UNIVERSITY OF MICHIGAN

DEVELOPING SOLUTIONS FOR BROWNFIELD RENEWABLE ENERGY IN MICHIGAN

Compendium for Michigan Department of Environment, Great Lakes, and Energy (EGLE)

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Executive Summary

In November 2023, Michigan enacted ambitious renewable energy legislation, requiring utilities to achieve a 50% renewable energy portfolio by 2030 and 60% by 2035. While large-scale renewable projects are crucial to meeting these goals, public support is stronger for siting projects on previously disturbed properties, such as brownfields, rather than farmland or forests. However, developing renewable energy on brownfields presents challenges related to costs, infrastructure, and site selection. To address these barriers, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) received $10 million through the federal Climate Pollution Reduction Grant (CPRG) to launch a Brownfield Renewable Energy Pilot Program.

This project, conducted by a University of Michigan graduate student team, aimed to support EGLE's Pilot Program development by identifying scalable models, tools, and resources to advance brownfield renewable energy across Michigan. Based on previous research and conversations with the client, the project focused on assessing and overcoming the key barriers of interconnection, off-taker uncertainty, site selection, and project cost-competitiveness.

The team developed four objectives to address these challenges. The first objective was to use geospatial analysis to identify relevant brownfield attributes to understand how an online mapping tool could increase accessibility to information and support brownfield renewable energy development. The second objective was to understand the costs associated with brownfield renewable energy projects and incentives to overcome these costs. The third objective focused on understanding the challenges and opportunities of interconnection into the power grid and finding an energy buyer. The final objective was to support the design of a Pilot Program that satisfied EGLE's CPRG requirements while considering longer-term opportunities for incentivizing brownfield renewables.

To achieve these objectives, this project culminated in four final deliverables to EGLE. The first deliverable is the **Summary Report**, which provides the bulk of our analysis and is divided into four sections: Geospatial Analysis, Overcoming Costs, Interconnection and Off-taking Power, and Pilot Program Design Considerations. The second deliverable produced is a **Proof-of-Concept Geospatial Mapping Tool** designed to demonstrate how a public-facing tool could support decision-making around brownfield reuse for renewable energy. The third deliverable is the **Pilot Program Design Framework**, which can function as a guide to help inform the final design of the Brownfield Renewables Pilot Program. The final deliverable is a compilation of recommended **Factsheets and Policy Considerations** that could support the deployment of renewable energy on brownfield sites. Together, these outputs aim to reduce barriers, incentivize brownfield redevelopment for renewable energy, and support Michigan's clean energy transition.

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SUMMARY REPORT

Summary Report Table of Contents

1. Introduction

In November 2023, the Michigan legislature passed a law requiring utilities to expedite their transition to renewable energy, aligning with the MI Healthy Climate Plan introduced by Governor Whitmer in 2020. The new law requires all electricity providers to reach a renewable energy certificate (REC) portfolio of at least 50% by 2030 and to further achieve 60% renewables by 2035 (*Renewable Energy,* 2023). A 2023 report by the Michigan Public Service Commission (MPSC) calculated the rate of RECs state-wide to be 16.2% of total energy sales at the end of 2022, making the new legislation an ambitious standard for the state's providers (Scripps et al). Effectively, utilities will need to more than triple the amount of renewables in the next five years.

While most of this additional renewable energy capacity will likely come from large-scale wind and solar projects, these projects–especially when sited on farm or forest land–can be controversial to impacted communities (Thayer, 2025). By contrast, there tends to be higher public acceptance for renewable energy projects located on previously disturbed property. A recent survey data from the University of Michigan, in conjunction with Lawrence Berkeley National Lab, finds "disturbed sites (e.g., landfills, industrial sites) are vastly preferred over forests and productive farmland for siting additional large-scale solar" (Hoesch et al, 2024).

There are, however, obstacles to siting renewables on brownfield property. A 2019 report highlighted the major obstacles to brownfield projects, including environmental liability, utility resistance, the cost of brownfields versus greenfields, site identification, and community acceptance (Schaap et al.). The Mitchell Bentley Solar Garden in Cadillac is the only renewable energy project that worked with the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Brownfield Redevelopment Program (BRP), which uses a variety of mechanisms to bring productive use to contaminated sites while human safety and environmental concerns.

In 2024, EGLE applied for—and received–a $129.1 million federal Climate Pollution Reduction Grant (CPRG) to accelerate deployment of renewables in the state. The grant specifically earmarks $10 million to establish a Brownfield Renewable Energy Pilot Program (Pilot Program) to "provide grants for renewable energy projects on brownfields, incentivizing deployment on brownfields," aiming for a total of 11.8 megawatts (MW) nameplate capacity (Executive Office of the Governor, 2024). In Winter 2025, our team of seven graduate students from the University of Michigan's Urban and Regional Planning program collaborated with EGLE and the BRP team to advance renewable energy generation and storage on Michigan brownfields.

Specifically, this report focuses on informing the development of the Brownfield Renewable Energy Pilot Program, aiming to generate scalable models of brownfield renewable energy developments that could be replicated on other brownfields statewide. Furthermore, this work develops tools and identifies resources that can be utilized to advance brownfield renewable energy development in Michigan beyond the projects participating in the Pilot Program. Through research, stakeholder engagement, and geospatial analysis, this project builds upon the 2019 report, which identified key barriers to brownfield renewable energy development. In consultation with our client, this report focuses on the barriers to interconnection, off-taking power, site selection, and cost-competitiveness challenges that have been identified as the major obstacles to renewable energy development on brownfields. The focus of our research is to determine, in more detail, what has changed since 2019, as well as to develop potential solutions to each of those barriers.

The remainder of this report summarizes our research findings. Section 2 presents a geospatial analysis that integrates brownfield, infrastructure, jurisdictional, and incentive data to create a proof-of-concept interactive map. This map helps identify brownfields most suitable for renewable energy development, while highlighting data gaps and recommending improvements for future site selection tools. In Section 3, the report considers the cost-effectiveness of brownfield renewable energy projects: both why these projects are often more expensive, but also what funding streams they are uniquely able to access as brownfield sites. In Section 4, the report examines how energy projects situated on small brownfields can connect to the distribution grid and find an off-taker willing to compensate them for the energy they generate. Finally, Section 5 of the report relays research findings relevant specifically to the Pilot Program Design Framework.

This project culminated in four final deliverables, which are presented within this compendium. The first deliverable is this Summary Report, which provides the bulk of our analysis. The Summary Report precedes the following three additional deliverables:

- GIS Mapping Tool: A proof-of-concept interactive map based on geospatial analysis that integrates brownfield, infrastructure, jurisdictional, and incentive data aimed at improving early-stage site selection and promoting transparency, while also identifying critical data gaps.

- Pilot Program Design Framework: A guide to consider potential award structures, eligibility criteria, participants, co-benefits, and project types included in the Pilot Program.

- Factsheets and Policy Considerations: A compilation of suggested fact sheets and policy considerations that could support the deployment of renewable energy on brownfield sites.

2. Geospatial Analysis

2.1 Introduction

The goal of our geospatial analysis was to increase accessibility to information about which brownfields may be most viable for renewables development. The analysis also proved useful in understanding what scale of renewable energy projects were most likely to occur and how brownfields were distributed across Michigan's electric utility service territories. We focused our efforts on two major areas: data visualization and statistics. Our data visualization was primarily done in ArcGIS, where we processed several disparate layers of information into a single unified layer. This layer was then exported to Excel, where each brownfield was sorted by utility provider territory (see Appendix A). Ultimately, this work culminated in a proof-of-concept web map, designed to demonstrate how a public-facing tool could support decision-making around brownfield reuse for renewable energy.

2.2 Models from Other States

Before designing our own interactive mapping tool to support a Brownfield Renewables Pilot Program, we examined two state-level examples that demonstrate effective strategies for data integration, visualization, and public usability. These tools offered valuable insights into how to organize complex datasets in a way that is accessible and informative for diverse stakeholders, including developers, planners, and policy staff.

2.2.1 Colorado Brightfields Mapping Application

The Colorado's Brightfields Mapping Application serves as a model of effective data integration and user engagement. This innovative platform consolidates over 100 publicly available datasets into a single, user-friendly interface, enabling stakeholders to identify and assess sites suitable for renewable energy development efficiently.

This tool offers detailed information for each site, including the site's name, acreage, and proximity to transmission lines. Users can interact with the map to access a pop-up containing data on zoning, land use, ownership, and land cover, which are crucial for evaluating site feasibility. Additionally, the tool provides geographic context through various GIS layers, such as topographic contours, flood hazard areas, and conservation easements, which can be toggled on or off to visualize physical features and regulatory constraints. The success of Colorado's Brightfields Mapping Application underscores the value of integrating diverse datasets into a centralized, accessible platform. Inspired by this approach, we incorporated similar data layers into our brownfield mapping initiative. Our objective was to create an interactive map that provides developers and brownfield owners with comprehensive information on site attributes, including land availability, infrastructure access, and environmental considerations. By emulating Colorado's model, we aim to offer a valuable resource that streamlines site selection and accelerates the redevelopment of brownfields for renewable energy projects.

2.2.2 New Jersey Community Solar PV Siting Tool

We also examined New Jersey's Community Solar PV Siting Tool as a model of effective data categorization and user engagement. Developed by the New Jersey Department of Environmental Protection (NJDEP), this tool helps stakeholders identify optimal locations for community solar projects by categorizing sites into three preference categories: high preference, medium preference, and no preference. The tool integrates various data layers, allowing users to visualize overlapping land uses and assess factors such as zoning, land use, ownership, and environmental constraints. By clicking on a specific location, users can access detailed information, including the site name, acreage, and proximity to transmission lines, facilitating informed decision-making for solar development.

While this tool serves as an excellent example of a comprehensive site assessment, it primarily utilizes polygon data to represent areas of interest. In contrast, our current brownfield dataset consists of point data, which presents certain limitations in depicting the spatial extent of potential sites. Despite this difference, we aim to adapt the principles demonstrated by New Jersey's tool to enhance our mapping initiative, ensuring it effectively supports stakeholders in identifying viable brownfield sites for renewable energy projects.

2.3 ArcGIS Processing Integrated Layers

The following subsections discuss layers that were integrated into our proof-of-concept web map. We submit them for consideration to be included in EGLE's RIDE Mapper. Step-by-step guidance for processing each of these layers is provided in our Proof-of-Concept Geospatial Mapping Tool.

2.3.1 Brownfields

The brownfields layer used in our proof-of-concept mapping tool is a point dataset provided by EGLE, which includes site names, location, and acreage information. This dataset, however, contains brownfield sites that have already been remediated and/or redeveloped, so they are unlikely candidates for renewable energy development. The brownfield data layers in the RIDE Mapper are more appropriate targets. However, they lack information about acreage and are only point-based rather than polygonal. Having acreage data is especially valuable, as it supports preliminary assessments of project scale and feasibility for renewable energy development. Furthermore, polygon data would enable more accurate analysis, including the evaluation of slope variation, overlap with floodplains, and proximity to infrastructure. While the point data are useful for statewide mapping, the lack of site boundaries limits parcel-level precision.

2.3.2 Distance to Transmission Line

We incorporated transmission line data from the Homeland Infrastructure Foundation-Level Database (HIFLD) to assess the proximity of brownfield sites to the electric grid. This layer is essential for evaluating the viability of brownfield sites to be part of renewable energy developments that would connect into the transmission grid. Using spatial joins, we calculated the straight-line distance from each brownfield site to the nearest transmission line. This information enables users to sort and prioritize sites based on their ease of connection to the grid. While these calculations are based on available line location data, additional site-specific engineering review would be required during project development.

2.3.3 Distance to Substation

We also used substation location data from HIFLD to evaluate the accessibility of electrical infrastructure at a more localized level. Substations are critical interconnection points. As with transmission lines, we calculated the straight-line distance from each brownfield site to the nearest substation. This layer helps users identify sites with greater potential for low-cost interconnection, supporting more targeted planning and outreach. While the proximity metric is useful for preliminary screening, final siting decisions would require an interconnection study to confirm capacity and compatibility (see Section 4).

2.3.4 Utility Territory

While most large-scale renewable energy projects connect into the transmission grid, smaller projects connect into the distribution grid operated by a distribution utility. We used utility service territory boundaries from the MPSC to identify which areas fall under investor-owned utilities (IOUs), municipal-owned utilities (MOUs), or electric cooperatives. This layer is essential for understanding the regulatory and distribution interconnection context for each brownfield site, as rules and opportunities vary by utility type. While the MPSC notes that these boundaries are approximate and not suitable for parcel-level decision-making, they are effective for broad spatial analysis and identifying trends, such as where most brownfields are located relative to utility types. For site-specific planning, users should contact utility providers directly, as recommended by MPSC.

2.3.5 Local Jurisdictions

To identify local governance boundaries, we used U.S. Census TIGER datasets for Michigan county subdivisions (i.e., townships) and places (i.e., cities and villages), combining the two to create a more complete representation of jurisdictional authority for property taxation purposes, for example. Since villages overlap with townships, merging these datasets was necessary to capture the correct jurisdiction for each parcel. This information is beneficial for identifying the appropriate entities for engagement.

2.3.6 Zoning Jurisdictions

We used zoning jurisdiction data from the Energy Zoning Atlas of Michigan to identify which governmental entity holds zoning authority over each area in the state. This is important since Michigan includes a patchwork of zoning authority, with a combination of municipal, township, county, and joint zoning, along with some geographies remaining completely unzoned. Knowing the zoning jurisdiction helps developers anticipate permit processes, community engagement requirements, and potential restrictions on renewable energy projects. This layer complements our local jurisdiction analysis by clarifying who has regulatory authority, especially in areas where jurisdictional boundaries overlap or where zoning responsibilities are delegated to the county or a joint authority.

2.3.7 Opportunity Zones

We included Opportunity Zones using data from the State of Michigan's Opportunity Zone Mapping Tool, which identifies federally designated census tracts eligible for investment incentives under the Tax Cuts and Jobs Act. Projects located within these zones may qualify for federal tax benefits, which can improve financial viability for renewable energy development. By mapping these zones alongside brownfield sites, we aimed to highlight areas where value-stacking incentives may be possible (see Section 3.4). This layer supports early-stage project screening by helping identify sites with potential economic and investment advantages.

2.3.8. Federal 48C IRA Energy Communities Tax Credit Adder

We mapped the Federal 48C IRA Energy Communities Tax Credit eligibility using the U.S. Department of Energy's NETL mapping portal. These areas may qualify for the Advanced Energy Project Credit (Section 48C) under the Inflation Reduction Act if they meet certain labor standards. This credit offers a 30% investment tax credit for developments that meet certain labor standards and an additional 10% for clean energy projects located in communities facing economic hardship. By overlaying this layer with brownfield sites, we identified locations where projects could maximize federal tax incentives. Including this layer helps direct attention to equity-focused investment opportunities, aligning renewable energy deployment with broader goals of economic revitalization.

2.3.9 Federal 48C IRA Coal Closure Energy Communities Tax Credit Adder

We used the Energy Communities layer from the U.S. Department of Energy's NETL mapping portal to identify areas eligible for tax credit adders under the Coal Closure Energy Communities bonus of the Section 48C Investment Tax Credit. These areas include communities historically reliant on fossil fuel industries, such as former coal mines or power plant locations. Projects sited within Coal Closure Energy Communities may receive an additional 10% tax credit, making these areas particularly attractive for brownfield renewable energy development. This differs from the above 48C adder because these communities don’t necessarily meet the unemployment requirements of the 30% portion of the tax credit and thus require more leg work for developers to know if a given site is eligible for 48C related funding.Mapping this layer alongside brownfields helps highlight high-impact sites where federal support is aligned with economic transition goals.

2.3.10 Tribal Lands

To account for equity-focused funding considerations, we included a layer of federally recognized Tribal lands downloaded from the Geospatial Energy Mapper (GEM) and based on U.S. Census TIGER/Line shapefiles. This dataset includes reservation boundaries, off-reservation trust lands, and other legally or statistically designated tribal areas. Identifying these areas is important because tribal governments may face distinct legal, financial, and technical challenges in brownfield redevelopment, and they may also be eligible for additional federal support. Mapping these geographies helps ensure that tribal lands are appropriately considered in both funding distribution and Pilot Program design.

2.4 Suggested Layers

The following layers are layers which we were not able to add to our proof-of-concept map. We submit them for consideration to be included in EGLE's RIDE Mapper.

2.4.1 Low-Income Communities

Due to economic pressures hindering brownfield renewable development, providing developers with a comprehensive view of available funding sources will reduce barriers to the redevelopment process. LIDAC-related funding through the CPRG may apply to both tribal territory and low-income communities, but unlike tribal communities, the low-income communities that are eligible for LIDAC-related funding are not available online in the form of a shapefile.

2.4.2 Flood Hazard Areas

Renewable energy projects are generally not sited in flood hazard areas due to the risk related to the electrical equipment installed. Including this data into the RIDE Mapper would allow developers to quickly understand non-viable sites when considering potential sites. Unfortunately, the FEMA flood hazard maps which show the areas that are most prone to flooding are not available for download, and so they are not included in the proof-of-concept map.

2.4.3 Land Cover

Land cover would serve as a valuable data layer for the RIDE Mapper, as the presence of buildings, impermeable surfaces, or tree cover may influence site-preparation costs. Although land cover raster data is generally available, it can be technically challenging to process. Our limited technical knowledge and student processing-software license prevented us from being able to integrate the land cover raster clipped to just the state of Michigan. In response, we incorporated a free ESRI land cover raster layer which spanned the whole United States into our proof-of-concept map. We encourage the inclusion of a land cover raster clipped to Michigan in the RIDE Mapper.

2.4.4 Slope
Slope is a critical attribute to map, as certain slopes may obscure solar panels for portions of the day, depending on their orientation and severity. Incorporating slope data into the RIDE Mapper will further assist developers in identifying optimal sites for renewable energy redevelopment. Unfortunately, slope raster data is not publicly available in a format compatible with our student-licensed mapping software, so we were unable to include it in our proof-of-concept mapper.

2.4.5 Tax Parcel
Relying solely on points makes it challenging to determine how site characteristics (e.g., land cover, slope, etc.) vary across a specific brownfield. Tax parcel data would enable developers to view the outline of a brownfield site and its surrounding parcels, enabling them also to determine the viability of approaching neighboring landowners to aggregate parcels into a larger renewable energy project.

2.4.6 Land Ownership
Information on land ownership presents an opportunity, as many brownfield sites are constrained by size. By identifying which surrounding areas are privately owned and which are publicly held, developers can quickly assess whether a site could be expanded through the acquisition of adjacent property.

2.4.7 Grid Capacity
Grid capacity is a crucial factor in the redevelopment of brownfield renewable energy sites. Even if a site excels in all other attributes, if the grid cannot accommodate the power generated from the development, it would not be viable for development. While the MPSC has required the large investor-owned utilities to offer maps of grid capacity, such resources are not universally available, and no comprehensive statewide map of grid capacity currently exists. Nevertheless, we emphasize the importance of considering grid capacity during the site selection phase of brownfield renewable energy redevelopment.

2.5 Analysis of Relevant Brownfield Characteristics
After completing our initial ArcGIS processing, we exported the data to Excel for ease of analysis, which informed our project. We began by sorting each brownfield by the utility provider territory it occupies. Because utility service territories overlap in some parts of the state, some brownfields fall into multiple utility territories. When this happened, we duplicated the brownfield records and placed one in each utility provider's territory. This provided us with a comprehensive view of the number of brownfields by utility service territory, informing our research.

Most of the brownfields in Michigan are located within the territories of a small number of utilities. The top 10 utilities, by number of brownfields, collectively account for 98% of all brownfield sites, as shown in Figure 1. Appendix A shows the count of known brownfields in each of the utility territories.

Utility Name	# 201, 211, 213	% of Total
Consumers Energy Company	21734	43.19%
DTE Electric Company	19695	39.14%
Indiana Michigan Power Company	1900	3.78%
Great Lakes Energy Cooperative	1815	3.61%
Lansing Board of Water & Light	1210	2.40%
Upper Peninsula Power Company	804	1.60%
Cloverland Electric Cooperative	657	1.31%
Upper Michigan Energy Resources Corporation	582	1.16%
Cherryland Electric Cooperative	477	0.95%
Bay City Electric Light & Power	444	0.88%

Figure 1. Brownfields by Electric Utility Territory. This figure shows the number of brownfield-related environmental sites (Part 201, 211, and 213) located within the service territories of Michigan's electric utilities. The top 10 utilities collectively account for 98% of all known brownfield sites across the state, with Consumers Energy Company and DTE Electric Company together comprising over 80% of the total. These findings highlight the importance of focusing outreach and remediation planning efforts on a small number of key utility providers.

As noted previously, one of the limitations with the brownfield data in the RIDE Mapper is that it does not include acreage. As a result, it limits the ability to see where looking at the number of brownfields alone may mask opportunities for renewable energy development on very large brownfields.

2.5.1 Case Study: Butterworth Landfill Analysis

To demonstrate the potential for detailed spatial analysis in support of brownfield-to-renewable energy redevelopment, we conducted a focused assessment of the Butterworth Landfill Superfund site in Grand Rapids. Unlike the point-based brownfield data used in our broader mapping tool, Superfund sites often include defined polygon boundaries, demonstrating how this data set offers a refined analysis of environmental and physical site conditions (see Appendix B).

The Butterworth Landfill was selected as a proof-of-concept site due to its size, accessibility of data, and current momentum toward solar redevelopment. In 2024, the City of Grand Rapids secured $3 million in state funding to advance solar infrastructure on the property (Frick, 2024). To evaluate physical suitability, we analyzed both slope and land cover characteristics. The slope analysis revealed that the majority of the site is either flat (0°) or gently sloping (3°–5°), with only limited areas along the site's perimeter showing steeper gradients. These conditions are ideal for solar development, as they reduce the need for costly land modification. In terms of land cover, the site is classified primarily as cropland, indicating large open areas with minimal vegetation—another advantage when considering site readiness for solar array construction.

This case study demonstrates how polygon-based brownfield or Superfund sites can be analyzed in greater detail to support informed investment decisions. Expanding this type of analysis to other sites could enhance the decision-making capabilities of our interactive map and provide added value for developers and municipal partners evaluating renewable energy potential.

2.6 Solutions

Through our research and development of a conceptual model, we have identified several challenges to producing an enhanced GIS tool, particularly related to data availability. Our team has identified the following opportunities to address these barriers.

2.6.1 Web Links

Data that is not accessible for download–such as land ownership–but is still useful for determining site eligibility can be embedded into the platform as web links to external sources. Although this solution does not fully integrate the information into the tool, it ensures that users can still retrieve relevant details when assessing sites in a single location. If a given dataset would be useful to include but cannot be integrated or linked to because of privacy concerns/data ownership, the priority should be on preserving the broad accessibility of the tool rather than on the creation of a completely comprehensive tool which cannot be used by the people it was made for.

2.6.2 Inter-Institutional Data Collaboration

Grid connectivity poses a significant challenge in site evaluation; however, inter-institutional collaboration could provide an effective solution. The New Jersey Community Solar PV Siting Tool features a hosting capacity function that enables users to visualize grid availability for new solar projects, aiding in the assessment of transmission constraints. However, in Michigan, while utilities like DTE and Consumers Energy offer online host capacity maps, the absence of downloadable shapefiles limits their utility. A more collaborative approach could involve sharing shapefiles of the three-phase power system, which would allow for better online assessments of whether brownfield properties are within range of a viable interconnection point. While we have made progress by embedding web links within our map, engaging relevant agencies such as

EGLE and MPSC through data-sharing agreements would provide access to these critical layers, improving the overall effectiveness of the platform. The opportunities for collaboration between state agencies are highlighted throughout this report and in the attached Fact Sheet & Policy Changes document.

2.6.3 Supporting Map Usage

To address the challenge of ensuring the interactive mapping tool is accessible and effective for all users, we propose developing a concise fact sheet paired with the platform. This resource will provide clear, step-by-step guidance for a wide range of stakeholders, including developers, municipal staff, and community members, enabling them to fully utilize the tool's capabilities. The fact sheet should cover essential functions such as toggling data layers using the interactive legend, interpreting pop-up windows for site-specific information, and utilizing the search function to locate brownfield sites by address in Michigan. By offering these detailed instructions and visual aids, the fact sheet will improve the usability of the tool, fostering better-informed decision-making for renewable energy development on brownfield sites.

2.6.4 Collect Polygon Data

One of the primary challenges in developing the interactive brownfield mapping tool is the lack of polygon data for the brownfield sites. Without defined boundaries, analyzing site-specific attributes such as land cover and slope is challenging. Currently, this data is not available through private, state, or federal institutions. Therefore, our team suggests a state policy change that enables the implementation of a standardized data collection process for all brownfields undergoing site assessments, thereby ensuring the accuracy of boundary data.

3. Overcoming Costs

3.1 Introduction

Bringing brownfield renewable energy projects to fruition is a complex and often costlier endeavor compared to projects on greenfield sites. Across Michigan, brownfields vary widely in size. The small acreage of many available sites can reduce the competitiveness of project costs. According to EGLE's RenewMI Project Viewer, the median site size of brownfields in the state that have been remediated or developed is approximately 4 acres, with an average of 24 acres—these relatively small parcels challenge developers' ability to achieve economies of scale, intensifying financial barriers (Michigan Department of Environment, Great Lakes, and Energy [EGLE], n.d.). This section examines both the costs associated with siting renewable energy on brownfield sites and presents potential solutions to overcome these barriers. These solutions include better leveraging existing incentive programs, improving site selection tools, and offering targeted gap funding to make brownfield renewable energy projects more financially competitive. Together, addressing cost barriers and streamlining access to relevant resources is critical for supporting successful brownfield renewable energy development in Michigan.

3.2 Methods

This report is based on a combination of available incentive opportunities within Michigan and insights from stakeholder interviews to understand the development process, associated costs, and funding streams available for renewable energy development on brownfields in Michigan. Ten individuals were interviewed over eight sessions with representatives from various sectors, including consultants, state agencies, a municipality, and a developer (see Figure 2). While the interviews were not exhaustive when contacting developers or municipalities, the focus was on identifying available funding sources, eligible costs covered, and any barriers to awarding projects, specifically those related to brownfields and renewables. Additional interviews with municipalities and energy developers could provide a deeper understanding of the challenges faced by municipalities and developers when siting renewable energy projects on brownfields.

Category	No. of Interviewees
Consultants	4
State Agencies	4
Municipality	1
Developer	1

Figure 2. Number of interviewees by stakeholder category

3.3 High Costs of Projects

Due to the limited site size of most brownfields, a realistic return on investment can be difficult as overall infrastructure costs remain high. Even in the case of a large-scale renewable energy project where only a portion of the project is on a brownfield, there are often additional development expenses, such as cleanup costs and/or due care responsibilities that would otherwise not be incurred on greenfields, that make these projects less competitive compared to large greenfield sites. Investor-owned utilities (IOUs), which the MPSC regulates, run competitive processes to procure projects; however, even municipal-owned utilities (MOUs) and cooperative utilities are price-sensitive. Even among greenfield sites, fixed costs and economies of scale often mean that larger projects prevail over smaller ones. In effect, there is a "brownfield premium," where remediation, due care, and economies of scale contribute to a higher price per megawatt for renewable energy projects on brownfield sites (represented in Figure 3). In addition to these costs, our team also identified site selection difficulties and developer perceptions of liability as factors that could impact project feasibility.

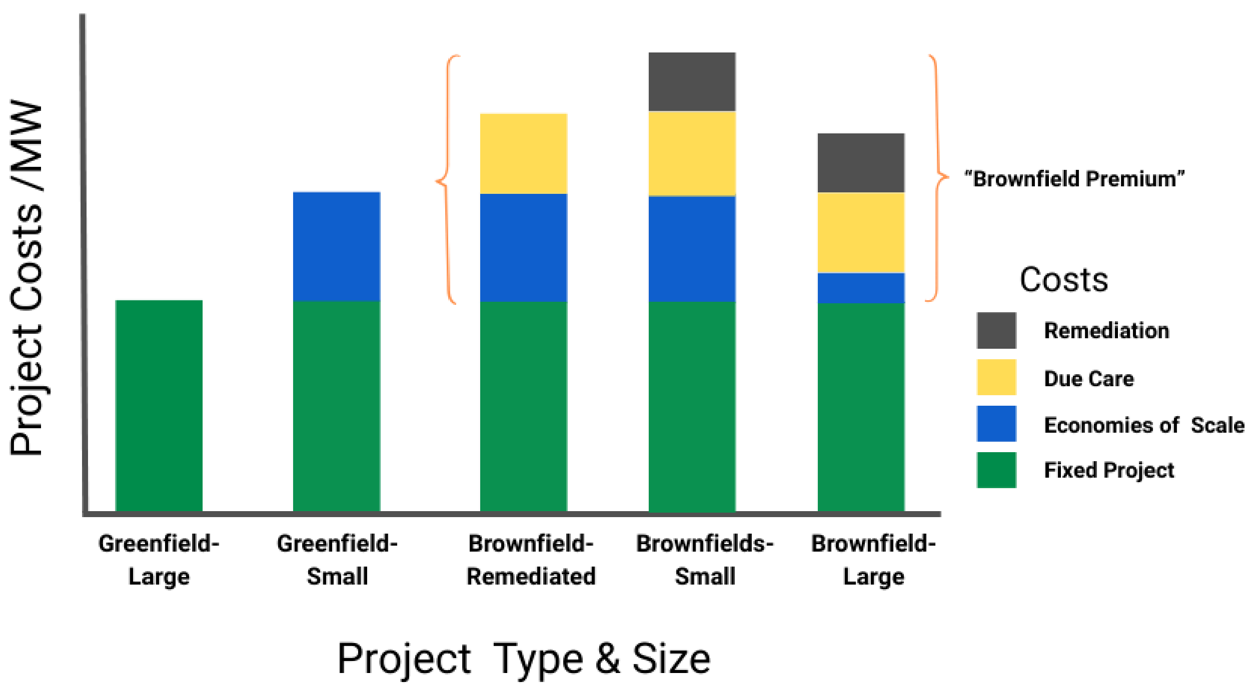

Figure 3. Illustration of the "brownfield premium," or the additional costs for projects on large and small remediated sites and non-remediated brownfields. Large brownfields benefit from economies of scale; however, our GIS analysis indicates that brownfields in the state tend to be generally smaller than utility-scale greenfields. Fixed costs and economies of scale are estimated from a 2019 report by Burger et al. Due care and remediation costs are presented as estimates based on assumptions for our research; however, they are site-specific and will vary for different projects.

3.3.1 Brownfield Remediation Costs

Brownfield redevelopment, whether for renewable energy or any other land use, entails additional financial burdens and liabilities due to the need for environmental cleanup and due care responsibilities, which are costs that would not typically be incurred when developing greenfield sites. Depending on the site's history and level of contamination, sites may be required to conduct studies to understand the extent of soil and groundwater remediation requirements, remove hazardous materials, or implement long-term monitoring and containment measures. These processes can be time-consuming and costly, requiring specialized environmental assessments, regulatory approvals, and compliance with state and federal cleanup standards. These added expenses increase the overall development cost and complicate project timelines, making brownfield sites less attractive compared to other undeveloped land, where such remediation efforts are unnecessary. In addition, developers may be dissuaded from brownfields whether or not they have been remediated because they are unsure of the requirements for renewable energy developments on these sites.

3.3.2 Due Care Considerations for Brownfields

Due care obligations refer to the responsibilities of brownfield site owners and operators to take necessary actions to ensure the site can be safely utilized, irrespective of an actor's liability for containments. In the case of renewable energy projects, due care obligations can necessitate additional pre-development and construction costs. Even if comprehensive remediation is not required, due care responsibilities—such as engineering controls, protective barriers, or restrictions on land use—must be implemented. For example, capped landfills may require that panels be affixed to a ballasted system that sits on the surface, preventing puncturing of the landfill cap, rather than steel poles that are driven into the ground, as in traditional solar arrays. Ballast systems and other system design changes for landfills are often 10% more expensive than greenfield designs. Since they usually cannot accommodate solar tracking systems, they may produce less power than a solar tracking system (Popkin & Krishnan, 2021). Outside of projects on capped landfills, for which there is extensive guidance at the federal level, another challenge is communicating anticipated due care requirements to prospective brownfield renewable energy developers. There are no statewide standards or guidance that address the diversity of site contamination and its potential intersection with different types of renewables (e.g., solar versus energy storage). Additionally, there are limited existing examples of brownfield renewable energy projects in the state to learn from.

3.3.3 Lacking Economies of Scale

Achieving cost competitiveness through economies of scale is a key challenge for renewable energy projects on brownfield sites, which are typically much smaller in acreage compared to greenfield sites. Larger projects benefit from spreading fixed costs over a greater number of megawatts, significantly reducing the cost per unit of energy produced. In contrast, the limited size of brownfields restricts project scale and increases the impact of fixed costs.

The interconnection process has the potential to significantly increase the cost of an energy project through grid upgrade requirements and increase the timeline to final deployment. Due to the limited size of brownfield sites available within the state, most brownfield energy projects will connect to the distribution grid rather than at the transmission level. An interconnection study is conducted to assess the feasibility of integrating the new power into the existing infrastructure. These interconnection study application fees are generally fixed costs with an added per-megawatt cost. The study determines the interconnection deposit, which covers the necessary upgrades for interconnection that comply with MPSC regulations. Depending on the study's results, upgrades can be costly and may include transformer replacements, substation enhancements, or additional transmission infrastructure.

According to an interviewed stakeholder, an interconnection study for a 1 MW solar project may cost $20,000, and the interconnection deposit could cost upwards of $2,000,000. While interconnection constitutes a cost for all projects, it can be a significant barrier for smaller projects. A high interconnection cost for relatively few megawatts produced could make a project prohibitively expensive, especially when compared to larger projects. Section 4.3 of this report provides further information on the interconnection process in Michigan.

According to stakeholder interviews, MOUs do not have a standardized interconnection cost, and developers will need to contact the local utility to establish costs associated with interconnection applications and studies. Figure 4 compares the interconnection studies of IOUs in Michigan.

Costs (fast-track, Certified)	**DTE**	**Consumers**	**MISO**
Pre-Application Review	$300	*$300*	*$7,000*
Application Review	*$100 + $1/kWac*	*$100 + $1/kWac*	*$8,000 /MW*
Supplemental Review	*$2,500*	*$1,000*	*Deposit /MW*
System Impact Study	*As Necessary*	*Not to exceed $10,000*	
Facilities Study	*As Necessary*	*Not to exceed $15,000*	

Figure 4. Michigan Investor-owned utility transmission interconnection study cost comparison with MISO energy generation interconnection study costs.

3.3.4 Difficulties of Site Selection

As discussed in Section 2, the site selection process for brownfield development is particularly challenging due to the lack of a centralized data source that identifies sites best suited for redevelopment, particularly in the context of energy redevelopment. In addition, uncertainty related to cleanup status, remediation requirements, or due care responsibilities, as well as whether any special steps need to be taken during construction, can make brownfield sites appear more financially risky to developers than greenfield sites. Similarly, less transparent and variable interconnection distribution grid upgrade costs introduce additional risk. As one interviewee pointed out, the time value of money puts pressure on renewable energy developers to move through the pre-development process as quickly as possible. Even if specific brownfield sites are well-suited for renewable energy development, there is no existing mechanism for developers to easily identify these sites and understand their pre-development requirements.

3.3.5 Liability

Through interviews, our team identified environmental liability as a cost concern for developers, a finding supported by previous research (Schaap et al., 2019). Stakeholders have indicated that assuming liability for the contamination on brownfields is considered a high-cost risk that deters enthusiasm for projects on these sites. However, our research suggests that developer concerns related to liability more often represent a barrier of perception rather than an actual cost.

Currently, Michigan State law protects site owners and parties operating projects on brownfields from liability if a baseline environmental assessment "is conducted before or within 45 days after the earlier date of purchase, occupancy, or foreclosure and the owner or operator provides the baseline environmental assessment to the department and subsequent purchaser or transferee within 6 months" (Michigan Natural Resources and Environmental Protection Act, 1994, § 324.20126). Baseline environmental assessments (BEAs) are included in the Brownfield Site Assessment Program, meaning the process to obtain critical liability protection can be fully funded by EGLE for any qualified applicant. In conversations with our team, EGLE representatives emphasized that the existing legislation regarding liability on brownfields is sufficient to protect developers from assuming liability costs. While environmental liability may not generally represent a significant cost to development, its perceived importance by developers suggests that it remains a barrier to be addressed.

3.4 Existing Funding Opportunities

A key component of reducing developer costs is maximizing the use of existing opportunities to value stack incentives. Our research revealed that both federal and state incentives for brownfield development and renewable energy already exist. A summary of funding opportunities are presented in Figure 5.

At the federal level, key incentives include the Inflation Reduction Act (IRA) tax credits, applicable IRA credit adders, and incentives for brownfields and energy communities. The base IRA tax credit for renewable energy projects with a capacity of less than 1 megawatt is 30%. Additional credits in 10% increments can be added to projects that utilize domestic content, are located in energy communities, which include brownfields, and projects in low-income or tribal communities, for a total of 60% credit. Qualified low-income residential projects can also qualify for a 20% credit, maximizing the IRA tax credit to 70%. (U.S. Environmental Protection Agency, 2025).

State-level research examined programs like the EGLE's Brownfield Redevelopment Program (BRP), Michigan State Housing Development Authority (MSHDA) initiatives, the Michigan Economic Development Corporation (MEDC), and the Michigan State Land Bank Authority (LEO). Current brownfield redevelopment funding exists through grants and loans from the BRP for remediation, due care, and any eligible environmental response activities. Funding caps are set at $1 million for each, with loans carrying an interest rate of 1.5%. Tax increment financing (TIF) is also an available funding opportunity with EGLE through established redevelopment authorities.

Other state agency programs provide funding for project sites located within designated distressed and core communities or those owned by the State Land Bank. Identifying which brownfield sites qualify is crucial for determining eligibility for funding. TIF capture areas are available through Brownfield Redevelopment Authorities (BRAs), the MEDC's Transformational Brownfields and Core Community programs, and projects owned or controlled by the Land Bank Authority.

Eligible costs for TIF capture vary by program. TIF captures administered by EGLE can cover remediation and environmental response activities, while Transformational Brownfield, Core Communities, and Land Bank TIF captures may also cover demolition, site preparation, and infrastructure costs for projects. These funding sources have additional criteria and success measures that may not apply solely to renewable energy projects on brownfields. Additional funding is available for mixed-use developments on brownfields. Based on our research, these funding sources can support a wide variety of renewable energy projects, including large-scale renewable energy, brownfield redevelopment, and mixed-use commercial and residential projects.

Opportunity Zones, overseen by the Michigan Economic Development Corporation (MEDC) and the Michigan State Housing Development Authority (MSHDA), are designed to encourage long-term capital investments in low-income communities through tax incentives, with the greatest benefits accruing to investments held for at least 10 years. Investors and developers can access funding by channeling capital gains into Qualified Opportunity Funds (QOFs) to support projects in these designated zones, including renewable energy developments (Michigan Department of Labor and Economic Opportunity, n.d.).

To encourage solar investment in Michigan, the Solar Energy Facilities Taxation Act establishes a payment in lieu of taxes (PILT) system that enables local governments to create solar energy districts and offer tax incentives for utility-scale solar projects. Within these districts, eligible facilities are granted a 20-year exemption from traditional property taxes and instead pay an annual tax based on their capacity—typically $7,000 per megawatt, with a reduced rate of $2,000 per megawatt for projects located on state-owned or brownfield sites. All exemptions must receive approval from both local governing bodies and the State Tax Commission by December 31, 2031 (Michigan Legislature, 2023).

Mixed-use developments on brownfields are eligible for funding in the funding opportunities (see Figure 5) as a type of eligible project. Energy related infrastructure costs may be eligible as construction financing costs. These projects can explore the deployment of renewable energy on rooftops or via carports, offering opportunities for behind-the-meter projects. While the overall megawatt is reduced, the energy-associated costs may be offset by larger funding opportunities, such as TIF captures.

Our research has identified a funding shortfall in the current Brownfield Redevelopment Financing Act. As it stands, the statute does not recognize renewable energy infrastructure, such as solar arrays, battery storage, or microgrids, as eligible activities for reimbursement through TIF capture. Amending the act to include these infrastructure costs would encourage new investment opportunities and facilitate the deployment of more renewable energy on brownfields.

Funding Opportunity & Tax Incentives	Project Type	Who Can Apply	Eligible Activities	Award Amount
Environment, Great Lakes and Energy (EGLE)				
Brownfield Redevelopment Grant & Loan	1. Revitalize blighted & abandoned properties, 2. Brownfield Redevelopment 3. Infrastructure Reuse	Local units of government, including Brownfield Redevelopment Authorities (BRAs), economic development corporations, or other public bodies, can apply every year	Environmental investigations & BEA; due care, planning & implementation; underground storage tank removal; ernvironmentalesponse activities; some demolition, lead, mold, & asbestos abatement	Max $1 million each Loans have 1.5% interest for 15 years starting the 5th year
Brownfield Tax Increment Financing (TIF)	1. Redevelopment of vacant, blighted, contaminated, or otherwise challenged property 2. Property value increases	Developers in established Brownfield Redevelopment Authorities (BRAs). Need Local and State Approval	Environmental investigations & BEA; due care, planning & implementation; underground storage tank removal; ernvironmentalesponse activities; some demolition, lead, mold, & asbestos abatement	Full reimbursement of eligible activities only. Can be stacked with EGLE Grants & Loans. Not eligible with DDA TIF captures.
Michigan Economic Development Corporation (MEDC) & Michigan Strategic Fund (MSF)				
Transformational Brownfield Plans (TBP)	Mixed-use development projects	Developers in any city; Investment is dependent upon population; Approved by the local government	Demolition, construction, restoration, alteration, renovation, or improvement of buildings, site improvements; public infrastructure	Tax Increment Financing (TIF), Competitive (5 awarded/year)
Core Communities & State Land Bank Owned/Controlled	Brownfields	Developers with Local & State approval in the Core Community of Land Bank owned properties	Demolition, site preparation, public infrastructure, lead and asbestos abatement, and environmental remediation.	Tax Increment Financing (TIF)

(continued on next page)

Funding Opportunity & Tax Incentives	Project Type	Who Can Apply	Eligible Activities	Award Amount
Michigan Economic Development Corporation (MEDC) & Michigan State Housing Development Authority (MSHDA)				
Opportunity Zones (OZ)	Industrial, retail, mixed-use, & transit-oriented developments	Developers in designated OZ geographic locations	Portion of full project cost covered as long-term capital investment	Defer &/ or reduce capital gains taxes by investing in Qualified Opportunity Funds (QOFs) which finance projects
Michigan State Housing Development Authority (MSHDA) & Michigan Strategic Fund (MSF)				
Distressed Areas	Blighted areas within communities of 10,000 people or more	Developers	Environmental response activities, demolition, abatement, site preparation & public infrastructure, permitting & engineering	May receive enhancements on applications. TIF eligibility when stacked with other programs
Michigan State - Payment in Lieu of Taxes (PILT)				
Solar Energy Facility Taxation Act (2023 PA 108)	Solar energy facilities with ≥ 2 MW nameplate capacity on brownfields in a Solar Energy District (SED)	Local unit of government in established (SED), or can simultaneously request SED establishment	Exemption of ad valorem real & personal property tax for 20 years	$2,000 /MW of nameplate capacity to community on brownfield projects (Reduced by 50% during construction process)
Federal Investment Tax Credits				
Inflation Reduction Act (IRA)	Renewable energy technologies including solar, wind & battery storage, Job & apprenticeship requirements	Energy system owners (i.e., developers, utilities, cities/businesses that own solar or storage equipment)	Renewable & Clean Energy projects	Investment Tax Credits base rate: < 1MW 30% , > 1MW 6% 10% Adders include: Domestic content, Energy Communities & Brownfields, Low-Income or Tribal. 20% for Low-Income Residential

Figure 5. Summary of funding opportunities and tax incentives for renewable energy projects on brownfields. Eligibility requirements and eligible costs covered vary by funding opportunity.

3.5 Solutions

Making brownfield renewable projects more cost-competitive with greenfields is essential to establishing a successful Brownfield Renewable Energy Pilot Program in Michigan. The higher costs of brownfield solar projects relative to greenfield developments can discourage developers due to the project's overall feasibility and unique site characteristics. By value stacking existing funding sources, streamlining site selection processes, and expanding on costs covered by current programs, Michigan can make brownfield renewable energy projects more attractive to developers and investors.

3.5.1 Value Stacking

Identifying existing opportunities for renewable energy projects on brownfield sites aims to provide a valuable resource for developers, highlighting how EGLE's Pilot Program can strategically extend funding to cover uncovered costs. Some of these opportunities exist as layers in the proof-of-concept map attached to this report, while others are identified as recommended layers for a public-facing tool in Section 2.3. Our team suggests expanding funding to support non-environmental infrastructure needs, such as site leveling, structural reinforcements, and grid interconnection, which currently represent some of the highest expenses. Targeted funding could also assist with site identification and feasibility studies to ensure projects are developed in areas with favorable grid access, suitable slope conditions, and minimal remediation needs beyond those addressed by the existing Brownfield Redevelopment Program. Due to the variety of value stacking opportunities, our research indicates that the Pilot Program could be most effective if it considers a diverse range of projects within its eligibility criteria. The viability of behind-the-meter projects is further discussed in Section 5.3.1. Additionally, the Pilot Program Design Framework provides further considerations for project diversity.

3.5.2 Comprehensive Resource Hub & Enhanced GIS Tool

To address the site-specific barriers identified in Section 3.3.4, creating a centralized, user-friendly platform that consolidates key information, such as liability, grid capacity, due care requirements specific to renewable energy projects (if any), and available incentive programs, could significantly ease the brownfield site selection process for renewable energy developers. EGLE's website already houses relevant information and resources for brownfields and could further tailor an online location to best suit potential renewable energy project developers and hosts.

This resource hub could also direct users to an enhanced GIS-based site selection tool with customizable filters, allowing developers to identify brownfield sites that meet specific technical and locational criteria, such as slope conditions, proximity to substations, or minimal remediation needs (see Section 2.3).

By housing critical data in one location, developers could more quickly assess project feasibility and reduce pre-development delays that increase project costs. Together, these tools could improve transparency, lower perceived financial risks, and help level the playing field between brownfield and greenfield development opportunities.

3.5.3 Gap Funding

Even if developers take full advantage of the existing funding options from EGLE and other state and federal programs, we believe that there is still a gap between the per-megawatt cost of brownfield renewable energy projects and large greenfield renewable energy projects. A "gap funding" approach supports projects that have completed pre-development work but face barriers due to the "brownfield premium" as identified in Section 3.3. The Pilot Program Design Framework, which accompanies this report, offers key considerations for implementing a gap-funding program.

4. Interconnection and Off-taking Power

4.1 Introduction

This section of the report aims to provide a more precise explanation of opportunities for brownfield renewable energy projects to enhance their ability to interconnect with the distribution grid and secure power purchasers (off-takers). Using a mixed-methods approach, we identified key procedural challenges, cost-related constraints, and infrastructure limitations impacting project viability. We also explored a range of proposed solutions to enhance interconnection efficiency, alleviate financial burdens, and make brownfield sites more attractive to renewable energy buyers.

4.2 Methods

The findings are based on a combination of statistical analysis of open data and qualitative insights from stakeholder interviews (as detailed in Figure 6). The statistical analysis used publicly available interconnection queue data from MISO (Midcontinent Independent System Operator, n.d.) and Consumers Energy (Consumers Energy, n.d.). A total of seven interviews were also conducted with 12 representatives from various sectors, including government agencies, investor-owned utilities (IOUs), municipal-owned utilities (MOUs), consultants, and legal experts.

Category	**No. of Interviewees**
Consultant	1
Government	7
Investor-Owned Utility	2
Municipal Utility	1
Lawyer Representing Utilities	1

Figure 6. Number of interviewees by stakeholder category

4.3 Interconnection Process & Timeline

Because most small projects on brownfields—typically those under 20 MW—will interconnect with the distribution system rather than the transmission system, they generally require approval from the local distribution utility, not MISO. The 2019 report, *Accelerating Solar Development on Michigan Brownfields: Challenges and Pathways Forward* (Schaap et al.), noted that distribution system interconnection processes were onerous and posed a barrier to brownfield renewables. However, the regulatory landscape on interconnection processes for renewable energy projects in Michigan has evolved significantly in the intervening years. In 2023, the

MPSC issued orders aimed at streamlining the process for distributed energy resources (DERs) to connect to the grid efficiently (Michigan Public Service Commission, 2023).

These standards only apply to IOUs such as DTE Energy and Consumers Energy. The orders required each IOU to update their interconnection process documents in compliance with the rule change, and so while IOUs still do publish their own interconnection procedures, they are much more standardized. MOUs and cooperative utilities, however, were not affected by the MPSC's recent changes to the interconnection process. Developers working with MOUs must continue to follow locally established protocols. Figure 7 summarizes the key points of the newly updated interconnection process.

Key Summary	**Reference [in Michigan Administrative Rules]**
Expanded Definitions and New Terminology: The 2023 updates introduced clearer and more comprehensive definitions, including for "Distributed Energy Resources" (DERs), now formally defined to include both generators and energy storage devices that can export electricity to the distribution grid.	R 460.901a (r)
Standardization of Interconnection Procedures: Utilities are now required to use standardized interconnection applications, forms, and agreements. These materials must be made available electronically, such as through utility websites or email.	R 460.920 (1)
	R 460.922 (1)
Faster and More Transparent Interconnection Process: New rules implement firm timelines at each step of the interconnection process. Utilities must now notify applicants within 10 business days whether their application is complete or deficient, and applicants are given clear pathways to correct deficiencies. Additionally, when projects trigger supplemental review or detailed study, utilities must provide transparent cost estimates and timelines, as well as several options for how developers can proceed.	R 460.908
	R 460.936 (7)
	R 460.946 (7)
	R 460.948 (2)
	R 460.954 (3)
	R 460.960 (b) (iv), (d)
	R 460.964 (5), (6)
	R 460.982 (4)

Key Summary (continued)	Reference
Updated Fee Structure and Caps on Charges: The rule changes introduced a standardized and capped fee structure for various review levels, including pre-application reports, fast-track reviews, and system impact or facility studies. Fees are now explicitly limited (e.g., a maximum of $300 for pre-application reports; a maximum of $10,000 for system impact studies). Utilities can propose fee adjustments but must seek Commission approval.	R 460.920(3) R 460.926 (2), (3), (4), (5) R 460.928 (1), (2), (3), (4), (5), (6), (7) R 460.952 (3), (4) R 460.974 (2) R 460.1004 (7) R 460.1006 (6)
Introduction of Mediation and Dispute Resolution Mechanisms: A formal dispute resolution process is now available for applicants and utilities. Informal mediation can be requested by mutual agreement and is facilitated by a Commission staff ombudsperson. If mediation fails, either party may file a formal dispute, triggering a structured process involving an administrative law judge.	R 460.904 (1), (2), (3), (4) R 460.906 (1), (2), (3)
Clarification of Technical Standards and Compliance Requirements: DERs are now required to comply with updated national standards for safety and reliability, including IEEE 1547.1-2020 and UL 1741 (2021 edition).	R 460.901a (l)
Encouraging Grid-Connected Energy Storage: The new rules explicitly define "energy storage devices" as eligible DERs. This opens the door for batteries and other storage technologies to participate in grid services and improves the state's ability to manage peak loads and integrate renewable energy.	R 460.901a (z)
Better Access to Information for Developers: Utilities must now provide online tools and documentation to support prospective applicants. This includes searchable rules, fillable forms, contact information for DER coordinators, and sample diagrams. Additionally, pre-application reports are available upon request, offering site-specific feasibility information before an application is submitted.	R 460.922 (1), (2)

Figure 7. Key points to note regarding the updated interconnection process

4.3.1 Interconnection Study Costs

The updated 2023 interconnection rules introduce clear initial caps on interconnection-related fees. For projects progressing beyond the initial review, fast-track supplemental reviews are capped at $1,000, system impact studies at $10,000, and facilities studies at $15,000. The fee for a study track scoping meeting and interconnection application review is also capped at $300. Additionally, pre-application reports may not exceed $300. Application fees related to legacy net metering or distributed generation programs, when combined with fast-track and study-related fees, must not exceed a total of $50. These fees and caps must be displayed on the electric utility's interconnection website. Utilities must also propose fixed fees and updated fee caps specific to DER certification status and system size in their interconnection procedures, based on estimated reasonable costs. However, if a utility anticipates costs exceeding any cap, it may request a waiver with formal justification. Importantly, any changes to fee structures are not retroactive and cannot affect fees that have already been paid.

4.3.2 Interconnection Study Timelines

Lengthy and uncertain transmission-level interconnection studies in Michigan, especially those managed through MISO, have emerged as a major barrier to clean energy deployment. In its 2019 Statewide Energy Assessment, the MPSC noted that the MISO queue is "cumbersome" (Michigan Public Service Commission, 2019, p. 49), often taking more than 500 days (Michigan Public Service Commission, 2019, p. 48) for projects to receive an interconnection agreement. In contrast, distribution-level projects—the most likely scale for brownfields projects—may now interconnect more quickly in theory, thanks to Michigan's updated 2023 interconnection rules.

To understand if this is the case, we did a statistical analysis of open data from both MISO (Midcontinent Independent System Operator, n.d.), the predominant transmission grid operator in Michigan, and Consumers Energy (Consumers Energy, n.d.), one of the state's largest electric utilities (data was not available for DTE Energy, and as such it was not analyzed). Referencing Figure 8 and looking just at energy projects that entered the interconnection queue after January 1, 2023, the date at which the Consumers Energy data begins, we do find significant differences in the processing and clearance rates of interconnection projects. For MISO, no projects that entered the queue since January 2023 have cleared the interconnection process, with a median duration of 299 days for projects that remain pending. In contrast, Consumers Energy reported a clearance rate of 85%, with cleared projects reaching interconnection in a median time of 54 days. For those projects not yet cleared under Consumers, the median duration stood at 173 days. See Appendix C for more details on this analysis.

	MISO	CMS
Percentage of Cleared Projects	0%	85%
Length of Cleared Projects	N.A. as there are no projects cleared	54 days
Length of Projects Not Cleared	299 days	173 days
Note: The median was used to calculate the average durations.		

Figure 8. Comparison of interconnection project timelines

Observations from interviewees call into question, though, whether the distribution interconnection studies are as fast as Figure 8 would suggest. While data from Consumers Energy's website (Consumers Energy, n.d.) shows the median processing time to be approximately 54 days, utility representatives suggest the actual timeframe is anywhere from six to thirteen months (roughly 300 to 390 days). In some instances, it may even extend up to three years, as noted by a lawyer with experience representing utility companies. On the transmission side, there is also great uncertainty in the data. MISO outlines an interconnection timeline of approximately 373 days (Midcontinent Independent System Operator, 2024), though recent research finds MISO projects take 16 to 50 months from interconnection request to interconnection agreement (Rand et al., 2024, slide 35). Due to this discrepancy in currently available data, it is difficult to definitively assess whether transmission or distribution interconnection study timelines are shorter.

Even so, some utility companies view the current interconnection timeline as a significant improvement over previous processes. They report that they have not received feedback from development teams requesting a faster timeline. Additionally, utilities indicate that they believe that connecting projects to the distribution system remains considerably quicker than navigating the transmission-level interconnection process.

Furthermore, some utilities believe that interconnection projects are not only progressing more quickly but also exhibiting higher quality than before. One contributing factor may be the rule requiring developers to decide within 15 business days of receiving the system impact study whether to proceed or withdraw their application (Consumers Energy Company, 2024, p.14). While customer option meetings allow for minor extensions, this new requirement was specifically designed to alleviate the bottleneck caused by excessive project applications. Given these improvements, some utility representatives believe that further changes to the interconnection process would not yield additional benefits, as the current system already supports efficiency and project quality.

4.3.3 Interconnection Study Validity

Aside from jurisdictional differences, utility companies and regulatory staff note that no formal rule currently governs the expiration dates of interconnection studies for IOUs, MOUs, or cooperative utilities. Generally, as long as a project remains in good standing, the original study remains valid. However, any material changes to the project, such as modifications to the inverter, solar panels, or other system components, or significant changes to the surrounding grid infrastructure (for example, the addition of other renewable energy projects in the vicinity of the study area), would trigger the need for a new interconnection study. Interviewees recounted that in practice, interconnection studies are, on average, valid for approximately six months.

4.3.4 Interconnection Upgrade Costs

Under these updated interconnection standards, applicants are responsible for the actual costs associated with interconnection facilities and any necessary distribution system upgrades, up to 110% of the original cost estimate provided by the utility. If the anticipated costs exceed this 110% threshold, the utility is required to furnish the applicant with an itemized summary that outlines and explains the reasons for the increase (Michigan Public Service Commission, 2023). Furthermore, if projected costs are expected to exceed 125% of the initial estimate, the utility must provide additional explanation to the applicant before any such costs are incurred (Michigan Public Service Commission, 2023).

4.3.5 Challenges to Distribution Interconnection

A fundamental challenge in the interconnection of renewable energy projects—particularly at the distribution level—stems from the inherent design of distribution infrastructure. Unlike transmission infrastructure, which is engineered to receive electricity from generators, distribution systems have historically been designed to deliver electricity outward to end-use customers. As such, when a generation project seeks to connect to the distribution grid, it is critical to determine whether the local lines are technically capable of accommodating a power "injection" back into the system.

Furthermore, there are also concerns that injections of power along distribution lines may pose a safety risk during power outages, and so utilities may require the installation of additional protective equipment, such as a Direct Transfer Trip (DTT) system. A DTT ensures that the distributed energy resource (DER) disconnects rapidly in the event of grid disturbances or outages, thereby protecting both utility personnel and infrastructure. The requirement for DTT systems in DER interconnections is not unique to Michigan; DTT has been prescribed by utilities in 14 states (Coalition for Community Solar Access, 2024). However, the necessity and implementation of DTT vary by utility, project type, and local grid conditions. Implementing a DTT introduces ongoing operational and maintenance costs for the project owner, which can influence the overall economic feasibility of a brownfield renewable energy development.

Capacity constraints and grid congestion also pose significant challenges, particularly in allocating upgrade costs among projects. Utility companies typically evaluate interconnection applications on a first-come, first-served basis, meaning that the first project requiring an upgrade is solely responsible for covering its associated costs. As a result, subsequent projects in the queue may face unexpected financial burdens if they are required to redo specific interconnection studies to account for grid modifications caused by earlier projects. This iterative process can lead to higher costs and extended timelines for developers further down the queue.

Additionally, utilities assess each project's interconnection requirements on a case-by-case basis to determine the necessary physical upgrades for grid integration. In some cases, a minor transformer upgrade may be sufficient, while in others, more extensive modifications, such as substation upgrades or distribution line reinforcements, may be required. These infrastructure changes create additional uncertainty and cost variability, making it more challenging for developers to anticipate total expenses accurately.

4.4 Securing Off-takers

The other pertinent—and perhaps even more important—aspect of this objective is the available opportunities for brownfield solar project developers to secure a utility, municipality, or other entity as an off-taker that purchases the power generated by the new solar development. While the interconnection process has been revised and, according to relevant stakeholders, may be more efficient than before, finding an off-taker remains a critical challenge to bringing projects online.

In Michigan, IOUs regulated by the MPSC are generally required to procure power through competitive solicitation processes, particularly for long-term power purchase agreements. These solicitations are designed to be price-driven, meaning that all projects must compete primarily on cost. As a result, brownfield solar projects often face a disadvantage, as they may incur higher development costs due to site remediation, permitting complexities, or interconnection constraints, as discussed in Section 3. This economic pressure means that even when a project has strong environmental or community benefits, it may struggle to win utility contracts unless additional incentives, scoring criteria, or policy support can help level the playing field. Therefore, to successfully secure off-takers in a utility solicitation, brownfield projects must either drive down costs or strategically align with utilities' broader planning objectives.

To better support brownfield projects, there is an opportunity to more clearly communicate how renewable energy procurement can be expanded or tailored to prioritize high-impact developments. This could include emphasizing alignment with utilities' broader planning goals as well as providing developers with clearer information on each utility's off-taking approach. A fact sheet outlining how off-taking differs from utility to utility will be proposed in Section 4.5.6

as a potential resource to address this information gap and support more strategic project positioning.

4.4.1 Existing Mechanisms

4.4.1a Public Utility Regulatory Policies Act (PURPA)

For projects that connect into the distribution grid, the Public Utility Regulatory Policies Act (PURPA) is one of the only mechanisms for non-utility developers (often called independent power producers) to secure an off-taker. PURPA is a federal law that was enacted in 1978 that aims to "encourage competition, conservation, reliability and efficiency in generating and delivering electricity" (*Public Utility Regulatory Policies Act*, n.d.). The act promotes competition by requiring IOUs to purchase power from qualifying facilities (QFs) at rates set by the MSPC, and non-regulated utilities such as MOUs and cooperative utilities to set their own rates for QFs (*Public Utility Regulatory Policies Act*, n.d.). In Michigan, utilities were previously required to purchase power produced by QFs smaller than 20MW, but this requirement is now 5MW (Report on the Implementation of The Public Utility Regulatory Policies Act of 1978 (PURPA), 2024). Additionally, utility companies are mandated to compensate QFs at the utility's avoided energy cost (Report on the Implementation of The Public Utility Regulatory Policies Act of 1978 (PURPA), 2024). Utility representatives have stated that utility companies often oppose PURPA as it requires them to purchase energy whether they need it or not, which can drive up costs for customers, conflicting with their goal of providing affordable energy to their customers.

While the avoided cost rates for PURPA were set in the late 2010s at such a lucrative level that many small solar projects flooded the system, these rates have subsequently been readjusted and are no longer as attractive for independent power producers. For most IOUs, the MPSC sets avoided energy costs based on MISO's day-ahead rates. While utilities must compensate QFs for avoided capacity when they have a capacity need, DTE and Consumers currently have no capacity need, per integrated resource plan settlement agreements, as long as they adhere to their proposed course of action. As a result, while PURPA is still a mechanism forcing utilities to provide some compensation for small projects that connect into the distribution grid, regulatory representatives stated that small front-of-the-meter brownfield solar projects lacking economies of scale and not receiving full avoided costs make it uneconomical to do PURPA projects and rely solely on market rates.

4.4.1b Virtual Power Purchase Agreements (VPPAs)

Because of the price gap between the levelized cost of energy for many brownfield projects and the negotiated PURPA rate, even technically viable projects can remain stalled unless they can identify an additional revenue source or off-taker willing to pay above avoided-cost rates. To close this gap, many developers turn to Virtual Power Purchase Agreements (VPPAs)—contracts in which a third-party customer, typically a corporation or large institution, agrees to pay the difference between the utility's compensation and the developer's actual production costs

(American Cities Climate Challenge, n.d.). This arrangement allows the buyer to claim the renewable energy credits (RECs) and report environmental benefits toward their Environmental, Social, and Governance (ESG) goals (*What Is ESG Investing?*, 2024). Thus, in light of growing interest among universities, hospitals, manufacturers, and other mission-aligned institutions to engage in such deals, strategic outreach and policy support could help expand the VPPA model in Michigan, particularly for brownfield solar projects seeking premium off-takers.

Importantly, VPPAs are legally permissible in Michigan. For example, the developer Irradiant Partners, in collaboration with Braze and other corporate buyers through the Watershed fixed-price VPPA platform (Watershed Technology, Inc., 2024), recently financed five solar plants across Michigan (Braze Social Impact Team, 2024). Given that many stakeholders—including local governments, nonprofits, and anchor institutions—are unfamiliar with VPPAs, pilot programs could help increase awareness and adoption through informational toolkits on VPPA structures, eligibility, and benefits, tailored to brownfield development. Engagement would need to target potential off-takers such as municipalities, universities, and large healthcare systems, as well as solar developers and site owners.

4.4.2 Authorized but Un(der)-Utilitized Mechanisms

Michigan's energy policy includes several mechanisms that authorize innovative or community-driven renewable energy projects, but these are often underutilized. Three such mechanisms include: (a) the "unsolicited proposals" clause in Part 6 of MCL § 460.1028, (b) pilot program funding available to large IOUs through rate cases, and (c) customer-requested projects enabled under Voluntary Green Pricing Programs.

4.4.2a Unsolicited Proposals

While Michigan law (MCL § 460.1028 Part 5) generally requires IOUs to procure new power supply—including renewable energy—through regular, competitive solicitations, this process often favors the lowest-cost, lowest-risk projects, such as large greenfield solar. In practice, these solicitations are held periodically but not frequently, and typically emphasize standardized scoring criteria that leave little room for site-specific social, environmental, or community co-benefits to be valued. However, Part 6 of the same statute explicitly authorizes utilities to pursue "unsolicited proposals" if they can demonstrate that such proposals provide "opportunities that may not otherwise be available or commercially practical through a competitive bid process." While external stakeholders may present ideas, the IOU is the one that chooses to initiate and submit the unsolicited proposal for consideration. This clause offers a potentially powerful—but largely unused—mechanism for advancing innovative or high-impact projects that fall outside traditional market structures, including brownfield solar installations. Despite its existence, there is little evidence that Michigan's IOUs have regularly invoked this authority, representing a missed opportunity to support strategically located, community-supported renewable projects that might not be cost-competitive in traditional solicitations but offer other long-term public benefits.

4.4.2b Large IOUs: Pilot Program Funding

Interviews with stakeholders indicate that Michigan's two largest IOUs—DTE and Consumers Energy—are each authorized through their rate cases to access approximately $10 million annually for pilot programs. Utilities have historically used this mechanism to test emerging technologies, evaluate grid modernization tools, or explore innovative business models. This funding stream represents a flexible and under-leveraged opportunity for utilities to either develop their own brownfield solar projects—a preferred model for IOUs, as they earn regulated returns on infrastructure they own—or to partner with private developers on brownfield sites that might otherwise be overlooked in competitive solicitations. Given the inherent challenges of siting renewables on brownfields, including higher costs and longer lead times, targeting pilot dollars toward such projects could reduce risk, demonstrate feasibility, and pave the way for broader integration of brownfield solar into utilities' long-term resource plans.

4.4.2c Customer-requested projects within Voluntary Green Pricing Programs

In Michigan, IOUs may offer Voluntary Green Pricing (VGP) programs, allowing customers to opt in to receiving a greater portion of their electricity from renewable sources. These programs, regulated by the MPSC, typically involve a modest premium for participants. While the primary focus has historically been on cost-competitive projects—often favoring greenfield development—a recent MPSC order expanded the scope of these programs. In a June 9, 2021, order in Case Nos. U-20713 and U-20851, the Commission approved a partial settlement agreement that allows customers to request renewable energy projects tailored to their specific needs. Specifically, the settlement established that DTE Electric should include customer-requested offerings in its MIGreenPower program, to be implemented through individual special contracts filed with the Commission on an ex parte basis (Michigan Public Service Commission, 2024, pp. 1–2).

According to a stakeholder, the City of Ann Arbor has actively pursued such opportunities to advance its renewable energy goals. The City's approach includes subscribing to DTE's existing renewable projects and advocating for the development of new, customer-requested renewable energy installations within the city's jurisdiction. This strategy not only supports local sustainability objectives but also demonstrates the practical application of the MPSC's provisions for customer-driven renewable projects.

While DTE's case highlighted the explicit authorization for customer-requested projects, multiple stakeholders have indicated that similar opportunities would likely be available across all Michigan IOUs, though they may need to be approved through a case to the Commission. This suggests a broader applicability of the MPSC's directive, empowering customers statewide to influence the renewable energy landscape by proposing projects that align with their specific needs and sustainability goals.

4.4.3 Potential for Mechanisms in Other States: Community Solar

Community solar is broadly defined by the U.S. Department of Energy (DOE) as any solar project or purchasing program, within a geographic area, in which the benefits of a solar project flow to multiple customers—such as individuals, businesses, nonprofits, and other groups. According to the National Renewable Energy Laboratory (NREL), community solar subscribers typically receive a monthly bill credit for the electricity generated by their share of the system, "as if the system were located on their premises" (National Renewable Energy Laboratory [NREL], 2025).

However, the very notion of "community" in community solar is often undefined or misrepresented. Scholars have pointed to the phenomenon of "community washing," in which projects are marketed as community-oriented without actually delivering control, equity, or deep engagement to the people they claim to serve (Ptak, Nagel, Radil, & Phayre, 2018). In Michigan, for example, the IOU voluntary green pricing programs are sometimes considered by the utilities as community solar, even though customers do not gain equity or ownership in the system. In essence, these subscribers are paying for renewable energy credits without building any long-term stake or wealth. "True" community solar, by contrast, enables participants to own a share of a solar project, much like shareholders own stock. This model is more equitable and financially empowering—once the initial investment is repaid, participants can receive electricity at little to no additional cost, apart from grid backup or maintenance. It promotes long-term energy savings and energy independence.

Several states have already demonstrated what is possible when policy frameworks actively support community ownership in solar development. Illinois' Green Energy Justice Cooperative (GEJC), launched by the nonprofit Blacks in Green, is one of the state's first minority-led, community-owned solar cooperatives. With backing from Illinois' Climate and Equitable Jobs Act (CEJA), the Illinois Power Agency, and the state's Climate Bank, GEJC has secured nearly $3 million in funding to support three 3-megawatt solar projects in Aurora, Naperville, and Romeoville—located near or on underutilized land (Henderson, 2024). Through a cooperative membership structure, local residents—particularly from BIPOC and low-income communities—can purchase memberships for as little as $5, making them eligible to subscribe to solar energy and receive monthly solar credits on their utility bills (GEJC, 2025). Members also gain the right to vote on cooperative decisions and are entitled to receive a share of any profit distributions (GEJC, 2025).

New York's Sunset Park Solar project is another example. Located on the rooftop of the Brooklyn Army Terminal—an industrial park owned by the City—the project is the first community solar installation in New York City to be owned and operated by a cooperative of residents and small businesses. Developed through a partnership between the NYC Economic Development Corporation (NYCEDC), grassroots climate justice group UPROSE, nonprofit Solar One, energy cooperative Co-op Power, development partner Resonant Energy, and solar installer 770 Electric Corp, the project reflects a collaborative public-private framework. Subscribers not only receive solar energy credits but also have voting rights to shape the project's direction, and any profits can be reinvested in additional clean energy efforts or returned to members (C40 Cities, 2020).

Because community members have a greater voice in community solar projects, they may be more likely to seek out solar projects that are sited in a way that advances community goals–for example, by reactivating brownfield properties. Furthermore, community solar projects also tend to be relatively small in size, making brownfield sites more viable. As a result, enabling community solar may be an opportunity for Michigan to deliver not only long-term energy savings to community solar members but also find an off-taker for brownfield renewable energy projects.

4.5 Solutions

4.5.1 State-Supported Interconnection Studies

One proposed solution to address interconnection challenges is for the state to cover the cost of interconnection studies for brownfield sites that are likely most suitable for renewables development (e.g., those that are larger, not currently vegetated, have a low slope, and are nearer to transmission lines or along 3-phase distribution lines). By proactively funding these studies to understand the expected cost of interconnection upgrades for the site, the state could help steer renewable energy development toward underutilized land while reducing financial barriers for developers.

To accommodate the requirement that a developer must decide within 15 business days whether to proceed after receiving the results of an interconnection study, the state could perhaps coordinate directly with utilities to conduct preliminary studies that are not part of the official interconnection process, and as such will not trigger formal decision timelines. This would reduce project uncertainty for the developers by gaining a general understanding of grid capacity and constraints at the brownfield site.

Stakeholders interviewed view this as a positive strategy for optimizing land use and expediting project timelines. A legal expert noted that the cost of interconnection studies is relatively insignificant, making this a low-cost, high-impact policy intervention. Additionally, utility representatives believe that state-funded studies would lower project costs and enhance the attractiveness of brownfield sites for development, even if a developer still needed to follow up by conducting a formal interconnection study.

One significant limitation of pre-conducted interconnection studies is their short shelf life. Although these studies do not technically expire, they remain valid only if a project stays in good standing and avoids major design modifications. Any substantial change—or shift in grid conditions due to new interconnections—may require the study to be updated or rerun entirely, undermining its long-term usefulness. Moreover, utility representatives have raised concerns about competition for interconnection capacity: if two developers pursue the same site, the first to proceed may secure favorable upgrade costs, while the second could face much higher expenses due to system impacts triggered by the first project. To address both fairness and fiscal prudence, a more targeted approach could involve reimbursing interconnection study costs only once a project moves forward, rather than fully funding them upfront.

4.5.2 Encourage Utility Pilot Programs

Another proposed solution to promote solar project development on brownfield sites involves encouraging utility companies to use their pilot program funding to establish a brownfield renewables program. Creating pilot projects or programs can provide a set source of funding solely to develop more solar projects on brownfields, utilizing otherwise unusable land. To be effective, any new funding would need to be explicitly reserved for small brownfield projects; otherwise, utilities may prioritize other types of projects instead of focusing on brownfield redevelopment.

As mentioned previously, the MPSC already allows DTE and Consumers to spend $10 million annually on pilot projects; other IOUs are authorized to spend smaller sums on pilot program activities. Because they would be allowed to spend this pilot funding on infrastructure investment, from which they can profit, many interviewees believed that the utilities may be more open to brownfields projects.

4.5.3 Improve Understanding of Interconnection

An additional proposed solution includes changing the way distribution interconnection timelines and applications are marketed and advertised. Creating fact sheets that clearly communicate the projected timeline for the overall interconnection process, as well as each step along the way, can help reduce negative connotations around it. This should also include estimates for extended interconnection processes if, for example, a project needs a study re-done or enters another type of feedback loop. Such information would help communities and owners of brownfields understand the process to assess costs of interconnection, and may also help developers new to Michigan understand the processes for Michigan's distribution utilities. A recently developed interactive map by the team serves as a proof of concept to demonstrate the value of integrating such functionality into the EGLE GIS team's RIDE mapper. The map enables brownfield property owners and potential developers to identify the utility service territory for any given site.

4.5.4 Encouraging Utilities of All Types to Offer Brownfield Renewables Option

Encouraging utilities of all types to offer brownfield-based renewable energy options could broaden the range of viable off-takers and create more targeted demand. IOUs could incorporate these projects into existing mechanisms such as pilot programs or Voluntary Green Pricing (VGP) offerings, especially where customer-requested projects or specific site characteristics align with community goals. MOUs and rural electric cooperatives may be even more responsive, as their programming often reflects direct customer interest, and interviews suggest growing appetite for locally sourced, community-aligned renewables. In addition, alternative electric suppliers (AES)—who serve customers in Michigan's limited but fully subscribed electric choice market—represent a promising and often overlooked channel. As one stakeholder proposed, AES providers could differentiate themselves by offering a brownfield renewables subscription product, allowing environmentally motivated customers to support brownfield redevelopment while securing clean energy.

4.5.5 More Price Certainty for Brownfields Developers

One of the core financial challenges facing brownfield solar developers is the low avoided cost rate paid under Michigan's PURPA framework, which often falls below the clearing price of recent competitive procurements. While keeping energy costs affordable is critical, the current approach can undercut the economic feasibility of projects—especially those with higher development costs like brownfield sites. A potential solution would be to offer standard offer contracts for qualifying PURPA projects at a rate equal to the most recent competitive procurement clearing price, which more accurately reflects the true cost of new generation. One stakeholder, who proposed this idea, argued that such an approach would maintain ratepayer protections while providing greater price certainty and a clearer development pathway for small-scale and community-focused renewable projects.

4.5.6 Match-making of Projects and Off-takers

There is a growing opportunity to connect brownfield-based renewable energy projects with customers whose climate or ESG goals exceed those of their utility's default offerings. This "match-making" could occur through Virtual Power Purchase Agreements (VPPAs), where the customer agrees to pay the premium for renewable energy and associated environmental attributes, or through customer-requested projects within Voluntary Green Pricing (VGP) programs, where available. In both cases, brownfield owners themselves could play an active role—not only by offering up their sites, but also by partnering with developers to create location-specific offerings that appeal to mission-aligned institutions such as universities, health systems, or corporations. The State of Michigan itself could also serve as a key off-taker for brownfield-based projects via VPPAs, reinforcing its climate commitments while supporting site redevelopment.

The MPSC's order regarding Ann Arbor's landfill solar project introduces a potential solution. It established a customer-requested project category under DTE's Voluntary Green Pricing (VGP) program, creating space for anchor tenants to serve as guaranteed off-takers to provide financial viability to the project (MPSC, 2021, p. 32), while allowing other, individual DTE customers to be able to participate under the same terms. This new customer-requested category provides a flexible and utility-aligned structure for advancing projects that align with customer goals regarding location, equity, and participation.

To further support these match-making efforts, clear communication around the range of off-taking options is critical—especially for residents or smaller institutions interested in increasing their renewable energy participation. A proposed fact sheet could help demystify how off-taking differs from utility to utility. This resource would enable more informed participation and encourage the growth of diverse off-taker pools for brownfield solar projects.

5. Pilot Program Design Considerations

5.1 Introduction

In developing the Brownfield Renewables Pilot Program, several key considerations are relevant to the final design. This section examines compliance with federal regulations, analyzes New York's successful Build-Ready program as a helpful model, explores connections with existing Michigan programs, and presents two implementation approaches for the Pilot Program. This guidance is intended to help EGLE design an effective program that maximizes program benefits while satisfying all CPRG grant requirements.

5.2 Methods

To support an effective program design, our research focused on federal funding requirements, a successful brownfield renewable program in New York State, and existing programs in Michigan that can be considered for the final design of this pilot. This research is based on qualitative insights from reviewing federal policies, state resources, and stakeholder interviews. We interviewed individuals from five Michigan state agencies, one representative from the New York State Energy Research and Development Authority (NYSERDA), and a representative from a national renewable energy think tank.

5.3 Compliance with Federal Acts

There are a series of federal acts that impact the eligibility of different costs and project types included in the final Pilot Program. The initial $10 million used to create this Pilot Program will be awarded to subrecipients from EGLE, which is a direct recipient of the EPA's CPRG grant. All subrecipients must adhere to federal grant requirements, even if they are not directly receiving the money from the EPA. Upon exhaustion of this CPRG grant, it is possible that alternative funding sources may sustain the program, thereby enabling the broader application of program funds. However, maintaining compliance ensures eligibility for any future federal funding opportunities. These acts do not necessarily prohibit what can be considered eligible costs in the pilot, but do impact the feasibility of covering certain costs related to renewable energy projects. It is advisable for administrators of the Pilot Program and applicants to understand the requirements and exemptions of federal acts.

The following information is not intended as legal advice nor a comprehensive summary of relevant Federal Acts and their applications to renewable energy projects. It will be necessary for EGLE to conduct further research and consult with legal professionals to meet all requirements when launching the Pilot Program.

5.3.1 Build America Buy America Act

The Build America Buy America Act (BABAA) was established in 2021 as part of the Infrastructure Investment and Jobs Act (IIJA). BABAA establishes a "domestic content procurement preference," also known as the "Buy America Preference," for all federal government procurement and various infrastructure projects that receive federal aid after May 12, 2022, as outlined in the Build America Buy America Act of 2021. BABAA was passed with the intent of ensuring taxpayer money is used on public infrastructure that is produced in the United States and creates American jobs. Project owners are able to apply for a waiver citing various justifications (2 CFR 184.7), but the current federal administration's emphasis on domestic manufacturing may decrease the likelihood of these applications being accepted. A 2024 report published by the Clean Energy States Alliance provides a useful breakdown of BABAA that can help developers and state officials understand how to maintain compliance (Bourg-Meyer, V., & Burrowes, A.).

5.3.1a When BABAA Applies

BABAA applies to all infrastructure components of a project, even if it receives federal and non-federal funds from one or more awards (Build America Buy America Frequently Asked Questions, 2025). Federal funds are only eligible for these infrastructure projects if "all of the iron, steel, manufactured products, and construction materials incorporated into the project are produced in the United States" (see Figure 9) (2 CFR 184.1(b)). As defined in 2 CFR 184.4(c), "infrastructure" refers to an inexhaustive number of public infrastructure projects that serve a public function, whether or not the infrastructure is the project's primary purpose, including:

1. Structures, facilities, and equipment for roads, highways, and bridges;
2. Electrical transmission facilities and systems; utilities; broadband infrastructure;
3. Buildings and real property;
4. Structures, facilities, and equipment that generate, transport, and distribute energy including electric vehicle (EV) charging.

These requirements apply to some of the major costs of renewable energy costs, including solar panels, turbines, and batteries. Currently, the United States relies heavily on imports of these technologies and the raw materials required for their production and the domestic market has been relatively slow to catch up to the demand (Abrahams, 2025). In the current market, it seems unlikely that renewable energy infrastructure will be able to feasibly comply with BABAA standards.

How to interpret "produced in the United States" under BABAA	
Category*	**BABAA production requirement(s)***
Iron & steel	All processes must occur in the US, from the initial melting stage through the application of coatings
Construction Materials	All manufacturing processes for the construction material must occur in the US
Manufactured Products	(1) Product must be manufactured in the US; (2) Cost of components from product that are mined, produced, or manufactured in US must be greater than 55 percent of total cost of product
**Information taken directly from 2 CFR. 184.3*	

Figure 9. How to interpret "produced in the United States" under BABAA

5.3.1b When BABAA Does Not Apply

Federal funding can be used for other elements of renewable energy projects in addition to infrastructure produced in the United States. According to the US Department of Energy (DOE), BABAA requirements do not apply "to non-infrastructure spending under an award that also includes an infrastructure project" (Department of Energy, 2022). Therefore, funds can be used on a variety of non-infrastructure costs without triggering BABAA, including:

i. Feasibility studies related to interconnection, environmental assessments, etc.;

ii. Permitting;

iii. Community engagement;

iv. Energy premiums.

Additionally, BABAA does not apply to infrastructure projects that do not serve a public function (Office of Management and Budget, 2023). A public function is determined by considerations of "whether the project is publicly owned and operated, privately operated on behalf of the public, or is a place of public accommodation, as opposed to a project that is privately owned and not open to the public" (2 CFR 184.4(d)). Behind-the-meter renewable energy projects for private institutions on privately owned land likely do not meet the public function criteria of BABAA and therefore may not be subject to compliance, but this should be further verified. Because there are various costs and project types that comply with federal requirements, project diversity is addressed as a design consideration in the additional Pilot Program Design Framework prepared for EGLE.

5.3.1c How to Ensure Compliance

Recipients of federal funding for projects that trigger BABAA requirements must be able to provide proof of compliance that all steel and iron, construction materials, and manufactured materials were produced in the US. Due to the relatively new implementation of BABAA, EGLE will need to work with the EPA to establish a satisfactory procedure to document and confirm compliance. This will need to be incorporated into the Pilot Program so that project owners are able to clearly understand what is required of them for the use of these funds, and how they will need to source all infrastructure materials for projects being covered by these funds. The EPA does hold the authority to issue waivers based on public interest, non-availability, or unreasonable cost (*BABA Overview,* 2025); however, it seems unlikely the Trump administration will be amenable to waiver requests for renewable energy projects (McDermott, 2025).

Because BABAA applies to all projects–energy and otherwise–that receive federal assistance, compliance may be something that renewable energy developers have already considered. Developers pursuing behind-the-meter projects on housing projects may already be subject to compliance if those housing projects have received federal subsidies for affordable housing or other public infrastructure. Additionally, BABAA compliance may already be in the interest of energy developers due to the availability of the Domestic Content Bonus Credit of 10 percent of the ITC or PTC (*Inflation Reduction Act Tax Credit Opportunities for Hydropower and Marine Energy*, 2022).

5.3.2 Davis-Bacon and Related Acts

Like most federal funding, the CPRG funds used to launch the Brownfield Renewables Pilot Program must be used in compliance with the Davis-Bacon and Related Acts (DBRA). DBRA requires that all contractors and subcontractors for projects funded in full or in part by federal funds must "pay their laborers and mechanics (and under certain conditions, watchmen/guards and working foreman) not less than the locally prevailing wage and fringe benefits for the geographic location" (Environmental Protection Agency, 2024). The Brownfield Renewables Pilot Program must be designed and implemented following this requirement and all awardees should be aware of these labor requirements prior to accepting their award. Compliance with this standard is not expected to pose any barrier to participation in the Pilot Program since solar developers must comply with these wage and apprenticeship requirements in order to access the 30% ITC, which is a standard assumption for all new renewable energy systems (*Summary of Inflation Reduction Act Provisions Related to Renewable Energy*, 2022).

5.4 New York Model

Multiple interviewees pointed to New York's Build-Ready program as a potential model for Michigan's Brownfield Renewables Pilot Program. The Build-Ready program is a partnership between the New York State Energy Research and Development Authority (NYSERDA) and local communities to locate and develop underused lands that can generally be classified as brownfield sites (landfills, retired mines, existing or former industrial sites, etc.). This program has a project size requirement of at least 10 MW, which, if developed in solar, generally requires about 50 acres of buildable land. EGLE can use Build-Ready as a successful brownfield renewables program model. Some lessons learned will be more applicable than others due to differences in scale, since our preliminary geospatial analysis indicates that many of EGLE brownfields are smaller than what would be viable for the Build-Ready program.

5.4.1 Self-Sustaining

An important element of NYSERDA's program is its model of self-sustainment over time. The Build-Ready program was launched after the New York Public Service Commission (NYPSC) provided an initial $50 million to NYSERDA. In the petition for this program, NYSERDA requested funding for at least 5 years from NYPSC following the initial investment. The goal of Build-Ready is to become self-funded by selling pre-developed brownfield renewable projects to developers who are able to begin the construction process immediately after buying the project. This competitive auction model charges a developer fee on each project and those funds are reinvested into the Build-Ready program.

5.4.2 Political and Financial Commitment

The State of New York has demonstrated strong political and financial commitment for the Build-Ready program that is largely responsible for the program's success so far. The New York program has secured five times the amount of funding than is available for EGLE's Pilot Program. The state's investment constitutes well over half of the program's entire budget of $71.8 million from 2020 through 2025 and has been instrumental in its implementation (NYSERDA, 2024).

5.4.3 Operate as Developer

Interviewees suggested that while New York's program requires a significant upfront investment by the state, it has created an attractive opportunity for developers interested in brownfield renewables but unwilling to take on the initial time and cost to prepare sites for projects. Build-Ready identifies and evaluates potential sites across New York State, both through nominations by site owners and proactive site selection. The Build-Ready Team assesses each site's feasibility, and if deemed viable, initiates the development process. This includes securing permits, designing the project, managing interconnection, and creating a community benefits package. Once these steps are complete, the site is auctioned through a transparent, competitive process to private renewable energy developers, who then oversee its construction and operation.

5.4.4 Renewable Energy Certificate

RECs compensate developers for generating renewable energy. The Build-Ready Program leverages NYSERDA's authority to secure and manage 20-year RECs, providing a competitive financial mechanism to support project feasibility. To enhance financial viability, Build-Ready incorporates an inflation adjuster and an interconnection cost adjuster, allowing for adjustments to the REC strike price if needed.

5.4.5 Community Benefits

A benefit of this program model is a stable revenue stream for landowners with minimal involvement, as the Build-Ready Team handles permitting, design, and project management. Additionally, participation demonstrates a commitment to clean energy and economic growth, benefiting the broader community. To address long-term site management, the program includes decommissioning requirements, ensuring that solar facilities are responsibly removed and land is restored at the end of the lease. Implementation of a similar program could consider requiring decommissioning plans and financial security measures to guarantee site restoration.

5.5 Related Programs and State Agencies in Michigan

While the Brownfields Renewable Pilot Program represents the first concerted effort to target brownfield sites for renewable energy development, there are existing state agencies with programs or policies which may facilitate the effectiveness of the pilot. EGLE should consider utilizing this wide network of opportunities and actors that already play a role in brownfield redevelopment and renewable energy projects in the state when designing the final Pilot Program and enhanced GIS tool.

5.5.1 EGLE's Brownfield Redevelopment Program

This pilot is an extension of the existing Brownfield Redevelopment Program in the state and its design can complement current functions that support brownfield redevelopment. As discussed in previous sections, the purpose of this program is not to replace or extend existing incentives for site assessment and remediation. This Pilot Program instead provides an opportunity to cover costs that are not allowed under the current Brownfield Redevelopment Program. However, the Pilot Program should rely on the Brownfield Redevelopment Program's site classification and assessments to determine site eligibility and due care obligated by project owners.

5.5.2 Michigan Economic Development Corporation and Michigan Strategic Fund (MSF)

As a public-private partnership, MEDC coordinates with the MSF to provide a variety of resources and incentives to municipalities and developers on projects to stimulate the local and state economy. Many of these programs apply to brownfield sites, and so this Pilot Program could be strategically designed to encourage renewable projects on brownfields that can leverage MEDC and MSF funding opportunities. See Section 3.4 for more information on MEDC programs.

5.5.3 Michigan State Housing Development Authority

This Pilot Program could work in conjunction with projects on brownfield sites that are being redeveloped for housing projects with MSHDA incentives. Including multi-use projects could allow the Pilot Program to apply to a greater number of brownfield sites, achieve meaningful co-benefits for host communities, and potentially leverage additional funding that can help overcome cost barriers identified in Section 3.3.

5.5.4 State Land Bank Authority

The State Land Bank Authority (LEO) owns over 2,600 properties and is already currently pursuing renewable energy projects on some of its brownfield sites (State Land Bank Authority, 2020). By partnering with LEO, the pilot could be modeled after New York's Build-Ready and pre-develop state-owned brownfield sites and sell fast-tracked projects to developers and reinvest profits from the sale back into the program. However, this partnership would require significant inter-institutional coordination and potentially a higher level of investment than the program can currently afford.

5.5.5 EGLE's Energy Services Unit

The Energy Services Unit (ESU) generally focuses on larger-scale projects that connect to the transmission grid, but advocates for SolSmart communities in the state, which may be relevant to distribution-connected projects. Additionally, the ESU website already provides information on renewable energy projects on contaminated sites in the state and could be a useful collaborator in continuing to expand public knowledge on the opportunities of brownfield sites (Clean Energy in Michigan Series, 2025).

5.5.6 Michigan Public Service Commission

The MPSC is largely the regulator and implementer of energy policy in the state. The Commission could provide the Brownfield Renewable Pilot Program with important context and an opportunity to extend the program's reach. Information made available online for distribution-system hosting capacity, for example, is important to aid site assessment. In addition, the MPSC may be aware of other opportunities to expand or make the program self-sustaining.

5.6 Considerations for Pilot Program Design

In exploring the different routes that this Pilot Program could go, our team settled on two broad approaches to increase renewable energy on brownfield sites. The Pilot Program Design Framework attached to this report provides further analysis on different considerations for both of these approaches.

5.6.1 Gap Funding for Projects

As discussed, the gap funding approach focuses on projects that have already completed the necessary pre-development activities and leveraged other available funding but still face higher costs associated with getting the projects online (see Section 3). By providing gap funding to enable these projects-in-the-pipeline to pencil, this approach intends to result in new MW of renewable energy being installed, creating a more straightforward path towards the 11.8MW goal of the pilot funding. Additionally, the uncertainty of support for renewables under the current federal administration, which has cut funding for renewable energy and committed to promoting fossil fuels (Gelles, 2025), may make this a pragmatic approach that can continue to push projects through in a political context that is unlikely to further incentivize renewables.

A gap funding approach would still require making decisions about how large any one award can be, which awardees and costs are eligible under the grant, and whether any criteria beyond simply MW installed might be applied. To extend program dollars, eligible awardees could demonstrate they have fully exhausted other funding opportunities (including those listed in Section 3.4). One design of the gap funding approach could be to offer the entity that enters into the power purchase agreement (or VPPA) a grant to cover the gap between the actual price and the price for a recent competitively bid contract. Paying the off-taker for the "brownfield premium"–in effect, subsidizing the purchase of the electricity, not subsidizing the project itself–seems the least likely to trigger BABAA requirements that can make projects cost prohibitive. Another approach could be to directly reimburse developers or the owners of these projects for the costs that make brownfields projects more expensive, but which may not be covered easily via other funding sources.

5.6.2 Build Ready

This approach helps more sites do the pre-development work required to more easily reduce uncertainty, time, and up-front costs for future development. Our research has revealed that many of these "soft" costs are unlikely to require large grants to owners of brownfields, developers or municipalities, but do play an important role in determining the viability of sites for future renewable development. This approach does not necessarily lead directly to renewables projects or MW produced but does lay the groundwork for successful renewable energy projects on brownfield sites in the future.

There are at least two potential ways that the "build ready" program model could be implemented. One is by providing comparatively small grants to undertake these pre-development activities. While this would help build a further pipeline of projects, if these projects still have "gaps" in being financially viable, this approach may be most appropriate if future funding is secured for the project and the State indicates strong political commitment to renewable energy projects on brownfields. Under this approach, funding could be distributed on a reimbursement basis once a project reaches a certain point in the development process to help avoid paying for activities that do not lead to successful renewable energy projects.

Another approach to a "build ready" program is to build this technical capacity into the State agencies that have support for brownfields redevelopment. While this would require collaboration and information sharing among these agencies, there may be a greater opportunity to leverage funding and efficiencies. For example, as the MEDC Redevelopment Ready

Communities program is helping assess and market properties in certified communities, pre-development activities for renewable energy projects can also be considered.

Some of the identified costs that could be included in the "build ready" approach are:

a. Site plan review,

b. Permitting and zoning pre-approval,

c. Community engagement,

d. Legal fees.

Works Cited

2 C.F.R. § 184.7 (2023). https://www.ecfr.gov/current/title-2/part-184/section-184.7

Abbott, S. (2024, September 3). *Scaling Low-Income Solar with the Inflation Reduction Act*. RMI. https://rmi.org/scaling-low-income-solar-with-the-inflation-reduction-act/

Abrahams, L. (2025). *The Impacts of Tariffs on Clean Energy Technologies*. Csis.org. https://www.csis.org/analysis/impacts-tariffs-clean-energy-technologies

American Cities Climate Challenge. (n.d.). Virtual PPA. https://cityrenewables.org/vppa/

Bourg-Meyer, V., & Burrowes, A. (2024). Build America Buy America and Domestic Content: A Primer for the Greenhouse Gas Reduction Fund Solar for All Program. *Clean Energy States Alliance*. https://www.cesa.org/wp-content/uploads/Explainer-BABA-and-Domestic-Content_CESA.pdf

Braze Social Impact Team. (2024, June 13). *Bringing new solar plants to life in Michigan.* Braze. https://www.braze.com/resources/articles/bringing-new-solar-plants-to-life-in-michigan

Build America Buy America Act, Title IX, 42 U.S.C. § 70901-27 (2021). https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf

Burger, S. P., Jenkins, J. D., Huntington, S. C., & Pérez-Arriaga, I. J. (2019). Why distributed? A critical review of the tradeoffs between centralized and decentralized resources. *IEEE Power & Energy Magazine, 17*(2), 47-55. https://doi.org/10.1109/MPE.2018.2885203

C40 Cities. (2020, February). *Sunset Park: Community solar energy in NYC.* https://www.c40.org/case-studies/nyc-sunset-park-solar/

Coalition for Community Solar Access. (2024). *Direct transfer trip: The interconnection problem you've never heard of*. https://communitysolaraccess.org/wp-content/uploads/Alternatives-to-DTT_CCSA-2024_09.pdf

Consumers Energy. (2024, March 22). *Generator interconnection procedures: Level 4 & 5 – Projects with DER capacity greater than 550 kW* (Revised ed.). https://www.consumersenergy.com/-/media/CE/Documents/Customer%20Forms/interconnection/interconnection-requirements-level4and5.pdf

Consumers Energy. (n.d.). Status report. Retrieved February 24, 2025, from https://www.consumersenergy.com/residential/savings-and-clean-energy/renewable-energy/generation-interconnection-information

Convergence Associates. (n.d.). Colorado Brightfields. ArcGIS Experience Builder. https://experience.arcgis.com/experience/dd9791df021f4c7594186cc06df3a72d/page/Brightfields

Department of Energy. (2022a). *Implementation of the Buy America requirements for infrastructure projects*. https://www.energy.gov/sites/default/files/2023-06/DOE%27s%20Implementation%20of%20the%20Buy%20America%20Preference%2011-17.pdf

Department of Energy. (2022b). *Inflation Reduction Act tax credit opportunities for hydropower and marine energy*. https://www.energy.gov/eere/water/inflation-reduction-act-tax-credit-opportunities-hydropower-and-marine-energy

DTE Electric. (2024, March 22). *Michigan electric utility generator interconnection procedures: Level 3, 4 & 5 projects with DER capacity greater than 150 kWac or any non-certified application*. https://www.dteenergy.com/content/dam/dteenergy/deg/website/hybris/rooftop-solar/InterconnectionProceduresL345.pdf

Environmental Protection Agency. (2024, November 22). *Climate Pollution Reduction Grants (CPRG) Program guidance document: General overview on Davis-Bacon and Related Acts*. https://www.epa.gov/system/files/documents/2024-12/cprg-davis-bacon-and-related-acts-1pager-002_0.pdf

Executive Office of the Governor. (2024, July 24). *Gov. Whitmer announces $129.1 million investment from Biden-Harris administration to lower costs, create jobs, protect clean air and water.* https://www.michigan.gov/whitmer/news/press-releases/2024/07/22/gov-whitmer-announces-291-million-investment-from-biden-harris-administration-to-lower-costs

Federal Emergency Management Agency. (2025, January 21). *Build America, Buy America Act frequently asked questions (FAQs)*. https://www.fema.gov/fact-sheet/build-america-buy-america-act-frequently-asked-questions-faqs

Frick, M. (2024, October 6). *Plan to build solar array at former Grand Rapids landfill one step closer to reality*. Mlive. https://www.mlive.com/news/grand-rapids/2024/10/plan-to-build-solar-array-at-former-grand-rapids-landfill-one-step-closer-to-reality.html

Gelles, D. (2025, March 6). Will the shift to clean power continue under Trump? *The New York Times*. https://www.nytimes.com/2025/03/06/climate/trump-clean-energy-transition.html

Green Energy Justice (2025). *Program*. https://gejc.org/program/

Henderson, A. (2024, April 16). Illinois gives $1.6 million boost to justice-focused community solar projects. *Canary Media*. https://www.canarymedia.com/articles/enn/illinois-gives-1-6-million-boost-to-justice-focused-community-solar-projects

Hoesch, K. (2024, May). *Perception of large scale solar neighborhoods*. https://graham.umich.edu/media/files/Perceptions-of-Large-Scale-Solar-Neighbors-2024-05.pdf

Investopedia. (2024, July 30). *What is ESG investing? What impact is your investment making?* https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp

McDermott, J. (2025, March 28). Trump administration cancels clean energy grants as it prioritizes fossil fuels. *AP News*. https://apnews.com/article/trump-energy-department-clean-energy-wind-solar-batteries-hydrogen-fossil-fuels-cf1dff9ee771c566765e9ca3e3599d91

Michigan Department of Environment, Great Lakes, and Energy. (2023a). *Act 381 Brownfield Tax Increment Financing* [Fact sheet]. https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/RRD/Brownfields/Brownfield-Act381-TIF-Factsheet.pdf

Michigan Department of Environment, Great Lakes, and Energy. (2023b, January). *Brownfield redevelopment grants and loans*. https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/RRD/Brownfields/Brownfield-Grant-and-Loan-Fact-Sheet.pdf

Michigan Department of Environment, Great Lakes, and Energy. (2023c). *Clean Energy in Michigan Series*. https://www.michigan.gov/egle/about/organization/materials-management/energy/communities/series

Michigan Department of Environment, Great Lakes, and Energy. (n.d.). RenewMI Project Viewer. ArcGIS Experience Builder. https://experience.arcgis.com/experience/a3db431c6b154b87a481e1122f726101/page/Project-Viewer/

Michigan Economic Development Corporation. (2023). *Core Communities* [Fact sheet]. https://www.michiganbusiness.org/globalassets/documents/reports/fact-sheets/core_communities.pdf

Michigan Economic Development Corporation. (n.d.). *Transformational Brownfield Plans: What is it*. https://www.miplace.org/4a19cc/globalassets/documents/tbp/tbp-fact-sheet.pdf

Michigan Legislature. (2023). MCL - Act 108 of 2023. https://www.legislature.mi.gov/Laws/MCL?objectName=mcl-Act-108-of-2023

Michigan Legislature. (2023). *Solar Energy Facilities Taxation Act, § 211.1153: Solar energy districts; establishment by resolution; written notice; discretionary approval*. https://www.legislature.mi.gov/Laws/MCL?objectName=mcl-211-1153

Michigan Legislature. (2024). *Clean and Renewable Energy and Energy Waste Reduction Act (excerpt), Act 295 of 2008, MCL § 460.1028.* Michigan Compiled Laws Complete Through PA 2 of 2025. https://legislature.mi.gov/Laws/MCL?objectName=MCL-460-1028

Michigan Natural Resources and Environmental Protection Act, Public Act 451 of 1994, § 324.20126, MCL § 324.20126.

Michigan Public Service Commission. (2019, September 11). *Michigan statewide energy assessment*. https://www.michigan.gov/-/media/Project/Websites/mpsc/regulatory/reports/2019-09-11_SEA_Final_Report_with_Appendices.pdf

Michigan Public Service Commission. (2021a, April 14). *Partial settlement agreement, Case Nos. U-20713 and U-20851*. https://a2gov.legistar.com/View.ashx?GUID=C0366C33-602A-44F8-BCD7-86F3090E610B&ID=9321410&M=F

Michigan Public Service Commission. (2021b, June 9). *Order in the matter of DTE Electric Company's compliance with Section 61 of 2016 PA 342 and Public Act 295 of 2008 (Case Nos. U-20713 & U-20851)*. https://mi-psc.my.site.com/sfc/servlet.shepherd/version/download/068t000000PPEkMAAX

Michigan Public Service Commission. (2023). *Interconnection and distributed generation standards*. Michigan Department of Licensing and Regulatory Affairs. https://www.consumersenergy.com/-/media/CE/Documents/residential/renewable-energy/distributed-generation/mixdg-rules-2023.pdf

Michigan Public Service Commission. (2024a, December 19). *Order in the matter of DTE Electric Company's application to comply with Public Act 295 of 2008, as amended (Case No. U-21285)*. https://adms.apps.lara.state.mi.us/Mpsc/ViewCommissionOrderDocument/27023

Michigan Public Service Commission. (2024b). *Report on the implementation of The Public Utility Regulatory Policies Act of 1978 (PURPA)*. https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/regulatory/reports/PURPA-reports/PURPA-report-2024.pdf

Michigan Public Service Commission. (n.d.-a). Electric Customer Choice. Retrieved April 4, 2025, from https://www.michigan.gov/mpsc/consumer/electricity/choice

Michigan Public Service Commission. (n.d.-b). Public Utility Regulatory Policies Act. Retrieved February 7, 2025, from https://www.michigan.gov/mpsc/regulatory/electricity/renewable-energy/purpa

Michigan Public Service Commission. (2019, September 26). *Public Utility Regulatory Policies Act (PURPA) Issue Brief*. https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/consumer/info/briefs/MPSC_Issue_Brief_--_PURPA.pdf

Michigan State Housing Development Authority. (2024). *Eligible Distressed Areas* [Report]. https://www.michigan.gov/mshda/-/media/Project/Websites/mshda/about/reports/Eligible-Distressed-Areas-List_2024.pdf

Michigan State Housing Development Authority. (n.d.). About Michigan Opportunity Zones. Retrieved April 15, 2025, from https://www.michigan.gov/opportunityzones/about

Michigan.gov. (2017). FAQs. https://www.michigan.gov/opportunityzones/about/faqs

Midcontinent Independent System Operator. (n.d.). *Generator interconnection*. https://www.misoenergy.org/planning/resource-utilization/generator-interconnection/

Midcontinent Independent System Operator. (2024, February 29). *Generator interconnection process flow diagram*. https://cdn.misoenergy.org/GI%20Process%20Flow%20Diagram106549.pdf

Midcontinent Independent System Operator. (n.d.). Generator interconnection queue (interactive queue). https://www.misoenergy.org/planning/resource-utilization/GI_Queue/gi-interactive-queue/

National Renewable Energy Laboratory. (2025, April 7). Community Solar. U.S. Department of Energy. https://www2.nrel.gov/state-local-tribal/community-solar

New Jersey Department of Environmental Protection. (n.d.). New Jersey Community Solar PV Siting Tool [Web map application]. ArcGIS Web AppViewer. https://www.arcgis.com/apps/webappviewer/index.html?id=c3a9466eb7e54badbb41a90794bd0349

NYSERDA. (2024, April). *Clean energy resource development and incentives: The Build-Ready Program annual progress report 2023*. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/LSR-BRP-2023-annual-r-1-v1.pdf

Office of Management and Budget. (2023, October 25). *Memorandum for the Heads of Executive Departments and Agencies* [Memo]. https://www.whitehouse.gov/wp-content/uploads/2023/10/M-24-02-Buy-America-Implementation-Guidance-Update.pdf

Popkin, M., & Krishnan, A. (2021). The future of landfills is bright. Rocky Mountain Institute. https://rmi.org/insight/the-future-of-landfills-is-bright/

Ptak, T., Nagel, A., Radil, S. M., & Phayre, D. (2018). Rethinking community: Analyzing the landscape of community solar through the community-place nexus. *The Electricity Journal, 31*(10), 46–51. https://doi.org/10.1016/j.tej.2018.11.006

Ramasamy, V., Zuboy, J., Woodhouse, M., O'Shaughnessy, E., Feldman, D., Desai, J., Walker, A., Margolis, R., & Basore, P. (2023). *U.S. solar photovoltaic system and energy storage cost benchmarks, with minimum sustainable price analysis: Q1 2023* (NREL/TP-7A40-87303). National Renewable Energy Laboratory. https://www.nrel.gov/docs/fy23osti/87303.pdf

Rand, J., Manderlink, N., Gorman, W., Wiser, R., Seel, J., Mulvaney Kemp, J., Jeong, S., & Kahrl, F. (2024). *Queued Up: 2024 edition – Characteristics of power plants seeking transmission interconnection as of the end of 2023* [PowerPoint presentation]. Lawrence Berkeley National Laboratory. https://emp.lbl.gov/sites/default/files/2024-04/Queued%20Up%202024%20Edition_R2.pdf

Schaap, B., Dodinval, C., Husak, K., & Sertic, G. (2019). *Accelerating solar development on Michigan brownfields: Challenges and pathways forward*. University of Michigan. https://graham.umich.edu/media/files/dow/Dow-Masters-2019-Brownfields.pdf

Scripps, D., Peretick, K., & Carreon, A. (2023, September 29). *Status of renewable energy, distributed generation, and legacy net metering in Michigan*. Michigan Public Service Commission. https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/regulatory/reports/RE-DG/2023-Renewable_Energy_Distributed_Generation_Legacy_Net_Metering_Report.pdf

Thayer, K. (2025, February 19). Look to rooftops, brownfields, policy reforms to capture solar savings. *Bridge Michigan*. https://www.bridgemi.com/guest-commentary/opinion-look-rooftops-brownfields-policy-reforms-capture-solar-savings

U.S. Environmental Protection Agency. (2022, November 21). Summary of Inflation Reduction Act provisions related to renewable energy. https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy

U.S. Environmental Protection Agency. (2024, October 22). Solar power purchase agreements. https://www.epa.gov/green-power-markets/solar-power-purchase-agreements

U.S. Environmental Protection Agency. (2025, January 24). Summary of Inflation Reduction Act provisions related to renewable energy. https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy

Watershed Technology, Inc. (2024, June 13). Fixed-price Virtual Power Purchase Agreement funds five new Michigan solar plants. *Watershed*. https://watershed.com/blog/michigan-clean-power-vpp

Appendix A

Brownfields Per Electric Utility Company

This figure shows each electric utility provider's number of contaminated sites and underground storage tanks (Note: the values in the figure may not add to the totals at the bottom because a given site/tank may be in more than one provider territory, resulting in double counting. This data was sourced from EGLE's RIDE Mapper)

Brownfields Per Electric Utility Company				
Utility Name	# Part 201 Sites of Contamination	# Underground Storage Tanks (Parts 211/213)	Sum	% of Total
Alger Delta Cooperative Electric Association	36	111	147	0.29%
Alpena Power Company	93	174	267	0.53%
Bay City Electric Light & Power	187	257	444	0.88%
Cherryland Electric Cooperative	207	270	477	0.95%
City of Charlevoix	15	44	59	0.12%
City of Chelsea	20	36	56	0.11%
City of Croswell	5	19	24	0.05%
City of Crystal Falls	5	20	25	0.05%
City of Dowagiac	15	46	61	0.12%
City of Eaton Rapids	16	33	49	0.10%
City of Escanaba	37	88	125	0.25%
City of Gladstone	14	24	38	0.08%
City of Harbor Springs	6	32	38	0.08%
City of Hart	8	24	32	0.06%
City of Marshall	35	53	88	0.17%
City of Negaunee	7	21	28	0.06%
City of Niles	32	74	106	0.21%
City of Norway	5	23	28	0.06%
City of Petoskey	32	70	102	0.20%
City of Portland	10	24	34	0.07%
City of South Haven	82	89	171	0.34%
City of St Louis	17	26	43	0.09%
City of Stephenson	0	8	8	0.02%
City of Sturgis	44	92	136	0.27%

Brownfields Per Electric Utility Company				
City of Wakefield	2	17	19	0.04%
City of Wyandotte	67	70	137	0.27%
Cloverland Electric Cooperative	186	471	657	1.31%
Coldwater Board of Public Utilities	37	91	128	0.25%
Consumers Energy Company	7630	14104	21734	43.19%
DTE Electric Company	7769	11926	19695	39.14%
Grand Haven Board of Light & Power	104	98	202	0.40%
Great Lakes Energy Cooperative	562	1253	1815	3.61%
Hillsdale Board of Public Utilities	48	75	123	0.24%
Holland Board of Public Works	174	250	424	0.84%
Homeworks Tri-County Electric Cooperative	43	117	160	0.32%
Indiana Michigan Power Company	633	1267	1900	3.78%
Lansing Board of Water & Light	402	808	1210	2.40%
Lowell Light & Power	20	34	54	0.11%
Marquette Board of Light and Power	96	168	264	0.52%
Midwest Energy Cooperative	77	227	304	0.60%
Northern States Power Company - Wisconsin	28	101	129	0.26%
Ontonagon County Rural Electrification Association	11	26	37	0.07%
Presque Isle Electric & Gas Cooperative	58	251	309	0.61%
Thumb Electric Cooperative	40	175	215	0.43%

Brownfields Per Electric Utility Company				
Traverse City Light & Power	158	265	423	0.84%
Upper Michigan Energy Resources Corporation	155	427	582	1.16%
Upper Peninsula Power Company	215	589	804	1.60%
Village of Baraga	0	10	10	0.02%
Village of Clinton	8	18	26	0.05%
Village of L'Anse	5	18	23	0.05%
Village of Newberry	7	28	35	0.07%
Village of Paw Paw	24	47	71	0.14%
Village of Sebewaing	11	21	32	0.06%
Village of Union City	5	13	18	0.04%
Zeeland Board of Public Works	39	53	92	0.18%
Total	18379	31946	50325	100.00%

Figure A1. Number of Brownfields by Utility

Appendix B

Butterworth Landfill Case Study

Figure B1. Butterworth Landfill Superfund Site

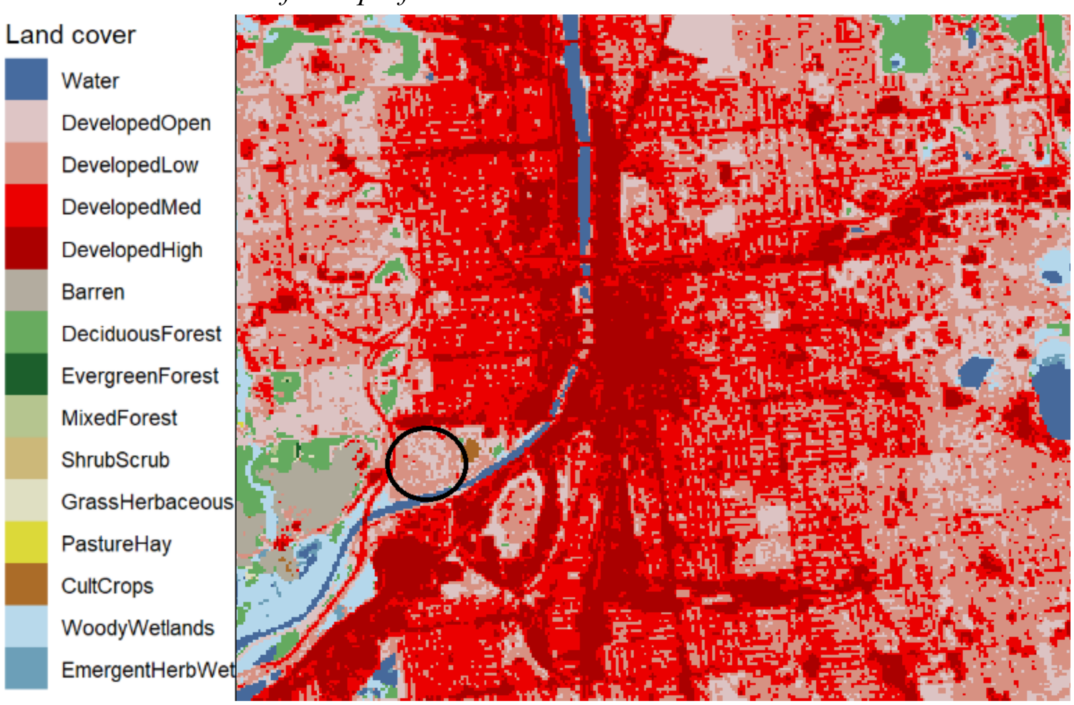

Figure B2. Grand Rapids Land Cover (Note: the approximate location of Butterworth Landfill has been circled)

Appendix C

Analysis of Interconnection Timelines and Clearance Status

In the context of the analysis conducted in Section 4, a project was considered "cleared" if it had a recorded completion date, indicating that it had successfully progressed through the interconnection process. For Consumers Energy, this meant projects with a non-empty and valid "Application Completed" date that occurred after the application submission date. For MISO, a project was classified as cleared only if it had a status of "Active" or "Done" and included a populated "Done Date". Conversely, non-cleared projects were those that remained incomplete. For Consumers, those lacked a completion date; for MISO, they had either "Active" or "Done" status but were missing a "Done Date." These definitions were applied consistently to both datasets and provided the basis for calculating project durations and clearance rates, using median values to represent average timelines.

To determine whether interconnection applications with Consumers Energy are processed more quickly than those with MISO, a statistical hypothesis test was conducted to compare the duration of non-cleared projects in each dataset. The Shapiro-Wilk test indicated that neither dataset followed a normal distribution (p-values < 0.05), thus justifying the use of a non-parametric test. A Wilcoxon rank-sum test (Mann-Whitney U Test) was applied, with the null hypothesis stating that the average duration of Consumers' non-cleared projects is greater than or equal to that of MISO, and the alternative hypothesis proposing that Consumers' durations are shorter. The resulting p-value was 0.0749. Since this exceeds the conventional threshold of 0.05, the null hypothesis could not be rejected. Therefore, there is no statistically significant evidence to conclude that Consumers processes interconnection projects more quickly than MISO. However, the p-value being near the threshold suggests a possible trend worth further investigation.

Histograms were also created to illustrate the distribution of interconnection processing times for both cleared and non-cleared projects within Consumers Energy and MISO. The first histogram (Figure C1) represents the processing duration of Consumers' cleared projects, showing a strong concentration around the 54-day median. The second histogram (Figure C2) illustrates MISO's non-cleared projects, with the majority of projects clustering around the 299-day mark. The third histogram (Figure C3) illustrates Consumers' non-cleared projects, displaying a broader distribution.

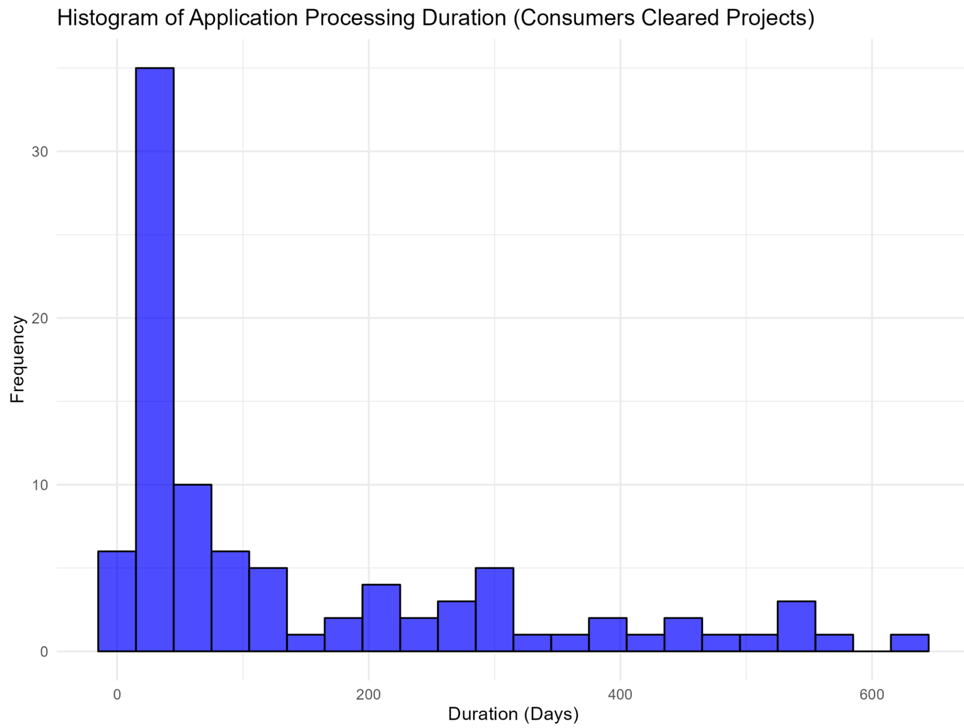

Figure C1. Processing durations for cleared projects (Consumers Energy)

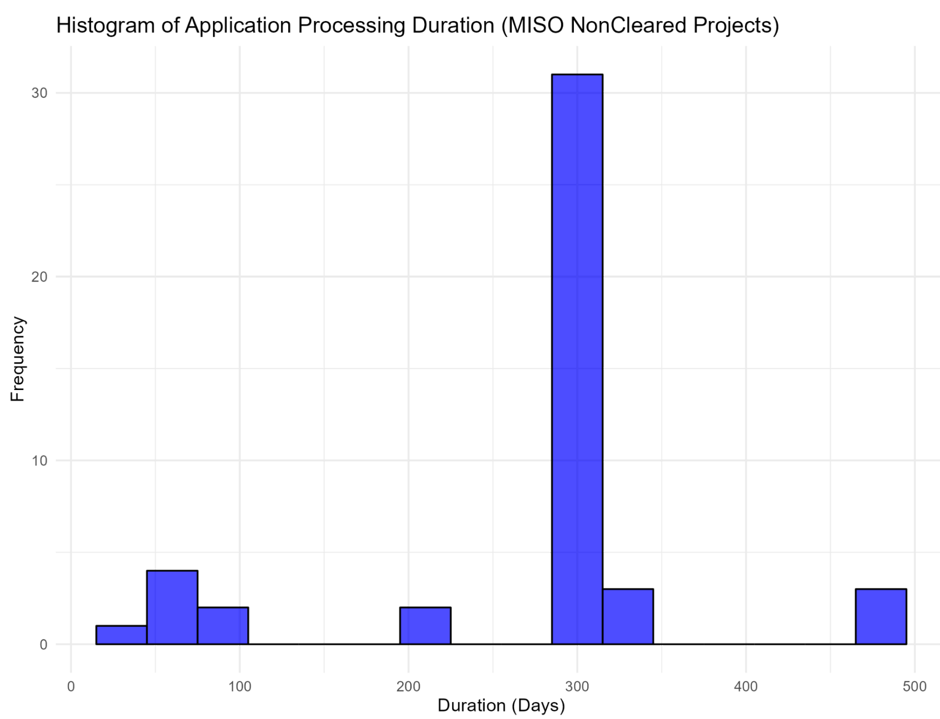

Figure C2. Processing durations for non-cleared projects (MISO)

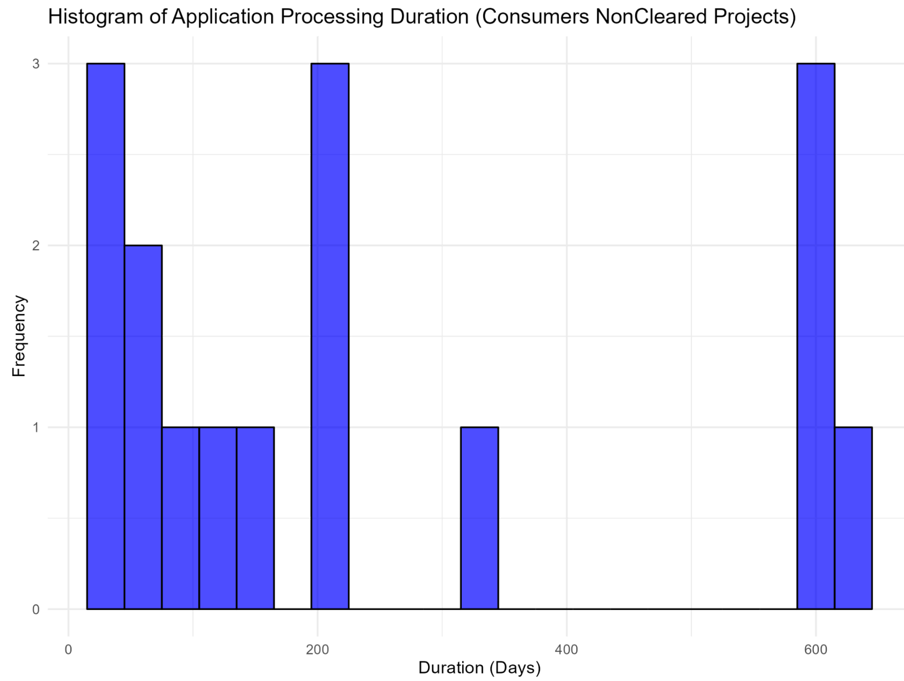

Figure C3. Processing durations for non-cleared projects (Consumers Energy)

2

PROOF-OF-CONCEPT **MAPPING TOOL**

Proof-of-Concept Map Link

Use this link to access the proof-of-concept map created to support the development of EGLE's Brownfield Renewable Energy Program: https://umich.maps.arcgis.com

Proof-of-Concept Map Breakdown

The above proof-of-concept map highlights a number of layers which we believe are important to developers who are in the site selection process of brownfield renewables redevelopment. This map is a proof-of-concept because it includes acreage values for brownfields despite the fact that no comprehensive list of brownfields has acreage data. Our proof-of-concept map utilizes the MI GIS Open Data "Brownfields" dataset, which shows which sites have received brownfield redevelopment incentives from EGLE (see Section 3.4 of the Summary Report for more information on these incentives). Thus, the displayed sites are not likely candidates for renewables redevelopment. Despite this, we chose to use this dataset because it has acreage, which is a critical piece of information for developers in the site selection process. Acreage determines how many solar panels can be on a site/how much power can be generated, and therefore the potential revenue and overall economic viability of the site.

We approached the limit of what was possible for our team to incorporate into this proof-of-concept mapper due to gaps in technical knowledge and the limits of the software available under our student license. For example, we were unable to incorporate slope and land cover layers, could not edit which default layers show upon starting the program, and we were unable to integrate a table viewer and a select by attribute feature. Although these features are not fully integrated, we believe that they would provide value to the EGLE RIDE Mapper and submit them for consideration.

Step-by-Step Guide to Attribute Join Processes for Michigan Brownfields Dataset

The following are step-by-step instructions to recreate our work which resulted in the proof-of-concept mapper.

1. Distance to Transmission Line

Source: Homeland Infrastructure Foundation-Level Data (HIFLD)

1. Download the transmission line shapefile from HIFLD.
2. Use the Near tool in ArcGIS Pro to calculate the shortest distance from each brownfield point to the nearest transmission line.
3. The output adds a field indicating this distance to the brownfields attribute table.

2. Distance to Substation

Source: Homeland Infrastructure Foundation-Level Data (HIFLD)

1. Download the substation point data from HIFLD.

2. Use the Near tool to compute distance from each brownfield to the closest substation.
3. The distance is recorded in a new attribute field.

3. Utility Territories

Source: Michigan Public Service Commission (MPSC)
1. Download utility territory shapefiles from MPSC.
2. Use the Spatial Join tool with Join Operation = ONE_TO_MANY to associate each brownfield with all utility polygons it intersects.
3. Export the result to a standalone table or layer where each brownfield appears once per intersecting utility.
4. Use the Summary Statistics tool or scripting (e.g., Python or Excel TEXTJOIN) to group by brownfield ID and concatenate all utility provider names into a single field.
5. Join this summarized table back to the original brownfields shapefile.

4. Local Jurisdictions

Source: US Census TIGER/Line Shapefiles
1. Download Place and Township (County Subdivision) shapefiles from Census TIGER.
2. Use Select by Attributes on Place shapefile to separate cities and villages based on NAMELSAD. Export as new shapefiles.
3. Use Erase (or Clip with Invert) to remove villages from the Township shapefile.
4. Merge the resulting cities, villages, and townships shapefiles using the Merge tool.
5. Perform a Spatial Join with brownfields.

5. Zoning Jurisdictions

Source: Energy Zoning Mapping Project
1. Download the zoning jurisdiction CSV file from the Energy Zoning Website.
2. Join the zoning jurisdiction table to the local jurisdiction layer (previously made in 4. Local Jurisdictions) that contains cities, villages, and townships, using the GeoID (10-digit FIPS code) of each jurisdiction to identify their corresponding zoning authority.
3. Use a Spatial Join to assign the zoning authority to each brownfield site.

6. Opportunity Zones

Source: MSHDA Opportunity Zone List
1. Download TIGER census tract shapefile and MSHDA Opportunity Zone list.
2. If starting from a PDF or CSV: convert the list to CSV and join to TIGER census tracts using tract IDs.
3. Use Spatial Join with brownfields.

7. Federal 48C Tax Credit - Distressed Communities

Sources: MSHDA, EnergyZoning jurisdiction CSV
1. Obtain distressed place list from MSHDA.

2. Join to EnergyZoning jurisdiction CSV using jurisdiction names or FIPS.
3. Join this enriched CSV to the Census TIGER jurisdiction shapefile.
4. Perform a Spatial Join to assign distressed status.

8. Federal 48C Tax Credit - Energy Communities

Source: NETL Energy Communities Web Map

1. Download or digitize energy community boundaries from the web map.
2. Perform a Spatial Join with the brownfields.

9. Tribal Communities (LIDAC-related Funding)

Source: Geospatial Energy Mapper (GEM)

1. Obtain the Tribal lands shapefile from GEM by selecting explore the layer catalog and utilizing the search function.
2. Use Spatial Join with brownfields to add tribal land indicator.

3

PILOT PROGRAM
DESIGN FRAMEWORK

Introduction
This document presents a strategic framework to guide the design of the Brownfield Renewables Pilot Program. It incorporates the initial client requests alongside key considerations identified through our team's research and analysis. **The framework consists of five core categories to inform the program's design:**

1. Number and size of awards
2. Eligible costs covered by the award
3. Eligible award recipients
4. Expected co-benefits
5. Project diversity

Our team identified two main approaches that the program may take to increase renewable energy on brownfield sites, which are more fully explored in the final project report.

1. **Gap Funding:** This approach supports projects that have completed pre-development work but face cost barriers to implementation. This approach is most likely to result in a known amount of megawatts installed within a shorter timeframe. Given uncertain federal support for renewables, this approach could keep projects moving forward despite political headwinds.
2. **Build Ready:** This approach funds early-stage pre-development activities, such as site assessments and permitting, to reduce up-front costs and shorten timelines for future development. While not immediately producing energy capacity, it prepares sites for successful renewable development, potentially paving the way for a higher number of projects in the future.

Both gap funding and build ready approaches to this project require the consideration of the five categories we have identified in our framework. The following sections apply this framework to both potential designs, providing EGLE and other policymakers with a clear understanding of the different variables that will impact the final program. We detail the possible approaches to all five framework elements, accompanied by further analysis of each option.

1. Gap Funding Award Considerations

a. *Number and size of awards*

The number of awards and the maximum size of each award are critical elements in the pilot program design. These decisions affect the potential price per megawatt for the resultant renewable project and the program's overall impact on brownfield development.

Award Structure	Considerations
Number of awards	● 1 or 2 awards: fund larger projects to achieve the MW required by EPA; larger economies of scale and less subsidy per MW ● 3+ awards: fund a greater diversity of brownfield renewable projects to provide more examples to inspire future projects
Maximum size of award	● Set a "not-to-exceed" value rather than a flat MW rate to allow for competition based on price (so that the award does not go to projects that do not need it), and may allow for more MW to be developed within total project costs ● Use a project scoring matrix so projects with co-benefits can still be competitive up to the "not-to-exceed" cap

b. *Eligible costs covered*

The eligible costs covered by this pilot program play a central role in determining both the maximum award size and the selection of eligible recipients and project diversity. We recommend prioritizing projects that have exhausted all other funding avenues, as referenced here and further detailed in Figure 5, Section 3.4 of the Summary Report. We also note which costs may be subject to BABAA, not to suggest that these costs be excluded, but to inform applicants that these would come with additional reporting requirements (see Section 5.3.1 for more information on BABAA compliance).

Eligible Costs	Subject to BABAA	Alternative Funding Sources Available?	$, $$, or $$$
Reimburse pre-development costs (e.g., interconnection studies, permitting, environmental assessments, lease negotiations)	● No	● Interconnection studies: no ● Permitting: Distressed Area, Brownfield Redevelopment Grant, Brownfield TIF ● Environmental assessments: Brownfield Redevelopment Program ● Lease negotiations: no	$ to $$
Interconnection upgrades	● Likely	● No	$$ to $$$
Site remediation	● Likely	● Yes: Brownfield Redevelopment Grant and Brownfield TIF	$ to $$
Public infrastructure (e.g., sidewalks, streetlights)	● Yes	● Yes: TBP, Core Communities, Distressed Areas	$ to $$
Mixed-use infrastructure	● Front of meter: yes ● Behind the meter: project dependent	● Front of the meter: TBP, Core Communities, Distressed Areas ● Behind the meter: TBP, Core Communities, Distressed Areas	$$ to $$$
Difference between actual cost and market rate (i.e., the "gap")	● No	● No	$$ to $$$

c. Eligible award recipients

The eligible recipients for this pilot program are directly related to the eligible costs. While EGLE anticipates administering funds to municipalities, the pilot program can stipulate that funds are then transferred to different actors related to the project. Certain costs are the burden of specific actors working on projects, so it is necessary to be strategic about who can apply for funding from this pilot program to ensure that EGLE can alleviate the costs ineligible for alternative funding.

Eligible Recipients	Advantages	Disadvantages
Off-takers (PPA/VPPA buyers, including building owners for behind-the-meter projects) May consider restricting utility off-takers.	● Directly addresses the key economic barrier of the "brownfield premium" without reimbursing specific costs ● Avoids BABAA requirements	● Difficult to assess reasonableness of proposal request (i.e., is the premium accurate?) ● Limited structural impact, benefiting similar projects in the future
Municipal and cooperative utilities	● Potential for greater community buy-in ● Potential for MOUs and cooperatives to be more open to third-party and/or community ownership of projects	● Smaller pool due to number of brownfields in relevant utility territories ● Unregulated by MPSC, so unclear interconnection processes and timelines for third-party developers
Investor-owned utilities	● Applies to majority (>80%) of Michigan brownfield sites ● IOUs are willing to develop brownfields if profit is guaranteed	● Unnecessary: existing mechanisms (i.e., bringing an unsolicited proposal) and funding (i.e., rate-case pilot funds) could be used instead
Developers	● Bear most project costs ● Could prioritize those with brownfield and/or MI experience	● Potential negative public perception of money going to developers
Local governments	● Consistent with other state incentives for renewables (e.g., RRCA) ● Accountable to constituents; unlikely to apply for projects with no public acceptance ● Could attach conditions (e.g., pro-renewables zoning, property tax abatements)	● Don't incur cost *unless* off-taker or property owner ● Not typically bearing direct development costs

d. Co-benefits expected from the program

The co-benefits associated with this pilot program provide an opportunity to meet other Michigan climate and economic development goals while expanding renewable energy projects on brownfield sites. The design of this program could strategically seek to produce measurable benefits for communities and the environment. This element can be useful in determining how to prioritize potential projects, in addition to evaluating the projected cost per megawatt.

Expected Co-Benefits	Considerations
Achieve other MI Healthy Climate Plan goals	● Environmental justice, resiliency
Local grid benefits (e.g., stability, peak demand, hosting capacity)	● Consider especially benefits in communities with most need (e.g., LIDAC, Tribal, energy poverty)
Job opportunities	● May be most applicable for behind-the-meter multi-use projects
Redevelop a hard-to-develop site	● Help target sites that are perceived as a problem for local governments or communities
Co-use (energy + another use of the property)	● Housing, pollinator garden, etc.
Lower energy bills for LMI customers, non-profits, or public entities	● Either directly or off-taker arrangements may have special program for LMI households

e. *Diversity of projects prioritized by the program*

Finally, this Pilot Program should be designed to support a diversity of renewable energy projects on Michigan brownfield sites as a way to generate a broader pool of case studies to inspire future action beyond the Pilot Program. The team has identified various characteristics that may be considered to ensure the program applies to the wide range of sites around the state and various potential types of projects that could benefit from additional funding. This section demonstrates how EGLE can use this Pilot Program to incentivize a diversity of project types.

Project Diversity	Considerations
Geography	● Projects in various regions of the state ● Projects in a variety of communities (e.g., urban and rural)
Utility Territory	● IOUs ● MOUs ● Co-ops
Site/project size	● Acreage diversity will likely lead to megawatt diversity
Previous land use	● Level of contamination ● Different types of sites (e.g., landfills, dry cleaners, retired power plants, or mines) ● Impacts on the surrounding community
Financial arrangements	● Behind-the-meter ● Front-of-meter ● Utility as purchaser ● RECs
Type of project	● Roof-mounted / Ground-mounted ● Mixed-use projects ● Energy storage

2. "Build-Ready" Approach

a. *Award size*

With this approach, the award size should be smaller in order to help prep as many sites as possible across the state. Because pre-development costs are generally smaller, this program design should seek to maximize the number of awards given.

b. *Eligible costs*

The build-ready program approach aims to cover pre-development costs to determine viability to de-risk projects for developers and/or to reduce some of the fixed costs. Refer to Section 1.b above to review funding that may apply for pre-development activities and or BABAA's application to these costs. The following potential costs could be eligible in this program design:

- Interconnection study,
- Zoning and pre-approval (e.g. permit fees),
- Environmental assessments,
- Lease negotiations (e.g. legal fees),
- Community engagement (e.g. community benefits agreements).

c. *Eligible Recipients*

Eligible Recipients	Considerations
Owner of a brownfield site	● Direct control over site access and use ● Incentivizes activation of idle or underutilized land ● May lack technical expertise
Local government	● Can align projects with broader community development or climate goals ● May be better positioned to handle early-stage coordination and public engagement
Developer	● Bring technical and financial expertise ● Can assess site viability and carry out pre-development work efficiently

d. *Co-benefits expected from the program*

Co-benefits do not need to be a primary consideration in the Build Ready approach, given the challenges associated with measuring them at the pre-development stage.

e. *Project Diversity*

Diversity across several dimensions could be considered during project selection to support a broad and representative portfolio of sites to evaluate for brownfield renewable energy projects. While renewable energy project details would not yet be available at the pre-development stage, the following diversity criteria will help guide evaluation:

- Geographic distribution: sites across different regions of the state; sites on various land designations; sites in various communities, such as rural, urban, tribal;
- Utility territory: investor-owned utilities (IOUs), municipal utilities (MOUs), and cooperatives;
- Site size: acreage diversity to support a range of small to large brownfield redevelopments;
- Previous land use: former gas stations or dry cleaners, capped landfills, abandoned mines, and industrial sites.

4

FACTSHEETS & POLICY CONSIDERATIONS

1. Summary of Suggested Factsheets

Our research has identified a range of topics that can be effectively represented through factsheets to create a successful brownfield renewable energy program. Inspired by the EGLE Brownfield Program's existing two-page factsheets, we believe developers and communities would benefit from similar, broadly accessible factsheets on the following topics, which we suggested in the final report.

1.1 Interactive Map Guidance (from Section 2.6.3)

Our proof-of-concept map includes several elements that may not be readily understood by first-time users. To help users make full use of the team's web-based map tool, factsheets will include instructions on map usability, including:

- How to toggle layers using the interactive legend or layer manager
- How to interpret pop-ups for detailed site-specific information
- How to use the search function to locate brownfield sites by address

1.2 Brownfield Previous Use (from Section 3.3.1)

Environmental response activities vary by site and require numerous studies to understand the specific requirements at each site fully. Understanding the previous use of a site can help determine what may be needed. To support developers navigating brownfield complexities, factsheets will provide:

- Summaries of due care responsibilities and typical remediation requirements for hosting renewable energy projects

1.3 Brownfield Funding Opportunities and Incentives (from Section 3.4)

While well-known funding resources are available to support environmental response activities in brownfield redevelopment, many additional funding opportunities and tax incentives remain underutilized. Navigating and accessing these resources can be complex, limiting their full impact. By consolidating and streamlining access to all available statewide funding sources, developers can more effectively leverage eligible funding streams through value stacking. Factsheets will provide:

- Explanations of value-stacking opportunities (e.g., combining tax credits, grants, or incentives)
- Quick-reference guides to relevant funding or incentive programs, with basic eligibility criteria included.

1.4 Interconnection Timelines (from Section 4.5.3)

Recent changes to distribution interconnection processes appear not to be widely known. To improve transparency and help developers manage expectations, factsheets will include:

- Clear outlines of expected interconnection timelines by project type
- Visual tools (e.g., flowcharts) illustrating typical milestones and timeframes
- Average processing times based on publicly available data or developer interviews, where possible

1.5 Securing Off-takers (from Section 4.5.6)

Clear communication about the range of off-taking options is crucial to support further match-making efforts, especially for residents or smaller institutions interested in increasing their participation in renewable energy. This factsheet could help demystify how off-taking differs from utility to utility. This resource would enable more informed participation and encourage the growth of diverse off-taker pools for brownfield solar projects. The factsheet should:

- Clearly illustrate and provide available tools and methods for securing off-takers in different utility service territories.
- Better communicate opportunities for residents to increase their renewable energy procurement.

1.6 Federal Compliance (from Section 5.3)

To determine which project costs might be eligible for Pilot Program funding, it is necessary to understand the federal regulations that apply to the EGLE's CPRG grant. To help EGLE, developers, and other parties have clarity on eligible activities, factsheets should include clarification of regulatory compliance with key federal standards, such as:

- Build America, Buy America Act (BABAA)
- Davis-Bacon and Related Acts wage requirements

2. Summary of Other Policy or Procedural Considerations

Our report identified several broader policy or procedural changes that may help reduce barriers and accelerate the deployment of brownfield solar. We have organized the information below based on the actor most likely to be implicated and have cross-referenced the relevant sections of the final report.

2.1 Utility Action

- Improved utility communication around interconnection timelines. *[Section 4.5.3]*
- Encourage all utility types—including investor-owned, municipal-owned, and cooperative utilities, and AES—to offer brownfield renewable energy options through existing or new customer-facing programs. *[Section 4.5.4]*
- Standardization of utility interconnection processes and transparency across service territories. *[Section 4.5.3]*

2.2 MPSC Action

- Create a clear and publicly available list of pilot projects launched by investor-owned utilities using funding authorized by the Michigan Public Service Commission (MPSC). The resource should reference the original workgroup that initiated this effort and track the outcomes of the various projects. *[Section 4.5.2]*
- Offer standard offer contracts for qualifying Public Utility Regulatory Policies Act (PURPA) projects at a rate equal to the most recent competitive procurement clearing price. *[Section 4.5.5]*

2.4 MI State Legislature Action

- Advance more equitable models of community solar, as current programs in Michigan often fall short of offering residents equity, ownership, or long-term wealth-building opportunities. *[Section 4.4.3]*
- Advance state-funded interconnection studies to reduce developer uncertainty and steer renewable energy development toward priority brownfield sites. *[Section 4.5.1]*
- Increase political and financial commitment from the state to incentivize renewable energy projects on brownfield sites, for example, by extending funding for brownfield renewable incentives. *[Section 5.4.2]*
- Amend the PA 381 of 1996 - The Brownfield Act to include renewable energy infrastructure, including solar, geothermal, windmills, etc, as eligible tax increment eligible activities. *[Section 3.4]*

2.4 MI State Executive Action

- Develop a streamlined mechanism to connect project developers/owners with interested energy off-takers. *[Section 4.5.6]*

- Make GIS map datasets downloadable and available in workable formats (.shp files rather than .json) for mappers to include in applications accessible to the general public, and more specifically, developers. *[Section 2.6.1]*
    - Brownfield polygon data
        - May require a procedural change at EGLE when conducting BEAs
    - Land ownership data
        - Available through county assessors
    - Tax parcel data
        - Exists online to be bought, and can also be attained through local governments
    - Host capacity maps
        - Work with utilities to make a statewide map, if not regularly updated, then at least with the extent of 3-phase power lines, where front-of-the-meter projects can interconnect

- Establish better collaboration between various state agencies and programs to support an enhanced GIS tool, maximize incentives, and encourage brownfield and renewable energy projects. *[Sections 2.6.2 , 3.4, and 5.5]*