

Instructions for Benchmark Metric Data Collection Form

This is a voluntary, optional activity available to Better Buildings Residential Network Members.

PURPOSE:

Benchmarking is the process of gathering, tracking, and assessing a program's current performance against past results in order to ***measure progress over time***, or to ***compare results to a peer group***. In order to effectively engage customers and achieve savings, the most-successful Residential Energy Efficiency Programs continually assess their performance in order to improve processes and tactics. Program benchmarking provides valuable information that can lead to better program design and delivery decisions.

The Benchmark Metric Data Collection Form provides a consistent framework for Better Buildings Residential Network Members to use to track progress over time and compare to their peers. By collecting this information in a consistent framework DOE can aggregate progress metrics from multiple programs and share the results to facilitate peer group comparison.

A [Guide for Benchmarking Residential Energy Efficiency Program Progress With Examples](#) is available as a resource for Better Buildings Residential Network members that voluntarily submit information using the Benchmark Metric Data Collection Form. Appendix A provides Common Terms and Definitions

On the Gross Metrics Input tab, enter information in the yellow cells.
Only provide metrics that are available and you currently track that meet the definitions in Appendix A of the [Guide for Benchmarking Residential Energy Efficiency Program Progress With Examples](#).

In rows 20 – 27 provide gross output metrics for program participation.

In rows 30 – 39 and 41 provide gross output metrics for program energy savings that you calculate.

In rows 40 and 42 – 43 provide gross output metrics for program environmental or water benefits if you calculate these metrics.

Provide additional details
where indicated by red text

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ID#	Gross Program Outcome Metric	Please provide a value for each metric.	Unit	Provide all relevant caveats associated with this data or explain how you use it.
PARTICIPATION				
1	# energy assessments		participant	
2	# home energy upgrades (completed)		participant	
3	# assessments or upgrades that included direct-install (DI) measures		assessments	
4	# of [specific measure type] installed	Measure A	measure	
		Measure B	measure	
		Measure C	measure	
		Measure D	measure	
		Measure E	measure	
5	# home upgrade loans (approved)		participant	
SAVINGS				
6	Annual energy savings by fuel type for total program (across all completed upgrades)	electric savings (kWh)	kWh	
		demand savings (kW)	kW	
		natural gas savings (therms)	therms	
		other fuel savings (MMBtu)	MMBtu	
		total energy savings across all fuels addressed, in common units (MMBtu)	MMBtu	
7	Lifetime energy savings by fuel type for total program (across all completed upgrades)	electric savings (kWh)	kWh	
		demand savings (kW)	kW	
		natural gas savings (therms)	therms	
		other fuel savings (MMBtu)	MMBtu	
		total energy savings across all fuels	MMBtu	

definition includes assessments performed by a trained assessor and excludes on-line or do-it-yourself (DIY) assessments. Energy assessments performed by trained assessors may vary based on the type of tests performed (i.e., air leakage test, duct leakage test, combustion safety test, and infrared scan).

Home energy upgrade (Energy upgrade, Home performance upgrade) – Individual measures or a group of measures installed for the customer to make a home or building more energy efficient, provide better comfort, and/or save money. Includes only customer-contracted upgrades and not direct install measures. Multiple upgrades may occur on the same house, but at different dates, over a period of time, and by different contractors. You will need to decide how these will be aggregated. Does each upgrade transaction (or invoiced project) count, or does a home count once regardless of the number of upgrade transactions? How this is addressed will affect each metric that is determined on a per-upgrade basis: e.g., estimated energy savings. Projects that include only measures that are directly installed by the program do not fall into this category (see Direct install measures below).

Direct install measures – Improvement measures installed under an energy efficiency program design strategy involving the direct installation of measures in customer premises by a contractor sponsored by the program at no cost to the customer. Such programs generally involve one-for-one replacement of existing equipment with more efficient equipment. The installation typically occurs during a home energy assessment. Direct install measures are typically restricted to a specific set of pre-qualified eligible measures and/or may be subject to

caps or other restrictions to meet the program's cost-effectiveness guidelines or other criteria. This is in contrast to "customer contracted work" (see definition). Commonly includes products such as lighting and low-flow shower heads – may also include services such as air sealing. Measure (or energy measure) – A specific action that a building owner can take to improve a building's structure or performance. For example, add attic insulation to R-38 or upgrade electric furnace with ENERGY STAR qualified heat pump.

Reporting energy savings, lifetime energy savings, annual CO2 and GHG reductions, customer savings, water savings, and water cost saving.

Only provide metrics that are available and you currently track that meet the definitions in Appendix A of the Guide for Benchmarking Residential Energy Efficiency Program Progress With Examples.

Please provide relevant caveats associated energy savings, lifetime energy savings, annual Carbon Dioxide (CO2) or Green House Gas (GHG) reductions, customer savings, water savings, and water cost saving in column F. Relevant caveats would include information about the method used to calculate each value provided and if the values are claimed or evaluated? Claimed savings are values reported by a program implementer or administrator after the efficiency activities have been completed. Evaluated savings are values reported by an independent third-party evaluator after the efficiency activities and impact evaluation have been completed. The designation of "independent" and "third-party" is determined by those entities involved in the use of the evaluations and may include evaluators retained, for example, by the program administrator or a regulator.

One method for estimating energy savings is deemed savings values or deemed savings calculations which are developed from common practice that is widely considered acceptable for the subject measure and its specific application. Deemed savings methods are typically documented in state specific technical reference manuals (TRMs). These are resource documents that include energy efficiency measure information used in program planning and energy efficiency program reporting. The SEE Action Energy Efficiency Program Impact Evaluation Guide provides a list of state specific TRMs in TABLE C.1. This Guide also provides helpful guidance on evaluating the impact of energy efficiency programs. In addition DOE's Uniform Methods Project for Determining Energy Efficiency Program Savings provides model evaluation plans for specific energy efficiency measures and project categories.

A second method for estimating energy savings is using a Building Energy Simulation Model to estimate savings from each building upgraded. Building Energy Simulation Models are computer models based on physical engineering principals and/or standards used to estimate energy use and/or savings. These models usually incorporate site-specific data on customers and physical systems, such as square footage, weather, surface orientations, elevations, space volumes, construction materials, equipment use, lighting, and building occupancy. Building simulation models can usually account for interactive effects between end uses (e.g., lighting and HVAC), part-load efficiencies, and changes in external and internal heat gains/losses. Examples of building simulation models include DOE's EnergyPlus and Home Energy Scoring tool.

A third method for estimated energy saving is using metered data. Metered data is collected over time through a meter. Metered usage before and after a home upgrade can be compared to determine an estimated savings using billing analysis.

The U. S. Environmental Protection Agency provides a Greenhouse Gas Equivalencies Calculator that can be used to convert energy savings into environmental benefits like CO2 or GHG emission reductions and a WaterSense calculator for estimating water savings.

INSTRUCTIONS

This Excel file contains three tabs: Instructions, Gross Metrics Input, and Normalized Metrics Input. Please enter information pertaining to your organization and residential energy efficiency program in the yellow cells on the Gross Metrics Input tab. On the Gross Metrics Input tab, enter information in the yellow cells. Rows 4 -12 and 14 are intended to provide a contact person and information that explains the context in which the program is operating. Use the drop-down menu in Rows 7, 8 and 9 to select the input value.

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The [Guide to Determining Climate Regions by County](#) can be used to determine the predominate climate zone served by the program. When a program spans multiple counties that are in different climate zones the counties with the most home upgrades reported will determine the predominate climate zone.



Better Building Residential Network **Optional** (DRAFT)		Building Data Collection Form
2		
3	Please provide input in the cells that are in yellow	
4	Calendar Year	
5	Program Name	
6	Program Contact	
7	Program Category	
8	Program Age	
9	Predominate Climate Zone	
10	Average Electricity Rate (\$/kWh)	
11	Average Natural Gas Rate(\$/therm)	
12	Funding Source	
13	Additional background information like regulatory requirements set by state legislation or public	
14		

The Normalized Metrics Input tab includes formulas that calculate the Normalized Progress Metrics based on your input in the Gross Metrics Input tab. You may provide relevant caveats associated with each normalized progress metric calculated.

The average % of total customer energy saved across the program is the average of the % energy savings estimated from each home upgrade. If not available leave blank.

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Please provide input in the cells that are in yellow.				
ID#	Normalized Progress Metric	Calculated Value	Unit	Provide all relevant caveats associated with this data or explain how you use it.
15	Cost of lifetime energy savings by fuel type – total program (across all completed upgrades)	\$/demand savings (kW)	\$	-
16		\$/natural gas savings (therms)	\$	-
17		\$/other fuel savings (MMBtu)	\$	-
18		\$/total energy savings across all fuels addressed, in common units (MMBtu)	\$	-
30	Upgrade cost to program leverage ratio (total upgrade)		total involved costs \$\$/ program \$	
31	Customer to Program Leverage ratio (total customer contribution/program cost)		total customer contribution \$\$/ program \$	
32	Program admin costs as % of total spending	N/A	% of total spending	
ENERGY SAVINGS				
33	Avg. total annual energy savings by fuel type per upgrade	\$/electric savings (kWh)	-	kWh
		\$/demand savings (kW)	-	kW
		\$/natural gas savings (therms)	-	therms
		\$/other fuel savings (MMBtu)	-	MMBtu
		\$/total energy savings across all fuels addressed, in common units (MMBtu)	-	MMBtu
34	Avg. annual CO2 or GHG reductions per upgrade	N/A	(please specify)/ upgrade	
35	Avg. % of total customer energy saved across program	(Average across the program - estimated percent customer energy saved)	% energy saved	
MARKETING AND SALES PERFORMANCE				
36	Marketing lead-to-assessment conversion rate	N/A	assessments/ lead	

Better Building Residential Network **Option

Please provide input in the cells that are in ye

- Calendar Year
- Program Name
- Program Contact
- Program Category
- Program Age
- Predominate Climate Zone
- Average Electricity Rate (\$/kWh)
- Average Natural Gas Rate(\$/therm)
- Funding Source

Additional background information like regu

ID#	Gross Program Outcome Metric
PARTICIPATION	
1	# energy assessments
2	# home energy upgrades (completed)
3	# assessments or upgrades that included direct-install (DI) m
4	# of [specific measure type] installed

5	# home upgrade loans (approved)
SAVINGS	
6	Annual energy savings by fuel type for total program (across all completed upgrades)
7	Lifetime energy savings by fuel type for total program (across all completed upgrades)
8	Annual CO2 or GHG reductions for total program (across all
9	Customer \$\$ savings for total program (across all completed
	Water Savings
	Water Cost Savings (\$)
SPENDING	
10	Total program spending
11	Total program incentives to customers for assessments
12	Total program incentives to customers for upgrades

13	Total program incentives to contractors for assessments
14	Total program incentives to contractors for upgrades
15	Total program cost for direct-install measures
16	Marketing (or lead generation) spending
17	Total amount loaned for upgrades
18	Total invoiced costs for upgrades
19	Total customer contribution for upgrades
OTHER	
20	Total # certified individuals within active contractor companies
21	Customer satisfaction - # complaints; feedback metrics from
22	Time from assessment-to-upgrade completion (days) for each
23	# marketing leads
24	# active participating contractors
25	# eligible homes
26	Total building stock (# buildings in program region)
	Additional metric TBD
	Additional metric TBD
	Additional metric TBD
	Additional metric TBD

Program Category List

BEHAVIORAL/ONLINE AUDIT/FEEDBACK

CONSUMER PRODUCT REBATE/APPLIANCES

CONSUMER PRODUCT REBATE/ELECTRONICS

CONSUMER PRODUCT REBATE/LIGHTING
APPLIANCE RECYCLING
MULTI-FAMILY
NEW CONSTRUCTION
HVAC
INSULATION
POOL PUMP
PRESCRIPTIVE
WATER HEATER
WINDOWS
WHOLE HOME/DIRECT INSTALL
WHOLE HOME/AUDITS
WHOLE HOME/RETROFITS
FINANCING
OTHER

Public reporting burden for this collection of information is estimated to average collection of information. Send comments regarding this burden estimate or any (1910-XXXX), U.S. Department of Energy, 1000 Independence Ave SW, Washingtc

Final** Benchmarking Data Collection Form (DRAFT)

Follow

Regulatory requirements set by state legislation or public utility commis

	Please provide a value for each metric.	Unit
		participant
		participant
measures		assessments
Measure A		measure

Measure B		measure
Measure C		measure
Measure D		measure
Measure E		measure
		participant
electric savings (kWh)		kWh
demand savings (kW)		kW
natural gas savings (therms)		therms
other fuel savings (MMBtu)		MMBtu
total energy savings across all fuels addressed, in common units (MMBtu)		MMBtu
electric savings (kWh)		kWh
demand savings (kW)		kW
natural gas savings (therms)		therms
other fuel savings (MMBtu)		MMBtu
total energy savings across all fuels addressed, in common units (MMBtu)		MMBtu
completed upgrades)		[please specify]
l upgrades)		dollars (\$)
		gallons
		dollars (\$)
		dollars (\$)
for electric savings		dollars (\$)
for electric demand savings		dollars (\$)
for natural gas savings		dollars (\$)
for other fuel savings		dollars (\$)
		dollars (\$)
		dollars (\$)

for electric savings		dollars (\$)
for electric demand savings		dollars (\$)
for natural gas savings		dollars (\$)
for other fuel savings		dollars (\$)
		dollars (\$)
		dollars (\$)
		dollars (\$)
		dollars (\$)
		dollars (\$)
		dollars (\$)
		dollars (\$)
es		individual
surveys		[please specify]
ch home energy upgrade		day
		lead
		contractor
		Select from Drop-down
		Select from Drop-down

Program Age List

ONE YEAR OR LESS

TWO YEARS

THREE YEARS

Climate Zone

HOT-HUMID

MIXED-HUMID

HOT-DRY

FOUR YEARS

FIVE YEARS

SIX YEARS

SEVEN YEARS

EIGHT YEARS

NINE YEARS

TEN OR MORE YEARS

MIXED-DRY

COLD

VERY-COLD

SUBARCTIC

MARINE

390 minutes (6.5 hours) per response, including the time for reviewing instructions, searching existing data sources other aspect of this collection of information, including suggestions for reducing this burden, to Office of the Chief Information Officer, DC, 20585-1290; and to the Office of Management and Budget (OMB), OIRA, Paperwork Reduction Project (1910-

sion, program size , or market characteristics.

Provide all relevant caveats associated with this data or explain how you use it.

[illegible]

[illegible]

, gathering and maintaining the data needed, and completing and reviewing the
formation Officer, Records Management Division, IM-23, Paperwork Reduction Project
XXXX), Washington, DC 20503.

Please complete the following t

# of Homes	Electric Energy Saving (kWh)
	<0 kWh

	1 - 500
	501 - 1000
	1001 - 1500
	1501 - 2000
	2001 - 2500
	2501 - 3000
	3001 - 3500
	3501 - 4000
	4001 - 4500
	4501 - 5000
	5001 - 5500
	5501 - 6000
	6001 - 6500
	6501 - 7000
	7001 - 7500
	7501 - 8000
	8001 - 8500
	8501 - 9000
	9001 - 9500
	9501 - 10,000
	>10,000 kWh

Distribution of Home Upg	
# of Homes	Upgrade Invoice Cost
	\$1 - \$1000
	\$1001 - \$2000
	\$2001 - \$3000

	\$3001 - \$4000
	\$4001 - \$5000
	\$5001 - \$6000
	\$6001 - \$7000
	\$7001 - \$8000
	\$8001 - \$9000
	\$9001 - \$10,000
	\$10,001 - \$11,000
	\$11,001 - \$12,000
	\$12,001 - \$13,000
	\$13,001 - \$14,000
	\$14,001 - \$15,000
	\$15,001 - \$16,000
	\$16,001 - \$17,000
	\$17,001 - \$18,000
	\$18,001 - \$19,000
	\$19,001 - \$20,000
	\$20,001 - \$21,000
	\$21,001 - \$22,000
	\$22,001 - \$23,000
	\$23,001 - \$24,000
	\$24,001 - \$25,000
	>\$25,0000

ables if you would like to benchmark your results against a

Distribution of Home Upgrade Est		
# of Homes	Natural Gas Energy Savings (therms)	# of Homes
	<0 therms	

	1 - 100	
	51 - 100	
	101 - 150	
	151 - 200	
	201 - 250	
	251 - 300	
	301 - 350	
	351 - 400	
	401 - 450	
	451 - 500	
	501 - 550	
	551 - 600	
	601 - 650	
	651 - 700	
	701 - 750	
	751 - 800	
	801 - 850	
	851 - 900	
	901 - 950	
	951 - 1000	
	>1000 therms	

Upgrade Costs or Loan Amount	
# of Homes	Loan Amount
	\$1 - \$1000
	\$1001 - \$2000
	\$2001 - \$3000

	\$3001 - \$4000
	\$4001 - \$5000
	\$5001 - \$6000
	\$6001 - \$7000
	\$7001 - \$8000
	\$8001 - \$9000
	\$9001 - \$10,000
	\$10,001 - \$11,000
	\$11,001 - \$12,000
	\$12,001 - \$13,000
	\$13,001 - \$14,000
	\$14,001 - \$15,000
	\$15,001 - \$16,000
	\$16,001 - \$17,000
	\$17,001 - \$18,000
	\$18,001 - \$19,000
	\$19,001 - \$20,000
	\$20,001 - \$21,000
	\$21,001 - \$22,000
	\$22,001 - \$23,000
	\$23,001 - \$24,000
	\$24,001 - \$25,000
	>\$25,0000

distribution instead of a single-point average.

Estimated Energy Savings		
Fuel Oil Energy Savings (gallons)	# of Homes	Propane Energy Savings (gallons)
<0 gallons		<0 gallons

1 - 100		1 - 100
51 - 100		51 - 100
101 - 150		101 - 150
151 - 200		151 - 200
201 - 250		201 - 250
251 - 300		251 - 300
301 - 350		301 - 350
351 - 400		351 - 400
401 - 450		401 - 450
451 - 500		451 - 500
501 - 550		501 - 550
551 - 600		551 - 600
601 - 650		601 - 650
651 - 700		651 - 700
701 - 750		701 - 750
751 - 800		751 - 800
801 - 850		801 - 850
851 - 900		851 - 900
901 - 950		901 - 950
951 - 1000		951 - 1000
>1000 gallons		>1000 gallons

# of Homes	Total Energy Savings (MMBTU)
	<0 MMBTU

	0.01 - 2.5
	2.51 - 5.0
	5.01 - 7.5
	7.51 - 10.0
	10.01 - 12.5
	12.51 - 17.5
	17.51 - 20.0
	20.01 - 22.5
	22.51 - 25.0
	25.01 - 27.5
	27.51 - 30.0
	30.01 - 32.5
	32.51 - 35.0
	35.01 - 37.5
	37.51 - 40.0
	40.01 - 42.5
	42.51 - 45.0
	45.01 - 47.5
	47.51 - 50.0
	50.01 - 52.5
	>52.5 MMTBU

Please provide input in the cells that are in yellow.

ID#	Normalized Progress Metric	
PROGRAM EFFICIENCY		
27	% of eligible homes improved	
	% of building stock improved	
28	Cost of annual energy savings by fuel type – total program (across all completed upgrades)	\$/electric savings (kWh)
		\$/demand savings (kW)
		\$/natural gas savings (therms)
		\$/other fuel savings (MMBtu)
		\$/total energy savings across all fuels addressed, in common units (MMBtu)
29	Cost of lifetime energy savings by fuel type – total program (across all completed upgrades)	\$/electric savings (kWh)
		\$/demand savings (kW)
		\$/natural gas savings (therms)
		\$/other fuel savings (MMBtu)
		\$/total energy savings across all fuels addressed, in common units (MMBtu)
30	Upgrade cost to program leverage ratio (total upgrade invoiced costs/program cost)	
31	Customer to Program Leverage ratio (total customer contribution/program cost)	
32	Program admin costs as % of total spending	
ENERGY SAVINGS		
33	Avg. total annual energy savings by fuel type per upgrade	\$/electric savings (kWh)
		\$/demand savings (kW)
		\$/natural gas savings (therms)
		\$/other fuel savings (MMBtu)
		\$/total energy savings across all fuels addressed, in common units (MMBtu)
34	Avg. annual CO2 or GHG reductions per upgrade	

35	Avg. % of total customer energy saved across program
MARKETING AND SALES PERFORMANCE	
36	Marketing lead-to-assessment conversion rate
37	Energy assessment-to-upgrade conversion rate for the total program
38	Avg. # upgrades per contractor (across program)
39	Average invoiced cost per upgrade
40	Marketing cost per lead
41	Average loan amount for home upgrades
42	Customer contribution as a % of total invoiced cost
43	Average time-to-complete (time from assessment to upgrade completion) across the program
CUSTOMER BENEFIT	
44	Average customer \$\$ savings per upgrade across program
CUSTOMER BENEFIT – INFORMATION ON INDIVIDUAL CONTRACTOR PERFORMANCE	
45	Average Customer \$\$ savings per upgrade for each contractor
46	Avg. of time-to-complete by contractor
47	Customer satisfaction - for specific contractors
	Additional metric TBD
	Additional metric TBD
	Additional metric TBD
	Additional metric TBD

Calculated Value	Unit
N/A	% of eligible homes improved
N/A	% of building stock improved
\$ -	kWh
\$ -	kW
\$ -	therms
\$ -	MMBtu
\$ -	MMBtu
\$ -	kWh
\$ -	kW
\$ -	therms
\$ -	MMBtu
\$ -	MMBtu
-	total invoiced costs \$\$/ program \$\$
-	total customer contribution \$ \$/ program \$\$
N/A	% of total spending
-	kWh
-	kW
-	therms
-	MMBtu
-	MMBtu
N/A	[please specify]/ upgrade

[Average across the program: estimated percent customer energy saved]	% energy saved
---	----------------

N/A	assessments/ lead
0%	percentage
N/A	upgrade/contractor
\$ -	dollar
\$ -	dollar
\$ -	dollar
0%	percentage
N/A	days

\$ -	dollars (\$)
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PERFORMANCE	
	dollars (\$)
	days
	[please specify]

Provide all relevant caveats associated with this data or explain how you use it.

[illegible]

[illegible]