

THE FUTURE OF MANUFACTURING

TECHNOLOGY AND TALENT

A Special Advertising Section in association with the *Regional Manufacturing Institute of Maryland*

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BGE SMARTENERGY
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Future of Maryland Manufacturing

By **Mike Galiazzo**,
President, Regional Manufacturing
Institute of Maryland

The future of Maryland manufacturing can be described in two words: technology and talent. Technology will be driven by the "Internet of Things," new materials, sensors, and artificial intelligence. Talent will be more highly educated, agile and collaborative. The future of manufacturing, unfolding now, is called the "4th industrial revolution."

The 4th industrial revolution (research World Economic Forum for further detail) is unlike any in the past. It is driven by cyber connections, digitization, and new collaborative environments. It brings both opportunities and challenges. Design, production, and supply chains are fundamentally altered becoming more efficient, flexible and digitally driven. Significant changes in talent requirements are required, both in terms of the number of people and the level of knowledge and skills needed. Highly skilled, highly motivated and highly flexible will be part of everyone's job description. Technology will rapidly alter how we work and talent will require a new set of traits, attitudes and skills.

Maryland's environment is ripe for the 4th industrial revolution. Our state has top national rankings in R&D, educational attainment levels, quality of life, colleges and universities, and an environment of entrepreneurship and innovation. With all of our assets Maryland could enter the 4th industrial revolution as a leader in next generation manufacturing. I have often said, "What we invent in Maryland we should make in Maryland" and the Augustine Commission (in their first report) concurred.



Mike Galiazzo, Peter Bowe, Kevin Haley

A great example of the 4th industrial revolution is being led by Kevin Plank's Under Armour and Port Covington. Recently, I joined Jay Timmons,

president, National Association of Manufacturers, Eric Spiegel, president, Siemens North America, Drew Greenblatt, president, Marlin Steel and Suzy Ganz, president and CEO Lion Brothers on a tour of Under Armour's Tide Point campus. Kevin Haley, president, product and innovation, was our tour guide, taking us into a new world of advanced manufacturing. We were able to witness the making of a tennis shoe using 3D additive manufacturing. We then traveled to Port Covington, visiting Building 37 and the City Garage, the location of Lighthouse, Under Armour's advanced manufacturing facility. Building 37 is clearly the future "now" and the City Garage a place to hang out with the architects of the future of Maryland manufacturing.

On May 26, 2016, RMI will host its annual Gala as we celebrate "The Future of Maryland Manufacturing" building on our successful gala last year that drew over 600 people. We have invited young learners this year to demonstrate robotics, 3D printing, drones and other project based activities in which they are engaged. Together, we are on the path of innovation and exploration. Join us for an evening of celebration and fun as we step into the future and make Maryland a model of next generation manufacturing. Go to rmiomaryland.com.

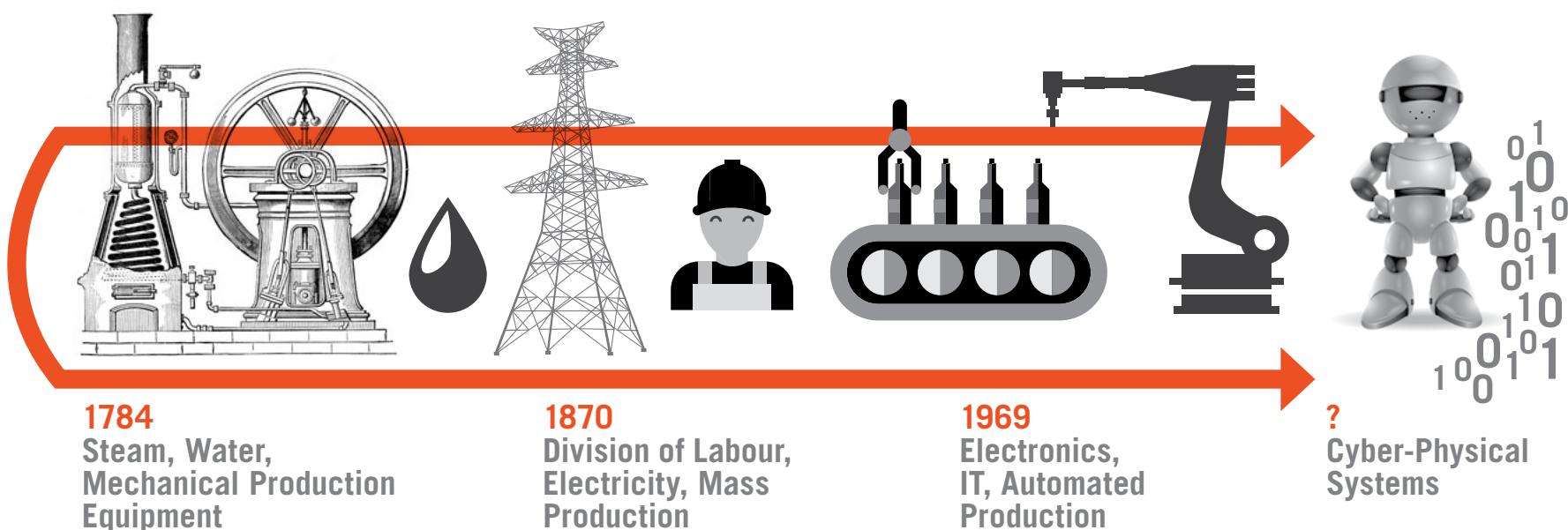


Jay Timmons, NAM president and Digital Harbor Foundation Tech Center Students



Eric Spiegel, Siemens Corporation of North America, Drew Greenblatt, Marlin Steel, Mike Galiazzo, RMI Suzy Ganz, Lion Brothers, Jay Timmons, NAM

NAVIGATING THE NEXT INDUSTRIAL REVOLUTION



Source: 2016 World Economic Forum

Maryland's Manufacturing Miracle — It Can Happen Current Trajectory Must be Altered

By **Anirban Basu**
Chairman & CEO
Sage Policy Group, Inc.

Ask yourself – in the 21st century, what are the components of a robust, entrepreneurial and innovate manufacturing sector? The obvious place to begin is workforce. Manufacturing is about constant invention, whether in the form of new products or process enhancements.

Along that dimension, there are few places in the world that have an advantage over Maryland. According to the Milken Institute, Maryland ranks second in the nation in its State Tech and Science Index. Only Massachusetts ranks higher. According to Milken's 2014 report, "Maryland did well in all the composites, ranking second in Research and Development input,

Human Capital Investment, and Technology and Science Workforce." Milken goes on to point out that Maryland is home to the most Ph.D. holders per capita, besting Massachusetts.

The experience of Massachusetts is instructive. While Massachusetts has not experienced a rebound in manufacturing employment levels that prevailed during the Great Recession, its manufacturing employment levels are virtually unchanged over the past five years. Massachusetts is still home to more than a quarter of a million manufacturing jobs.

By contrast, Maryland manufacturing employment has declined by 6,700 over the past five years. Maryland is home to fewer than 107,000 manufacturing jobs according to the most recent data from the Bureau of

Labor Statistics and has lost nearly 30,000 manufacturing positions over the past decade.

Beyond workforce, one would look to factors such as infrastructure, location, and public-private partnerships. Here again, Maryland can claim superiority. The Port of Baltimore is one of the few seaports on the East Coast with a channel deep enough to accommodate the largest container ships in the world. Recent investment supported by an innovative public-private partnership has helped to recapitalize port facilities and the State of Maryland continues to invest in its capacities.

The seaport is supported by heavy rail and one of the most connected highway networks in the nation that link Maryland to the north and south with interstates like I-81 and I-95 and to the West by I-70. The

presence of major universities and federal laboratories generates additional opportunities for public-private partnerships.

Given these and other advantages, one might question why Maryland's manufacturing sector has shrunk over time, with supply chains eroding.—why other states have attracted large-scale, high-tech manufacturing facilities, including South Carolina and New York. This is largely due to what has been inhospitable tax and regulatory environments in the Free State. Local colleges and universities also have perhaps not done enough to create a broader workforce capable of elevated productivity in manufacturing setting. All of this can be addressed and must be if we are to produce another Maryland miracle.

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Want to lower your business's energy costs? **Let's talk!**

BGE's energy efficiency experts are working with businesses, organizations and agencies across Maryland to help them save energy and money. Let us show you how our financial incentives and technical assistance can make your retrofit, equipment replacement and new construction projects affordable. Together we'll implement solutions that will give you a great return on investment.

Call 877.685.7377 or visit BGESmartEnergy.com.

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- Company and product showcase

If you would like to know more about this no cost program, please contact:
Tyler Burford at tburford@mdmep.org

WORKING TOGETHER, FOR THE FUTURE OF MARYLAND MANUFACTURING

RMI REGIONAL MANUFACTURING INSTITUTE OF MARYLAND **MD MEP** MANUFACTURING EXTENSION PARTNERSHIP

Manufacturers of All Sizes Are Saving with Energy Efficiency Upgrades

Utility Incentives Reduce Project Costs by 50 Percent or More.

Energy is the lifeblood of manufacturing. It powers the motors, keeps the lights on and makes employees comfortable so they can do their jobs effectively. It's also a major expense for most businesses. Yet, the U.S. Environmental Protection Agency estimates that efficiency problems waste up to 30 percent of the energy consumed by manufacturing and industrial facilities. Old and outdated equipment, systems out of sync with each other and unnecessary run times are just a few examples of inefficiencies that could be impeding operations and eating away at your bottom line.

"People are always talking about lean manufacturing, which means auditing processes to eliminate waste," says Jeff Blankman, sustainable manufacturing manager at McCormick & Company, a global supplier of food flavoring products and spices. "Looking at energy efficiency from the lean manufacturing standpoint,

reducing energy waste will save you money and make you more competitive."

McCormick recently replaced a 20-year-old air conditioning system at its plant in Hunt Valley with a high-efficiency chiller. The project cut the plant's energy demand for air conditioning by 75 percent. Incentives totaling \$1 million from BGE's Smart Energy Savers Program® helped offset the cost of installing a more efficient chiller model.

"We could have gone with a less efficient direct expansion unit for a lower upfront cost, but it would have cost more in electricity bills over the long term," Blankman says. "We looked at the paybacks, and the incentives made the project financially sound."

BGE's Smart Energy Savers Program supports the EmPOWER Maryland Energy Efficiency Act of 2008, a state effort to reduce per capita energy consumption. The act required all Maryland utilities

to implement programs to reduce electricity demand for all customer segments, including large industrial and commercial facilities.

From automobile paint shops and bakeries to manufacturers of apparel, electronics and pharmaceuticals, BGE's

return on investment can be 2 years or less.

McCormick also used the program to help pay for lighting retrofits in three manufacturing plants, two distribution centers and an office building. The company now has a corporate-wide

"I think it's important for any business to look for opportunities to improve their energy efficiency," says Pat Talbert of C.J. Miller. "BGE's program is a great place to start."

program offers financial incentives and technical assistance to help businesses of all types and sizes improve their energy efficiency and reduce costs. In many cases, the bigger the project is, the higher the incentives and long-term savings.

For most manufacturers, the utility's incentives cover up to 50 percent of the cost for retrofit projects and up to 75 percent of the cost difference between standard and high-efficiency equipment for new construction and equipment replacement. In addition to new heating and cooling equipment and tune-ups for existing systems and controls, the incentives can cover installation of high-performance lighting, room occupancy sensors and smart power strips for computers and office equipment. Depending on the size of the project, the

goal to achieve a 20 percent reduction in energy use by 2018. "Working with BGE has been a win-win," Blankman says. "We're saving money and reducing our impact on the environment."

Another energy-saving opportunity is installing variable frequency drives (VFDs) on motors and pumps, which helps to match the operating speed of equipment to the needs of the manufacturing process. C.J. Miller, an excavating and paving company based in Hampstead, installed VFDs at its Finksburg and Westminster plants to provide greater control over the high-horsepower motors used in heating the aggregate for asphalt production. The company churns out more than 300 tons of asphalt an hour for its paving business, and the VFDs help control the airflow

more efficiently and allow for variability in production levels throughout the day.

According to Pat Talbert, C.J. Miller's asphalt plant maintenance manager, the decision to install the VFDs was an easy one. BGE's program incentives cut the cost of the VFD installation in half.

The biggest benefit is the energy savings. "Instead of running the motors full bore all day," Talbert says, "the VFDs let us slow things down, saving a significant amount of energy." Electricity costs at the Westminster plant alone are down almost one third. In total, the company is now saving an estimated \$30,000 annually on energy.

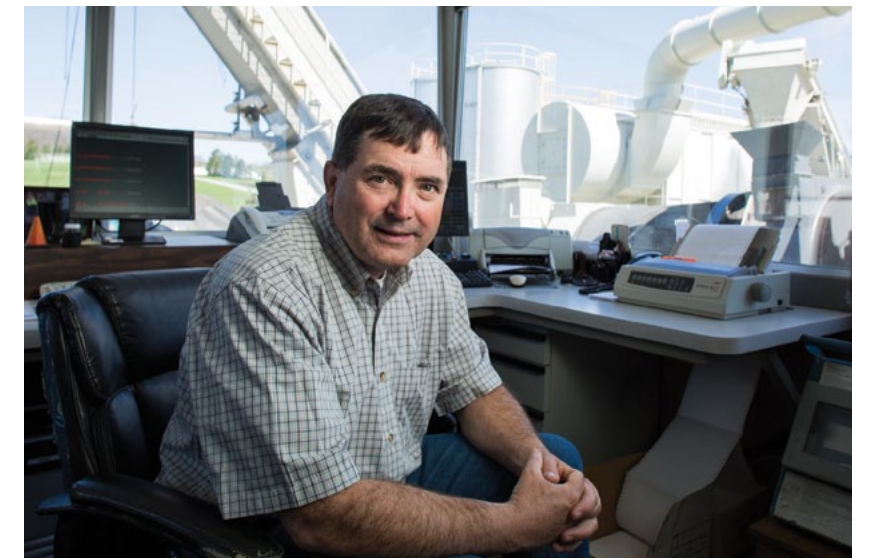
No matter how new your building is, opportunities exist to improve energy efficiency. That's what Tulkoff Food Products in Baltimore discovered during an energy audit offered by the Regional Manufacturing Institute. The

company, which manufactures condiments, sauces and dressings for the food service industry, had moved into a brand-new building in 2008.

"Frankly, we didn't think we could save much," says Buddy Dietz, Tulkoff's vice president of operations. "But the audit revealed we did have opportunities to save energy and money."

In 2010 the company completed a lighting upgrade, installing T5 fluorescent lamps throughout the manufacturing and warehouse areas. Incentives totaling \$14,150 covered the majority of the cost. "The incentives make a big, big difference," Dietz says.

In fact, with available incentives, small manufacturers can save up to 80 percent on lighting upgrades and refrigeration control retrofits. Plus, small businesses have the option of spreading the remaining



Pat Talbert, asphalt plant maintenance manager at C.J. Miller, oversaw installation of VFDs to improve control of fans at the company's asphalt production plant in Westminster.

20 percent cost contribution over 12 monthly payments on their BGE bills, so there is no out-of-pocket cost.

Tulkoff Food Products recently applied for an incentive to replace an existing large air compressor with two smaller ones, one fixed speed and the other variable. "Compressed air is expensive," Dietz says. "If you use a lot of it, upgrading your compressor will give you a

big bang for your buck. Even in a small building like ours, with minimal investment, we'll save about 12 percent on our overall energy costs."

For more information on how your business can take advantage of the financial incentives and technical assistance available from BGE's Smart Energy Savers Program, visit BGESmartEnergy.com or call **410.290.1202**.



McCormick employee Charles DiStefano works with the new high-efficiency chiller.

Put combined heat and power and up to **\$2.5 million in incentives** to work for your business.

The BGE Smart Energy Savers Program® offers incentives for qualified combined heat and power (CHP) projects to help industrial and commercial customers offset the costs of installing a CHP system to improve their operating efficiency and reduce energy costs.

Visit BGESmartEnergy.com/CHP or call **410.290.1202** to learn about project requirements and deadlines.

This program supports EmPOWER Maryland.

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20 YEARS

RMI Program Identifies Over 40 Million Kilowatt Hours of Energy Reduction Opportunities for Maryland's Manufacturing Industry



By **Peter Gourlay**
Energy Program
Manager,
Regional
Manufacturing Institute

Over the past three years, the Regional Manufacturing Institute of Maryland (RMI), in partnership with the Maryland Energy Administration, has been involved in an energy efficiency initiative funded by the State of Maryland's Customer Investment Fund.

The primary goal of the \$3 million grant program was for RMI to work with over 200 Maryland manufacturing companies to help curtail industrial energy consumption in the BGE service territory. Prior to this initiative, Maryland's energy efficiency efforts had not as much success with reducing energy in the industrial sector and so they turned to RMI to help.

While Maryland manufacturing only represents 5% of today's economy, it touches every key growth sector including medical, biotech, computers, defense systems, machinery, apparel, food production, chemicals, automotive among others. Industrial facilities are huge consumers of energy with facilities representing hundreds of thousands of square footage and energy intensive production processes. They have been top targets by the State for energy conservation, with a strong potential for good returns on energy investments.

RMI's Successful Approach

As a trusted industry partner, RMI provided a six month intensive engagement approach to 60 companies which included a "deep-dive" complementary energy audit, providing companies with a snapshot of their energy use and a detailed written report listing the energy inefficiencies within their production process and recommendations for energy savings. Additionally, RMI provided experts to help work with employees at each company to create a culture of energy efficiency ensuring that RMI's efforts would have a long lasting impact.

After making the case to management on best opportunities for ROI, RMI worked with each company coaching them through the process to benefit from available rebates, grants, and loans and then even provided

the project management ensure implementation of upgrades.

In addition to helping the 60 companies, RMI has responded to industry's need to better understand energy management issues helping over 100 companies with a variety of needs including energy management, energy purchasing, facility upgrade questions, vendor proposal reviews and access to state and utility resources.

As of March 1, 2016, RMI had recruited 60 firms into the program who are now in process of reducing over 17 million kilowatt hours in electricity demand which include both facility and machinery upgrades at facilities through the BGE service territory. RMI anticipates that over 27 million kw in energy saving projects will be completed within the next year with a savings of over \$2.5 million to the companies.

a systematic way to measure their energy usage.

This is a great tool," said Gary Moffat, Vice President of Operations, CAG, USA. Most monitoring systems are composed of a small monitoring device integrated with the meter that communicates energy data via pulses to a web-based software system. It provided participating companies with real-time energy data to help them gauge how they are using their energy.

C-Care, LLC, a leading Maryland contract manufacturer of personal care products based in Linthicum, Maryland, realized they could save \$1000 a week on energy within the first month of the system's installation.



RMI program executives gather at a graduation ceremony in November 2015



Steve Petrides, President & CEO, Tenax Corporation

"The RMI staff and partners made it simple to participate in the program and reap these benefits without draining our limited internal resources. At each step, it was clear your staff had a solution-focused approach to assessing our operations. This gave us tremendous confidence that we were getting a trustworthy and unbiased accounting of our energy usage and straightforward proposals to limit our consumption." "Now that our project is complete, we are on target to save over \$100,000 annually in energy usage." "We would never have been able to take on such a project without RMI's help."



Gary Moffat, Vice President of Operations, CAG USA

Technology Impact

One way to ensure companies would have a better tool to manage their energy use is by using energy monitoring systems. "You need to know your energy consumption baseline before you can make any improvements," said John Freeburger, Vice President of Manufacturing at Holmatro USA, a Glen Burnie, Maryland, is the No. 1 rescue company equipment company in the world by new sales. RMI had energy monitoring systems installed with companies realizing that most manufacturers don't have

The company is dedicated to reducing energy consumption and is making a \$1.5 million investment in energy upgrades to upgrade its 135,000 square foot manufacturing facility and a 90,000 square feet of warehouse space for raw material and packaging storage. The total investment will reduce energy consumption for the site by 25 to 35% annually and is only the beginning for their Green Team which was initiated by the RMI partnership.

This past year, Holmatro informed RMI that they reduced their energy demands by approximately 1,500 kWh per working day, with an annual savings of approximately \$40,000.

Savings such as these are making an impact. Many companies are now incentivizing employees to save energy. Some have hired additional workers and others like Tenax have purchased new equipment to allow them to be more competitive and continue to contribute to the local economy. The bottom line is that energy savings have translated positively for corporate growth prospects, jobs and for their local economies.



Maryland Manufacturers Served by the RMI Energy Edge Program Thank You for Your Dedication to Energy Efficiency

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Developmental Disability Workers Make A Big Difference at Acadia Windows and Doors



By **Neill Christopher**
Vice President of Manufacturing Operations,
Acadia Windows & Doors
410-780-9600 x124

As an employer, we are always searching for reliable, dedicated workers. I'd like to share our company's experience with a pool of workers that you may not have considered—individuals with developmental disabilities. Our company, Acadia Windows & Doors, has partnered with The Arc of the Northern Chesapeake Region to integrate several of these capable workers into our production team.

Acadia's partnership with The Arc of the Northern Chesapeake Region began in 2003. We were approached by Jan Stauffer, a Job Developer. Ms. Stauffer asked if we were interested in hiring some good workers. When we learned that these workers had developmental disabilities, we had a

lot of trepidation, and frankly thought that our environment would not be suitable. With some discussion, based on the fact that The Arc had clients who thrive on repetitive work, we agreed to try a single client. The Arc provided transportation for the client, as well as a job coach, who would stay with the placement until we said that she was properly trained. The training lasted about a week, at the end of which the employee from the Arc had reached a proficiency level equal to that of a new hire from the general population.

That was thirteen years, and six Arc employees ago. Our six Arc employees now make up 14% of our work force, and are an integral part of our organization. Our employees from The Arc rank in the top 5% of all employees with regard to attendance. Five year retention numbers are off the charts. They consistently reach their production goals, and do so with a terrific attitude.



Neill Christopher, and Erik Anders.

When we brought our team together to explore hiring individuals with disabilities, there was a lot of frank discussion. We had many concerns, and some outright objections. The staff of The Arc of the Northern Chesapeake Region was able to work with our team to address these concerns, and overcome our objections. Companies spend tens of thousands of dollars in team building exercises. Our partnership with The Arc, like a good team building exercise, has made us a stronger company.

Back in 2003, Jan Stauffer asked if we wanted some good workers. Not disabled workers—good workers.

Our experience with The Arc of the Northern Chesapeake Region has allowed us to focus on the abilities of these individuals. If your business needs good workers, I invite you to take a tour of our facility to see these individuals in action. I guarantee that the 40 minutes that you spend at Acadia will change your perspective forever.

Please join me at the Arc NCR Business Summit "Bringing together the business community" on April 21st from 4-6 p.m. at the Water's Edge Events Center in Belcamp. Call Nicole Hazel, Director of Vocational services 410-836-7177.



In partnership with the Maryland MEP

Photos from 2015 RMI Gala



FUTURE OF Maryland Manufacturing Gala

May 26, 2016
Martin's West

5:30 – 9:00 PM

5:30 – 6:30 Network Demos

6:30 Dinner and Program

Last year over 600 people joined us to celebrate manufacturing in Maryland (see photos below). This year we will celebrate the future leaders of manufacturing, young students engaged in Robotics, 3D Printing, IT, Coding, VR, STEM and more! Companies are invited to become "Teammates" of schools and projects that are teaching students future technologies. Companies are asked to bring their youngest employees as ambassadors to young students, and for RMI to recognize them at our event.

FEATURING

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CEO, BGE

SPEAKER
Anirban Basu
President,
Sage Policy Group

HONOREE
Drew Greenblatt
President, Marlin
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(Sponsorships will help pay the cost of attending students and mentors.)