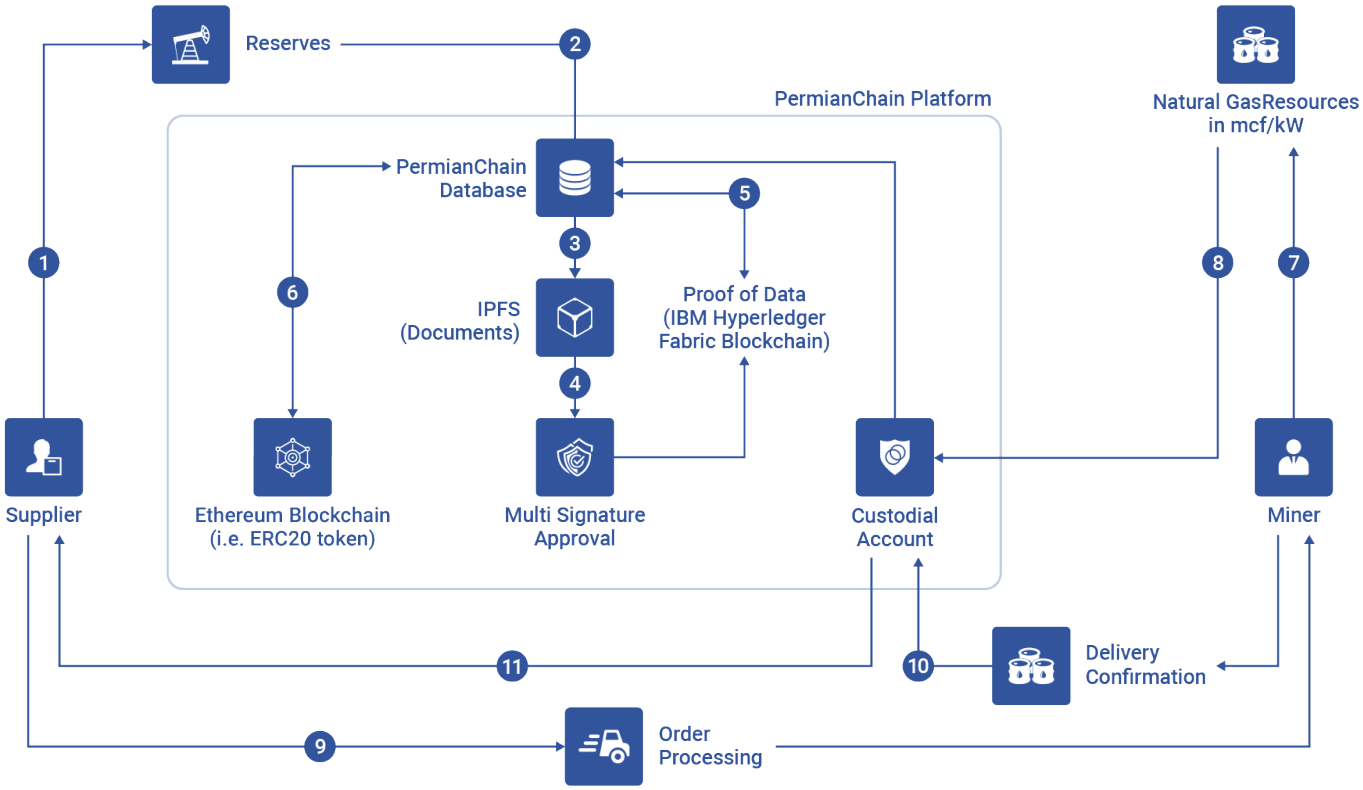
Our analysis shows electricity costs as low as $0.03 to as high as $0.05 per kilowatt-hour compared to the usual $0.07 to $0.12 per kilowatt-hour on the market today. A potential reduction in ongoing operational expenses for mining data centres resulting in higher profits and lower payback periods.

THE TOKENIZATION SOLUTION

Digital Energy Currency

Off-take agreements represent an attractive alternative method of financing for oil and gas companies. By adopting smart contracts and blockchain solutions, natural gas companies (suppliers) and data miners (off-takers) can now efficiently buy and sell natural gas in the form of electricity using PermianChain's Digital Energy Currency (DEC), which serves as a utility token facilitating the buying and selling of electricity under a smart contract from within the suppliers' blockchain-enabled business-to-business marketplace.

Figure 3: How PermianChain Blocks Work



1. Supplier submits due diligence documents to the PermianChain, including but not limited to, reserve reports, well logs, details of total proven reserves, total probable reserves, etc...
2. Documents are uploaded to the PermianChain database.
3. Supplier's uploaded reports and documents are stored on decentralized cloud storage.
4. PermianChain experts and advisors (i.e. petroleum engineers, A&D consultants, geologists) conduct due diligence on the supplier's submission. Once a minimum of two experts approve the submission, supplier data and reserve reports are added to the PermianChain blockchain explorer (IBM Hyperledger Fabric).
5. IBM Hyperledger Fabric blockchain generates a hash of each dataset and saves it to the PermianChain blockchain explorer.
6. The PermianChain appointed treasurer unlocks tokens and makes them available for sale.
7. Miner buys tokens to secure power from natural gas resources.
8. Miner submits purchase order and sends order amount to custodial account (escrow) where it is held until the miner receives natural gas power.
9. Supplier processes order to supply power generation.
10. Miner confirms trade on the platform.
11. Trade confirmation releases escrow to supplier.

THE OPPORTUNITY

The inclusion of digital currency mining solutions allows for an auxiliary source of revenue for oil and gas organisations and brings data crunching to a new level. OGBiF is a business-model enabler that supports natural gas operators by establishing direct access to a new market of energy-hungry data miners. In addition, company-owned Bitcoin mining data centres can generate economic value, providing an auxiliary source of income in the form of Bitcoin rewards, and can potentially increase net present value by securing offtake through SOTAs using DEC as a bridge currency. Secured revenues translate into stable cash flow projections which increase net present value of a company. Petroleum consultants valuing these assets should soon enough start taking into account the value derived from the natural gas to electricity conversion instead of the standalone value of natural gas flowing through sales pipelines at Alberta Energy Company (AECO) prices. With the OGBiF adoption, the industry should be able to take into account what is commonly known as the Spark Spread, which, in short, is the difference between the wholesale market price of electricity and its cost of production using natural gas.

Putting this into perspective, Canadian natural gas operators in most cases, sell their gas into the market based on the AECO benchmark price. Assuming AECO price is at USD1.60 per thousand cubic feet (mcf), natural gas operators would generate their revenue based on that price.

If natural gas operators were to deploy a one megawatt-hour power plant facility by the well-site to transform natural gas into electricity, the revenues would be based on the electricity price instead of the AECO price. If a kilowatt-hour (kWh) is sold at USD0.05, we could assume a 1,000-kWh facility, which equates to one megawatt-hour (MWh) could equal to the following example:

1,000-kWh x 24 hours = 24,000 kW/day

24,000-kW/day x $0.05 = $1,200

Now compare that with selling 300 mcf (which is the estimated amount required to generate a 1,000-kWh facility).

1 mcf = $1.60

300 mcf x $1.60 = $480

Based on the above, rough estimates show that a natural gas operator can make around 2.5 times revenue per mcf if that same amount of gas was converted and transferred into electricity to be sold on the market or to third-party data centre operators for as low as five cents a kWh. The price of 1 mcf in the example above would have to equal to USD4.0 to match the net-back or revenue multiple coming from the Spark Spread.

Now let us assume natural gas operators go the extra mile and integrate the OGBiF business-model to deploy natural gas-powered Bitcoin mining data centres. Let us also assume that the 1,000-kWh generated above are not sold to the electrical grid or any third-party data centre operator, but instead are used by the natural gas operator to power their own company-owned bitcoin mining data centres. Based on our findings from a recent proof of concept, a 1,000 kWh bitcoin mining data centre would fit approximately up to 289 ASICs of the latest models. 289 ASICs running on 1,000-kWh could generate around 0.3 Bitcoins per day, which translates to around 9 Bitcoins per month. The net-back would depend on the value of Bitcoins at the time of liquidation. Assuming Bitcoin is priced at USD9,000 and taking in consideration the above example, those 9 Bitcoins would generate a whopping USD81,000 before expenses and operating costs. Considering that the operator's operating cost is simply equipment maintenance and ongoing gas supply (which is in excess, stranded or being wasted) the net-back here could be as much as five (5) times per mcf. However, should Bitcoin price drop to previous lows, assuming USD5,000/BTC that would translate into $45,000 which could still result in a net-back of 2.5 to 3.0 times per mcf.

CREATING A CIRCULAR ECONOMY

The integration of the OGBiF on the PermianChain platform allows for DEC token holders to participate in conserving natural gas resources to generate earnings in the form of bitcoins that can be distributed in real-time. The platform creates an untapped marketplace to a niche market that is driven by energy conservation solutions for social and economic benefit. The Bitcoin network alone consumes more than seven gigawatts of electricity with a network size of 200 gigabytes. Bitcoin is currently consuming more than 58 terawatt-hours, that is 0.25% of the world's electricity consumption and almost as much as the entire energy consumption of Switzerland. This could support a circular economy by bringing cheaper cost of electricity (from wasted natural gas resources) to power the world's blockchain computing and data mining farms with a cleaner source of energy. Ultimately, by getting electricity straight from the source and being able to provide cheaper and more reliable computing power for data mining operations on a digital platform that streamlines the process using trust- and transaction-protocols, we can reward DEC holders with a new form of economic empowerment.

Figure 4: Circular Economy

DEC TOKEN DETAILS

Maximum Supply	**1,500,000,000**	**100%**	**The maximum supply of DEC tokens**
Reserves	550,000,000	37%	Total supply of DEC tokens reserved for future natural gas power generation supply. Reserve tokens would be locked for 365 days.
Token Float	800,000,000	53%	The total supply of DEC tokens to be offered to PermianChain platform users who want to purchase electricity for their blockchain computing power (i.e. Bitcoin mining). DEC tokens will only be released to the PermianChain platform in proportion to electricity (kWh) registered onto the platform to ensure 1 kWh for each floating DEC token.
Restricted Tokens	150,000,000	10%	Total supply of DEC tokens reserved founders, team members and advisors. Restricted tokens are locked-up for 180 days from the day of distribution.

DEC PRICING DETAILS

During the time of Private Sale and Platform Sale (see page 27) the DEC token pricing will be fixed at $0.05/DEC. The benefit to private sale participants is that they will be able to purchase electricity for as low as $0.03/kWh (making each DEC token worth 1.6 kWh) whereas the platform sale buyer will have access to electricity at $0.04/kWh (making each DEC token equal to 1.25 kWh).

Post-sale, the DEC token price will be determined by the market, but will always use the the Alberta Electric System Operator (AESO) wholesale price of electricity as a benchmark index. AESO manages and operates the provincial power grid for Alberta. This pricing mechanism is intended to provide token holders and the community a benchmark for their SOTA exchanges on the PermianChain platform. Other benchmarks and indexes may be considered in the future.

DEC TOKEN SALE DETAILS

Token Sale Start Date	To be determined
Token Sale End Date	Open-ended
Token Price (USD)	Private Sale: $0.035 Platform Sale: $0.040 (accepting USDC and QCAD)
Private Sale Allocation	13%
Public Sale Allocation	40%
Country	Canada
Token Distribution Date	To be determined
Token Contract	https://etherscan.io/token/0xa6D7BCc3c352700d891DA2B5DCaf2fa7A2A0c383

USE OF DEC TOKEN SALE PROCEEDS

Digital Energy Conservation [Electricity Generation]	90% of all proceeds from DEC token sale will by default exercise SOTAs to secure electricity generated from natural gas suppliers. Suppliers convert natural gas into energy and miners (DEC token holders) use the generated energy to power their data mining servers in containerized data centres ("Mobile Data Centres"). Miners can claim their electricity supply using their DEC tokens. This provides DEC token holders access to remote locations with low-cost electricity to power blockchain computing [cryptocurrency mining].
Marketing	5.0% of all proceeds from DEC token sale will be allocated towards marketing and branding efforts. The PermianChain campaign will be launched by Blockworks Group and the Blockchain Research Institute. The Marketing will focus on with prominent oil and gas, blockchain and cryptocurrency media outlets (i.e. Blockworks Group, OilPrice.com, CoinTelegraph, CoinMarketCap.com, etc…) as well as Podcasts and relevant conferences, in addition to our social media channels. The marketing and branding campaign is intended to strengthen PermianChain's online presence and brand awareness across the oil and gas, blockchain and cryptocurrency markets.
Human Resources	2.5% of all proceeds from DEC token sale will be allocated towards retaining the best possible talent and to provide ongoing training and development.

Research & Development	2.5% of all proceeds from DEC token sale will be allocated towards further research with prominent institutes such as the Blockchain Research Institute in Toronto and the Petroleum Technology Alliance Canada in Calgary. We believe that participating on research papers with prominent institutions will give us a competitive advantage and increase brand awareness. Further resources will be allocated towards ongoing development of the PermianChain platform to enhance user experience, user interface design, security, interoperability, and move towards developing a proprietary blockchain with a native token.

DEC ELECTRICITY TRADING SCENARIO

(References to currency in USD)	Private Sale	Platform Sale
***Total Token Floating**	**200,000,000**	**600,000,000**
Cumulative Token Floating		800,000,000
Token Sale Proceeds	$7,000,000	$24,000,000
**Cost of kWh (DEC Price)	$0.035	$0.04
Power Capacity (kWh)	22,831	68,493
Cumulative Power Capacity (kWh)		136,986
DEC: kWh	1.0	2.0
Token Value @ $0.05/kWh	**$0.49**	**$0.49**
Token Cost	$0.035	$0.04
Token Profit	$0.014	$0.009
Profit Margin ($/kWh)	**41%**	**23%**

*Total Token Floating is the cumulative amount of DEC tokens in circulation and that are readily available by DEC holders to buy and sell electricity on the PermianChain platform. Total Tokens Floating may increase with time as the PermianChain platform identifies more electricity generation supply.

**It is expected that PermianChain users who purchase DEC during the Private Sale will have access to lower cost electricity. They would then be able to sell that electricity to other users on the PermianChain platform.

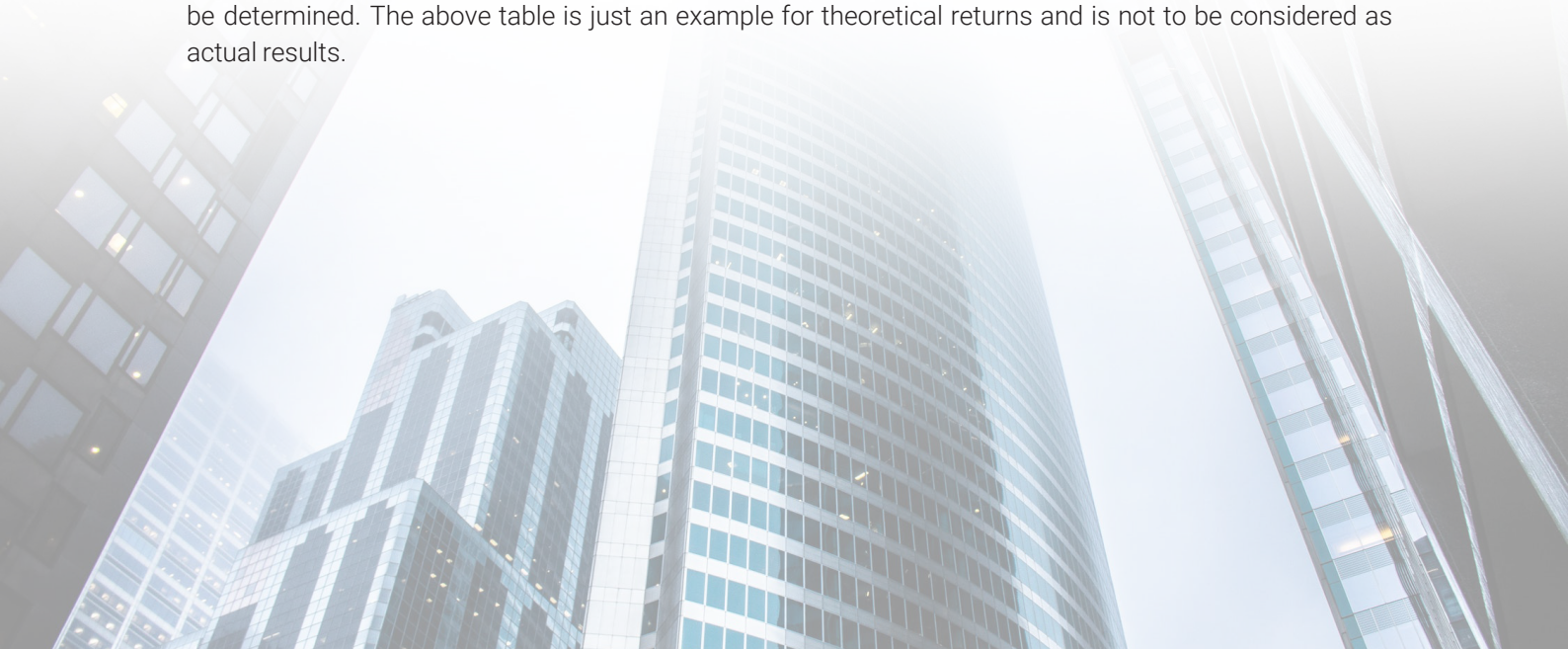
The release of 200,000,000 DEC tokens at USD 0.035/DEC will result in a hard cap of $7,000,000 (USD). With 90% of these proceeds, PermianChain can secure a minimum 3-year 100-megawatt power purchase agreement at a rate of USD 0.035/kWh.

The intent is to achieve a 1-for-1 ration for DEC to kWh on the PermianChain marketplace. This gives DEC token holders an immediate profit margin if they were to decide to sell their DEC token on the PermianChain digital energy marketplace. However, if DEC token holders decide to use their DEC tokens to power their own crypto-mining operations, DEC token holders will have the potential to create an arbitrage between their kWh and the cryptocurrency which they are mining. In the below table we assume bitcoin (BTC) as the cryptocurrency of choice to achieve a realized kWh selling price. The following is an example:

Joelle purchases 14 application specific integrated circuits (ASICs) for bitcoin mining. Each ASIC has a power consumption of 3,220W with a hashrate of 76TH/s. Based on various mining calculators, this 14 ASIC operation will generate around 0.01 BTC per day. The following is a breakdown of the realized kWh price per bitcoin:

Assumed BTC Price (USD)	*$30,000
Realized $/kWh (USD/kWh/BTC)	$0.17
Realized $/kWh Profit (USD/kWh/BTC)	$0.14
Realized $/kWh Profit Margin (USD/kWh/BTC)	276%

*Price of bitcoin (BTC) is just an assumption. BTC is highly volatile and the future price of BTC cannot be determined. The above table is just an example for theoretical returns and is not to be considered as actual results.



REFERENCES

- J.M.K.C. Donev et al. (2020). Energy Education - Energy currency [Online]. Available: https://energyeducation.ca/encyclopedia/Natural_gas. [Accessed: May 28, 2020].
- IEA (2019), Bitcoin energy use - mined the gap, IEA, Paris https://www.iea.org/commentaries/bitcoin-energy-use-mined-the-gap. [Accessed: May 29, 2020].
- J.M.K.C. Donev et al. (2020). Energy Education - Energy currency [Online]. Available: https://energyeducation.ca/encyclopedia/Energy_currency. [Accessed: May 28, 2020].
- J.M.K.C. Donev et al. (2020). Energy Education - Energy currency [Online]. Available: https://energyeducation.ca/encyclopedia/Energy_currency. [Accessed: May 28, 2020].
- J.M.K.C. Donev et al. (2020). Energy Education - Energy distribution technology [Online]. Available: https://energyeducation.ca/encyclopedia/Energy_distribution_technology. [Accessed: May 28, 2020].
- Fisher, Daniel, and Martin J. Wooster. "Multi-decade global gas flaring change inventoried using the ATSR-1, ATSR-2, AATSR and SLSTR data records." Remote Sensing of Environment 232 (2019). URL?
- Fred Pearce, Energy Hogs: Can World's Huge Data Centers Be Made More Efficient?", Yale School of Forestry & Environmental Studies (2018), https://e360.yale.edu/features/energy-hogs-can-huge-data-centers-be-made-more-efficient, accessed November 10, 2019.
- Yevgeniy Sverdlik (2017). Microsoft Launches Pilot Natural Gas-Powered Data Centre in Seattle. https://www.datacenterknowledge.com/design/microsoft-launches-pilot-natural-gas-powered-data-center-seattle
- Bill Kosik (2018). Data centers used for bitcoin mining: Data centers used for bitcoin mining have significant differences from their commercial data center counterparts. https://www.csemag.com/articles/data-centers-used-for-bitcoin-mining/.
- Fred Pearce (2018). Energy Hogs: Can World's Huge Data Centers Be Made More Efficient? https://e360.yale.edu/features/energy-hogs-can-huge-data-centers-be-made-more-efficient
- Shehabi, A., Smith, S.J., Horner, N., Azevedo, I., Brown, R., Koomey, J., Masanet, E., Sartor, D., Herrlin, M., Lintner, W. 2016. United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-1005775.
- Nick Szabo (1996). Smart Contracts: Building Blocks for Digital Markets. http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart_contracts_2.html
- Cambridge Bitcoin Electricity Consumption Index (CBECI). https://www.cbeci.org/comparisons/. Accessed March 28 2020.
- Alberta Electric System Operator (AESO). https://www.aeso.ca/market/market-and-system-reporting/

Digital Energy Currency

Powered by PermianChain

www.DigitalEnergyCurrency.com

info@digitalenergycurrency.com

PermianChain Technologies Inc.

Toronto, ON Canada

@PermianChain

@DigitalEnergyCurrency