Zacks Small-Cap Research

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Steven Ralston, CFA
312-265-9426
sralston@zacks.com

scr.zacks.com

10 S. Riverside Plaza, Chicago, IL 60606

Midwest Energy Emissions (MEEC-OTCQB)

Preliminary 2Q revenues expected to be announced in mid-July

Based on comparative analysis that utilizes the valuation metric of price-to-sales (P/S), an upper second quartile P/S ratio of 3.5 on projected sales through 3Q-2017 of $38.3 million indicates a share price target of $1.60

Current Price (06/28/17)	$0.42
Valuation	**$1.60**

OUTLOOK

Midwest Energy Emissions is well-positioned to benefit from the reduction of mercury emissions program of the EPA. The company has exclusive rights to SEA™ Technology for the reduction of mercury emissions by coal-fired electric generating units. Over 20 EGUs are highly prospective and are in various stages of the sales process, of which management anticipates at least 10, and potentially up to 15 will come under contract during 2017. Management's guidance for 2017 revenues is between $40 million and $45 million. It is expected that preliminary 2Q revenues will be announced during the second or third week of July.

SUMMARY DATA

52-Week High	**$1.93**
52-Week Low	**$0.36**
One-Year Return (%)	**-43.24**
Beta	**1.52**
Average Daily Volume (shrs.)	**168,250**
Shares Outstanding (million)	**74.19**
Market Capitalization ($ mil.)	**$31.16**
Short Interest Ratio (days)	**0.002**
Institutional Ownership (%)	**44**
Insider Ownership (%)	**24**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/M**
P/E using 2017 Estimate	**21.0**
P/E using 2018 Estimate	**4.2**
Zacks Rank	**N/A**

Risk Level	**Above Average**
Type of Stock	**Small-Growth**
Industry	**Pollution Control**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015	0.24 A	2.70 A	3.63 A	6.07 A	12.63 A
2016	3.37 A	9.39 A	11.77 A	7.81 A	32.35 A
2017	5.43 A	10.69 E	14.36 E	9.53 E	40.00 E
2018					50.00 E

Earnings per Share
(EPS is operating earnings before non-recurring items)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015	-$0.16 A	$0.01 A	-$0.02 A	-$0.12 A	-$0.32 A
2016	$0.02 A	-$0.17 A	-$0.19 A	-$0.00 A	-$0.33 A
2017	-$0.02 A	$0.00 E	$0.03 E	$0.01 E	$0.02 E
2018					$0.10 E

Zacks Projected EPS Growth Rate - Next 5 Years % **20**

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KEY POINTS

- The U.S. Environmental Protection Agency's Mercury and Air Toxic Standards (MATS) created a multi-billion dollar market for mercury remediation solutions.
- Midwest Energy Emissions is **well-positioned** to benefit from the full implementation of MATS.
  - The company now holds **42 issued patents and patents-pending** related to mercury removal processes developed by the Energy & Environmental Research Center, including SEA™ Technology.
  - SEA Technology provides an operationally-effective and cost-effective mercury emissions solution that is flexible to accommodate a broad range of configurations of coal-fired power plants fueled by varying coal types.
  - SEA Technology has been **successfully demonstrated over 50 times** at large operating power plants across the United States and Canada.
- Midwest Energy Emissions has won contracts that span **20 Electric Generating Units** (EGUs) across at least ten power plants.
  - a **West Coast utility** with two EGUs
  - a **major U.S. power producer** for 9 generating units
  - two separate utility **cooperatives in the Southwest**, each with one EGU
  - a large **northern Midwest utility** with two EGUs
  - four additional EGUs contracts awarded in early 2016
  - another 3-year contract secured at another electric utility in September 2016
- **Timetable and expectations for the installation of mercury emissions control systems**
  - By September 2016, all 20 systems under the contract were operational and under compliance.
  - The initial average EGU was estimated to approximately generate between $2.0 million and $3.0 million of revenue annually. Evidence of pricing power with challenged boilers prompted management to increase expectations to greater than $3.0 million annually for EGUs coming under contract going forward.
  - Management estimates that product sales, equipment installations and consulting services will generate **over $120 million over the terms of existing contracts**.
- As the company's mercury emission control systems came online during the second quarter of 2016, Midwest Energy Emissions gained traction within the marketplace as coal-fired utilities seek more cost-effective mercury emissions solutions.
- Midwest Energy Emissions has international **blue sky market opportunities**. The company holds the exclusive rights to SEA Technology patents in **Europe, Canada** and **China**, and the Minamata Convention on Mercury should bolster international demand for the company's mercury remediation solutions.
- **Alterna Capital Partners** is financially committed to Midwest Energy Emissions, currently holding a beneficial interest in 11,700,000 shares (about 16% of shares outstanding).
- Though MATS was legally challenged, the regulation became full effective beginning on April 15, 2016.
- **Management began holding quarterly conference calls** to review financial and operational results **in 2016**.

RECENT NEWS

Midwest Energy Emissions acquires SEA Technology patents from EERCF

In a **milestone event**, on April 24, 2017, Midwest Energy Emissions closed on the acquisition of all patents rights and patents pending related to the Sorbent Enhancement Additive (SEA™) Technology from the Energy & Environmental Research Center (EERCF) at University of North Dakota. The purchase price was $2,500,000 and 925,000 shares of MEEC common stock, of which 628,998 shares will be issued directly to EERCF and 296,002 shares will be issued to the inventors within 30 days. The

cash payment was funded by cash-on-hand, which includes a portion of the net proceeds from the private placement that closed in November 2016.

Midwest Energy Emissions now not only owns the Technology, but also no longer is required to pay monthly license maintenance fees of $$25,000 ($300,000 annually) and annual running royalties of $100 per one megawatt (MW) of electronic nameplate capacity and $100 per three MW per hour at systems utilizing licensed products and/or processes.

SEA Technology, the company's **core IP**, provides an operationally-effective and cost-effective mercury emissions solution that is flexible to accommodate a broad range of configurations of coal-fired power plants fueled by varying coal types. Developed by researchers at the Energy & Environmental Research Center (EERC), SEA Technology utilizes the application of sorbent enhancement additives to promote the oxidation of elemental mercury in preparation for adsorption by uniquely formulated blends of sorbent products. Utilizing this Technology, Midwest Energy Emissions is able to offer at lower-cost option to utilities so that their coal-fired units can achieve compliance with MATS while maintaining the marketability of the fly ash by-product.

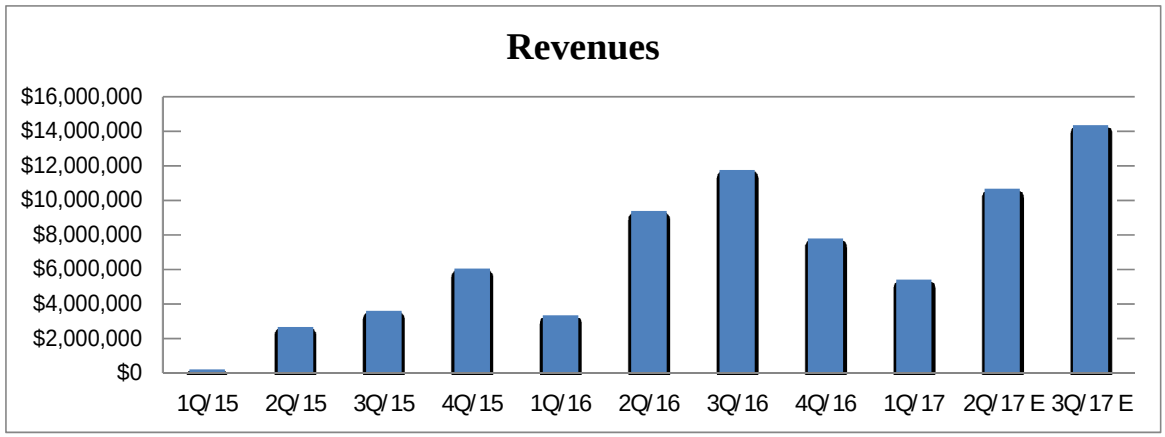
The portfolio of patents rights and patents pending is composed of **42 patents and patents-pending** related to mercury removal processes developed by the (EERC). The patents in the United States include:

- Sorbents and Flue Gas Additives for the Oxidation and Removal of Mercury (7,435,286)
- High-Temperature Halogen Dissociation for Mercury Control in Coal-Fired Systems (7,615,101)
- Multifunctional Abatement of Air Pollutants in Flue Gas (7,628,969)
- Sorbents for the Oxidation and Removal of Mercury (8,168,147)
- Process for Regenerating a Spent Sorbent (8,173,566)
- Mercury Control Using Moderate-Temperature Dissociation of Halogen Compounds (8,312,822)
- Process for Regenerating a Spent Sorbent (Continuation) (8,440,585)
- Sorbents for the Oxidation and Removal of Mercury (Continuation) (8,652,235)

The patent and patents pending portfolio also includes international **blue sky market opportunities** with SEA Technology patents in **Europe, Canada** and **China**.

2017 Revenue Guidance

Management adjusted revenue guidance for the 2017 year **down to the range of $40 million-to-$45 million**, representing a 23% and 39% increase from 2016 revenue $32.3 million but below prior guidance of $60 million-to-$70 million. Guidance appears to have been lowered due to a slower than expected closing rate of new contracts primarily from an **unexpected competitive response** from a particular large chemical company discounting the price of sorbent to its break-even point (and possibly below) in order to maintain customer relationships, to preserve accounts and to create a situation whereby production capacity can be expanded.



Despite the lower guidance for the year, Midwest Energy Emissions has maintained a **sales pipeline of over 20 EGUs**, which are in various stages of testing, demonstration and contract negotiation. Management firmly believes that the ownership of the patent portfolio will aid in the conversion of high quality prospects to long-term, recurring revenue contracts.

2017 Contract Announcements

On March 7, 2017, Midwest Energy Emissions announced that the company has secured an **order for a $1 million injection system** for a redundant long-term application by an owner of a fleet of EGUs. Management is confident that the installation will lead to additional opportunities throughout this customer's fleet.

On April 4, 2017, Midwest Energy Emissions announced that a current utility customer located in the Midwest renewed its contract valued at over $5.0 million over the next two years. The customer has been utilizing Midwest Energy SEA Technology since 2015.

First Quarter 2017 Results

Midwest Energy Emissions reported results for the first quarter ending March 31, 2017. The company reported **revenues** of $ **5,427,394, up 60.9%** from $3,373,311, reported in comparable quarter last year. Revenue growth was primarily driven by product (sorbent) deliveries (+86.2% to $5.28 million) while revenues from demonstration & consulting services ($136,000) also contributed to the top-line. The increased use of sorbent is associated with many customer sites not implementing for full MATS compliance until April last year.

Total operating expenses increased 77.2% to $6.48 million versus $3.66 million in the first quarter of 2016, primarily attributable to $954,621 in expenses related to stock-based compensation (option grants) recorded under SG&A. **Cost of goods sold increased only 48.6%** to $3.79 million, **less than rate of increase in revenues** demonstrating the positive effects of economies of scale and cost saving initiatives. The direct product gross margin improved 382 basis points (bps) from 38.3% to 47.6%. Midwest Energy has a $500,000 net operating loss carry forward.

The company reported a net loss of $1,445,285 (or $0.02 per diluted share) versus net income of $908,294 (or $0.02 per diluted share) in the first quarter of 2016. The net loss in the first quarter of 2017 was primarily due to higher SG&A expenses, particularly $954,621 related to stock-based compensation. The profitable quarter last year was a result of the $3,309,400 positive change in value of warrant liability. Without the change in value of warrant liability, the company would have reported a loss of approximately $2.4 million (or $0.05 per diluted share).

Adjusted EBITDA improved over 800% to $145,000 compared to $16,000 in the first quarter of 2016 as again most of Midwest's customer has not yet committed to full compliance to MATS in the comparable quarter last year. As of March 31, 2017, working capital was a healthy $4.3 million, though down $1.3 million sequentially.

OVERVIEW

Headquartered Lewis Center, Ohio, Midwest Energy Emissions Corp. (MEEC) provides patented mercury capture solutions for coal-power plants whose mercury emissions exceed the U.S. Environmental Protection Agency's Mercury and Air Toxic Standards (MATS). **The company has successfully commercialized its Sorbent Enhancement Additive (SEA™) Technology**, which can achieve mercury removal levels that are compliant with MATS at a significantly lower cost than other methods while preserving the quality (and hence the marketability) of fly-ash, a by-product from the coal

burning process. The company holds **42 issued patents and patents-pending** related to a mercury removal processes developed by the Energy & Environmental Research Center (EERC) and has a close and mutually beneficial relationship with the EERC Foundation, which aids in the commercialization EERC's research efforts. The company's holistic **cost-competitive solution** for mercury emission control is a proven, effective technology that reduces mercury emissions to MATS-compliant levels over a wide range of plant configurations and coal types.

The EPA's **MATS have created a multi-billion dollar market for mercury remediation solutions**. MATS require that all coal-fired Electric Generating Units (EGUs) larger than 25 megawatts (MW) remove approximately 90% of mercury from their emissions beginning April 16, 2015. Many EGUs were granted one-year compliance waivers, including eleven of the initial 15 EGUs under contract to MEEC. On a plant-by plant basis, power plant operators must find an economical feasible method to upgrade existing plants in order to comply with MATS; otherwise, non-compliant plants could be forced to be decommissioned, which will affect the capacity, reliability and supply attributes of the associated electric networks.

The process of commercializing any pollution control technology or method within the utility industry is a lengthy and expensive process, which involves the migration of a technology from the laboratory to commercial-scale demonstrations and then to contract signings, installations, testing and finally commercial operations. SEA Technology has been successfully demonstrated over 50 times at large operating power plants across the United States and in Canada.

Midwest Energy Emissions is deploying what appears to be the industry's most cost-effective solution for coal power plants to comply with MATS. Management and the EERC believe that the SEA Technology process with an optimized blend of sorbents is the most efficient, cost-effective manner to capture mercury. **SEA Technology provides an approach that optimizes the mercury capture process while minimizing the cost of injected materials**. As a result, SEA Technology lessens the total amount of sorbent injected, thereby reducing the cost of MATS compliance. **The technology is also flexible**, allowing Midwest Energy's consumable products to be formulated specifically for a coal-fired unit and its coal-fuel-type. Importantly, the process has less operational impact with minimal corrosion to the plant's equipment and preserving the marketability of fly ash, an important ancillary revenue stream for power plants.

The company's primary consumable products are **SF-10** (a front-end sorbent enhancement additive) and **SB-24** (a back-end carbon sorbent). SF-10 conditions the flue gas enhancing the ability of mercury to be removed with the company's proprietary back-end sorbent products. The company also can provide a non-carbon approach with a back-end carbon-free sorbent, **SB-26**, if a customer desires.

Management is executing its plan to sign multi-year contracts, deliver and test mercury emissions removal equipment and supply sorbent for three-year contract periods. The company has been **awarded at least seven contracts encompassing 20 EGUs**. Management's strong marketing efforts resulted in many successful full-scale demonstrations since 2013, which altogether exceed 50 in number since SEA Technology was invented. However, the company has many more opportunities in its sales pipeline, especially utilities that have not yet committed to a mercury remediation solution and also companies currently under contract with competitors but dissatisfied with the high cost of their current solution.

Also, Midwest Energy Emissions has **international market opportunities**. The company holds the exclusive rights to SEA Technology patents in Europe, Canada and China. SEA Technology has been successfully demonstrated for a few large utilities in Canada, where raising mercury capture regulations is being contemplated. Since 2012, a nationwide mercury reduction agreement has required a 60% reduction, which will likely be raised to an 80% reduction beginning in 2018. Individual provinces may require more strict emissions control sooner. China has promulgated emission regulations, but has yet to implement mercury reductions. In October 10, 2013, 140 nations (including the US, Canada, China, Germany, Netherland and the U.K.) signed the Minamata Convention on mercury, an international treaty that recognized mercury is a chemical of global concern and addresses the reduction of emissions of

mercury and mercury compounds. Long-term, there is **blue sky potential** for international demand for the company's mercury remediation solutions.

Midwest Energy Emissions has demonstrated a **technical competitive advantage** by bringing EGUs to MATS compliance in a cost-effective manner. As many coal-fired utilities are having difficulties, ranging from encountering prohibitive costs in achieving a 90% reduction in mercury emissions to having to de-rate (lower the capacity of) boilers to attain compliance, management is focused on further penetrating the fleets of existing customers as well as securing new clients (electric utilities) which are challenged and are seeking an economical solution to comply with MATS.

Midwest Energy Emissions is unique in that it has a singular focus (the mercury emissions control market), holds exclusive rights to patented processes, has achieved market penetration through the commercialization of SEA™ Technology and is positioned to take advantage of further opportunities afforded by the implementation of MATS.

We expect Midwest Energy Emissions to **gain further traction** within the marketplace as electric utilities attempt to achieve compliance with MATS. **Many coal-fired utilities are having difficulties**, ranging from encountering prohibitive costs in achieving a 90% reduction in mercury emissions to having to de-rate (lower the capacity of) a boiler to attain compliance. Electric utilities with challenged EGUs are seeking out alternative solutions in the attempt to achieve compliance with MATS. Midwest Energy is specifically targeting this **sweet spot of prospective customers**.

The benefits of new contract wins can accrue within the timeframe of a quarter. The turn time to implement Midwest Energy's SEA™ Technology is relatively short: 8-to-16 weeks, and in many cases, Midwest Energy's sorbent products can be utilized with existing back-end equipment until the custom-designed front-end system is designed and implemented.

SEA™ TECHNOLOGY

Utilizing a patented Sorbent Enhancement Additive (SEA™) Technology, Midwest Energy Emissions is able to offer at lower-cost option to utilities so that their coal-fired units can achieve compliance with MATS while maintaining the marketability of the fly ash by-product. Developed by researchers at the EERC, the company's SEA Technology utilizes the application of sorbent enhancement additives to promote the oxidation of elemental mercury in preparation for adsorption by uniquely formulated blends of sorbent products.

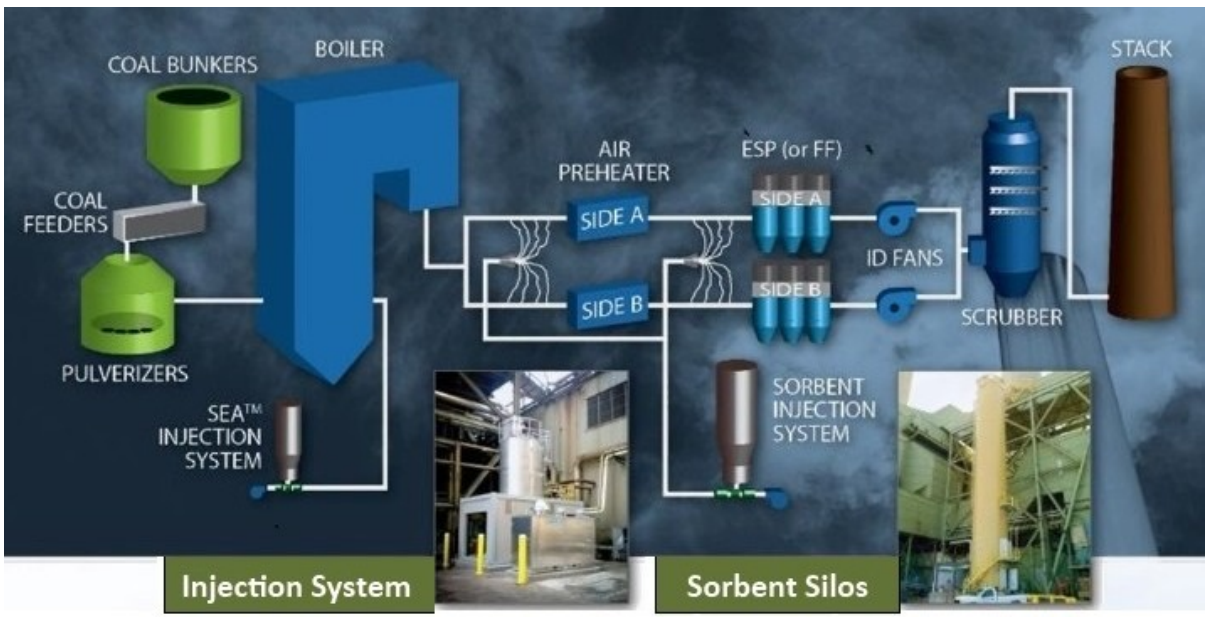
Mercury is emitted from coal-fired boilers in three basic forms: elemental mercury (Hg^0), oxidized mercury (Hg^{2+}) and particulate-bound mercury (Hg_p). **Compliance with MATS requires that the <u>total</u> of all three forms of mercury be measured and reduced.** The ratio of elemental to the oxidized forms of mercury emitted from combustion is highly dependent on the type of coal that is combusted. By and large, bituminous coal-fired boilers emit primarily oxidized mercury while the majority of mercury produced by low rank coal-fired (subbituminous and lignite) boilers is elemental mercury.[i] The strongest factor for this generalization is that the relatively high concentrations of halogens, such as chlorine and bromine, in bituminous coals results in the oxidization of elemental mercury to form oxidized mercury, primarily the mercuric halides ($HgCl_2$ and HBr_2). In contrast, both subbituminous and lignite coals not only have lower quantities of halogens, but also higher amounts of alkaline material (such as calcium and sodium) than bituminous coals. The halogens from the combustion of subbituminous coal and lignite have a tendency to react with the alkaline materials with the result that little halogen oxidizes the elemental mercury.[ii] Though in aggregate, roughly 60% of the mercury emitted by coal combustion is elemental mercury and 40% is oxidized mercury.[iii]

Elemental mercury is very difficult to capture and remove because, by definition, it is in its elemental form (a single atom with a neutral charge). Elemental mercury is the most difficult to remove from flue

gas since it is practically insoluble in water, and hence, not typically removed by wet processes like flue gas desulfurization (FGD) systems aka scrubbers. However, **oxidized mercury** is reactive in that it more easily deposited and captured by sorbents. Through the chemical reaction by which oxidized mercury is formed, it becomes charged allowing its efficient capture by pollution control devices. It is highly soluble in water, and therefore, readily captured in wet scrubbers. **Particle-bound mercury** is condensed on the fine fly ash particles emitted by coal-fired boilers. With charged components, Hg_p sticks to surfaces and is readily removed by pollution control devices designed to remove particulates (bag houses/fabric filters, electrostatic precipitators and scrubbers) and also by activated carbon.

The use of a Brominated Activated Carbon (BAC) injection system is the most common method used today to oxidize elemental mercury, primarily since BAC is more effective than Standard Powdered Activated Carbon (PAC) for removing mercury from flue gas of boilers burning low chlorine content coal. However, the cost of operation can become uneconomical, since the injection of activated carbon sorbent is only cost-effective at capturing about 60% of the mercury emissions, at which point diminishing effectiveness is achieved by the injection of additional sorbent. For some 1,000 MW coal-fired units, the cost to achieve a 90% reduction in mercury emissions can exceed over $10 million per year.

Midwest Energy Emissions can provide a MATS-compliant process, along with custom-blended halogenated front-end sorbent enhancement additives and back-end sorbents, for an effective and cost-competitive solution for controlling emissions mercury in coal-fired units. The use of SEA Technology, namely the proprietary additives and sorbents, costs around $2.5 million annually, depending on size of the EGU, the coal being combusted and the amount of time the plant is being operated. In addition, the fly ash by-product remains marketable, which may not be the case in a BAC system. Fly ash is fine, powdery matter collected by the fabric filters and electrostatic precipitators, which is mostly utilized by the cement/concrete industry, but also for structural fills (such as embankments), the stabilization of waste materials and road bases. The sale of fly ash represents an opportunity for utilities to both increase revenues and reduce costs.



Midwest Energy Emissions **provides a process** that can be fine-tuned to achieve optimum efficiency, by tweaking not only the **location and method of injection** of products, but especially the **blend and reactivity** of sorbents. The company's solution for 90%+ mercury emissions reduction is a **two-step process** that can be fine-tuned to the unique configuration of the customer's EGU and the coal type being combusted. The **first step** involves the introduction of **flue gas conditioning products** that promote the conversion of elemental mercury to oxidized mercury and particulate-bound mercury, which are more easily captured in downstream devices.

SF-10, Midwest Energy's proprietary and patented sorbent enhancement additive flue gas conditioner, is **injected into the coal-fired boiler** by MEEC's injection system. The SF-10 immediately gasifies and migrates throughout furnace system promoting mercury oxidation. With a keen understanding of the complex interactions among elemental mercury, sorbent enhancement additives and flue gases, along with the role and impact that these various components of flue gas have on chemisorption, EERC designed SEA Technology to maximize the conversion of elemental mercury to oxidized mercury while minimizing the amount of injected sorbent enhancement additives. The location of front-end injection **optimizes the residence time** for these reactive conditioning products to oxidize the elemental mercury. Promoting mercury oxidation through catalytic processes and materials is a key feature of SEA Technology and only requires the use of a relatively small amount of sorbent enhancement additive. In addition, the amount of SF-10 being injected is adjusted to the unique requirements of each client's system to ensure benefit-to-cost performance.

The cost of installing the **front-end injection system** is roughly $500,000; however, Midwest Energy Emissions sells its front-end and back-end products for the duration of the contract, which normally costs the utility approximately $2.5 million annually per EGU. Typically, the lower operating costs can provide a 4-to-5 month payback on the front-end capital equipment when compared to current costs of operating a Brominated Activated Carbon system.

SEA Technology's **back-end injection system** is located up-stream (prior) to the particulate matter (PM) equipment, principally bag-house and electrostatic precipitator. Midwest Energy offers a variety of products for introduction into the mercury-contaminated flue gas stream, with the most-used product being SB-24. The fine sorbent particles of the sorbent are injected through a flue gas duct, where the now more reactive, oxidized mercury contacts the sorbent and attaches to its surface so it can be collected. The pregnant sorbent is removed from the flue gas stream, along with the fly ash, in the bag-house or electrostatic precipitator. The cost of the back-end system is in the $1.0-$1.5 million range, but an injection silo must be installed in all cases when MATS-compliance cannot be achieved. This back-end injection system is common to almost any mercury collection technology in the industry, and not unique to SEA.

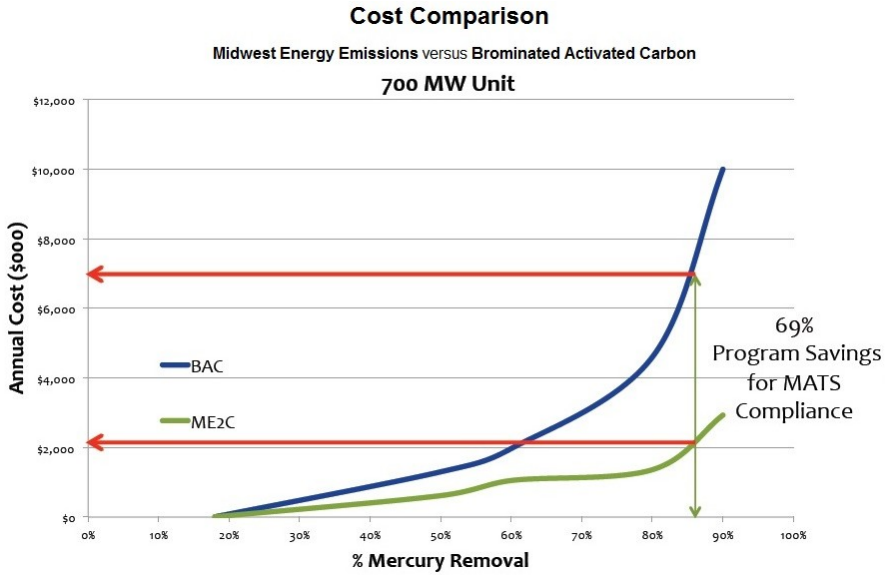
SB-24 is the mainstream sorbent product of Midwest Energy Emissions and designed to provide active capture sites for mercury absorption. The proprietary blend performs well across all known boiler configurations and most coal types without impacting fly ash quality. SB-24 is the company's most effective and least cost-per-pound sorbent.

The SEA Technology process has been proven to be effective over a broad range of coal types and configurations of coal-fired power plants. Midwest Energy provides an approach that optimizes the mercury capture process while minimizing the cost of injected sorbents. The optimal combination is determined through extended parametric testing of various combinations of front- and back-end products to determine the arrangement that exhibits optimum mercury removal rate at the minimal consumption of sorbent material. Depending on the existing air pollution control equipment and the type of coal being burned, the SEA Technology system can also be tailored on-the-fly through adjustable sorbent enhancement additive and sorbent feed rates. As a result, SEA Technology lessens the total amount of sorbent injected thereby reducing the cost of MATS compliance.

A **case study** was performed in which mercury removal and costs were monitored through parametric testing of the use of both SEA Technology proprietary sorbents and Brominated Activated Carbon at the same 700 MW EGU powered by subbituminous coal. The results (depicted in the graph below) clearly indicate that Midwest energy's SEA Technology is vastly superior to BAC in terms of cost and effectiveness.

Attaining 80%+ mercury reduction levels at low-rank-coal EGUs by injecting Powdered Activated Carbon or Brominated Activated Carbon has proven to be challenging and, in most cases, uneconomical. The higher volumes of injectant not only can increase annual injectant costs to the $5 million to $20 million

range, but also potentially can creates severe operational issues, including corrosion of the plant's equipment and the degradation of the fly ash by-product, which renders it unsuitable for sale.



COMMERCIALIZATION OF SEA TECHNOLOGY

Lead times for the selection of mercury emissions control solutions are long, with power producers requiring demonstrations in order to evaluate and assess the effectiveness and costs of competing pollution control systems. Since SEA Technology is both operationally effective and cost-effective, management anticipates that demonstrations will often yield commercial contracts.

Midwest Energy's initial client was a **West Coast utility** with the contract being signed in late 2010. The utility had parametrically tested various mercury emission control systems at one of its two 730-MW Electric Generating Units (EGUs) located at a power plant in the Pacific Northwest. Midwest Energy's method of employing SEA Technology achieved a mercury capture rate that exceeded the required MATS compliance limit at the lowest cost. State mercury emissions regulations and grass roots pressure required the early implementation of the reduction of mercury emissions. The company's system was commissioned into operation in September 2011, and compliance operation began in December 2011. The company attained a significant milestone with this **first commercial installation** of SEA Technology. A **second system** was also installed at the utility's other 730-MW EGU. The systems are used when the EGUs are in operation, usually during peak demand periods of the year.

In August 2012, a major **Southwestern U.S. power producer** contracted Midwest Energy Emissions to perform a demonstration of the company's mercury removal technology at one of the power producer's generating units. After the initial demonstration in the fall, the power producer contracted for additional demonstrations on three of the larger generating units at different plant sites for the spring of 2013.

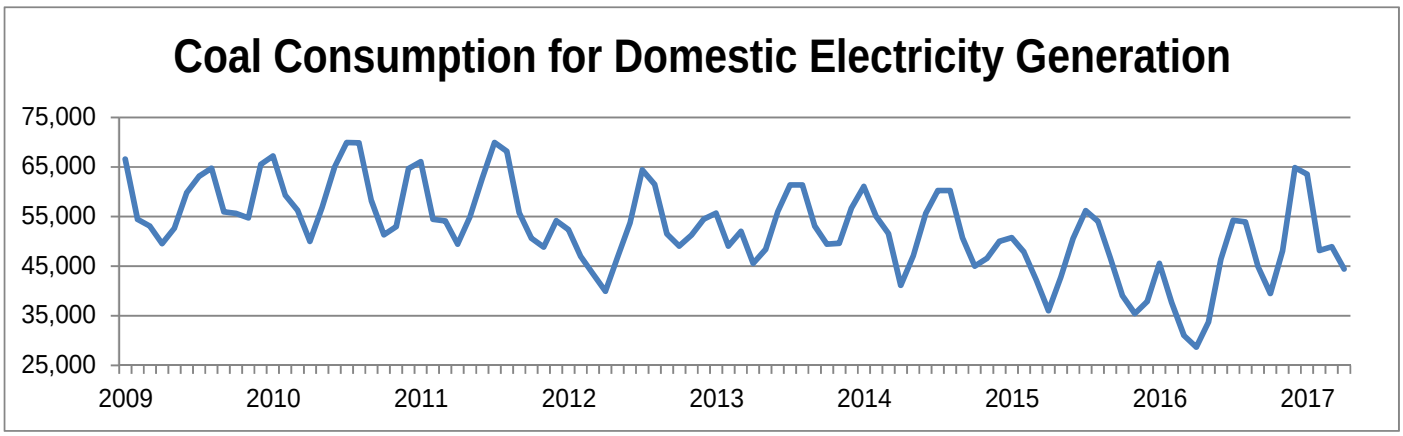
By the spring of 2013, Midwest Energy Emissions had performed 23 demonstrations of the SEA Technology in North America. In April 2013, a major **U.S. electric utility in the Midwest** contracted for a demonstration in early-summer. The Southwestern and Midwestern utilities then requested additional demonstrations, which were completed in late-summer.

By the end of 2013, Midwest Energy Emissions had conducted **31 demonstrations** of its patented SEA Technology on the power generating units of potential customers. The demonstrations were carried out across many coal types and the majority of utility system designs. In addition, management attended trade shows including participation at the EERC Air Quality Conference during October 2013 in Arlington,

Virginia. Midwest Energy's CEO Alan Kelley served as Session Chair for "Hg Control – Sorbent Injection" and Marc Sylvester, VP of Sales, made a presentation entitled "MATS Compliance Programs for Mercury with Various PM Equipped Units." The company's participation cultivated interest with potential clients who were planning for compliance with mercury emissions regulations.

As a result of the management's marketing efforts since 2012 and subsequent demonstrations during 2013, 11 coal-fired electricity generation units came under contract during the first quarter of 2014, bringing the total to 13 at that time. The first commitment was from a **major U.S. power producer** for **9 generating units**, which are expected to come online in early 2016. Management estimates that by 2016 the relationship will be generating approximately $30 million annually, with initial revenues beginning in 2014. The second contract announced was for a **single EGU** with a large coal-power **cooperative in the Southwest US** The installation of the SEA system, which included a newly-designed mercury-control feeder system, occurred in 2014. The company estimated that the sorbent supply contract should generate $2 million of revenues annually. The third commitment was a contract with a large utility **cooperative in the Southwest US** for a single EGU. The system installation generated revenues of $2.4 million in 2015, and the three-year supply contract should generate revenues of $4 million per year annually beginning in 2016.

Seasonal Consumption of Coal for Domestic Electricity Generation



In May 2014, the company's initial customer, located on the West Coast, **extended the contract for its two coal-fired electric generating units** for additional three years. The contract extension serves as an indicator of the customer's level of satisfaction with Midwest Energy's Sorbent Enhancement Additive solution. Obviously, the operational performance of SEA Technology has more than met the utility's expectations. The supply contract is expected to generate approximately $3 million in revenues per year. To date, revenues derived by supplying sorbent to the customer has been less than the $3 million potential due to lower reduction rates required by state regulations and the seasonal operation of the two EGUs, which are used to satisfy peak demand periods in the summer and winter.

In November 2014, a large coal-power producing **electric utility in the upper Midwest** contracted for the company's mercury emissions control systems on a **dual-unit power plant**.

In January 2016, an unnamed customer signed **contracts for four systems**, and in September 2016, a three-year contract was signed with an electric utility for new proprietary high sulfur-tolerant SEA™ product, bringing **the total number of systems under contract** to **20 EGUs**.

Management has provided some guidance as to the expectation of anticipated revenues to be generated from the installation of mercury emission control systems and from the sale of sorbent thereafter. These estimations have been incorporated into our income statement model.

- In September 2016, 20 systems had been installed and are still operational today. **Going forward**, **each EGU added to the portfolio should be generating approximately $3.0 million of revenue annually**.
- Based on power demand forecasts and plant projections, management expects the company to generate revenues of between $40 million and $45 million during the full year ending December 31, 2017.

RISKS

- The industry addressing the reduction of mercury emissions is a market driven by governmental regulation. Any reduction in the EPA's regulations concerning mercury emissions or the timing of enforcement would significantly impact the demand for the company's products and services.
- Investors should be aware of the potential dilution from options, warrants and convertible notes as the company becomes profitable. The fully diluted share count is approximately 110 million shares versus 73.6 million shares outstanding as of March 27, 2017.

VALUATION

The valuation methodology for pollution control/environmental remediation companies usually is based on the use of EV-to-EBITDA (Enterprise Value/Earnings Before Interest, Taxes, Depreciation and Amortization) reflecting the industry's characteristics of profitability and cash flow generation. However, if a company is experiencing negative profitability, either due to adverse fundamental circumstances or being in the early phases of the company's life cycle, **the applicable valuation metric becomes Price-to-Sales (P/S)**.

Finding comparable companies to Midwest Energy Emissions is challenging. The company is unique in that it has a singular focus (the mercury emissions control market), holds exclusive rights to patented processes, has achieved market penetration through the commercialization of SEA Technology and is positioned to take advantage of further growth opportunities afforded by the implementation of MATS. Many companies involved in the air pollution control industry range from companies that provide commodity chemicals and/or equipment to divisions of large, diversified companies where emission controls is just a small part of total operations. These types of companies are generally valued in the lower-to-middle portions of the valuation continuum rather than in the higher-end of the spectrum where highly-focused companies with patented treatment processes tend to trade.

For example, competing mercury emission control technologies are largely being commercialized by subsidiaries of large, diversified firms where mercury emission remediation is a small part of the total company. For example, TOXECON™ is being brought to market by Hamon Research-Cottrell, a subsidiary of Hamon & Cie International SA (aka Hamon Group), a publicly-traded Belgium-based engineering, procurement and contracting company (HAMO.BR) while Mer-Cure™ is being offered by US Power Plant Laboratories and URS Group, both subsidiaries of Alstom SA (ALO.PA and ALSMY OTC Pink), a publicly-traded France-based power generation, power transmission and rail infrastructure company. Also, the Air Pollution Control business unit of FMC Environmental Solutions, a division of FMC Corp. (FMC: NYSE), offers methods of mercury emission control as an adjunct to its use of hydrogen peroxide- and sodium bicarbonate-based methods to prevent or remediate contamination of air by power utility and manufacturing industries. FMC Corp. is a diversified chemical company. Mitsubishi Hitachi Power Systems, a merger of thermal power generation businesses of Mitsubishi Heavy Industries, Ltd. (7011) and Hitachi, Ltd. (HTHIF), is dedicated to the engineering, design and service of SCR systems for the control of NOx and SO2, and its SCR system solutions also have mercury oxidation capabilities.

Industry Comparables	Pr Chg YTD	P/E CFY	EPS Gr 5Yr Est	Gross Margin	Price/ Book	Price/ Sales	Price/ CF
MIDWEST ENERGY EMISSIONS	-33.3	24.9	15.0	27.2	N/M	0.9	N/M
Industry Mean	-0.6	21.9	12.1	35.7	3.0	2.6	14.5
Industry Median	3.7	24.4	13.2	37.2	2.5	2.7	15.2
S&P 500	8.1	18.6	10.8	N/A	11.3	3.9	18.6
ALBEMARLE CORP.	21.4	24.1	14.4	35.4	3.1	4.3	18.6
CALGON CARBON	-14.1	24.6	7.0	31.3	1.9	1.4	11.7
CECO ENVIRONMENTAL	-33.6	11.4	15.0	33.2	1.7	0.8	4.9
IDEX CORP.	23.8	27.4	12.0	43.1	5.2	4.0	22.6
Recent Industry Acquisition		**Acquiror**					
CYTEC INDUSTRIES INC.		Solvay SA	16.0	30.0	3.6	2.6	14.4
PALL CORP.		Danaher	12.5	50.2	8.3	4.8	19.3

We believe that the **valuation comparables** of Midwest Energy Emissions should Albemarle (ALB), Calgon Carbon (CCC), CECO Environmental (CECE), Cytec Industries (CYT), IDEX (IEX) and Fuel-Tech (FTEK). For example, Calgon Carbon supplies value-added catalyst chemicals while CECO Environmental provides engineering, manufacturing and construction services and Fuel-Tech offers boiler optimization and air pollution control solutions. Also, comparable pollution control and value-added specialty chemical companies have comparable business models to Midwest Energy Emissions and achieve higher-than-average gross margins, generally in the 30% range, which is management's targeted margin for fully functional contracts.

The appropriate valuation methodology for Midwest Energy Emissions is based on price-to-sales (P/S) due the character of the company's enterprise, namely a small-capitalization company, currently with negative profitability, but with an expected sales profile that should grow and expand as the company's SEA Technology processes are deployed within the coal-fired utility industry and the company's patent-protected sorbent is sold into the operating customer base. Ultimately, the growing revenue stream should manifest itself into positive EBITDA and later, positive earnings when the break-even point is surpassed.

Comparable companies trade in a P/S valuation range between 4.3 and 0.8. Also, as a reference, Cytec Industries was recently acquired by Solvay SA at 2.6 times TTM revenues (19.7 EV/EBITDA) while Pall Corp. was acquired by Danaher (DHR) at 4.8 times TTM revenues (20.3 EV/EBITDA). Utilizing an upper second quartile P/S ratio of 3.5 on projected 3Q-2017 TTM sales of $38.3 million, our **share price target is $1.60**.

We are optimistic the ultimate success of Midwest Energy Emissions. The company should continue experiencing dramatic increases in revenues over the next few years as the coal-fired plants utilize Midwest Energy's SEA Technology to control mercury emissions in order to become compliant with the EPA's mercury emissions reduction regulations.

BALANCE SHEET

Midwest Energy Emissions Corp.							
Year ending December 31st	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	3/31/2017
ASSETS							
Cash and cash equivalents	99,713	189,367	509,605	7,212,114	1,083,280	7,751,557	4,378,550
Accounts receivable	206,545	274,464	383,859	410,950	1,150,602	3,553,096	2,205,739
Inventory	30,622	37,993	-	5,784,905	2,715,91	609,072	1,240,893
Prepaid expenses and other assets	33,234	68,59	63,13	140,559	161,81	199,49	201,90
Total Current Assets	**370,114**	**570,42**	**956,596**	**13,548,528**	**5,111,608**	**12,113,220**	**8,027,087**
Property and Equipment, net	1,566,697	343,584	173,072	255,33	1,243,450	2,569,35	2,938,95
Deferred tax asset	-	-	-	-	-	500,000	500,00
License, net	82,353	76,47	70,58	64,70	58,82	52,94	51,47
Prepaid expenses and other assets	43,019	36,28	23,53	13,79	4,058	-	-
Debt issuance costs, net	-	125,534	700,011	2,285,696	-	-	-
Customer acquisition costs	-	-	-	1,156,521	897,428	642,20	521,35
TOTAL ASSETS	**2,062,183**	**1,152,29**	**1,923,80**	**17,324,581**	**7,315,369**	**15,877,722**	**12,038,87**
Liabilities and Stockholders' Equity							
Accounts payable and accrued expenses	420,360	529,947	275,145	688,73	1,235,162	4,363,55	950,948
Accrued legal and consulting fees	656,507	220,159	365,348	86,304	-	-	-
Accrued salaries and benefits			377,213	399,48	-	-	-
Deferred revenue	-	-	-	5,808,301	2,281,76	-	-
Convertible notes payable	-	-	-	3,080,376	2,497,11	-	-
Customer credits	-	-	-	936,500	936,50	590,20	590,20
Current portion of equipment notes payable	-	-	-	-	-	39,499	58,44
Other current liabilities	-	-	261,036	250,00	0	0	0
Accrued interest - related party	-	-	247,696	0	0	0	0
Advances payable - related party	951,034	951,034	4,167	0	0	0	0
Convertible note payable - discontinued ops.	50,000	50,00	50,00	0	0	0	0
Notes payable	150,000	150,000	300,000	0	0	1,500,000	2,125,00
Current liabilities of discontinued operations	379,521	262,032	-	0	0	0	0
Note payable - related party of disc. ops.	169,984	169,984	-	0	0	0	0
Total Current Liabilities	**2,777,406**	**2,333,15**	**1,880,60**	**11,249,698**	**6,950,536**	**6,493,258**	**3,724,60**
Notes payable	-	-	-	-	-	11,678,669	11,208,46
Convertible notes payable	-	2,570,199	4,675,673	4,724,598	3,175,08	1,142,15	1,185,04
Warrant liability	-	-	-	5,597,011	9,854,40	1,313,00	991,000
Accrued interest	-	134,975	273,877	337,99	169,20	78,750	38,75
Equipment note payable	-	-	-	-	111,144	143,13	213,31
TOTAL LIABILITIES	**2,777,406**	**5,038,33**	**6,830,15**	**21,909,306**	**20,260,36**	**20,848,966**	**17,361,16**
Common stock	32,679	33,24	35,29	40,22	47,19	73,51	73,707
Additional paid-in-capital	9,251,529	9,958,202	13,789,473	19,113,724	25,008,016	49,838,469	50,932,511
Accumulated deficit	(9,999,431)	(13,877,480)	(18,731,120)	(23,738,677)	(38,000,208)	(54,883,223)	(56,328,508)
Total Stockholders' Equity	**(715,223)**	**(3,886,038)**	**(4,906,348)**	**(4,584,725)**	**(12,944,998)**	**(4,971,244)**	**(5,322,290)**
TOTAL LIABILITIES & STOCKHOLDERS' EQUITY	**2,062,183**	**1,152,292**	**1,923,807**	**17,324,581**	**7,315,369**	**15,877,722**	**12,038,876**
Shares outstanding	32,678,650	33,239,878	35,299,429	40,228,123	47,194,118	73,509,663	73,707,128

PROJECTED INCOME STATEMENT

Midwest Energy Emissions Corp.

Income Statement

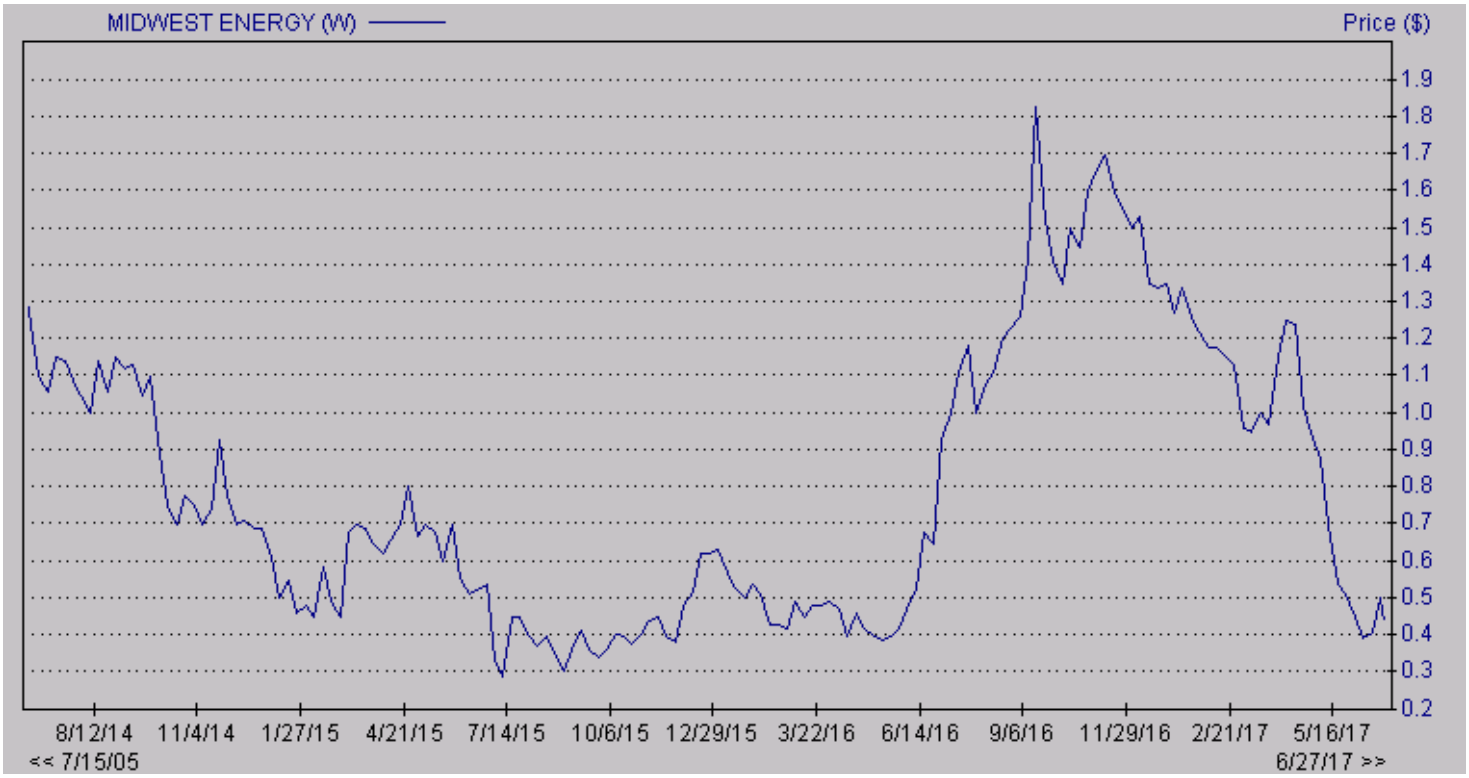
Period ending	2011 12/31/2011	2012 12/31/2012	2013 12/31/2013	2014 12/31/2014	2015 12/31/2015	2016 12/31/2016	2017 E 12/31/2017
Revenues	**458,080**	**788,072**	**1,668,472**	**2,794,206**	**12,631,919**	**32,345,540**	**40,001,059**
Costs and operating expenses:							
Cost of goods sold	443,925	233,120	370,635	1,483,379	8,629,570	23,030,404	26,628,117
Operating expenses	255,026	263,143	886,949	904,914	1,812,355	-	-
License maintenance fees	150,000	200,000	1,075,000	300,000	300,000	-	-
Marketing and development	764,046	413,816	338,379	0	0	-	-
Selling, general & administrative exp.	3,878,087	1,655,114	1,622,657	2,208,546	2,967,146	7,257,445	9,667,013
Settlement charges	-	-	-	-	1,335,394	-	-
Depreciation and amortization	23,250	417,735	176,394	387,123	390,828	-	-
Professional fees	805,852	782,121	565,851	678,725	672,269	-	-
Stock-based compensation	N/A	N/A	855,256	3,318,759	213,273	-	-
Impairment of fixed assets	-	800,000	-	-	-	-	-
Impairment of goodwill	3,555,304	-	-	-	-	-	-
Total operating expenses	**9,875,490**	**4,765,049**	**5,891,121**	**9,281,446**	**16,320,835**	**30,287,849**	**36,295,131**
Operating gain (loss)	**(9,417,410)**	**(3,976,977)**	**(4,222,649)**	**(6,487,240)**	**(3,688,916)**	**2,057,691**	**3,705,928**
Other income (expense):							
Interest (expense)	(54,257)	(261,534)	(711,647)	(2,724,506)	(6,213,897)	(4,912,855)	(2,268,475)
Letter of credit (fees)	-	-	-	-	-	(226,000)	(240,000)
Gain (loss) on disposal of fixed assets	-	(19,504)	-	-	-	-	-
Gain (loss) on forgiveness of liabilities	-	280,000	80,656	0	0	-	-
Gain (loss) on debt restructuring	-	-	-	-	-	406,791	-
Change in value of warrant liability	-	-	-	4,204,189	(3,194,189)	(14,681,311)	208,000
Debt conversion costs	-	-	-	-	(1,123,380)	0	-
Other income (expense)	-	-	-	-	-	-	-
Total other income (expense)	**(54,257)**	**(1,038)**	**(630,991)**	**1,479,683**	**(10,531,466)**	**(19,413,375)**	**(2,300,475)**
Net loss before taxes	**(9,471,667)**	**(3,978,015)**	**(4,853,640)**	**(5,007,557)**	**(14,220,382)**	**(17,355,684)**	**1,405,453**
Income tax benefit (expense)	-	-	-	-	(41,149)	472,669	(12,230)
Net Gain (Loss) from Continuing Ops.	**(9,471,667)**	**(3,978,015)**	**(4,853,640)**	**(5,007,557)**	**(14,261,531)**	**(16,883,015)**	**1,393,223**
Net gain (loss) from discontinued ops.	(25,449)	99,966	-	-	-	-	-
Net Income (Loss)	**(9,497,116)**	**(3,878,049)**	**(4,853,640)**	**(5,007,557)**	**(14,261,531)**	**(16,883,015)**	**1,393,223**
Net loss per share:							
Basic and diluted loss per share	**(0.32)**	**(0.12)**	**(0.14)**	**(0.13)**	**(0.32)**	**(0.33)**	**0.02**
Wgted avg. shares - basic & diluted	29,331,788	33,136,492	34,283,631	39,140,243	44,160,298	50,646,328	74,418,175

Midwest Energy Emissions Corp.

Income Statement Period ending	2015 12/31/2015	1Q 2016 3/31/2016	2Q 2016 6/30/2016	3Q 2016 9/30/2016	4Q 2016 12/31/2016	Year 2016 12/31/2016
Revenues:						
Product sales	5,028,184	2,837,628	6,872,000	11,453,000	7,757,423	28,920,051
Equipment sales	6,939,412	164,400	2,391,000	143,000	651	2,699,051
Demonstration and consulting services	664,323	371,283	129,000	175,000	51,155	726,438
Total revenues	**12,631,919**	**3,373,311**	**9,392,209**	**11,771,418**	**7,808,602**	**32,345,540**
Costs and operating expenses:						
Cost of goods sold	10,764,835	2,547,187	7,304,197	7,821,028	5,357,992	23,030,404
Selling, general & administrative expenses	4,220,606	1,110,591	1,667,827	2,213,849	2,265,178	7,257,445
Settlement charges	1,335,394	-	-	-	-	-
Total operating expenses	**16,320,835**	**3,657,778**	**8,972,024**	**10,034,877**	**7,623,170**	**30,287,849**
Operating gain (loss)	**(3,688,916)**	**(284,467)**	**420,185**	**1,736,541**	**185,432**	**2,057,691**
Other income (expense):						
Interest (expense)	(6,213,897)	(2,073,144)	(1,032,949)	(972,930)	(833,832)	(4,912,855)
Letter of credit (fees)	-	(42,667)	(60,666)	(61,333)	(61,334)	(226,000)
Gain (loss) on disposal of fixed assets	-	-	-	-	-	-
Gain (loss) on forgiveness of liabilities	0	-	-	-	-	-
Gain (loss) on debt restructuring	-	-	-	-	406,791	406,791
Change in value of warrant liability	(3,194,189)	3,309,400	(7,566,000)	(9,984,541)	(440,170)	(14,681,311)
Debt conversion (costs)	(1,123,380)	-	-	-	-	-
Other income (expense)	-	-	-	-	-	-
Total other income (expense)	**(10,531,466)**	**1,193,589**	**(8,659,615)**	**(11,018,804)**	**(928,545)**	**(19,413,375)**
Net loss before taxes	**(14,220,382)**	**909,122**	**(8,239,430)**	**(9,282,263)**	**(743,113)**	**(17,355,684)**
Income tax benefit (expense)	(41,149)	(828)	(3,383)	(19,561)	496,441	472,669
Net Gain (Loss) from Continuing Ops.	**(14,261,531)**	**908,294**	**(8,242,813)**	**(9,301,824)**	**(246,672)**	**(16,883,015)**
Net gain (loss) from discontinued ops.	-	-	-	-	-	-
Net Income (Loss)	**(14,261,531)**	**908,294**	**(8,242,813)**	**(9,301,824)**	**(246,672)**	**(16,883,015)**
Net loss per share:						
Basic and diluted loss per share	**(0.32)**	**0.02**	**(0.17)**	**(0.19)**	**(0.00)**	**(0.33)**
Wgted avg. shares - basic & diluted	44,160,298	47,358,618	47,358,618	47,918,064	60,125,548	50,646,328
Adjusted EBITDA	**(1,200,000)**	**16,000**	**1,000,000**	**2,300,000**	**784,000**	**4,100,000**

Income Statement Period ending	2016 12/31/2016	1Q 2017 3/31/2017	2Q E 2017 6/30/2017	3Q E 2017 9/30/2017	4Q E 2017 12/31/2017	Year Est. 2017 12/31/2017
Revenues:						
Product sales	5,028,184	5,284,234	7,818,658	13,972,660	9,464,056	36,539,608
Equipment sales	6,939,412	7,160	2,720,374	174,460	794	2,902,788
Demonstration and consulting services	664,323	136,000	146,770	213,500	62,409	558,680
Total revenues	**32,345,540**	**5,427,394**	**10,686,040**	**14,361,130**	**9,526,494**	**40,001,059**
Costs and operating expenses:						
Cost of goods sold	23,030,404	3,785,922	7,159,647	9,090,998	6,591,550	26,628,117
Selling, general & administrative expenses	7,257,445	2,694,282	2,748,168	2,586,007	1,638,557	9,667,013
Settlement charges	-	-	-	-	-	-
Total operating expenses	**30,287,849**	**6,480,204**	**9,907,815**	**11,677,005**	**8,230,107**	**36,295,131**
Operating gain (loss)	**2,057,691**	**(1,052,810)**	**778,226**	**2,684,125**	**1,296,388**	**3,705,928**
Other income (expense):						
Interest (expense)	(4,912,855)	(540,475)	(576,000)	(576,000)	(576,000)	(2,268,475)
Letter of credit fees	(226,000)	(60,000)	(60,000)	(60,000)	(60,000)	(240,000)
Gain (loss) on disposal of fixed assets	-	-	-	-	-	-
Gain (loss) on forgiveness of liabilities	-	-	-	-	-	-
Gain (loss) on debt restructuring	406,791	-	-	-	-	-
Change in value of warrant liability	(14,681,311)	208,000	0	0	0	208,000
Debt conversion costs	-	-	-	-	-	-
Other income (expense)	-	-	-	-	-	-
Total other income (expense)	**(19,413,375)**	**(392,475)**	**(636,000)**	**(636,000)**	**(636,000)**	**(2,300,475)**
Net loss before taxes	**(17,355,684)**	**(1,445,285)**	**142,226**	**2,048,125**	**660,388**	**1,405,453**
Income tax benefit (expense)	472,669	0	(142)	(6,144)	(5,943)	(12,230)
Net Gain (Loss) from Continuing Ops.	**(16,883,015)**	**(1,445,285)**	**142,226**	**2,048,125**	**660,388**	**1,405,453**
Net gain (loss) from discontinued ops.	-	-	-	-	-	-
Net Income (Loss)	**(16,883,015)**	**(1,445,285)**	**142,226**	**2,048,125**	**660,388**	**1,405,453**
Net loss per share:						
Basic and diluted loss per share	**(0.33)**	**(0.02)**	**0.00**	**0.03**	**0.01**	**0.02**
Wgted avg. shares - basic & diluted	50,646,328	73,585,727	73,953,656	74,693,192	75,440,124	74,418,175
Adjusted EBITDA	**(1,200,000)**	**145,000**	**1,358,041**	**3,247,584**	**1,894,956**	**6,645,580**

HISTORICAL STOCK PRICE



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[i] Control of Mercury Emissions from Coal-fired Electric Utility Boilers, U.S. Environmental Protection Agency, March 2004.
[ii] Process Optimization Guidance for Reducing Mercury Emissions from Coal Combustion in Power Plants, United Nations Environment Programme, Division of Technology, Industry and Economics, November 2010, page 13.
[iii] Bowen, Brian, Basic Mercury Data & Coal Fired Power Plants, Indiana Center for Coal Technology Research, August 2007, Slide 4.