Rating Review Process

June 1, 2010

The attached spreadsheet contains to date gathered information on six domestic and international rating and/or labeling programs (summarized below), including: their rating; calculation methodology; the display of the scale; the display of additional information on the label; detailed information contained on the label's accompanying report; policy issues, training, and quality assurance; and data gathering, management, and analysis. The following provides some background on the organization of the data:

1. The ratings section of the matrix attempts to differentiate between operational and asset ratings;
2. The calculation section examines the inputs and reference parameters used for each rating software package;
3. The scale values and the comparison section describes the information displayed on each program's energy rating scale;
4. The label display section provides the information contained on each program's label, in some cases attempting to capture any information provided beyond what is depicted on the scale;
5. The recommended energy conservation measures section discusses the information contained in each label's accompanying report, which may include recommendations for energy efficient upgrades;
6. The policy section indicates whether the program is mandatory or voluntary and if there are other similar programs in the region;
7. The training, workforce, and quality assurance section covers training, certification, audit methodologies, and quality assurance;
8. The data gathering, analysis, and methodology section provides information on data storage and program impact. DOE, which seeks comment, has reviewed and evaluated the attached.

The data was developed to assist and provide insight into various rating and labeling efforts. The list is not intended to be exhaustive, nor a selection of "exemplary" programs, but a snapshot of a number of efforts already underway. The spreadsheet is a living document that should continuously be updated as more information becomes available and as programs evolve, and as such, DOE seeks comment and any needed clarification related to the information contained in the spreadsheet.

1. E-Scale (USA – Department of Energy)

The EnergySmart Homes Scale (E-Scale) is a residential label, initiated by the U.S. Department of Energy (DOE), whose rating is developed using the Home Energy Rating System (HERS) Index. The rated home's performance estimate is displayed on a scale that also depicts useful comparisons, including the ratings of a typical existing home and a typical new home. Currently, the E-Scale is being used for the Builders Challenge, which is a voluntary program across the U.S.

2. ENERGY STAR (USA – Environmental Protection Agency)

The ENERGY STAR for new homes label was initiated by the U.S. Environmental Protection Agency (EPA). The label is built under a binary construct. If the rated home is 15% more energy efficient than a home built to the 2004 International Residential Code (IRC), then it receives the label; if it is not more than 15% more efficient than the 2004 IRC, then it does not receive the label. The Home Energy Rating System (HERS) Index is used to determine the home's rating.

3. ENERGY STAR Home Energy Yardstick (USA – Environmental Protection Agency)

The ENERGY STAR Home Energy Yardstick is an online tool that a homeowner can use to perform a self-audit on his home to determine, at a high level, the home's energy performance. Homeowners enter minimal data about their home, including size, utility bill data, etc. and are presented with a numerical score. There is no home audit by a certified rater and a label is not produced at the end.

4. Energy Performance Score (Oregon)

The Energy Performance Score (EPS) was conceptualized by the Earth Advantage Institute and is supported by funding from the Energy Trust of Oregon. The EPS is a voluntary program currently being used in Oregon and Washington for new and existing homes. For new construction in Oregon, REM/Rate, accredited HERS software, calculates an initial output, which is fed into Energy Trust of Oregon's proprietary calculator, resulting in an EPS. In Washington and elsewhere, Earth Advantage is using an online platform with the SIMPLE modeling engine. The EPS label displays both the Energy Consumption and Carbon Emissions with relevant comparisons.

5. Energy Performance Certificate (United Kingdom)

All buildings constructed, rented, or sold are required to have an Energy Performance Certificate (EPC) under the terms of the Energy Performance of Buildings Directive (EPBD). When renting or selling a home, it is the responsibility of the current homeowner to obtain the EPC. For a home in the UK to receive an EPC, an accredited Domestic Energy Assessor (DEA) must audit the home and perform a calculation of the home's energy efficiency using the Standard Assessment Procedure (SAP) for new homes and the Reduced Data SAP (RdSAP) for existing homes. The EPC displays both the current and potential Energy Efficiency Ratings and the Environmental Impact (CO_2) Ratings.

6. EnerGuide (Canada)

EnerGuide Rating System is a voluntary program, developed by Natural Resources Canada (NRCan). Before a home can receive an EnerGuide label, two audits must be preformed: a pre-retrofit and a post-retrofit audit. The Canadian Government has created incentives for homeowners to label their homes by offering rebates for implementing the measures recommended in the report that is generated after the first audit. The final label is presented after the second audit is performed.

The Energy Performance Assessment of Existing Dwellings (EPA-ED) was also included in the review.

7. Energy Performance Assessment of Existing Dwellings (European Union)

The Energy Performance Assessment of Existing Dwellings is a methodology for implementing Europe's Energy Performance of Buildings Directive (EPBD); it is not an actual program that supplies a label. It gives guidance and provides standard protocols and software that countries can use when designing

their own programs. Participating countries can use the provided algorithm with their own graphical user interface. The information that comes out of the software is used to create a report, which is independently designed by each country. The EPA-ED methodology was piloted in Denmark, the Netherlands, Austria, and Greece.

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
	EnergySmart Home Scale	**ENERGY STAR for New Homes**	**ENERGY Home Energy Yardstick**	**Energy Performance Score**	**Energy Performance Certificate**	**EnerGuide Rating System**	**Energy Performance Assessment of Existing Dwellings**	
Ratings								
Is the rating (or part of the rating) neutral to occupant behavior?	Y	Y	N	Y	Y	Y	Y	E-Scale: HERS rating is asset rating ENERGY STAR: HERS rating is asset rating ENERGY STAR HEY: uses assumed values for occupancy and behavior to compare energy use with other homes in the zip code area EPS: EPS is an asset rating; EPS uses assumed values for occupancy and behavior in order to represent the annual energy use of a home under typical conditions EPC: the rating is an indicator of energy use in average circumstances and assumes standard occupancy EnerGuide: use standard conditions so the homeowner can compare his house's rating to similar size houses built in similar regions. The house's actual energy consumption and future savings may be significantly influenced by the number of occupants and their day-to-day habits. EPA-ED Method: grade the dwelling(s) based on standard circumstances concerning energy-related behavior and energy consumption. Since the owner would be selling or renting out the dwelling, the history of energy consumption by the former inhabitant is irrelevant. If an accompanying report is requested, occupant behavior is taken into consideration.
Is the rating (or part of the rating) based on energy bills?	N	N	Y	N	N	N	N	ENERGY STAR HEY: user is asked for energy use and corresponding cost of energy for both electricity and heating EPS: the EPS is an asset rating and therefore is not based on the operational information from utility bills EPA-ED Method: utility data is only used when a homeowner requests tailored advice on improving the energy performance of their home. Energy savings as a result of energy saving measures are thus fully tailored to (the behavior of) the actual occupant.
Do operational variables factor into the rating?	N	N	Y	N	N			ENERGY STAR HEY: impacted by variables due to utility input, which is driven by behavior.
Can operational values be customized?	N	N	N	N	N			
Does the rating use default values for # of occupants?	Y	Y	N	Y	Y	Y		E-Scale: number of occupants plus 1 ENERGY STAR HEY: rating is normalized for occupancy, but number of occupants is an input EPS: the number of bedrooms indicates the potential service of the home by suggesting the typical occupancy of the home EPC: The calculation assesses the home itself, as used by standard or typical occupants, and not affected by the way current occupants might use it.
Calculation (of rating, to inform the label content):								
What is the denominator of the rating (if any)?	Index: home built to IECC 2004 (HERS reference) = 100	Index: home built to IECC 2004 (HERS reference) = 100	Index: home compared to national distribution of household energy consumption found in RECS with similar size and demographics	consumption / home	consumption / m^2	Index: Zero Energy Home = 100		E-Scale: much more complicated than consumption/home. Based on a mathematical equation. ENERGY STAR HEY: the Yardstick score is from 1 to 10. The score is an abstract representation of the relative energy use of the home compared to other similar homes. The score is based on the ratio of Actual Energy Use to Predicted Mean Energy Use (for homes with similar characteristics). That ratio is then mapped to a 1 to 10 scale.

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
When calculating the rating, is energy use normalized by climate?	Y	Y	Y	Y	N	Y		ENERGY STAR HEY: uses zip code to determine HDD and CDD EPS: uses closest weather station to account for climate EPC: assumes average weather data for the whole UK EnerGuide: calculation accounts for climate zone
Is the rating based on an assumed number of occupants?	Y	Y	N	Y	Y	Y		ENERGY STAR HEY: enter number of occupants into online tool EPC: assumes standard occupancy EnerGuide: assumes 4 occupants
When calculating the rating, is energy use normalized by number of occupants?	N	N	Y	N	N	N		E-Scale: number of occupants is estimated based on standardized algorithms but whole-house energy use is not normalized by the number of occupants EPS: uses assumed values for occupancy and behavior in order to represent the annual energy use of a home under typical conditions; Performance Factors EPC: calculation is independent of factors related to the individual characteristics of the household occupying the dwelling when the rating is calculated EnerGuide: assumes 4 occupants
Is the size of the home accounted for (i.e., per square foot)?	N	N	Y	N	Y	N		ENERGY STAR HEY: rating is adjusted for floor area so that it is essentially independent of dwelling size EPS: larger homes use more energy and this is shown on the EPS in terms of a higher score; Performance Factors - Shows area normalized and climate normalized consumption EPC: rating is adjusted for floor area so that it is essentially independent of dwelling size EnerGuide: adjusted for volume and area
Is site or source energy used in the calculation of the rating?	site	site	source	site		source	source	E-Scale: HERS rating uses site energy; RESNET willing to go to source. RESNET utilizes normalized, modified end-use loads (nMEUL). This is neither site nor source. ENERGY STAR: HERS rating uses site energy ENERGY STAR HEY: the Yardstick score is based on source energy use. The user inputs site energy use, but it is converted to source energy use to calculate the score. EPS: the energy score is a calculation of energy used on site; the carbon score is based on the source energy that is produced in order to power the home EnerGuide: HOT2000 calculates site energy consumption but uses various source energy factors based on Province to determine greenhouse gas emission production. EPA-ED Method: The calculation is based on the primary energy consumption under standard indoor and outdoor conditions

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Does the home's rating change over time as a result of updated reference parameters?	Y	Y	N/A	N	Y	Y	Y	E-Scale: update the software to reflect new technologies ENERGY STAR: does keep pace with rising codes EPS: REM/Rate stays current with codes EPC: the calculation methodology does get updated every 5 years (in line with changes to Building Regulation requirements) and this includes key parameters such as fuel costs. EPCs have a shelf life. The rating would need to be updated every 5 years or so to stay current. EnerGuide: EnerGuide ratings are calculated using software that is continually being revised. A house may at one point meet a certain level, but later reach a lower level due to software changes and updates. EPA-ED Method: Within the EPA-ED project the tools and the software are designed to be flexible towards the modification resulting from standards to be issued in the near future.
Scale values and comparisons								
Does the label present total energy consumption on the scale?	N	N	N	Y	N	N		E-Scale: total annual energy consumption (estimated annual energy usage, electric and natural gas) is presented on the label and relative energy performance (0-150) is indicated on the scale ENERGY STAR HEY: not a label, just an online output EPC: total energy consumption is presented on the label and relative energy performance is presented on the scale EPS: total energy consumption (Mbtu/yr) is indicated on the scale; estimated annual energy usage (electric and natural gas) are indicated on the label, separate from the scale EnerGuide: total energy consumption (estimated annual energy consumption) is presented but not on the scale. In the future, it will be presented on the scale. Relative energy performance (0-100) is presented on the scale.
Does the scale reflect performance relative to code?	Y	N	N	Y	N	N		E-Scale: scale indicates the rating of a typical new home (100 HERS rating), which is a home built to IECC 2004 standards EPS: it is not inherent in the number, but the consumption of a "code equivalent" can be used as a benchmark EnerGuide: not now but it will in the future
Does the scale reflect performance relative to homes in surrounding areas?	N	N	Y	Y	N	Y		E-Scale: HERS rating is based on local climate and national codes (for that climate) ENERGY STAR: HERS rating is based on local climate and national codes (for that climate) EPS: benchmarks for the typical state, national, or regional homes can be used on the scale EnerGuide: compares house in the same age group nationwide
Does the scale reflect performance relative to homes nationwide?	N	N	N	Y	N	N		E-Scale: HERS rating is based on local climate and national codes (for that climate) ENERGY STAR: HERS rating is based on local climate and national codes (for that climate) EPS: includes Oregon average and US average
Does the scale reflect actual performance vs. the home's potential performance?	N	N	N	N	Y	N		
Is energy per unit area displayed on the scale?	N	N	Y	N	Y	N		EPC: presented as consumption/m^2

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Is actual energy consumption, relative energy consumption, or neither presented on the scale?	Y: relative	N	Y: relative	Y: actual	Y: relative	Y: relative		ENERGY STAR: the home must reach a certain threshold to earn the ENERGY STAR but there is no scale that indicates where exactly the home falls in comparison to benchmarks EPS: shows Mbtu/yr - the numbers on the energy and carbon scales are actual numbers, they are not index numbers EnerGuide: the actual house consumption is compared to a benchmark which consists of a highly efficient home
Does the scale use a "bin" system into which homes are placed?	N	N	N	N	Y	N		EPC: ranges from A-->G
Does the label present information on estimated carbon savings?	N	N	Y	Y	Y	N		E-Scale: the label does not present this information but the rating calculates carbon reductions relative to the reference home ENERGY STAR HEY: the user must indicate to what degree (%) they'd like to improve their home EPS: if recommended upgrades are made and analyzed, the corresponding emission reductions are indicated on the scale EPC: shows carbon score and potential carbon score EPA-ED Method: software calculates CO2 emission reduction
Label Display								
Does the label display an estimate of current energy consumption?	Y	N	Y	Y	Y	Y		ENERGY STAR: ENERGY STAR is based on a binary construct. A home is either ENERGY STAR qualified or not.
Does the label display an estimate of future energy consumption?	Y	N	Y	Y	Y	Y	Y	ENERGY STAR HEY: the Yardstick does estimate future energy use and cost if the user sets a goal for improvement and enters energy cost information EPS: improved score after energy upgrades is shown if recommendations were made and analyzed EnerGuide: the report indicates what the rating will be if all measures are implemented EPA-ED Method: the software calculates the effect of the energy saving measures
Are energy costs presented on the label, or just consumption?	both	neither	both	both	both	consumption / home	both	E-Scale: label includes "Estimated average monthly energy bill"; the rating includes both ENERGY STAR: the only information presented are home address, builder name, rater/verifier name, and date verified EPS: displays estimated average annual energy cost and monthly average EPC: energy cost is only presented for lighting, heating, and hot water. Does not provide cost for total energy consumption. EnerGuide: the software has the capability to calculate total fuel costs and fuel savings by component but they are not displayed on the label EPA-ED Method: software calculates annual savings of energy costs

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If energy costs are shown, does the calculation use national or local energy costs?	local	N/A	Actual utility bill inputted: local	Actual utility bill inputted: local	national	local	local	E-Scale: The calculation generally uses local or state-level energy rates. Raters will use local utility rates in many cases if they have that information. This helps to increase the accuracy of the cost estimates, particularly in states where local rates vary significantly from the state-wide average. ENERGY STAR HEY: user enters utility data for the home for the last 12 months EPS: In Oregon where they are running the new homes program for Energy Trust, the EPS uses actual utility energy costs and carbon scores for the customers individual utilities. Therefore, two homes built exactly the same but with different electric and gas providers would have the same energy performance score but different monthly/yearly costs to operate as well as carbon scores based on the serving utility. EPC: A national energy/fuel cost is used within SAP and this is updated every six months in the context of generating EPCs. When citing fuel savings attributable to energy efficiency measures a caveat is added to say that these are approximate/average because it depends not only on fuel costs (which can be very different across the UK because of the competitive nature of the energy industry and the various deals that are on offer) but also on the way householders use energy in their homes. EnerGuide: Each evaluator creates a data base with costs of utilities ion their area where they perform audits. When a file is modeled, the evaluator selects the appropriate Fuel library based on where the house is located.
Are energy costs updated regularly?	Y	N/A	Y	Y	Y	Y		E-Scale: energy rates can be customized EPS: the associated energy cost is estimated based on current energy rates when EPS is issued EPC: the EPC states, "Always check the date the certificate was issued, because fuel prices can increase over time...". The fuel prices given are averaged over the previous three years and across regions. EnerGuide: in the fuel library. Fuel cost is independent of rating. It is a communication tool to assist and provide to the homeowner perspective in prioritizing energy efficiency upgrades.
If consumption is shown on the label, are gas and electric presented separately?	Y	N/A	Y	Y	N	Y		
Does the label break-out energy use by system/component?	N	N	N	N	Y	N		E-Scale: the label does not break out by system/component but the rating is capable of doing so EPS: shown in accompanying report EPC: although the individual features and products contribute to the overall energy performance, there is no SAP rating for them individually; label shows breakout of light, heating, and hot water EnerGuide: technical report includes detailed information
Is energy use presented on the label as total consumption or per square unit?	total consumption	total consumption	total consumption	total consumption	per square meter	total consumption		
Does the label show separate information for space heating?	N	N	N	N	Y	N		EPS: shown in accompanying report EPC: indicates current and potential cost (not energy use) EnerGuide: in the report, not on the label
Does the label show separate information for hot water heating?	N	N	N	N	Y	N		E-Scale: the label does not separately note water heating but the rating does EPS: shown in accompanying report EPC: indicates current and potential cost (not energy use) EnerGuide: in the report, not on the label
Does the label show separate information for light?	N	N	N	N	Y	N		E-Scale: the label does not separately note energy use of light but the rating does EPC: indicates current and potential cost (not energy use) EnerGuide: in the report, not on the label

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Does the label show separate information for space cooling?	N	N	N	N	N	N		EPS: shown in an accompanying report E-Scale: the label does not separately not energy for space cooling but the rating does
Does the label show separate information for building shell values?	N	N	N	N	N	N		E-Scale: the label does not separately note building shell values but the rating does EnerGuide: in the report, not on the label
Does the label show separate information for appliances?	N	N	N	N	N	N		EPS: shown in an accompanying report E-Scale: the label does not separately not energy use of appliances but the rating does EnerGuide: in the report, not on the label
Is the label generated by one central system?	Y	N	N/A	N	N	N	N	E-Scale: DOE has ownership of this process ENERGY STAR: labels are provided by HERS raters throughout the country EPS: For new construction in Oregon, REM/Rate calculates an initial output; the Energy Trust of Oregon has developed a proprietary calculator that takes the outputs from REM/Rate and calculates the EPS. In Washington and elsewhere, Earth Advantage is using an online platform with the SIMPLE modeling engine. EPC: Domestic Energy Assessors generate the EPC EnerGuide: For the existing homes program ,the evaluator generates the report and label for each house and mails them to the homeowner directly. They have to keep a PDF copy of the report in their data base for QA and liability purposes. EPA-ED Method: Certificates are designed on local level. There is no general EU certificate available in EPA-ED. The EPA-ED method provides numeric values to be put on label.
How many labels have been applied to homes?	3,000	1,000,000	N/A	under 1,000		850,000		ENERGY STAR: in November 2009, the ENERGY STAR for New Homes program celebrated 1 million ENERGY STAR qualified homes built in the US. EPS: under 1,000 for new homes in Oregon; minimum of 6,300 in Washington over the next 18 months EPC: approximately 5,000 EPCs are generated per day
Recommended Energy Conservation Measures (Retrofits):								

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Is a list of recommended measures shown on the label?	N	N	N/A	N	N	N	N	** for all programs that include recommended measures, they are included in a separate report and not on the actual label E-Scale: REM/Rate can be used on existing homes and can deliver prioritized upgrades, but it is not automated and not included as part of the E-Scale ENERGY STAR HEY: when the homeowner prints the label from the online interface, a list of generic recommendations are included (recommended measures are not included if the user does not click "print these results") EPS: the effect of recommended measures is shown on the scale, but the measures are described in an accompanying report EPC: a recommendation is actually made only if it increases the SAP rating by at least 0.95 EnerGuide: in the report EPA-ED Method: Cost-effective recommendations for improvements are part of an Energy Performance Certificate; includes payback time
Is a list of recommended measures shown in an accompanying report?	N	N	N/A	Y	Y	Y	Y	The HERS software does not provide recommended upgrades. A rater can offer suggestions for improvement, independent of the HERS rating. ENERGY STAR HEY: a list of recommended improvements is generated from generic information entered by user EPS: program rates new homes; for the existing homes pilot, energy upgrades are prioritized based on the cost of the upgrades, with the lowest cost of upgrade having the highest priority EPA-ED Method: the report is generated separately from the Energy Performance Certificate. A homeowner can choose to have one or the other or both.
Are recommended measures prioritized?	N/A	N/A	N	Y	Y	Y		
Are recommended measures prioritized by their total cost?	N/A	N/A	N	Y	Y	N		EPS: the recommended energy upgrades are prioritized based on the cost of upgrades, with the lowest cost of upgrade having the highest priority EPC: improvement measures are prioritized based on cost of improvement (low cost measures, higher cost measures, further measures)
Are recommended measures prioritized by their total savings?	N/A	N/A	N	N	N	Y		EnerGuide: software prioritizes recommended measures based on energy savings
Are recommended measures prioritized by payback periods?	N/A	N/A	N	N	N	N		
Are recommended measures prioritized by savings:investment ratio?	N/A	N/A	N	N	N	N		
Are recommendations capped at a number of measures?	N/A	N/A	N	N	N	N		
Are recommendations capped at a total cost?	N/A	N/A	N	N	N	N		
Do all recommended measures fall within a specified payback period?	N/A	N/A	N/A	N/A	N/A	N/A		could not evaluate based on information provided

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Are anticipated costs ($) of the recommended measures shown on the label?	N/A	N/A	N	Y	N	N	Y	EPS: "lower-cost upgrades" are under $1,000; "higher-cost upgrades" are over $1,000; estimated cost ranges for upgrades are provided on the accompanying report EPA-ED Method: Proposed measures to reduce the energy consumption will be judged on investment costs, payback period, technical feasibility
Are anticipated energy bill savings ($) presented on the label?	N	N	Y	N	N	N		E-Scale: label shows current estimated energy use ENERGY STAR HEY: not a label, just an online output EPS: this is shown in an accompanying report EPC: only cost that is displayed is current and potential cost of lighting, heating, and hot water. Anticipated energy bill savings are presented in the accompanying report for each of the recommended measures.
Are predicted decreases in energy consumption shown on the label?	N	N	N	Depends	Y	N		EPS: if upgrades were recommended on an accompanying report, then the lowered energy and carbon usage levels associated are shown on the scale EnerGuide: shown in report EPA-ED Method: software calculates new energy consumption
Policy Issues:								
Is the program mandatory?	N	N	N	N	Y	N	Y	EPC: Energy Performance of Buildings Directive (EPBD) EPA-ED Method: According to the EPBD it will be mandatory for every owner to show an Energy Performance Certificate when selling, renting, or renovating the home. The EPA-ED could be used for this purpose.
Is the program voluntary?	Y	Y	Y	Y	N	Y	N	
If the program is mandatory, is it mandatory at time of sale?	N/A	N/A	N/A	N/A	Y	N/A	Y	EPC: the EPBD requires energy performance certificates for all buildings when constructed, sold, or leased EnerGuide: in some jurisdictions a label is required at time of sale EPA-ED Method: the EPBD requires energy performance certificates for all buildings when constructed, sold, or leased
Is a similar program available for commercial buildings?	N	Y	Y	N	Y	N		E-Scale: only for residential buildings ENERGY STAR: commercial buildings can earn the ENERGY STAR label ENERGY STAR HEY: ENERGY STAR Portfolio Manager EPC: Display Energy Certificate (DEC) for commercial buildings EnerGuide: there are other programs, but not a label
Was the program intended for new homes?	Y	Y	N	Y	Y	Y	Y	ENERGY STAR: looking specifically at ENERGY STAR for new homes
Was the program intended for existing homes?	N	N	Y	Y	Y	Y	Y	E-Scale: only for new homes. There have been requests for an E-Scale rating on existing homes and it can be adapted for existing homes. EPS: in EnergyTrust territory, EPSs are only issued for new construction. Existing homes will be added to the program after the modeling software is approved by EnergyTrust. Elsewhere, Earth Advantage is using EPS for existing homes.

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Training, Workforce, and Quality Assurance:								
Does the program require auditors to be professionally certified?	Y	Y	N/A	Y	Y	Y	Y	EPC: accredited domestic energy assessor (DEA) EnerGuide: must complete training in a number of fields related to residential energy efficiency and also conduct several home evaluations under the guidance of an instructor EPA-ED Method: The European directive (EPBD) states that a qualified and/or accredited expert whose independence can be guaranteed on the basis of objective criteria should carry out the process of calculating the energy performance of a building.
Does the program use RESNET training?	Y	Y	N/A	Y/N	N	N	N	EPS: The existing homes methodology utilized by Earth Advantage requires BPI certified analysts who are then trained to use the SIMPLE modeling tool. The EnergyTrust new homes program uses REM/Rate and therefore requires HERS raters.
Do professionals receive official certifications?	Y	Y	N/A	Y	Y	Y		EPC: to become a DEA, one must attain a level 3 Diploma in Domestic Energy Assessment (DipDEA)
Does the program accredit training programs or providers?	N	N	N/A	N	N	N		E-Scale: uses RESNET training ENERGY STAR: uses RESNET training EPC: there are a number of DipDEA awarding bodies, which each formulate their own training schemes in slightly different ways, although the end result should be the same
Does the program verify and approve audit protocols?	N	N	N/A	Y		Y		E-Scale: uses RESNET protocols ENERGY STAR: uses RESNET protocols EPS: uses EPS Diagnostic Survey and EPS Plus Audit Field Protocol, which outlines the preferred step-by-step method for inspecting a home, along with general timeframes for each portion of the inspection EnerGuide: the program authority develops all the admin and technical protocols
Does the program verify and approve software tools?	N	N	N/A	Y	Y	Y		E-Scale: uses RESNET-accredited software ENERGY STAR: uses RESNET-accredited software EPS: conducted extensive research during pilot to determine best software tool EPC: the SAP programs have been checked by BRE (Building Research Establishment) on behalf of the Department of Energy and Climate Change (DECC), Communities and Local Government (CLG), Scottish Building Standards (SBS), and the Department of Finance and Personnel Northern Ireland (DFPNI)

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Are inspections field-checked to ensure integrity of work?	Y	Y	N/A	Y	Y	Y		E-Scale: Quality Assurance Designee must independently field verify the accuracy of a minimum of 1% of each certified Rater's homes ENERGY STAR: on-site inspections provide a quick and reliable snapshot of the construction quality and program compliance of the program EPS: The Earth Advantage model is following the RESNET model of 1% of field work will be independently verified and 5% of online files will be checked for each EPS auditor EPC: this is only the case for EPCs for existing dwellings where a limited number of field tests might be undertaken EnerGuide: internal and external QA
Are a percentage of labels checked to ensure accurate assessments?	Y	Y	N/A	Y	Y	Y	Y	E-Scale: Quality Assurance Designee must independently verify internal consistency of a minimum of 10% of all building input files ENERGY STAR: data file reviews are used to assess accuracy and completeness of rater data file and confirm that modeling utilized worst-case EPS: currently all new homes files are checked. The existing homes model with SIMPLE is checking on 5% of files. EPC: the work done by the DEAs is checked periodically. It is unclear how many jobs are checked per year. EPA-ED Method: Data resulting from energy performance certificates have to be collected and evaluated regularly for quality control of the scheme. Additionally, these data provide information about the energy performance of the building stock in a certain region or member state.
Are there processes in place to ensure that labels are not counterfeit?	Y		N/A	Y	Y	Y		E-Scale: there is a unique registration number associated with each label, which correlates to the database EPS: there is a central database for existing homes with a unique identifier for each home and each label EPC: there are unique registration numbers held by Landmark EnerGuide: for new homes only
Data Gathering, Management, and Analysis:								
Is data gathered and held in a central database or repository?	Y	Y	N/A	Y	Y	Y	Y	ENERGY STAR: iSTAR - marginal data (house count only) EPS: for new homes in Oregon, the Energy Trust of Oregon has its own proprietary database that keeps all of the information about the EPS, trade allies, builders, amount of energy savings on a per-home basis, incentives paid to builders, etc. Earth Advantage has an online database that stores all EPS audit files and EPS auditor information. EPC: the Secretary of State has approved Landmark Information Group Limited as the keeper of the register EnerGuide: EnerGuide for Houses (EGH) database EPA_ED Method: (theoretically) In order to be able to use the collected data, they have to be accessible on a central level, and there have to be resources to evaluate these data.

	E-Scale (USA - DOE)	ENERGY STAR (USA - EPA)	ENERGY STAR HEY (USA - EPA)	EPS (Oregon)	EPC (UK)	EnerGuide (Canada)	EPA-ED Method (EU)	Comments/Explanations
Is all data made publicly available?	N	N	N	N	Y	N		E-Scale: house-specific information on any qualifying home is only available for the program administrators to access ENERGY STAR: only EPA and their support contractors have access to iSTAR. A subset of the information (i.e., builder data) is publicly available through energystar.gov. EPS: For new homes in Oregon, the Energy Trust of Oregon is the only group that has access to the database. For existing homes, Earth Advantage has set up an online database where regional program managers can access "their data" but only Earth Advantage admin can access all data EPC: the "Report Retrieval" page on the Landmark website allows anyone to retrieve the EPC for a home using the report reference number EnerGuide: information collected in the database can be used by internal program personnel and is only made available upon request
Has analysis of the program's impact been conducted with collected data?	Y	Y		Y	Y	Y		E-Scale: data collected on total annual energy saved, average annual energy saved, total annual energy cost saved, average annual energy cost saved, total annual CO2 saved, average annual CO2 saved, total annual SO2 saved, average annual SO2 saved, total annual NOX saved, and average annual NOX saved ENERGY STAR: last year, families living in ENERGY STAR homes saved more than $270 million on their utility bills, while avoiding greenhouse gas emissions equivalent to those from 370,000 vehicles. EPS: the EPS has only been around for about 1.5 years and have seen that 85% of builders are actually building at the ENERGY STAR level or above and are experiencing energy savings 15% higher than ENERGY STAR standards EPC: the impact assessment has not been published yet (work in progress)
Does any data analysis performed to identify outliers that might indicate fraud?	Y		N/A		Y	Y		E-Scale: not necessarily done with fraud in mind, but a basic review of home records is conducted to check for erroneous submissions EPC: audits of assessors is undertaken

Websites	
ENERGY STAR	http://www.energystar.gov
Natural Resources Canada (NRCan)	http://oee.nrcan.gc.ca/residential/personal/retrofit-homes/energy-advisors.cfm?attr=4
RESNET	http://www.resnet.us/about/resnet

Reports	
Adopting EnerGuide 80 as a Code Compliance Requirement for New Homes, June 2007	http://www.chba.ca/uploads/enviroment/r%20energuide80.pdf
EnerGuide for Houses Database Analysis, April 2001	http://creedac.mechanicalengineering.dal.ca/reports/pdfs/EGH-database.pdf
EnerGuide for Houses Energy Efficiency Evaluation Report	http://www.findacountryhome.com/images/energuide.pdf
Energy Performance Score 2008 Pilot Findings and Recommendations Report, August 2009	
Guide for the Use of the EPA-ED Method, September 2004	http://www.epa-ed.org
Notice of Approval of the methodology of calculation of the energy performance of buildings in England and Wales, September 2008	
REM/Rate Residential Energy Analysis and Rating Software Version 12.5 for Windows Users Guide, April 2008	http://www.archenergy.com/products/rem/rem_rate//rateman.pdf
Requirements for energy performance certificates (EPCs) when marketing commercial (non-domestic) properties for sale or let, October 2008	http://www.communities.gov.uk/documents/planningandbuilding/pdf/995136.pdf
The Government's Standard Assessment Procedure for Energy Ratings of Dwellings, 2005 Edition, Revision 3	http://projects.bre.co.uk/sap2005/pdf/sap2005_9-83.pdf

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