

Retrofit Savings Estimator User Guide

The Retrofit Savings Estimator (RSE) was developed to help building owners and other users to quickly evaluate the potential energy savings associated with existing building retrofit strategies, and to identify the most promising retrofit strategies that should be part of a building performance upgrade.

The RSE uses basic information about your building to automatically perform a set of custom building energy simulations. The results allow you to investigate how much energy you could save by implementing promising groups of energy savings measures (that is, building improvements). The tool identifies a set of the most significant upgrades based on the characteristics of your project, and identifies potential energy savings associated with those upgrades. The tool can also predict how much energy you could save, as a percent of current usage, by implementing a custom set of measures. You can define a subset of the recommended measures to identify the impact of those choices.

To use the tool you will need to enter information about your building on a website. There are two screens in which you enter data, both of which are described in detail in this guide. Step 1 (Foundational Parameters) gathers simple building information such as building type, size, and location as well as information about the HVAC system. Step 2 (Basic or Detailed Inputs) gathers additional information about specific measures. In Step 2 you can choose between basic textual inputs or detailed numerical inputs. If you don't know what to enter into a particular field you can leave the default setting unchanged. The defaults represent the most common conditions based on building information entered, and they will automatically update based on the data you've already input.

To save results and information from the tool you will need to hit the "print" button, which is in the upper right corner of each page. You may print to paper, to PDF, or to another location (e.g. fax). The tool does not save your session data upon exit so printing is the only way to save your information.

While using the tool you will see some text underlined by a row of dots. Hover your mouse cursor over these lines to see further information. The information in this guide is supplementary to the mouse-over text in the tool.

This user guide walks through each step of the RSE and can help answer questions that may arise during the process.

Home of:



www.newbuildings.org

Terms and Conditions Page

You must accept the terms and conditions listed on the first page of the RSE. Click the “Accept” button at the bottom of the screen to start using the tool.

Step 1: Foundational Parameters Page

The first page of the DRST in which you may enter data is the Foundational Parameters page. In order to complete this page you will need to know some basic information about your building. The purpose of the information gathered in this page is to enable the completion of an initial set of simulations to determine which energy conservation measures to investigate in more detail. The page is preloaded with default values in some fields. Be sure to confirm or change the information in each category.

Deep Retrofit Scoping Tool
Simplified Web-Based Energy Simulation Model for Existing Buildings

nbi new buildings institute **DRST**
User Guide | Print | Back to NBI

Step 1

To begin, please tell us a little about your building.

Building Name	<input type="text"/>
Primary Building Use Type	Office
City	<input type="text"/>
State	(Unspecified)
Total Building Area	<input type="text"/> sq. ft.
<u>Number of Occupied Floors Above Grade</u>	<input type="text"/>
Amount of Windows	<input type="checkbox"/> 11% - 30% <input type="range"/>
<u>Building Operation Schedules</u>	Moderate Use
Year of Construction	Before 1984
Air Distribution System	Packaged Single Zone
Heating Type	Natural Gas Burner
Cooling Type	DX

Next

Building Name: Whatever name you select here will be carried through the tool and will appear as an identifier when you print out any subsequent page. The building name can be whatever you choose.

Primary Building Use Type: This describes the principal building activity. If a building has more than one use type, enter the use type that occupies most building space. Secondary, tertiary or other building use types are not considered in this tool.

City & State: These are used to look up weather information to perform building simulations. If your city is not recognized choose a nearby city.

Total Building Area: This refers to the building floor area. Specifically, this refers to gross square feet that are served by the building's HVAC system. If a large portion of the building (more than 25%) is unoccupied and unconditioned (unheated and uncooled) subtract this from the total building area.

Number of Occupied Floors Above Grade: This refers to the number of conditioned stories above ground level the building occupies. All models used in the RSE include only above-ground floors. If your building contains stories below grade (not including parking – this refers to conditioned space only) please subtract the approximate square footage associated with these areas from the Total Building Area.

Amount of Windows: Using the slider you can select an approximate window to wall ratio. This ratio describes the relative amount of glazing (all fenestration including punched openings, individual or grouped windows, glass doors, clerestory windows, etc.) in the building wall assembly. This does not include glazing on the roof (traditional skylights or solar tube skylights). The icon shows a simple representation of what this might look like. You can select one of four window to wall ratio ranges:

- **0%-10%:** Glazing accounts for 10% or less of the total wall surface area. Buildings with very few punched openings (individual windows) such as warehouses and buildings with tilt-up concrete walls may have window to wall ratios in this range.
- **11%-30%:** Glazing accounts for more than 10% but less than 31% of the total wall surface area. Many small offices have window to wall ratios in this range.
- **31%-60%:** Glazing accounts for more than 30% but less than 61% of the total wall surface area. Various building types such as schools or restaurants may have window to wall ratios in this range.
- **61%-100%:** Glazing accounts for more than 60% of the total wall surface area. Occupants of these buildings should not throw stones.

Building Operation Schedules: Each building has its own schedule and that schedule may vary over time. The purpose of this question is to get an idea of roughly how heavily the building is used. The building operation schedule categories (Light Use, Moderate Use, and Heavy Use) are meant assist your estimation of building usage. The number of hours per day that each category represents can vary by building type, so hover your mouse over the words Building Operation Schedules to see what specifically is meant by each of the three usage categories for the particular building type you've selected.

Year of Construction: This represents the year in which construction was finished and the building was occupied for the first time. If the building has had multiple renovations at different times, select the age range that represents most of the building.

Air Distribution System: This question refers to the method by which conditioned air is supplied to the building space. The default system choice automatically adjusts based on other information already entered (building type and square feet). There are various methods of supplying conditioned air. If you don't know what air distribution system is present in your building you can leave the default setting unchanged. The defaults represent the most common condition based on building information entered.

- **Variable Air Volume (VAV):** In a VAV air distribution system conditioned air is supplied via ductwork from the air handling unit to terminal units (fan boxes) equipped with automatically actuated air dampers to control the flow of air. The air flow rate is varied to meet the changing load in the space while the supply air temperature typically remains constant.
- **Constant Air Volume (CAV):** In a CAV air distribution system conditioned air is supplied via ductwork from the air handling unit. A CAV system may use terminal reheat coils for reheat (in a terminal reheat CAV system the air handling unit cools the air to the lowest temperature called for within its zone) or may use a mixed air strategy (in a mixed air CAV system there are two air streams, one for the lowest needed temperature and one for the highest needed temperature, and they are mixed at the distribution point).
- **Packaged Single Zone:** This strategy uses a packaged unit, typically on the roof or through the wall, to provide conditioned air to a single zone. Many commercial buildings use packaged single zone systems.
- **Single Zone:** This describes a split system serving a single zone, similar to most residential air conditioners.
- **Four Pipe Fan Coil:** This system uses a central plant or mechanical room, typically using a boiler and chiller, to simultaneously provide hot water and cold water to four pipes: two supply pipes and two return pipes. This water passes through a coil in order to provide conditioned air. Each fan coil unit can supply cold air or hot air at any given time.
- **Two Pipe Fan Coil:** This system uses a central plant or mechanical room, typically using a boiler and chiller, to provide hot water and cold water to two pipes: one supply pipe and one return pipe. This water passes through a coil in order to provide conditioned air. The fan coil units can supply cooling in the summer and heating in the winter.
- **Water Loop Heat Pump:** A water loop heat pump system uses individual heat pump units to provide conditioned air in the space. The heat pumps, located within the conditioned space, reject heat to (in cooling mode) or draw heat from (in heating mode) a water loop. The water in the loop is typically heated by a boiler in winter and cooled by a cooling tower in summer.
- **Ground Source Heat Pump:** In a ground source heat pump system conditioned air is supplied by a heat pump that rejects its heat to the ground via pipes installed below the ground surface.

Heating Type: This question refers to the primary method by which the building is heated. The default system choice automatically adjusts based on other information already entered (building type and square feet). If your building is unheated, or only a small portion (less than 10%) of the building is heated, enter "none". If unheated areas comprise more than 10% of the building the best course of action is to split the building into parts and analyze the two areas separately. There are various choices:

- **Natural Gas Burner:** This category covers gas furnaces as well as unit heaters. Gas furnaces may be part of a packaged unit (roof top unit) or split system (like a residential furnace). Gas furnaces are common on all building types and range in rated thermal efficiency from 80% to 95% and above. Unit Heaters, gas burners are typically wall- or ceiling-mounted and self-contained, typically vented to the outside, and are almost universally around 80% efficient. These units are often found in warehouses.
- **Electric Resistance:** Electric resistance heat is a simple way to heat a space – electricity passes through resistance coils (like a toaster). Plug-in space heaters and baseboard heaters use electric resistance heat to directly heat the space; electric furnaces and terminal reheat coils heat an air stream that is pushed to the space by an air handling unit.
- **Boiler – Condensing, 80% eff., 70% eff., or Electric:** Boilers heat up water for use in hydronic heat systems. The various boiler type options refer to the boiler type and efficiency. A condensing boiler achieves high thermal efficiency by condensing the water vapor in the exhaust stream. Thermal efficiency for a condensing boiler is typically at least 90%. Boilers installed since 1992 are required to be at least 78% efficient and as a general rule are at least 80% efficient. Older boilers may be less than 80% efficient. Finally, electric boilers use electric resistance coils to heat the water.
- **District Steam:** Some buildings, particularly in central business districts in large cities or on university or corporate campuses, may be served by district energy. Steam pipes run underground from a central plant to serve the needs of individual buildings. Choose this option if your building is served by district heat (steam or hot water).

Cooling Type: This question refers to the primary method by which the building is cooled. The default system choice automatically adjusts based on other information already entered (building type and square feet). If your building is uncooled, or only a small portion (less than 10%) of the building is cooled, enter “none”. If uncooled areas comprise more than 10% of the building the best course of action is to split the building into parts and analyze the two areas separately. There are various choices:

- **Air-Cooled Chiller:** This option will only appear for buildings above a certain size. Air-cooled chillers provide chilled water to the building via a pipe loop and reject the heat directly to the air outside. Air-cooled chillers do not use cooling towers.
- **Water-Cooled Chiller:** This option will only appear for buildings above a certain size. Water-cooled chillers provide chilled water to the building via a pipe loop and reject the heat to a cooling tower. Water-cooled chillers require a cooling tower to reject heat to the atmosphere.
- **DX:** DX (Direct Expansion) cooling is how a typical air conditioner provides cold air. Packaged roof top units, heat pumps, split systems (e.g. residential style air conditioners), and mini-split air conditioners are all DX units.
- **District Chilled Water:** Some buildings, particularly in central business districts in large cities or on university or corporate campuses, may be served by district energy. Chilled water pipes run underground from a central plant to serve the needs of individual buildings.

Step 2: Basic Inputs Page / Detailed Inputs Page

At this point a preliminary set of simulations has been performed and a group of energy conservation measures (between four and seven measures) has been selected for further investigation. In this step a measure-level data input page gathers information about the particular measures under consideration to quantify the energy impacts of specific improvements. There are two versions of this page: Basic Inputs and Detailed Inputs. The entries in each field are default entries based on the information entered in Step 1. If you cannot find the answer to a question simply leave it as the default. Once you have entered information in each field click the Next button to proceed. Once you click “Next” the web tool will conduct a full set of custom energy simulations to predict the energy impacts of various energy conservation measures and combinations of those measures.

Basic Inputs is the default page and is intended for the great majority of users. In the Basic Inputs page you can enter building information in formats that are intended to make finding the needed information as easy as possible. The answers to the questions on this page will be translated to numerical inputs in the model. This numerical translation is based on a large dataset of building data. Here is what the Basic Inputs page looks like:

Deep Retrofit Scoping Tool

Simplified Web-Based Energy Simulation Model for Existing Buildings

nbi new buildings institute DRST

User Guide | Print | Back to NBI

User Guide Sample

Type: Office	Location: Portland, OR	Dimensions: 10,000 sq. ft. / 2 floors
Windows: 20%	Op. Sched.: Moderate Use	Const. Yr.: Pre-1984
Air Dist.: Packaged Single Zone	Heating: Natural Gas Burner	Cooling: Air Conditioner (DX)

Step 2 - Basic Inputs

To help evaluate specific energy conservation measures, more information is needed about your building. General information can be entered below or specific values for these parameters can be entered directly at [Detailed Inputs](#).

What type of windows are in the building? Metal frame with two panes of glass

[How is the HVAC system's fan and outdoor air damper controlled?](#) Scheduled time of day

When was your heating equipment last replaced? Never

Does your building have energy recovery of exhaust air? No

[Which option best describes your building?](#) Central fans, normal

Next

1. **Detailed Inputs** is intended for users such as energy modelers that want the ability to enter numerical inputs for particular parameters (for example, the roof or wall assembly U-value). To access this page, click on the **Detailed Inputs** link in the paragraph. Once you have entered data into the Basic Inputs screen you can see exactly what the numerical values associated with your inputs are by switching to the Detailed Inputs page. These values may be further adjusted by entering new values. You can switch back to Basic Inputs from Detailed Inputs by clicking on the **Basic Inputs** link in the paragraph. When you do so all numerical input data entered will be lost and you will have to re-select the answers to the questions in the Basic Inputs page before proceeding. Here is what the Detailed Inputs page looks like:

Deep Retrofit Scoping Tool

Simplified Web-Based Energy Simulation Model for Existing Buildings

nbi new buildings institute **DRST**

[User Guide](#) | [Print](#) | [Back to NBI](#)

User Guide Sample

Type: Office	Location: Portland, OR	Dimensions: 10,000 sq. ft. / 2 floors
Windows: 20%	Op. Sched.: Moderate Use	Const. Yr.: Pre-1984
Air Dist.: Packaged Single Zone	Heating: Natural Gas Burner	Cooling: Air Conditioner (DX)

Step 2 - Detailed Inputs

Numeric inputs below will be used to identify the energy conservation measures for your building. Basic building features are characterized with drop down menus in the **Basic Inputs** section. If you want to provide more specific information about building characteristics, you can use the more detailed interface on this page. Note that all information entered will be lost if you switch between Basic and Detailed input options.

Glazing unit U-factor? Btu/(hr ft² degF)

HVAC fan control? ▼

Furnace efficiency? %

Heat recovery type? ▼

Heat recovery system effectiveness? %

Average fan horsepower? HP

In each case the specific questions that appear on this page may be different for different buildings. The preliminary calculations already performed by this point have resulted in the selection of four to seven measures. The following reference list contains information about each question and shows how that question appears in the Basic Inputs screen as well as in the Detailed Inputs screen.

Building Envelope Air Tightness (Basic) –or– Average Infiltration Rate (Detailed): This refers to the leakiness or air tightness of the building’s exterior shell. In Basic Inputs mode there are three options: Drafty, Typical, and Air Sealed. Explanations of these are included here and are also visible by hovering your mouse over the words Building Envelope Air Tightness.

- Drafty: Building has visible cracks or drafts can be felt through exterior walls on extreme weather days; cold, hot or windy. Windows have large gaps and cracks.
- Typical: Building does not have any large visible gaps or cracks through the exterior envelope. Windows have visible gaps or cracks up to 1/4".
- Air Sealed: Building has been air sealed in the last 10 years or has continuous air barrier such as spray foam insulation or synthetic air barrier. Window weather-stripping and caulking is in excellent to good condition.

What type of windows are in the building (Basic) –or– Glazing Unit U-Factor (Detailed)? The purpose of this question is to estimate the insulating value (assembly U-factor) of the building’s windows. In Basic mode you are presented with a list of window types. If your building has more than one window type, enter the type that is most common. In Detailed mode you can enter the U-factor (insulating value) of the window directly.

How tinted are your windows (Basic) –or– Solar Heat Gain Coefficient (Detailed)? The purpose of this question is to estimate the solar heat gain coefficient (assembly SHGC; this measures how much heat passes through the window assembly from incident sunlight) of the building’s windows. In Basic mode you are presented with a list of window tint options. If your building has more than one window tint type, enter the type that is most common. In Detailed mode you can enter the SHGC directly.

When was the roof last replaced (Basic) –or– Roof U-Factor (Detailed)? In Basic mode, this question uses the age of the roof to estimate the insulating value of the roof assembly. If you know the U-factor of the roof assembly you may enter it directly in the Detailed mode. Note that this refers to the overall assembly U-factor, rather than simply the inverse of the R-value of insulation present in the roof assembly.

When was the wall insulation last replaced (Basic) –or– Wall U-Factor (Detailed)? In Basic mode, this question uses the age of the wall insulation to estimate the insulating value of the wall assembly. If you know the U-factor of the roof assembly you may enter it directly in the Detailed mode. Note that this refers to the overall assembly U-factor, rather than simply the inverse of the R-value of insulation present in the walls.

Which option best describes the window shading systems (Basic) –or– Setback and Overhang depth on South Façade (Detailed)? The window shading systems referenced here are permanently installed shading devices or architectural features. This question does not refer to venetian blinds, curtains, or other similar shading products.

Do you have automatic daylighting sensors controlling your interior lighting systems (Basic) –or– Daylighting Type and Percent (Detailed)? In Basic mode this is a simple yes or no question; in Detailed mode this allows the user to specify whether the daylighting system is stepped or dimming and to select the percentage of the building floor space controlled by the automated daylighting sensor system.

Which option best describes your building's lighting control system (Basic) –or– Lighting Control System Type and Sensor Percent (Detailed)? This question determines the functional efficacy of the lighting controls in the building. In Basic mode there are four options; choose the one most applicable for the building. If occupancy sensors are used in a portion of the building, choose the option closest to your building's condition. For example, if 30% of building floor space is served by occupancy sensors, the closest choice would be "Occupancy sensors in 50% of building." In Detailed mode you may enter the specific lighting control system type and define the actual percentage of the building controlled by that system. The results of these inputs, in conjunction with the occupancy intensity information supplied in Step 1, allows the creation of a lighting schedule.

When was your interior lighting system last replaced (Basic) –or– Average Lighting Power Density (Detailed)? The purpose of this question is to determine the amount of power used by the lighting in the building. Multiplying the power by the lighting schedule for the building gives the overall building estimated building lighting energy usage.

When was your cooling equipment last replaced (Basic) –or– (DX, Air cooled chiller, or Water cooled Chiller) cooling equipment efficiency (Detailed)? This question is used to define the cooling equipment's efficiency. Because equipment efficiency has improved over time the age of the equipment can be used as a proxy to estimate efficiency. In Detailed mode you can input the actual cooling efficiency; the units used vary depending on the cooling equipment type selected in Step 1.

What type of motor drives the chiller's compressor (Basic and Detailed)? This will only appear if you have selected a chiller as the cooling equipment in Step 1. Chillers may have constant speed or variable speed drives.

How is the HVAC system's fan and outdoor air damper controlled (Basic and Detailed)? This is used to determine the scheduling of the HVAC system fans, which is used to estimate the fan energy usage overall. HVAC fans may have scheduled or demand controlled ventilation systems or may not use automatic controls.

When was your heating equipment last replaced (Basic) –or– (Boiler, Furnace, or Heat Pump) heating equipment efficiency (Detailed)? This question is used to define the heating equipment's efficiency. Because equipment efficiency has improved over time the age of the equipment can be used as a proxy to estimate efficiency. In Detailed mode you can input the actual heating efficiency; the units used vary depending on the heating equipment type selected in Step 1.

Does your building have energy recovery of exhaust air (Basic) –or– Heat Recovery Type and Effectiveness (Detailed)? Energy recovery systems use heat exchangers to reduce the energy needed to condition incoming outside air by harvesting heat from warm exhaust streams during the heating season

and removing heat from warm inlet air in the cooling season. Energy recovery systems may harvest only sensible heat (air temperature differences) or both sensible and latent heat (temperature and humidity differences). In Detailed mode you can input the energy recovery system type and effectiveness.

Fan Noise/Power: Which option best describes your building? In Basic mode, the amount of noise generated by the fans is used as a proxy to estimate fan power usage. In Detailed mode the average fan horsepower may be entered.

Ventilation: Which option best describes your building? In Basic mode, the overall ventilation system type is used to estimate ventilation rates. In Detailed mode the average ventilation rate may be entered.

Controls: Which option best describes your building? This question is used to estimate a schedule for HVAC operations based on the occupancy schedule. In Basic mode you can enter the broad controls strategy used in the building: no setbacks, night setbacks with normal setpoints, or night setbacks with relaxed setpoints. In Detailed mode the actual heating and cooling setpoints and schedules may be entered.

When weather conditions are mild, does outside air provide the cooling directly? The purpose of this question is to determine whether an air side economizer is used in the building. Air side economizers take advantage of conditions in which the outside air is cooler than the air in the building to provide cool air without the need for a refrigeration cycle. If your HVAC system uses air side economizers and they are operating properly answer yes to this question.

Step 3: Results Page

Once the simulations are complete you will arrive at the Results Page. This page shows the estimated whole-building percent energy savings (all fuels) for a selected package of measures. The savings estimate takes into account interactive effects between measures: for example, increasing the efficiency of the lighting in a building will decrease the amount of waste heat, leading to an increased heating load in winter and a decreased cooling load in summer.

The vertical bars show the relative all-fuel energy usage of the building in various scenarios. The relative height of the bars shows the building's energy consumption in each case. On the left is a red bar showing how much energy your building would use if all elements of the building were compliant with your area's relevant 2010 building energy code. In the middle is a blue bar showing the current energy consumption of your building. The grey bar on the right shows how much less energy your building could use if all recommended measures were implemented. All bars are scaled to compare with the blue "My Building" bar (that is, the height of the red and grey bars will be lower in proportion to their lower predicted energy usage). The percentage shown above the grey bar is the total energy savings potential as a portion of total annual energy use.

You can read more information about each measure by hovering your cursor over the measure name. A popup box will appear with a brief description of the measure.

The horizontal green and white bars under the title “Potential Energy Savings Impact” represent the effects of each measure. The overall width of the bar, including both white and green portions, represents the range of savings from this measure between best and worst-case characteristics in the general building stock. The location of the vertical line (down the middle) represents the characteristics of your building within this range of performance. The white portion, if present, shows the difference between the least-efficient case and your building. When this showing for a particular measure it serves to give you a relative idea of your building’s current status regarding that measure. The green portion of the bar shows how much energy could be saved by upgrading this element of your building to the most-efficient case analyzed.

Deep Retrofit Scoping Tool

Simplified Web-Based Energy Simulation Model for Existing Buildings

nbi new buildings
institute

DRST

User Guide | Print | Back to NBI

User Guide Sample

Type: Office	Location: Portland, OR	Dimensions: 10,000 sq. ft. / 2 floors
Windows: 20%	Op. Sched.: Moderate Use	Const. Yr.: Pre-1984
Air Dist.: Packaged Single Zone	Heating: Natural Gas Burner	Cooling: Air Conditioner (DX)

Results

The savings potential for this building is 41% of your current whole-building energy use, including all fuels.

2010 Code Building	My Building	My Building with All Measures
--------------------	-------------	-------------------------------

Potential Energy Savings Impact

Measure Options

Gas Furnace Efficiency	✓
Heat Recovery	✓
Glazing U-Value	✓
HVAC Distribution	✓
Demand Controlled Ventilation	✓

Customize Measure Results

Print
Analyze Another Building

To save your results click on “Print.” You may print to paper, to a pdf file, or to another source such as fax. The tool does not save your session upon exit so printing is the only way to save your information. To customize the selected package of measures, click on the “Customize Measure Results” button. If you do not wish to customize the selected package of measures and you would like to restart your session,

click on the “Analyze Another Building” button. This will clear the session data and take you back to Step 1 where you may enter data for a new building.

Step 4: Customized Results Page

The Retrofit Savings Estimator has the capacity to customize results and to examine the effects of any combination of the recommended measures. If the recommended package of measures includes a measure that you know you do not want to pursue you can remove it from the package by clicking on the corresponding check box on the right side of the screen, under the green bar (“My Building with Selected Measures”).

The vertical bars show the relative all-fuel energy usage of the building in various scenarios. The relative height of the bars shows the building’s energy consumption in each case. On the left is a red bar showing how much energy your building would use if all elements of the building were compliant with the ASHRAE 90.1-2010 code. Second from the left is a blue bar showing the current energy consumption of your building. The grey bar second from the right shows how much less energy your building could use if all recommended measures were implemented. All bars are scaled to compare with the blue “My Building” bar (that is, the height of the red, grey, and green bars will be lower in proportion to their lower predicted energy usage. The percentage shown above the grey and green bars is the total energy savings potential as a portion of total annual energy use.

Because the model takes interactive effects into account some counterintuitive results may occasionally show up. In some cases the addition of a particular measure to a specific package can actually increase energy usage slightly. This is not an error in the model but is actually a result of measure interactivity. These cases are rare and the effects are usually less than 5%.

The horizontal green and white bars under the title “Potential Energy Savings Impact” represent the effects of each measure. The overall width of the bar, including both white and green portions, represents the range of savings from this measure between best and worst-case characteristics in the general building stock. The location of the vertical line (down the middle) represents the characteristics of your building within this range of performance. The white portion, if present, shows the difference between the least-efficient case and your building. When this showing for a particular measure it serves to give you a relative idea of your building’s current status regarding that measure. The green portion of the bar shows how much energy could be saved by upgrading this element of your building to the most-efficient case analyzed.

User Guide Sample

Type: Office Location: Portland, OR Dimensions: 10,000 sq. ft. / 2 floors
Windows: 20% Op. Sched.: Moderate Use Const. Yr.: Pre-1984
Air Dist.: Packaged Single Zone Heating: Natural Gas Burner Cooling: Air Conditioner (DX)

Results

The savings potential for this building is 41% of your current whole-building energy use, including all fuels.



Potential Energy Savings Impact



Measure Options

Gas Furnace Efficiency	✓	<input checked="" type="checkbox"/>
Heat Recovery	✓	<input type="checkbox"/>
Glazing U-Value	✓	<input type="checkbox"/>
HVAC Distribution	✓	<input checked="" type="checkbox"/>
Demand Controlled Ventilation	✓	<input checked="" type="checkbox"/>

Would you like to inquire about an in-depth detailed analysis?

Yes

Print

Analyze Another Building

To save your results click on “Print.” You may print to paper, to a pdf file, or to another source such as fax. The tool does not save your session upon exit so printing is the only way to save your information. To save another customized measure package, simply adjust your measure selection and print another version of this page. Once you have printed all the analyses you are interested in for this building your analysis of this building is complete.

If you would like to restart your session, click on the “Analyze Another Building” button. This will clear the session data and take you back to Step 1 where you may enter data for a new building. If you are interested in an in-depth customized energy simulation of your particular building, click on the “Yes” button to proceed.

Step 5: Contact Form (Optional)

If you have questions or find issues in the tool, or are interested in a more in-depth custom energy simulation of your building, you may enter your contact information into this form to send an inquiry to the tool's developers.

Deep Retrofit Scoping Tool

Simplified Web-Based Energy Simulation Model for Existing Buildings

nbi new buildings institute DRST

[User Guide](#) | [Print](#) | [Back to NBI](#)

User Guide Sample

Type: Office	Location: Portland, OR	Dimensions: 10,000 sq. ft. / 2 floors
Windows: 20%	Op. Sched.: Moderate Use	Const. Yr.: Pre-1984
Air Dist.: Packaged Single Zone	Heating: Natural Gas Burner	Cooling: Air Conditioner (DX)

A more comprehensive energy simulation is available for an additional fee. Complete the form below and a representative of The Weidt Group will contact you to discuss the custom analysis and fees in more detail.

User Guide Sample		Contact	
Address	<input type="text"/>	Name	<input type="text"/>
	<input type="text"/>	Phone	<input type="text"/>
City	Portland	E-Mail	<input type="text"/>
State	Oregon		
Zip	<input type="text"/>		