



# EVALUATION FRAMEWORK ECONOMIC DEVELOPMENT REVENUE GENERATION

## Revenue Generation Impact Overview



Economic Development is a positive externality of the Green Bank's programs and activities. Directly, the capital deployed is used to buy the hardware for projects and pay for the labor needed to implement them. Indirectly, this economic activity creates jobs as those in the supply chain increase their operations in response to the implementation of projects. In 2009, the Connecticut Clean Energy Fund (CCEF), the predecessor to the Green Bank, in partnership with the Department of Economic and Community Development (DECD) and the Connecticut Energy Efficiency Fund (CEEFF),<sup>1</sup> engaged Navigant Consulting to complete a study to quantify the job years and their wages created as a result of the support from the CCEF and CEEFF activities. This study was refreshed in 2016 by the Connecticut Green Bank (Green Bank) in coordination with DECD and with assistance from Eversource Energy and United Illuminating.



The resulting job factors are unique to the combination of project type (technology used) and the Green Bank Program leveraged for the project. The job factors estimate the number of direct, indirect, and induced job-years created per \$1 million of gross project costs deployed<sup>2</sup> in a given combination of project type and program. More on this can be found here:

- [Jobs Fact Sheet](#)
- [Job Study](#)

## Methodology

The Green Bank has long recognized the economic benefits of its investments. Since inception, the Green Bank has stimulated the creation of more than 16,000 jobs-years. This economic activity also results in revenue for the state in the form of individual income, corporate, and sales taxes.

Working with Navigant in 2018, the Green Bank developed a methodology to estimate this revenue. This methodology, which has been reviewed with the Department of Revenue Services, and is explained on the pages that follow.

<sup>1</sup> CT Renewable Energy / Energy Efficiency Economy Baseline Study (March 27, 2009)

<sup>2</sup> Note that the Green Bank differentiates between Capital Deployed, Gross Project Cost, and Total Investment. The Capital Deployed and Total Investment metrics include financing costs but might exclude the portion of project costs borne by the building owners. For calculating job-years and taxes, the Green Bank uses Gross Actual project cost as that metric best reflects the cashflows going to lenders and installers.

## Methodology

### Individual Income Taxes

The Green Bank uses the methodology developed by Navigant to estimate individual income taxes. This method relies on the factors for job creation and estimated wages<sup>3</sup> produced by both the 2009 and 2016 Job studies.<sup>4</sup> Then the appropriate effective tax rate is applied based on the tax calculator that can be found on the Department of Revenue Services' [website](#).<sup>5</sup>

$$\text{Personal Income Tax Generated} = [\text{Number of job-years created}]^* \times [\text{weighted average wage}]^{**} \times [\text{income tax rate}]^{***}$$

**\* Source: 2009 and 2016 Jobs Studies**

**\*\* Source: 2009 and 2016 Jobs Studies, and NREL JEDI Model**

**\*\*\* Source: Department of Revenue Services Tax Calculator**

To operationalize this, the Green Bank has created individual income tax factors that too are a result of the combination of project type (technology used) and the Green Bank Program leveraged for the project, and estimate the taxes paid per \$1 million invested.

By applying this methodology<sup>6</sup>, for example, to the \$1.2 billion of costs of projects sparked by the Green Bank since its inception, the Green Bank estimates its activities have generated \$30.1 million in individual income tax revenues for the General Fund.

### Corporate Income Taxes

The Green Bank uses the Navigant-developed method for estimating corporate income taxes. The method reviews all parties (installer, lender, investor, etc.) involved in a project, estimates their taxable income from their involvement with the project over its lifetime, and then applies the appropriate standard corporate tax rate. The estimations used for profitability come from an in-depth analysis prepared by Navigant based on a review of publicly traded companies and qualified CT Green Bank contractors (installers).

$$\text{Corporate Income Tax Generated} = [\text{Sum of taxable income}]^* \times [\text{corporate income tax rate}]^{**}$$

**\* Source: 2018 Tax Calculator models of corporate profitability**

**\*\* Source: CT Department of Revenue Services**

To operationalize this, the Green Bank has created corporate income tax factors that too are a result of the combination of project type (technology used) and the Green Bank Program leveraged for the project and estimate the taxes paid per \$1 million invested.

By applying this methodology<sup>7</sup>, for example, to the \$1.2 billion of costs of projects sparked by the Green Bank since its inception, the Green Bank estimates its activities have generated \$13.9 million in corporate income tax revenues for the General Fund.

<sup>3</sup> Only the 2016 study included wages for indirect and induced job-years. Navigant identified a wage based off of NREL models for 2009 that is consistent with what was done for the 2016 study.

<sup>4</sup> The Green Bank applies the wages and factors from the 2009 study to all projects closed prior to July 1, 2017. The Factors resulting from the 2016 study are applied to all projects closed after June 30, 2017.

<sup>5</sup> For the purposes of this, it is assumed that all job-years created are located in Connecticut and everyone is filing taxes as a single filer.

<sup>6</sup> This methodology has been presented to the CT Department of Revenue Services in January 2018. We expect to further review it with them in March 2018 and for it to be approved by the Green Bank Board of Directors subsequently.

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## Sales Tax

The Green Bank's programs also generate revenue for the state through sales and use tax. While solar thermal, solar photovoltaic, and geothermal generation equipment and activities (home installation work) are exempt from sales tax, the rest of the activities to sell and install the Green Bank's projects contribute to the general fund.



$$\text{Sales Tax Generated} = [\text{Gross Project Cost}]^* \times [\% \text{ of Project that is a taxable Service or Hardware}]^{**} \times [6.35\%]^{***}$$

\* Source: CT Green Bank Data Warehouse

\*\* Source: 2018 Navigant Tax Calculator

\*\*\* Source: CT Department of Revenue Services

As part of their 2018 analysis, Navigant identified what portion of a project's costs are from labor and what are from hardware. They also broke down the labor portion into what is engineering or design work and what is pure installation work as this distinction impacts whether or not the contracted labor is taxable. Applying the state's 6.35% sales tax rate to the taxable projects (i.e. excluding solar PV, solar thermal, and geothermal projects which are exempt from sales taxes) or portions of projects, the Green Bank estimates that projects stimulated by its programs have generated \$13.6 million in sales taxes for the state since inception.<sup>8</sup>

## Overall

Across all of its projects, for FY 2012 through FY 2017, the Green Bank's activities have generated an estimated \$57.6 million for the state.

**Table 1.**

Sum of ActualGrossCost Market	2012	2013	2014	FYClosed 2015	2016	2017	Grand Total
Capital Deployed	\$38,822,491	\$118,871,396	\$105,012,856	\$317,404,490	\$301,155,574	\$194,278,615	\$1,075,545,420
Capital Deployed - Labor	\$17,287,081	\$46,004,645	\$37,643,116	\$115,720,947	\$107,259,752	\$72,831,750	\$396,747,291
Capital Deployed - Hardware	\$21,535,410	\$72,866,751	\$67,369,740	\$201,683,542	\$193,895,822	\$121,446,864	\$678,798,129
Direct Jobs Created	259	636	635	1,859	1,880	806	6,075
Indirect and Induced Jobs Created	416	1,021	1,020	2,890	3,013	413	8,773
Total Jobs Created	675	1,656	1,656	4,749	4,892	1,219	14,848
Individual Income Taxes Generated	\$1,293,428	\$3,186,490	\$3,012,139	\$9,378,468	\$8,891,072	\$4,308,682	\$30,070,278
Corporate Taxes Generated	\$729,841	\$1,146,201	\$1,654,528	\$4,359,442	\$3,579,538	\$2,479,796	\$13,949,345
Sales Taxes Generated	\$182,457	\$4,165,296	\$856,421	\$4,016,435	\$2,291,750	\$2,079,636	\$13,591,996
Total Taxes Generated	\$2,205,725	\$8,497,987	\$5,523,088	\$17,754,345	\$14,762,360	\$8,868,114	\$57,611,618

<sup>8</sup> Methodology was reviewed by the CT Department of Revenue Services in March 2018 and approved by the Green Bank Board of Directors subsequently..

## About the Connecticut Green Bank

The Connecticut Green Bank was established by the Connecticut General Assembly on July 1, 2011 as a part of Public Act 11-80. As the nation's first full-scale green bank, it is leading the clean energy finance movement by leveraging public and private funds to scale-up renewable energy deployment and energy efficiency projects across Connecticut. The Green Bank's success in accelerating private investment in clean energy is helping Connecticut create jobs, increase economic prosperity, promote energy security and address climate change. In 2017, the Connecticut Green Bank received the Innovations in American Government Award from the Harvard Kennedy School Ash Center for Democratic Governance and innovation for their "Sparkling the Green Bank Movement" entry. For more information about the Connecticut Green Bank, please visit [www.ctgreenbank.com](http://www.ctgreenbank.com).



## About the Department of Revenue Services

The Connecticut Department of Revenue Services is responsible for instilling public trust in the collection of and increasing the voluntary compliance with taxes in the state. To learn more about DRS, please visit <http://www.ct.gov/drs/site/default.asp>.

