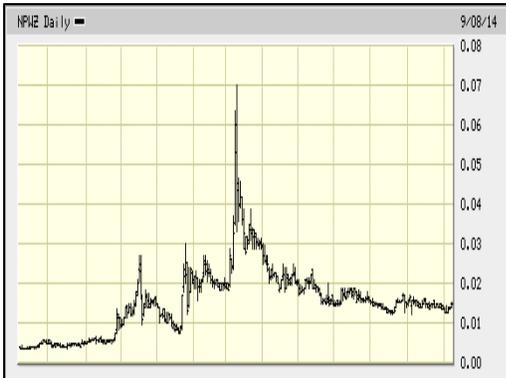




September 9, 2014 : Price \$.0145	Initiation Report	Renewable Energy
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Key Data as of: Sept. 9, 2014	
Exchange : Symbol	Price
OTCQB : NPWZ	\$0.0145
US \$	
52-week Range \$	\$0.003-\$0.07
Revenues (\$000)	\$0.00
Market Capitalization	\$14.0
Enterprise Value	\$14.1
Shares Outstndg (1)	963.00
Avg. Daily Vol.	6.26
Institutional Holdings	10.8%
Debt / Total Capital	nmf
Cash (\$000)	\$1,221.0
Total Debt (\$000)	\$0.4
Price / Book Value	nmf
ttm EBITDA	(\$2.7)
<i>(1) Est. Add'l 114 mil shs upon Series B pfd conversion</i>	
<i>(Numbers in millions unless indicated)</i>	



Neah Power Systems, Inc.. – 1 Yr Stock Chart  
Source: Bigcharts.com

**HIGHLIGHTS**

- The company has developed unique and proprietary fuel cell technologies that can generate electric power for much longer periods than conventional batteries. This prolonged power capability is well suited to portable applications and, of considerable importance, the technology also allows the fuel cell to operate in airless environments. The company has 14 patents and four that are pending.
- For several years the company has been grossly undercapitalized. In addition, a premature listing has excluded numerous avenues of potential financing. Fortunately, the company has very little debt. Regular injections of capital have allowed for the continuation of research development and, more recently, the pursuit of commercial initiatives.
- The Company is involved in product development programs and project discussions with the U.S. Navy, several leading defense contractors and the DRDO of India. In the past, some of these entities have from time to time provided the Company with project grants.
- Importantly, the company's newly introduced *Buzzbar*<sup>TM</sup> product, a highly versatile small device power recharger, is now in production and offers the promise of immediate, significant revenue generation.
- An independent group valued the company's fuel cell IP in the range of \$800 million to \$1.6 billion, but we scaled this back using conservative assumptions to a range of \$46.9 million to \$117.7 million. That same research group estimates that stationary fuel cell markets will grow from \$1.2 billion in 2013 to \$14.3 billion in 2020.

**Company Description**

The Company specializes in using proprietary fuel cell technology for the military, transportation, and portable electronics applications. It develops fuel cells, including *PowerChip*<sup>TM</sup> and *BuzzBar*<sup>TM</sup> products. Prospective applications include notebook PCs military radios, unmanned aerial vehicles as well as other computer, entertainment, and communications products. Neah Power is headquartered in Bothell, Washington.

## Neah Power Systems

### Company Background:

Neah Power was founded in 2006 at a time when the promise of fuel cell technology was fully embraced by the investment markets. Enormous amounts of investment funds found their way to fuel cell companies, including Neah Power, but nearly ten years later the results have been limited. Because the economics of fuel cells have remained challenging, few companies have achieved a level of break-even, let alone profitability.

To date, Neah Power has received over \$50 million in funding. Project financing has provided some revenues over the past few years, but for the most part the company had been essentially in research mode. Only within the past two years has management shifted gears to introduce some innovative, revenue generating products. However, the great hope for the company is its patented technology that centers on silicon-like chips that are perforated and specially coated, thus creating a much greater surface area and conductivity, producing power at a much more cost effective level. Costs are further contained through outsourced manufacturing.

### Proprietary IP

One of the drawbacks of the fuel cell industry to date is that the technology has been relatively unchanged for decades. Neah Power has developed unique designs and processes that substantially enhance fuel cell capabilities. One such design is the use of silicon wafer technology in combination with methanol as a fuel that generates more power and durability than batteries and other fuel cells of similar size. A second area of advantage is the recent development and application of formic acid in a unique catalyst environment which produces hydrogen as a by-product. This new process, for which the company has two patents pending, not only can be used to produce electricity, but can be used as an on-site hydrogen power source for other variant applications. This new technology should percolate the interest of most manufacturers of powering units, including the auto manufacturers.

Importantly, Neah's intellectual property has been developed in-house or realized through acquisition. Other major fuel cell companies such as Plug Power (PLUG – Nasdaq: \$5.47) and Ballard (BLDP – Nasdaq: \$3.56) rely greatly on licensed technology, thereby limiting some of their commercial flexibility.

### Three Avenues for Commercialization

The shift from research entity to commercial status might be happening faster than most people might realize.

The Company has three immediate areas of commercial focus. The company has entered into a commercial arrangement with the Defense Research and Development Organization (DRDO) of India. Shipments have already been made and the scale of this initial contract could reach \$14 million. India is looking at the *PowerChip*<sup>™</sup> as a means of providing power to individual soldiers.

A second product area, aimed primarily for the retail markets, uses the company's formic acid technology as a variation on the PEM (Proton Exchange Membrane) process for its suite of battery recharging products serving the portable electronic markets (*BuzzBar*<sup>™</sup> *Suite*). The nature of the company's design and technology capabilities, however, gives it great flexibility in developing all manner of device applications depending on the need and scope of the customer.

The Company has entered into memorandums of understanding (MOUs) to deploy the formic acid technology into drones and other off-grid power solutions. The modular design would provide a lot of flexibility to adapt the technology to these various applications which serve a variety of markets.

## Neah Power Systems

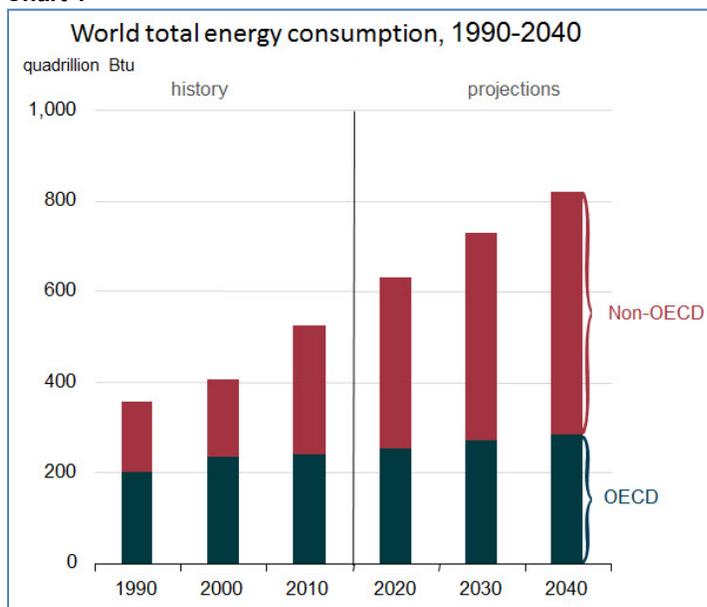
### Financial Challenges

In 2006 the Company transitioned to a publicly traded entity through a reverse merger. By so doing, however, the company excluded itself from private equity funding sources, exacerbated when the public financial markets suffered from the collapsing securitized mortgage markets. As a result, the company's capital raising activities have involved the private issuance of equity or equity-linked securities on an "as needs" basis. The company recently raised close to \$750,000 through the issuance of two tranches of 6% convertible preferreds, as well as other direct investments into the Company, a capital influx that gives the company sufficient breathing room to support its unfolding commercialization program.

### The Fuel Cell Imperative

Global power demand is increasing in response to growing populations, greater urban density and lifestyles that increasingly revolve around power consuming devices. Bringing conventional power in all its forms to remote locations can be costly and generally takes many years to build. Thus, more flexible alternative energy sources are being aggressively explored. Fuel cells, by their very nature, are particularly appealing in that emissions from all fuel cell types are benign (water and CO<sub>2</sub>). The rub has been that conventional fuel cells have also required highly conductive anodes and cathodes, most of which are typically made of an expensive precious metal.

Chart 1



Source: U.S. Information Agency

### What Are Fuel Cells?

Fuel cell technology has actually been with us for a long period of time. It is believed that the first fuel cell was developed in England in 1838 by a lawyer who was particularly curious about science. It was not until 1955, however, that a serious effort by GE was pursued in the development of a viable fuel cell. Improvements by GE were used by NASA in its space exploration programs. Despite the resourcefulness of GE, the ongoing development of fuel cells that were both practical and economic has eluded most entrepreneurs who understood the enormous benefits that could be reaped if these challenges could be overcome.

## Neah Power Systems

A fuel cell is a device that generates electricity by a chemical reaction. Every fuel cell has two electrodes, one positive and one negative, called, respectively, the anode and cathode. The reactions that produce electricity take place at the electrodes.

Every fuel cell also has an electrolyte, which carries electrically charged particles from one electrode to the other, and a catalyst, which speeds the reactions at the electrodes.

Hydrogen is the most common fuel, but most fuel cells also require gaseous oxygen (Neah Power has developed a patented process that eliminates the need for gaseous oxygen). One great appeal of fuel cells is that they generate electricity with very little pollution – much of the hydrogen and oxygen used in generating electricity ultimately combine to form harmless byproducts, CO<sub>2</sub> and H<sub>2</sub>O.

Fuel cells compete directly with other forms of electricity generation and storage, with batteries being the main alternative and more conventionally accepted means of storage. There is no limit to the size and wattage that a fuel cell can be designed. Fuel cells can be used in transportation applications, as power storage replacements for military purposes, for small, electric devices and for large, stationary power generating stations.

One of the chief advantages of fuel cells is that they can be replenished quickly, whereas re-chargeable batteries usually require multiple hours to regain a charge. Additionally, fuel cells tend to be much lighter, an important consideration when dealing with portability issues. One of the negatives is that fuel cells often require expensive metals for conductivity, and PEM based fuel cells eventually experience deterioration because of micro impurities in the Hydrogen fuel source.

### **Recent Growth**

According to the Dept. of Energy's 2011 Fuel Cell Technologies Market Report, worldwide fuel cell shipments grew 37.5% between 2010 and 2011 and 214% between 2008 and 2011. The report finds continued growth in:

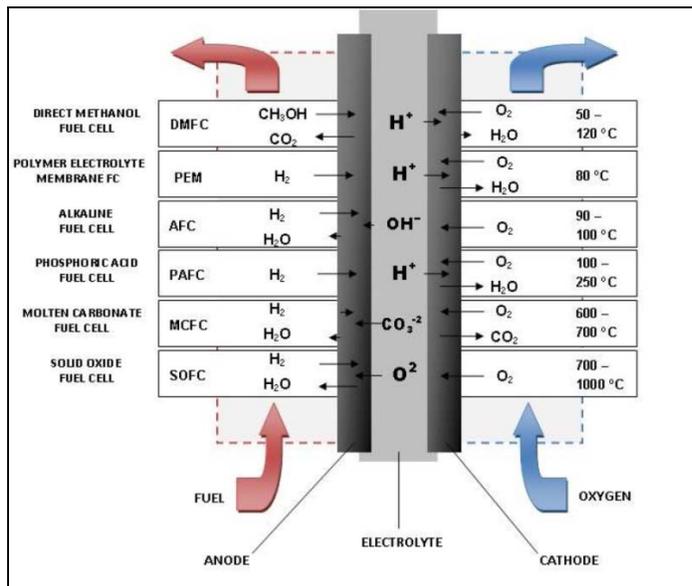
- Material handling
- Combined heat and power
- Back-up and auxiliary power unit applications

Other continuing trends:

- Power purchase agreements in the stationary fuel cell market
- Repeat customers
- Larger systems
- Integrating with other technologies/fuels – solar, wind, biogas

There are a multitude of different fuel cell configurations. Each type / application has its respective positives and negatives and differ in suitability depending upon the application. The following chart (page 5) shows the different chemical dynamics associated with each type of fuel cell.

**Chart 2 - Different Fuel Cell Schematics**



Source: Fuel Cells 2000

## General Fuel Cell Applications

### Large Stationary

(MCFC, PAFC, SOFC, PEM)

Grocery and Retail Establishments, Hospitals, Data Centers, Government Buildings, Corporate Sites, Wastewater Treatment Plants, Jails, Agricultural and Beverage Processing Facilities, and Breweries

### Small Stationary

(PEM)

Telecommunications, Residential, and Small Commercial Buildings

### Portable Power

(PEM, DMFC)

Soldier Power, Surveillance, Mobile Lighting, and Battery Chargers

### Materials Handling

(PEM, DMFC)

Warehouses, material handling equipment (forklifts)

### Transportation

(PEM)

Passenger Vehicles, Buses, and Campers

According to the DOE, in general, the trends for the fuel cell industry were encouraging in 2012. Total fuel cell shipments increased in 2012 in terms of total units and megawatts (MW). Costs continued to decline, especially for light duty vehicle applications. Importantly, the U.S. Department of Energy (DOE) noted that the cost per kilowatt (kW) for high volume production of transportation fuel cells moved closer to the

## Neah Power Systems

DOE's target of \$30 per kW. The *Carbon Trust* issued a report highlighting promising U.K. efforts that, according to the report, have the potential to achieve \$36 per kW. Neah Power is looking to reduce its costs by leveraging existing computer chip production infrastructure, thereby enabling a capital efficient manufacturing model.

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### **Direct Methanol Fuel Cells – Neah Power's Area of Expertise**

Fuel cells are devices that combine a fuel, such as methanol, with an oxidant, such as oxygen gas, air, or other liquid oxidants in a chemical reaction at a catalyst surface to produce electricity. A fuel cell can generate electricity directly and continuously as long as fuel and oxygen are supplied to the reactor. Like a car, fuel cells can be "refueled" instantly by simply maintaining the fuel supply with small, replaceable fuel cartridges. Since fuel cells can be "recharged" instantly, end-users of mobile products powered by fuel cells can achieve long runtimes by carrying spare fuel cartridges, not extra batteries and chargers. Also, because spare fuel cartridges can be smaller, lighter and less costly than extra batteries, convenience of use can be dramatically improved. As the fuel is consumed, water or carbon dioxide is created and an electric current is produced.

Neah Power Systems has developed innovative and proprietary technologies relating to the design and construction of fuel cells. The Company's designs are based largely on direct methanol as the key fuel source. DMFC technology allows for a substantial increase in longevity for an equivalent weight in a comparable battery.

Current DMFCs are limited in the power they can produce, but can still store high energy content in a small space. This means they can produce a small amount of power over a long period of time. Fuel cells that use the direct methanol process tend not to be well suited for large trucks and automobiles, but they are well tailored for smaller vehicles such as forklifts. Other areas that are well suited for DMFC technology are mobile phones, digital cameras, laptops and other portable applications. Military entities are particularly interested in DMFC technology given the long power duration of DMFC chargers, the absence of toxic emissions and the relatively lighter weight of a DMFC unit.

### **The Uniqueness of Neah Power's Methanol Fuel Cell Technology**

Most of the company's 14 patents center on the structure and manufacture of the silicon wafer chip that forms the core of its fuel cell. Thousands of holes are cut into the chip, each hole about half the size of a human hair. The result of this perforation is that the actual area size that allows the catalysis to occur is 40x that of a normal Proton Exchange Membrane (PEM) fuel cell. This has the effect of increasing the Neah Power fuel cell density by about 2 ½ times the standard metric. The company has named this technology *PowerChip™*.

Methanol is the simplest of the alcohols and contains about half the energy of an equivalent amount of gasoline. It is easy to make, easy to store, easy to transport, has a slower, safer burn, and costs about \$1.60 per gallon.

### **Using Formic Acid to Create Hydrogen**

The other area of uniqueness is the company's proprietary formic acid technology which allows for the creation of hydrogen on site, thereby allowing for that hydrogen to be used in a variety of power generating applications. This technology might also go a long way to resolving the current challenge of storing hydrogen.

## Neah Power Systems

### **The Neah Power PowerChip™ Advantages**

#### *Energy Duration*

The average life of a Lithium ion battery is 250 to 400 hours, after which the battery must be replaced or recharged. With the *PowerChip™*, tests have demonstrated a duration of 2,000 hours with only a 4% erosion in power density. Moreover, should the *PowerChip™* run out of fuel, one need only replace the small fuel canister in much the same way that a battery is replaced. In essence, the porous, 3D reaction zone increases power density.

#### *Anaerobic Application*

The Neah Power *PowerChip™* uses nitric acid as the oxidant and methanol as the fuel. The catalysis of these two chemicals via the single wafer *PowerChip™* structure produces the necessary electric current but the emissions are CO<sub>2</sub> and H<sub>2</sub>O. Most importantly, the process does not require ambient oxygen, meaning that the *PowerChip™* can operate in subterranean and other harsh, oxygen-free environments, a sometimes critical requirement for military applications.

#### *Manufacturing Efficiencies*

Oddly enough, Neah Power's technology is based on silicon wafer production, absent the complicated circuitry that is typical of the now much more sophisticated semi-conductor manufacturing processes. Accordingly, Neah Power can use older and far less expensive machinery to manufacture its perforated wafers. The silicon wafer itself merely acts as a mechanical support, hence the quality of the silicon, purity, and doping of the silicon itself is not important to the performance of the fuel cell.

#### *Lighter / Size Advantage*

When compared with conventional batteries, fuel cells can be much lighter. In collaboration with a defense contractor (with a view to a Neah Power fuel cell serving as a soldier's primary, portable energy source), for a 72 hour mission the Neah Power fuel cell was able to provide the necessary power to complete that mission. However, the Neah Power *PowerChip™* would weigh only 7 - 10 lbs. when compared to the 38 lbs of weight that it replaced. Given that each soldier is maxed out at 80 lbs, this weight saving is significant.

#### *More Durable*

The more rigid structure of the silicon wafer technology allows for much greater durability, providing for a much longer operating life. One of the downsides of a conventional PEM fuel cell is that the membrane itself is highly prone to micro particle contamination and degradation, thereby leading to a shorter life span.

#### *Scalability*

The *PowerChip™* technology lends itself very well to "stacking", the simple method of connecting multiple *PowerChip™* wafers together. This stacking feature enables the company to design any application that requires unique powering qualities.

#### *Storage Dynamics*

In more conventional fuel cell platforms, hydrogen is one of the main fuel ingredients and is twice as efficient as internal combustion engines in creating energy. However, the logistics of storing and shipping hydrogen, in whatever form, is extremely challenging and greatly limits the types of applications hydrogen utilizing fuel cells can be used for. By comparison, Neah Power uses nitric acid and methanol, two

## Neah Power Systems

compounds that are comparatively safe and easy to store. Neah also uses Formic acid for its *Formira* technology, which allows a safe, liquid fuel which has much higher energy density than compressed hydrogen.

### *Reduced Litigation Exposure*

Because Neah Power's technology relating to DMFC is unique to the company, they run little risk of interfering or contravening other DMFC patents or processes that might be held or employed by other companies.

### ***Focusing on Portable Power***

The company's products are targeted for the portable electronics markets. Long lasting and low power applications target such markets as notebook PCs, military radios, and other power-hungry computer, entertainment and communications products. The company's unique and patented, silicon-based design for micro fuel cells embrace higher power densities that are lighter-weight, all of which involve potentially lower product costs.

It bears mentioning that pure economics alone will not necessarily drive the demand for Neah Power's portable products. Certain military organizations value portability, durability, weight and energy density well above cost per se.

### **World Markets – Competing Not Only With Fuel Cells, But Batteries as Well**

There are several markets where fuel cell manufacturers are finding not only sales, but repeat customers, for their products. These include large stationary fuel cells to power buildings; small stationary fuel cells for telecom and residential applications; portable power for military use and other mobile applications; as a replacement for battery power in materials handling applications; as primary power or auxiliary power units (APU) in a variety of transportation applications (passenger vehicles, buses, trucks); and hydrogen production and storage.

It is estimated that the market for military use of fuel cells in the US will increase from \$1.19 billion in 2011 to \$16.11 billion in 2021. The military fuel cell market in India is expected to increase from \$94.6 million in 2011 to \$1.28 billion in 2021.

Fuel cells used in transportation in the US were expected to increase from \$233 million in 2012 to \$2.98 billion in 2021. In India, the market is projected to increase from \$1.81 million in 2012 to \$781 million in 2021.

The stationary fuel cell market in the US is expected to increase from \$1.54 billion in 2011 to \$38.15 billion in 2021. In India, the market is currently almost negligible. However, it is projected to increase to \$1.34 billion in 2021.

One of the most vibrant areas of fuel cell usage is in forklifts. According to the DOE, there are currently more than 4500 fuel cell-powered material handling vehicles on order or deployed at warehouses, distribution centers and other facilities around the U.S., with customers such as Sysco, Lowe's, Procter & Gamble, BMW, Walmart and FedEx. Neah Power currently is not involved in this market.

For all intents and purposes, there is a much larger competing market, and that is the massive battery market.

## Neah Power Systems

### **The Battery Market – The Real Target**

The battery market is clearly a logical target market for fuel cells. The scale, scope and diversity of the global battery markets offer a wide variety of opportunities for fuel cell manufacturers to pick their spots and compete with existing battery products. In many ways, the functionality of a fuel cell alternative can be superior to that of an existing battery product, but the economics of more conventional fuel cell manufacturing is often an obstacle.

According to Hybrid Energy Technologies (EnCansol Capital Corporation), the worldwide battery market was approximately US\$89 billion in 2012 and was growing at an annual rate of approximately 5%. The rechargeable battery segment was estimated at \$63 billion annually and was growing at over \$3 billion per year. Due to its low cost, lead-acid batteries currently dominate the rechargeable market with annual sales of approximately \$45 billion. Approximately 72% of the market is Lead acid, 20% is Lithium and 8% is Nickel.

### ***Lithium Batteries***

In the world of batteries, Lithium-ion batteries are rapidly becoming the battery of choice for most portable applications.

According to “How Stuff Works”, a typical lithium-ion battery can store 150 watt-hours of electricity in 1 kilogram of battery. A NiMH (nickel-metal hydride) battery pack can store perhaps 100 watt-hours per kilogram, although 60 to 70 watt-hours might be more typical. A lead-acid battery can store only 25 watt-hours per kilogram. Using lead-acid technology, it takes 6 kilograms to store the same amount of energy that a 1 kilogram lithium-ion battery can handle.

#### *Other advantages:*

- They hold their charge. A lithium-ion battery pack loses only about 5 percent of its charge per month, compared to a 20 percent loss per month for NiMH batteries.
- They have no memory effect, which means that you do not have to completely discharge them before recharging, as with some other battery chemistries.
- Lithium-ion batteries can handle hundreds of charge/discharge cycles.

#### *Some disadvantages:*

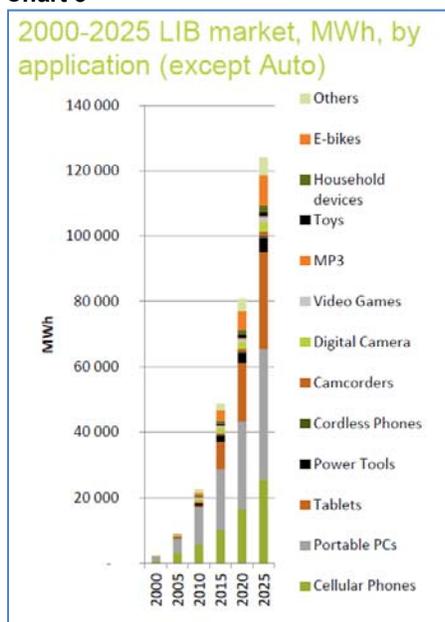
- Li-ion batteries start degrading as soon as they leave the factory. They will only last two or three years from the date of manufacture whether you use them or not.
- They are extremely sensitive to high temperatures. Heat causes lithium-ion battery packs to degrade much faster than they normally would.
- If you completely discharge a lithium-ion battery, it is ruined.
- A lithium-ion battery pack must have an on-board computer to manage the battery. This makes them even more expensive than they already are.
- There is a small chance that, if a lithium-ion battery pack fails, it will burst into flame.

## Neah Power Systems

According to a December, 2013 report published by Transparency Market Research "Global Lithium Ion Battery Market (Cathode, Anode, and Electrolytic solution) - Industry Analysis, Size, Share, Growth, Trends, and Forecast, 2013- 2019", the global market was worth \$11.70 billion in 2012 and is expected to reach \$33.11 billion in 2019, growing at a CAGR of 14.4% from 2013 to 2019. Due to the increasing demand and huge potential of lithium-ion battery in consumer, automotive and industrial sectors, Asia Pacific was the largest market for lithium-ion batteries in 2012.

We have taken the time to outline the framework of the global battery market in order to highlight the long-term potential of Neah Power. The small size of Neah Power requires that the company focus on real, low hanging opportunities, but successful adoption of its technology could clearly generate a substantial long-term growth agenda.

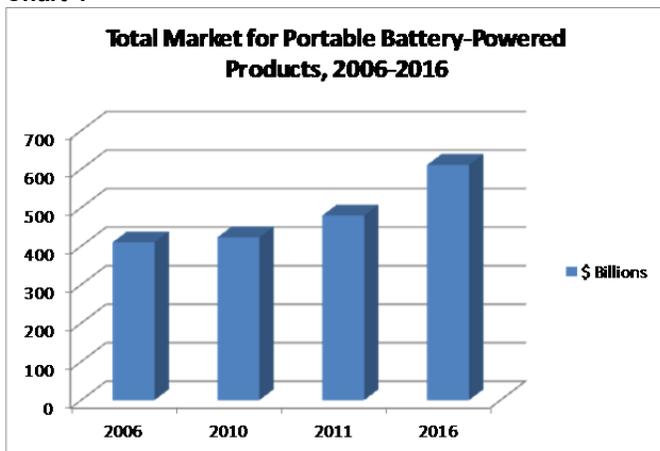
Chart 3



Source: AVICENNE

## The Portable Battery Market

Chart 4

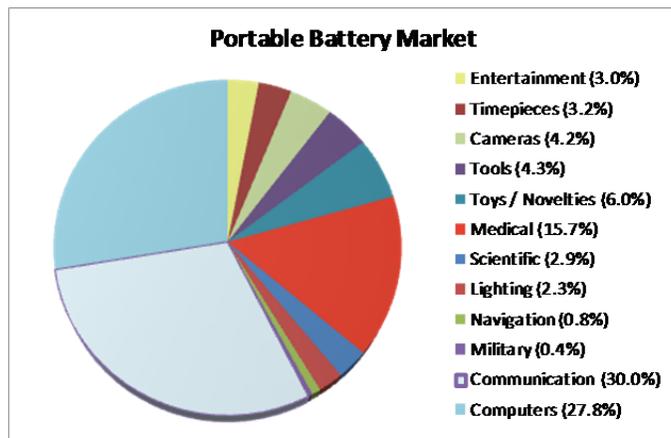


Source: Battery University

## Neah Power Systems

According to BCC Research in a 2012 report, the global market for portable battery-powered products was estimated at nearly \$480 billion of revenues in 2011 and is expected to reach more than \$611 billion by 2016, yielding an overall compound annual growth rate (CAGR) of 5%. The global market for portable battery-powered products can be divided into 12 segments - communication/multifunctional, computers, medical, cameras, toys and novelties, tools, entertainment, timepieces, scientific, lighting, navigation, and military.

Chart 5



Source: Battery University

It is our belief that the entire battery market is ripe for targeting by Neah Power's fuel cell technology. As one can imagine, the target markets are vast and substantial. The key in the commercial markets will be to keep manufacturing costs down to sufficiently competitive levels where essentially the cost of a fuel cell is brought to a level where its power advantage will give the consumer a difficult decision.

### Immediate Commercial Initiatives at Neah Power

Having established the vast target markets that are available to Neah Power, the harsh reality is that Neah Power is a small company, undercapitalized and must nurture its resources wisely. To that end, the company is focusing on several commercial opportunities that offer the promise of establishing a firm foundation from which further growth can occur. The scalability of the company's technology is virtually self evident from the target markets identified earlier in this report.

#### The Military Markets - A Small But Very Important Sub-Group

Market analysis firm Frost & Sullivan projects steady growth in the military battery market, with earned revenues reaching \$2.6 billion in 2017. The military battery market had earned revenues of roughly \$2 billion in 2012. This area is of particular interest to Neah Power in that cost is less of a concern whereas portability, weight and duration are of far greater importance.

#### The Government of India

The Company has commenced working on a project for the Defense Research and Development Organization (DRDO) of India. The DRDO is the equivalent of India's defense department, but its

## Neah Power Systems

infrastructure includes the vast ownership of numerous manufacturing and research facilities, a consequence of a history based on a far greater state controlled political and economic system.

Neah Power *PowerChip*<sup>™</sup> fuel cells will be used to provide portable electricity needs for troops in hostile environments. Shipments have already been sent to India for stress testing from which some revenues can be realized. However, should the *PowerChip*<sup>™</sup> units pass muster, it is envisioned that a far more substantial arrangement will be entered into, one that might have the DRDO take over the manufacturing of the product whereby Neah Power will be compensated in the form of long-term royalty payments.

### *The U.S. Navy*

The Company is exploring with a major defense contractor as well as the U.S. Navy using *PowerChip*<sup>™</sup> technology to power a submersible vessel that will assist in mapping the ocean's floor. The appeal of the *PowerChip*<sup>™</sup> is that it does not require Oxygen to function, a critical concern when operating at deep ocean depths. Granted, oxygen could conceivably be stored on the submersible craft, but it would take up precious space. A safety issue would also be raised.

### *A Significant Defense Contractor*

For some time the company has been working with a major defense contractor regarding that way in which the on-board electronics of a jet operate. The contractor is giving some thought to modularizing various parts of an aircraft with each module being powered by a Neah Power fuel cell. This modular architecture will provide a safer framework by separating the heavy work loads that power the jet from other, less important functions.

### ***The BuzzBar*<sup>™</sup> Suite - Addressing the Small Device Power Re-Charging Market On the cusp of significant growth?**

As the company ramps up its commercial focus, the *BuzzBar*<sup>™</sup> Suite of fuel cells appears to be on the verge of attaining significant traction. The *Buzzbar*<sup>™</sup> serves as a highly versatile, mobile power generation device that uses, in part, the company's proprietary, formic acid fueled PEM fuel cell technology (patents pending). Having attained both FCC and CE certification, the *Buzzbar*<sup>™</sup> is fully portable and is capable of re-charging a full landscape of portable electronic devices including iPhones<sup>™</sup>, iPads<sup>™</sup>, cameras, personal computers, video games and mp3 players. Importantly, *BuzzBar*<sup>™</sup> can also use conventional batteries, solar power (each *Buzzbar*<sup>™</sup> has a solar panel) and basic grid plug-in as power sources in order to re-charge various devices. A fuel cell charging option (*BuzzCell*<sup>™</sup>) is expected to be available in the Q4 2014 timeframe. For the average traveler who deals with the constant dilemma of rapid power depletion in their various devices, the *Buzzbar*<sup>™</sup> offers a highly effective solution.

The *BuzzBar*<sup>™</sup> Suite encompasses the *BuzzBar*<sup>™</sup> Gen 2<sup>™</sup>, *BuzzBar*<sup>™</sup> Sun Kit<sup>™</sup>, *BuzzBar*<sup>™</sup> Battery Kit<sup>™</sup>, *BuzzBar*<sup>™</sup> Survival Kit<sup>™</sup> which, in *toto*, offer various levels of device compatibility and battery chargeability.

The advantage of *BuzzBar*<sup>™</sup> is not only its portability but that it can charge a device on average four or five times before additional fuel needs to be reintroduced. Such fuel is encased in a simple plastic container that is roughly what one expects of a small battery but is comparatively lighter.

The company is holding commercial discussions with a number of cell phone companies and companies that provide battery products to cell phone companies. Some companies have expressed a keen interest in both the *PowerChip*<sup>™</sup> and *BuzzBar*<sup>™</sup> technologies and applications.

The company does not wish to be in the retail business per se, but intends to market to and supply large companies that already have a substantial commercial presence. Management's target asking price

## Neah Power Systems

range for the different *BuzzBar*<sup>™</sup> products is \$39 to \$99, which seems low enough to attract meaningful attention. A simple fuel cell replacement would cost about \$1.

Revenues are expected to be flowing in as this report is being written. Management suggests that revenues could reach \$250k for *BuzzBar*<sup>™</sup> products by the end of this fiscal year and reach over \$500k next year. We would impart a value of \$1 million to \$3 million to this segment at this early stage, but it could quickly expand if some of its discussions with several major companies prove fruitful.

The BuzzBar suite is covered by two patent applications, and the management believes that there is no product with similar capability out in the market.

### Off-grid / Stationary Lighting Market

One area that the company is giving immediate focus is the off-grid power market.

The growth of the off-grid power market, including the smart lighting market in the coming years is expected to be very robust, with revenue growth estimated to reach \$56.05 billion by 2020 at an estimated CAGR of 15.8% from 2014 to 2020. The major players in this market include: Acuity Brands, Inc. (U.S.), Legrand S.A (France), Lutron Electronics Company, Inc. (U.S) and Zumtobel AG (Austria).

The Company has announced a MOU with a drone company to integrate its fuel cell into drone, and is also exploring various off-grid sensor and lighting opportunities. The company is currently in advanced discussions with a South African company for the deployment of fuel cells to power lighting units in remote locations. It is expected that revenues will flow from that engagement within the next six months. To the extent that there is considerable need for lighting improvement in most areas of the world, this collaboration could lead to many more opportunities.

### Future Potential in the Automotive Markets – *Harnessing Formic Acid to Produce Hydrogen on Site*

Neah Power, through its recent asset acquisition from Clean Tech Investors (Nov 2013), has demonstrated a reformer that allows onsite (point of use) generation of hydrogen using formic acid (HCOOH). This technology is covered by two pending patent applications. Many portable energy sources have distinct differences in energy density, safety, cost and availability as shown in the table below.

Table 1

Power Source	Theoretical Energy Density (W-hr/kg)	Theoretical Energy Density (W-hr/L)
Lithium-ion <sup>1</sup>	125	440
Lead-acid	30-40	60-75
Formic Acid <sup>2</sup>	1,700	2,086
Hydrogen <sup>3</sup> (5,000psi compressed)	33,333	833

Sources below

<sup>[1]</sup> D. L. Anglin, D. R. Sadoway, "Battery", in AccessScience@McGraw-Hill, <http://www.accessscience.com>, DOI 10.1036/1097-8542.075200

<sup>[2]</sup> J. Yeom, R.S. Jayashree, C. Rastogi, M.A. Shannon, P.J.A. Kenis, "Passive direct formic acid microfabricated fuel cells", *Journal of Power Sources* 160 (2006) 1058–1064.

<sup>[3]</sup> National Research Council and National Academy of Engineering of the National Academies, *The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs*, The National Academies Press, Washington, D.C., 2004.

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Formic acid, which is a liquid, is a comparatively safe and high energy liquid and does not suffer from the handling challenges of compressed hydrogen.

Neah's technology heats formic acid which produces carbon dioxide and water. The "reformat" is then exposed to catalysts that reduces the chemical composition to hydrogen and carbon monoxide. The released hydrogen is essentially created on site and does not require storage, one of the major impediments to hydrogen being used on a large scale basis for automotive fueling. Indeed, not only is hydrogen produced, but an electric current can also be produced, thereby providing the potential for multi sources of power. The hydrogen produced can be used by a variety of fuel cell types – solid oxide fuel cells (SOFC), proton exchange membrane (PEM), etc. for either grid scale power or automotive power.

The scalability of this technology has obvious implications, though it will almost certainly take time before this technology demonstrates commercial traction. However, management has indicated that it is already holding discussions with other fuel cell companies regarding the licensing of its reformer technology, and it hopes to gain the attention of automobile manufacturers as well.

For the near term, however, the company is looking to apply this new technology to 50w to 100w power units, such as that needed by military drones.

### Valuation

#### *First Things First*

Neah Power has been grossly undercapitalized for some time and, by virtue of its reverse merger in 2006 to become a public company, has found it extremely difficult to raise capital from early stage sources.

In 2007 Chris D'Couto, the current CEO, joined the company in the capacity of COO. In 2008 Chris assumed the position of CEO. In 2009, David Schmidt, a veteran of Honeywell, joined the company's Board of Directors, and in 2012 assumed the role of interim CFO. Facing the difficult challenge of dealing with a research focused company that was burning a great deal of cash monthly and had a sizeable amount of debt, this team pushed forward in restructuring the balance sheet to where little debt currently exists and a number of significant commercial initiatives are on the verge of taking place. A recent cash injection of approximately \$750k via equity linked preferred shares (Series B) should assure the company the necessary breathing space to see some or all of its commercial ventures reach a more advanced level.

One significant complication has been the extremely low market price of the common stock. Over the past several years the company not only has failed to reach any extensive commercial progress, but in order to keep the engine going with little cash available management was obliged to issue stock as consideration or compensation. This had become such a regular routine that over 1 billion shares of common stock are now issued and outstanding. The Series B preferred, if converted, would represent an additional share count of approximately 114 million shares if one used \$.015 as the conversion price (the conversion price is determined on the conversion date and is based on the average closing price of the stock for five days prior to conversion. If the share price rises over time, the dilution associated with the convertible Series B preferred will decline.)

The basic fact is that the market cap of the company is about \$17.6 million. In order to move the company to a more optically appealing (and manageable) status, a reverse stock split of large proportion would be helpful. A 100 to one share reverse split, for example, would produce a market price of about

\$2 per share with approximately 10 million shares outstanding. Tying such an announcement with another, positive revelation of customer progress would help reinforce such a reverse split. Of course,

## Neah Power Systems

such a reverse split would be a pointless exercise if the company had little to offer which, in our view, is not the case.

### **Intellectual Property – 2013 Acquisition of Tekion Assets**

Over the years the company has amassed a substantial stable of 14 patents, and various pending patents and patent applications.

In late 2011, an independent, professional IP evaluation company, Dolcera Corp., assessed Neah Power's patent portfolio and determined a valuation range of approximately \$800 million to \$1.6 billion. This valuation was based on the projected growth rates in various markets, the ability of the company to garner market share, and the types of royalty arrangements that can be reasonably expected. All this is contingent upon the uniqueness of the company's proprietary technology. The company's patents are slated to expire in the years 2020 - 2030.

The acquisition of Tekion's assets in November, 2013 brought to Neah Power several of the above mentioned patents and the capability to build upon its silicon and formic acid technologies. It is upon these new and innovative technologies that the promise of long-term growth has been based. It stands to reason that the value of the assets from the Tekion acquisition reinforces the overall valuation of the company.

### **Three Main Market Areas of Value**

The Dolcera evaluation focused on three major markets, the military, transportation and stationary fuel cell markets. In addition, because of the company's strong links to the Indian government, that government's potential spending on military applications was also included.

We believe Dolcera's valuation parameters are overly optimistic relative to the status of the company's current commercialization efforts. Projecting royalties is indeed a viable method by which to assess a company's value, but much verification will still be needed of the company's technology before major manufacturers or large-scale power generation entities are likely to step forward and embrace Neah Power.

We believe that the company's opportunities in the military market are very real and unfolding with the most recent engagement with the DRDO of India. Applications in the Electric Vehicle (EV) market are still some time away, except that the recent progress achieved by the company's formic acid technology has led to encouraging conversations relating to the manufacture of 50 watt and 100 watt power units. The stationary market is more conceptual than actual at this stage, but should be considered as a basis of value vis-à-vis the company's patents.

### ***The Potential of the Portable Power Military Market***

Part of the process used by the independent assessment was to project the growth in the military portable market and take a present value of prospective revenues and earnings. Because the company has a strong relationship with the government of India, that country's metrics are also included. We took the liberty of modifying this approach but preserved the market size projections. In the accompanying table (next page), we outline the scale-up in prospective revenues for Neah Power based upon military portable power being 4% of the total military Fuel Cell market and that the company realizes 2% market penetration of this segment. Even at such low participation rates the revenue stream looks appealing.

As one can see, the scalability aspect is robust once traction sets in. Using this methodology, we arrive at a discounted level for the military market alone at \$28.8 million. If one assumes that costs are

## Neah Power Systems

reasonably contained (at least break-even) and a valuation that is based solely on 2x revenues, an IP value of nearly \$60 million is calculated.

**Table 2 - Military Fuel Cell Market, US and India**

Total Fuel Cell Military Market - US & India								
Portable Share of Military FC Budget	4.00%							
Est. Neah Power Market Penetration	5.00%							
Annual Discount Rate Used:	15%							
Year	US Market \$M	Indian Market \$M	Combined Market	Wtd Avg Price	Portable Share of Military Mkt	Proj NPWX Mkt Share \$M	Assuming 5% Royalty	Discount Value of Royalties
2011	2,656,145	210,231	2,866,376	\$450	\$114,655			
2012	2,957,724	234,210	3,191,934	\$372	\$127,677			
2013	3,611,196	286,089	3,897,285	\$300	\$155,891			
2014	6,052,956	479,756	6,532,712	\$248	\$261,308			
2015	11,042,760	875,655	11,918,415	\$210	\$476,737	\$23,837	\$1,192	\$1,036
2016	18,003,555	1,428,291	19,431,846	\$174	\$777,274	\$38,864	\$1,943	\$1,469
2017	29,241,474	2,320,923	31,562,397	\$143	\$1,262,496	\$63,125	\$3,156	\$2,075
2018	50,244,416	3,989,809	54,234,225	\$119	\$2,169,369	\$108,468	\$5,423	\$3,101
2019	85,952,427	6,828,500	92,780,927	\$98	\$3,711,237	\$185,562	\$9,278	\$4,613
2020	143,423,224	11,394,274	154,817,498	\$81	\$6,192,700	\$309,635	\$15,482	\$6,693
2021	240,674,232	19,129,325	259,803,557	\$67	\$10,392,142	\$519,607	\$25,980	\$9,767
							<b>PV Royalties:</b>	<b>\$28,755</b>

Source: Dolcera Corp.

## Transportation Markets

It is unlikely that a major new initiative in the Electrical Vehicle (EV) market will take place anytime soon. However, with the Neah Power's new formic acid technology there is the promise that inroads will be made. How to value that potential is problematic. In the accompanying table, we made a wide range of assumptions. We are focusing on both the U.S. market and the Indian market, which tends to have much smaller vehicles and power needs. These are the assumptions we used:

- US EV Growth of 9.25% per annum (Navigant Research)
- Indian EV Growth of 6% per annum
- Revenues realized per unit will be declining as manufacturing efficiencies improve and competitive pressures persist
- Gradually rising market penetration
- 5% royalty rates
- Three year period before market entry

Again, we are assuming that costs are reasonably controlled, an aspect that is helped by the simple fact that the company will be outsourcing most, if not all of its manufacturing.

Based on these projections (see Table 3, next page), and incorporating our potential market share for Neah in each market, we calculate a discounted present value for revenues in the U.S. and India EV markets of \$5 million and \$0.36 million, respectively. When applying a valuation multiple of 2x the sum of our calculated discounted revenues (\$5.36 mil), an overall, combined value inherent to Neah of about \$10.7 million is calculated. It bears mentioning that in our projections for India whereby we estimate EV production at 232,810 EVs by 2022, the government of India has stated that it wishes to see the market grow to between 5 and 7 million units.

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**Table 3 – Neah Power’s Potential Revenue in the US and India EV Markets**

Revenues Projections on Growth of Electric Vehicle Markets, US and India										
US Growth Rate: 9.25%			Royalty Rate: 5.00%							
India Growth Rate: 6.00%			Discount Rate: 15.00%							
Year	US Market/ Units	Rev per Unit	Neah Power % Market Share	Potential Revenues/ Royalties \$mm	Discounted Revenues Value	India Market/ Units (1)	Rev per Unit	Neah Power % Market Share	Potential Revenues/ Royalties \$mm	Discounted Revenues Value
2012	434,498					130,000				
2013	495,685					137,800				
2014	541,536					146,068				
2015	591,628					154,832				
2016	646,354					164,122				
2017	706,141	\$1,500	1.0%	\$529,606	\$400,458	173,969	\$500	1.0%	\$43,492	\$32,886
2018	771,459	\$1,400	2.0%	\$1,080,043	\$710,146	184,407	\$450	2.0%	\$82,983	\$54,563
2019	842,819	\$1,300	3.0%	\$1,643,498	\$939,675	195,472	\$400	3.0%	\$117,283	\$67,057
2020	920,780	\$1,200	3.5%	\$1,933,638	\$961,360	207,200	\$375	3.5%	\$135,975	\$67,604
2021	1,005,952	\$1,100	4.0%	\$2,213,095	\$956,782	219,632	\$350	4.0%	\$153,743	\$66,467
2022	1,100,000	\$1,000	5.0%	\$2,750,000	\$1,033,827	232,810	\$325	5.0%	\$189,158	\$71,112
				<b>PV US Market:</b>	<b>\$5,002,248</b>					<b>PV India Market:</b> <b>\$359,689</b>

Source: Navigant Research

(1) Smaller vehicles, therefore smaller power requirements

### The Stationary Market

There is much debate as to whether fuel cell technology is well suited to providing mid to large scale power generation. It is certainly feasible that the company’s technology can be adapted to large scale wattage generation, and to that purpose we provide the following tables for the US and Indian Stationary Fuel Cell markets. As one can see in these tables, we make limited assumptions about market penetration, but we still believe that potential value in this space should be recognized. Assuming, however, that one uses only a 1x revenue multiple for this category, we arrive at a combined discounted value of \$31 million for the company’s IP potential in this space. As is the case with the other segments, our evaluation is more theory than practice, but we would also submit that if the company’s products are adopted by even 1% of any market, that verification is likely to lead to a more rapid expansion in market share than our estimates indicate. Note that our market share projections are quite restrained.

**Table 4 - Neah Power’s Revenue Potential in Selected FC Stationary Markets, 1**

Projected US Stationary Market Fuel Cell Revenues										
Year	US Shipments			Proj. Revenues \$M			Est. Neah St. Power Mkt Share	5% Royalty	Pres Value of Royalty	
	Backup	CHP	DG	Backup	CHP	DG				
2013	637	1,334	1,517	\$14.01	\$4.71	\$2,050.11				
2014	834	2,092	2,103	17.93	7.25	2,743.95				
2015	1,093	3,279	2,915	22.95	11.15	3,672.60				
2016	1,476	5,378	4,226	30.28	17.94	5,141.50	0.25%	\$ 0.65	\$ 0.49	
2017	2,022	8,927	6,255	40.54	29.22	7,346.81	0.50%	\$ 1.85	\$ 1.22	
2018	2,810	14,908	9,508	55.08	47.87	10,781.77	0.75%	\$ 4.08	\$ 2.33	
2019	3,934	25,046	14,737	75.35	78.91	16,135.01	1.00%	\$ 8.14	\$ 4.05	
2020	5,586	42,578	23,137	104.57	131.61	24,457.74	1.50%	\$ 18.52	\$ 8.01	
2021	8,100	73,234	37,019	148.18	222.1	37,781.90	2.00%	\$ 38.15	\$ 14.34	
<i>All figures are estimates</i>				Present Value of Stationary Market Revs:					<b>\$ 30.44</b>	
									Discount Rate: 15.0%	
Source: Frost & Sullivan			Backup application - 15 kW							
			CHP application - 2 kW							
			DG application - 700 kW							

**Table 5 - Neah Power’s Revenue Potential in Selected FC Stationary Markets, 2**

Projected India Stationary Market Fuel Cell Revenues										
Year	Total MW	India MW			Proj. Revenues \$M			Est. Neah St. Power Mkt Share	5% Royalty	Pres Value of Royalty
		Backup	CHP	DG	Backup	CHP	DG			
2013	31	23	2	5	\$34.38	\$2.95	\$9.98			
2014	48	34	3	9	49.25	4.82	16.59			
2015	74	50	5	15	70.56	7.89	27.59			
2016	114	74	8	26	101.07	12.91	45.87	0.25%	\$ 0.02	\$ 0.02
2017	176	108	13	45	144.79	21.14	76.28	0.50%	\$ 0.06	\$ 0.04
2018	271	159	22	78	207.42	34.59	126.84	0.75%	\$ 0.14	\$ 0.08
2019	419	233	36	135	297.14	56.61	210.92	1.00%	\$ 0.28	\$ 0.14
2020	647	341	60	232	425.66	92.65	350.72	1.50%	\$ 0.65	\$ 0.28
2021	1,000	500	100	400	609.78	151.64	583.20	2.00%	\$ 1.34	\$ 0.51
<i>All figures are estimates</i>								Present Value of Stationary Market Revs: <b>\$ 1.06</b>		
								Discount Rate: 15.0%		
<i>Source: Frost &amp; Sullivan</i>				Backup application - 15 kW						
				CHP application - 2 kW						
				DG application - 700 kW						

**Revenues and Income – Looking Forward**

The scope and timing of commercial engagements for a hitherto research focused company is far from being an exact science. It is fair to say, however, that the commercial transactions now being initiated are likely to lead to greater revenue flow in the near future. Whether the revenue slope takes flight in fiscal 2014 (only two more reporting quarters left in the fiscal year) or at a later time remains more a matter of timing. The accompanying income statement with our projections takes into account the prospect that several of the company’s customers or prospective customers move forward on various projects and finally bring revenues to the company coffers. Most, if not all of the company’s customers have the wherewithal to enter into sizeable contracts for large scale and long term commitments. Historically, the company’s small size has been an impediment to developing new business. With a sub-contracting framework in place and a clear willingness to simply license out the technology, the Company stands in much better shape today to move forward on its growth plans.

It bears mentioning that due to limited resources the company has kept to a very lean operating expense profile. The current cash burn rate is between \$110k and \$135k per month. The recent injection of nearly \$750k in funding suggests that the company has the wherewithal to follow through on its various initiatives.

**Production Metrics – Keeping it Simple**

With respect to overall valuation, much of the assessment was based on the likelihood that the company will emphasize considerable reliance on licensing agreements rather than handling its own production. As mentioned earlier, all of the manufacturing of the company’s products will be handled by outside manufacturing specialists. Furthermore, since the *PowerChip*™ requires only earlier generation semi-conductor manufacturing equipment, costs will be kept down, all of which improves the value of the platform.

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**Table 6 - Neah Power Annual Income Statements**

Neah Power Systems US \$	Annual		9 Months		3 Months	
	Sep. 30 2012	Sep. 30 2013	June 30 2013	June 30 2014	June 30 2013	June 30 2014
<b>Revenues</b>						
Total Revenues	228,000	149,179	149,179		103,887	
Cost of Goods Sold	31,443	2,332	2,332		2,332	
<b>Gross Profit</b>	<b>196,557</b>	<b>146,847</b>	146,847		101,555	
<b>Operating expenses</b>						
Research and development expense	455,274	484,494	506,967	598,235	246,355	316,343
General and administrative expense	1,736,200	1,724,211	1,157,828	1,505,932	381,121	528,196
<b>Total operating expenses</b>	<b>2,191,474</b>	<b>2,208,705</b>	1,664,795	2,104,167	627,476	844,539
Loss from operations	(1,994,917)	(2,061,858)	(1,517,948)	(2,104,167)	(525,921)	(844,539)
<b>Other income (expense)</b>						
Financing costs	0	(36,900)	(36,900)	(263,569)	(2,500)	(101,339)
Interest expense	(266,366)	(171,072)	(111,951)	(68,675)	(44,122)	(14,275)
Gain (loss) on settlement of liabilities, net	1,264,739	57,722	(60,018)	(402,633)	(2,047)	1,625
Gain on sale of equipment				13,699		13,699
Other expense	(3,000)	58,347		(2,825,345)		
<b>Net Income/(loss)</b>	<b>(999,544)</b>	<b>(2,385,899)</b>	(1,726,817)	873,013,636	(574,590)	(944,829)
Basic and diluted weighted average common shares outstanding (in Shares)	252,639,447	601,765,763	557,221,918	873,013,636	606,732,765	936,826,593

Source: Company reports

The ongoing losses shown in Table 6 reflect the primary research focus of the company to date. Importantly, the company carries little debt and the convertible preferred shares recently issued can be paid in equity at the choosing of the company. With the recent injection of capital and over \$1.2 million in cash on the books (June quarter closing), the company has the breathing room necessary to implement its commercialization strategy.

### Peer Companies

The accompanying table (next page) shows a great many publicly traded fuel companies that either compete directly with Neah Power or operate in different areas of fuel cell technology. Over the years, many companies have fallen by the wayside, unable to make the economics of producing fuel cells sufficiently compelling to establish long term foundations. The underlying appeal of fuel cells, that emissions are non-toxic to the environment, continues to drive companies like Neah Power to find either more economically friendly or logistically appealing products that can overcome the basic inertia of the marketplace.

To date, Neah Power has been very limited in revenue generation. This condition appears to be on the verge of changing. Our income model accounts for the establishment of a number of contractual or grant arrangements that should soon produce revenues. We are also taking the leap that these relationships will lead to even higher revenues 12 months down the road. In parallel, we are assuming that the technological advantages that Neah Power has developed will be of considerable appeal to many companies. The logical consequence would, of course, be an expanding foundation of customer royalty-based revenues. The risk is that unforeseen technical complications arise as current customers stress-test the technology in all its practical applications.

From a valuation standpoint, valuation ratios among the peer companies are wide and varied. In addition to the IP valuation cited earlier in this report, revenue as a multiple of projected revenues for such an early stage company is often used as a tool. In the case of Neah Power, we believe that the company is on the verge of generating significant revenues over the next 18 months. Our model anticipates revenues rising to \$14.5 million by the close of fiscal 2015 (see Appendix A). Such a ramp-up in revenues is not as

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logistically far-fetched as you might think. All of their product manufacturing will be handled by established, outside sources.

**Table 7 - Fuel Cell Listed Peer Companies**

Company Name	Symbol	Price	Shs. Out (Diluted)	Mkt Value (Diluted)	Revenues LTM	Operating Income	Net Income	Cash & ST. Inv.	Total Debt	Enterprise Value	Ent Val to Revs	Debt/ Capital
AFC Energy (LSE: AFC.L)	AFC-LN	£22.50	220.6	4,963.5	759.4	-£4.5	-£4.1	7.0	0.0	4,956.5	6.5	0.0
Arotech (ARTX)	ARTX	\$4.18	19.6	81.8	89.9	£3.8	£2.8	6.4	4.4	79.8	0.9	1.1
Ballard Power Systems (Nasdaq: BLDP)	BLDP	\$3.56	99.4	353.9	66.5	-£21.9	-£20.6	21.7	26.1	358.3	5.4	1.1
FuelCell Energy (Nasdaq: FCEL)	FCEL	\$2.67	200.6	535.6	195.7	-£35.0	-£35.3	72.7	73.9	536.8	2.7	1.2
Hydrogenics (Nasdaq: HYGS)	HYGS	\$21.18	9.0	190.6	40.2	-£9.2	-£9.2	13.2	2.4	179.8	4.5	1.0
Manhattan Scientifics, Inc.	MHTX	\$0.15	489.4	73.4	45.0	-£1.9	-£1.9	1.7	2.8	74.5	1.7	1.0
Plug Power Inc. (Nasdaq: PLUG)	PLUG	\$5.47	104.2	570.0	26.6	-£63.1	-£62.8	5.0	1.3	566.3	21.3	1.0
Proton Power	PPS.L	£0.075	641.0	48.1	1.1	-£9.3	-£9.3	0.4	12.0	59.7	53.8	1.3
SFC Energy AG (ETR: F3C.DE)	F3C.DE	€ 6.28	8.2	51.5	32.4	-£4.2	-£4.2	7.4	4.5	48.6	1.5	1.1
										<b>Average:</b>	10.9	
										<b>Median:</b>	4.5	
<b>Neah Power, Inc.</b>	<b>NPWZ</b>	<b>\$0.0150</b>	<b>963.0</b>	<b>14.4</b>	<b>0.1</b>			<b>0.5</b>	<b>0.0</b>	<b>14.5</b>	<b>nmf</b>	<b>0.0</b>

Source: Yahoo Finance, London Stock Exchange (Prices as of September 8, 2014)

One of the more profound observations one can make from this list is the persistently high valuations of some of these companies (Ballard, Fuel Cell, Plug Power) despite the fact that each has run up substantial cumulative losses and despite each being in business for over 20 years. By contrast, Neah Power is on the verge of meaningful commercialization after only 14 years of product research and development.

It is perhaps why this nearly widespread lack of success with the major fuel cell companies has produced a very deep sense of cynicism with respect to this sector. For this reason, should the company deliver on two or more of the projects on which it is currently involved, this cynicism could suddenly transition to a great deal of investor recognition and enthusiasm.

### Valuation Based on Potential Revenues

If one looks at the above table, the median value multiple for enterprise value to revenues is 4.5. A 3x multiple in general is not unusual for a risk oriented situation such as Neah Power where scalability potential is extremely high. With projected revenues for Neah Power of \$14.5 million in two years' time, a 3x multiple would produce a market valuation of \$50.7 million. Discount that result over a 12 month time frame at an annualized 15% rate and one calculates a value of \$32.9 million, well above the company's current market capitalization of \$14.4 million.

This valuation metric does not fully take into consideration the enormously promising potential of the company's new technology in utilizing formic acid to create hydrogen on site and in substantial quantities.

### Tax Loss Carryforwards

Neah Power has over \$50 million in tax loss carry-forwards. Given the complicated rules governing tax loss-carry-forwards and the circumstances by which those accumulated losses can be applied, we would nonetheless suggest that there is meaningful value in the company's NOLs should a merger or acquisition with another company take place. Certainly, if the company's commercial initiatives gain traction, these NOLs will be valuable in protecting the company's cash generation for some time.

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### Valuation Summary

Neah Power still has to prove to investors that its commercialization efforts are actually gaining traction. Management has indicated that its efforts along these lines are bearing fruit and that it is only a matter of time before a genuine flow of revenues unfolds. Shipments have already been made to the DRDO in India which will lead to payments within the next few months, and other situations cited are very close to kicking in.

We offer the following summary of the company's IP in combination with some other value elements as a reasonable compendium to measure the company's latent value.

**Table 8**

Assessment of Neah Power IP Value	\$MM
Present Value of US and India Military Markets	\$60.00
Present Value of US and India EV Markets:	\$10.70
Present Value of US and India Stationary FC Markets:	\$31.00
Value of BuzzBar™ Suite of Products:	\$2.00
Tax Loss Carryforwards:	\$14.00
<b>Total:</b>	<b>\$117.70</b>

This sum of the parts approach produces a present value of all of the company's intellectual assets and tax loss carry-forwards of \$117.7 million.

In our second, more practical approach, we estimated the company's likely revenue progression over the next two years and calculated a revenue achievement of \$14.5 million which, when a 3x revenue multiple is applied, produces a value of approximately \$43.5 million which, discounted at a 15% annual discount rate over two years produces a base value of \$32.9 million. Add in the tax loss carry-forwards estimated value of \$14 million and a total value of \$46.9 million can be calculated. Currently the company is trading with an enterprise value of about \$14.4 million.

***The steep discount from our valuation calculations is almost certainly attributed to the enduring inability of the company to generate revenues and the generally disappointing history of fuel cell investments.*** Investing at this time before real commercial corroboration takes place has its obvious risks, but it will not take long to respond positively if any of the pending customer discussions translate to real material engagements. It is understandable, however, why the market is taking a "show me" attitude towards this company and its stock.

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### Management

#### **Dr. Chris D'Couto, President and Chief Executive Officer**

Dr. D'Couto brings more than fifteen years of sales, marketing and product development experience to Neah Power. In his previous roles of increasing responsibility at Intel Corporation, Novellus Systems and FormFactor Inc. he was responsible for the introduction of new, dynamic products that were critical to the success of these companies. Dr. D'Couto is the primary author of various patents, has published extensively in peer reviewed journals and has been the invited keynote speaker at various forums. He has a Ph.D. in chemical engineering from Clarkson University, NY, and an MBA from the Haas School of Business, University of California, Berkeley.

## Neah Power Systems

### **David Schmidt, Acting Principal Financial Officer**

As of July 2012, Mr. Schmidt has been serving as the company's Acting Principal Financial Officer and since 2010 has served on Neah's board of directors. Mr. Schmidt's previous experience includes senior management roles at Honeywell International Specialty Materials, Plasmion Corporation, Inc. Film Specialties, Inc. and Hydromer, Inc. Mr. Schmidt earned his B.S. in business and economics from Lehigh University.

### **Derek Reiman, Director of Manufacturing**

Mr. Reiman has extensive experience in all aspects of Neah's proprietary technology and has had roles of increasing responsibility in development, manufacturing, process transfer and system development. In his current role as Director of Manufacturing, Mr. Reiman is responsible for the silicon processing, production, cell and stack testing and quality control, and is working with the outsourced manufacturing supply chain to enable world class competitive products. Mr. Reiman has a B.S. in Metallurgical Engineering, with a focus on semiconductor processing, from the University of Washington.

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## **Board of Directors**

### **Jeffrey B. Sakaguchi | Chairman of the Board**

Jeffrey Sakaguchi has served on our board since November 2010. Mr. Sakaguchi has served since 2009 as the Chairman of the Board of Directors of the American Red Cross, Greater Los Angeles Chapter where he has been responsible for the financial and organizational turnaround of chapter performance. From 2004 until 2007, Mr. Sakaguchi served as the President and Chief Operating Officer of Evolution Robotics Retail, Inc. In that role, Mr. Sakaguchi co-led a spin off of Evolution Robotics Retail, Inc. from its former parent company and developed and executed a commercialization strategy for a breakthrough visual scanning product targeted for the retail industry. From 1995 until 2003, Mr. Sakaguchi served as the Managing Partner for the North American Energy Strategy Practice at Accenture LLP in Los Angeles. From 1989 until 1995, Mr. Sakaguchi served as the Senior Engagement Manager at McKinsey & Company, Inc. in Los Angeles. Mr. Sakaguchi earned his bachelor's of science in chemical engineering from the Massachusetts Institute of Technology and his masters in business administration from the Wharton School of the University of Pennsylvania. Mr. Sakaguchi was chosen to serve on our Board because of his extensive business leadership experience with technology and emerging companies and his knowledge of the emerging fuel cell industry.

### **Dr. Gerard C. D'Couto**

Dr. D'Couto has served as a member of our Board since January 28, 2008 and as our Chief Executive Officer and President since February 2008. Dr. D'Couto previously served as our Chief Operating Officer and Executive Vice President from September 2007 until February 2008. Prior to joining us, Dr. D'Couto served as senior director of marketing at Form Factor Inc. from January 2006 until September 2007, where he headed the launch of NAND flash and DRAM sort probe cards. Prior to that, Dr. D'Couto had a nine-year tenure at Novellus Systems, Inc., with positions of increasing responsibility ranging from product management to technology development and sales. Prior to that, Dr. D'Couto worked at Varian Associates and as a consultant to Intel Corporation. Dr. D'Couto received a bachelor's degree in chemical engineering from the Coimbatore Institute of Technology in India and also received a master's and a doctoral degree in chemical engineering from Clarkson University in New York. Dr. D'Couto also earned an MBA from the Haas School of Business at the University of California, Berkeley. Mr. D'Couto was chosen to serve on our Board because of his management and operational skills from his business school education and past management positions as well as his technical knowledge related to our fuel cell technology.

### **David Schmidt**

Mr. Schmidt has served on our board since November 2010. Mr. Schmidt has served since 2008 as an independent consultant advising chemical, material and alternate energy spaces regarding strategic marketing and execution services. From 2004 until 2008, Mr. Schmidt served as the Manager of Commercial Excellence and the Strategic Marketing Business Development Manager at Honeywell International Specialty Materials, Inc. From 2000 until 2003, Mr. Schmidt served as a Senior Director and Chief Operations Officer of Plasmion Corporation, Inc. Mr. Schmidt has

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also served in management positions at Film Specialties, Inc. from 1993 until 2000, Hydromer, Inc. from 1989 until 1992 and ROI Group, Inc. from 1986 until 1988. Mr. Schmidt earned his bachelor of science in business and economics from Lehigh University. Mr. Schmidt was chosen to serve on our Board because of his extensive executive and business development experience in technology industries.

### **Jon M. Garfield**

Mr. Garfield has served on our Board since May 2008. Mr. Garfield is currently the CFO of Monte Nido LLC a behavioral healthcare treatment facility. He served as Chief Executive officer of technology company Clearant, Inc. (OTCBB: CLRA) from January 2007 until October 2010, and as Chief Financial Officer at Clearant, Inc. from September 2006 until January 2007. Mr. Garfield has served as a member of Clearant, Inc.'s board of directors from May 2007 until August 2010. From September 2001 through 2006, Mr. Garfield served as an independent financial consultant, including advising as to SEC reporting obligations and Sarbanes-Oxley compliance. From 1998 until 2001, he served as Chief Financial Officer of a telecom service provider and a software developer. From 1996 to 1998, he served as Vice President of Acquisitions for the formerly NYSE-listed ground transportation consolidator Coach USA, Inc. From 1991 to 1996, Mr. Garfield served as Corporate Assistant Controller of Maxxim Medical, Inc., a formerly New York Stock Exchange listed manufacturer and distributor. During 1986 to 1991, Mr. Garfield practiced public accounting with Arthur Andersen and PricewaterhouseCoopers. Mr. Garfield received a Bachelor of Business Administration in Accounting from University of Texas, Austin. Mr. Garfield was chosen to serve on our Board because of his past experience in chief executive officer and chief financial officer roles at public companies and because of his financial literacy.

### **William M. Shenkin**

Mr. Shenkin has served on our Board since November 2013. Mr. Shenkin is currently the CEO and President of CeFO, Inc. Mr. Shenkin specializes in working with businesses and individuals in providing family office services for high net worth individuals, chief financial officer services including strategic business review and planning, monthly financial and accounting review, equity and debt financing, buy/sell negotiations, and tax services. Mr. Shenkin's professional history encompasses 30 years of CPA, tax, audit and advisory services beginning with Ernst & Young, then Shenkin Kurtz Baker & Co. and presently CeFO, Inc. He is a member of the American Institute of Public Accountants and serves as a Board Member and Board Advisor for numerous companies and non-profits. Mr. Shenkin holds a M.A. in Accounting from Florida Atlantic University.

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## Scientific Advisory Board

### **Drs. van den Hoek**

Drs. Van den Hoek retired from Novellus Systems, Inc. in February 2008. He is currently a part-time advisor to Novellus Systems, Inc. From July 1999 through October 2005, he served as chief technical officer and executive vice president, Integration and Advanced Development. From March 2003 – Jan 2005, he was also in charge of the Human Resources organization, and acting General Counsel till December, 2006. From the end of 2005 through February 2008, he was president and CEO of Novellus Development Company, LLC.

Drs. van den Hoek represents Novellus Systems, Inc. as a member of the board of directors of the Semiconductor Research Corp. and as a member of the Governing Council of the Microelectronics Advanced Research Corp. (MARCO). He is a member of the Technical advisory boards of various public and private companies. Drs. Van den Hoek has written over thirty technical publications and holds more than fifteen patents. Drs. van den Hoek received a Doctorandus degree in Chemistry from the Rijks Universiteit Utrecht, The Netherlands.

### **Joseph R. Bronson**

Mr. Bronson is President and Chief Operating Officer of Sanmina-SCI Corporation (NASDAQ: SANM), a leading electronics contract manufacturer serving the fastest-growing segments of the global electronics manufacturing services (EMS) market. Prior to Sanmina, Mr. Bronson served as President and Director of FormFactor, Inc. (NASDAQ: FORM), a manufacturer of high performance advanced semiconductor wafer probe cards. Mr. Bronson also spent 20 years at Applied Materials (NASDAQ: AMAT) in senior level operations management positions concluding with Executive Vice President and Chief Financial Officer of the company.

## Neah Power Systems

### **Dr. Reza Abhari**

Dr. Abhari is a professor of Energy Technologies at the Swiss Federal Institute of Technology Zurich (ETH) where he is committed to research and development of advanced energy conversion systems and technologies. Dr. Abhari has served as a consultant to notable companies such as Alstom Power, a global leader in power generation, Daimler (NYSE: DAI), General Electric (NYSE: GE), Honeywell (NYSE: HON), and Toshiba Corp. (TSE: 6502.T). Additionally, he has served as an advisor to several private equity and venture capital firms, providing business, strategic and technical advice in the support of Clean Tech investments.

Dr. Abhari serves as a Member of the Board of Factor3C, a global leader in carbon asset development, and trading of Carbon Emission Reduction credits; Vice-Chairman of the International Gas Turbine Institute; and, Member of NASA Glenn Research Center's Working Group focusing on aeronautical research. Professor Abhari is a member of the prestigious Swiss Academy of Engineering Sciences, a Fellow of American Society of Mechanical Engineers and the recipient of several scientific awards, as well as a keynote speaker in the US, Europe, and Asia on topics related to climate change and energy supply and conversion. Professor Abhari received his PhD from MIT (1991) in Aeronautics and Astronautics and his MA and BA from Oxford University in Engineering Sciences.

### **Colonel James Mutter**

Colonel James Mutter joins the Company's Strategic Advisory Board after a distinguished 36-year military career with the US Marine Corps, including five years in USMC research, development, test and evaluation positions, about 15 years in senior command and control positions in both field and garrison, and also several tours as Chief of Staff at various commands. Following his military career, Col. Mutter was Sr. VP for Administration at Sensys Corp in D.C., has consulted with a number of military support contractors, and was President of the National Military Family Association. In 1998, he received the civilian US Navy Distinguished Public Service Award. After graduating from University of New Mexico in 1961, and serving two tours of duty in Vietnam, Col. Mutter was selected to attend graduate school and earned a Masters Degree in Financial Management at George Washington University.

### **Lieutenant General Carol Mutter (Ret.)**

Lieutenant General Carol Mutter (retired) joins Neah Power's Strategic Advisory Board after a celebrated 31-year career with the US Marine Corps where she retired as a Lieutenant General in 1999. General Mutter possesses 13 years of experience in military research, development and acquisition in addition to her experience in financial management, logistics, personnel administration, and equal opportunity. She was appointed by the President of the U.S. to the American Battle Monuments Commission, and currently serves on the National Advisory Council of The Alliance for National Defense, on the Advisory Board of the Indiana Council on World Affairs, on the Indiana State (legislative) Commission on Military and Veterans Affairs, and participates as a Senior Fellow at the Joint Forces Staff College in Norfolk, VA. More recently, Gen. Mutter has been a consultant for companies including IBM (NYSE: IBM), Raytheon Co. (NYSE: RTN), Revision Eyewear, as well as virtual training and nanotechnology organizations, directly contributing to their relationships with and success in obtaining government contracts. Gen. Mutter earned two masters degrees; one from Salve Regina University and the other from Naval War College, and has been awarded two honorary doctorate degrees.

### **John P. de Neufville**

Mr. Neufville is a recent addition to the company's Scientific Advisory board. Mr. Neufville brings a wealth of experience as a highly successful technologist and entrepreneur who has successfully spearheaded numerous successful corporate initiatives. His strengths are rooted in both scientific application as well as business acumen. He holds a PhD. in applied physics and materials science from Harvard University and an M.S. in geology from Harvard University and a B.S. in geology from Yale University.

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**Table 9 – Neah Power Balance Sheet**

	Sep. 30, 2012	Sep. 30, 2013	June 30, 2014
<b>ASSETS</b>			
Cash and cash equivalents	\$235,145	\$18,346	\$1,220,671
Accounts receivable	38,500	6,300	6,300
Note receivable, net of allowance for uncollectable accounts of \$58,347 and \$0, respectively	53,597		0
Prepaid expenses and other current assets	296,345	108,542	145,286
Total current assets	623,587	133,188	1,372,257
Property and equipment, net	10,453	9,615	86,474
<b>Total assets</b>	<b>634,040</b>	<b>142,803</b>	<b>1,458,731</b>
<b>Liabilities and Stockholders' Deficit</b>			
Accounts payable	597,134	882,674	697,065
Accrued compensation and related expenses	141,397	381,873	446,725
Other liabilities	69,981	88,354	91,487
Notes payable and accrued interest, net of discount of \$37,908 and \$13,258, respectively	140,432	135,844	440,268
Current portion of obligation to building landlord	80,000		
Total current liabilities	1,028,944	1,488,745	1,675,545
Long term portion of obligation to building landlord	6,665		
<b>Total liabilities</b>	<b>1,035,609</b>	<b>1,488,745</b>	<b>1,675,545</b>
Stockholders' Equity			
Preferred Stock	427	287	1,315
Common stock \$0.001 par value, 1,800,000,000 shares authorized, 766,991,327 and 503,041,505 shares issued and outstanding, respectively	503,041	766,991	963,003
Additional paid-in capital	55,244,886	56,422,602	60,180,035
Accumulated deficit	(56,149,923)	(58,535,822)	(61,361,167)
<b>Total stockholders' deficit</b>	<b>(401,569)</b>	<b>(1,345,942)</b>	<b>(216,814)</b>
<b>Total liabilities and stockholders' deficit</b>	<b>634,040</b>	<b>142,803</b>	<b>1,458,731</b>

Source: Company reports

**Table 10 – Neah Power Cash Flow Statement**

All numbers in US\$ thousands	Annual			Quarterly		
	30-Sep-11	30-Sep-12	30-Sep-13	31-Dec-13	31-Mar-14	30-Jun-14
<b>Period Ending</b>						
<b>Net Income</b>	<b>(1,633)</b>	<b>(1,000)</b>	<b>(2,386)</b>	<b>(857)</b>	<b>(1,023)</b>	<b>(945)</b>
Operating Activities, Cash Flows Provided By or Used In						
Depreciation	323	209	167	42	4	11
Adjustments To Net Income	(860)	89	643	222	584	239
Changes In Accounts Receivables		(39)	32			
Changes In Liabilities	1,457	(808)	610	37	11	(121)
Changes In Inventories						
Changes In Other Operating Activities	(4)	(267)	188	49	(54)	13
<b>Total Cash Flow From Operating Activities</b>	<b>(717)</b>	<b>(1,814)</b>	<b>(746)</b>	<b>(507)</b>	<b>(478)</b>	<b>(802)</b>
Investing Activities, Cash Flows Provided By or Used In						
Capital Expenditures		(3)		(9)		(32)
Investments	(48)					
Other Cash flows from Investing Activities					63	14
<b>Total Cash Flows From Investing Activities</b>	<b>(48)</b>	<b>(3)</b>		<b>(9)</b>	<b>63</b>	<b>(19)</b>
Financing Activities, Cash Flows Provided By or Used In						
Dividends Paid						
Sale Purchase of Stock	549	2,006	397	738	712	1,067
Net Borrowings	218	42	132	(13)		450
Other Cash Flows from Financing Activities						
<b>Total Cash Flows From Financing Activities</b>	<b>767</b>	<b>2,048</b>	<b>529</b>	<b>726</b>	<b>712</b>	<b>1,517</b>
Effect Of Exchange Rate Changes						
Change In Cash and Cash Equivalents	2	230	(217)	209	298	696
<b>Cash at End of Period</b>	<b>5</b>	<b>235</b>	<b>18</b>	<b>227</b>	<b>525</b>	<b>1,221</b>

Source: Company reports

**Appendix A – Fuel Cell Companies**

<b>Fuel Cell Companies - May, 2014</b>	
<b>Company</b>	<b>Location</b>
Acumentrics SOFC Corporation	Westwood, Massachusetts, United States
AFC Energy	Surrey, United Kingdom
Altery Systems	Folsom, California, United States
Automotive Fuel Cell Cooperation Corp.	Burnaby, BC, Canada
Ballard Power Systems	Burnaby, Canada
BIC Consumer Products	Shelton, Connecticut, United States
Bloom Energy	Sunnyvale, California, United States
Cellkraft AB	Stockholm, Sweden
Ceramic Fuel Cells Ltd.	Noble Park, Australia
ClearEdge Power	Hillsboro, Oregon, United States
Convion Ltd.	Espoo, Finland
DDI Energy Inc.	Airdrie, Canada
Delphi Automotive Systems, LLC	Troy, Michigan, United States
Elcogen AS	Tallinn, Estonia
elcore GmbH	Munich, Germany
EnerFuel	West Palm Beach, Florida, United States
eZelleron GmbH	Dresden, Germany
FuelCell Energy	Danbury, Connecticut, United States
Fuji Electric Corp. of America	Edison, New Jersey, United States
FutureE Fuel Cell Solutions GmbH	Nuertingen, Baden-Wuerttemberg, Germany
Horizon Fuel Cell Technologies	, Singapore
Hydrogenics	Mississauga, Canada
Infinity Fuel Cell and Hydrogen, Inc.	Windsor, Connecticut, United States
Infintium Fuel Cell Systems	Carrollton, Texas, United States
Intelligent Energy	Loughborough, Leicestershire, United Kingdom
Lilliputian Systems/Nectar Mobile Power	Wilmington, Massachusetts, United States
M-FIELD Energy LTD.	Taipei, Taiwan, Province of China
MES sa	Stabio, Switzerland
Nedstack PEM Fuel Cells	6802 ED Arnhem, Netherlands
Nuvera Fuel Cells	Billerica, Massachusetts, United States
Oorja Protonics Inc.	Fremont, California, United States
Palcan Energy Corporation	Vancouver, BC, Canada
Plug Power Inc.	Latham, New York, United States
PowerCell Sweden AB	Göteborg, Sweden
ReliOn	Spokane, Washington, United States
SerEnergy A/S	Hobro, Denmark
SFC Energy AG	Brunnthal-Nord, Germany
SOFCpower Spa	Mezzolombardo - Trento, Italy
sunfire GmbH	Dresden, Germany
Toho Gas Co., Ltd.	Tokai City, Japan
Topsoe Fuel Cell A/S	Lyngby, Denmark
Tropical S.A.	Athens, Greece
US Hybrid	South Windsor, Connecticut, United States
Versa Power Systems	Littleton, Colorado, United States
VP Energy LLC	Brighton, Michigan, United States

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All prices are as of September 9, 2014

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