The **PONNEL** of Progress

O SOLAR

for a More Sustainable Energy Future

> DC SUSTAINABLE ENERGY UTILITY



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Ted Trabue

Ted Trabue, Managing Director

A Message from the DCSEU

As the fifth full year of DCSEU progress comes to a close with this FY 2016 Annual Report, we know one thing: With all of our performance targets met or exceeded, once again, the DCSEU's steady progress means there is very little low-hanging fruit to pick—fewer obvious, energy-saving opportunities within reach.

The ongoing economic and environmental improvements we have brought to the District—through reductions in energy use and demand, through renewable energy, and through green collar jobs and our workforce development program—all of this progress means that the DCSEU has set a standard no other energy efficiency program in the United States has ever achieved.

We intend to keep it that way. This 5-year progress is now ready to power the next phase of the District's sustainable energy future.

This Annual Report describes the past year's performance, and describes quantitative improvements in energy savings, the number of jobs created, the use of efficient technologies, the number of incomequalified customers we have helped, and the contractors who have grown their businesses from working with us.

More important are the qualitative differences brought by this progress and the achievement of all of our goals.

For one thing, building contractors now include the DCSEU's services in their bids. That wasn't happening in FY 2012. For another, the record number of solar panel installations that serve income-qualified residents means that thousands fewer people in the District are at risk from the summer heat and the winter cold. In fact, for every story this Annual Report highlights about the qualitative difference the DCSEU has made to the District, there are scores more that comprise our 5-year legacy. We look forward to adding to that legacy in FY 2017 and beyond.

So, how do we get to the higher-hanging fruit? With a budget that's holding even with the past 3 years' budgets, we know that keeping the DCSEU among the most extraordinary sustainable energy programs in the United States will require new thinking (and more leveraged funds). We look forward to using all of our well-invested creativity, our experience, and our resourcefulness to continue our progress. The District's sustainable energy future depends on it.

We are thankful to have this extraordinary and challenging opportunity, continuing to play a role in the District's quest to be the greenest city in the nation.

FY 2016 Highlights



158 solar PV system installations for income-qualified homeowners¹

171,600 green job hours worked

¹This represents the total number of projects funded by both Sustainable Energy Trust Fund (SETF) and Renewable Energy Development Fund (REDF) dollars. There were 29 projects funded by SETF dollars and 129 projects funded by REDF dollars.

Enough electricity saved to power **7,800** homes in DC for a year²

²http://www.eia.gov/electricity/sales_revenue_price/ xls/table5_a.xlsx; DC average monthly electricity use is 841 kWh.

\$5.6 million

invested in energy efficiency for low-income residents

\$4.4 million invested with 27 Certified Business Enterprises



Enough natural gas saved to heat Benjamin Banneker High School for **13 years**³

³http://www.buildsmartdc.com/buildings/151; FY 2014 natural gas usage was 7,890 Mcf.

1.6 million

pounds of carbon emissions prevented – the equivalent of taking 160,000 cars off the road for 1 year⁴



\$18.3 million SETF dollars invested

\$157 million in lifetime customer savings

 ${}^{4} https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator$

Helping More DC Residents Than Ever Before

Residential

The DCSEU has been the primary resource for energy savings for District residents for more than five years. In FY 2016, the DCSEU expanded its rebate offerings to increase customer participation across the District and to increase the amount of energy saved per dollar invested. The DCSEU this year broke its previous records for serving high numbers of residential customers across the city—with substantially increased energy savings to more of the city's most vulnerable residents than ever before. The number of projects completed with Home Performance with ENERGY STAR® services, the cornerstone of the DCSEU's energy improvements to District residents' homes, increased by 70% over FY 2015.

As the market responds to the entry of new, efficient technologies, the DCSEU has kept pace with helping customers understand what they should consider for their homes The DCSEU broadened the selection of discounted LED bulbs for both interior and exterior lighting, and expanded

rebates to include high-efficiency clothes dryers when ENERGY STAR qualified models entered the market this year. Throughout the year, the DCSEU worked with retailers to make customers more aware of DCSEU-discounted efficient products. For example, the DCSEU sent large floor decals to major retailers, pointing customers to efficient lighting and displays with increased LED selections. The



DCSEU also started working with a national big-box retailer that recently opened its doors in the District. The DCSEU also collaborated with more than 50 participating retailers and manufacturers on promotions, events, and marketing. This combined effort made it easier than ever before for residential customers to take advantage of energy efficiency services that matter to them, and resulted in the DCSEU serving more unique customers than in any previous year.





Good Old-Fashioned Energy Savings

Rodman's Discount Food and Drug has served the Friendship Heights community since 1955. The Washington Post calls this family-owned and -operated DC institution "The Weirdest Little Drugstore in Washington." But Rodman's is also a DCSEU participating retailer, carrying DCSEU-discounted LED bulbs. Since 2012, Rodman's has been working with the DCSEU to help customers choose the most efficient lighting for their homes and offices.

A partnership with a trusted neighborhood institution like Rodman's helps the DCSEU reach customers who might be unfamiliar with new lighting technology—or customers who don't know what information they can trust about the technology. Together, Rodman's and the DCSEU inform customers of the availability and benefits of discounted LED bulbs, via on-site DCSEU demonstrations and a wide floor decal in the store's lighting aisle, to direct customers to the efficient products. "We have a very old-school customer base, so it may take them a little bit of time to get into some of the newer trends and products that are available," said Nolan Rodman, Vice President of Rodman's and grandson of founder Leonard Rodman.

"I think people are starting to realize there are more options out there than traditional lights that put out heat, waste energy, and don't last as long. Once they realize they're getting the same product at a better price that's more energy efficient, it's senseless not to do it."

After years of collaboration, Rodman's considers the DCSEU an energy efficiency resource for its business. "I make a lot of the decisions around new units, new refrigeration, and new lighting fixtures in our store. Being more energy efficient just makes sense, especially in the long term," Nolan said. "At the same time, it's nice to know you're being more responsible with energy use. If more businesses become more energy efficient I think it would help a lot with the amount of energy use that we have as a community."



Nolan Rodman, Vice President of Rodman's Discount Food and Drug



I thought the DCSEU and its contractors were very friendly, very professional. I enjoyed their company.

> Joyce Milton Homeowner

Coming Back for More

By the end of FY 2015, the DCSEU had completed 137 solar photovoltaic (PV) installations supplying electricity for income-qualified residents through the Solar Advantage Plus Program (SAPP). In FY 2016, the DCSEU reached out to some of these customers to offer its income-qualified Home Performance with ENERGY STAR services at no cost. Combining renewable energy with the effectiveness of proper home insulation and air sealing allows these residents to achieve deeper energy savings (for both electricity and home heating) and reap the maximum electricity benefits from their solar PV systems.

Joyce Milton, a retired deacon and resident of Ward 7, was happy to participate in another DCSEU program after her positive experience as a SAPP recipient. This summer, Ms. Milton received whole-home insulation and air sealing, as well as insulation jackets for her water heater and pipes. Throughout her home, contractors replaced all bulbs with high-efficiency CFL bulbs. They also weatherized her front door, closing a gap that had wasted energy and caused safety concerns. And to complement the added energy protections, they installed a carbon monoxide detector and two smoke detectors—two very effective health and safety measures that go hand-in-glove with energy improvements.

"I thought the DCSEU and its contractors were very friendly, very professional. I enjoyed their company," said Ms. Milton. "I already noticed the air conditioner kicks off more now, so that's a sign that this is a good thing."

The measures will reduce Ms. Milton's energy use by approximately 134 kWh and 5 Mcf per year. Together with the savings she receives from using solar-panel-supplied electricity, Ms. Milton's energy costs are reduced by more than \$500 per year, and she will have a more comfortable home year-round. Of the 19 income-qualified Home Performance with ENERGY STAR projects completed in FY 2016, all were former SAPP customers.



income-qualified properties served

\$7.8 million in lifetime energy savings

3.2 million gallons of water saved

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44

44

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Expanding Benefits to Serve Those in Need



Bridging the Gap to Net Zero

It is a major feat for any residential building to be certified as a Passive House. This label is considered the most stringent energy standard in the world for housing, and the U.S. Department of Energy recognizes Passive House design as the most effective method for achieving net-zero building operations. When Housing Up (formerly known as Transitional Housing Corporation or THC), a nonprofit that provides housing and comprehensive support services to District homeless and at-risk families, acquired Weinberg Commons located along Southern Avenue in Ward 7, it set out to make the development into the first Passive House-certified multifamily buildings in the country.

The team at Housing Up reached out to the DCSEU to bring their dream for the Passive House multifamily project to life. Although the engineering team at the DCSEU had not yet worked on a Passive House design, they were able to help Housing Up navigate the method's many specifications as well as the lengthy, unconventional construction process. This collaboration resulted in solutions that both met the strict requirements and kept the project on budget for Housing Up. Passive House design minimizes energy use primarily through whole-building, continuous insulation; airtight building envelope; high-performance windows and doors; and temperature controls. Each building received triple-paned windows; thermal shell enhancements; efficient water fixtures; high-performance heat pumps; energy-efficient heating, ventilation, and air conditioning upgrades; energy-efficient appliances; and efficient lighting fixtures.

Phil Hecht, President and CEO of Housing Up, quickly saw its value: "Providing sustainable, deeply affordable housing requires addressing the full housing cost over the long run. Energy efficiency represents the highest impact opportunity for cost management. Achieving this efficiency, Weinberg Commons will benefit its residents and the community for years to come."

The \$10.5 million Weinberg Commons project is effectively net zero, and is expected to save 311 MWh per year. The apartments will provide housing for 36 low- and moderate-income families, including homeless or formerly homeless families.

Energy efficiency represents the highest impact opportunity for cost management. Achieving this efficiency, Weinberg Commons will benefit its residents and the community for years to come.

> Phil Hecht President and CEO Housing Up

Power of Progress



More Comfort for Those in Need

Founded in 1976, House of Ruth helps women, children, and families in greatest need and with very limited resources build safe, stable lives, and achieve their highest potential. Each year, House of Ruth serves more than 1,000 women and children, helping them learn skills to live independently and to eliminate homelessness and abuse from their lives. The organization operates five residential programs in the District, providing housing and services to more than 100 women, all of whom were homeless and many of whom have suffered from domestic abuse.

One such residence is the Madison / Empowerment Center located in Ward 6. Currently under partial renovation, the residence had old, inefficient window air conditioning units that were inadequate for providing relief from the summer heat, an old commercial stove, and some plumbing leaks. The result: high utility bills and uncomfortable temperatures in the dormitories for the women staying there.

Working with CBE R. O. McMillan and Associates, the DCSEU provided 22 new energy-efficient window heat

pump units, upgraded electrical systems to ensure safety and that code was being met, upgraded faucets with low-flow aerators and repaired leaks, and replaced exhaust fans in the shower room to reduce humidity levels. While the project was under way, the facility's boiler needed to be replaced. The DCSEU was able to replace the boiler and hot water heater with energyefficient models that will provide comfort to residents and savings to House of Ruth for years to come. Overall, House of Ruth will see \$6,500 per year in savings from the upgrades and repairs.

"The savings that we experience, we can take that money and use it for services for the clients that can greatly impact the work we are able to do for them, to help them move on to the next level," said Shirley Malone, Program Coordinator at the Madison / Empowerment Center. "Many of the ladies who come through our program have never had a chance to experience fun and enjoyable things, so we are hoping we can do more of those things for them as well as continuing the hard work of helping them reach their goals."

Moving the Mark on Access to Solar

Renewable Energy

The DCSEU has been providing access to solar energy to income-qualified households at no cost since 2012. Each year, the DCSEU has increased the number of income-qualified solar PV customers it serves, while steadily increasing the number of local contractors with which it collaborates to drive the solar initiatives. In four years, the DCSEU has installed more than 500 solar PV systems for income-qualified households in the District—one of few programs in the nation to offer the systems at no cost to customers.

This year, the DCSEU worked with DOEE to establish solar programming that not only makes solar energy accessible to the District's incomequalified residents, but also provides incentives to small- and mediumsized businesses to invest in solar. The Renewable Energy Development Fund (REDF) provided the dollars for both the Affordable Solar Program and the Small Business Solar Pilot. In FY 2016, the DCSEU installed more solar PV panels for income-qualified residents than in any previous year. By contrast, the jointly funded Solar Advantage Plus Program in FY 2015 had a goal of installing and interconnecting 130 PV systems on incomequalified households by September 30. By the end of that fiscal year, 137 systems had been installed and interconnected. This fiscal year, the DCSEU exceeded an ambitious goal of installing and interconnecting 140 affordable residential solar systems across the District by September 30, with 158 systems⁵ installed and interconnected.

In partnership with DOEE and in collaboration with local businesses and residents across all Wards, the DCSEU is committed to helping the city meet the targets under the Renewable Energy Portfolio Standard Program and ensure the District's strong position in this industry.



⁵ This represents the total number of projects funded by both Sustainable Energy Trust Fund (SETF) and Renewable Energy Development Fund (REDF) dollars. There were 29 projects funded by SETF dollars and 129 projects funded by REDF dollars.

⁶ Total energy cost savings of SETF- and REDF-funded projects combined.



158 solar PV installations for income-qualified homeowners⁵

\$1.2 million

cost savings⁶



in annual energy cost savings per household

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Studying Solar for Small Businesses

In May 2016, the DCSEU and DOEE together launched a small business solar pilot program offering PV panels at no charge to qualifying businesses in Wards 7 and 8. Two months later, Mayor Muriel Bowser signed the Renewable Portfolio Standard Expansion Amendment Act of 2016, coming into effect in October. The law establishes a target of meeting 5 percent of the District's energy needs with solar energy by 2032, thus providing a legislated target that can align with DCSEU performance goals. The DCSEU partnered with three participating contractors to complete the work. One contractor, New Columbia Solar, used its experience as a small business to drive other small-business leads to the program—and completed 13 installations by September 30. This pace of activity accounted for approximately 75 percent of the program's total installations. Like the DCSEU, the contractor's goal is to be a solar enabler in the District.

The contractors managed the project process from permitting and procurement of materials, to building and installation, to supporting customers in their long-term ownership of the systems. Working with the DCSEU on the FY 2016 Small Business Solar pilot, the businesses will see significant electric energy savings over the next 15 years. The types of small businesses participating in the program had different energy needs. The projects

involved businesses such as a hair salon, art studio, small manufacturer, construction company, business center, and mom and pop shops. Each had an interest in making a statement about being a green business, and in reducing their electric energy costs.

"We were able to turn things around so quickly because we understand as a small business that working with vendors is more like a partnership—you have to trust the other person on the other side," said Nicole Marandino, Head of Business Development at New Columbia Solar, the contracting firm that aggressively participated in the Small Business Solar pilot. "There was a lot of coordination on all sides, between us, the customer, Pepco, DCRA (Department of Consumer and Regulatory Affairs), and DOEE. The DCSEU did a tremendous job managing all that."

New Columbia Solar (NCS) was crucial in helping the DCSEU reach 13 small business with solar installations this summer. NCS's work benefited those who received the systems and helped the firm expand its business. Since the start of the program, NCS hired three new permanent employees and became a District of Columbia Certified Business Enterprise (CBE) so that it could qualify as a DCSEU program Implementation Contractor.

There was a lot of coordination on all sides, between us, the customer, Pepco, DCRA (Department of Consumer and Regulatory Affairs), and DOEE. The DCSEU did a tremendous job managing all that.

> Nicole Marandino Head of Business Development New Columbia Solar



Small Change, Big Impact

Christopher Stewart, a fourth generation Washingtonian, purchased his home in Anacostia when he was in his early twenties with the goal of being in an environment where he could give back. Mr. Stewart, Wesley Theological Seminary graduate and employee of the DC Public Library, and his wife, a social worker, have always been focused on serving their community, especially serving those less fortunate and advocating for DC youth. As part of his dedication to serving his community, each week Mr. Stewart runs a breakfast for homeless members of his community at the local library.

Mr. Stewart has also always been dedicated to serving the environment in the best way possible. In searching for programming that would help him green his family's home, he came across the Affordable Solar Program and applied. Working with the DCSEU and participating contractor Solar Solutions, Mr. Stewart received a 2.34 kW solar PV system.

"The world we live in is a gift, and if we don't strive to protect it, then we won't be afforded the opportunity to pass on a great world to our children," said Mr. Stewart. "Something as small as solar panels is huge in the long run. This could be something people see and think 'I can do that.' My neighbors have already asked me about it." The system installed on his home will offset his energy costs by about \$500 per year, savings that are incredibly important with two young daughters.

"The savings will mostly likely go for additional funds for college for my girls. And possibly being able to continue to serve the community. Every Tuesday I do a community breakfast in Ward 8 in front of the library those funds could help me expand the breakfast to serve more people in need."



The Stewart family





businesses and institutions served

\$43 million

invested in efficiency improvements by DC businesses

White House

first walk-through to look for opportunities to save energy

Guiding District Businesses to Energy-Saving Opportunities



Commercial and Institutional

In FY 2016, the DCSEU served more commercial and institutional (C&I) customers and achieved greater energy savings in the C&I market than ever before. Through solid data analytics, a stronger emphasis on long-term technical assistance, and a dedication to combining services that enabled reaching small businesses to large institutions, the DCSEU also achieved high-yield, low-cost energy savings.

For small- and medium-sized businesses, the DCSEU offered standard rebates on lighting, HVAC, refrigeration, kitchen, and other qualifying equipment. During FY 2016, the DCSEU responded to market demand by reducing incentive amounts on standard rebates, which allowed it to serve more business customers and achieve energy savings at a lower cost. In addition, the DCSEU offered direct services to small businesses and institutions, which allowed the DCSEU to serve customers previously unable to afford energy-efficient upgrades and to use CBE contractors to complete the work.

The DCSEU also offered custom rebates to large C&I customers. Improving upon its account management approach, this year the DCSEU drove deep energy savings by continuing to develop longterm relationships with large energy users. These customers primarily comprised commercial real estate owners, universities, and hospitals. The relationships allow the DCSEU to explore long-term planning, closely examine a customer's energy use, and realize greater energy savings. The DCSEU also had a larger influence on buildings owned by the federal government, completing projects and developing close relationships with the Office of Personnel Management (OPM), the National Park Service, the Smithsonian Institution, and the General Services Administration (GSA). The GSA even invited and hosted the DCSEU for a walk-through of the White House to explore energy savings opportunities.

A Shining Example

The Tower Companies is a family-owned real estate development and property management company that develops, owns, and manages commercial office, retail, and multifamily residential properties across the Washington, DC, metropolitan area. Mindful of its global impact, Tower is a leader in sustainable development and building operations, recognized by the U.S. Green Building Council, U.S. Department of Energy, Natural Resources Defense Council, and the Institute for Market Transformation. Nearly 90 percent of Tower's portfolio is LEED® certified (considered "resource efficient"), and 80 percent of its ENERGY STAR certified buildings average a score above 80 (out of 100). The Millennium Building, 1909 K Street NW, contains a 30 kilowatt (kW) solar PV system—the largest installation by a privately held real estate developer on a Class A commercial office building in the District. Tower began its relationship with the DCSEU in 2012, and has since completed efficiency projects in. its District buildings: upgrades to boiler systems, building automation systems, lighting retrofits, variable frequency drives, and installation of additional occupancy sensors.

Tower's property at 1828 L Street NW is a 340,000 squarefoot LEED Gold and ENERGY STAR certified, multi-tenant office building with a four-level, below-grade 120,000 square-foot parking garage. With the help of the DCSEU in early FY 2016, Tower replaced more than 850 lamps and fixtures in the parking garage and below-grade, back-ofhouse areas with high quality, ENERGY STAR and Design Lights Consortium qualified LEDs. The energy savings estimated at more than \$20,000 per year—will reduce operating costs not only from direct energy savings but also from maintenance savings. The brighter, more reliable lighting is designed to increase tenant safety and help improve the reliability of day-to-day operations for the property management and engineering teams. That retrofit will pay for itself in less than 5 years.

This garage lighting retrofit project resulted from a recommendation Tower's real-time energy management program transmitted. Tower had implemented that program across its entire portfolio in 2012 to significantly increase energy savings and improve operations with energy conservation measures. The second phase of

I would strongly encourage others to partner with programs like the DCSEU to help achieve both shortand long-term energy efficiency goals.

Eugenia Gregorio

Director of Corporate Responsibility Tower Companies

this project, designed in FY 2016, will be to install zoned motion sensors in the garage in late 2016 or early 2017. The company also began an FY 2016 project with the DCSEU to upgrade the lobby lights to LEDs, and to complete a larger, more comprehensive lighting retrofit at 1707 L Street NW.

"The 1828 L Street parking garage lighting project is a great example to share with other building owners and was a 'no-brainer' since the lights are on 24/7. It demonstrates a clear benefit for making low-risk investments to yield significant energy savings that will contribute to lower operating costs," said Eugenia Gregorio, Director of Corporate Responsibility at Tower Companies. "I would strongly encourage others to partner with programs like the DCSEU to help achieve both short- and long-term energy efficiency goals."

As a partner in the U.S. Department of Energy's Better Buildings Challenge, Tower has committed to reducing both energy and water consumption by 20 percent by 2020 for 3 million square feet of its building portfolio space in the District and in Maryland. The lighting retrofit in the 1828 L Street parking garage will contribute to this goal and save approximately 165 MWh per year—the equivalent of more than 15 homes' electricity use for one year. Since 2010, the company has reduced energy and water consumption by nearly 15 percent, and is now a model for companies of its kind in the District and across the country.



Powering Federal Agencies Through Energy Savings

Located in the Theodore Roosevelt Federal Building in Washington, DC, OPM offers services in human resources, leadership, and support to federal agencies. OPM oversees all policies that support federal human resources departments—classification and qualifications systems for hiring authorities; performance management; and pay, leave, and benefits.

It is the policy of OPM that all agency business and operations be conducted in a manner that allows it to achieve its mission, while minimizing environmental impacts in accordance with all federal statutes, regulations, policies, and executive orders.

OPM's 853,865 square foot building contains a chilled water plant, heating provided by District steam and a 24 / 7 IT operations center. In addition to providing technical assistance to OPM, the DCSEU offeredincentives for energy-efficient lighting upgrades, HVAC upgrades, and chiller replacements. These efficiency measures will result in energy savings of nearly 4.7 million kWh each year, and \$600,000 in annual cost savings.

OPM recognizes that, in addition to the financial benefits from improved energy efficiency, there are significant environmental gains that align with the core value of adhering to environmental statutes, regulations, policies, and executive orders. Therefore, integrating efficiency into its business planning is of high importance. OPM budgets 10 percent of its annual utility expenses for efficiency improvements, and actively involves employees on its Green Team. Employees participate in Earth Day and Energy Awareness Month activities, and in energy efficiency incentive programs. Although the federal government sets some annual energy and water reduction performance targets, OPM determines others that go beyond the established "stretch" targets that particularly relate to improving energy efficiency and water reduction practices at the facilities OPM oversees. The DCSEU has worked with OPM to use a continuous energy improvement (CEI) approach. For example, in addition to advanced metering that is installed at the facility level, OPM sub-meters equipment that is considered to consume high amounts of energy. OPM accesses and enters monthly consumption data into a database operated by its energy contractor, who reviews all utility data for anomalies and provides a high-level analysis of performance to date. The reports are then provided to the DCSEU for review and to aid in future planning.

Since 2014, the DCSEU has provided rebates and technical review of energy efficiency projects contemplated by OPM. The DCSEU made suggestions for improved functionality and provided financial incentives for the implementation of the energy conservation measures. When OPM solicited proposals for a qualified performance contract with energy services companies to provide deep energy retrofits, the DCSEU provides third party objective review of the awarded contractors' proposed measures and cash flow projections. The projects prioritized by the team at OPM not only resulted in significant energy savings, but also increased occupant comfort.

In the future, OPM plans to invest rebate dollars and energy cost savings into additional energy efficiency measures, such as on-site combined heat and power, solar thermal projects, and additional lighting controls.



"We were interested in energy efficiency from the start our entire business model revolves around rainforest conservation. "

> Colin Hartman Co-Founder Harper Macaw

Sweet, Sweet Energy Savings

Harper Macaw is a fine-chocolate venture co-founded by a husband and wife—a Brazilian chocolate maker and a U.S. Marine veteran. One of the company's environmentally conscious goals has been to turn their District-made chocolate into a force for rainforest restoration. Located on Bladensburg Road in Woodridge, the factory offers tours, tastings, and sales of chocolate bars. To promote rainforest restoration near their cacao sources in Brazil, the founders knew they could not lose sight of operational efficiency and sustainability at home. They chose small-carbon-footprint materials to use in the company's café, packing materials, toilets, and hand dryers. When it came time to build out their factory's warehouse space, the founders contacted the DCSEU.

After conducting energy assessment walk-throughs of the space, the DCSEU guided the founders on the types of lighting fixtures and equipment in which the company could invest, and estimated the energy and cost savings for installing the measures. Although they were already planning to incorporate efficient measures into their space, Harper Macaw's founders were happy to discover that they could take advantage of rebates and the professional guidance and technical assurance offered by the DCSEU. They chose to install an ENERGY STAR freezer, dishwashers, and refrigerators. They also upgraded the lighting in the space to highly efficient LED T8 lamps and A19 lamps with accompanying track fixtures and troffers.

"It was good for us to learn about what considerations a business owner needs to make when installing efficient equipment in a large warehouse space. As difficult as it can be and as much as it takes some initial up-front investment, green energy is really important," said Colin Hartman, co-founder of Harper Macaw. "We were interested in energy efficiency from the start—our entire business model revolves around rainforest conservation, so environmental sustainability is essential to what we're trying to do."

The improvements will reduce the chocolate factory's energy use by more than 21 MWh and 3 Mcf per year, resulting in reduced energy costs valued at nearly \$3,000 annually. The measures installed in FY 2016 will pay for themselves in approximately two years.

Building Green Careers in the District

Green Jobs

The DCSEU is committed to providing employment opportunities in the green economy to District residents, partnering with local businesses to build economic opportunity in the District. As with every year since its inception, all DCSEU new hires in FY 2016 are District residents. In the context of other types of green job, the DCSEU uses District-based contractors to implement its energy efficiency and renewable energy programs. The DCSEU also requires all employees and contractors, internal and external, to be paid at or above the City's 2016 Living Wage of \$13.85 per hour.

Through its signature Workforce Development Program, the DCSEU fills a gap in the District's workforce development infrastructure for green jobs. It mentors entry-level workers and skilled workers who wish to transition into the field. Twice a year, the DCSEU connects District residents with 6-month paid externships, shadowing and learning from local contractors and other organizations in the green economy. Externs gain marketable job skills, certifications, and work experience. They also receive job placement assistance to discover new careers in sustainability. Thanks to many dedicated employers, large and small—from Savage Technical Services (a CBE) to Howard University—and thanks to strong partnerships with United Planning Organization (UPO) and the Department of Employment Services (DOES), the DCSEU Workforce Development Program has paved green career pathways for District residents.

The success of the FY 2016 Workforce Development program is a testament to the power of this collaboration. Graduating in November 2015 with an 85 percent permanent-job placement rate, members of the fall/winter cohort took jobs as full-time solar installers, project managers, AutoCAD designers, and draftsmen, among other positions. In May, nine spring/summer cohort externs graduated from the program, all of whom found permanent, full-time employment

In FY 2016, the DCSEU worked with more than 50 local contractors, including spending more than \$4.4 million with 27 CBEs, and providing work for hundreds of District residents.



171,600 areen iob hours fo

B

green job hours for District residents

400+

District residents worked in support of DCSEU initiatives



DC Sustainable Energy Utility



Embarking on a New Journey

According to the U.S. Department of Labor, just 2.2 percent of all electricians in the United States are female. That did not stop Shannon Williams from beginning to pursue her dream of becoming a journeyman electrician, and eventually a master electrician. Ms. Williams came into the Workforce Development Program with a certificate in building maintenance, but she believed becoming an electrician would offer more opportunities to expand her career. The DCSEU Workforce Development Program offered her that opportunity with an externship with the electrical contracting firm, Savage Technical Services.

During her externship, Ms. Williams worked with master electricians in the field and learned about small contracting firm operations. Meanwhile, the DCSEU mentored her career development with mock interviews, resume writing assistance, and tutorials on elevating interpersonal skills. "I never really saw myself doing this," said Ms. Williams. "This opened a whole other side of me that I never really knew about. It taught me to believe in myself. Workforce Development program gave me the opportunity to embark on a whole different experience."

Upon completion of the six-month program, Savage Technical Services hired Ms. Williams as a full-time electrician's helper. She will be an apprentice in that position, and work toward achieving her journeyman electrician license and eventually, her master electrician license.

"Now I want to start my own construction business...I realize these are really attainable dreams," said Ms. Williams. "The Workforce Development program was really an empowering experience and opened my eyes to all of the things that I'm capable of really doing."

This opened a whole other side of me that I never really knew about. It taught me to believe in myself. The Workforce Development program gave me the opportunity to embark on a whole different experience.

Shannon Williams

Workforce Development Program Graduate

Power of Progress

The Value of Investing in Sustainability

Financial Leveraging

The DCSEU continues to expand its ability to bring in additional support for sustainable energy projects. In FY 2015, the DCSEU engaged Encentiv Energy to monetize the energy savings of eligible projects in the PJM Reliability Pricing Model (RPM) Capacity Market. The DCSEU bid capacity credits (saved energy) into that market, bringing in sequenced payouts of \$141,000 for that year's performance. These funds will be held for use in DCSEU programs in future years. Working with Encentiv, the DCSEU also bid into the PJM RPM Capacity Market in FY 2016 and anticipates approximately \$160,000 in revenue.

In FY 2015, the DCSEU launched the Sustainable Energy Finance Forum (SEFF), a discussion series that explored issues and questions around energy efficiency financing. In FY 2016, the DCSEU launched the Energy Efficiency Financing Partnership (EEFP), bringing eight lending organizations together to understand better how energy efficiency projects contribute cash-flow savings to customers. For this program, the DCSEU provided project information to these lenders to demonstrate the savings that can be realized by undertaking and completing a business's proposed energy efficiency upgrades. The Partnership activity showed how DCSEU incentives could be used to buy down interest rates or capital costs, thus lowering loan payments on upgrades and new equipment. The buy-down also enables the money saved on energy costs to be reinvested into the business.

Finally, the DCSEU completed its first major project in partnership with the DC Property Assessed Clean Energy (DC PACE) financing program: a joint renovation project on Elsie Whitlow Stokes Community Freedom Public Charter School in the Brookland neighborhood. The project involved capital improvements and infrastructure upgrades to mechanical equipment, energy and water conservation measures, and the installation of rooftop solar PV panels. DC PACE financed the project, and the DCSEU provided incentives to help offset total project costs. The DCSEU's incentives supported the work of contractors W.L. Gary and Greenscape Environmental Services, both District CBEs.



A Winning Combination

Matthews Memorial Baptist Church is home to one of the District's oldest and largest Baptist congregations. It is located in Anacostia, and offers worship services to 800 families, who also participate in community outreach work. Although Matthews Memorial renovated and expanded its extensive building for the church's 100th anniversary, it had poor lighting, outdated electrical equipment, and high maintenance and energy costs. Deferred maintenance because of tight cash flow is a classic challenge for faith organizations.

Jeffrey Clark, Chairman of the Board of Trustees at Matthews Memorial, asked the DCSEU for advice and assistance to solve the problem of inadequate lighting and the high energy costs. Although the DCSEU helped Mr. Clark with a design for a full lighting retrofit, the church's board could not approve the project because the price was too high. The DCSEU went back to the drawing board, and explored financing options with its Energy Efficiency Financing Partners. SparkFund, one of the EEFP partners based in the District, presented a payment plan to Mathews Memorial, allowing the church to pay for the project across six years. The plan makes it possible for the church to be cash-flow-positive on the net monthly energy savings. Moreover, the DCSEU's rebates reduced the monthly payments of the project—leaving \$16,000 in annual energy cost savings that can now be spent on the church's community outreach work.

Jeffrey Clark, Trustee Chairman of Matthews Memorial Baptist Church had this to say about the project: "LED lighting is a win-win for our community and our environment. We are proud to have quality LED lighting for our congregational activities and grateful for such easy financing options from SparkFund and very helpful rebates from the DCSEU."

" LED lighting is a win-win for our community and our environment. We are proud to have quality LED lighting for our congregational activities and grateful for such easy financing options from SparkFund and very helpful rebates from the DCSEU. "

Jeffrey Clark

Trustee Chairman Matthews Memorial Baptist Church



Collaborating for a Stronger Community

In the Community

In FY 2016, the DCSEU dedicated itself to new and higher levels of community outreach to District agencies and community organizations. The objective: to ensure that as many District residents and businesses as possible were aware of DCSEU services.

Working with DOEE and the District of Columbia Housing Authority (DCHA), the DCSEU participated in the Power Down DC competition, which encouraged residents in several affordable housing developments to reduce their energy consumption through behavioral changes. The DCSEU provided energy-efficient lighting along with energy-savings tips. The competition offered energy efficiency improvement prizes to the two winning housing developments.

In addition, the DCSEU expanded its local, regional, and global impacts. Locally, the DCSEU joined with the Boys and Girls Club on its Martin Luther King Day event. The DCSEU also participated in the #STEAMtheBlockParty, an activity of DC STEM Network. At that event, DCSEU staff spoke to teenagers about energy efficiency and career opportunities in technology and engineering the industry offers. The DCSEU also partnered with retailers on several events informing residents about rebates and alerting customers to District retail partners. Regionally, the DCSEU participated in events with the Metropolitan Washington Council of Governments, making presentations to regional leaders on the DCSEU's achievements and lessons learned. In international context, the DCSEU welcomed delegations from China, India, and Ecuador, and other groups whose visits were arranged by the U.S. Department of State, sharing best practices and lessons learned.

In earned media, the DCSEU received hundreds of placements in local, regional, and national press in FY 2016. The DCSEU's solar work was specifically featured in The Atlantic, the Washington Post, and WUSA-9 CBS. The DCSEU website also experienced the most traffic it has ever received in the five full years of its existence. Overall, the DCSEU's work in marketing, public relations, public affairs, and community outreach helped contribute to the DCSEU's landmark success in FY 2016.





18% increase in website visits over FY 2015







23% increase in Twitter followers





Racing Towards Success

For the second year in a row, the DCSEU sponsored a DC Public School in the annual DC Electric Vehicle Grand Prix, and activity of Global Education / Energy / Environment (an online competition promoting those three areas of interest). In its fourth year, the Grand Prix is a hands-on educational program for high schools in Washington, DC, Maryland, and Virginia. For the competition, student teams apply engineering, science, and math to construct and race battery-powered electric cars, helping improve their understanding of renewable energy technologies and project management, while working on teams.

This year, the DCSEU sponsored H.D. Woodson Senior High School's vehicle and team to compete in the Grand Prix. In addition to sponsoring the vehicle and providing support for the team on race day, engineers from the DCSEU mentored the students as they constructed the car and prepared for the race. The H.D. Woodson team completed 32 laps and finished in 12th place out of 24 schools.

Beth Dunn, NAF Academy of Engineering Coordinator at Woodson, believes the experience had a positive impact on her students. "Working with the engineers at DCSEU was an enlightening experience for the team of students at H.D. Woodson." Though we talk a great deal about engineering and what engineers do on a daily basis, meeting the engineers, talking with them about what they do and who they are as people was transformative. Many of the students on the team have become much more invested in their career path and academics because of this experience. No longer does the engineering field seem out of reach to them."

Many of the students on the team have become much more invested in their career path and academics because of this experience.

Beth Dunn NAF Academy of Engineering Coordinator H.D. Woodson Senior High School

FY 2016 Initiatives



Residential

Efficient Products

Deep discounts on CFLs, LEDs, and appliances, with partner retailers in DC; and rebates for appliances and gas equipment installed by licensed DC contractors

<u>Customer:</u> All District residents

Home Performance with ENERGY STAR®

Rebates for whole-home energy efficiency improvements

<u>Customer:</u> District single-family homeowners

Low-Income Direct Services

Direct installation of household energy efficiency products and improvements

<u>Customer:</u> Income-qualified District homeowners

Low-Income Multifamily

Low-Income Multifamily Comprehensive

Custom technical and financial assistance for energy efficiency improvements in multifamily properties

Customer:

Multifamily building owners serving income-qualified District residents

Low-Income Multifamily Direct Services

Direct installation of CFLs, low-flow faucet aerators and showerheads, hot water tank wrap, and pipe wrap in low-income multifamily properties

Customer:

Multifamily buildings owners serving income-qualified District residents



Renewable Energy

Affordable Solar Photovoltaic (PV)⁷

Incentives and financing to install solar PV systems in partnership with DOEE

<u>Customer:</u> Income-qualified District homeowners

Small Business Solar Pilot⁸

Solar PV systems for qualifying small businesses in Wards 7 and 8 in partnership with DOEE

Customer:

Small commercial and institutional customers in the District

Solar Thermal

Incentives to install solar thermal arrays

Customer:

Cooperative housing groups and multifamily building owners serving income-qualified District residents

⁷ Funded by SETF and REDF dollars
 ⁸ Funded by REDF dollars



Commercial and Institutional

Business Energy Rebates

Rebates for energy-efficient lighting, heating, refrigeration, cooking, and other qualifying equipment

<u>Customer:</u> District business owners

Direct Services

Incentives for customers to install energy-efficient lighting and other equipment

<u>Customer:</u> District business owners

Commercial and Institutional Custom

Technical assistance, account management, and financial incentives for energy efficiency projects

Customer:

Large commercial and institutional customers in the District

Performance Benchmarks

Natural gas savings and electricity savings.

DCSEU initiatives in FY 2016 resulted in an annual reduction of 106,218 Mcf in natural gas consumption. This exceeds the Performance Benchmark minimum metric for natural gas savings. Electricity consumption was reduced by 79,807 MWh.

Peak demand.

DCSEU initiatives in FY 2016 reduced the growth of peak electricity demand in the District of Columbia by 9,310 kW. This far exceeded the Performance Benchmark minimum for peak demand.

Renewable energy generating capacity.

In FY 2016, the DCSEU completed more solar projects than in any previous fiscal year. The DCSEU also reduced the negotiated price per therm with participating contractors by 77%.

Low-income.

In its commitment to reducing the financial burden from energy costs borne by lowincome households, the DCSEU invested more than \$5.6 million in energy services to the low-income community. This investment far exceeded the minimum metric for low-income services Performance Benchmark of \$3.52 million.

Largest energy users.

The DCSEU significantly reduced the growth in energy demand of the largest energy users, defined as buildings with 200,000 square feet. The minimum metric for this Performance Benchmark (largest energy users) was 30 projects for FY 2016; the DCSEU completed 94 projects with these customers.

Green jobs.

All DCSEU jobs and contractor positions, both internal and external, are offered at or above the City's Living Wage. In FY 2016 the DCSEU created 88 full-time equivalent (FTE) positions for District residents, meeting the maximum Performance Benchmark for creating green jobs.

Table 1. FY 2016 Performance Benchmarks and Minimum Requirements⁹

Table 1. FY 2016 Performance Benchmarks and Minimum Requirements ⁹							
Item	Description	Metric Unit	Benchmark Minimum	Benchmark Maximum	FY 2016 Results	Minimum Benchmark Progress	Maximum Benchmark Progress
1a	Reduce per-capita consumption— Electricity	MWh	51,845	103,690	79,807	154%	77%
1b	Reduce per-capita consumption—Natural gas	Mcf	61,521	273,428	106,218	173%	39%
2	Increase renewable energy generating capacity	Cost / kWh	10% cost reduction over 2015	20% cost reduction over 2015	77%	770%	385%
3	Improve energy efficiency in low-income housing	% of annual budget	\$3,520,000	\$5,280,000	\$5,614,119	206%	138%
4	Increase number of green collar jobs ¹⁰	Green job FTE's directly worked by DC residents, earning at least a Living Wage	53	88	88	166%	100%
5	Reduce growth in peak demand	kW	2,000	20,000	9,310	466%	46%
6	Reduce growth in energy demand of largest users	# of projects completed with > 200,000 ft ²	30	50	94	313%	188%
7	Expenditure of annual SETF dollars allocated to DCSEU services	Fiscal year dollars	\$17,600,000	\$18,372,814	\$18,372,814	104%	100%
8	Expenditures with Certified Business Enterprises	Minimum expenditure for Certified Business Enterprises	\$3,105,554	\$6,160,000	\$4,468,900	144%	73%
9a	Annual expenditures related to electric energy efficiency	Program expenditures that reduce electrical energy consumption, allocated to sustainable energy activity	\$10,560,000	\$15,616,892	\$13,401,944	127%	86%
9b	Annual expenditures related to natural gas energy efficiency	Program expenditures that reduce natural gas consumption, allocated to sustainable energy activity	\$2,640,000	\$4,593,204	\$4,972,870	188%	108%

⁹ Results to be verified through DOEE's evaluation, measurement, and verification contractor. All benchmarks are based on SETF projects unless otherwise noted. ¹⁰ Period results are estimates subject to final verification of green job hours. Green collar jobs include hours worked on solar projects funded under the REDF.

Minimum Requirements

Energy Savings by Sector

Overall electricity consumption in FY 2016 was reduced by more than 79,807 MWh. Approximately 67 percent of total electric savings came from the Commercial and Institutional core area.



Economic Benefits

Table 2. Lifetime Economic Benefits and Annual Customer Savings

	Residential Customers	Comm. & Inst. Customers	Total	
Lifetime economic benefits ¹¹	\$25,874,873	\$131,226,433	\$157,101,306	
First-year annual energy cost reduction ¹²	\$2,401,895	\$9,154,267	\$11,556,162	

¹¹ Lifetime economic benefits are defined as the present value of the avoided cost of energy for the life of each measure installed. Includes SETF- and REDF-funded projects. ¹² First-year annual energy cost reduction equals the estimated savings in energy costs, at average retail rates, for the first 12-month period in which the efficiency and / or renewable energy measures are in operation. Includes SETF- and REDF-funded projects.

Expenditures-Actual

Table 3. FY 2016 actual expenditures

	Actual Expenditures
IMPLEMENTED ENERGY SERVICES	
Residential Initiatives	\$2,516,642
Low-Income Multifamily Initiatives	\$3,660,020
Renewable Energy Initiatives	\$561,871
Commercial Initiatives	\$8,128,706
SUPPORT SERVICES	
Administration	\$2,489,902
Information Technology	\$449,161
Compliance	\$123,129
Workforce Development	\$445,383
TOTAL	\$18,372,814

Renewable Energy Development Fund Performance measured against benchmarks and contract requirements

Table 4. FY 2016 REDF performance

Category	Item	Description	Metric Unit	Benchmark	Actuals	Benchmark Progress
	1a	Expenditure of REDF dollars	Fiscal year Dollars	\$1,880,447	\$1,611,547	86%
Affordable Solar	1b	Installation of Solar PV Systems	Number of Projects Completed	140	15813	113%
Small Business	1a	Expenditure of REDF dollars	Fiscal year Dollars	\$536,384	\$477,806	89%
Solar Pilot	1b	Installation of Solar PV systems	Number of Projects Completed	15	13	87%

¹³ The actuals include the 29 projects completed using SETF dollars.

Special Thanks

DCSEU TEAMING PARTNERS

George L. Nichols and Associates Institute for Market Transformation Groundswell Nextility PEER Consultants, P.C.

FEDERAL GOVERNMENT

Department of Commerce Department of Health and Human Services Federal Energy Regulatory Commission General Services Administration Office of Personnel Management

DISTRICT GOVERNMENT

Council of the District of Columbia **DC Housing Authority DC Public Schools** Department of Consumer and Regulatory Affairs **Department of Employment Services Department of Energy & Environment Department of General Services Department of Housing and Community Development Department of Public Works** Department of Small and Local Business Development **Department of Transportation** Mayor's Office of Community Relations and Services **Office of Community Affairs Office of Contracting and Procurement** Office of the Deputy Mayor for Planning and Economic **Development** Office of the People's Counsel Office on Aging **Public Service Commission** Workforce Investment Council





BOYS & GIRLS C

Special Thanks (cont.)

PARTICIPATING RETAILERS

Ace Hardware Annie's Ace Hardware Best Buy Brookville Super Market Costco Dollar Tree Giant Food Harris Teeter Home Depot Howard Mini Store King's Discount Lowe's M&M Appliances M&S Liquor and Market Martin's Foodtown Net Zero Lighting, Inc. Old School Hardware Rodman's Safeway Target Techniart.com Walmart Yes! Organic Market

IMPLEMENTATION AND PARTICIPATING CONTRACTORS

Access Green, LLC ADP Group, Inc. Aerie Consulting, LLC All-Pro Services, Inc. **Atlantic Electric Supply Corporation Alternative Renewables Solutions, LLC Argent Heating and Cooling** Atlantic Electric Supply Corp. **B&B** Air Conditioning and Heating Service Company Battle's Transportation BMC Heating & Air Conditioning Climate Heating and Cooling **Comfort Solutions** Commun-ET, LLC Complete Home Solutions, LLC CroppMetcalfe Heating & Air Conditioning Drake Incorporated Ecobeco LLC Edge Energy Efficient Home, LLC Eko Smart Solutions, LLC Elysian Energy, LLC **Emergency Security Energy Efficiency Experts, LLC** Foley Mechanical Inc. Fry Plumbing GCS, Inc. greenNEWit, LLC **Greenscape Environmental Services** GRID Alternatives Mid-Atlantic, Inc. **Home Energy Medics**

HR&A Advisors, Inc. James A. Wheat & Sons, Inc. JM Plumbing & Heating Leone Tech, LLC Live Green, LLC M&M Mechanical, Inc. Magnolia Plumbing Heating & Cooling Michael and Son Services Mona-Hill Contracting Group Inc. New Columbia Solar Polar Bear Air Conditioning and Heating Inc. **Presidential Heating & AC** Providence Construction, Inc. R.O. McMillan & Associates, LLC Real Plumbers (Warner Super Service, Inc) **Rebecca Gurnev** S&P, LLC Savage Technical Services Sigora Solar Solar Solution, LLC Somerset Development Company, LLC Standard Energy Solutions, LLC **Tetra Tech** The Energy Federation Inc. John G. Webster Company Trusted Solutions Group, Inc. **Urban Ingenuity Advisors Vito Services** Walker Marchant WDC Solar, Inc WL Gary, Inc.

FINANCING PARTNERS

Amalgamated Bank City First Enterprises DC PACE / Urban Ingenuity Metrus Energy

COMMUNITY PARTNERS

BISNOW Broccoli City Building Hope Capital Area Food Bank Coalition for Nonprofit Housing and Economic Development (CNHED) Columbia Lighthouse for the Blind DC Council of the Blind DC Public Library DC Retired Educators Association DC VA Medical Center Fairmont Hotel Global EEE GSC, Inc. Habitat for Humanity of Washington, DC

MEDIA

The AFRO American Newspapers The Atlantic Capital Community News The Current Newspapers NBC 4

UTILITIES

DC Water Pepco Washington Gas

And to our customers and all who worked with the DCSEU to make FY 2016 a success.

PEAR Energy Self-Help Credit Union Spark Fund

Home Depot
Housing Association of Nonprofit Developers (HAND)
Manna, Inc.
Metropolitan Washington Council of Governments (MWCOG)
National Federation of the Blind, DC Chapter
National Housing Trust
Northeast Energy Efficient Partnerships
Serve DC
Steven Winter & Associates
Transitional Housing Corporation
United Planning Organization
View, Inc.
WC Smith

The Washington Informer The Washington Post WJLA WPGC WUSA-9



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