TAX REVENUE CALCULATOR

FINAL REPORT

JANUARY 19, 2018

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CONNECTICUT GREEN BANK SM

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OUTLINE

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II. Assumptions
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BACKGROUND:
GOAL OF PROJECT

The Connecticut Green Bank asked Navigant to assist with measuring economic impacts other than job creation, starting with tax revenue generation.

Create a tax revenue calculator to determine the taxes generated for the State of Connecticut as a result of co-investment by CGB in RE and EE projects. Specifically:

- Estimate the individual income tax and corporate income tax
- Calculate taxes generated per $1 million invested
- Provide taxes generated per $1 million invested for each technology agreed upon

Our understanding is the results of the tax revenue calculator can further help CGB as it relates to presentation of quantified benefits to the state legislature and others.

BACKGROUND:
TECHNOLOGIES INCLUDED

All of the RE and EE technologies that were part of the Jobs Calculator were included in the Tax Revenue Calculator with the addition of Anaerobic Digestion and CHP.

Renewable Energy	
Fuel Cell	Manufacturing[1]
	R&D/Engineering[1]
	Installation[2]
Solar PV	Residential Installation
	Non Residential Installation
Renewable Thermal Technologies	Ductless Split Heat Pump
	Geothermal Installation
	Solar Thermal Installation
Other	Wind Installation
	Hydro Installation
	EV Charging Stations Installation
	Storage Installation
	Anaerobic Digestion[1,2]
	CHP[2]

Energy Efficiency	
Residential (Single and Multi-Family)	Lighting
	Home Energy Solutions (HES) – Audits
	HES – Weatherization & HVAC
	Gas Conversion
Commercial	Small Business Energy Advantage
	Large Commercial and Industrial

Notes:
1. Assumed not yet profitable
2. New technology versus jobs calculator

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ASSUMPTIONS:
INDIVIDUAL AND CORPORATE INCOME TAXES

Various assumptions were necessary to estimate the return from taxable income in the state.

- Individual Income Tax
  - All jobs are located in Connecticut and everyone is paying taxes as single filers
  - Jobs receiving individual income tax are only for installations
    - Operation jobs were not part of this analysis.
- Corporate Income Tax
  - Corporate taxable income NPV was calculated which relies on project lifetime
    - Navigant assumptions on technology/project lifetimes based on industry knowledge
    - Conducted research to estimate current technology/project costs
  - Sponsor equity investor, tax equity investors, and banks for projects located in Connecticut pay Connecticut taxes
  - Sponsor equity investor typically only cover about 10% of project capital cost, with the rest of the investment coming from tax equity investors and banks
  - Fuel cell R&D and manufacturing and anaerobic digestion assumed not to be profitable based on industry insight so the only taxable income for these project types is individual income tax

ASSUMPTIONS:
ECONOMIC NEXUS WITH CT

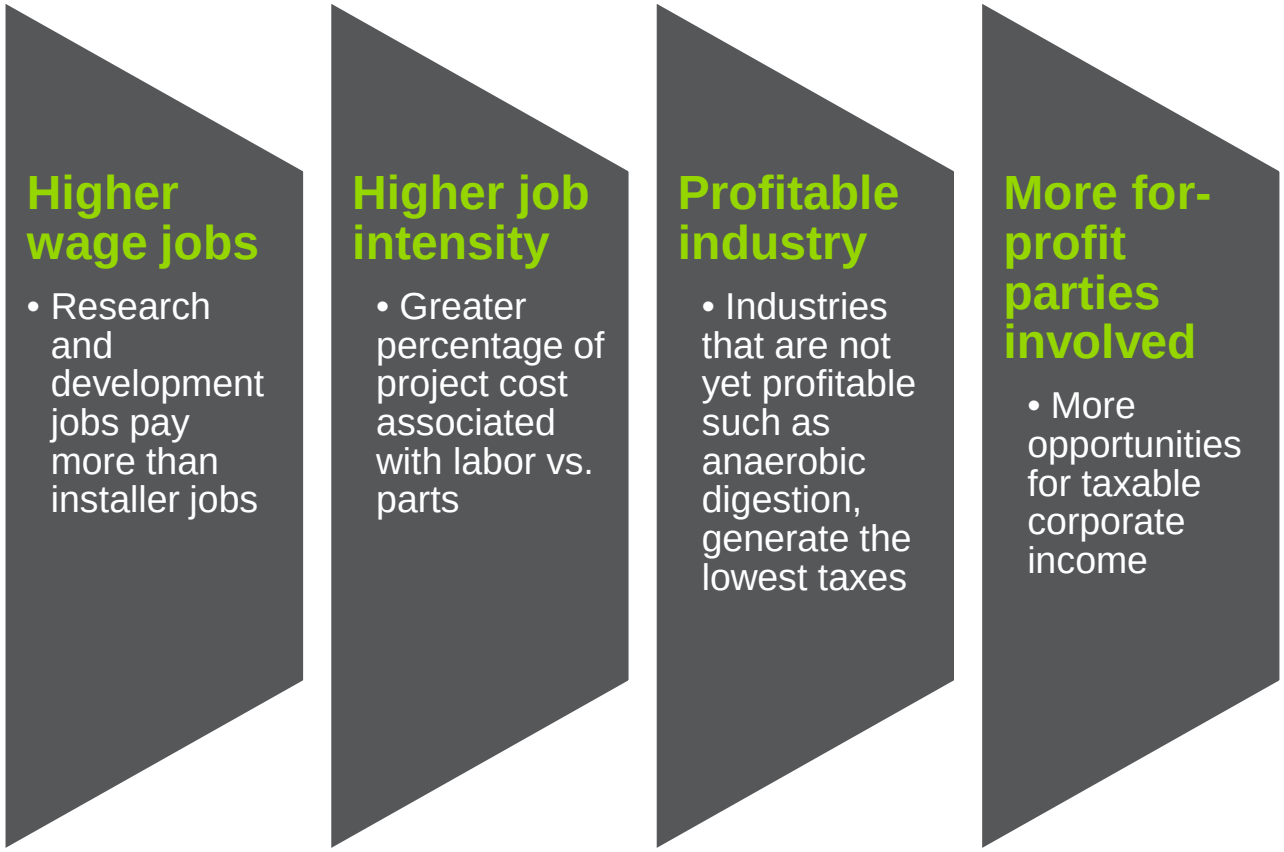
- Navigant assumed that for all companies involved, they would pay CT income tax for their portion of the project income
- This is based on the how CT defines economic nexus:

  "Effective for tax years beginning on or after January 1, 2010, any companies, partnerships, and S corporations that derive income from Connecticut or have a substantial economic presence within Connecticut, in either case attributable to the purposeful direction of business activities toward Connecticut, will be subject to tax in Connecticut"

  http://www.ct.gov/drs/cwp/view.asp?A=1510&Q=470710
- **Economic nexus by commercial entity:**
  - Host: Employees and business located in CT
  - Installer/EPC: Employees in CT or derives income from CT
  - For-profit or not-for-profit bank: either located in CT or derives income from CT
  - Tax-equity investor: derives income from CT
  - Sponsor-equity investor: derives income from CT

DRIVERS OF HIGHER TAX REVENUE

There are a number of drivers that lead to higher tax revenues for certain projects in the state.



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METHODOLOGY:
INDIVIDUAL INCOME TAX

Starting with jobs calculator:

1. Individual Income Tax

a. Direct Jobs

[Number of job-years created] x [weighted average wage] x [income tax rate]

2016 Jobs Calculator *2016 Jobs Calculator* *CT DRS Tax Calculator*

b. Indirect/Induced Jobs

[Number of job-years created] x [weighted average wage] x [income tax rate]

2016 Jobs Calculator *NREL JEDI Model* *CT DRS Tax Calculator*

Legend:
[Item]
Source

METHODOLOGY:
CORPORATE INCOME TAX

2. Corporate Income Tax

[Sum of taxable income] x [corporate tax rate]
From parties below *CT Tax Rates*

a. Determine all potential parties:

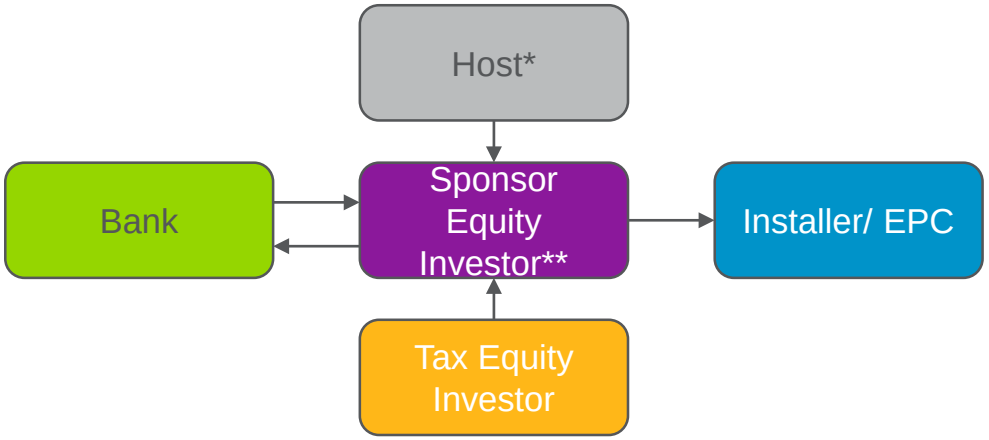
- **Installer/EPC** – taxable income from technology installation/sales
- **Sponsor Equity Investor** – taxable income from a portion of project distributions
- **For-Profit Bank** – taxable income from loan proceeds over useful life
- **Host** – taxable income from buying power for cheaper (NPV of change in profit)
- **Tax Equity Investor** – taxable income from a portion of project distributions + tax benefits

Legend:
[Item]
Source

METHODOLOGY:
CORPORATE INCOME TAX

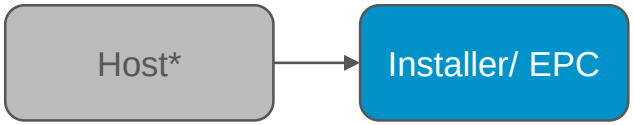
Multiple schemes possible based on project type/technology. Top three:

a.) Lease/PPA
(e.g., solar, wind or hydro projects)



b.) Loan Program
(e.g., ductless split heat pump, CHP)

c.) Residential EE Programs
(e.g., lighting, HES Audits)



* Changes to host taxable income only in some scenarios
** Sponsor Equity Investor and Installer/EPC sometimes same entity (e.g., SolarCity)

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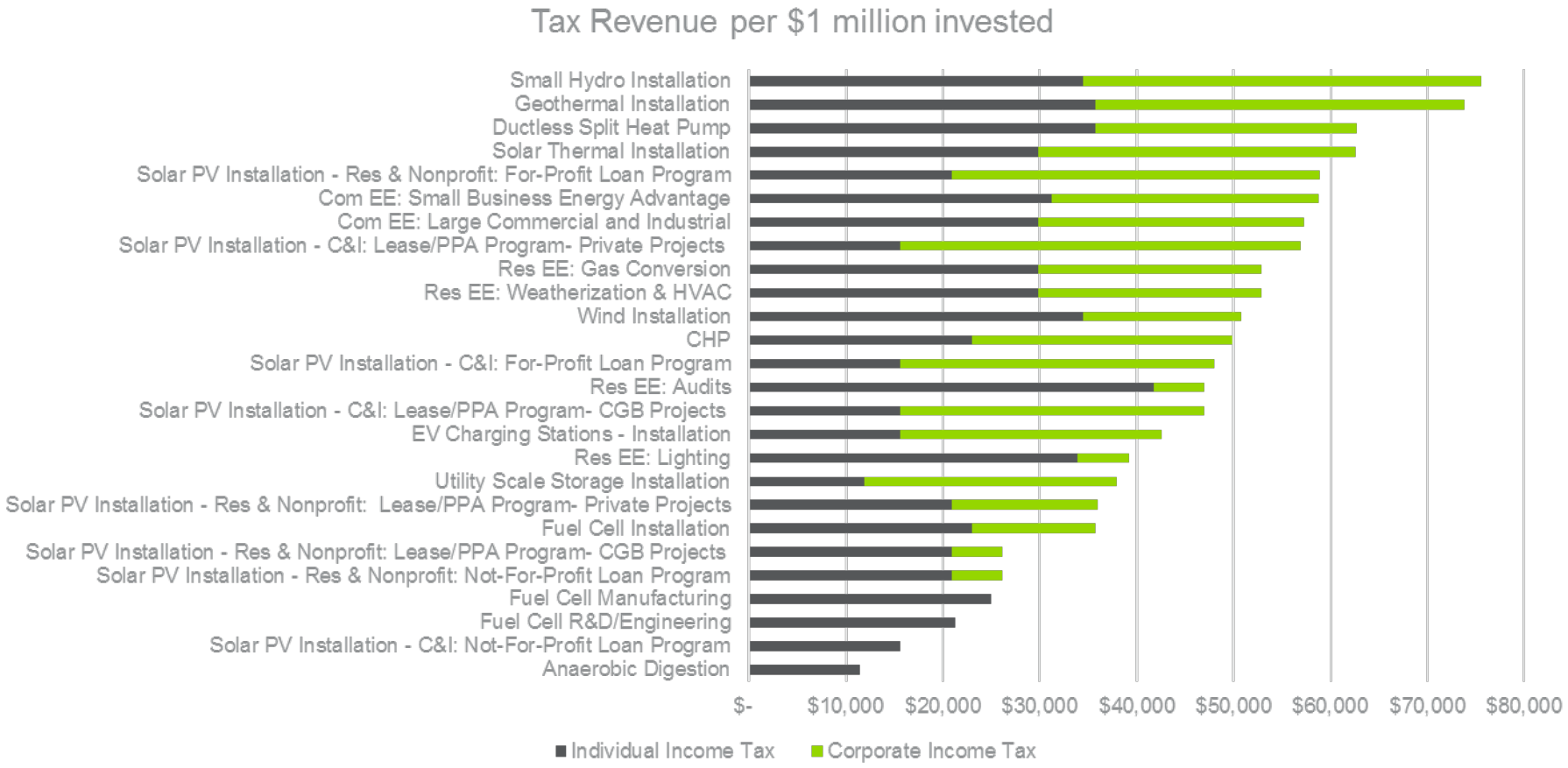
RESULTS:
RANKED BY TOTAL TAX

Across the different project types, the total tax varies significantly, from $12,000 to $75,000 per million dollars invested.



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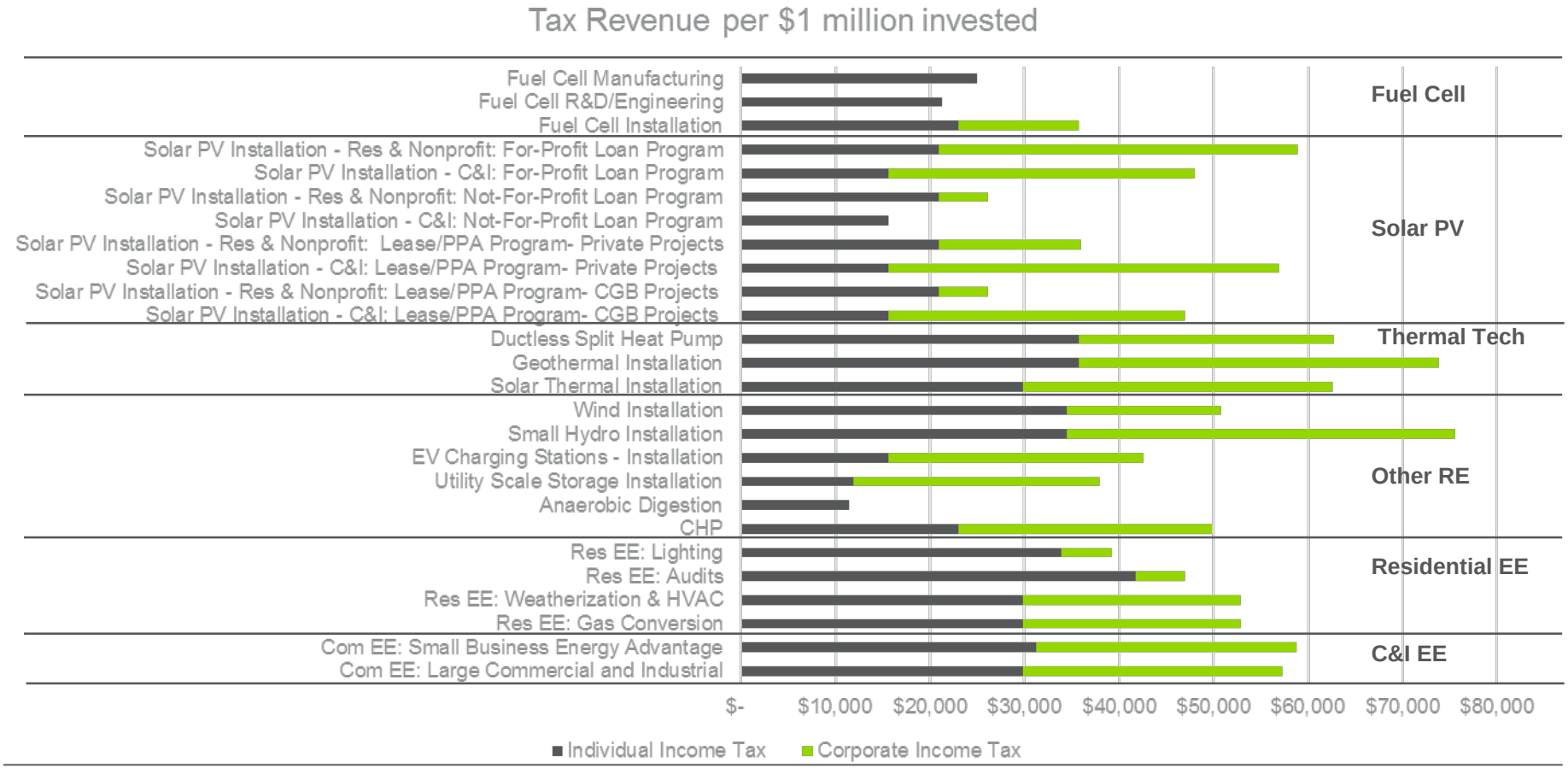
RESULTS:
SORTED BY CATEGORY

There is some spread within a technology category dependent on the project financing method and whether or not it is residential or non-residential.



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RESULTS:
RANGES BY HIGHER LEVEL TECHNOLOGY CATEGORY

Specific drivers impact the difference in tax revenue impacts between various projects and technologies.

Renewable Energy		Tax Revenue as % of project cost
Fuel Cell	All	2.5% - 3.6%
Solar PV	Residential Installation	2.6% - 5.9%
	Non Residential Installation	4.7% - 5.7%
Renewable Thermal Technologies	All	6.3% - 7.4%
Other RE	Wind Installation	5.1%
	Hydro Installation	7.6%
	EV Charging Station Installation	4.0%
	Storage Installation	3.3%
	Anaerobic Digestion	1.1%
	CHP	5.0%
Energy Efficiency		**Tax Revenue as % of project cost**
Residential (Single & Multi-Family)	All	3.9% - 5.3%
Commercial	All	5.7% - 5.9%

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SOURCES:
INDIRECT/INDUCED JOBS

Indirect and induced job wage was not part of the jobs calculator and therefore was estimated for the tax calculator analysis based on research.

1. NREL Jobs & Economic Development Impact (JEDI) models[1]
   - The models generate the number of indirect and induced jobs and the total earnings based on the project/technology type
   - The models for Conventional Hydropower and Wind specified for CT and inflated to 2016$ calculated an average indirect/induced wage on the **higher side of about $67,000-$70,000**
2. The Solar Foundation, An Assessment of the Economic, Revenue, and Societal Impacts of Colorado's Solar Industry (Oct 2013)[2]
   - The analysis reported the number of indirect and induced jobs and the total earnings for the Colorado solar industry in 2012
   - Inflating to 2016$ and increasing the wage based on the average wage in CT vs CO in 2016, the average indirect/induced wage on the **lower side of about $50,000**
3. Bureau of Labor Statistics, May 2016 State Occupational Employment and Wage Estimates[3]
   - Based on the average report wage of $57,960 across the state of CT in 2016 according to BLS, Navigant estimate an **average indirect/induced wage of $55,000 be used in the tax calculator**

- **We assume the same indirect/induced job wage across all projects/technologies**

[1] National Renewable Energy Laboratory, 01D_JEDI_CSP_Trough_Model_rel._CSP12.23.16, https://www.nrel.gov/analysis/jedi/
[2] The Solar Foundation, http://solarcommunities.org/wp-content/uploads/2013/10/TSF_COSEIA-Econ-Impact-Report_FINAL-VERSION.pdf
[3] BLS, May 2016 State Occupational Employment and Wage Estimates Connecticut, https://www.bls.gov/oes/current/oes_ct.htm

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SOURCES:
CORPORATE INCOME BEFORE TAX

- Navigant looked at financial data for publicly traded companies that perform renewable energy and energy efficiency installation/EPC services in the US over the 2014-2016 time period
- Benchmark companies included larger diversified construction companies such as Ameresco, EMCOR, MasTec, Quanta Services and Argan and some solar companies such as Vivint and SunRun
- Many of the installers/EPCs in CT are smaller companies. As such, they are privately held and financial data is not public
- For the purposes of modeling corporate income tax, Navigant assumed that **income before tax (or taxable income) was equal to 7% of revenue**

SOURCES:
ONLINE REFERENCES

- CT base electricity rates:
  - https://www.chooseenergy.com/electricity-rates-by-state/#commercial-rates
- Percent of project cost provided by tax equity investor:
  - http://greenzu.com/solar-tax-equity-investor-returns
  - https://www.solsystems.com/invest-in-solar/tax-equity/
- Renewable energy technologies that qualified for investment tax credit in 2016:
  - http://programs.dsireusa.org/system/program/detail/658
  - http://www.bakertilly.com/services/renewable-energy/investment-tax-credit-section-48
- CT Corporate Tax Rate – 7.5%
  - http://www.ct.gov/drs/lib/drs/forms/1-2016/corporation/ct-1120.pdf
- CT Individual Income Tax Rate
  - http://www.dir.ct.gov/drs/Taxcalsched/TCS2016.htm

Wage	Individual Income Tax Rate
$ 40,000	3.5%
$ 45,000	4.1%
$ 50,000	4.1%
$ 55,000	4.2%
$ 60,000	4.3%
$ 85,000	5.1%

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TECHNOLOGY DASHBOARDS

FUEL CELLS

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FUEL CELL INSTALLATION

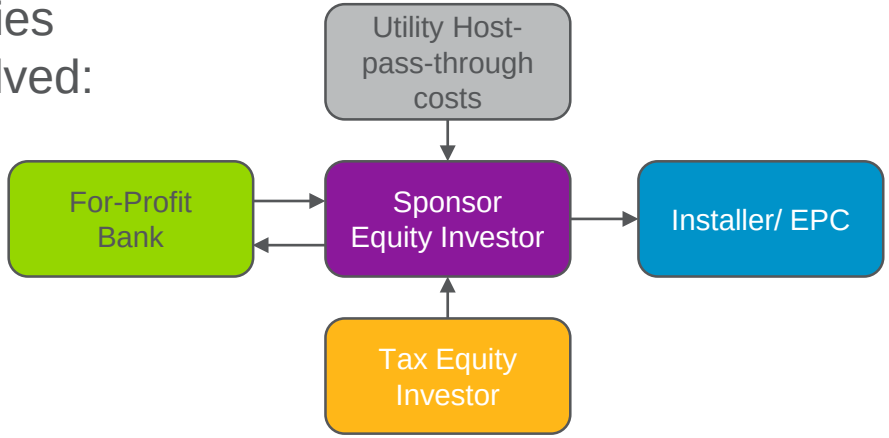
Description:

For fuel cell installation projects, we assumed there are five commercial parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, the tax equity investor, and the utility host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital, tax equity and some debt to finance the project. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The power from the fuel cell is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.

Inputs:

Average Direct Wage	$60,000
Labor % of Project Cost	40%
Project Lifetime	10 years
Average 2016 Cost	$4.87/W
Capacity Factor	90%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Parties involved:



Drivers:

Results (per $1 million invested):

Individual Income Tax	$22,960
Corporate Income Tax	$12,774
Tax Revenue as % of project cost	3.6%
Rank	20/26

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FUEL CELL MANUFACTURING

Description:

For fuel cell manufacturing activities in CT, we assumed there is only one corporate party involved, the manufacturer. However, based on our analysis of the current state of the fuel cell industry, fuel cell manufacturers are not yet profitable companies and are relying on investors for funding. As the fuel cell industry matures, fuel cell manufacturers may become profitable companies.

Parties involved:

Manufacturer- not profitable

Drivers:

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	40%
Project Lifetime	10 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$25,026
Corporate Income Tax	-
Tax Revenue as % of project cost	2.5%
Rank	23/26

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FUEL CELL
R&D/ENGINEERING

Description:

We assumed that firms focusing on research and development or engineering work on fuel cells in CT are not yet profitable and are relying on investors for funding. As the fuel cell industry matures, fuel cell engineering or R&D firms may become profitable companies. These firms have the highest direct wage of all of the projects included in the calculator at $85,000.

Parties involved:

R&D/Engineering Frim – not profitable

Drivers:

Inputs:

Average Direct Wage	$85,000
Labor % of Project Cost	40%
Project Lifetime	10 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$21,309
Corporate Income Tax	-
Tax Revenue as % of project cost	2.1%
Rank	24/26

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TECHNOLOGY DASHBOARDS

SOLAR PV

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SOLAR PV – LOAN PROGRAM
FOR-PROFIT BANK, RESIDENTIAL AND NONPROFIT

Description:

When a residential or nonprofit host takes out a loan to install a solar PV project from a for-profit bank, the three parties involved are the host, the bank, and the installer/EPC. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 25 years. The residential or nonprofit host benefits from not paying for power from their own panels, lowering their overall energy bills. However, since the host in this scenario doesn't pay income tax, their taxes are not impacted as a result of lower energy bills, which is the case for a C&I host. The cost per watt and the PPA price for these projects is approximately 30% higher than for C&I projects.

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	35%
Project Lifetime	25 years
Average 2016 Cost	$2.98/W
Capacity Factor	13.7%
% by Tax Equity Investor	-
Depreciation	-

Parties involved:

Drivers:

Results (per $1 million invested):

Individual Income Tax	$20,878
Corporate Income Tax	$37,978
Tax Revenue as % of project cost	5.9%
Rank	5/26

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SOLAR PV – LOAN PROGRAM
FOR-PROFIT BANK, C&I

Description:

When a C&I business takes out a loan to install a solar PV project from a for-profit bank, the three parties involved are the host, the bank, and the installer/EPC. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 25 years. The C&I business benefits from lower overall energy bills, leading to lower operating costs and increasing their income accordingly. However, the C&I host can deduct the interest payments and the depreciation of the panels from their increased income. We found a net negative NPV of the decreased energy bills, interest payments, and depreciation for the C&I host, lowering their income taxes.

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	25%
Project Lifetime	25 years
Average 2016 Cost	$2.30/W
Capacity Factor	13.7%
% by Tax Equity Investor	-
Depreciation	5 year MACRS

Parties involved:

Drivers:

Results (per $1 million invested):

Individual Income Tax	$15,641
Corporate Income Tax	$32,333
Tax Revenue as % of project cost	4.8%
Rank	13/26

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SOLAR PV – LOAN PROGRAM
NOT-FOR-PROFIT BANK, RESIDENTIAL AND NONPROFIT

Description:

When a residential or nonprofit host takes out a loan to install a solar PV project from a not-for-profit bank, the three parties involved are the host, the bank, and the installer/EPC. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 25 years. The not-for-profit bank does not pay taxes on the interest paid on the loan. The residential or nonprofit host benefits from not paying for power from their own panels, lowering their overall energy bills. However, since the host in this scenario doesn't pay income tax, their taxes are not impacted as a result of lower energy bills. The cost per watt and the PPA price for these projects is approximately 30% higher than for C&I projects.

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	35%
Project Lifetime	25 years
Average 2016 Cost	$2.98/W
Capacity Factor	13.7%
% by Tax Equity Investor	-
Depreciation	-

Parties involved:

Drivers:

Results (per $1 million invested):

Individual Income Tax	$20,878
Corporate Income Tax	$5,250
Tax Revenue as % of project cost	2.6%
Rank	22/26

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SOLAR PV – LOAN PROGRAM
NOT-FOR-PROFIT BANK, C&I

Description:

When a C&I business takes out a loan to install a solar PV project from a not-for-profit bank, the three parties involved are the host, the bank, and the installer/EPC. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 25 years. The not-for-profit bank does not pay taxes on the interest paid on the loan. The C&I business benefits from lower overall energy bills, leading to lower operating costs and increasing their income accordingly. However, the C&I host can deduct the interest payments and the depreciation of the panels from their increased income. We found a net negative NPV of the decreased energy bills, interest payments, and depreciation for the C&I host, lowering their income taxes.

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	25%
Project Lifetime	25 years
Average 2016 Cost	$2.30/W
Capacity Factor	13.7%
% by Tax Equity Investor	-
Depreciation	5 year MACRS

Parties involved:

Drivers:

Results (per $1 million invested):

Individual Income Tax	$15,641
Corporate Income Tax	-$395
Tax Revenue as % of project cost	1.5%
Rank	25/26

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SOLAR PV – LEASE/PPA PROGRAM
PRIVATE PROJECTS, RESIDENTIAL AND NONPROFIT

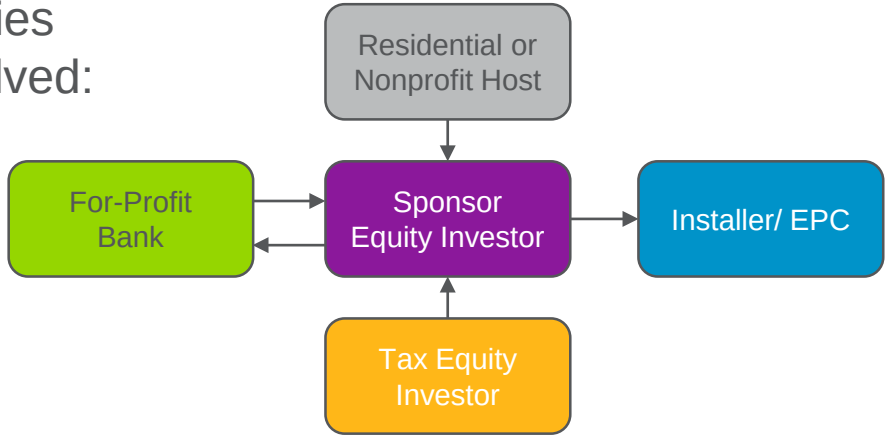
Description:

For a residential or nonprofit private lease/PPA solar PV project, we assumed that there are five parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, the tax equity investor, and the residential or nonprofit host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital, tax equity and some debt to finance the project. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The residential or nonprofit host benefits from a lower energy price than if they purchased the power from the utility directly. However, since the host doesn't pay income tax, their taxes are not impacted as a result of lower energy bills.

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	35%
Project Lifetime	20 years
Average 2016 Cost	$2.98/W
Capacity Factor	13.7%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Parties involved:



Drivers:

Results (per $1 million invested):

Individual Income Tax	$20,878
Corporate Income Tax	$15,118
Tax Revenue as % of project cost	3.6%
Rank	19/26

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SOLAR PV – LEASE/PPA PROGRAM
PRIVATE PROJECTS, C&I

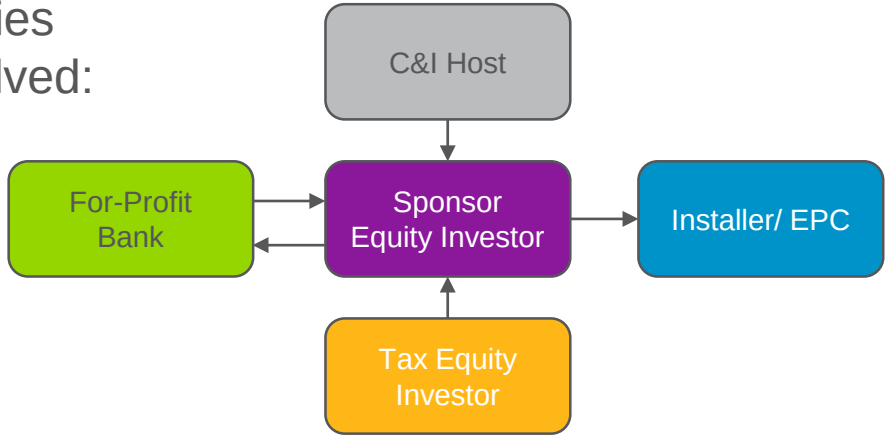
Description:

For a C&I private lease/PPA solar PV project, we assumed that there are five parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, the tax equity investor, and the C&I host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital, tax equity and some debt to finance the project. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The C&I host benefits from a lower energy price than if they purchased the power from the utility directly, leading to increased taxable income for the C&I host over the lease/PPA term.

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	25%
Project Lifetime	20 years
Average 2016 Cost	$2.30/W
Capacity Factor	13.7%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Parties involved:



Drivers:

Results (per $1 million invested):

Individual Income Tax	$15,641
Corporate Income Tax	$41,282
Tax Revenue as % of project cost	5.7%
Rank	8/26

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SOLAR PV – LEASE/PPA PROGRAM
CT GREEN BANK PROJECTS, RESIDENTIAL AND NONPROFIT

Description:

If the CGB participates as a part owner of the lease/PPA solar PV project with a residential or nonprofit host, for that part of the lease the only parties involved are the host, the CGB, and the installer/EPC. The CGB does not pay taxes on their earnings from their lease portion. The residential or nonprofit host benefits from a lower energy price than if they purchased the power from the utility directly. However, since the host in this scenario doesn't pay income tax, their taxes are not impacted as a result of lower energy bills, which is the case for a C&I host. The cost per watt and the lease/PPA price for these projects is approximately 30% higher than for C&I projects.

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	35%
Project Lifetime	20 years
Average 2016 Cost	$2.98/W
Capacity Factor	13.7%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Parties involved:

Drivers:

Results (per $1 million invested):

Individual Income Tax	$20,878
Corporate Income Tax	$5,250
Tax Revenue as % of project cost	2.6%
Rank	21/26

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SOLAR PV – LEASE/PPA PROGRAM
CT GREEN BANK PROJECTS, C&I

Description:

If the CGB participates as a part owner of the lease/PPA solar PV project with a C&I host, for that part of the lease the only parties involved are the host, the CGB, and the installer/EPC. The CGB does not pay taxes on their earnings from their lease portion. Also, the CGB does not borrow money from a tax equity investor or a bank to purchase that portion of the lease/PPA. The C&I host benefits from a lower energy price than if they purchased the power from the utility directly, leading to increased taxable income for the C&I host over the lease/PPA term.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	25%
Project Lifetime	20 years
Average 2016 Cost	$2.30/W
Capacity Factor	13.7%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Results (per $1 million invested):

Individual Income Tax	$15,641
Corporate Income Tax	$31,358
Tax Revenue as % of project cost	4.7%
Rank	15/26

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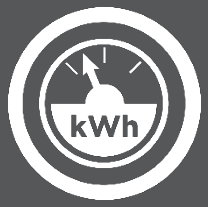
TECHNOLOGY DASHBOARDS

RENEWABLE THERMAL TECHNOLOGIES



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RENEWABLE THERMAL TECHNOLOGIES – LOAN
DUCTLESS SPLIT HEAT PUMP

Description:

With the installation of a ductless heat pump, only the host, the installer/EPC, and the for-profit bank are involved in the project. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 15 years. The host can be either a residential, nonprofit, or C&I host since we do not assume that the energy savings are significant enough to lead to increased income taxes considering the deduction of the interest payments. We assumed that if this system was not installed, another would be for similar cost, so the depreciation would be similar in either case.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	60%
Project Lifetime	15 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$35,791
Corporate Income Tax	$26,887
Tax Revenue as % of project cost	6.3%
Rank	3/26

NAVIGANT

RENEWABLE THERMAL TECHNOLOGIES – LOAN GEOTHERMAL INSTALLATION

Description:

With the installation of a geothermal heating system, only the host, the installer/EPC, and the for-profit bank are involved in the project. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 25 years. The host can be either a residential, nonprofit, or C&I host since we do not assume that the energy savings are significant enough to lead to increased income taxes considering the deduction of the interest payments. We assumed that if this system was not installed, another would be for similar cost, so the depreciation would be similar in either case.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	60%
Project Lifetime	25 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$35,791
Corporate Income Tax	$37,978
Tax Revenue as % of project cost	7.4%
Rank	2/26

NAVIGANT

RENEWABLE THERMAL TECHNOLOGIES – LOAN
SOLAR THERMAL INSTALLATION

Description:

With the installation of a solar thermal system, only the host, the installer/EPC, and the for-profit bank are involved in the project. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 15 years. The host can be either a residential, nonprofit, or C&I host since we do not assume that the energy savings are significant enough to lead to increased income taxes considering deduction of the interest payments. We assumed that if this system was not installed, another would be for similar cost, so the depreciation would be similar in either case.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	50%
Project Lifetime	20 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

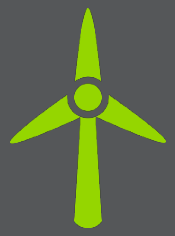
Results (per $1 million invested):

Individual Income Tax	$29,826
Corporate Income Tax	$32,736
Tax Revenue as % of project cost	6.3%
Rank	4/26

NAVIGANT

TECHNOLOGY DASHBOARDS

OTHER RENEWABLE ENERGY



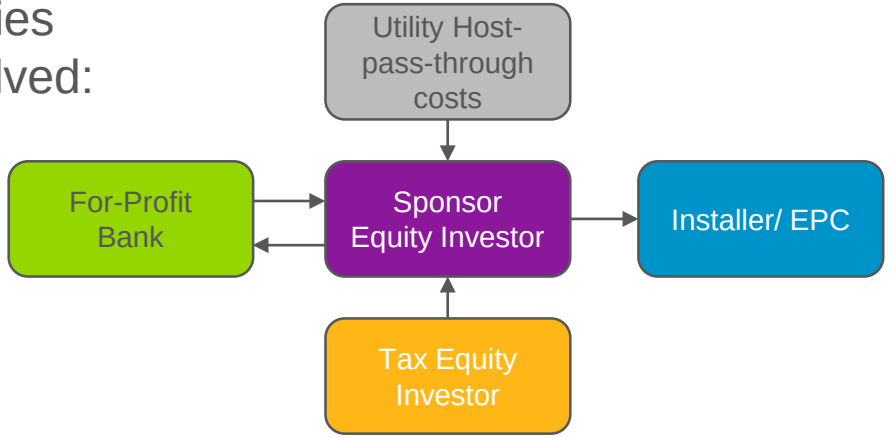
NAVIGANT

OTHER RENEWABLE ENERGY
WIND INSTALLATION

Description:

For a wind installation project, we assumed that there are five parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, the tax equity investor, and the utility host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital, tax equity and some debt to finance the project. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The wind power is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.

Parties involved:



Drivers:

Inputs:

Average Direct Wage	$60,000
Labor % of Project Cost	60%
Project Lifetime	20 years
Average 2016 Cost	$4.96/W
Capacity Factor	18%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Results (per $1 million invested):

Individual Income Tax	$34,439
Corporate Income Tax	$16,355
Tax Revenue as % of project cost	5.1%
Rank	11/26

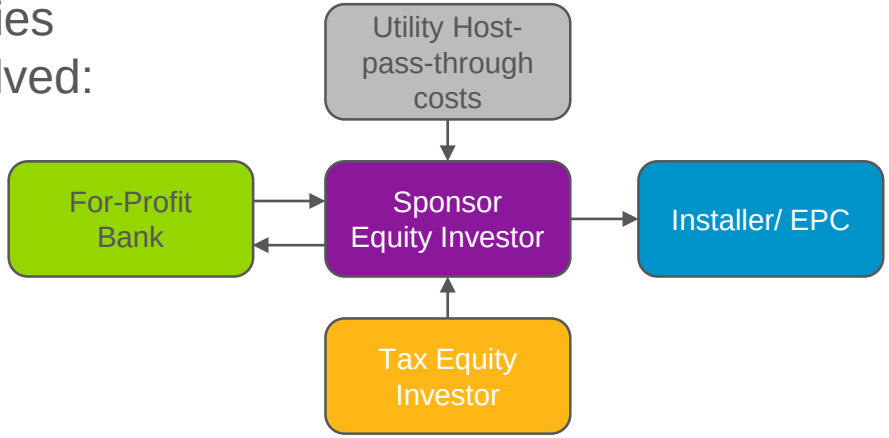
NAVIGANT

OTHER RENEWABLE ENERGY
SMALL HYDRO INSTALLATION

Description:

For a small hydropower project, we assumed that there are five parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, the tax equity investor, and the utility host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital, tax equity and some debt to finance the project. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The hydropower is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.

Parties involved:



Drivers:

Inputs:

Average Direct Wage	$60,000
Labor % of Project Cost	60%
Project Lifetime	20 years
Average 2016 Cost	$2.77/W
Capacity Factor	49%
% by Tax Equity Investor	40%
Depreciation	5 year MACRS

Results (per $1 million invested):

Individual Income Tax	$34,439
Corporate Income Tax	$41,083
Tax Revenue as % of project cost	7.6%
Rank	1/26

NAVIGANT

OTHER RENEWABLE ENERGY
EV CHARGING STATION INSTALLATION

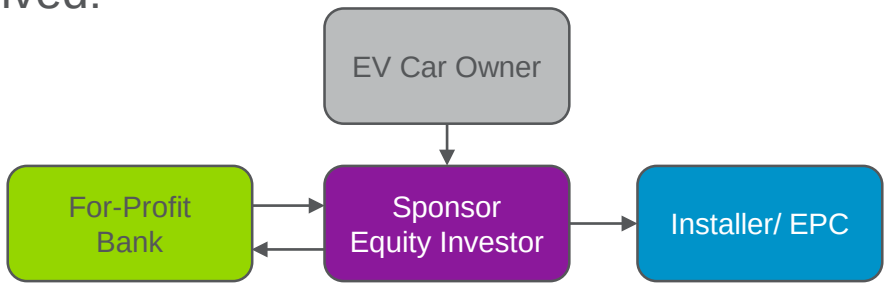
Description:

For an EV charging station installation project, we assumed that there are four parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, and the EV car owners that use the charging station. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital and debt to finance the project. We assumed that the sponsor equity investor is looking for an IRR of ~10% and will use that to set the price of charging. The sponsor equity investor can depreciate 85% of the project cost. Based on an assumed 10% IRR, the depreciation, and the interest deduction, we found the sponsor equity investor has an NPV of net negative income taxes.

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	25%
Project Lifetime	20 years
Average 2016 Cost	$2.50/W
Capacity Factor	25%
% by Tax Equity Investor	-
Depreciation	7 year MACRS

Parties involved:



Drivers:

Results (per $1 million invested):

Individual Income Tax	$15,641
Corporate Income Tax	$26,883
Tax Revenue as % of project cost	4.3%
Rank	16/26

NAVIGANT

OTHER RENEWABLE ENERGY
UTILITY SCALE STORAGE INSTALLATION

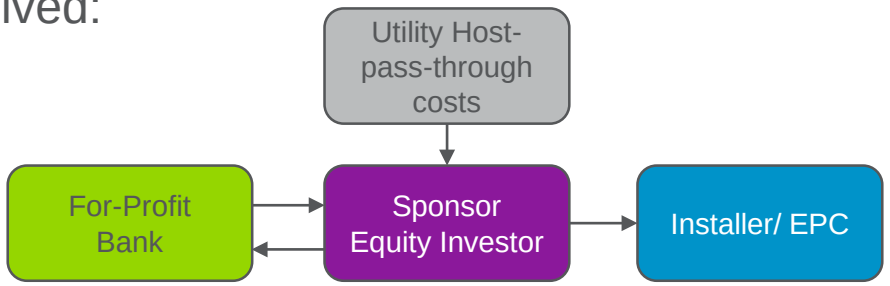
Description:

For a utility scale storage installation project, we assumed that there are four parties involved: an installer/EPC, the sponsor equity investor, a for-profit bank, and the utility host. The sponsor equity investor works with the installer/EPC to get the project installed and uses their own capital and debt to finance the project. We assumed that the sponsor equity investor is looking for an IRR of ~10% and will use that to set the price per kWh. The sponsor equity investor can depreciate 85% of the project cost. The battery power is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	20%
Project Lifetime	10 years
Average 2016 Cost	$1.50/W
Capacity Factor	17%
% by Tax Equity Investor	-
Depreciation	7 year MACRS

Parties involved:



Drivers:

Results (per $1 million invested):

Individual Income Tax	$11,930
Corporate Income Tax	$25,963
Tax Revenue as % of project cost	3.8%
Rank	18/26

NAVIGANT

OTHER RENEWABLE ENERGY
ANAEROBIC DIGESTION

Description:

We assumed that for anaerobic digestion projects, the only key player is the host of the anaerobic digestion project. However, this technology is still in the development stage and we assumed that it is not yet profitable. As the anaerobic digestion industry matures, anaerobic digestion projects may become profitable.

Parties involved:

Host

Drivers:

- Higher wage jobs
- Higher job intensity
- Profitable industry
- More for-profit parties involved

Inputs:

Average Direct Wage	$60,000
Labor % of Project Cost	20%
Project Lifetime	15 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$11,480
Corporate Income Tax	-
Tax Revenue as % of project cost	1.1%
Rank	26/26

NAVIGANT

OTHER RENEWABLE ENERGY
COMBINED HEAT AND POWER (CHP)

Description:

We assumed that for a combined heat and power plant it will be owned by the commercial entity or host and located on their site. The other players are the for-profit bank and the installer/EPC. We assumed that the host takes out a loan for 100% of the project cost and the loan term is 15 years. The host can be either a nonprofit or C&I host since we do not assume that the energy savings are significant enough to lead to increased income taxes considering deduction of the interest payments. We assumed that if this system was not installed, another would be for similar cost, so the depreciation would be similar in either case.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$60,000
Labor % of Project Cost	40%
Project Lifetime	15 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$22,960
Corporate Income Tax	$26,887
Tax Revenue as % of project cost	5.0%
Rank	12/26

NAVIGANT

TECHNOLOGY DASHBOARDS

ENERGY EFFICIENCY

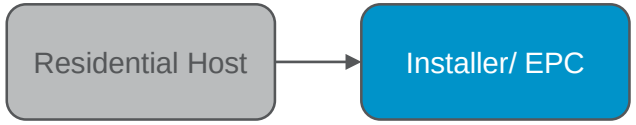
NAVIGANT

RESIDENTIAL ENERGY EFFICIENCY LIGHTING

Description:

The jobs and corporate income generated from a residential energy efficiency lighting upgrade are only when the lighting is installed by someone besides the homeowner. Lighting upgrades are usually low cost and we assumed that the residential host does not take out a loan to finance the upgrade. For this reason, only the installer/EPC has increased taxes from these projects.

Parties involved:



Drivers:

Inputs:

Average Direct Wage	$40,000
Labor % of Project Cost	50%
Project Lifetime	12 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$33,911
Corporate Income Tax	$5,250
Tax Revenue as % of project cost	3.9%
Rank	17/26

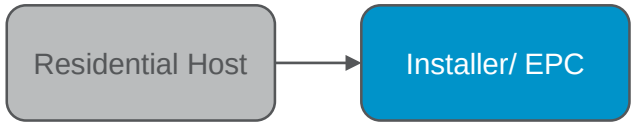
NAVIGANT

RESIDENTIAL ENERGY EFFICIENCY AUDITS

Description:

The jobs and corporate income generated from a residential energy efficiency audit are only when the audit is performed by someone besides the homeowner. Audits are usually low cost and we assumed that the residential host does not take out a loan to finance the audit. For this reason, only the installer/EPC has increased taxes from these projects. The labor is not the full cost of the project due to the cost of the equipment needed to conduct the audit such as for a blower door test.

Parties involved:



Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	70%
Project Lifetime	-
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$41,756
Corporate Income Tax	$5,250
Tax Revenue as % of project cost	4.7%
Rank	14/26

NAVIGANT

RESIDENTIAL ENERGY EFFICIENCY
WEATHERIZATION & HVAC

Description:

The jobs and corporate income generated from residential energy efficiency weatherization and HVAC upgrades are only when the work is performed by someone besides the homeowner. HVAC and weatherization upgrades can be more expensive and we assumed that the residential host takes out a loan to finance 100% of the upgrade. The three parties involved in the upgrade are the residential host, the for-profit bank, and the installer/EPC.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	50%
Project Lifetime	12 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$29,826
Corporate Income Tax	$23,072
Tax Revenue as % of project cost	5.3%
Rank	9/26

NAVIGANT

RESIDENTIAL ENERGY EFFICIENCY
GAS CONVERSION

Description:

The jobs and corporate income generated from residential gas conversion are only when the work is performed by someone besides the homeowner. Gas conversion can be more expensive and we assumed that the residential host takes out a loan to finance 100% of the conversion. The three parties involved in the upgrade are the residential host, the for-profit bank, and the installer/EPC.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	50%
Project Lifetime	12 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$29,826
Corporate Income Tax	$23,072
Tax Revenue as % of project cost	5.3%
Rank	10/26

NAVIGANT

COMMERCIAL ENERGY EFFICIENCY
SMALL BUSINESS ENERGY ADVANTAGE

Description:

For commercial energy efficiency projects at small businesses, we assumed that there are three parties involved: the small business host, the for-profit bank, and the installer/EPC. We assumed that the small business takes out a loan to finance 100% of the energy efficiency upgrades. The energy efficiency upgrades will reduce overall energy costs for the small business and increase profit. The small business can deduct their interest payments from the increased profits. Assuming a cost of $5/kWh saved per year, the small business has a net increase in income over the 12 year life of the upgrade.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$50,000
Labor % of Project Cost	50%
Project Lifetime	12 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$31,282
Corporate Income Tax	$27,492
Tax Revenue as % of project cost	5.9%
Rank	6/26

NAVIGANT

COMMERCIAL ENERGY EFFICIENCY
LARGE COMMERCIAL AND INDUSTRIAL

Description:

For commercial energy efficiency projects at large commercial and industrial sites, we assumed that there are three parties involved: the large C&I host, the for-profit bank, and the installer/EPC. We assumed that the large C&I host takes out a loan to finance 100% of the energy efficiency upgrades. The energy efficiency upgrades will reduce overall energy costs for the C&I host and accordingly increase profit. The C&I host can deduct their interest payments from the increased profits. Assuming a cost of $5/kWh saved per year, the C&I host has a net increase income over the 12 year life of the upgrade.

Parties involved:

Drivers:

Inputs:

Average Direct Wage	$55,000
Labor % of Project Cost	50%
Project Lifetime	12 years
Average 2016 Cost	-
Capacity Factor	-
% by Tax Equity Investor	-
Depreciation	-

Results (per $1 million invested):

Individual Income Tax	$29,826
Corporate Income Tax	$27,492
Tax Revenue as % of project cost	5.7%
Rank	7/26

NAVIGANT

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