NYMBUS

SOLAR EMPOWERS…SOME

The State of Diversity and Inclusion in the Solar Sector in Washington, DC and Baltimore, MD

Report commissioned by
Groundswell
www.groundswell.org

Table of Contents

Prepared By:

NYMBUS Holdings, LLC is a minority owned research and analysis firm headquartered in Washington, D.C. We deliver strategic solutions for government and commercial organizations that optimize public-private value streams.

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EXECUTIVE SUMMARY

The solar marketplace has experienced exponential growth on a global, national, and local scale. Nationally, 4 out of 10 electricity generation jobs were solar jobs in 2017 – more new jobs than any other segment of the energy industry.[1]

Solar energy's sustained growth has impacted local economies. In both the District of Columbia and Baltimore, solar developers, financiers, and solar engineering, procurement, and construction (EPC) firms are shaping a market that is rich with innovation and profitability. In the District alone, solar capacity grew from a negligible base in 2009 to 62MW by the end of 2018, representing an investment of about $160 million to date.[2] DC's solar capacity is expected to increase to 164MW by 2023. Based on expected installation costs and capacity projects, the period 2018-2023 could see an additional $300 million in solar investments in DC.[3]

Critically, however, minority and woman-owned businesses are underrepresented at every level of the solar supply chain in the District – especially as business owners and principals. As a result, the solar industry and its wealth-building economic expansion in the District of Columbia and in Baltimore is not fulfilling its potential to drive equitable economic development. In order to create successful pathways of participation, business ownership and employment opportunities must be made known to disadvantaged entrepreneurs; financing must be accessible; and guidance in establishing specialized administrative functions must be available.

At the same time, and towards supporting full market participation, the District of Columbia and Baltimore should maintain their momentum and accelerate programs that enable equitable access to affordable solar and associated electricity bill savings, such as the District of Columbia's innovative Solar for All program. These leading efforts help to eliminate unnecessary and unfair financial barriers to consumer participation in the local solar marketplace.

The objective of the report is two-fold:

1. To describe the current levels of minority and woman-owned business participation in the solar sector in the Baltimore, MD and District of Columbia solar markets, and frame the near-term opportunities; and,
2. To provide recommendations for closing the diversity gap.

1 2018 *U.S. Energy and Employment Report*, National Association of State Energy Officials and Energy Futures Initiative, May 2018 (release Feb. 4, 2018); p. 38 (https://www.usenergyjobs.org/)

2 Wood Mackenzie, Limited/SEIA *U.S. Solar Market Insight®*, Solar Energy Industry Association with GTM Research (now known as Wood Mackenzie). District of Columbia-specific data is cited from https://www.seia.org/state-solar-policy/washington-dc-solar; and also https://www.seia.org/sites/default/files/2018-12/Federal_2018Q3_Washington%20DC.pdf. Data from this report is current through Q3, 2018

3 Ibid., Full report, p. 9

FOREWORD

To quote *Bloomberg New Energy Finance*'s Michael Leibreich, "Solar is not alternative energy, it is mainstream power-generating technology."[4] Cities such as Baltimore and the District of Columbia have unique opportunities to create shared assets, establish innovation centers and foster mentor relationships that ultimately create paths to prosperity for all members of every community.

This rapidly expanding solar marketplace has been often referred to as the "New Wild West." In America's "old" Wild West, policymakers shaped legislation and allocated public funds, such as through the Homestead Act Land Grants,[5] which created market drivers to motivate and support a new generation of Americans and budding entrepreneurs. Though this period was riddled with appalling ethical and humanitarian failures such as tribal displacements, rampant violence, and lack of regulatory controls; there were also vast opportunities for freed slaves, immigrants, and the downtrodden to create sustainable means to succeed. The solar marketplace provides similar market opportunities for creating next generation employment pathways and wealth for all communities.

4 Bloomberg New Energy Finance, Conference proceedings, Future of Energy Global Summit, May 2017, Available at: https://medium.com/@TigercommPR/highlights-from-michael-liebreichs-bnef-future-of-energy-global-summit-presentation-b1ded697d04d

5 Signed into law by President Abraham Lincoln on May 20, 1862, The Homestead Act encouraged Western migration by providing settlers 160 acres of public land. See: https://www.ourdocuments.gov/doc.php?flash=false&doc=31

Research Methodology

Information related to minority and woman-owned business participation in solar projects in the District of Columbia and in Baltimore and the State of Maryland is fragmented. In many cases, data is self-reported, or collected only from associated member companies of the Solar Energy Industries Association (SEIA). In addition, data from the District of Columbia's Certified Business Enterprise Database tracks "certified" companies only. Data sources used for this report often assert different counts for the number of solar firms, small businesses, and minority and woman-owned enterprises.

To provide the most comprehensive and accurate view of the status of minority and woman-owned businesses in the District and Maryland, NYMBUS collected and cross-referenced data from multiple sources, including Federal, state and local governments, as well as private and non-profit organizations, to form a composite picture of diversity trends specific to the solar sector. NYMBUS obtained historical business and employment data, industry reports, and feedback from key stakeholder interviews to develop inclusion and participation statistics. Data sources included: The District of Columbia's Certified Business Enterprise Database; The State of Maryland MDOT Minority Business Enterprises Database; the Solar Energy Industry Association's Statewide Solar Database; and the U.S. Department of Labor, Bureau of Labor Statistics *2017 State Occupational Employment Wage Estimates for District of Columbia and the State of Maryland.* This report also cites data and information from national sources of solar employment: The Solar Foundation's *2017 U.S. Solar Industry Diversity Study*; and the *National Solar Jobs Census 2017*; and, the *US Energy and Employment Report 2018*. (National data sources were developed through industry survey methodologies – please see the "Sources" section for links to view these reports in full.)

From these data sources, NYMBUS calculated minority and woman-owned business statistics, diversity levels by job categories, and average weekly wages by segments of the solar value chain for Maryland and the District of Columbia, as cited within the report. As a cross check, NYMBUS also conducted interviews with industry stakeholders in the Mid-Atlantic. Information relevant to solar industry growth, using economic forecasts and market studies from both private and non-profit organizations, shapes a picture of solar potential and the status of diversity in employment and ownership for women and minorities. This report provides a unique snapshot of the intersection between solar industry growth and minority and woman-owned business enterprise (WMBE) participation.

Established sectors such as banking, technology, and energy have made strides to improve the financial conditions of individuals who have been marginalized by society. Likewise, state and local governments including the State of Maryland, the City of Baltimore, and the District of Columbia have implemented initiatives that are intended to assist citizens and business owners who are underserved, balancing economic opportunity for all citizens – as consumers, employees, and importantly, as owners and investors.

Both industry and government partners have committed to closing the wealth gap for the economically disadvantaged. Actions such as allocating portions of public funds toward business development opportunities with women and minorities or low-interest loans and development grants might seem sufficient in satisfying goals for inclusion. However, our experience has led us to a different conclusion.

While inclusion efforts such as the aforementioned are absolutely necessary to realize robust participation of women and minorities in business, they are no comparison to the benefit of direct participation in the entrepreneurial growth of an emerging economy – in this case, the solar energy market. However, in order to create successful pathways of participation, business and employment opportunities must be made known to disadvantaged entrepreneurs, financing must be accessible, and guidance in establishing specialized administrative functions must be available. When minority capacity is developed and afforded fair, equitable access to new and complex information pertaining to the solar market, economic development can be substantial and sustainable.

Finally, there is a desperate need to improve the collection, quality, and access to data pertaining to minority and woman-owned businesses in the solar energy market. You're not playing the game if you're not keeping score, and without this critical data, it is impossible to gain a transparent understanding of who is capitalizing on the industry's growth and where opportunities exist for full and equitable market participation.

Terrell Richmond
NYMBUS President, CEO

INTRODUCTION

Groundswell is a District of Columbia-based 501(c)3 organization that builds community power by serving as a nonprofit community solar developer and subscriber management organization. At work in Washington DC, Maryland, Georgia, Illinois, New York, and Hawaii, Groundswell's Share Power™ model opens up solar savings to low-income households. In each neighborhood Groundswell serves, our Share Power™community solar projects connect solar power to economic empowerment.

When we issued our first request for proposal (RFP) for a local community solar project in the District of Columbia, we noticed that there were very few locally-owned, minority or woman-owned solar companies, and hardly any women or minorities were represented on the leadership teams of the solar companies that responded to our RFP. Given the District's very favorable solar policies and the millions of dollars in grant funds that the District Department of Energy and Environment (DOEE) has and continues to invest to provide solar savings to low-income residents, it seemed jarring (and wrong) that the rich diversity of the District of Columbia would be so underrepresented. We wondered whether this would also be true in Baltimore, where we are developing a pioneering community solar project in collaboration with The Economic Empowerment Coalition.

That's why Groundswell engaged NYMBUS to research participation of minority and woman-owned companies in the District of Columbia and Maryland solar marketplace. While we weren't surprised by the findings in light of our own experiences, seeing the data sharpened our disappointment. We are, however, encouraged that there are immediate and measurable steps that policy and industry leaders can take to make sure that the economic benefits of solar are equitably available to everyone at every level of the supply chain; that the market is fair and transparent; and that the solar industry looks like the communities it serves.

Michelle Moore
CEO, Groundswell

Citi Foundation

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Acknowledgements

Groundswell would like to express our appreciation for being among the Citi Foundation's Community Progress Makers in Washington DC. Being a Progress Maker enabled Groundswell to go deeper when we observed inequity in the local solar market through research, Our hope is that by thoughtfully exploring the equity and inclusion issues that face the solar industry, we can help identify opportunities for improvement and encourage the level of engagement necessary from our policy and industry leaders to drive fair and inclusive progress.

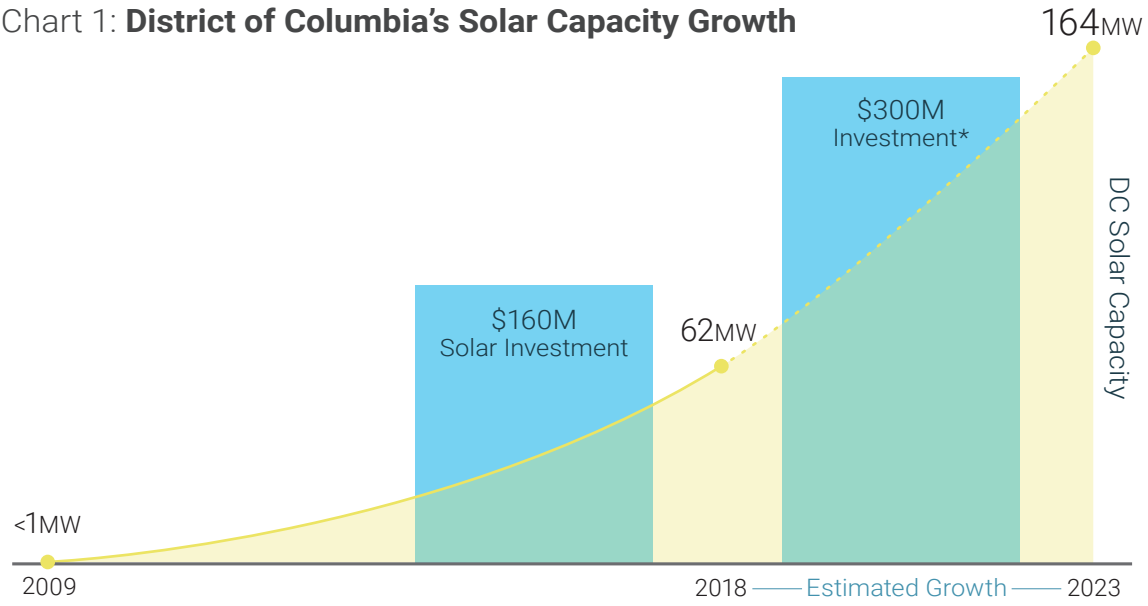
SOLAR EMPOWERS…SOME

The solar marketplace has experienced exponential growth on a global, national, and local scale. Nationally, 4 out of 10 electricity generation jobs were solar jobs in 2017 – more new jobs than any other energy segment of the energy industry.[6] Moreover, since 2012, 1 out of every 100 new jobs in America was created by the solar industry[7] — not just new *energy* jobs, but **all** new jobs in that period were solar jobs. Between 2014 and 2016 alone, solar employment grew by an estimated 86,270 jobs nationwide.[8] Despite an overall national employment decline in the solar industry during 2017, solar employment in the District of Columbia and 29 states continued to grow that year: DC's solar employment in 2017 grew by 10%, to 1,294 total jobs, according to the Solar Foundation.[9]

The national trend has impacted local economies as well. In both the District of Columbia and Baltimore, solar developers, financiers, and solar engineering, procurement, and construction (EPC) firms are shaping a market that is rich with innovation and profitability.

From a practically non-existent base in 2009, the District of Columbia's solar capacity grew to 62MW by the end of 2018 (and grew by a factor of 8 since 2013 alone). This represents an investment of about $160 million to date.[10] DC's solar capacity is expected to increase to 164MW by 2023. Based on expected installation costs and capacity projects, the period 2018-2023 could see an additional $300 million in solar investments in DC.[11]

Chart 1: **District of Columbia's Solar Capacity Growth**



Source: U.S. Solar Market Insight®

6 2018 *U.S. Energy and Employment Report,* National Association of State Energy Officials and Energy Futures Initiative, May 2018 (release Feb. 4, 2018); p. 38 (https://www.usenergyjobs.org/)

7 *National Solar Jobs Census 2017,* The Solar Foundation, available at: SolarJobsCensus.org; p. 9

8 Ibid, p. 12

9 *National Solar Jobs Census 2017,* Appendix A., p. 52

10 Wood Mackenzie, Limited/SEIA *U.S. Solar Market Insight®,"* Solar Energy Industry Association with GTM Research (no known as Wood Mackenzie). District of Columbia-specific data is cited from https://www.seia.org/state-solar-policy/washington-dc-solar; and also https://www.seia.org/sites/default/files/2018-12/Federal_2018Q3_Washington%20DC.pdf. Data from this report is current through Q3, 2018

11 Ibid., Full report, p. 9

Table 1: **Solar Industry: National Employee Demographics by Firm Type and Position**

	UPSTREAM SOLAR FIRMS		DOWNSTREAM SOLAR FIRMS		OTHER SOLAR FIRMS	
Demographic Category	Management Positions	Senior Executive Position	Management Positions	Senior Executive Position	Management Positions	Senior Executive Position
Women	24%	17%	30%	25%	24%	17%
Latino or Hispanic	6%	4%	18%	9%	8%	8%
African American	2%	1%	6%	2%	2%	2%
White	85%	88%	78%	87%	88%	89%
More than One of the Above	5%	5%	3%	4%	3%	2%
Veterans of the U.S. Armed Forces	10%	10%	21%	17%	7%	8%
Older Workers (55+)	23%	32%	21%	40%	23%	34%

Source: *2017 U.S. Solar Industry Diversity Study*, The Solar Foundation, Appendix, Table 1

While the City of Baltimore's solar capacity is less robust than DC's, the State of Maryland's solar market, already more than 1 GW in Q3, 2018,[12] is projected to grow by 974 MW by 2023, according to the Maryland-DC-Virginia Solar Energy Industries Association (MDVSEIA), representing an estimated $ 2.4 billion in solar infrastructure.[13] That's an estimated $2.73B in projected new solar infrastructure – which is great news for local solar companies.

"Empowering practitioners of all backgrounds with the opportunity to contribute to the renewable energy field at all levels is what builds sustainable growth. DC's leadership in developing the blueprint for solar energy is ripe with potential to scale this commitment. As a DC Ward 7 resident, I look forward to seeing an inclusive approach applied to innovative solar development coupled with necessary measuring and reporting standards. "

Brandi Colander
Former United States Department of the Interior
Deputy Assistant Secretary for Land and Minerals Management

12 Solar Energy Industries Association, state profiles, Maryland, Retrieved from: https://www.seia.org/state-solar-policy/maryland-solar

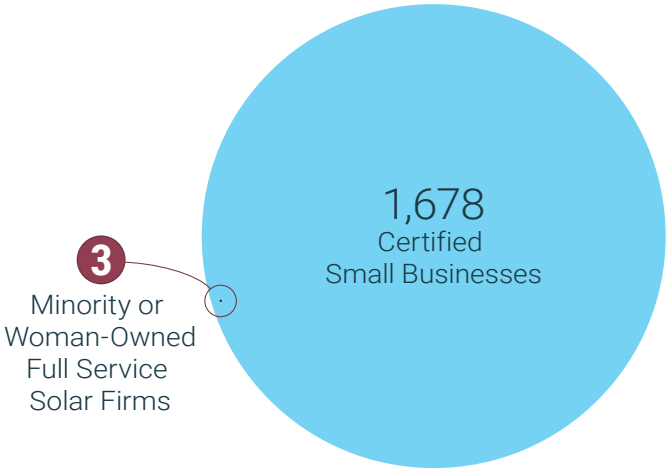
13 MDVSEIA, as drawn from Solar Energy Industries Association, National Solar Database, data downloaded 11/14/2018

Critically, however, minority and woman-owned businesses are grossly underrepresented at every level of the solar supply chain. As a result, the solar industry and its wealth-building economic expansion in the District of Columbia and in Baltimore is not fulfilling its potential to drive equitable economic development. In fact, the level of diversity in the local solar value chain is sparse even compared to solar industry diversity in other states and to the under-representation of minority and woman-owned businesses in other sectors.[14]

Half of the more than 10,000 solar companies in the United States are small firms.[15] This sometimes implies that the firm is a recent start-up. Without adequately equipping women, people of color, Veterans, and LGBTQ potential solar entrepreneurs with the tools and know-how that get them on a path towards full participation in the solar industry, they risk exclusion from the growth in solar opportunities.[16] Of the half of solar companies that are small businesses, only a fraction are led by women and minorities. For example, in the District of Columbia, just 3 out of 1,678 (0.17%) certified small businesses are minority or woman-owned full service solar firms.[17] The diversity gap in Baltimore City is even wider, with only 1 out of 916 (0.11%) certified minority-owned businesses operating as a full service solar firm.[18] By comparison, 237 out of 854 general and electrical contractors are certified minority and woman-owned firms in the District.[19] In Maryland, 77 of the 321 minority and woman-owned owned general and electrical contractors are located in Baltimore City.[20]

Chart 2: **The Diversity Gap**

In the District of Columbia, just 3 out of 1,678 (0.17%) certified small businesses (CBE) are minority or woman-owned (DBE) full service solar firms.



Source: D.C. Government Department of Small and Local Business Development CBE Database

14 *2017 U.S. Solar Industry Diversity Study*, The Solar Foundation. Available at www.TheSolarFoundation.org/diversity Appendix, p.38

15 From Solar Energy Industries Association, Solar Industry Research Data, 2017, retrievable from: https://www.seia.org/solar-industry-research-data

16 Krumholz, N. and Kathryn Wertheim Hexter, editors. (2018). *Advancing Equity Planning Now*; citing Giloth, R, Chapter 7: "The Opportunity Challenge: Jobs and Economic Development," pp. 149 – 164. Ithaca, NY, Cornell University Press

17 *D.C. Government Department of Small and Local Business Development CBE Database* https://dslbd.secure.force.com/public - Data pull November 14, 2018. NGIP codes utilized: 2908200, 9062700, 9062800, 9074000, 9074010, 9096100, 9101600, 9108200, 9108250, 9184100, 9184210, 9251700, 9253100, 9253400, 9254400, 9259500, and 9362800. Categories of businesses filtered for (as defined by the District of Columbia database) included all 8 sub-categories: Local Business Enterprise (LBE), Disadvantaged Business Enterprise (DBE), Longtime Resident Business (LRB), Veteran Owned Business (VOB), Small Business Enterprise (SBE), Development Enterprise Zone (DBZ), Residence Owned Business (ROB), and Local Manufacturing Business Enterprise (LME). Only 3 of the businesses returned were categorized as Disadvantaged

18 State of MD Minority Business Enterprise Directory, https://mbe.mdot.maryland.gov/directory/search_select.asp. Source data downloaded October 30, 2018

19 *D.C. Government Department of Small and Local Business Development CBE Database* https://dslbd.secure.force.com/public - Data downloaded November 14, 2018. Category filters included all NGIP codes listed in note 13, filtering for DBE

20 State of MD Minority Business Enterprise Directory, https://mbe.mdot.maryland.gov/directory/search_select.asp. Search conducted October 30, 2018. NAICS codes utilized: 238210, including 236115, 236118, 236210, 236220 for Baltimore County

The lack of minority participation and impacts on the value chain

The business and technical skills needed to lead electrical contracting firms are similar to skills and structures for solar development firms. However, for employees and professionals to capitalize on the economic opportunities inherent to solar, they must understand the interdependence and sequence of work requirements in the solar project development lifecycle. If policy and industry leaders fail to actively address this disparity, the solar industry and a host of related business and social innovations may perpetuate persistent gender and racial gaps in the economy at large instead of leveraging the emergence of an abundant new source of investment and jobs to deliver on the promise of fair, equitable participation.

The solar industry nationally offers a picture of growth in employment – though with lagging diversity in hiring with persistent proportional underrepresentation among minorities and women. By encouraging increasing numbers and proportions of minority and woman-owned solar businesses, diversity in the solar labor force might also increase.

While the current state of minority and woman-owned business participation in the solar sector is lagging, there are immediate and measurable opportunities to close the gap toward local solar markets that represent the diversity of our communities – at every level of the value chain. These opportunities include:

- Leverage existing municipal programs to mentor minority and woman-owned businesses in adjacent market space, such as general and electrical contracting, to compete in the solar market;
- Improve transparency and accountability by measuring women and minority-business participation in state or municipal RFPs;
- Collaborate with industry, academia, and local nonprofits to incubate women and minority-led businesses that can drive innovation; and
- Maintain momentum and accelerate programs such as DC Solar for All that expand equitable consumer access to solar towards empowering full market participation.

"There is an opportunity for the Maryland State Legislature to establish policies that could stimulate greater levels of investor interest and job creation within community solar."

Lynn Heller Founder/CEO, Climate Access Fund

Table 2: **Electric Power Generation, US Employment 2017**

Technology	Generation	Fuels	Total	% of Total Electricity Generation Jobs	% of Total Generation & Fuels Jobs
Solar	349,725		349,725	41%	19%
Wind	107,444		107,444	13%	6%
Geothermal	7,927		7,927	1%	0%
CHP	27,239		27,239	3%	1%
Bioenergy	12,385	104,446	116,831	1%	6%
Low-Impact Hydroelectric Generation	11,531		11,531	1%	1%
Traditional Hydropower	55,941		55,941	7%	3%
Nuclear	64,743	8,962	73,705	8%	4%
Coal	92,843	74,180	167,023	11%	9%
Natural Gas	66,385	312,964	379,349	8%	20%
Oil/Petroleum	12,407	510,015	522,422	1%	28%
Advanced gas	41,034		41,034	5%	2%
Total Electric Generation Employment	**849,604**	**1,010,567**	**1,860,171**	**100%**	**100%**

Sources: *US. Energy & Employment Report 2018*, page 38, Table 1: Generation and Fuels Employment by Major Energy Technology Application and Detailed Technology Application

Table 3: **Minority And Woman-Owned Businesses (DC) With Wage Data**

Segment	Total Firms	SEIA Reported WMBE	% WMBE	Average Weekly Wage (US DOL BLS)
Engineering, Procurement & Construction	30	7	23%	$1,348
Finance	18	2	11%	$12,587
Legal Services	32	1	3%	$3,705

Sources: U.S. Department of Labor, Bureau of Labor Statistics *2017 State Occupational Employment and Wage Estimates, District of Columbia*; SREC Trade.

Table 4: **Solar Electric Workforce Demographics (%), Q4, 2017**

Demographics	Solar Photovoltaic	Concentrating Solar Power	National Workforce Averages	Maryland PV Solar Jobs	DC PV Solar Jobs
Male	69	67.4	53	77.9	77.9
Female	31	32.6	47	22.1	22.1
Hispanic or Latino	20.4	21	17	8.9	9.5
Not Hispanic or Latino	79.6	79	83		
American Indian or Alaska Native	1.2	1.1	1		
Asian	9.8	9.7	6	3.8	5.8
Black or African American	7.2	6.8	12	9.8	9.7
Native Hawaiian or other Pacific Islander	1.4	1.5	>1	0.2	1.1
White	71.9	73.2	78		
Two or more races	8.5	7.7	2		
Veterans	9.6	7.9	6	6.9	8.5
55 and over	11.4	8.1	23		
Union	3.8	3.5	11		

Sources: *US Energy and Employment Report 2018*, Table 7, Page 48

(MD data) Maryland solar worker demographics: from The Solar Foundation: https://www.solarstates.org/#state/maryland/counties/solar-jobs/2017

(DC data) DC solar worker demographics: from The Solar Foundation: https://www.solarstates.org/#state/district-of-columbia/wards-districts/solar-jobs/2017

DIVERSITY AND INCLUSION IN THE SOLAR ECONOMY: WASHINGTON, DC

Since 2013, solar capacity in the District of Columbia has grown by a factor of eight, to 62MW. Industry experts project that growth will accelerate, with 131 MW of capacity being developed over the next five years.[21] As of 2017, DC had added 1,294 solar jobs and is a national leader in renewable energy policy with one of the richest solar incentive marketplaces in the country. As of April of 2018, there were approximately 3,600 solar energy systems in the District, with a total generating capacity of roughly 62 megawatts.[22] A number of factors make DC among the best markets in the country for solar, including the highest Solar Renewable Energy Credit (SREC) prices in the country, which in January 2019 were priced at $0.34/kWh (the equivalent of $340/MWh) – 36 times higher than the value of SREC in Maryland.[23,24] The local solar market, shaped by DC's progressive energy policies, could make solar energy and technology a "Made in DC" industry that empowers local, diverse entrepreneurs and businesses to thrive.

"The U.S. solar industry generated more than $150 billion in economic activity in 2016 - so there is clearly an abundance of opportunity that should be shared. It's urgent we act now to close the diversity gap and make sure that the growth of the solar industry increases equity and inclusion inclusion, and doesn't replicate the disparities of the old energy economy."

Jigar Shah
President and Co-Founder, Generate Capital

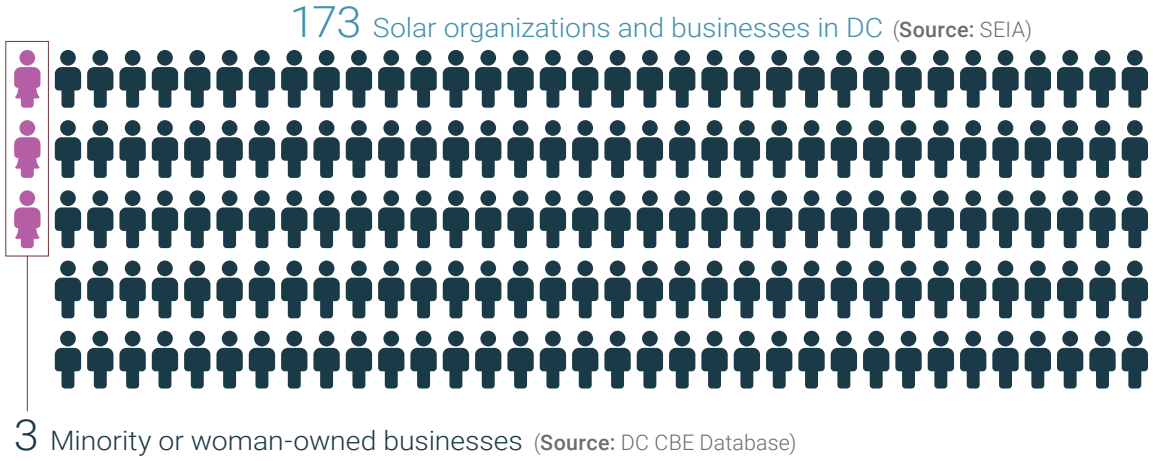
21 Wood Mackenzie, Limited/SEIA *U.S. Solar Market Insight®*," Solar Energy Industry Association with GTM Research (now known as Wood Mackenzie). District of Columbia-specific data is cited from https://www.seia.org/state-solar-policy/washington-dc-solar; and SEIA *State of MD and District of Columbia Forecast Report*. Retrievable in detail to SEIA members only, from: https://www.seia.org/solar-industry-research-data. Data from this report is current through Q3, 2018. Full report; state references p. 19 in Executive Summary

22 US Energy Information Administration, District of Columbia State Profile, available from: https://www.eia.gov/state/print.php?sid=DC EIA cites April 2018 solar capacity totals from the DC Public Service Commission, Report on the Renewable Energy Portfolio Standard for Compliance Year 2017 (May 1, 2018), p. ii, iii. Capacity in 2018, year end, has increased.

23 Solar Renewable Energy Credit (SREC) prices shown as reported January 2019, from: https://www.srectrade.com/srec_markets/district_of_columbia. Current SREC prices are shown per month ONLY in the SolSystems pricing sheet. Current month's pricing is available from: https://www.solsystems.com/srec-customers/state-markets/. In January 2019, SolSystems showed the referenced value of SRECs in DC as: $0.34/kWh (the equivalent of $340/MWh). In Maryland in December, 2018, SREC's were valued at $9.50/MWh. Each month's pricing sheet is removed at the end of the month and replaced by the next month. See: pdf of January 2019 pricing sheet in Appendix A below

24 Value of Electricity: The DC CREF credit rate card for January 2019 shows the referenced value of $0.12/kWh. This value fluctuates per month. The referenced price will be removed from Pepco's website and replaced with the next month's pricing. See: pdf of January 2019 pricing from PEPCO bin Appendix A. The current month's file is always available at: https://www.pepco.com/MyAccount/MyService/Pages/DC/CommunityEnergy.aspx

Chart 3: **Solar Firms in the District of Columbia**



Under-representation of minority and woman-owned businesses, by every measure

In contrast to the velocity of DC's solar market, the levels of diversity and inclusion within it remain slim. To understand the market context within which the District's three certified minority and woman-owned business are operating, we looked to The Solar Energy Industries Association (SEIA) National Solar Database, which surveys the number of solar companies operating in the District of Columbia. We cross referenced that data with the District Government's Certified Business Enterprise reports to gather both certified and self-reported information on minority and woman-owned businesses in the solar sector. According to SEIA's National Solar Database, there are 173 recognized solar organizations and businessess operating in the District of Columbia, however only 80 are commercial solar service providers.[25]

Table 5: **Categories of Solar Related Firms Within the District of Columbia**

DC CBE Database (Solar Category Name)	Commercial Solar Service Providers	Related Fields	DC CBE Database (# of firms)
Engineering	20	Engineering	28
Construction	10	Electrical Contractor	57
Finance	18	Financial Services	30
Legal Services	32	Legal Services	17
Total	**80**		**132**

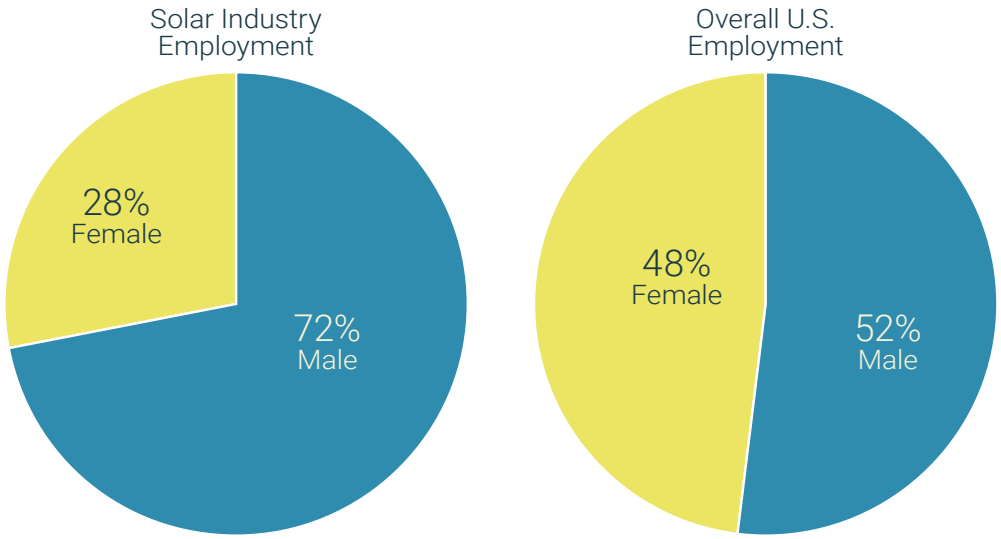
Source: D.C. Government Department of Small and Local Business Development CBE Database

25 Solar Energy Industries Association, National Solar Database, data downloaded 11/14/2018

Minority and woman business participation is higher in lower wage solar segments

While SEIA data indicates a relatively higher level of participation of minority and woman-owned businesses in the DC solar market, these higher levels of participation are concentrated in lower paying segments of the supply chain. Minority and woman-owned business participation in the lower wage solar/electrical contractor segment is 23%, while participation in the much higher wage solar/finance segment is just 11%. [2 out of the 18 firms] See Table 3, above. Businesses that operate at the upper end of the value stream often own assets such as technology patents or solar systems. As such, legal, financial and advanced technical skill sets are in higher demand when compared to trade-based skills such as construction and electrical services. When comparing the average wages of all professions native to solar, those at the upper end of the value stream pay higher wages than those that at the lower end of the value stream. Essentially, a solar firm's position in the market directly impacts their capacity to generate wealth and employ high wage earning professionals.

Chart 4: **U.S. Diversity in the Solar Industry**



Source: The Solar Foundation, *2017 U.S. Solar Industry Diversity Study*, pp 24-25

There is capacity available to level the scales

Compared to the solar market, the number of participating minority and woman-owned firms in adjacent segments is much larger, representing untapped capacity to quickly increase minority and woman-owned participation in the rapidly-growing solar industry. For example, the SEIA National Solar Database mirrors the DC Department of Small and Local Business Development's CBE database's count of only three Certified Disadvantaged Business Enterprise (DBE) solar companies in DC. Comparatively, there are 132 certified DBE firms which provide design, electrical and structural engineering and related construction services in DC[26] – representing immediate capacity to train and mentor new businesses to compete in DC's thriving solar market.

26 D.C. Government Department of Small and Local Business Development CBE Database; Search conducted November 14, 2018. Accessible at: https://dslbd.secure.force.com/public

"Historically Black Colleges and Universities must increase their focus on research and development to prepare students for the business and employment opportunities within solar."

Anthony Robinson
Chair of The Economic Empowerment Center

DIVERSITY AND INCLUSION IN THE SOLAR ECONOMY: BALTIMORE, MD

Because it is generally more cost-efficient to install solar photovoltaic (PV) in larger projects, using flat tracts of open land rather than smaller rooftop installations, many utility-scale solar projects within the State of Maryland have utilized areas outside the City of Baltimore to meet the State's solar energy goals. The City of Baltimore, however, is leading innovation in two emerging areas – community solar and energy storage – both of which offer Baltimore-based businesses the potential to build expertise and capacity to compete in the larger state-wide market, which is projected to add 974 MW of capacity in the next five years with estimated investment of $2.5 billion.[27] The City of Baltimore's nationally-leading Resilience Hub program, combined with approximately $185 million in Maryland Energy Administration (MEA) grant funding for energy storage and Maryland's emerging community solar pilot program form the foundation of a potential economic development strategy that could lift more minority and woman-owned businesses into full solar industry participation and market leadership.

Table 6: **Maryland Solar Business by Industrial Classification, with Wage Data**

Segment	Total Firms	SEIA Reported WMBE	% WMBE	Average Weekly Wage (US DOL BLS)
Engineering	7	2	29%	$2,130
Construction	12	1	8%	$648
Finance	2	1	50%	$2,582
Legal Services	2	0	0%	$2,482

Sources: Solar Energy Industry Association, State of Maryland, and also U.S. Department of Labor, Bureau of Labor; Statistics 2017 State Occupational Employment and Wage Estimates, State of Maryland

27 Solar Energy Industries Association, State of Maryland (2018). Retrievable from: https://www.seia.org/state-solar-policy/maryland-solar

Maryland's woman and minority businesses: Even more under-represented in solar than in other sectors

In 2016, the State of Maryland commissioned a business disparity study that indicated that African Americans and non-minority women experienced the highest disparity ratios in overall procurement activity. For example, at that time women and minority firms made up 19% of construction firms, 13% of Architectural and Engineering firms and less than 1% of solar developers in the State of Maryland.[28] Additionally, only 3% of the certified woman and minority owned firms in Baltimore were recognized by SEIA as solar companies.[29] The Maryland disparity study reflects more than mere societal discrimination – it demonstrates the impact discrimination in the marketplace has on the viability of entrepreneurial opportunities available to minorities and women.[30]

Table 7: **Diversity In The Solar Industry In Comparison To Other Industries**

Demographics	Solar	Overall U.S. Employment	Construction	Manufac-turing	Oil and Gas Extraction*	Utilities	Information
Female	28%	48%	18%	29%	17%	24%	39%
Male	72%	52%	82%	71%	83%	76%	61%

Demographics	Solar	Overall U.S. Employment	Construction	Manufac-turing	Oil and Gas Extraction*	Utilities	Information
Hispanic/Latino	17%	16%	18%	14%	16%	9%	10%
Non-Hispanic	83%	84%	82%	86%	84%	91%	90%

Demographics	Solar	Overall U.S. Employment	Construction	Manufac-turing	Oil and Gas Extraction*	Utilities	Information
Asian	9%	5%	2%	6%	2%	3%	7%
Black or African American	7%	13%	7%	10%	5%	9%	11%
White	74%	79%	88%	81%	90%	85%	79%
More the One Race	8%	2%	2%	1%	1%	1%	2%

Source: The Solar Foundation, 2017 U.S. Solar Industry Diversity Study, pp 24-25

28 Wainright, Jon. NERA Economic Consulting, for The State of Maryland and the Maryland Department of Transportation. *Business Disparities in the Maryland Market Area*, February 8, 2017. Table 3.20. Detailed M/WBE Availability Percentages—Services (All Contracts) (Dollars Awarded), p. 123. See also: Table C2. Utilization, Availability and Disparity Results for State of Maryland Contracting, Overall and by Contracting Category–All Contracts (Dollars Paid), p. 28. Available at: http://www.mdot.maryland.gov/newMDOT/MBE/Documents/2018%20DBE%20Disparity%20Study%20Vol%201.pdf

29 Solar Energy Industries Association, State of Maryland (2018), Retreivable From: https://www.seia.org/state-solar-policy/maryland-solar

30 *Business Disparities in the Maryland Market Area*, Ibid. See Chapter IV. Market-Based Disparities in Business Formation and Business Owner Earnings, pp. 121-169.

"As a relatively new and growing sector, the solar industry has a unique opportunity to create space for women and minorities and to ensure fair and equitable participation from an early stage."

Maura Brophy
Director of Transportation and Infrastructure, Federal City Council
Managing Director, Infrastructure DC

There is an opportunity to both serve and engage the community

The Maryland Energy Administration (MEA) leads the charge for the state's pursuit of renewable energy. The State has supported the development of Baltimore as one of several Resiliency Hubs and committed significant resources toward building its sustainability. The Resiliency Hub program incentivizes the creation of resilient solar storage systems that reduce electric bills by using solar to offset electricity usage and using batteries to reduce utility demand charges. MEA is seeking developers and engineering firms to purchase and install solar panels, deploy energy storage (e.g., a battery), and provide for critical functions. Resiliency Hubs are being created to provide an immediate resource to assist residents in the recovery from (1) natural emergency events such as high heat, flooding, hurricanes, coastal storms, earthquakes, and high wind conditions, (2) man-made disasters such as fires, explosions, or civil unrest or (3) large-scale service outages.[31]

Table 8: **Baltimore-based Minority and Disadvantaged Businesses**

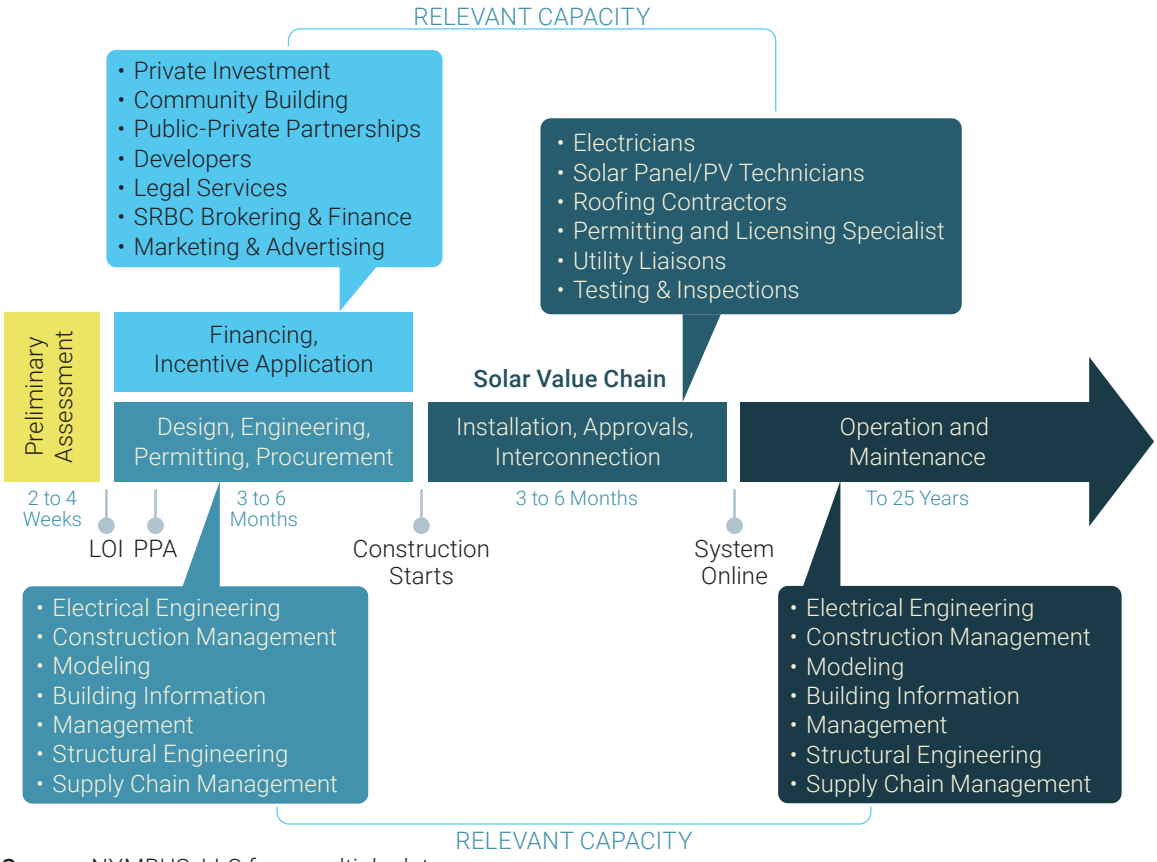
Segment	MD MBE Database # firms in Baltimore	Self-Reported Solar Firms (SEIA Database)	Total MWBE within Solar (SEIA Database)	% MWBE Solar in Baltimore (SEIA Database)
Engineering	9	7	2	28%
Construction	131	12	1	8%
Finance	8	2	1	50%
Legal	7	2	0	0%

Source: State of Maryland Minority Business Enterprise Database, from October 30, 2018.

Resiliency Hubs not only create sustainable energy contingencies, but they also intrinsically create robust business and employment opportunities. Solar drives demand for knowledgeable workers in fields such as electrical engineering, applied mathematics, and data analytics. There is no shortage of women and minorities in the City of Baltimore who possess expertise

31 Maryland Energy Administration, 'Resiliency Hub,' general program description. Available at: https://energy.maryland.gov/Pages/Resiliency-Hub.aspx and also: https://microgridknowledge.com/resiliency-hub-microgrids-maryland/

Chart 5: **Solar Capacity Alignment, With And Related Industries**



Source: NYMBUS, LLC from multiple data sources.

in these and other related fields. Academic centers such as Johns Hopkins University, Coppin State University, and Morgan State University (MSU) are world-renowned. For example, MSU's architectural and engineering programs rank 2nd and 4th among all Historically Black Colleges and Universities (HBCU) nationally. In 2017 MSU graduated 79 individuals with undergraduate degrees in electrical engineering alone.[32] The University of Maryland-College Park Clark School of Engineering hosts three undergraduate student societies for Black, Hispanic, and Women engineering students and graduated more than 1,000 women (24.5% of undergraduate enrollment) in 2018.[33] There is both existing and burgeoning professional talent ready to be utilized. Despite this capacity, inclusion of many women and minority candidates is lagging and career growth and wage levels lag those of males and non-minorities in the solar industry.[34]

Maryland State Agencies, local governments, and cities most commonly use the MD Dept of Transportation (MDOT) *Minority Business Enterprise Directory* to track and locate minority and woman-owned firms. Table 8 above[35] depicts the cohorts of Baltimore-based firms that are recognized by the State of Maryland as minority and disadvantaged businesses.

32 Morgan State University, Office of the Provost, 2017 academic year report, available at: https://www.morgan.edu/office_of_the_provost/academic_units/office_of_institutional_research/national_rankings.html

33 From the University of Maryland, Clark School of Engineering, "Facts and Figures," available at: https://eng.umd.edu/facts-and-figures

34 The Solar Foundation, *2017 U.S. Solar Industry Diversity Study*, pp. 17-18

35 State of Maryland *Minority Business Enterprise Database*, available at: https://mbe.mdot.maryland.gov/directory/

"It is virtually impossible for small firms to trade SREC's directly with utility companies…there are high technical and capitalization requirements that prevent small and minority businesses from participating as EPC's and developers."

Pranay Kohli CEO, Amidus, LLC

UNDERSTANDING THE BUSINESS OF SOLAR

Solar market complexity as a barrier to new market entry for minority and woman-owned businesses

Minority and woman-owned businesses are under-represented in both the District of Columbia and Baltimore solar markets, creating the very real risk that the growth of the solar industry in our region will only amplify historic racial and gender gaps in wealth and economic opportunity. Existing minority and woman-owned business capacity in both cities combined with unique local market opportunities create the potential for a powerful course correction that could lead to greater equity and representation. However, the complexity of the solar market is a barrier to market participation that requires both support and access to education and mentorship as a means for correction. Chart 5 above,[36] describes the timing and type of skill sets that are required for solar development.

The solar market is fundamentally shaped by a dynamic policy environment that includes Federal, state, and local legislation and incentives; applicable public service commission regulation; utility service territory tariffs, rate structures and zoning laws; local and wholesale utility energy prices; complex financing regulations; local permitting and zoning requirements; and complex legal contracting infrastructure. Taken together, each state's solar market has a high cost for new market entry. This complexity, while profitably manageable for experienced businesses with existing partnership networks and ready supplies of capital, can precipitate a dense fog of uncertainty for new entrants and disadvantaged entrepreneurs. Despite possessing skill sets that are in demand throughout the solar value chain, the mechanics of local solar marketplaces would not be clearly visible to new entrepreneurs including minorities and women who may lack direct solar industry experience and networks.

"There are significant opportunities for small businesses in the District to capitalize on new activity that has been spawned by the District Government's commitment to make clean and reliable power accessible to all."

Bill Updike Principal, Integral Group

36 Developed by NYMBUS, LLC from combined data sources, including SEIA. US Department of Labor, and others

Demystifying the business of solar and the role SRECs play

Fundamental to succeeding in the solar industry is understanding the value and function of SRECs, particularly in the DC marketplace, which boasts the highest SREC values in the nation.

Every solar project in the District of Columbia and Maryland has at least three sources of revenue: Federal tax credits, electricity sales, and Solar Renewable Energy Credits (SRECs). SRECs are state-level incentive payments for every MWh of solar energy produced. States have different approaches for valuing SRECs; some states have preset values per SREC, whereas in others like DC and Maryland, SREC values are determined by supply and demand. While SRECs in Maryland do not currently have significant value, SRECs in DC are worth vastly more than the electricity generated by a solar project. This stems from the design of the District's Renewable Portfolio Standard (RPS) which has aggressive renewable sourcing goals, a "carve out" specifically for solar energy, and high Alternative Compliance Payments, which effectively become the maximum price a utility will pay for an SREC. Additionally, solar installation in the District is lagging behind the volume needed to meet the RPS requirements in the designated time frame. Taken together, the District's demand for solar is high, and supply is low, thereby driving up the value of DC's SRECs compared to other markets and compared to the value of the electricity itself. To illustrate this point, a kWh of solar electricity produced in DC by a residential customer in January 2019 is valued at $0.12[37] whereas the SREC associated with that same kWh of solar electricity in January 2019 is valued at $0.34.[38]

Understanding how SRECs work, how SRECs impact the solar project economics, who owns the SRECs, how to sell them, and how to maximize their value – is just one example of the complexity that minority and woman-owned businesses must understand and navigate in order to balance opportunity with policy decisions.

Understanding policy and regulatory opportunities and risks

Solar market opportunities are fundamentally shaped by state and local policy because energy is a highly regulated market in the United States. From the market impact on SREC pricing, to raising renewable portfolio standard (RPS) and solar goals, to new grant programs to deploy advanced solar and energy storage systems – changes to existing and new renewable energy policies can have immediate and lasting impacts on business planning, profitability, and performance.

37 https://www.pepco.com/MyAccount/MyService/Documents/PDCCREF-Rate%20Card%20-%20January%202019.pdf

38 DC SREC pricing for January 2019; https://www.solsystems.com/wp-content/uploads/2019/01/Sol-Systems-Pricing-January-2019.pdf

A CALL TO ACTION

IMMEDIATE AND MEASURABLE STRATEGIES TO MOVE THE NEEDLE

As leaders in both Baltimore and the District of Columbia advance potential avenues for equitable and inclusive wealth, the solar industry provides rich business opportunities and pathways that can empower groups previously shut out. The goal of this report is to engage state and local governments, community leaders, industry professionals, professional associations, the media, academia, and community members themselves to recognize that we are at an intersection of opportunity. Collectively, we need to take the necessary actions to make sure growth in the solar industry demonstrates increased equity and inclusion.

Measure and Report: Data Collection

As noted in the description of the research methodology supporting this report, data on minority and woman-owned businesses is highly fragmented. In order to create a strong foundation for setting goals and measuring progress, the District of Columbia and Baltimore, working with industry partners, should implement a consistent set of measures and associated methodologies for assessing solar market participation by minority and woman-owned businesses, including standardized data collection protocols.

Set Minority Utilization and Measurable Participation Goals

Form a government and industry partner coalition to increase the participation of minority and woman-owned contractors and suppliers, including setting measurable participation goals. By using a combination of compliance requirements and incentives, a coalition could both promote and access the untapped capacity in the minority and woman-owned business supply chain. In the State of Maryland and the District of Columbia, construction projects that use public funds already have minority and woman-owned business goals, so extending this approach to the solar industry would be aligned with existing programs.

Sustainable Infrastructure Finance Academy

One promising model for increasing diversity is offered by Sustainable Infrastructure Finance Academy. This nonprofit organization is dedicated to driving diversity and expanding professional opportunities for diverse new and emerging leaders in the sustainable infrastructure finance sector. Programs include a yearlong Fellowship program dedicated to developing new, diverse leadership in infrastructure finance and a Workshop series focusing on engagement and recruitment of new thinkers into the field.

SUSTAINABLE INFRASTRUCTURE FINANCE ACADEMY

"With the abundant opportunity in today's solar economy, we desperately need to expand opportunities for experiential learning and mentorship throughout the value chain so that minorities and women not only 'move in' to the industry, but stay engaged and 'move up' in order to realize the wealth-creating opportunities that exist."

Trenton Allen
Founder and CEO, Sustainable Capital Advisors and Founder, Sustainable Infrastructure Finance Academy

Expand Awareness of the Solar Business Model

The District of Columbia and Baltimore each offer extraordinary opportunities to build a profession, build a business, and build wealth in the solar industry. Proudly evangelizing these entrepreneurial and employment opportunities to a diverse community of potential new solar market entrants – with a focus on existing minority and woman-owned businesses in adjacent sectors – will help build a more diverse pipeline of solar market leaders. Not every minority or female electrician, engineer or financial executive will want to become a solar contractor or professional, but some will.

Increase Entrepreneurial Capacity through Mentorship

Solar specific mentor-protégé programs must be designed to link new entrants to solar with larger firms. Mentorship would be a mechanism to address both the technical and business nuances that may be elusive otherwise. New solar market entrants don't just need training, they need an active network. A mentor-protégé program represents an opportunity for industry collaboration in which existing companies can mentor emerging minority and woman-owned businesses through subcontracting.

Explore Launching Innovation Centers

DC's solar market leadership and Baltimore's Resiliency Hub program are leading the nation. Working in collaboration with local academic and research institutions and with local utilities, the region's market leadership could be coalesced into one or multiple innovation hubs to foster entrepreneurship and connect emerging minority and woman-owned businesses to business development opportunities associated with utility and university supply chains.

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> *The BNEF report covers electricity generation and related industries and technologies, not employment or ownership trends. From the public report, p.1: "Focusing on the electricity system, the New Energy Outlook (NEO) combines the expertise of over 65 in-house country and technology-level specialists in 12 countries to provide a unique assessment of the economic drivers and tipping points that will shape the sector to 2050."*

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Publication note: "Our coverage in the U.S. Solar Market Insight reports includes 43 individual states and Washington, D.C. However, the national totals reported include all 50 states, Washington, D.C. and Puerto Rico.

Detailed data and forecasts for 43 states and Washington, D.C. are contained within the full version of this report, available at www.greentechmedia.com/research/ussmi" This is a quarterly publication of Wood Mackenzie, Limited (formerly known as GTM Research) and the Solar Energy Industries Association (SEIA)®.

APPENDIX A
SREC PRICING SHEETS (STATIC, PER MONTH)

January 2019: SREC Trades, SolSystems Pricing

SREC Certification (Technology)	Sol Annuity 3 ($/SREC)	Sol Annuity 5 ($/SREC)	Sol Combo 10 ($/SREC)	Sol Upfront 10+ ($/kW)	Sol Brokerage Market Price ($/SREC)
Delaware (PV)	-	-	-	-	$7 for 2018
DC (PV & ST)	$330	$315	$325/3-year $150/7-year	$1,250/kW (15 year)	$340 for 2018
Indiana (PV)	-	-	-	-	$11 for 2018
Kentucky (PV)	-	-	-	-	$11 for 2018
Maryland (PV & ST)	$8	-	-	$50/kW (15 year)	$10 for 2018
Massachusetts SREC I (PV)	$285	$275	-	-	$410 for 2018 Option 3
Massachusetts SREC II (PV)	$220	$210	$220/3-year $150/7-year	Custom Quote	$335 for 2018
Michigan (PV)	-	-	-	-	$11 for 2018
New Jersey (PV)	$170	$150	$160/3-year $50/7-year	$550/kW (10 year)	$225 for 2019
Ohio (PV)	-	-	-	-	$11 for 2018
Pennsylvania (PV)	-	-	-	$50/kW (15 year)	$6 for 2019
PJM Tier I REC (PV)				$20/kW	$5 for 2018

Please Note

- Sol Annuity 3 has a 3 year term.
- Sol Annuity 5 has a 5 year term.
- Sol Annuity 10 has a 10 year term.
- Sol Upfront 5 has a 5 year term.
- Sol Upfront 10 has a 10 year term.
- Sol Upfront 15 has a 15 year term.
- Sol Combo 10 has a 10 year term.
- A dash ("-") indicates that a service is not currrently offered for new customers.

DC CREF CREDIT RATE CARD FOR JANUARY 2019

Price Key	Price Name	Schedule	8/1/2018	8/13/2018	9/1/2018	10/1/2018	11/1/2018	12/1/2018	1/1/2019
PDRSCREFD	PDRS CREF Distribution Price	R, RAD-R, R-MM, AE, RAD-AE, AE-MM, RTM	-$0.04852720	-$0.04680720	-$0.04681920	-$0.05845720	-$0.04946520	-$0.04950820	-$0.04899020
PDEGCREFD	PDEG CREF Distribution Price	GS-ND	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000
PDEBCREFD	PDEB CREF Distribution Price	GSLV, GS3A, GTLV, GT3A, GT3B	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000
PDRSCREFT	PDRS CREF Transmission Price	R, RAD-R, R-MM, AE, RAD-AE, AE-MM, RTM	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000
PDEGCREFT	PDEG CREF Transmission Price	GS-ND	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000
PDEBCREFT	PDEB CREF Transmission Price	GSLV, GS3A, GTLV, GT3A, GT3B	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000	-$0.00560000
PDRSCREFG	PDRS CREF Generation Price	R, RAD-R, R-MM, AE, RAD-AE, AE-MM, RTM	-$0.06035190	-$0.06035190	-$0.06102660	-$0.06233670	-$0.06821590	-$0.06896810	-$0.06872910
PDEGCREFG	PDEG CREF Generation Price	GS-ND	-$0.06035190	-$0.06035190	-$0.06102660	-$0.06233670	-$0.06821590	-$0.06896810	-$0.06872910
PDEBCREFG	PDEB CREF Generation Price	GSLV, GS3A, GTLV, GT3A, GT3B	-$0.06035190	-$0.06035190	-$0.06102660	-$0.06233670	-$0.06821590	-$0.06896810	-$0.06872910
PDRSCREFA	PDRS CREF Admin Price	R, RAD-R, R-MM, AE, RAD-AE, AE-MM, RTM	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000
PDEGCREFA	PDEG CREF Admin Price	GS-ND	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000
PDEBCREFA	PDEB CREF Admin Price	GSLV, GS3A, GTLV, GT3A, GT3B	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000	$0.00000000

Source: https://www.pepco.com/MyAccount/MyService/Pages/DC/CommunityEnergy.aspx

CREF CREDIT RATE

	BASED ON GS-LV-ND FOR SUPPLY AND GS-ND FOR DISTRIBUTION							
	BILLING MONTH OF							
	AUGUST 2018	AUGUST 13, 2018	SEPTEMBER 2018	OCTOBER 2018	NOVEMBER 2018	DECEMBER 2018	JANUARY 2019	Authority
Generation								
- All kWh	$ (0.05833000)	$ (0.05833000)	$ (0.05833000)	$ (0.05833000)	$ (0.06394000)	$ (0.06394000)	$ (0.06394000)	Tariff Page No. R-41.3
- Administrative Charge	(0.00450000)	(0.00450000)	(0.00450000)	(0.00450000)	(0.00450000)	(0.00450000)	(0.00450000)	Tariff Page No. R-41.3
- Procurement Cost Adjustment	0.00247810	0.00247810	0.00180340	0.00049330	0.00022410	(0.00052810)	(0.00028910)	Tariff Page No. R-41.8
Total Generation	$ (0.06035190)	$ (0.06035190)	$ (0.06102660)	$ (0.06233670)	$ (0.06821590)	$ (0.06896810)	$ (0.06872910)	
Transmission								
All kWh	$ (0.00560000)	$ (0.00560000)	$ (0.00560000)	$ (0.00560000)	$ (0.00560000)	$ (0.00560000)	$ (0.00560000)	Tariff Page No. R-41.3
Distribution								
- All kWh Charge	$ (0.03125000)	$ (0.03125000)	$ (0.03125000)	$ (0.04173000)	$ (0.03266000)	$ (0.03266000)	$ (0.03266000)	Tariff Page No. R-6
- Bill Stabilization Adjustment	(0.00489800)	(0.00489800)	(0.00491000)	(0.00606800)	(0.00562600)	(0.00566900)	(0.00515100)	Tariff Page No. R-49
Residential Aid Discount Surcharge	(0.00076500)	(0.00076500)	(0.00076500)	(0.00076500)	(0.00076500)	(0.00076500)	(0.00076500)	Tariff Page No. R-46
Administrative Credit	-	-	-	-	-	-	-	Tariff Page No. R-42
Energy Assistance Trust Fund	(0.00023220)	(0.00023220)	(0.00023220)	(0.00023220)	(0.00023220)	(0.00023220)	(0.00023220)	Tariff Page No. R-48
Sustainable Energy Trust Fund	(0.00161200)	(0.00161200)	(0.00161200)	(0.00161200)	(0.00161200)	(0.00161200)	(0.00161200)	Tariff Page No. R-47
Public Space Occupancy Surcharge	(0.00207000)	(0.00207000)	(0.00207000)	(0.00207000)	(0.00207000)	(0.00207000)	(0.00207000)	Tariff Page No. R-33
Delivery Tax	(0.00770000)	(0.00770000)	(0.00770000)	(0.00770000)	(0.00770000)	(0.00770000)	(0.00770000)	Tariff Page No. R-32
EDIT Credit * - 5 Year	-	0.00039000	0.00039000	0.00039000	0.00027000	0.00027000	0.00027000	Tariff Page No. R-55
EDIT Credit * - 10 Year	-	0.00133000	0.00133000	0.00133000	0.00093000	0.00093000	0.00093000	Tariff Page No. R-55
Total Distribution	$ (0.04852720)	$ (0.04680720)	$ (0.04681920)	$ (0.05845720)	$ (0.04946520)	$ (0.04950820)	$ (0.04899020)	
CREF CREDIT RATE								
Residential Customers	$ (0.11447910)	$ (0.11275910)	$ (0.11344580)	$ (0.12639390)	$ (0.12328110)	$ (0.12407630)	$ (0.12331930)	
Commercial Customers	$ (0.06595190)	$ (0.06595190)	$ (0.06662660)	$ (0.06793670)	$ (0.07381590)	$ (0.07456810)	$ (0.07432910)	

* Excess Deferred Income Tax Credit

NYMBUS

NYMBUS is a small, minority-owned management consulting firm, providing strategies, analysis and process improvements for public-private value streams.

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