

Green Banks: Transforming Clean Energy Finance in Maine

By encouraging private-sector investment in renewable energy and energy efficiency, green banks and other approaches to financing clean energy play an important role in transforming clean energy markets in the United States and other countries. These state-level financial institutions provide underwriting support, facilitate conversations with key stakeholders, and educate the public and lenders on technological options.

Based on the experiences of existing green banks and related financing programs, the Union of Concerned Scientists (UCS) has analyzed the potential impact of creating such an enterprise in Maine. According to this analysis, the state could leverage an initial capitalization of \$14 million into a \$300 million investment in renewable energy and energy efficiency projects over the next 15 years.

By 2031, this clean energy investment could:

- Support the deployment of 70 megawatts (MW) of new solar- and wind-power capacity and generate or save the equivalent of 3 percent of Maine's 2015 electricity sales;
- Save homes and businesses \$33 million on their annual electricity bills by investing in efficiency; and
- Reduce carbon dioxide emissions by nearly 176,000 tons, equivalent to taking 33,600 cars off the road.

A green bank would be a cost-effective tool that drives investment and creates new clean energy jobs in communities across Maine. At the same time, it would help Maine achieve state targets for energy efficiency, renewable energy, and reducing global warming emissions.

A Promising Pathway for Clean Energy Finance

The basic strategy of green banks is to leverage a pool of public-sector funds to garner a larger pool of private-sector investments in renewable energy and energy efficiency. They do this by bringing together a suite of financial products that support the development of clean energy projects. Just as important, green banks raise awareness of clean energy technologies and their benefits. Already, green banks in New

York, Connecticut, and Rhode Island are aiding the transition from government incentives for clean energy to financial products funded primarily with private-sector capital. And many more states, including Maine, have developed related loan programs for efficiency and renewable energy.¹

Typically, the performance of a green bank is measured as a leverage ratio of private-sector to public-sector funds invested. For example, the green banks in Connecticut and New York have achieved average leverage ratios across their programs of more than \$5 of private funds to every \$1 of public funds over recent years (Shrago and Healey 2016; NY Green Bank 2016; Connecticut Green Bank 2016).

By increasing the leverage ratios of green banks, policy makers aim to reduce the need for government incentives and make clean energy markets more sustainable. This makes green banks a viable strategy for helping states foster economic growth and competitiveness while reducing emissions and meeting goals for renewable energy and efficiency. For example, between 2008 and 2013, Maine invested \$31 million from the Regional Greenhouse Gas Initiative to improve energy efficiency in homes, businesses, and industrial facilities, saving consumers \$257 million. Overall, these investments generated \$214 million in gross state product and have created several hundred jobs in Maine (NRCM 2015; Hibbard et al. 2015).

In the case of efficiency retrofits and renewable energy projects, job creation tends to be local, keeping money and jobs in the state by reducing spending on fossil fuel imports. However, Maine lags behind its neighbors and the rest of the country in installed solar and in attracting jobs in the solar industry. In 2015, it ranked 43rd with 330 solar jobs and 35th in solar jobs per capita (Solar Foundation 2016). In essence, a

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green bank combined with other clean energy policies could help Maine jump start the state’s solar industry while achieving both economic development and climate goals.

Building on Existing Clean Energy Programs in Maine

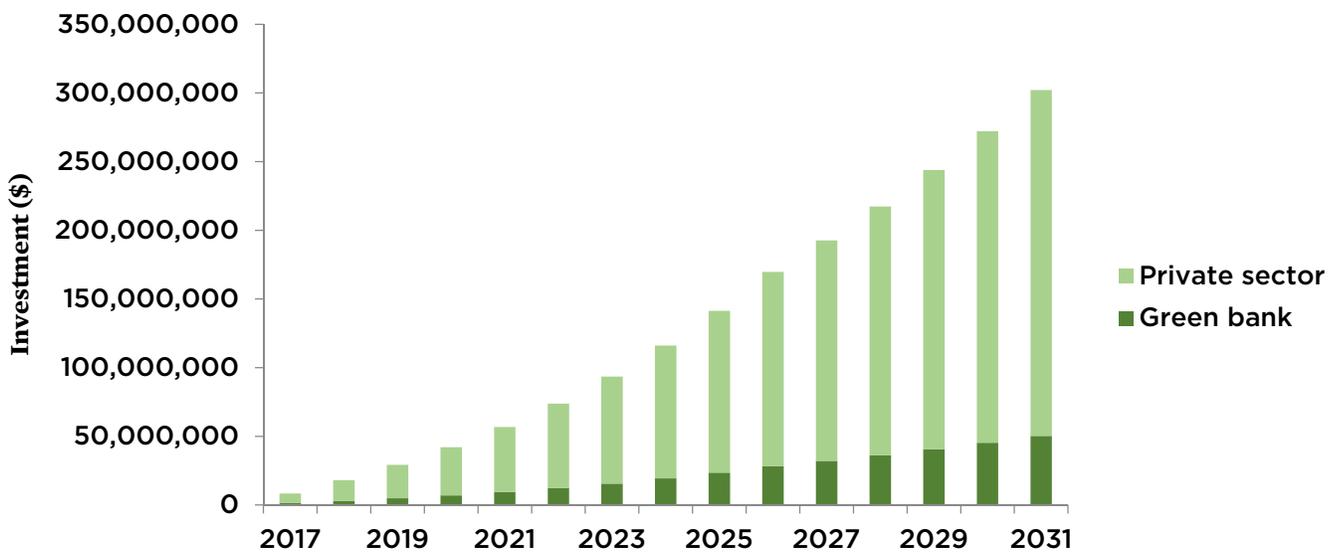
Maine already offers a number of financing programs and incentives to invest in energy efficiency and renewable energy. A green bank could expand, enhance, and supplement these and future programs. Current programs and policies, administered by numerous state entities and utilities, include the following:

- **Efficiency Maine**, the independent administrator of the Efficiency Maine Trust, finances residential and small-business energy efficiency projects. It is governed by a board of trustees comprised of stakeholders, with oversight from the Maine Public Utilities Commission. Efficiency Maine offers a suite of programs that provide information, technical assistance, and incentives for commercial and residential retrofits and new construction.² It operates a revolving loan fund of approximately \$20 million, seeded by a U.S. Department of Energy Better Buildings grant. Efficiency Maine’s energy efficiency

programs include 10-year residential energy loans ranging from \$1,000–\$15,000 at 4.99 percent APR, as well as microloans for credit scores above 580 for up to \$4,000 with 5.99 percent APR. In 2015, Efficiency Maine provided \$4.7 million in residential efficiency loans. From 2010 to 2015, Efficiency Maine lent more than \$15 million for 1,400 residential projects (Efficiency Maine Trust 2015). On a per-capita basis, that made it a top-performing home-efficiency loan program nationally.

- The PUC administered Maine’s **community-based renewable energy production pilot program** that provided incentives for 12 community-based renewable energy projects between 2011 and 2015. The projects had to be at least 51 percent owned by community members to qualify for a 20-year power-purchase agreement negotiated with the utility provider by the PUC for 1–10 MW systems. Projects under 1 MW received a fixed price of 10 cents per kilowatt hour (kWh). While the future of this program is uncertain, a green bank could revive financial models for community-based energy projects.³
- **Property-Assessed Clean Energy (PACE)** financing legislation, enacted in 2010, enables state agencies to develop commercial and residential PACE programs,

FIGURE 1. Cumulative Investment Leveraged by the Green Bank



Within 15 years, a Maine Green Bank could leverage more than \$250 million of private capital to finance renewable energy and energy efficiency projects in homes and businesses.



A green bank would support deployment of solar energy projects, such as this community solar farm in Edgecomb, Maine, to help the state catch –up to neighboring states and the rest of the country. (Revision Energy)

and a 2011 amendment enables private-sector administration for residential PACE programs. Efficiency Maine, which hosts the program, has enlisted over 190 municipalities to enable PACE loans to support renewable energy and energy efficiency projects. Residential loan terms include a maximum \$15,000 of financing for a 4.99 percent APR up to 15 years (DSIRE 2015). PACE loans utilize the same Revolving Loan Fund as unsecured Energy Loans, also provided by Efficiency Maine. However, PACE financing has been underutilized in Maine because the enabling legislation does not allow PACE loans to precede mortgages and other loans; this is in contrast to successful programs in Connecticut and other states (Connecticut Green Bank 2016).

- Maine is one of nine Northeast and Mid-Atlantic states that participate in the **Regional Greenhouse Gas Initiative**, a mandatory, market-based program established in 2009 to reduce power-sector emissions of carbon dioxide (CO₂). Almost all revenue collected from the sale of CO₂ emission allowances contributes to the funding of numerous state clean energy initiatives, including Efficiency Maine programs (Efficiency Maine Trust 2015).⁴
- A green bank would help Maine achieve its **emission reduction goals** and its standards for energy efficiency and renewable energy. Maine has set a goal of reducing statewide global warming emissions 10 percent below 1990 levels by 2020 and 35–45 percent by 2030 (Maine Department of Environmental Protection n.d.; 39th Annual Conference 2015). As a member of the Regional Greenhouse Gas Initiative, Maine is on track to meet its targets to reduce power-sector carbon emissions under EPA’s Clean Power Plan.

- A green bank also would help the state meet its **energy efficiency targets**. Maine seeks to cut the use of electricity, natural gas, and oil 20 percent by 2020, reduce peak electricity consumption by 300 MW, and weatherize substantially all homes willing to participate and share in the costs by 2030 (Efficiency Maine Trust 2012).
- Maine’s **renewable portfolio standard (RPS)** requires each competitive electricity provider to supply 40 percent of retail electricity sales from renewable energy by 2017. It also requires 10 percent of electricity sales by 2017 to come from renewable energy projects that are up to 100 MW in size and developed after February 2005. Maine has basically met its RPS targets, but it is not on target to meet its wind energy goals: install 3,000 MW by 2020 and 8,000 MW by 2030, with 5,000 MW coming from offshore wind projects (Governor’s Energy Office n.d.). As of the end of 2015, only 613 MW of land-based wind power had been installed, with no offshore projects in place.
- Maine has a **net metering** policy for customer-owned solar and other distributed generation systems up to 660 kW in size. Any excess generation from these systems in a month is credited to the customer’s next monthly bill at the retail rate; any excess generation left at the end of a 12-month billing cycle is granted to the utility. Maine also has “shared” net metering, which allows up to 10 customers to be credited to a single facility of up to 660 kW. Since 2014, discussions in Maine have addressed the future of distributed generation and compensation through net metering. A study commissioned by the Maine Public Utilities Commission found that distributed solar in Maine had a value of 33.7 cents per kilowatt-hour over 25 years (Norris et al. 2015). Since that study’s release, the Maine State Legislature and the PUC have considered proposals to revise the state’s net metering law and enact other solar policies to capture this value, given Maine’s limited existing solar capacity.⁵ Should policy shifts occur, green bank financing could play a crucial role in providing an avenue for sustainable support of renewable energy and catalyzing public, private, and

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utility investments. However, green banks are most successful in concert with complementary policies like net metering to support distributed generation, efficiency, and renewable energy.

A green bank could help Maine meet its clean energy and emission reduction targets, with Efficiency Maine as a potential host that could build on this foundation. It is the state's largest provider of capital for clean energy, with years of experience in issuing loans and rebates for energy efficiency even if it lacks significant experience financing solar and wind projects. Other possible hosts include the Finance Authority of Maine, which provides an array of loans and other financing programs to support the start-up and growth of Maine businesses, and the Maine Technology Institute, which works with entrepreneurs and businesses to develop and commercialize new technologies, products, and processes.⁶ In any scenario, green bank products and efforts would need to be coordinated with Efficiency Maine to make use of its knowledge in lending for clean energy projects.

The Leverage Potential of a Maine Green Bank

A green bank in Maine could supply a range of financial products that would help transform or advance clean energy markets (Rhodes, Bloustein, and Pitkin 2013):

- **Credit enhancements** reassure private lenders. A green bank could offer to occupy a first-loss position or create 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. States previously provided enhanced credit for efficiency using American Recovery and Reinvestment Act funds, but legislative changes could prevent this type of public-private finance strategy in the future.
- **Warehousing and securitization services** aggregate loans and sell the collections as securities. The bank can then use the proceeds to further its programs. Several states have used the warehousing model (NASEO n.d.): Connecticut (through its C-PACE program), Pennsylvania and New York (through the Warehousing for Energy Efficiency Loans—WHEEL—program), and Oregon (through the Clean Energy Works program) (Beldon, Clemmer, and Wright 2015).⁷
- **Direct lending** involves traditional consumer or business loans for renewable energy or energy efficiency projects. Efficiency Maine is providing loans for residential energy efficiency, and these services

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could be expanded to include more low- and moderate-income households and to provide more loans for businesses and industry. A Maine green bank could make use of this expertise and further leverage these efforts.

- **Structured products and other financing tools** include PACE financing, state-backed leasing programs for renewables, and performance based incentives, grants, and other support mechanisms. Under Efficiency Maine's Commercial & Industrial Custom Program, the state already provides large-scale rebates for up to \$1 million. This shows that expertise for performance-based incentives and grants is available for projects on the scale a green bank could support.
- **Technical expertise** on such topics as underwriting support can help traditional lenders improve their knowledge of new technology investments and lower the risks.

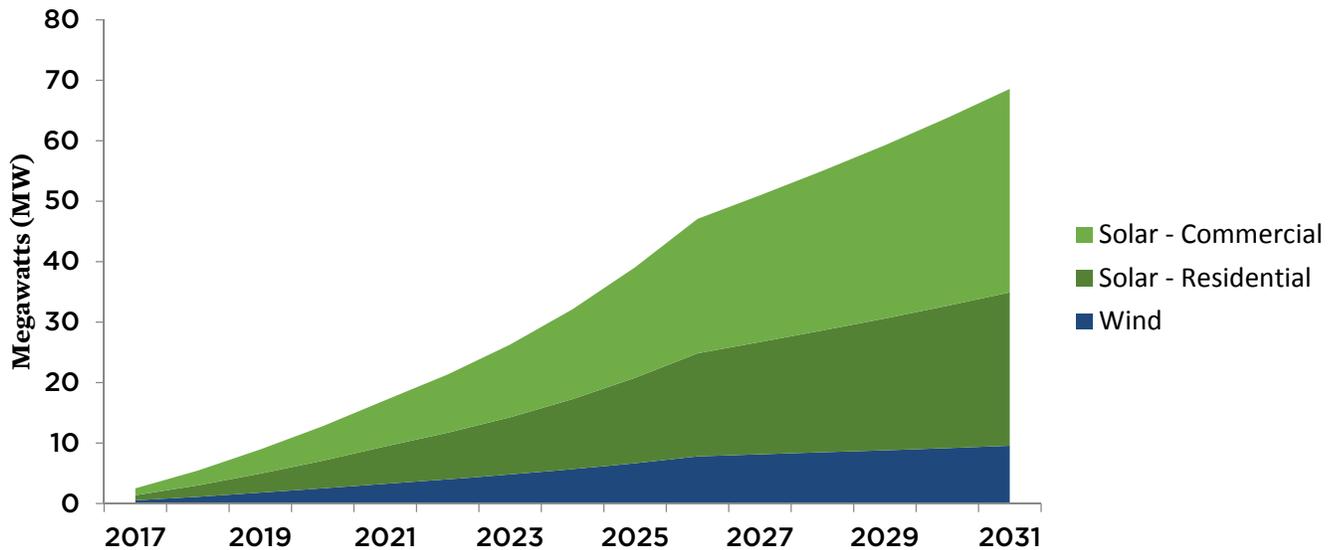
Each of these products and services carries its own risks and benefits, of course, and an effective green bank may support different clean-energy market segments through different means of financing.

Driving Investments and Emissions Reductions under a Maine Green Bank

For our analysis of the impact of creating a green bank in Maine, UCS developed an illustrative example of what a bank focused on saving or generating electricity could accomplish by investing in energy efficiency and renewable energy. It shows significant economic and emission reduction benefits.

We did not analyze additional technologies and sectors that could be good candidates for green bank lending, such as home heating, energy storage, transportation, combined heat and power, offshore wind, and financial products targeting low-income and minority communities. Also, more analysis and input from stakeholders are needed to identify preferences and priorities among the possible technologies, sectors, and communities. Nevertheless, given the great variety of financing and rebates already provided to stimulate clean energy

FIGURE 3. Cumulative Solar and Wind Capacity Added under the Maine Green Bank



By deploying a suite of financial products, a Maine green bank could support 70 MW of solar and wind power by 2031, producing enough clean power to meet the annual electricity needs of more than 18,400 households.

Over the next 15 years, the green bank could also support the development of 70 MW of new solar and wind capacity, producing enough clean power to meet the annual electricity needs of more than 18,400 households (Figure 3).

Conclusions

A green bank in Maine could be an effective tool for expanding and enhancing existing programs and policies, while leveraging additional private-sector investment, increasing the sustainability of clean energy markets, and improving access to clean energy in low-income and minority communities. Potential institutions that could be expanded to host or coordinate a green bank include Efficiency Maine, the Finance Authority of Maine, and the Maine Technology Institute.

If Maine decides to pursue a green bank, key stakeholders such as existing program managers, utilities, lenders, and communities across the state should engage in a dialogue to set its goals and priorities. Adding a greater focus on financing to Maine’s clean energy programs could be an effective strategy for helping the state reach its long-term goals for clean energy, carbon reduction, and economic development.

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ENDNOTES

- 1 For further details, see: *Financing Clean Energy: Cost-effective Tools for State Compliance with the Clean Power Plan* (Belden, Clemmer, and Wright 2015).
- 2 For more information, see: www.energymaine.com/at-home/energy-loans.
- 3 For more information, see: www.state.me.us/mpuc/electricity/community_pilot.shtml

- 4 For more information on the Regional Greenhouse Gas Initiative, see: www.rggi.org/rggi.
- 5 For more information, see: <https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2016-00008>.
- 6 For more information on the Finance Authority of Maine, see: www.famemaine.com/about. For more information on the Maine Technology Institute, see: www.mainetechnology.org/get-funded/where-do-i-start.
- 7 For more information on Clean Energy Works, see: <http://energy.gov/eere/better-buildings-neighborhood-program/portland-shows-how-clean-energy-works>.
- 8 For a more detailed discussion of methodology, please see the companion document *Quantitative Methodology Description*: www.ucsusa.org/greenbanksmethodology.

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