National Grid's
TRC/BC Screening Reference Document for Commercial & Industrial Projects
(revised 09/11/13)

Developed based on New York State Public Service Commission Regulatory Guidelines for Screening Energy Efficiency Projects

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Please note: PROGRAMS CAN CHANGE WITHOUT NOTICE!

For additional Program Details please visit our website at:
https://www1.nationalgridus.com/energysolutionspartner

Step 1 – Screening Methodologies

The New York Public Service Commission has set guidelines for the NYS utilities to follow to make sure measures and projects implemented by customers are cost effective prior to committing funding to those projects. The Benefit Cost (BC) Screening tool is developed to screen Custom energy efficiency projects to determine if a project is eligible to receive incentives from National Grid.

The tool uses a series of calculations that include:

1) LRAC – Long Range Avoided Cost, to avoid the cost associated with new energy production and distribution.
2) Societal Benefits
3) Simple Payback

The end result or the EEM passes the BC Screening requires that the EEM (Energy Efficiency Measure) screens at a "1" or greater also known as a BC of 1, in order for the project to receive an incentive.

Recently the NYS PSC changed the way that we screen projects by changing the method that you will choose to screen an EEM. The items 1 – 4 below are a brief explanation of the screening methods and their intended use. It is important that the appropriate method is selected when analyzing various projects. As a result, it is important to be familiar with the various screening methods.

TIP 1 – The BC screening tool <Help> tab is very useful for explanations of the inputs required.

BC Screening Method for Custom Projects

1) BC Screening Method: Retrofit

- <u>THIS METHOD APPLIES ONLY TO LIGHTING MEASURES</u>.

- Uses full values of savings and project costs on lighting and lighting related measures. Lighting controls apply when the lighting controls savings is < then 5% of total lighting project savings. In the case where lighting controls exceed 5% of the project savings – a different method called "Add-On" needs to be used. (See # 3 below).

- Operating hours, lighting type, application (outdoor or indoor) and calculated lighting measure life is utilized for screening

TIP 2 – In order for LED lighting to qualify for an incentive, it has to be listed on the DLC's or Energy Star's most current lists. The NYS PSC has set LED rules for determining the Effective Useful Life (EUL) of LED lighting. .The lighting EUL is impacted by ambient temperature that they are installed in. Therefore, the EUL is 50,000 hours exterior, 35,000 hours interior, NG Approved but unlisted is 25,000 hours and all other lighting is 70,000 hours. Being considerate of the LED EUL impact a project consideration could be to use a weighted average (EUL) measure life. (See internal memo from TC on the DLC decision for LEDs).

2) BC Screening Method: Early Replacement

- THIS METHOD APPLIES TO NON-LIGHTING RELATED MEASURES.
- This method should be used for replacement of equipment before it reaches end of its Effective Useful Life (EUL).
- Projects will follow the Tech Manual Appendix M methodology incorporating Dual Baseline Method of analysis.
- If one cannot document or substantiate the age of the equipment in place is less than its prescribed EUL, the replacement must be analyzed as normal / end of life replacement (See #4 below).

3) BC Screening Method: Add-On

- Add-ons would be enhancing performance of existing equipment by adding devices such as VFD, lighting controls (> 5% savings, see bullet 2, retrofit above), compressed air storage tanks, EMS, etc.

4) BC Screening Method: Normal [Formerly Time of Replacement (TOR)]

- THIS METHOD IS APPLIES WHEN THE AGE OF THE EQUIPMENT BEING REPLACED IS PAST ITS EUL.
- Analysis uses code referenced design criteria or industry standard equipment as baseline. A code example is the 2010 Energy Conservation construction code of New York, if applicable.
- Required will be the cost and energy usage of Code standard equipment to be used for the baseline for screening.
- Required cost and energy usage of proposed equipment to be used as EE (proposed) equipment for screening.

TIP 3: The electric screening tool will automatically calculate the program caps when you select electric program option D2 and Normal Replacement. The BC screening tool will set the incentive at 75% of the incremental not to exceed 50% of the total project/EEM cost where the project cost is the labor and materials for the new high efficiency equipment. All other caps are in place: $/kWh, $/therm, buy down to 1 year payback for commercial /6 month payback for industrial customers or 50% of the total project cost , whichever is the least amount.

Please note: The tool calculates 75% of incremental costs as the incentive as longs as all other caps are met. However, National Grid is paying 100% of incremental costs as long as it does not exceed 50% of the total project cost.

5) BC Screening Method: Special Circumstances

- THIS METHOD APPLIES ONLY TO COMMERCIAL AND INDUSTRIAL MACHINERY AND MULTI-FAMILY CENTRAL SYSTEMS BUT NOT TO LIGHTING EQUIPMENT.

- Customers typically influenced by initial capital outlay more than life cycle economics due to lack of capital.

- Customers with short time horizons and other factors which tend to prevent long range economic decision making with regard to the installation of high efficiency equipment.

Special Circumstances must follow this five criteria regarding equipment being considered for replacement:

1. Equipment age equals or exceeds 125% of its effective useful life (EUL) and energy consumption significantly exceeds that of current high efficiency models by at least 20%.
2. There is a history of significant repairs or replacement with used equipment
3. The prospective next repair or replacement is likely to be initially much less expensive than replacement with new high efficiency machinery.
4. Documentation to support above criteria must be collected and attached to the application in InDemand.
5. Equipment fitting these criteria would be subject to a form of dual baseline TRC screening. Initial baseline of 25% of new measure's prescribed EUL. Second baseline consists of 75% remainder based on minimally code compliant or standard efficiency equipment. Under this approach, first year savings would be reported as the difference between the existing equipment's electric usage and that of the high efficiency equipment which replaces it. Analysis will require use of tables published by PSC under Appendix N to the NY Tech Manual.

Step 2 – Screening Method Examples

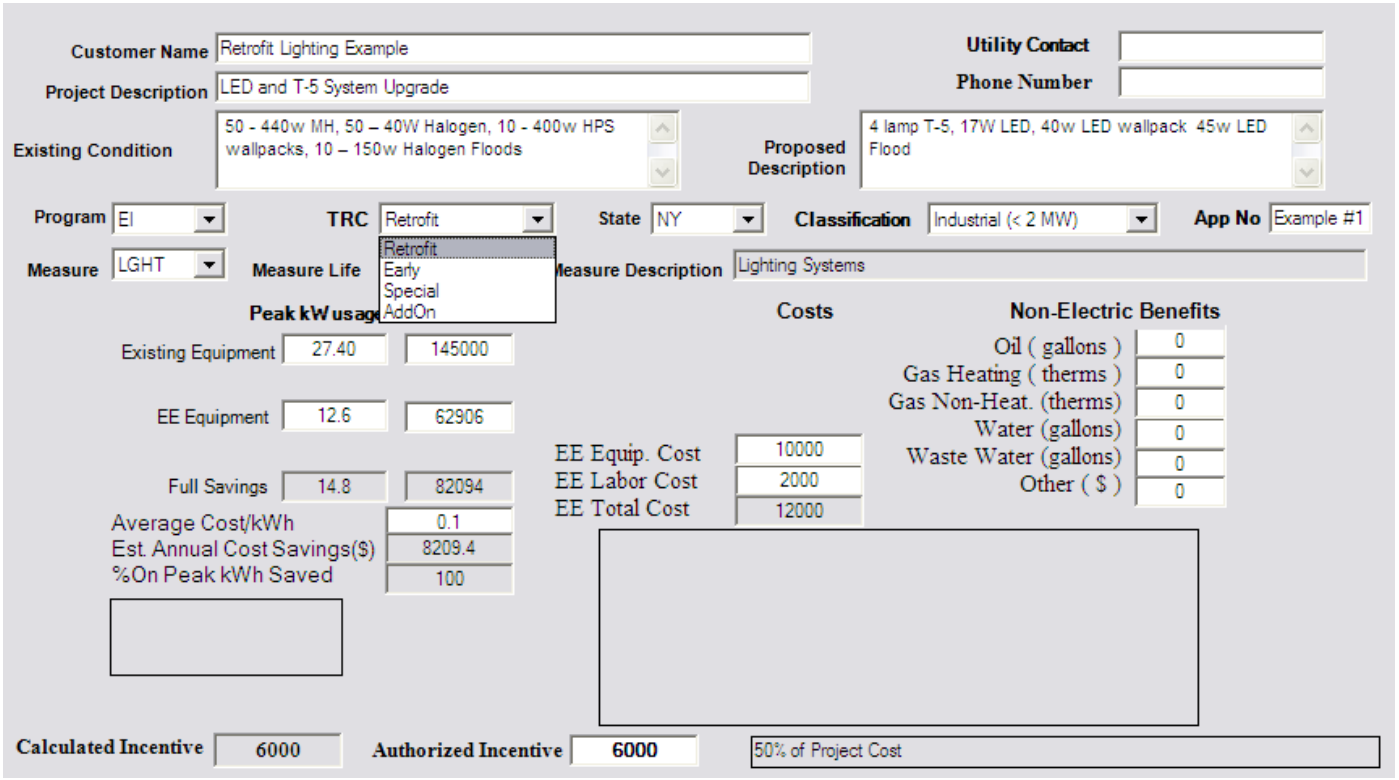
Now that all the screening methods have been explained, it is important to look at an example of each method for an actual project to show the inputs required for each method. Each sample screening snapshot has a project description, summary and the following page is the report that is automatically generated saved as an .html file on your C drive. The other automatic output is a .csv file. The .csv file is an excel spreadsheet that is used to automatically uploads the screening data to our tracking software known as InDemand. Step 3 explains the report and .csv files in more detail.

See pages 8 - 15

Custom Screening Example #1: *Retrofit* (Lighting Project)

Energy Efficiency Measure:

- Replace qty 50 - 440w MH with 4 lamp T-5, 50 – 40W Halogen with 17W LED, 10 - 400w HPS wallpacks with 40w LED wallpack& 10 – 150w Halogen Floods with 45w LED Flood



Summary:

- Project: Lighting upgrade – EEM: T-5 & LED Lighting
- Energy Analysis and Findings:
  - 82,094 kWh saved and14.8kW (June, July and August)
  - $8,209 saved per year at $0.10/kWh
- Project Costs - $12,000 Energy Efficient
- Incentive - $6,000 Incentive
  - Incentive is 50% of the incremental cost as the simple payback is bought down to 0.7 years.

National Grid 2013 Custom Screening Tool Upstate NY - v 1.0	Report Version - 1.0
Customer Name:	Retrofit Lighting Example
Project Description:	LED and T-5 System Upgrade
Existing Case	50 - 440w MH, 50 – 40W Halogen, 10 - 400w HPS wallpacks, 10 – 150w Halogen Floods
Proposed Case	4 lamp T-5, 17W LED, 40w LED wallpack 45w LED Flood

Utility Contact:		Phone Number:	
Program:	EI	App Number:	Example #1
State:	NY	Classification:	Industrial (< 2 MW)

Time Period	Energy (kWh) Reduction Per Period	Hours Per Period	Average Demand Reduction Per Period
Winter			
December	0	0	0
January	0	0	0
February	0	0	0
Summer			
June	0	0	14.8
July	0	0	14.8
August	0	0	14.8
September	0	0	0

Measure Code:	LGHT
Measure Description:	Lighting Systems
Measure Life:	11
Est Equip Costs	$10,000
Est Labor Costs	$2,000
Est Total Cost	$12,000

	KW	KWH
Existing Equip Usage	27.40	145,000
Std Equip Usage	NA	NA
EE Equip Usage	12.6	62,906

Total Est Annual kWh Savings	82,094
Average Cost Per kWh	0.1
Est Annual Energy Cost Savings	$8,209
% On Peak Energy Savings	100
Proposed Incentive	$6,000

TRC Method	Retrofit		
Existing Age	0	RUL	NA
DFP	NA	ADJEUL	NA
Incr/Full kWh	NA	Incr/Full Cost	NA
Ben Adj	NA	Cost Adj	NA
Oil (Gallons)	0	WasteWater (Gallons)	0
Gas Heating (Therms)	0	Water (Gallons)	0
Gas NonHeating (Therms)	0	Other ($)	$0.0
Total NEB $ Savings	$0.0		

Pk Sum kW Rd	14.8		
kW Years	163	kW Years (AdjEUL)	NA
Lifetime MWH	903	Lifetime MWH (AdjEUL)	NA
Payback Without Incentive	1.5		
Payback With Proposed Incentive	0.7		

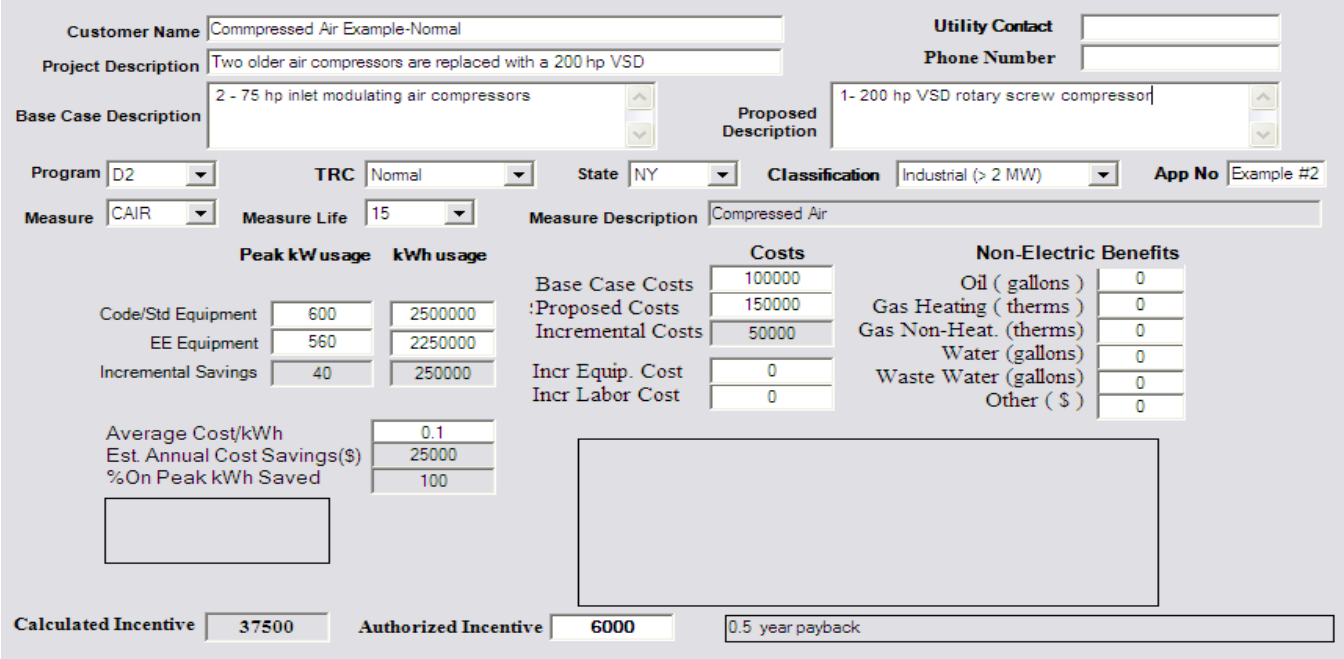
50% of Project Cost

Customer Cost : $6,000

Custom Screening Example #2: *Normal Replacement* (Compressed Air Project)

Energy Efficiency Measure:

- Replace two, 16 year old, 75 hp inlet modulating air compressors with a 200 hp VSD.



Summary:

- Project: Compressed Air System Improvements - EEM: 200 hp two stage VSD compressor
- Energy Analysis and Findings:
  - 250,000 kWh saved and 40 kW (June, July and August)
  - $25,000 saved per year at $0.10/kWh
- Project Costs
  - $100,000 Standard Replacement
  - $150,000 Energy Efficient
  - $50,000 Incremental Project Cost
- Incentive
  - $37,500 Incentive
  - Incentive is 50% of the incremental cost as the simple payback is bought
  - down to 0.5 years.

National Grid 2013 Custom Screening Tool Upstate NY - v 1.0	Report Version - 1.0
Customer Name:	Commpressed Air Example-Normal
Project Description:	Two older air compressors are replaced with a 200 hp VSD
Existing Case	2 - 75 hp inlet modulating air compressors
Proposed Case	1-200 hp VSD rotary screw compressor

Utility Contact:		Phone Number:	
Program:	D2	App Number:	Example #2
State:	NY	Classification:	Industrial (> 2 MW)

Time Period	Energy (kWh) Reduction Per Period	Hours Per Period	Average Demand Reduction Per Period
Winter			
December	0	0	0
January	0	0	0
February	0	0	0
Summer			
June	0	0	40
July	0	0	40
August	0	0	40
September	0	0	0

Measure Code:	CAIR
Measure Description:	Compressed Air
Measure Life:	15
Base Costs	$100,000
Proposed Costs	$150,000
Est Incremental Costs	$50,000
Est Incr Equip Costs	$0
Est Incr Labor Costs	$0

	KW	KWH
Existing Equip Usage	NA	NA
Std Equip Usage	600	2500000
EE Equip Usage	560	2,250,000

Total Est Annual kWh Savings	250,000
Average Cost Per kWh	0.1
Est Annual Energy Cost Savings	$25,000
% On Peak Energy Savings	100
Proposed Incentive	$37,500

TRC Method	Normal		
Existing Age	0	RUL	NA
DFP	NA	ADJEUL	NA
Incr/Full kWh	NA	Incr/Full Cost	NA
Ben Adj	NA	Cost Adj	NA
Oil (Gallons)	0	WasteWater (Gallons)	0
Gas Heating (Therms)	0	Water (Gallons)	0
Gas NonHeating (Therms)	0	Other ($)	$0.0
Total NEB $ Savings	$0.0		

Pk Sum kW Rd	40.0		
kW Years	599	kW Years (AdjEUL)	NA
Lifetime MWH	3750	Lifetime MWH (AdjEUL)	NA
Payback Without Incentive	2.0		
Payback With Proposed Incentive	0.5		

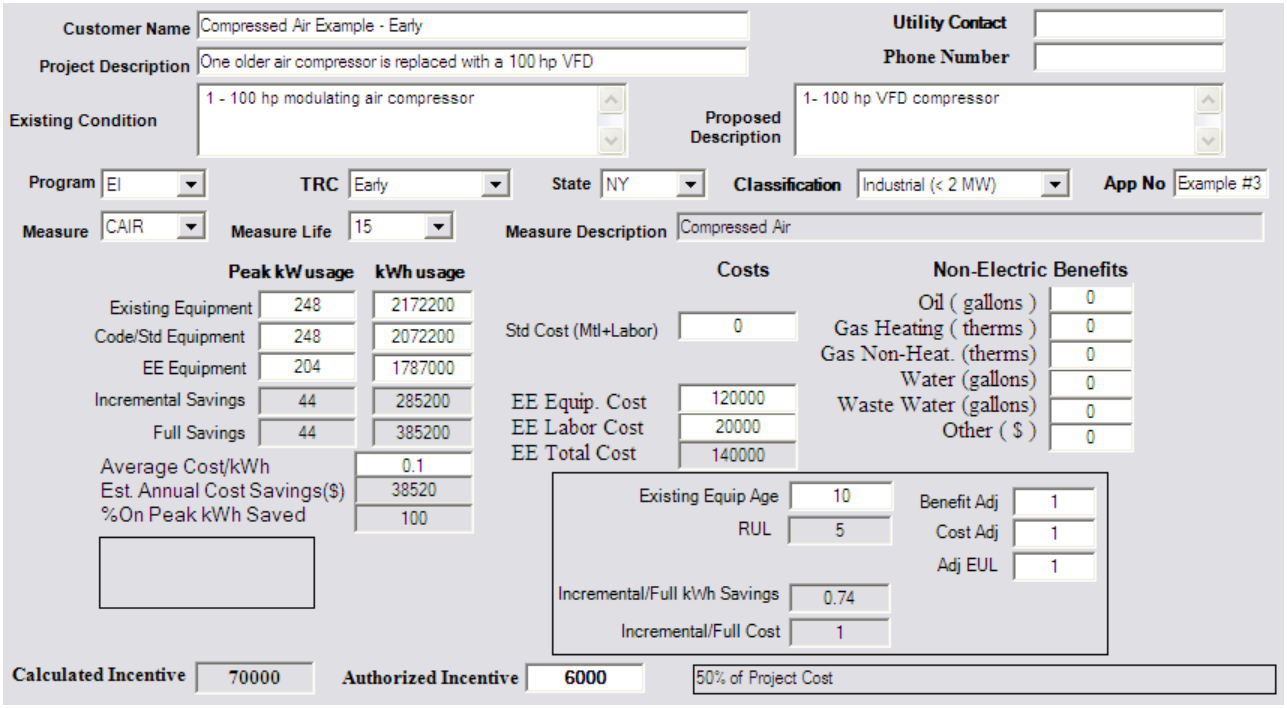
0.5 year payback

Customer Cost : $12,500

Custom Screening Example #3 : *Early Replacement* (Compressed Air Project*)*

Energy Efficiency Measure:

- Replace qty 1, 12 year old, 100 hp inlet modulating air compressors with a 100 hp VSD.



Summary:

- Project: Compressed Air System Improvements - EEM: 100 hp two VSD compressor
- Energy Analysis and Findings:
  - 385,200 kWhrs saved
  - 44 kW (June, July and August)
  - $38,520 saved per year at $0.10/kWhr
- Project Costs
  - $140,000 Energy Efficient
- Incentive
  - $70,000 Incentive
  - Incentive is 50% of the incremental cost as the simple payback is bought down to 2 years.

National Grid 2013 Custom Screening Tool Upstate NY - v 1.0	Report Version - 1.0
Customer Name:	Compressed Air Example - Early
Project Description:	One older air compressor is replaced with a 100 hp VFD
Existing Case	1 - 100 hp modulating air compressor
Proposed Case	1- 100 hp VFD compressor

Utility Contact		Phone Number:	
Program:	EI	App Number:	Example #3
State:	NY	Classification:	Industrial (< 2 MW)

Time Period	Energy (kWh) Reduction Per Period	Hours Per Period	Average Demand Reduction Per Period
Winter			
December	0	0	0
January	0	0	0
February	0	0	0
Summer			
June	0	0	44
July	0	0	44
August	0	0	44
September	0	0	0

Measure Code:	CAIR
Measure Description:	Compressed Air
Measure Life:	15
Standard Costs	0
Est Equip Costs	$120,000
Est Labor Costs	$20,000
Est Total Cost	$140,000

	KW	KWH
Existing Equip Usage	248	2,172,200
Std Equip Usage	248	2,072,200
EE Equip Usage	204	1,787,000

Total Est Annual kWh Savings	385,200
Average Cost Per kWh	0.1
Est Annual Energy Cost Savings	$38,520
% On Peak Energy Savings	100
Proposed Incentive	$70,000

TRC Method	Early		
Existing Age	10	RUL	5
DFP	4	ADJEUL	1
Incr/Full kWh	0.74	Incr/Full Cost	1
Benefit Adj	1	Cost Adj	1
Oil (Gallons)	0	WasteWater (Gallons)	0
Gas Heating (Therms)	0	Water (Gallons)	0
Gas NonHeating (Therms)	0	Other ($)	$0.0
Total NEB $ Savings	$0.0		

Pk Sum kW Rd	44.0		
kW Years	659	kW Years (AdjEUL)	43.956
Lifetime MWH	5778	Lifetime MWH (AdjEUL)	385.2
Payback Without Incentive	3.6		
Payback With Proposed Incentive	1.8		

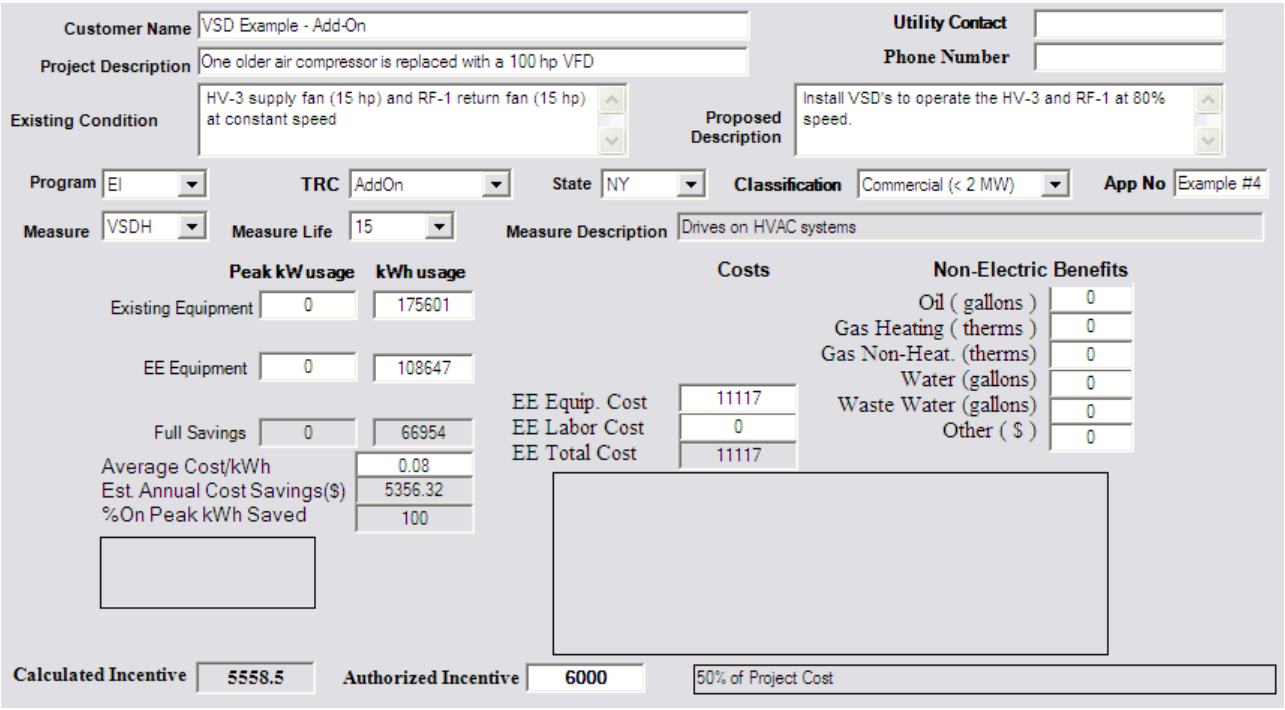
50% of Project Cost

Customer Cost : $70,000

Custom Screening Example #4: *Add-On (*VSD Project*)*

Energy Efficiency Measure:

- Add VSDs to a 15 HP supply and 15 HP exhaust fans for a gym/pool facility heating and ventilating unit.



Summary:

- Project: Add VFDs to a 15 HP supply and 15 HP exhaust fans for a pool facility heating and ventilating unit.
- Energy Analysis and Findings:
  - 66,954 kWh saved
  - $5,356 saved per year at $0.08/kWh
- Project Costs
  - $11,117 VFD
- Incentive
  - $5,559 Incentive
  - Incentive is 50% of the incremental cost as the simple payback is bought down to 1 year.

National Grid 2013 Custom Screening Tool Upstate NY - v 1.0	Report Version - 1.0
Customer Name:	VSD Example - Add-On
Project Description:	One older air compressor is replaced with a 100 hp VFD
Existing Case	HV-3 supply fan (15 hp) and RF-1 return fan (15 hp) at constant speed
Proposed Case	Install VSD's to operate the HV-3 and RF-1 at 80% speed.

Utility Contact:		Phone Number:	
Program:	EI	App Number:	Example #4
State:	NY	Classification:	Commercial (< 2 MW)

Time Period	Energy (kWh) Reduction Per Period	Hours Per Period	Average Demand Reduction Per Period
Winter			
December	0	0	0
January	0	0	0
February	0	0	0
Summer			
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0

Measure Code:	VSDH
Measure Description:	Drives on HVAC systems
Measure Life:	15
Est Equip Costs	$11,117
Est Labor Costs	$0
Est Total Cost	$11,117

	KW	KWH
Existing Equip Usage	0	175,601
Std Equip Usage	NA	NA
EE Equip Usage	0	108,647

Total Est Annual kWh Savings	66,954
Average Cost Per kWh	0.08
Est Annual Energy Cost Savings	$5,356
% On Peak Energy Savings	100
Proposed Incentive	$5,559

TRC Method	AddOn		
Existing Age	10	RUL	NA
DFP	NA	ADJEUL	NA
Incr/Full kWh	NA	Incr/Full Cost	NA
Ben Adj	NA	Cost Adj	NA
Oil (Gallons)	0	WasteWater (Gallons)	0
Gas Heating (Therms)	0	Water (Gallons)	0
Gas NonHeating (Therms)	0	Other ($)	$0.0
Total NEB $ Savings	$0.0		

Pk Sum kW Rd	0.0		
kW Years	0	kW Years (AdjEUL)	NA
Lifetime MWH	1004.3	Lifetime MWH (AdjEUL)	NA
Payback Without Incentive	2.1		
Payback With Proposed Incentive	1.0		

50% of Project Cost

Customer Cost : $5,559

Step 3: Deliverables

- BC Screening Report (Analysis Report)
- .csv File
- EEM Breakout spreadsheet

Email the Report, .csv and the EEM Breakout SS to your National Grid sales representative for a technical review and the next step, Energy Assessment, Scoping Study, Tech Review or TA Study.

To export the current report and .csv File, while on the screening tool input screen:
Click on <Report>
Click on <Analysis Report>
Click on <Export>

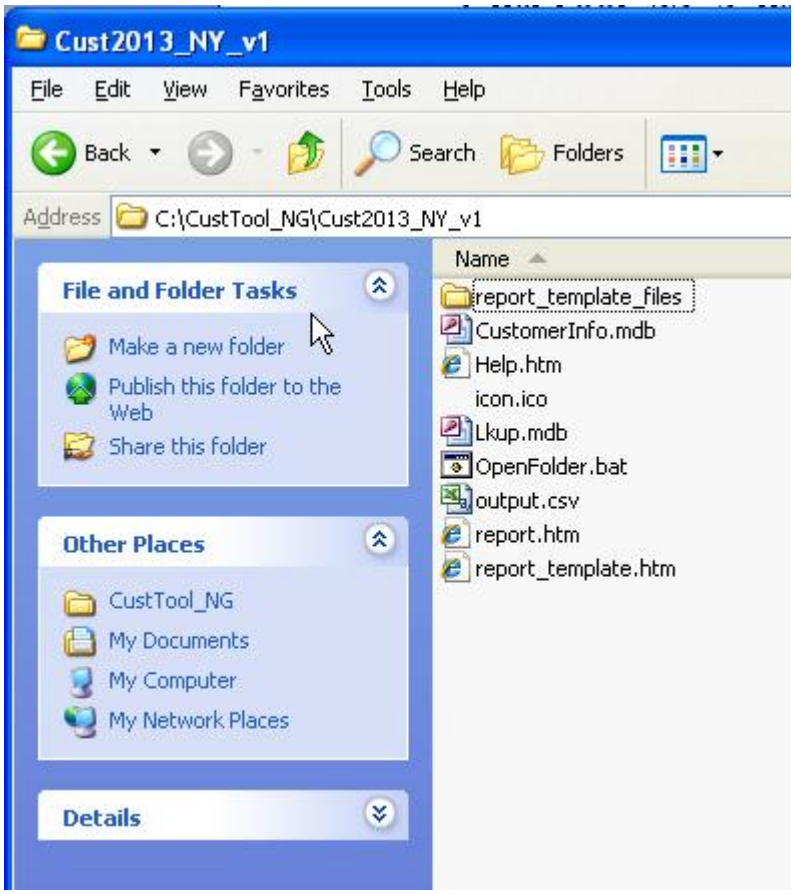
Now the current files, the BC screening report and the .csv file will upload automatically to your C drive file: CustTool_NG/Cust2013_NY_v1 (see the screenshot below).

BC Screening Report - For the report to upload as the file report.htm below you have to view the report while in the screening tool and then it will be the most current file.

.csv File or as it is known in the file below, output.csv will be the current file if you export it from within the screening tool

TIP 4 – If you cut and paste an output.csv file into the CustTool_NG/Cust2013_NY_v1 you can then go to the screening tool and <import> and it will populate the screening tool.

Note: You need to copy and past the <u>two</u> files in order to save the files for each EEM screened.



Step 4 - EEM Breakout Spreadsheet

Enter Screening results onto the spreadsheet.

Note - an example EEM BO spreadsheet will be provided, but feel free to make your own as long as the information is identical.

What is the EEM Breakout spreadsheet?

- It is an EEM Summary for a consistent deliverable
- Tool to calculate common gas and electric EEMs <u>project cost</u>
- A Sales Tool

Inputs:

1) Annual Gas and Electric Consumption
2) Information from the screening tools, gas and electric.

Gas Screening Tool

Currently the gas screening tool is being revised. If you require the gas screening tool contact your National Grid representative for a copy and training.