Agenda Date: 4/29/13
Agenda Item: 8B

STATE OF NEW JERSEY

Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton, New Jersey 08625-0350
www.nj.gov/bpu/

CLEAN ENERGY

IN THE MATTER OF THE EDISON INNOVATION GREEN GROWTH FUND SOLICITATION – AWARD RECOMMENDATION – United Silicon Carbide Inc.	))))	ORDER DOCKET NO. EO13040307

Parties of Record:

Dr. J. Christopher Dries, President and CEO United Silicon Carbide Inc.

BY THE BOARD:

The Board's Office of Clean Energy ("OCE" or "Staff"), in collaboration with the New Jersey Economic Development Authority ("EDA") as administrator of the Edison Innovation Green Growth Fund ("EIGGF"), issued a Solicitation for the EIGGF Program. The Solicitation announced the availability of loans with a performance grant component to Class I Renewable Energy or Energy Efficient clean technology companies that have achieved "proof of concept," successful independent beta results, and are seeking funding to grow and support their technology business.

The EIGGF will ultimately provide New Jersey consumers with greater access to energy efficiency and renewable energy products by developing emerging technologies in New Jersey. The funds may be used as growth capital to advance energy efficient, renewable energy or supply chain products that will assist Class I renewable energy or energy efficient technologies in becoming competitive with traditional sources of electric generation. To qualify, a company must be a developer/owner of protected proprietary technology, demonstrate a commitment to creating jobs in New Jersey, and satisfy other criteria.

Total funds that can be awarded under the EIGGF program cannot exceed $2,000,000 per company. The interest rate is fixed at two percent (2%). There is a twelve-month moratorium with interest to be accrued and capitalized followed by a four-year term and seven-year amortization. In addition, fifty percent (50%) of the loan may be converted into a performance grant if milestones are satisfied during the first five years. At closing, up to twenty percent (20%) of the loan may be advanced, with the remainder paid upon completion of milestones.

On December 14, 2011, the Board approved the New Jersey Clean Energy Program 2012 Program Descriptions and Budgets Order, Docket Nos. EO07030203 & EO11100631V. The Board approved approximately $4 million in funds for the EIGGF program in 2012. On March 1, 2012, EDA released a EIGGF Solicitation.

On August 27, 2012, United Silicon Carbide Inc. ("United Silicone") submitted an EIGGF Intake Form. The Intake Form received a favorable OCE technical review. On January 25, 2013, United Silicone submitted a full EIGGF application to the EDA.

On February 7, 2013, United Silicone gave its oral presentation to the Clean Technology Advisory Committee ("CTAC") and was favorably reviewed. The advisory committee included various government agencies and private sector members with applicable industry experience, all of whom signed confidentiality agreements.

On April 4, 2013, after completing its underwriting review, the EDA submitted the attached report recommending that the Board approve $2 million in EIGGF financial assistance to United Silicone.

The United Silicone Project

- United Silicone was formed in 2009 to commercialize Silicon Carbide ("SiC") technology that was initially developed by Rutgers University. The company's technology is designed to replace Silicon ("Si") in semiconductor applications to increase performance and improve efficiency. According to United Silicone, there are numerous benefits to SiC including faster switching, increased connectivity and higher operating temperature (less cooling is needed).

- In 2012, United Silicone commenced commercial sales of its 1200V JBS diode. In addition, the Company expects to commence sales of two additional products in 2013 (a 650V diode within the next few weeks and its JFET switch in the third quarter of 2013).

- United Silicone stated that its technology will assist the State in meeting its Energy Master Plan goals by improving the efficiency and reducing the energy consumption of electrical devices. The Company said that the primary benefit of its technology is that it will enable a reduction in power consumption without having to change lifestyles as its SiC technology will be built into products that are used every day. United Silicone estimated that an average household would realize a 5.2% reduction in power consumption when SiC is used in place of Si in appliances and other devices. The Company advised that if every household in the State used devices with SiC versus Si, carbon dioxide emissions would be reduced by more than 1 million tons per year.

- The Company stated that the commercial and industrial sectors account for more than 65% of the State's power consumption. They advised that an average business can realize a 6.5% reduction in consumption by converting to SiC technology in its electronic devices including computers, lighting and HVAC systems. As a result, United Silicone estimates that an 8,000 square-foot light industrial complex would reduce its carbon dioxide emissions by 11 tons per year.

- Of note, the BPU awarded United Silicone a $500,000 grant in November of 2010 for the development of Thrysitor technology.

Staff has reviewed the CTAC's comments on the United Silicone project. Staff has also reviewed the underwriting analysis and due diligence review prepared by EDA which recommends $2 million in EIGGF assistance for the United Silicone project. Based on its review of the United Silicone project and the documents identified above, Staff recommends the Board award $2 million in EIGGF assistance to United Silicone, for the project described herein.

DISCUSSION AND FINDING

The EIGGF Program supports manufacturing of energy efficient and renewable energy products that will assist Class I renewable energy technologies in becoming competitive with traditional sources of electric generation. This support is consistent with the energy and environmental goals of the 2011 Energy Master Plan issued in December 2011. In addition, the Program will ultimately benefit New Jersey's ratepayers by providing long-term energy needs and solutions in an environmentally sound manner.

The Energy Master Plan calls for increasing the number of green jobs in New Jersey by encouraging expansion of current manufacturers and providing sufficient incentives for other manufacturers to locate in New Jersey; stimulating economic development in the New Jersey's renewable energy and energy efficiency sector through demand for goods and services by manufacturers; and increasing the volume of renewable energy and energy efficient products manufactured in New Jersey and sold to New Jersey consumers.

Upon consideration of the facts set forth above, the Board **FINDS** that the Solicitation for the EIGGF was issued to the public on May 23, 2011 and March 1, 2012. The Board **FURTHER FINDS** that the CTAC reviewed the application of United Silicone consistent with the evaluation criteria set forth in the Solicitation and recommended United Silicone for an award. The Board **FINDS** that EDA conducted an underwriting review of United Silicone's application and recommended a Loan of $2 million. The Board **FINDS** that an award of $2 million to United Silicone is appropriate and proper.

Now, therefore, the Board **HEREBY ACCEPTS** the CTAC Report and, based on Staff's recommendation, **HEREBY APPROVES** a Loan of $2 million to United Silicone in accordance with relevant terms and conditions herein and the recommendation issued by the EDA. The Board **ORDERS** that commitment letters, consistent with the terms of this Order, be issued to United Silicone by BPU staff in coordination with appropriate EDA staff. The Board **AUTHORIZES** President Hanna to sign the Loan Funding Agreements, the form of which was approved by the Board on March 12, 2009 in Docket No. EO08070470, and as revised from time-to-time, consistent with the terms of this Order and the Department of Treasury requirements. The Board also **AUTHORIZES** President Hanna to review and approve matters

within the scope of Section VII(B) of the Memorandum of Understanding between BPU and EDA dated March 24, 2011, consistent with the terms of this Order, subject to Board review as necessary.

DATED: 4/29/13

BOARD OF PUBLIC UTILITIES
BY:

ROBERT M. HANNA
PRESIDENT

JEANNE M. FOX
COMMISSIONER

JOSEPH L. FIORDALISO
COMMISSIONER

MARY-ANNA HOLDEN
COMMISSIONER

ATTEST:

KRISTI IZZO
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities

I/M/O the Edison Innovation Green Growth Fund (EIGGF) Solicitation – Award Recommendation – United Silicone Carbide Inc.

Docket Number EO13040307

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NEW JERSEY ECONOMIC DEVELOPMENT AUTHORITY
EDISON INNOVATION GREEN GROWTH FUND

April 29, 2013

Re: United Silicon Carbide, Inc.

PROGRAM and STRUCTURE

New Jersey Board of Public Utilities (BPU) Office of Clean Energy and the New Jersey Economic Development Authority (EDA) as administrator of the Edison Innovation Green Growth Fund ("EIGGF") is proposing the following assistance to United Silicon Carbide, Inc. ("USCI" or the "Company") for growth capital needs associated with developing and marketing its Silicon Carbide ("SiC") technology.

Borrower:	United Silicon Carbide, Inc.
Amount Requested:	$2,000,000
Interest Rate and Term:	Interest rate fixed at 2%. 12-month payment moratorium with interest to be accrued and capitalized followed by a 4-year term and 7-year amortization. 50% of the amount disbursed may be converted to a performance grant if milestones are met during the first five years as agreed prior to closing.
Collateral:	First blanket lien on all business assets. Negative pledge and springing lien on USCI's intellectual property. Consent to future additional senior indebtedness excluding IP of up to 25% of the $2,000,000 EIGGF funding commitment (this would result in BPU being in a subordinated position on the applicant's assets).
Purpose:	The proceeds of the proposed loan will be used for general growth capital needs including research and development, hiring and training personnel, marketing and purchasing inventory.

Of note, 20% of the loan will be advanced at closing with remainder paid upon the satisfaction of milestones.

DESCRIPTION OF COMPANY AND TECHNOLOGY

USCI was formed in 2009 to commercialize SiC technology that was initially developed by Rutgers University. USCI's technology is designed to replace Silicon (Si) in semiconductor applications to increase performance and improve efficiency. There are numerous benefits to SiC including faster switching, increased connectivity and higher operating temperature (less cooling is needed). In 2012, USCI commenced commercial sales of its 1200V JBS diode. In addition, the Company expects to commence sales of two additional products in 2013 (a 650V diode within the next few weeks and its JFET switch in the third quarter of 2013).

USCI stated that its technology will assist the State in meeting its Energy Master Plan goals by improving the efficiency and reducing the energy consumption of electrical devices. The Company said that the primary benefit of its technology is that it will enable a reduction in power consumption without having to change lifestyles as its SiC technology will be built into products that are used every day. USCI estimated that an average household would realize a 5.2% reduction in power consumption

when SiC is used in place of Si in appliances and other devices. The Company advised that if every household in the State used devices with SiC versus Si, carbon dioxide emissions would be reduced by more than 1 million tons per year. Furthermore, the Company stated that the commercial and industrial sectors account for more than 65% of the State's power consumption. They advised that an average business can realize a 6.5% reduction in consumption by converting to SiC technology in its electronic devices including computers, lighting and HVAC systems. As a result, USCI estimates that an 8,000 square-foot light industrial complex would reduce its carbon dioxide emissions by 11 tons per year.

Of note, BPU awarded USCI a $500,000 grant in November of 2010 for the development of Thrysitor technology. The results are currently confidential; however, the EDA has been informed that USCI has satisfied all of the requirements associated with the grant.

MANAGEMENT TEAM

Staff believes that USCI has a complete management. The members of the team have significant experience and appear well suited for their respective roles.

Dr. J. Christopher Dries, Founder, President and CEO (20.8% ownership) - Dr. Dries formed USCI in 2009 and has since served as President and CEO. His prior experience includes serving as Vice President of Research and Development at Sensors Unlimited. In that role, Dr. Dries was actively involved in the sale of the company in 2000, its repurchase in 2002 and the subsequent sale to Goodrich in 2002. Dr. Dries also served as a Managing Partner at DOLCE Technologies, which was formed in 2007 as a provider of capital and advisory services to early stage technology companies. He currently serves on the Duke University Engineering School Board of Visitors, the Princeton University Graduate School Leadership Council and the Electrical Engineering Advisory Board at Princeton University. In addition, he has authored six patents and several technical publications. Dr. Dries received his Bachelor of Science degree in Electrical Engineering with Distinction from Duke University, his M.A. from Princeton and his Ph.D. in Electrical Engineering from Princeton University.

Dr. Anup Bhalla, VP of Engineering (2.78% ownership) – Dr. Bhalla received his B.S. in electrical engineering from the Indian Institute of Technology and M.S. and Ph.D. in Electrical Engineering from Rensselaer Polytechnic Institute. He is responsible for all of USCi's product development and design activities. His prior experience includes serving as Vice President of High Voltage Devices at Alpha and Omega Semiconductor ("AOS"), a Senior Staff Engineer at Siliconix and a Staff Design Engineer at Harris Semiconductor. Of note, he co-founded AOS in 2000 and assisted in taking the company public in 2009. Dr. Bhalla has authored more than 50 patents and numerous scientific publications in the area of power devices.

BOARD OF DIRECTORS

Dr. Derek Lidow (0.62% ownership) – Dr. Lidow is currently the James Wei Visiting Professor in Entrepreneurship at Princeton University. His prior experience includes forming iSuppli Corporation, which provided data analysis for the global electronics industry. Of note, the company was recently sold. Prior to founding iSuppli, Derek was CEO of International Rectifier (IR), a leading power semiconductor company. He earned a Bachelor of Science degree summa cum laude in Electrical Engineering from Princeton University and a Ph.D. in Applied Physics from Stanford University as a Hertz Foundation Fellow.

Dr. Marshall J. Cohen (Board Chair, 8.9% ownership through a Trust) - Dr. Cohen received his B.S. in physics from the University of Michigan and his Ph.D. in Solid State Physics from the University of Pennsylvania. While at the University of Pennsylvania, he participated in pioneering work on electrically conducting polymers for which his thesis advisor was later awarded the Nobel Prize. In 1991, Dr. Cohen co-founded Sensors Unlimited and eventually served as the President and CEO of the company. After leaving SUI, Dr. Cohen became the President and CEO of Princeton Power Systems. He is the author of more than 40 scientific publications and holds six U.S. patents. He is an active Committee chairman for the Electrical and Electronics Engineers, serves on the Board of Trustees of the Family Guidance Center in Mercer County, NJ and is a member of the Board of Directors of Integrated Photonic Solutions.

Dr. Gregory H. Olsen (41.39% ownership through GHO Ventures) – Dr. Olsen received his BS Physics, a BSEE and MS Physics from Fairleigh Dickinson University, and a Ph.D. in Material Science from the University of Virginia. In 1972, Dr. Olsen joined RCA Laboratories, and in 1984 founded EPITAXX, Inc., which was acquired by Nippon Sheet Glass in 1990. Subsequently, he co-founded SUI in 1991, which was acquired by Finisar Corp. in 2000, repurchased in October 2002 and sold again in 2005 to Goodrich Corp. Dr. Olsen is a Fellow of the IEEE, has ten patents and over 100 publications. He is now President of GHO Ventures in Princeton, NJ.

RECOMMENDATION

Approval is recommended for a $2,000,000 loan from the Edison Innovation Green Growth Fund as proposed based upon the experienced management team, proven ability to raise capital, adequate customer traction and the fact that USCI's technology will assist the State in reducing energy consumption by making electronic devices more efficient.