KWHU

KILOWATT-HOUR EQUIVALENT UNIT

by

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THE STANDARDS & PRINCIPLES OF KWHU

KWHU - KiloWatt-Hour equivalent Unit: 1 KWHU represents 1 kWh (kilowatt-hour) of electricity.

THE STANDARDS OF KWHU

I. KWHU can only be accounted for the exact kWh of electricity supplied

II. KWHU can only be accounted for electricity generated from Solar, Wind, Hydro, Geo-Thermal or Tidal Power Plants

III. KWHU cannot be exchanged for any fiat or crypto currency

THE PRINCIPLES OF KWHU

I. KWHU furthers the law of conservation of energy - Energy can neither be created nor destroyed, it can only be converted from one form to another

II. KWHU is indisputable - The retention of value through direct kWh of electricity transformation to KWHU is indisputable, when the supply of electricity is accurately measured and authenticated

III. KWHU represents renewable energy - The KWHU must represent electricity generated exclusively from renewable energy sources

IV. KWHU is not for speculation - The KWHU should not be used as a speculative instrument

V. KWHU is a means of exchange - The primary function of KWHU is to provide a stable & secure means of exchange

VI. KWHU is global - The KWHU attributed to an account can be used for transactions anywhere computing & networking allows

THE STANDARDS & PRINCIPLES OF KWHU - EXPLAINED

KWHU Furthers the Law of Conservation of Energy

KWHU is the continuity of the law of conservation of energy, which states that "Energy can neither be created nor destroyed, it can only be converter from one form to another." In this case, we are transforming the kWh of electricity to an accounted KWHU and when KWHU is used to pay for kWh of electricity the value transforms back to electricity supplied. It is a circle that is closed and stays true to the law of conservation of energy and is the dominant rationale behind KWHU and the first standard.

KWHU is Indisputable

The purpose of the first standard of KWHU, is that the KWHU can only be accounted for the exact kWh of electricity supplied, accurately measured and authenticated. In this way the value of KWHU cannot be disputed. The first standard is clear but for the sake of emphasis it must be made clearer that in all time and space the exchange of a unit of kWh of electricity is for exactly a unit of KWHU and vice-versa. This precludes any claims that a past or future delivery of kWh of electricity is more valuable in KWHU terms than the present value.

KWHU Represents Renewable Energy

The purpose of the second standard is that all the KWHU can only be accounted from or pay for electricity from renewable energy sources. Specifically, Solar, Wind, Hydro, Geo-Thermal or Tidal. The elimination of CO_2 emissions & nuclear waste from KWHU has the added benefit of being representative of clean electricity.

KWHU is Not for Speculation

The standards & principles are put in place to ensure that the KWHU is not used as a speculative instrument. The third standard is aimed specifically at reducing volatility and preventing speculation.

KWHU is a Means of Exchange

The standards & principles are put in place to ensure that the KWHU is used as a means of exchange. A party can offer a KWHU priced product or service to a counterparty. A fiat currency reference may be used to value real world products & services, and this is inevitable, but direct conversion to fiat or crypto currency is prohibited by the third standard.

KWHU is Global

KWHU attributed to the ledger of an account can be transferred with ease anywhere computing & networking allows. Specifically designed platforms, accounts, cards, encrypted storage devices, smartphone applications and facilitation by mobile service providers makes KWHU easy to use and transfer globally.

THE KWHU FOUNDATION

The mandate of the KWHU Foundation is to be the reference body for the correct implementation and promotion of KWHU and serve as a regulatory entity if needed. The KWHU Foundation, therefore, will work to ensure the adherence to the standards & principles and promote widespread adoption of the KWHU. For the active promotion of the KWHU standards & principles, the KWHU Foundation will provide clear documentation, guidelines and education programs. The KWHU Foundation would earn revenue from the certification and licensing to the entities that operate the accounts and the market place. The KWHU Foundation will earn revenue only in KWHU. The fact that the KWHU are representative of electricity delivered from renewable energy sources is a vital component facilitated by the certification & verification of the KWHU Foundation. This would apply to all entities that are actively earning KWHU by delivering electricity; in order for these entities to earn revenue in KWHU from electricity they would have to provide the requisite documented proof that they generate or source their electricity from an exclusively renewable energy source. This would also apply to operators of battery storage capacity and EV charging stations. Certification is mandatory to earn KWHU for kWh of electricity supplied.

STANDARDS & PRINCIPLES

The standards & principles are in essence designed to keep the alignment of the goal; which is to have KWHU be primarily a means of exchange of value. Reduction if not complete elimination of speculation & volatility that can stem from arbitrage opportunities that will present themselves over the course of widespread adoption of the KWHU is vital. For this purpose the KWHU Foundation will serve as a guiding body that oversees the correct implementation.

ACCOUNTS & PLATFORMS

The KWHU Foundation will provide the platform for accounts & ledgers of the KWHU participants and/or oversee the operation of the entities that provide these services to the end users. Creation of rules & regulations and programming & APIs to incorporate specifically designed platforms, accounts, cards, encrypted storage devices, smartphone applications and facilitation by mobile service providers to make KWHU easy to use and transfer globally.

CERTIFICATION & VERIFICATION

The KWHU Foundation will certify & verify that the participants are adhering to the standards & principles of KWHU thereby ensuring that the participants are protected from bad actors who seek to unduly benefit from arbitrage opportunities. The certification & verification will also ensure that there is a balanced and distributed development of the KWHU across all jurisdictions. And, where required, the KWHU Foundation will coordinate with regulatory bodies to implement the standards of security expected by the regulatory bodies and authorities. Having said this, there is an evolutionary aspect to the KWHU standards and where the expectations of the regulatory bodies and authorities are contrary to the standards & principles the KWHU Foundation will, in good faith, work towards exploring the balance between regulation and innovation.

MARKETPLACE & COMMUNITIES

The KWHU Foundation will develop a market place & community and/or oversee the entities developing market places & communities that allow for the exchange of products & services in KWHU. The purpose here is to ensure that a platform exists for the KWHU Community to find each other to exchange their KWHU for products & services or vice-versa. The development of community is essential to the success of the KWHU. The market place is also a good method to arrive at consensus pricing of products & services in KWHU, allowing for fair value transactions. Each transaction for real world product or service maybe indexed anonymously in order to, over time, arrive at consensus pricing of products and services. Community development will be inline with the market place and perhaps several of the market place developers would have their own inputs to the development of the standards & principles of the KWHU.

STATISTICS, INDICES & ANALYTICS

The KWHU Foundation would remain the final authority to oversee the evolution of the standards & principles of the KWHU. The KWHU Foundation would also be a means to analyse the circulation and value of the KWHU for kWh of electricity delivered, by monitoring if the efficiency differentials in the electricity sources are detrimental and where necessary take corrective steps to mitigate the detrimental effects.

KWHU FOUNDATION BOARD

The KWHU Foundation, furthermore, will empanel a board that would oversee the operations and functioning. This board would have a diverse representation and will always consist of an odd number of board members. No board member will have the power to veto. The position of the board chair should rotate every month. All votes for changes will be a simple majority.

THE NARRATIVE OF KWHU - WHY, HOW & WHAT IF?

RATIONALE

The indisputable value of KWHU is fundamental to the value of the KWHU, in a manner similar to the indisputable value of a sovereign of gold is fundamental. Hence the first standard enshrines the permanent and indisputable connection between the kWh of electricity and the KWHU. Gold became the predominant means of exchange because it is indisputable once accurately measured and authenticated. The same applies to KWHU, once authenticated and measured the kWh of electricity's conversion to KWHU is indisputable.

The second standard is in support of proliferating renewable energy. Reduction of CO_2 emissions and nuclear waste is the goal and restricting the use of KWHU to renewable sources of electricity supports this goal. Additionally, individuals and companies using the KWHU as a means of exchange benefit from the reputation of being environmentally responsible.

The third standard prevents arbitrage opportunities due to the varying price of electricity across jurisdictions. There are certainly arbitrage opportunities that will become apparent but it is the hope that adding the product & service component limits the speculation that arbitrage opportunities may cause. It is still possible that one could produce electricity to earn KWHU and use it to purchase goods and sell it for fiat currency; but the number of steps makes the effort more complex and thereby limiting the volatility.

MODUS OPERANDI

The KWHU will be the accounting of the amount of kWh of electricity transferred at an authenticated measuring point from one party to another. For example, when 10 kWh of electricity is supplied to a buyer, the seller would be obliged to receive 10 KWHU. This 10 KWHU is now accounted as credit to the seller and a debit from the buyer. It is entirely possible that the value of kWh of electricity delivered may have changed in fiat currency and this is the exact difficulty that is being mitigated by the use of the first and third standard. Producers of electricity can begin to earn KWHU immediately and there would be an initial imbalance where the buyer may not have KWHU to pay for the electricity purchased. Therefore, an initial negative balance in the KWHU account would be allowed in order to facilitate the requisite KWHU required for transactions. However any buyer can offer exchange of KWHU priced product or service and thus the seller of electricity could directly or indirectly use the earned KWHU.

These following examples can be expanded with the growth of participants; every exchange cumulatively builds greater consensus of pricing in KWHU. For example, an apple farm could buy 1000 kWh of electricity from the solar power plant. The solar power plant operator earns 1000 KWHU, who can purchase various goods and services from the market worth 1000 KWHU. The market would pay for apples worth 1000 KWHU thus completing the exchange of KWHU to satisfy all balances. A house solar power plant could produce 50 kWh of electricity and sell 25 kWh of electricity to their neighbour to charge their EV to earn 25 KWHU and buy 15 KWHU of IT services from a service provider who in turn pays the EV owner 10 KWHU for a shared ride in to town every week. In this manner KWHU becomes a conduit that allows value to traverse through an economy as a means of exchange and possible storage of value until the accounts are inevitably balanced. Imbalance is likely to occur because of differences in pricing or accumulation of KWHU but consensus will be achieved as prices of products & services are raised or lowered to balance the difference in negative versus positive accounts.

Every producer of electricity from renewable sources can participate in the KWHU but given the high capital investment and returns expectations of the larger electricity producers and their current contracts they are unlikely to find the KWHU beneficial to their immediate requirements. It is possible for net-metering & wheeling to be provided through the use of KWHU. In essence instead of providing a net-metering credit on the electricity supplied to the grid which is then either consumed at the same or different location at a later date. The utility or authority could credit KWHU to the account which of course could be used to pay for the consumption of electricity but it could also, where accepted, be used for other products & services. The utility or authority is not negatively affected by the fiat currency value of the electricity supplied, which is the primary concern when creating the net metering policies, because the KWHU can only be converted to kWh of electricity when paid to the utility or authority. Leaving them net neutral irrespective of from where or whom the KWHU is ultimately paid.

KWHU can be used to pay for electricity from battery storage provided that the battery storage is connected to and is charged exclusively from a renewable energy sources. Electric Vehicle users can also use KWHU to pay for charging of electricity from a charging point provided the electricity is exclusively from renewable energy sources. Corporate entities can earn KWHU to compensate or reduce their emission burdens by providing products or services but not outright payment of fiat or crypto currency.

PLATFORMS & TECHNOLOGY

Unlike Gold, KWHU attributed to the ledger of an account can be transported or transferred with ease for delivery anywhere computing & networking allows. This will require the development of specifically designed platforms, accounts, cards, encrypted storage devices, smartphone applications and facilitation by mobile service providers. Technology will need to be built for each of these possibilities and it would be the KWHU early adopters who would have to be the vanguard in these ventures. The standards & principles are quite simple and therefore several existing technologies can very easily be adapted for

the purposes of KWHU. An intriguing possibility is the adaption of energy meters to automatically transmit to accounting ledgers the credit of KWHU immediately after the measurement of a transfer of kWh of electricity.

COMMUNITY & PARTICIPANTS

The global share of electricity generated annually from renewable sources exceeds 9 PWh and therefore there will be no shortage of potential sources of kWh of electricity. Furthermore, the share of distributed electricity from renewable energy sources continues to increase thanks to the rapid and continuing proliferation of solar PV. It is more than sufficient at the early stages for house, C&I and community solar power generators to actively participate in the use of KWHU in their local community. The accounts and market place will be able to operate regardless of jurisdiction. As these small community clusters grow and interact with other communities we would be able to realise the objective of a global KWHU adoption.

The entire ecosystem of the KWHU would seek to aspire for greater distribution of wealth. While this cannot actively be controlled and nor should it be coerced, it should be the objective of the KWHU Community to ensure that all participants benefit from the ecosystem. In the context of greater social equity the products & services provided and the consensus price & value thereof is influenced by market forces & economic factors. There is a likelihood that initially the KWHU would circulate exclusively in certain sectors and jurisdictions, possibly predominantly in the renewable energy sector. Though, it is unlikely to be a hindrance to the growth of KWHU and nor is it necessary that KWHU dominate. Value is transferred by multiple currencies, commodities and indeed assets, several of which are constantly changing in value relative to each other. This essential economic reality is likely to have an impact on KWHU as well. But to the extent possible the objective is to strive towards a global consensus of price for common products & services in KWHU terms. This objective might be met with the supporting role of the KWHU Foundation.

ECONOMY

A company or even a country can accumulate KWHU as is also true for any fiat currency. What is likely to happen to this accumulated KWHU? It can appreciate or depreciate in value in comparison to products & services but not relative to the kWh of electricity. The purchase of electricity may not be needed or cannot occur directly and therefore the entity is forced to use the KWHU on products & services. By selling oil for US Dollars the company or country has sold a commodity and accumulated US Dollars and thus no different than selling kWh of electricity for and accumulating KWHU. And just as the US Dollar, KWHU can also be used for purchase of products, services & assets. Thus, KWHU can also be used to purchase assets such as land, essentially KWHU can become an asset class rather than merely a form of exchange. Therefore, it is quite possible that accumulation of KWHU can be a store of value akin to accumulating gold provided of course as in the case of gold there is a counter-party willing to accept KWHU as payment.

Electricity is continuously generated by power plants. When kWh of electricity is delivered for the acceptance of KWHU the value of the kWh of electricity delivered is now held in terms of KWHU. The concern is that accumulation of KWHU will distort the value of KWHU relative to products & services, either inflating or deflating, and negatively impact transactions. However, it must be considered that at some point the KWHU would need to be spent for products & services and at some point inevitably for the purchase of electricity, thereby closing the loop by converting the KWHU back to kWh of electricity. Relying on the fact that energy can neither be created nor destroyed, in the case of KWHU the kWh of electricity simply converts to a storage of value until such time that the KWHU is paid once again for the kWh of electricity.

In an environment that is dominated by exchange of KWHU, the inherent differential in efficiency between the sources of electricity are likely to become apparent. This could also lead to having the effect of KWHU having an inflationary or deflationary trend when being converted to kWh of electricity. However, at this point in time, these arguments remain conjecture and a true state of affairs can only be understood at the point when KWHU is a dominant means of exchange. The differential in efficiency could also be another opportunity for arbitrary speculation, which must be closely monitored and corrected.

WHAT WENT WRONG WITH BITCOIN

There is a fundamental problem with Bitcoin, there is no real underlying anything. As per the premise this is particularly the point. Because the Bitcoin in and of itself should not have any inherent value. Bitcoin is supposed to be used as a means of exchange. And the consensus value of the exchange will determine the value of the Bitcoin. The predominant measure of a Bitcoin's value is its comparison to the US Dollar, a fiat currency. This was possibly the first mistake we did when using Bitcoin, we should have instead used it to agree upon our exchange of value on specific items of daily use. To illustrate this point, let us suppose that one were to meet a person who has bread and to ask: "at what value they would be willing to part with it?" If they agree to part with it at 1 Bitcoin that would be the first point of reference for the price of bread and as more vendors of bread appear and agree or disagree a consensus price of bread would be arrived at and let us say that price is 2 Bitcoin. This would continue till we arrive at a Bitcoin price point for all goods and services. This did not happen. Satoshi Nakamoto's Bitcoin was a wonderful idea that has been misapplied and hijacked. The blockchain and the computing power required to mine a Bitcoin was designed to function in the following manner. Every computer would be able to solve the hashes and thus add to the blockchain, this would ensure that it is not just one computer processing all transactions. That is to say that all computers wherever available connected to the internet can process and verify transactions. The fundamental tenet of decentralisation. This meant that a transaction cannot be disputed and it is simultaneously universally authenticated. This also means that the individual computer providing the processing power is not always actively participating in the transaction of value. And thus to incentivise the provision of processing power the mining of Bitcoin is fair value compensation, in lieu of transaction fees owed to the computer. However, Bitcoin cannot be created without mining so all early participants would have to begin by connecting to the network and provide their processing power. A million users would mean that they would now be able to trade Bitcoin amongst them and can apply to exchange of goods for Bitcoin and as more users joined the amount of Bitcoin in circulation would grow as well as continue to be distributed by being used and accepted by those not providing computing power as well. Thus as universal acceptance of Bitcoin occurs and more computers provide the processing power it would be a decentralised means of exchange of value and replace centralised banks. But because the predominant measure of Bitcoin's value became the US Dollar all Bitcoin transactions were tied to the real world value of goods through the US Dollar, thus eliminating Bitcoin's ability to independently determine its worth vis-a-vis goods. The second impediment was that the provision of processing power to earn Bitcoin became directly incentivised by its convertibility to the US Dollar. Now, you could put your processing power to work not to mine Bitcoin and use it to buy goods or services but to buy US Dollar. And when this became the primary motive it became clear that the more processing power you have the more Bitcoin you could mine to buy US Dollar. And taking it a step further, if the capital cost of equipment, operational cost and electricity cost were lower than the determined US Dollar equivalent of Bitcoin that can be mined by this investment, it made a perfect arbitrage opportunity albeit a complex one. But blockchain designed as a decentralised processing did not require centralised concentration of computing power. It was designed to run on any computer. But when the higher processing power was brought to bear it disincentivised the smaller processing power of personal computers. Therefore, while blockchain and Bitcoin is claimed to be decentralised, in reality it is once again concentrated in computing power to a minority of holders. As Bitcoin's value continued to appreciate, and possibly driven now by the investment and return expectations of Bitcoin miners, it lost its fundamental purpose as a means of exchange of value. At early stages it was possible to exchange a few US Dollar to acquire Bitcoin or mine Bitcoin with a personal computer but as the additional mining power came online the Bitcoin could not be mined and as the Bitcoin value appreciated buying Bitcoin also became difficult. Even at a $100 it made no sense for the majority of users to acquire Bitcoin for everyday use when one would need to exchange it again for fiat currency for everyday use. Once it crossed a particular threshold value, for the sake of argument let us say $1000, the use case for everyday transactions was lost. This was compounded by the volatility of its exchange value to the US Dollar, making pricing anything in Bitcoin a moot point. Because once again if you price a house, let us say, at 5 Bitcoin and the price expected in US Dollar terms is 350,000 even a 2% change in exchange value could have significant impact. So the real use of Bitcoin is for miners to accumulate virtual crypto by expending real energy and computing power or participate in the volatility provided by user sentiment and movements of profit seeking capital. The underlying reality is that there isn't a true value of the Bitcoins generated, it is only valued based on the amount of investment and energy used to create it and the market demand for it. For participants who are not miners volatility is the only real method to benefit from Bitcoin.