TreadStone Technologies, Inc.

Pivotal Technologies for the New Energy Economy

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January 30, 2018

Project Review Committee - VW Settlement Program National Trust
NJ Department of Environmental Protection
401 E. State Street
Trenton, NJ 08608

RE: Proposal Submission

Dear Committee Members:

TreadStone Technologies, Inc. (TreadStone) is pleased to submit the enclosed project proposal under the NJ funding allocation from the VW Settlement National Trust program for your review and consideration. This proposal suggests that $3.9M (5%) over three years of the NJ allocated funds be used to support technology enhancements, demonstration and in-State manufacturing, thereby creating a local supply chain and new jobs for the State of New Jersey.

TreadStone is a small New Jersey company located in Princeton that was initially sponsored by the NJ Commission on Science and Technology and won the prestigious $500K Edison Innovation Grant. In addition, we have a wrap-around loan funding ($100K) from the NJ Economic Development Authority. We have transitioned to Federal programs with support funding from the Department of Energy and Department of Defense. Our technology has been vetted by US National Laboratories and also international corporations and research institutions.

Over the last several years, we have been working with both domestic and international corporations that provide renewable energy systems (fuel cells, electrolyzers, flow batteries, compressors and Li-batteries) to the market. These systems operate under extremely corrosive environments and require that metal subcomponents be protected. TreadStone's technology family with 18 patents, protects metal components (at low costs) used in these system applications. This year, we will initiate our first license agreement, bringing our coating technology to full commercialization and production.

Thank you in advance for your thoughtful consideration of our proposal. We hope that the review committee recognizes that further innovation and demonstration is needed to advance the products expected in this program.

Sincerely,

Gerald DeCuollo

Proposal

Technology Innovation, Demonstration and Manufacturing:

Enhancing the Performance and Lowering the Cost of New Transportation Technologies

In response to

Project Solicitation issued by the NJ Department of Environmental Protection

Pursuant to the Volkswagen Settlement National Trust Program

Over the last 20 years, the economic competitiveness of non-fossil based sources of energy has improved. During this time, new modes of transportation (BEV and FCEV) have gain prominence, infrastructure needs (charging and hydrogen refueling stations) are being defined and installed, warehouses, distribution centers and ports are using new fuel cell powered forklift and truck technologies and the need for grid stability is becoming a national crisis. As more and more systems are installed, new technology development is needed to further enhance performance, durability while offering lower costs. To support these emerging technologies, new innovations and a local supply chains are needed, creating jobs for the State of New Jersey.

January 30, 2018

Prepared by:

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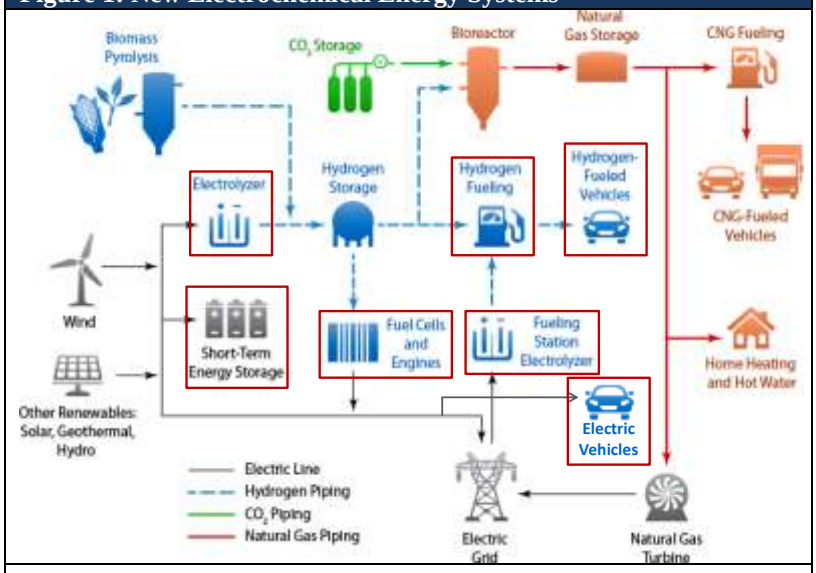
TreadStone proposes that $3.9M (or 5%) of the State's VW Settlement funding be allocated over three years for technology demonstration and developing a local supply chain thereby creating new jobs for the State of New Jersey

Introduction:

The world's energy landscape is changing. Today, society is becoming more "green" and recognizing the climate change issues associated with using fossil energy resources (oil, diesel, coal). The world is now moving toward non-fossil based energy (electricity).

TreadStone Technologies, Inc. (TreadStone), a NJ supported small business located in Princeton, has developed and is commercializing a novel patented family of coating technologies (DOTS Technology) used on metal components within these new energy systems. As shown in Figure 1, TreadStone's family of coating technologies has broad and multiple use applications.

Figure 1: New Electrochemical Energy Systems*



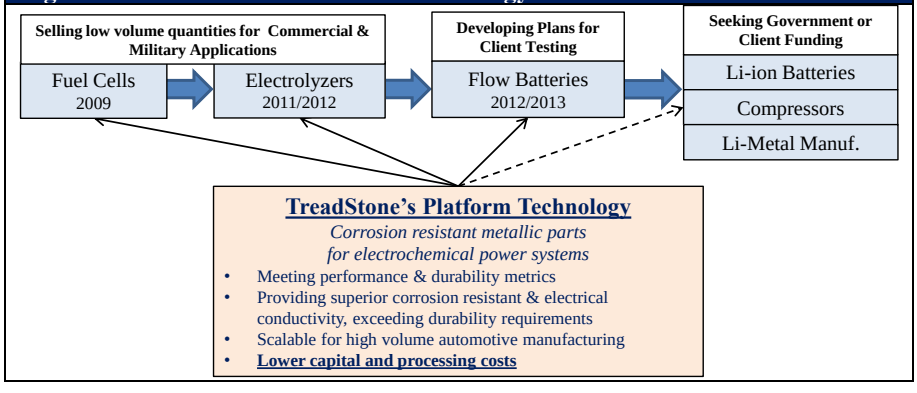
***Systems where TreadStone's coatings are possible (red boxes)**

Over the last decade, new energy systems for transportation (BEV & FCEV) and energy storage (Li-batteries & flow batteries) have been introduced. These systems, based on electrochemistry, are key components used in energy generation and storage. With applications in numerous markets, systems can be categorized as Transportation-Mobility, and Grid Electrical Storage and Transmission. As these emerging markets grow, the demand for advanced technologies is needed thereby reducing the overall costs and improving the system performance and durability.

TreadStone's low cost family of coating technologies and processing techniques protects metal components used in these systems from corrosion, while remaining electrically conductive, at low cost. TreadStone owns the core proprietary technology (18 patents and patent applications) and our technology is commercially proven and used in systems critical to the new energy economy.

TreadStone's coating technology was initially developed with support from the NJ Commission on Science and Technology, the NJ Economic Development Authority, Department of Energy and the Department of Defense. Over the last several years, the core technology and processing techniques have been further improved to lower costs and we have diversified the coatings use into new applications including flow batteries, Li-batteries, compressors and other systems (Figure 2).

Figure 2: TreadStone's Platform Technology



TreadStone Technologies, Inc.

TreadStone is a small business located in Princeton and incorporated in the State of New Jersey. TreadStone was initially supported by the NJ Commission on Science and Technology (seedling grant) and funding from a $500K Edison Innovation Grant Award. TreadStone received additional funding support from the NJ Economic Development Authority ($100K wrap-around loan).

TreadStone's DOTS technology is commercially available and used in specialty markets for DOD and NASA applications. The company is moving toward full global production capability by licensing the DOTS technology to a world-class supplier with experience and expertise in automotive and large industrial markets.

Proposal:

TreadStone proposes that $3.9M (5%) of the State's VW Settlement fund be allocated over three years to further develop, enhance and support evaluation and demonstration programs and to set up and supply it's technologies used in the alternative systems (BEV, FCEV, flow batteries, electrolyzers and compressors) under consideration by the State of New Jersey for this program. TreadStone works with OEMs (original equipment manufacturers) to evaluate and demonstrate its technologies but is limited where end-use applications vary and have different performance, durability and cost metrics. The proposed funding is needed to support work with and deploy our technologies thereby enhancing each application supporting the State of New Jersey goals.

Proposed Activities:

TreadStone proposes to use funding from the VW Settlement Fund to support two tasks briefly discussed in the table below.

Task	Market Application	Proposed Work	Impact for New Jersey
Commercialization/ Manufacturing support to enhance NJ based supply chain	• FCEV • Electrolyzers • Compressors	• Work with OEM to evaluate and demonstrate TreadStone's DOTS technology • Become a supplier to the OEMs • Provide samples and support in-house testing	• Bring a NJ sponsored technology to commercial success • Expand current manufacturing capabilities in Princeton, NJ • Hire additional employees (Engineering/Technician levels)
Support technology diversification for Li-batteries and flow batteries applications	• BEVs • Li-Batteries • Flow Batteries	• Support ongoing laboratory development activities with co-funding from the Federal government* • Additional Co-funding from outside investors.	• Improve the performance and durability of Li-batteries • Indirect improvement for Li-battery safety • Further development and testing for flow battery applications
***TreadStone has proposals submitted and in review by the DOE (fuel cells and electrolyzers) and DOD (Li-batteries)**			

TreadStone DOTS technology is proven, demonstrated and is being used for specialty fuel cell (Infinity Fuel Cells) and electrolyzer (Giner ELX) activities. We are working with a current customer (Giner ELX) to evaluate the DOTS technology for compressors used in hydrogen refueling stations and have ongoing discussions with the DOD (Rapid Response Technology Office/Army/SOCOM) to sponsor a proof of concept project to evaluate its coating technology for Li-batteries supporting the US military and BEV markets.

Funding provided by the State of New Jersey under the National VW Settlement Program would be used as co-funding to support the current and future projects. TreadStone can provide written project plans, milestones and project cost estimates at the request of the NJ Department of Environmental Protection and the proposal Review Committee.