

# Tax Cuts, Jobs, and Distributed Energy: Leveraging Opportunity Zones for Equitable Community Solar in the D.C. Region

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## Abstract

*Federally designated Opportunity Zones (OZs) can serve a key function in meeting the United States' climate and energy goals while spurring economic growth and upward mobility for low-income groups. However, the unclear eligibility criteria and cross-jurisdictional nature of the 2017 Tax Cuts and Jobs Act complicates its implementation when maximizing co-benefits is a priority. This capstone seeks to capture the ways in which federally designated OZs can be utilized to achieve equity-focused clean energy outcomes in the Washington, D.C.-Maryland-Virginia region. In the few years since the legislation was implemented, jurisdictions have tested its boundaries to create additional positive outcomes for constituents and the natural environment. Utilizing existing climate plans and clean energy infrastructure in the District of Columbia (D.C.) as a case study, the author argues that Opportunity Zones can and should serve as a vehicle to achieve our region's climate goals. This article recommends policy changes to resolve barriers to entry and encourage community-invested solar projects that reduce utility costs, create jobs, and provide value to investors.*

## Introduction

Qualified Opportunity Zones (QOZs), as defined in the 2017 Tax Cuts and Jobs Act, provide local governments the opportunity to spur equitable investments in low-income communities by allowing jurisdictions to designate 25 percent of low-income census tracts for capital gains tax breaks (IRS, n.d.). The successes and limitations of the 2017 Tax Cuts and Jobs Act have yet to be fully explored in the program's 4 years and with broad implementation. Many municipalities have continued to grapple with the realities of climate change and its impact on our infrastructure systems. To study this complicated issue for cities and their residents more holistically, this article focuses on the potential to pair solar incentives with Opportunity Zones in the D.C. metropolitan

region. When Opportunity Zones are paired with local clean energy incentives and creative financing mechanisms, it is possible to achieve the economic development goals of the QOZ program while also investing in our collective climate future.

Our present moment requires a swift move from extractive and outdated fossil fuel infrastructure toward distributed renewable clean energy systems that benefit the region's communities and environment as well as reinforce its resilience to storm damage and cyberattacks on the grid. The D.C.-Maryland-Virginia region, hereafter referred to as the D.C.-MD-VA metropolitan region, has grappled with meeting its energy needs as its energy production system has had to adapt to market forces. This article is timely because of the ambiguity of the QOZ program regulations and the breadth and depth of potential social solutions for which it can assist. Pairing existing incentives and tweaking policies to reduce barriers can open the door to a more equitable clean energy future for all.

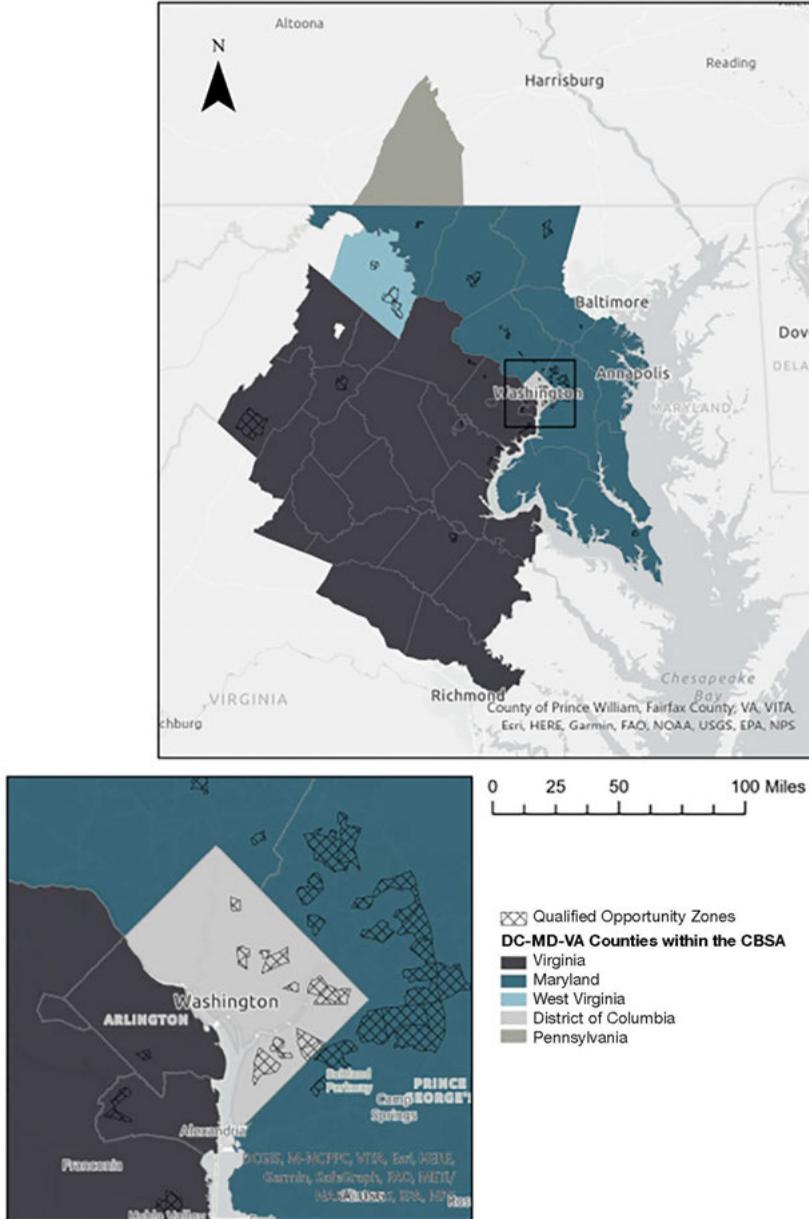
## **Clean Energy and the Local Policy Landscape**

Although research has been conducted on tax incentives relating to solar energy and Opportunity Zones separately, little has been done to pair these two opportunities. At the time of this article's publishing, the legislation creating the federal Opportunity Zone program has only been in effect for 4 years; however, the program's tax incentives are fully realized after 10 years of investment. On the other hand, considerable attention has been paid to the proliferation of distributed renewable energy sources as technology has improved, costs have been cut, and policies have been implemented.

The purpose of including Opportunity Zones in the 2017 Tax Cuts and Jobs Act is to promote economic development through long-term private investment in low-income census tracts. Once the law was enacted, investors were encouraged to reinvest capital gains into a census tract given the QOZ federal designation (see exhibit 1) (Cohen and Haradon, 2018). The Metropolitan Washington Council of Governments (MWCOCG) has designated broader low-income areas of the region similarly through its Equity Emphasis Areas as part of its environmental justice analysis for the Visualize 2045 long-range transportation plan (exhibit 2).

**Exhibit 1**

QOZs in D.C.-Maryland-Virginia-West Virginia CBSA and Jurisdictional Boundaries

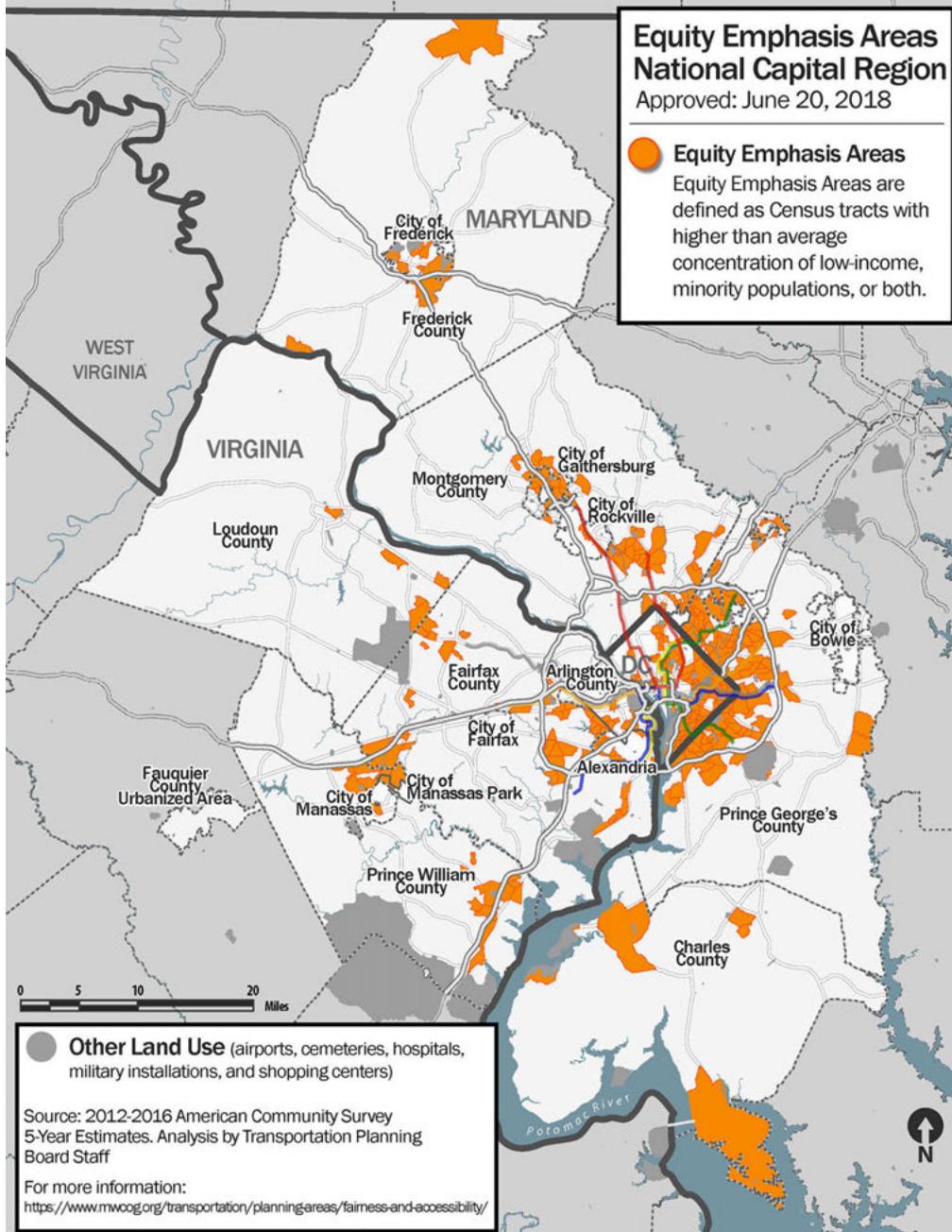


CBSA = Core Based Statistical Area. QOZs = Qualified Opportunity Zones.

Sources: Maps created by the author; County Boundaries provided by West Virginia Department of Transportation, University of Virginia, and Maryland Department of Transportation; CBSA provided by the U.S. Census Bureau; Opportunity Zones data courtesy of the U.S. Department of the Treasury

**Exhibit 2**

MWCOG Approved Equity Emphasis Areas



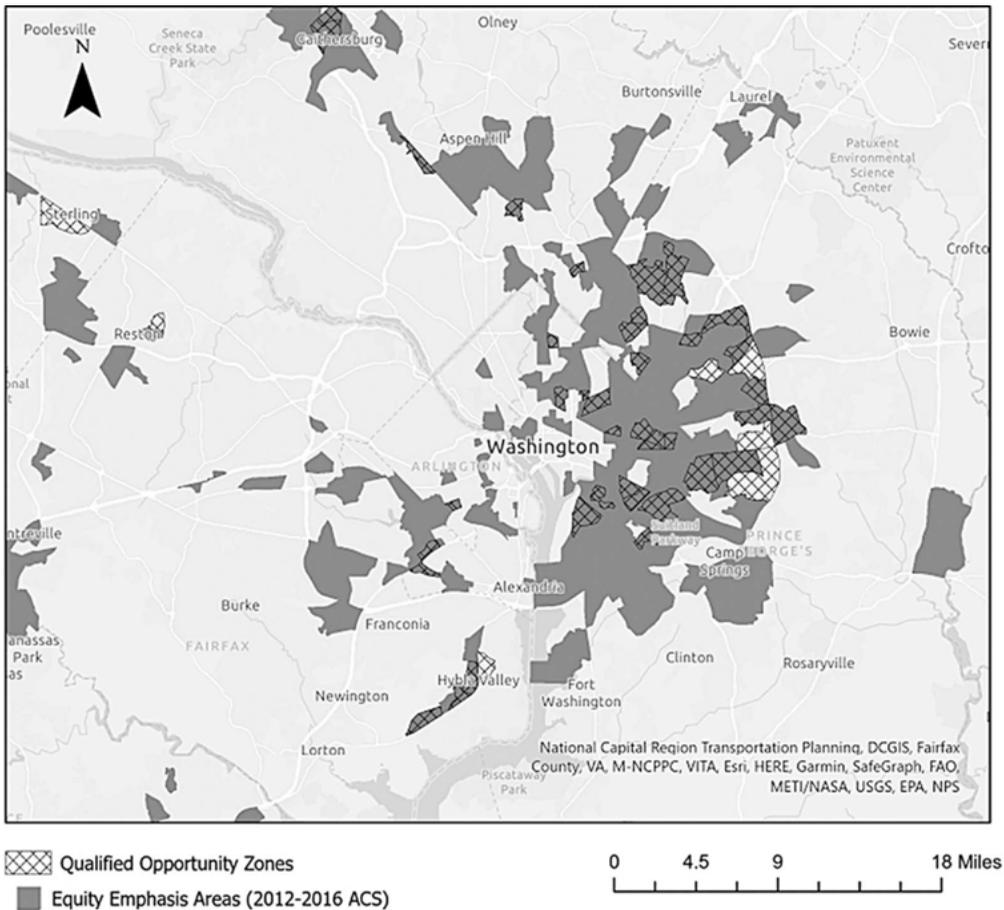
MWCOG = Metropolitan Washington Council of Governments.

Source: Metropolitan Council of Governments Transportation Planning Board. 2018. Washington, D.C.. <https://www.mwco.org/assets/1/6/Region.pdf>

For a census tract to be considered a QOZ, the states, the District of Columbia, and other U.S. possessions nominate the tracts for designation. The tracts then get approved by the U.S. Treasury Department, whereas the Equity Emphasis Areas rely on additional demographic factors such as race and age (Cohen and Haradon, 2018). Comparing these two policy objectives can be helpful in assessing how federal and local priorities are aligned (exhibit 3).

### Exhibit 3

#### Opportunity Zones Compared with Equity Emphasis Areas



Sources: Map created using ArcGIS online, data clipped to CBSA boundaries; Opportunity Zones data courtesy of the U.S. Department of the Treasury; Equity Emphasis Areas provided by GIS@MWCO

When it comes to clean energy investments, development generally can be accomplished through the developer creating a Qualified Opportunity Fund (QOF). In this case, the QOF would provide developers with additional sources of investment capital and more access to ideal clean energy sites (Jewett, 2019). Because the program is so new and formal guidance about the affected parcels outside the OZ designation has been open ended, combining incentives with other renewable energy programs creates problems for tax planning and inefficiencies due to deduction limits

(Jewett, 2019). Outside the Opportunity Zone program exist a variety of incentives meant to spur clean energy deployment. Many of these incentives are focused on barriers to market entry; such incentives include tax deductions/credits, rebates for materials, grants, and performance-based incentives. It is important to note that these incentives can often be utilized for adjacent technologies, such as energy storage and investments into energy efficiency, both of which can further the energy savings and contribute to achieving additional green building objectives. Those efforts also benefit low-income census tracts, which historically spend a higher proportion of their income on energy.

From a local policy standpoint, D.C. is expected to save an estimated \$45 million on the city government's electric bills over the next 20 years, thanks to one such agreement (Hauslohner, 2015). When clean energy and energy efficiency incentives are passed along to utility consumers on a larger scale, communities can benefit by developing new industries, improved livelihoods through energy access and lower pricing in low-income communities, and broadly expanded economic development for the D.C.-MD-VA region. Bundled incentives do the best job of maximizing these benefits to investors and consumers at all levels (Dinçer, 2011). The scope of this study is restricted to photovoltaic (PV) power systems for ease of comparison; ease for combination with other community benefits, such as affordable housing or energy storage; and reliability of data for measuring solar radiation levels and sunshine hours, which are imperative for the design of a solar energy conversion system (Dinçer, 2011). Over the past decade, the distribution of PV solar arrays has increased significantly because of increasing retail energy costs throughout the country, the decrease in the costs associated with installation, and a growing carbon trading and renewable energy credit market throughout the country (Varghese and Sioshansi, 2020). When PV is paired with energy storage investments, the project becomes more profitable due to increased reliability and lower dependence on seasonal solar availability.

Implementing climate and energy policy across the D.C. metropolitan region has largely included voluntary action options and flexible implementation levels due to the challenges of different governmental structures, population levels, and income distribution across the two states and D.C. (MWCOG, 2017). In 2017, MWCOG adopted the Regional Climate and Energy Action Plan, which included a number of benchmarks for local jurisdictions to grow their local clean energy economy as their economies and populations grow in tandem (exhibit 4). MWCOG acknowledges that public and private action is necessary for the clean energy revolution. In its regional Climate and Energy Plan for 2017–2020, MWCOG's Climate, Energy and Environmental Policy Committee argues that local resources and support play a role in reducing market uncertainties and barriers and providing financing solutions that encourage private investment (MWCOG, 2017).

#### Exhibit 4

##### Metropolitan Washington Council of Governments Local Climate Actions Tracker

| Activity   | Percentage of MWCOG Jurisdictions Taking this Action by 2020 |
|--|--|
| Adopt environmentally preferable purchasing policies to facilitate public purchasing of goods and services that reduce impacts on human and environmental health | 100%   |
| Increase the percentage of government spending on climate-friendly products and services   | 100%   |
| Encourage government vendors and businesses in the community to minimize the carbon intensity of their supply chain  | 25%  |
| Commit to divest in fossil fuels over the long-term  | 25%  |
| Support vocational training for the clean economy  | 25%  |
| Update economic development workforce plans/policies to incorporate strategies to support emerging green or cleantech industries                                 | 25%  |
| Develop a cleantech branding and marketing strategy  | 25%  |
| Provide shared space and develop incentives for green/cleantech businesses to locate within the jurisdiction   | 25%  |
| Expand opportunities for minority and women-owned businesses to participate in clean economy initiatives   | 25%  |
| Support innovative technology and infrastructure deployment to address current community challenges and needs  | 25%  |
| Support state and federal incentive programs for green and cleantech activities  | 25%  |

*MWCOG = Metropolitan Washington Council of Governments.*

*Source: Metropolitan Washington Council of Governments. Regional Climate and Energy Action Plan, 2017: 28*

The District of Columbia government has a number of programs specifically targeted at growing renewable energy resources throughout their jurisdiction. These policies, including the Renewable Portfolio Standard Expansion Amendment Act of 2016, all stem from the District’s Sustainable D.C. initiative. Sustainable D.C. aims to establish goals and targets for responding to climate change, including a commitment to reducing greenhouse gas emissions by 50 percent below 2006 levels by 2032 and 100 percent by 2050 (DOEE, 2020). The Renewable Portfolio Standard Expansion Amendment Act of 2016, also known as the Solar for All Program (Solar for All), focuses on the expansion of solar capacity and market penetration throughout the District and providing low-income households, small businesses, nonprofits, and seniors with access to locally sourced, low-cost renewable energy. Specifically, the Solar for All program aims to provide solar to 100,000 low-income households and reduce their energy bills by 50 percent by 2032. Eligible District residents can participate in Solar for All single-family solar or community solar options if the household income is below 80 percent of the area median income (AMI) threshold. The program has encountered problems meeting its goal because not many low-income households in the District pay electric bills due to other relief programs. This circumstance has expanded Solar for All’s strategy to provide additional benefits to those households that cannot take advantage of credits on their energy bills.

The Renewable Energy Development Fund (REDF) was established as a special-purpose revenue fund specifically for community solar projects in D.C.. Funding for the project comes from compliance fees from electricity suppliers, which also creates a market for Solar Renewable Energy Credits (SRECs), as they can be purchased in lieu of paying the fee (DOEE, 2020). This program has had difficulty securing commitments from business owners as site access must be guaranteed for a period of 15 years. Community engagement has also been an issue due to the lack of consumer information and education about the benefits of solar to low-income communities (DOEE, 2020).

## Research Methodology

To fully grasp the scope of potential populations in need of clean energy investments, the research for this article began with geospatial analysis of designated QOZs in the D.C.-MD-VA region, as defined by the Census Core-Based Statistical Area, overlaid with MWCOG's Equity Emphasis Areas and Opportunity Zones. After QOZs and clean energy assets are established, the author will delve deeper into a comparative analysis between existing projects and potential sites for new community solar development in these QOZs that could provide broader benefits to the surrounding community. The analysis will then show how anchor institutions, such as public and low-income housing, can help to identify several areas that should be explored to establish the kind of partnership in which social equity, PV output, and financial incentives are matched to reduce costs for consumers and increase economic mobility in disadvantaged regions of the study area.

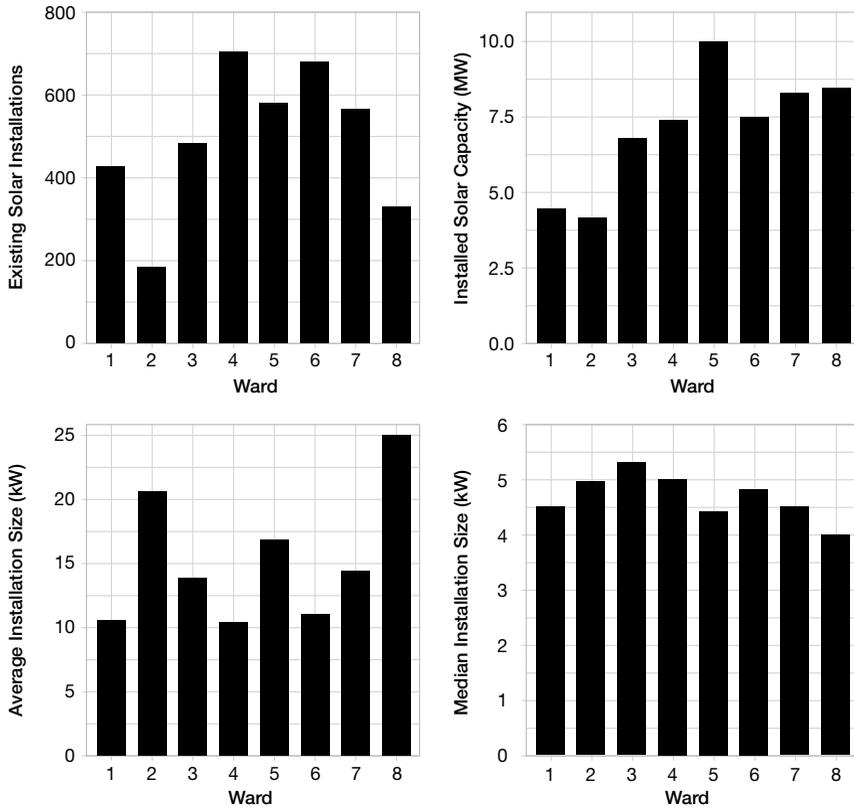
## Research Findings

The economic disparities within the District of Columbia follow a similar pattern to the surrounding region (see exhibit 3). Within the District of Columbia, all QOZs are also within the boundaries of some of MWCOG's Equity Emphasis Areas, showing the potential for additional positive externalities to the surrounding areas with similar legacies of poverty and disinvestment. This overlap occurs most frequently in the eastern and southeastern quadrants of the city, in Wards 7 and 8, respectively. Similarly, residents of Wards 7 and 8 often bear the District's highest energy bills but have the fewest resources. A report from Groundswell found that solar energy projects in the area could save residents 10 percent or more on electricity costs. These savings can be further increased when paired with home energy efficiency or weatherization improvements, benefiting low- to moderate-income households (Groundswell, 2019).

In May 2020, Synapse Energy Economics, Inc., produced a feasibility study that advocates for the program's extension on the basis of an analysis of the District's Renewable Portfolio Standards (Camp et al., 2020). The document also identifies the strengths and weaknesses of each ward regarding renewable energy proliferation (exhibit 5). This information, along with the spatial analysis illustrated in exhibit 3, led the author to prioritize Wards 7 and 8 for QOZ solar investments.

**Exhibit 5**

Renewables Generation by District of Columbia City Ward



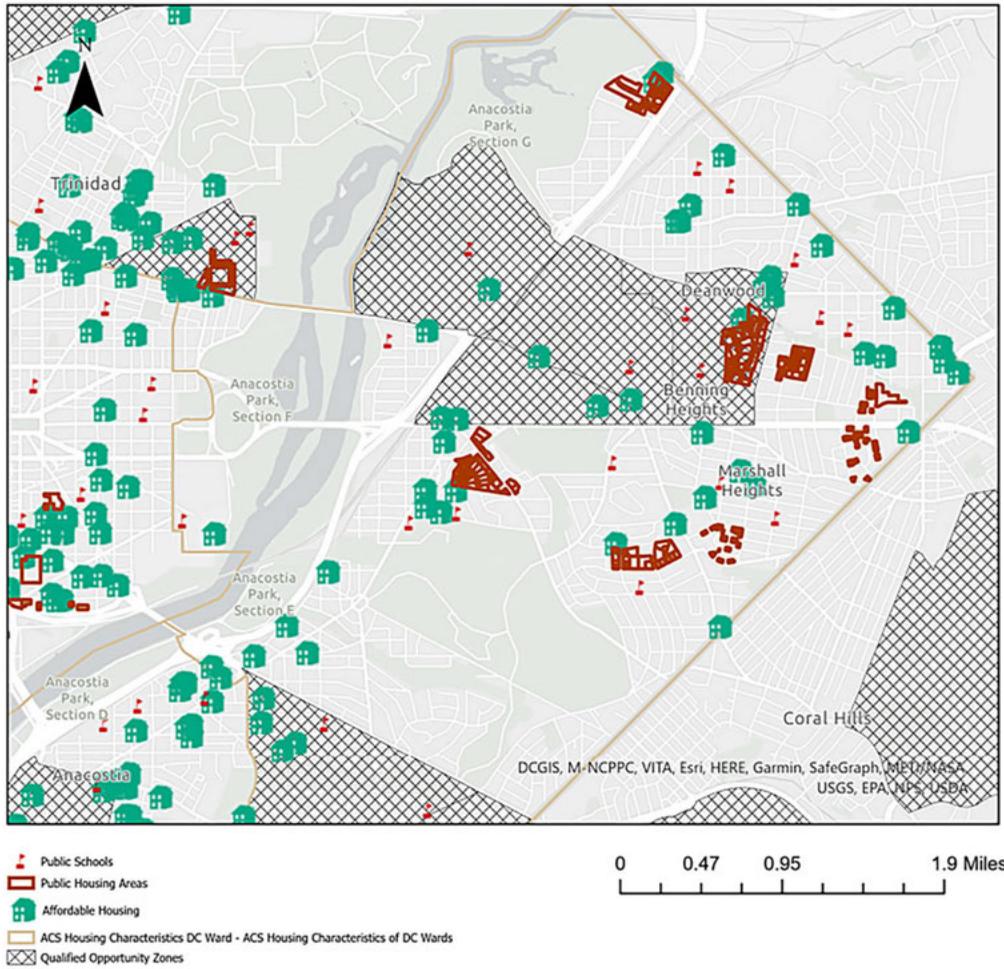
*kW = kilowatt. MW = megawatt. PV = photovoltaic.*

*Sources: Erin Camp, Ben Havumaki, Thomas Vitolo, and Melissa Whited. Future of Solar PV in the District of Columbia; adapted from D.C. PSC, "List of Eligible Renewable Generators.xlsx," and Open Data D.C.*

Exhibits 6 and 7 illustrate the spatial relationship between Opportunity Zones, District subsidized affordable housing properties, public housing owned by the District, and high schools in Wards 7 and 8. These structures were chosen as the anchor institutions for this study because the District's limited land inventory and rising land costs make land purchases more arduous. To reap additional benefits, energy policy best practices provided by the National Association for the Advancement of Colored People (NAACP) provide a standard for workforce development integration.

### Exhibit 6

#### Ward 7 QOZs and Anchor Institutions

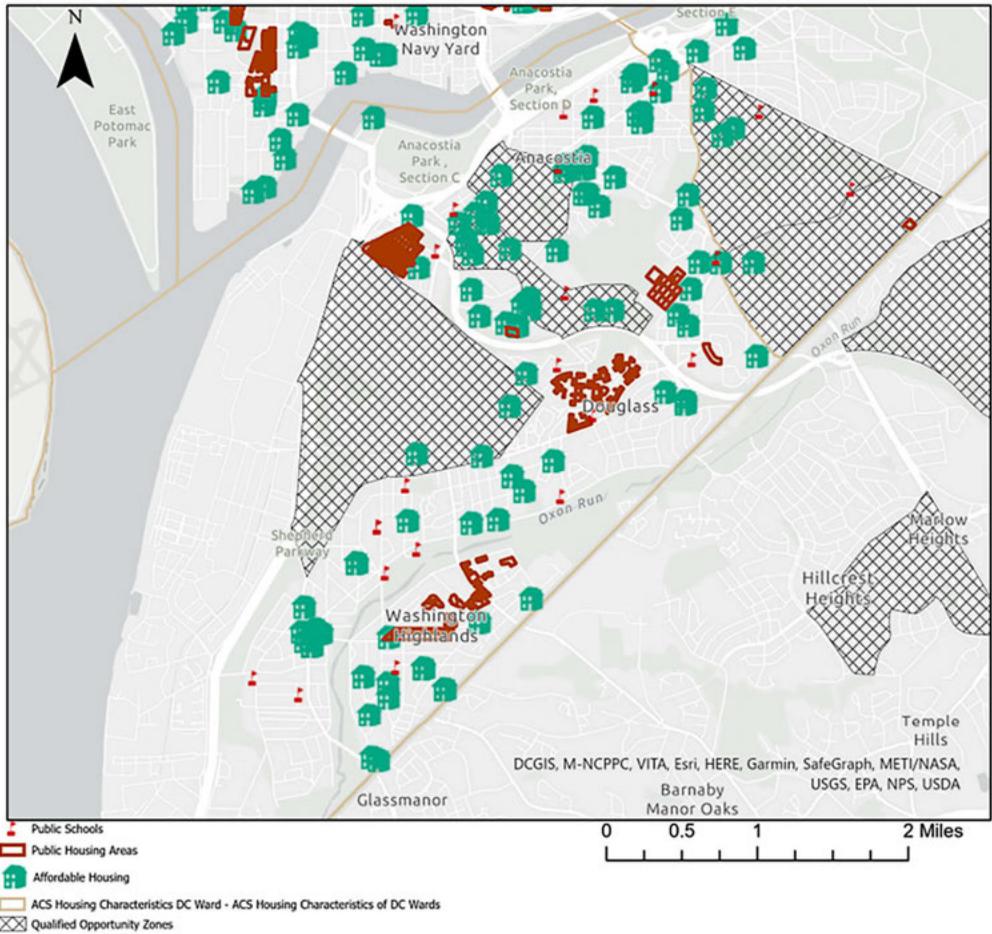


ACS = American Community Survey. QOZs = Qualified Opportunity Zones.

Sources: Map created by author; high school, public housing, and affordable housing data provided by DCGISopendata; Opportunity Zones data courtesy of the U.S. Department of the Treasury; Equity Emphasis Areas data provided by GIS@COG

Exhibit 7

Ward 8 OZ Anchor Institutions



ACS = American Community Survey. QOZs = Qualified Opportunity Zones.

Sources: Map created by author; high school, public housing, and affordable housing data provided by DCGISopendata; Opportunity Zones data courtesy of the U.S. Department of the Treasury; Equity Emphasis Areas data provided by GIS@COG

The NAACP has created a Just Energy Policy Guide to integrate workforce training into renewable energy projects and suggest policies that increase majority ownership by minorities in these companies. Suggested policies for equitable energy enterprises included in the NAACP’s 2017 report include local hiring standards to keep project revenues within the communities they are expected to support, as well as the establishment of a Disadvantaged Business Enterprise (DBE), which is at least 51 percent “owner-operated and controlled by individuals who identify with specific ethnic minority, gender, disability, and other disadvantaged group classifications” (Franklin, Alksnis, and Younger, 2017). These businesses are typically certified by an outside organization, such as the National Minority Supplier Development Council or a government agency.

Although the District of Columbia has programs that certify small businesses for preferential selection in contracting, D.C. does not have a specific program targeted at minority-owned firms. The author contends that access to solar projects is out of reach for low-income individuals due to high upfront costs, a lack of solar-ready structures, and inequitable access to training and education in these technologies. The D.C. government could bring about greater access to the benefits of solar power for low-income individuals by ensuring better coordination among organizations. Through a Community Benefits Agreement (CBA), the developer and the community can enter into a legally binding agreement that can help to bridge this gap through the support of workforce training programs that already exist at the District's high schools and community centers. This educational infrastructure exists throughout the D.C.-MD-VA region alongside nonprofit workforce training partners, such as GRID Alternatives, which already has a range of successful projects in D.C., Maryland, and Virginia.

## Recommendations

The Solar for All D.C. program has made great strides in connecting capital funders, nonprofits, and low-income households to create community solar projects. This work has already begun in the areas of the city most in need of lower utility bills, affordable housing, and access to job training and economic opportunities for minority-owned businesses through CBAs. Based on the research and analysis presented in the previous sections, the author recommends four actions that can help to pair incentives locally in a way that can be scaled to other jurisdictions in the region: (1) unification of anchor institutions, (2) collaborative funding mechanisms, (3) workforce training, and (4) connected marketing strategies.

**Recommendation 1:** Formalize the network of anchor institutions to maximize co-benefits so that schools and subsidized government housing complexes can build symbiotic relationships that connect residents, students, and the broader community to the benefits of collectively owned solar and the job opportunities this field provides. The District currently has all the various pieces of this sort of program at its disposal, but the network of connections is still missing. A public-private partnership between the solar industry and local governmental entities is needed to provide workforce training that connects residents to this growing industry in their communities.

**Recommendation 2:** Explore opportunities for nonprofit funding partnerships through impact investing and public-private partnerships. Solar Qualified Opportunity Funds have been adapted in other jurisdictions with success, although with limited margins of return. A study by the Urban Institute in June 2021 found that it was difficult for many solar QOZ projects to find qualified investors but that mission-based investing has proven fruitful for addressing those gaps (Theodos et al., 2020). Exhibit 8 lists projects that currently exist through this kind of partnership wherein the funder provides the initial capital for the project and monetizes the energy, and the nonprofit partner leases its rooftop over the agreement period and benefits from a negotiated portion of the proceeds.

**Exhibit 8**

Existing Community Solar Projects

| Capital Funder                 | Public/Nonprofit Partner                 | Households Served | Govt. Program      | Output  | Solar Types                 | Lifetime Energy Savings | Project Lifecycle |
|--------------------------------|--|-------------------|--------------------|---------|-----------------------------|-------------------------|-------------------|
| Groundswell                    | Dupont Park Seventh-Day Adventist Church | 47                | Solar for All D.C. | 168 kW  | Rooftop, parking lot canopy | \$470,000               | 20 years          |
| GRID Alternatives Mid-Atlantic | DCGS, DOEE, Oxon Run Community           | 750               | Solar for All      | 2.65 MW | Ground-based solar farm     | \$500/household/year    | 15–25 years       |

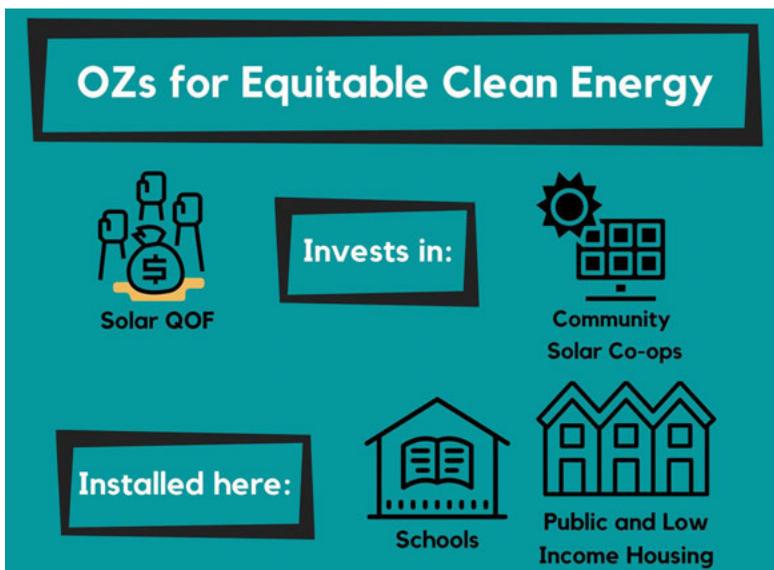
*DCGS = D.C. Dept of General Services. DOEE = Department of Energy and Environment. kW = kilowatt. MW = megawatt. Sources: D.C. Department of Energy and Environment. n.d.; Groundswell, n.d.*

**Recommendation 3:** Incorporate workforce development at high schools and majority-minority- and minority-owned businesses that are local to the jurisdiction to increase the social impact of these projects. Currently, the D.C. region is home to the first Black-owned community solar company, WeSolar, based in Baltimore, Maryland (Givens, 2020). Incorporating workforce development and solar business leadership opportunities to the communities served can not only help to increase the impact of a project but also help to drive meaningful economic growth to the area and open doors for additional partnerships that may otherwise be unavailable.

**Recommendation 4:** Market incentives and programs as a package for different groups. Because these programs have the potential to affect the community at large, it is essential to market these incentives as a package of benefits for everyone. Exhibits 9 and 10 are some examples the author created of how these co-benefits could be emphasized more in future branding and program development.

**Exhibit 9**

OZs for Equitable Clean Energy Community Explainer



**Exhibit 10**

OZs for Equitable Clean Energy Community Benefits

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**Conclusion**

The federal Opportunity Zone incentive program created by the 2017 Tax Cuts and Jobs Act can play an important role in creating equitable growth in communities that often get overlooked by private and public investments. Although many state and federal incentives help to ease the burden of affording solar for individuals, there is still a gap between how our lowest income neighborhoods access these resources. The D.C.-MD-VA region has been a leader in the United States for including clean energy resources in its urban contexts and providing opportunities for future generations to get involved in the green economy.

As identified in this article, there is a missing connection between individual and public benefits in the eyes of constituents for community solar projects and how they relate to broader equitable development outcomes of QOZs. Local governments need to better explain the interconnections between our energy system, our environment, and our collective economic future. If we as a community can start measuring the benefits of these projects holistically by linking anchor institutions, social programs, and networks of funders, we can create linkages between our programs, decrease redundancy, and make connections between our lived environment and our societal aspirations.

## Acknowledgments

The author would like to thank the URP Department at Georgetown University for their guidance on the original capstone from which this article was adapted.

## Author

Sara Harvey is a recent graduate of the Urban and Regional Planning program at Georgetown University's School of Continuing Studies.

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