

# Green Banks: Transforming Clean Energy Finance in Michigan

By encouraging private-sector investment in renewable energy and energy efficiency, while reducing the need for public subsidies, green banks and other clean energy financing programs are playing an important role in the United States and other countries. Green banks have also been effective in facilitating conversations with key industry stakeholders, educating lenders on technological options, and providing underwriting support.

In these ways, a green bank could be a cost-effective tool not only for helping Michigan comply with the U.S. Environmental Protection Agency's (EPA's) Clean Power Plan but also for driving investments in targeted economic sectors or communities. Based on the experiences of existing green banks and clean energy lending programs elsewhere, the Union of Concerned Scientists (UCS) has analyzed a potential green bank in Michigan, finding that it would enable the state to leverage an initial capitalization of \$105 million into a \$3.3 billion investment in renewable energy and energy efficiency over the next 15 years.

By 2030, this clean energy investment could:

- Support the deployment of 685 megawatts (MW) of new solar power capacity and generate or save the equivalent of 3.25 percent of Michigan's 2013 electricity sales.
- Save homes and businesses \$322 million on their annual electricity bills by investing in efficiency.
- Reduce power-sector carbon dioxide emissions by 3.9 million tons per year—equivalent to taking 740,000 cars off the road—or 13 percent of the emissions reduction that Michigan must achieve to comply with the Clean Power Plan.

## A promising pathway for clean energy finance

Green banks are state-level financial institutions that provide a suite of financial products to support clean energy project development; they also help raise the public's and the financial sector's awareness of clean energy technologies and their benefits. Green banks have been successfully implemented in New York and Connecticut to aid the transition from governmental clean energy incentives to financial products

funded primarily with private-sector capital. Many more states, such as Kentucky, Iowa, and Pennsylvania, have developed locally based loan programs for renewable energy and energy efficiency.<sup>1</sup>

Green banks seek to leverage a pool of public-sector funds in order to garner a larger pool of private-sector investments in renewable energy and energy efficiency. A green bank's performance in this regard is typically measured by its ratio of public-sector to private-sector funds. In Connecticut, for example, the bank has achieved a leverage ratio of 1:10 (CGC 2015). By increasing green banks' leverage ratios, policy makers aim to establish programs that eventually reduce or eliminate the need for government incentives and that create self-sustaining clean energy markets.

Green banks represent a viable strategy for helping states reduce their emissions rates substantially, comply with the Clean Power Plan, and foster economic growth and competitiveness, particularly in renewable energy and energy efficiency products and services. In 2014, the solar industry employed 2,100 workers at 189 companies in Michigan, while the wind industry employed 3,000–4,000 workers, manufactured wind turbine components at 33 facilities, and made \$4.6 million in land lease payments to farmers and local landowners (AWEA 2015; TSF 2014). In essence, green banks can help states achieve not only climate goals, but economic development goals as well.

## Building on existing clean energy programs in Michigan

Michigan has a number of active programs, operated by a variety of public and private entities, to support residential- and commercial-scale clean energy investments. These programs include:

- *A revolving loan fund, operated by the Michigan Energy Office and the Michigan Agency for Energy, for renewable energy and energy efficiency projects.* These loans are available by solicitation, with terms of up to four years at 6 percent interest (DSIRE 2015a).
- *A property-assessed clean energy (PACE) financing mechanism for funding renewable and efficiency projects*

through a special property-tax assessment. These loans, made available at competitive rates and longer terms than traditional products, can be repaid over the life of the investment via tax bills. Several local governments, such as that of Ann Arbor, have created their own local PACE programs, while other jurisdictions have opted for Lean & Green Michigan, a privately owned enterprise, to administer programs on their behalf (Lean & Green Michigan 2015).

- *Michigan Saves*. A nonprofit created by funds from the Michigan Public Service Commission, this program offers a series of energy-efficiency loan products for businesses and homeowners (Michigan Saves 2015).

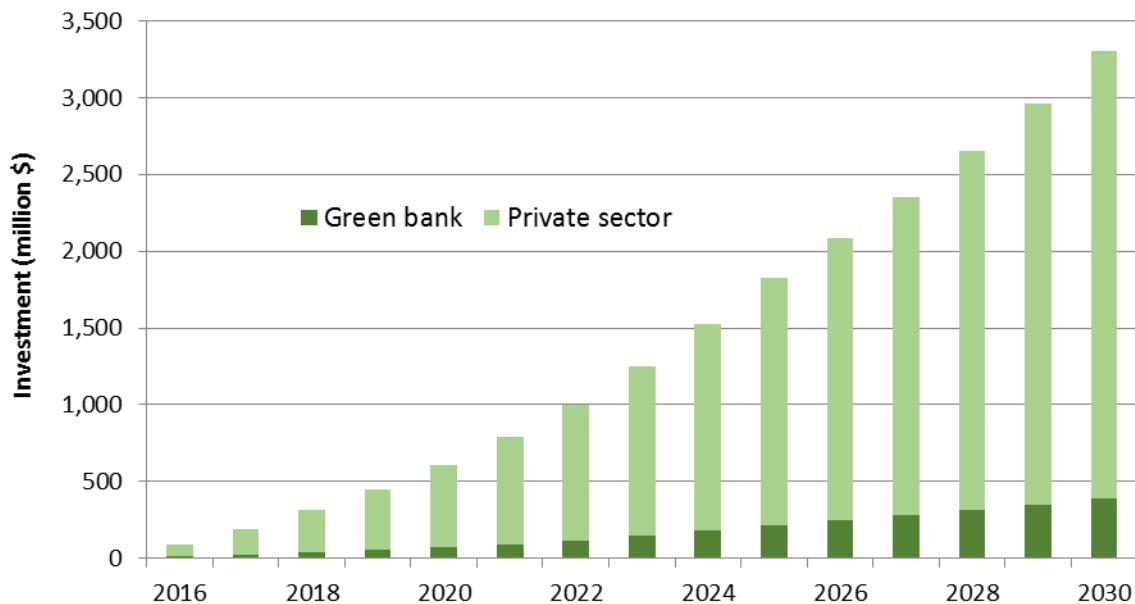
Under a green bank structure, these programs could be expanded, enhanced, or supplemented under a central administrator such as the Michigan Energy Office, the Michigan Agency for Energy, or the Michigan Economic Development Authority. The latter entity already has

experience in encouraging the development of advanced technology projects.

As specified by the Clean Power Plan, Michigan’s emissions-rate-reduction target is 39.4 percent by 2030 from 2012 levels, which would lower the state’s emissions rate from 1,928 lbs CO<sub>2</sub>/MWh to 1,169 (E&E Publishing 2015). The EPA has given states flexibility in their approaches to achieving their emissions rate reductions, while noting that renewables and demand-side efficiency can help achieve significant progress toward those ends. Michigan already has a renewable energy standard and energy efficiency resource standard, with respective targets of 10 percent of electricity sales from renewable sources by 2015 and 1 percent year-to-year reductions in electricity sales from efficiency after 2015 (DSIRE 2015b). But additional investments beyond these programs will be necessary if Michigan is to achieve its 2030 Clean Power Plan target (Georgetown Climate Center 2015).

A green bank could play a role in catalyzing and enhancing

FIGURE 1. Cumulative Clean Energy Investment Leveraged by Michigan Green Bank



The estimated 15-year investment potential demonstrates that a Michigan green bank would be able to leverage an initial capitalization of \$105 million into a \$3.3 billion investment in renewable energy and energy efficiency through 2030.

such clean energy investments in the state. Projects could also potentially benefit from the EPA’s Clean Energy Incentive Program, which awards states matching emissions credits under the Clean Power Plan for early reductions generated by wind, solar, or low-income efficiency programs (Lynch et al. 2015).

### Michigan green bank leverage potential

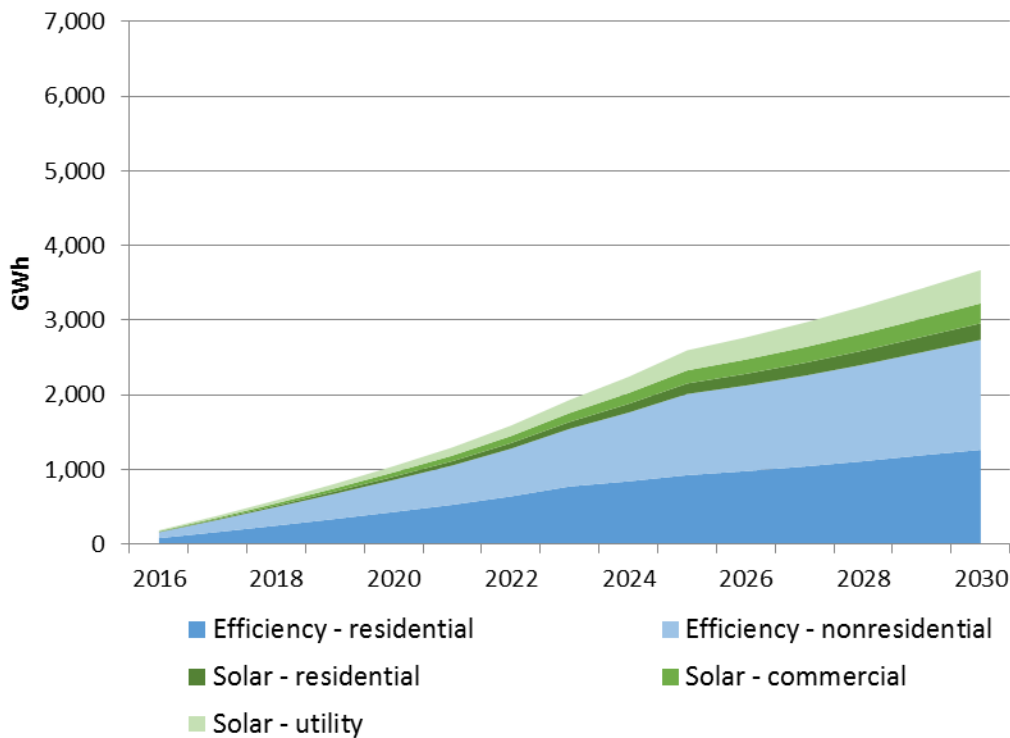
A green bank in Michigan could supply a range of financial products (Rhodes, Bloustein, and Pitkin 2013), including:

- **Credit enhancements**, which assure private lenders by offering to occupy a first loss position or by creating a loan-loss reserve fund in the case of default. Both of these actions can lower a lender’s perceived risks, allow loans to be issued to a wider variety of credit ratings, or assist with funding new or emerging technologies.

- **Warehousing and securitization services**, which aggregate loans and sell the collections as securities. Proceeds are then used to further the bank’s programs. The warehousing model has been used successfully by Connecticut, Pennsylvania, and New York, both for energy efficiency (WHEEL) and PACE loans (Belden, Clemmer, and Wright 2015).
- **Direct lending** involves traditional consumer or business loans for renewable energy or energy efficiency projects. An example is the Connecticut Solar Loan program for rooftop photovoltaics.
- **Structured products and other financing tools.** Examples include PACE financing, state-backed leasing programs for renewables, and performance-based incentives, grants, or other support mechanisms.

Each of the above products has its own risk and benefit profile, and an effective green bank may support different clean-energy market segments through different means of financing. In addition to offering financing products, green banks can help

FIGURE 2. Cumulative Energy-Efficiency Savings and Solar Generation Added Under the Michigan Green Bank



Over a 15 year period, investments from a Michigan green bank would generate or save 3,700 GWh of electricity through solar and energy efficiency projects. This is equivalent to 3.25 percent of Michigan’s 2013 electricity sales.

provide technical expertise, such as underwriting support, to traditional lenders in order to lower the risks and improve their knowledge of new technology investments.

### Potential investments and emissions reductions under the Michigan green bank

In this analysis, we have assumed:

- That a hypothetical Michigan green bank would provide direct lending products for solar and consumer energy-efficiency programs.
- An initial capitalization for the Michigan green bank of \$105 million, which was derived by applying a per-capita investment ratio similar to that of New York’s comprehensive green bank.
- Loan terms of seven years for energy efficiency and 10 years for renewable energy, with interest rates of 5 percent.
- That each dollar of green bank public funding would leverage 7.5 dollars of private-sector funding for energy efficiency and renewable energy projects.

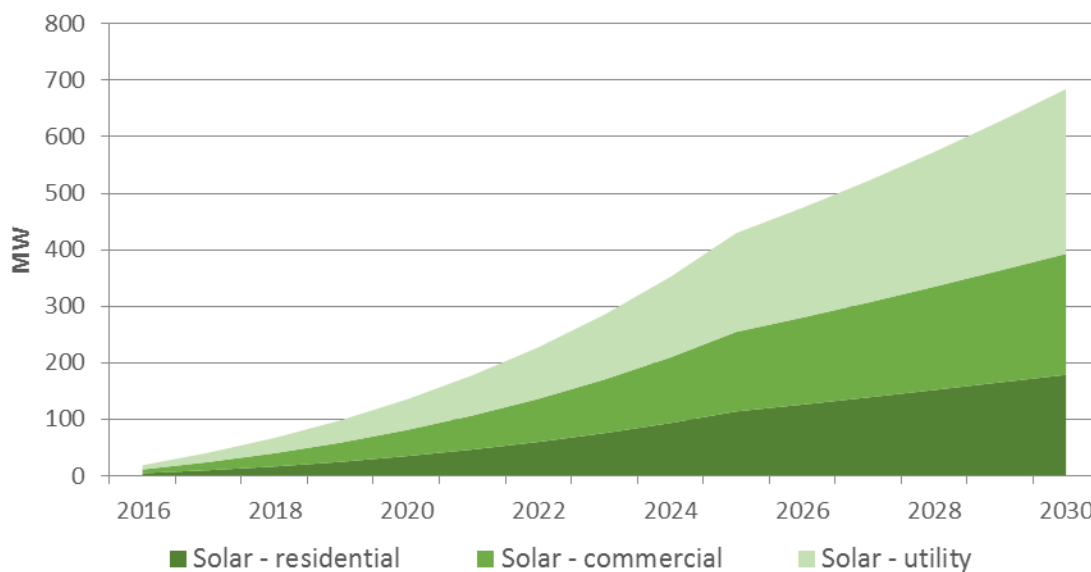
All of these inputs were based on the experiences of existing state green banks and clean-energy lending programs elsewhere. (For a more detailed discussion, please see the companion methodology document.)

By structuring a green bank as a revolving loan fund, we estimate that the bank’s annual impact would increase each year. Over a 15-year period, a green bank in Michigan with an initial capitalization of \$105 million in public funds could lend out \$388 million while strategically leveraging \$2.9 billion in private-sector funding, for a total investment of more than \$3.3 billion (Figure 1).

The increase in clean energy enterprises supported by green bank funding would be substantial. By 2030, green bank investments would escalate to the point that 500 gigawatt-hours (GWh) of new energy-efficiency savings and renewable energy generation would be added *each year* (Figure 2). Over a 15-year period, the cumulative impact of these clean energy investments would be to generate or save 3,700 GWh of electricity, equivalent to 3.25 percent of Michigan’s 2013 electricity sales. The 2,700 GWh of efficiency savings from these investments would lower homes’ and businesses’ electricity bills by an estimated \$322 million annually by 2030, based on 2014 electricity prices.

After 15 years of green bank lending, 92 MW of new solar resources would be developed with the bank’s funds *each year*, with a cumulative impact of 685 MW by 2030 (Figure 3). By displacing fossil fuels, these energy efficiency and renewable energy investments in Michigan would eliminate by 2030 nearly 3.9 million tons of carbon dioxide emissions *each year*—equivalent to taking 740,000 cars off the road—or 13 percent of

FIGURE 3. Solar Power Capacity Added Under the Michigan Green Bank



By providing a suite of financial products for clean energy projects, a Michigan green bank would support the deployment of 685 MW of utility, commercial, and residential solar power capacity in the state by 2030.

the emissions reduction that Michigan must achieve to comply with the Clean Power Plan.

## Conclusions

Green bank financing could be applied in Michigan to: widen public-sector funds' impacts on developing a clean energy economy; help achieve compliance with the EPA's Clean Power Plan; and accelerate Michigan's transition to a lower-carbon and more sustainable electricity system. But successfully fostering a green bank in the first place requires a dialogue—between key stakeholders such as utilities, existing-program managers, and local lenders—to set goals and priorities for the bank's programs. By establishing such a foundation for partnership, the green bank will be well positioned to catalyze clean energy investment.

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## ENDNOTES

- 1 For more details, please see this fact sheet's companion report, which profiles financing programs in the United States and Europe (Belden, Clemmer, and Wright 2015).

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