Updated Supermarket Model
Direction for SRA
November 19, 2014

Objective

This document provides all information on the revised benchmarking methodology for the Supermarket/Grocery Store model, which is to be updated on July 28, 2008. The benchmarking methodology described herein should be applied within both Portfolio Manager and Target Finder. As this is an existing model, full integration with the automated benchmarking services is essential. Also, EPA will need to review and approve a score change report to assess the impact of these changes prior to the July release.

Timeline

Final technical direction to SRA	March 27, 2008
EPA/SRA meeting to review model and direction	April 2, 2008
Score change report delivered to EPA	May 5, 2008
EPA approval of score change report	May 30, 2008
Final public release date	July 28, 2008

Sections

I. Attributes, definitions and default values 2
- Supermarket/Grocery Store definition 2
- List of required attributes 2
- List of optional attributes 4
- Attributes to be removed 5
- Default values 5

II. Model format and coefficients 5

III. Procedures to compute an energy performance rating 7
- Procedure for a building that contains one supermarket space only 7
- Procedure for a building that contains multiple supermarket spaces 7
- Procedure for a building that contains a supermarket and another primary space 8
- Procedure for a building that contains a supermarket and a secondary space 10
- Negative EUI predictions 11

IV. Eligibility requirements 11
- Eligibility to receive a performance rating 11
- Eligibility to earn a label 12

V. Consistency requirements 12

VI. Model testing and score change report 13

VII. Lookup table 16

I. Attributes, definitions and default values

The updated supermarket model will require ***seven*** attributes to be entered by users for collection. In addition, some elements which are currently collected in PM will now become optional, as they are no longer required for benchmarking. The following sections detail each of these attributes.

Supermarket/Grocery Store definition

The Supermarket/Grocery Store space type applies to facility space used for the retail sale of food and beverage products. It should not be used by restaurants, which are not eligible for a rating at this time. The total gross floor area should include all supporting functions such as kitchens and break rooms used by staff, storage areas (refrigerated and non-refrigerated), administrative areas, stairwells, atria, lobbies, etc.

List of required attributes

The following is a list of attributes required to receive a rating for supermarkets. ***This is not*** the same as the list of required attributes for the supermarket rating model that is currently being used in Portfolio Manager. Please note the following should also be updated in PM Help.

1. **Gross floor area**
   - *Definition*: The total gross floor area used for the retail sale of food and beverage products. The total gross floor area is measured between the principal exterior surfaces of the enclosing fixed walls and includes all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note the following:
     i. Existing atriums should only include the base floor area that it occupies.
     ii. Interstitial (plenum) space between floors should not be included in total.
     iii. Gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.
   - *Identical to*: This is identical the current supermarket attribute for floor area, with an updated definition for consistency with Retail, Office and the PM FAQs.
   - *In the Model*: The model uses the natural log of gross floor area (LN(Sqft)) to rate the energy performance of a supermarket.
2. **Weekly operating hours**
   - *Definition*: The number of hours per week that a facility is used, excluding hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "weekly operating hours" refers to the total weekly hours for the schedule most often followed.

- *Identical to*: This is identical to the current supermarket attribute of weekly operating hours.
- *In the Model*: The model uses the natural log of the weekly operating hours to rate the energy performance of a supermarket.

3. **Workers on main shift**
   - *Definition*: The average number of employees who occupy the facility during the main shift of a typical workday. This is not the total employee count or number of customers in a building during an entire 24 hour period but rather represents typical peak staffing level during the main shift. For example, in a supermarket if there are two daily 8 hour shifts of 15 workers each, the Workers on Main Shift value is 15.
   - *Identical to*: This is identical the current supermarket attribute of Main Shift Staffing, but the name has been changed and the definition has been updated to include a clarifying example. These changes make the attribute consistent with the Retail and Office spaces
   - *In the Model*: The model uses the natural log of the number of workers on main shift per 1,000 square foot (LN(WkrDen)) to rate the energy performance of a supermarket
4. **Number of walk-in refrigeration/freezer units**
   - *Definition*: Indicates the total number of large walk-in refrigeration or freezer units in use within the supermarket. This typically includes large refrigeration units located in the back of a supermarket in storage and receiving areas and used to store refrigerated goods.
   - *Identical to*: This is identical to the current supermarket attribute of Number of walk-in refrigeration/freezer units. The definition has been expanded slightly for consistency with the Retail space.
   - *In the Model*: The model uses the number of walk-in refrigeration and freezer cases per 1,000 square foot (WalkinDen) to rate the energy performance of supermarkets
5. **Presence of cooking facilities**
   - *Definition*: Does the supermarket use energy for commercial or institutional cooking or food serving on-site? This could include cooking facilities associated with bakeries, lunch counters, or other food service activities. This does not include employee lounges or galleys with food preparation equipment and/or vending machines.
   - *Identical to*: This should have the same yes/no value the user has entered for the current attribute of Food Preparation. However the name and definition have both been updated, and are more similar to the K-12 Attribute Cooking Facilities. ***Therefore this attribute is considered the same attribute as Cooking Facilities in the K-12 model, and should be mapped accordingly.***
   - *In the Model*: ***The model uses a variable called "cooking density" (CookDen) to rate the energy performance of a supermarket. This variable is equal to zero if the supermarket does not have cooking facilities; it is equal to 1,000/Gross Floor Area if the building does have cooking facilities.***

6. **Percent of the gross floor area that is heated**
    - *Definition*: This denotes the percent of gross floor area that is heated.
    - *Identical to*: The percent heated attribute under Retail Store. The user should select from a drop-menu, with options ranging in increments of 10 from 0 to 100 (i.e. 0, 10, 20, 30…)
    - *In the Model*: The model uses the product of heating degree days and the percent of the building that is heated in order to rate the energy performance of a supermarket.
        i. ***Note that a value of 10% is equal to 0.10 for the purposes of calculation.***
        ii. Note that Portfolio Manager should retrieve the actual, as-experienced HDD value for the 12 month period of interest, using the building's zip code.
7. **Percent of the gross floor area that is cooled**
    - *Definition*: This denotes the percent of gross floor area that is cooled.
    - *Identical to*: The percent cooled attribute under Retail Store. The user should select from a drop-menu, with options ranging in increments of 10 from 0 to 100 (i.e. 0, 10, 20, 30…)
    - *In the Model*: The model uses the product of cooling degree days and the percent of the building that is cooled in order to rate the energy performance of a supermarket.
        i. ***Note that a value of 10% is equal to 0.10 for the purposes of calculation.***
        ii. Note that Portfolio Manager should retrieve the actual, as-experienced CDD value for the 12 month period of interest, using the building's zip code.

<u>List of optional attributes</u>

These elements are no longer required for benchmarking. However, EPA has determined to retain them as optional elements, because they are already present in the tool**.** ***Please note these optional attributes should also be updated in PM Help***.

1. **Number of registers and/or personal computer**
    - *Definition*: The total number of electronic registers and personal computers used at the supermarket. This figure should include all cash registers that are used for conducting transactions and indicating to customers the amounts of individual sales. This number should also include computers that are used in managerial offices, break rooms, and/or storage areas.
    - *Identical to*: This attribute is identical to the current supermarket attribute number for number of cash registers/PCs. The definition has been modified slightly for consistency with the CBECS survey and the Retail space.
2. **Number of open and closed refrigeration/freezer cases**
    - *Definition*: The number of commercial refrigeration units (cases) used for the sale or storage of perishable goods. This includes display type

refrigerated open or closed cases and cabinets as well as display type freezer units typically found on the sales floor. Each case or cabinet section, typically 4 to 12 feet in length, should be considered 1 unit. Include those cases located inside and immediately adjacent to the facility. This should not include any refrigerated vending (soda) machines

- *Identical to:* This is identical to the current supermarket attribute of Number of open and closed refrigeration/freezer units. The definition has been expanded slightly for consistency with the Retail space.

Attributes to be removed

The following attribute should be removed from Portfolio Manager; it is no longer required to receive a rating and is not considered useful for management purposes. Please note this attributes should be ***removed*** from PM help.

1. **Number of Floors**

Default values

Default values should be available for most of the required attributes. Defaults are not required for optional element. The default values are listed in **Table 1.**

Table 1
Default Values for Required Attributes

Required Attribute	Default Value	Notes
Gross floor area	NA	Defaults for size are not permitted in any modeling equation
Weekly operating hours	105	Assign a value of 105 hours per week
Workers on main shift	1 worker per 1,000 square foot	Compute default value as: Workers on main shift = Gross Floor Area/1,000 Round to the nearest whole number
Number of walk-in refrigerator/freezer units	0.25 Walk-in units per 1,000 square foot	Compute default value as: Walk-in Units = 0.25*(Gross Floor Area/1,000) Round to the nearest whole number
Cooking facilities	Yes	Assign a value of 1 (yes) for cooking facilities
Percent Heated	100%	Assign a default value of 100% heated (i.e. in the model 100% = 1.0)
Percent Cooled	100%	Assign a default value of 100% cooled (i.e. in the model 100% = 1.0)

II. Model format and coefficients

The new Supermarket model variables and coefficients are summarized in **Table 2**. The new supermarket model is computed in a Source Energy Intensity (Source EUI) format, similar to the Office and Retail models released on 10/1/2007. The lookup table is computed and presented in terms of energy efficiency ratios: Actual Source Energy/Predicted Source Energy. The lookup table is presented in Section VII.

Table 2 Summary of Coefficients and Centering Terms for Supermarket Benchmark Model			
Variable Name	**Variable Definition**	**Variable Coefficient**	**Reference Centering Value**
(Constant)	Regression intercept	581.1	NA
LNWkrDen	Natural Log of the Number of Workers on Main Shift per 1,000 square foot	115.6	-0.1084
LNWkhrs	Natural Log of the Weekly Operating Hours Per Week	125.8	4.657
LNSqFt	Natural Log of the Gross Floor Area	84.97	9.679
HDDxPH	Heating Degree Days times Percent Heated	0.0326	3510
CDDxPC	Cooling Degree Days times Percent Cooled	0.0947	1219
WalkinDen	Walk-in Refrigeration/Freezer Units per 1,000 square foot	794.4	0.2345
COOKDen	Cooking Density (0 if no cooking, or 1,000/Gross Floor Area if cooking)	902.8	0.0254
Note: *The Heating Degree Days and Cooling degree days should be the actual as experienced HDD and CDD for the 12 month period that is being rated. They should* ***not*** *be the 30-year average values.*			

Note that the variables presented in **Table 2** are combined to compute the predicted Source Energy Intensity according to the following equation:

Predicted Source EUI in kBtu/ft^2 = 581.1
+ 115.6 * [LNWkrDen - (-0.1084)]
+ 125.8 * [LNWkhrs - (4.657)]
+ 84.97 * [LNSqFt - (9.679)]
+ 0.0326 * [HDDxPH - (3510)]
+ 0.0947 * [CDDxPC - (1219)]
+ 794.4 * [WalkinDen - (0.2345)]
+ 902.8 * [COOKDen - (0.0254)]

Where:

- Source EUI = Source Energy / Gross Floor Area
- LNWkrDen = LN(1,000*Number of Workers on Main Shift / Gross Floor Area)
- LNWkhrs = LN(Weekly Operating Hours)
- LNSqFt = LN(Gross Floor Area)
- HDDxPH = Heating Degree Days times Percent Heated
  - The percent heated should be expressed as a fraction between 0 and 1
- CDDxPC = Cooling Degree Days times Percent Cooled
  - The percent cooled should be expressed as a fraction between 0 and 1
- WalkinDen =
  - 1,000*(Number of Walk-in Refrigerator/Freezer cases) / Gross Floor Area
- CookDen =
  - 0 if the user has selected “No” for Presence of Cooking Facilities
  - 1,000/Gross Floor Area if the user has selected “Yes” for Presence of Cooking Facilities.

III. Procedures to compute an energy performance rating

The following procedures should be used to compute energy performance ratings for buildings with supermarkets. These procedures should be the same as those used for both the Retail and Office models.

Procedure for a building that contains one supermarket space only

1. Calculate the predicted Source EUI in kBtu/ft^2 using the equation presented in Section II
2. Calculate the total Predicted Source Energy
    a. Predicted Source Energy = predicted source EUI * gross floor area
    b. Floor area in this equation should be the same time weighted floor area as was used to generate the predicted Source EUI.
3. Compute the Actual Source Energy from the metered data.
    a. This total should be equal to 12 months worth of energy data.
    b. This actual value should ***not*** be weather normalized
    c. This total should reflect the source energy conversion factors introduced on 10/1/2007, documented at:
    http://www.energystar.gov/ia/business/evaluate_performance/site_source.pdf
4. Calculate the energy efficiency ratio
    a. Efficiency ratio = Actual Source Energy / Predicted Source Energy
5. Lookup the energy efficiency in the lookup table
    a. Refer to Section VII for direction on how the lookup table should be read.

Procedure for a building that contains multiple supermarket spaces

1. Combine all supermarket spaces into a single space. Attributes should be combined as follows:
    a. Gross floor area: the square foot should be added across all supermarket spaces.
    b. Weekly operating hours: The total number of hours should be an average ***weighted by floor area***.
        i. For example, if there are two spaces: one is 10,000 square foot and open 60 hours per week; the other is 20,000 square foot and open 168 hours per week. The average weekly operating hours should be: 60*(10,000/30,000) + 168*(20,000/30000) = 132 hours per week.
        ii. For example, if there are two spaces: one is 10,000 square foot and open 60 hours per week, the other is 20,000 square foot and open 60 hours per week. The average weekly operating hours should be 60 hours per week.
    c. Workers on main shift: The total workers on main shift should be added across all supermarket spaces.
    d. Number of walk-in refrigerator/freezer units: The total number of walk-in refrigerator/freezer units should be added across all supermarket spaces.

e. Presence of Cooking Facilities: If ***any*** of the supermarket spaces have entered yes, then the answer to this question should be ***yes***.
f. Percent Heated: The average percent heated should be computed across all supermarket spaces and ***weighted by floor area***.
    i. For example, if there are two spaces: one is 10,000 square foot and 50% heated; the other is 20,000 square foot and 100% heated. The average percent heated should be: 0.5*(10,000/30,000) + 1.0*(20,000/30,000) = 0.833. The combined space is 83.3% heated.
g. Percent Cooled: The average percent cooled should be computed across all supermarket spaces and ***weighted by floor area***.
    i. For example, if there are two spaces: one is 10,000 square foot and 80% cooled; the other is 20,000 square foot and 100% cooled. The average percent cooled should be: 0.8*(10,000/30,000) + 1.0*(20,000/30,000) = 0.933. The combined space is 93.3% cooled.

2. Compute the necessary model variables across the combined supermarket space
    a. For example, compute LNWkrDen as the Natural Log of the Number of Workers on Main Shift (from step 1.c) per 1,000 square foot (using the total gross floor area from step 1.a)
3. Compute the predicted Source EUI in kBtu/ft^2 according the equation presented in Section II; use the values obtained in Steps 1 and 2 shown above.
4. Calculate the total Predicted Source Energy
    a. Predicted Source Energy = predicted source EUI * gross floor area
    b. Floor area in this equation should be the same time weighted floor area as was used to generate the predicted Source EUI.
5. Compute the Actual Source Energy from the metered data.
    a. This total should be equal to 12 months worth of energy data.
    b. This actual value should ***not*** be weather normalized
    c. This total should reflect the source energy conversion factors introduced on 10/1/2007, documented at:
    http://www.energystar.gov/ia/business/evaluate_performance/site_source.pdf
6. Calculate the energy efficiency ratio
    a. Efficiency ratio = Actual Source Energy / Predicted Source Energy
7. Lookup the energy efficiency in the lookup table
    a. Refer to Section VII for direction on how the lookup table should be read.

<u>Procedure for a building that contains a supermarket and another primary space</u>

1. Calculate the predicted Source EUI in kBtu/ft^2 for the supermarket, using the equation presented in Section II.
2. Calculate the Predicted Source Energy for the supermarket
    a. Predicted Source Energy = predicted source EUI * floor area
    b. Floor area in this equation should be the same time weighted floor area as was used to generate the predicted Source EUI.
3. Calculate the total Predicted Source Energy for the other primary space

a. For a Retail, Office, Court, or Bank/Financial space this will require computing a predicted Source EUI and then using the time weighted floor area to translate the predicted EUI into a Predicted Source Energy
b. For other primary spaces, this will require computing a predicted LN(Source Energy), and use the exponential function, *e*, to convert the prediction into units of Source Energy
c. ***Note that the supermarket space cannot be combined with Wastewater Treatment Plan or Hospital***.

4. Calculate the Predicted Source Energy for the building by adding together the predicted source energy for each space, obtained in Steps 2 and 3.
5. Create a combined lookup table for the building. There are two options for this step. They are both presented below and they are mathematically equivalent. SRA should determine the method that allows for the most streamlined computation within Portfolio Manager and Target Finder.
   a. Option A – Add Across in Units of Source Energy
      i. For each space with a LN(Source Energy) model format (e.g. school), PM already computes a unique lookup table in units of Source Energy.
      ii. For each space with a Source EUI model format (e.g. supermarket, office), there is a lookup table of energy efficiency ratios. This table can be converted into units of source energy by multiplying each ratio by the predicted energy intensity and the time weighted floor space of the building. **Table 3** presents example calculations to convert the efficiency ratios into Source Energy values for both the supermarket and office space types.
      iii. The combined lookup table adds across the source energy at each score. **Table 3** illustrates an example combined source energy calculation for an example building that is part office and part supermarket.

Table 3
Example Ratings for a Combined Lookup Table Option A – in Source Energy (kBtu)

Rating	Supermarket Space		Office Space		Combined Source Energy
	Ratio	Source Energy (kBtu)	Ratio	Source Energy (kBtu)	
95	0.6236	22,823,760	0.435548	4,355,480	27,179,240
75	0.8086	29,594,760	0.691894	6,918,940	36513,700
40	1.0304	37,712,640	1.041511	10,415,110	48,127,750

Note
- For this example the supermarket has a predicted EUI of 610 kBtu/ft^2 and a gross floor area of 60,000 ft^2
- For this example the office has a predicted EUI of 200 kBtu/ft^2 and a gross floor area of 50,000 ft^2

   b. *Option B – Combined Lookup Table of Efficiency Ratios* (only available for spaces with EUI models)
      i. For space types that have an EUI based format, Option A is mathematically identical to creating a combined lookup table of energy efficiency ratios where the ratios at each rating value are

added together ***and weighted by the percent of the predicted source energy***

ii. For the example in **Table 3** (above): the predicted source energy for the supermarket is equal to: 60,000*610 = 36,600,000 kBtu. The source energy prediction for the office is equal to: 50,000*200 = 10,000,000 kBtu. Hence, the total predicted source energy is equal to: 36,600,000 + 10,000,000 = 46,600,000 kBtu.

iii. For the example in **Table 3**, the supermarket space accounts for 78.54% of the total source energy prediction (36,600,000/46,600,000); the office space accounts for 21.46% of the total source energy prediction (10,000,000/46,600,000).

iv. **Table 4** presents the lookup table values for selected ratings for the same example building as in **Table 3**, but in energy efficiency ratios rather than source energy units.

Table 4
Example Ratings for a Combined Lookup Table Option B – in Efficiency Ratios

Rating	Supermarket Space		Office Space		Combined Efficiency Ratio
	Ratio	Percent of total source prediction	Ratio	Percent of total source prediction	
95	0.6236	78.54%	0.435548	21.46%	0.5832
75	0.8086	78.54%	0.691894	21.46%	0.7836
40	1.0304	78.54%	1.041511	21.46%	1.0328

Note
- For this example the supermarket has a predicted EUI of 610 kBtu/ft^2 and a gross floor area of 60,000 ft^2
- For this example the office has a predicted EUI of 200 kBtu/ft^2 and a gross floor area of 50,000 ft^2

6. Calculate the Actual Source Energy for the building
   a. This total should be equal to 12 months worth of energy data.
   b. This actual value should ***not*** be weather normalized
   c. This total should reflect the source energy conversion factors introduced on 10/1/2007, documented at:
   http://www.energystar.gov/ia/business/evaluate_performance/site_source.pdf
7. Look up the building rating in the lookup table created in Step 5
   a. For ***Option A***: Actual Source Energy for the building can be found directly in the table.
   b. For ***Option B***:
      i. Compute the energy efficiency ratio for the building. The energy efficiency ratio is the actual source energy (from Step 6) divided by the predicted source energy (from Step 4).
      ii. Lookup the efficiency ratio in the lookup table.

Procedure for a building that contains a supermarket and a secondary space

The methodology for incorporating a secondary space (i.e. Computer Data Center, Pool, and Parking Garage) with a supermarket should follow the standard procedures instituted on October 1, 2007.

Each secondary space has a predicted source energy use (or energy use per square foot). This prediction for the secondary space should be ***subtracted*** from the actual source energy consumption prior to computing and looking up the efficiency ratio (or, actual source energy, depending on the building) in the lookup table.

Per discussions prior to the October 1, 2007 release date, this methodology, on rare occasions can yield a negative value for the actual source energy consumption. This is not expected to be common, especially for a supermarket space. However, it is possible, especially in a theoretical net zero building, or a building that is not connected to the grid. If a negative value is obtained for the actual source energy, the building should be assigned an actual source energy value of zero, and therefore the building should receive ***an energy performance rating of 100***. SRA should maintain a list of these buildings and their operating characteristics, and present this list to EPA on a quarterly basis.

Negative EUI predictions

With the methodology of predicted Source EUI, it is possible that a supermarket could receive a negative prediction. This is not expected and would only occur for an atypical combination of space attributes. If this occurs, Portfolio Manager should be programmed to assign a value of 1 kBtu/ft^2 for the Source EUI, and the ***building should receive N/A as its rating***. The NA message should read: The combination of space attributes falls outside the expected range for supermarkets. SRA should maintain a record of any buildings that fall into this category, and present a list of these buildings to EPA on a quarterly basis. This list should include building ID, in addition to energy information and operating characteristics.

IV. Eligibility requirements

As with other benchmarking models there are two sets of eligibility requirements associated with the supermarket model: 1) requirements for receiving a rating, and 2) requirements for earning the label.

Eligibility to receive a performance rating

All three conditions must be met for the supermarket space within a building in order for that building to earn an energy performance rating:

1. Gross floor area must be at least 5,000 square foot. (i.e. floor area >= 5,000)
2. The weekly operating hours must be at least 30 but cannot exceed 168
   (i.e. 30 hrs/week <= Weekly Operating Hours <=168)
3. There must be at least one worker (i.e. Workers on Main Shift >=1)

These three conditions should be applied one time across all supermarket space within a building. In other words, all of the supermarket spaces should be added together to create a single supermarket space. ***The eligibility flags are applied to the combined supermarket space.*** Direction for combining attributes is described above, as Step 1 in the *Procedure for a building that contains multiple supermarket spaces*.

Note that there are ***no requirements for refrigeration, as in the current model***. If the building does not meet all three requirements noted above, the building should receive an "N/A" as its rating.

Eligibility to earn a label

The following three conditions are considered eligibility flags for the purpose of applying the label. These should be applied to the supermarket space within any building applying for the label. If a label applicant falls outside of these ranges, they should be required to provide an explanation. ***Note that due to the change in required attributes, there is no longer an eligibility flag for the number of PCs/Registers. Also, due to the change in refrigeration there is a new flag for walk-in refrigeration. This new flag replaces the old flag on refrigeration.***

1. Weekly Operating Hours cannot be less than 40 Hours per week (Hours <40)
2. Workers on Main Shift cannot be:
    a. Less than 0.3 per 1,000 square foot (Workers < 0.3)
    b. Greater than 2.3 per 1,000 square foot (Workers > 2.3)
3. Walk in Density cannot be:
    a. Less than 0.06 units per 1,000 square foot (WalkinDen <0.06)
    b. Greater than 0.5 units per 1,000 square foot (WalkinDen > 0.5)

The following condition should be checked if a building is classified as a supermarket (***i.e. if the supermarket space constitutes more than 50% of the total***).

1. Source Energy Use Intensity (EUI) cannot be:
    a. Less than 93 kBtu/ft^2 (Source EUI <93)
    b. Great than 926 kBtu/ft^2 (Source EUI >926)

V. Consistency requirements

This document has been structured to detail the calculation requirements for benchmarking the new model within Portfolio Manager. This does not cover an exhaustive list of all places where these changes will apply. SRA will be expected to update the following areas of the tool and the web accordingly.

1. Portfolio Manager and Target Finder
2. Portfolio Manager/Target Finder Help Sections
3. Automated benchmarking services
4. Energystar.gov web content on space requirements and eligibility rules (for example, the list of required elements at:

http://www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_space_types#supermarket

These updates will also include the eligibility criteria at:

http://www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_eligibility

If SRA identifies areas of the website, help sections, or portions of the tools that will require additional or new language and content, then EPA will work with SRA to develop appropriate content.

VI. Model testing and score change report

EPA will require a score change report in order to test the new model and to prepare our market sector teams for the expected rating changes. This score change report should be similar to the report created for the October 1, 2007 changes. **Table 5** contains a list of elements which should appear as column headings in the report. This list is constructed from those elements that were included in the score change report(s) for the October 2007 releases. However, some items have been added/removed to make this report as valuable as possible (e.g. the total predicted source energy (kBtu) has been added, and the hospital attribute columns have been removed).

It is EPA's intention that the information contained in this report will provide all required fields so that the ratings can be completely replicated. ***If SRA has any questions or identifies any missing elements, they should alert EPA prior to generating the report.*** This way, the report should be complete the first time it is created.

The sample should be drawn to include all buildings that:

1. Have a rating
2. Are not labeled "Test" or "Sample
3. Are not associated with a Test Service Provider, or owned by EPA or its contractors
4. Have at least one space designated as Supermarket. ***Please note this is any building that has a supermarket space, regardless of size of that space. Even if the supermarket space is only 10% of the building, EPA wants that observation included. All buildings with supermarkets will be impacted by these changes.***

In addition, please note the following:

1. SRA should determine whether it is best to pull the report from the last monthly export or the live tool. Please note
    a. It is acceptable to pull this report from the last monthly export; it does not have to be run off the live server, as it is only an approximation of the impacts. ***However, please note that if some elements require data that is not saved in the monthly export, SRA must take all necessary precautions to ensure that the pull correctly matches up data from the two sources.***
    b. If SRA pulls from the live tool, a procedure should be in place to ensure that the correct data can be captured and updated in the event that changes or modifications are made to the data pull. Although EPA and SRA will take all precautions to eliminate the need for a second data pull, one may be necessary if elements are missing or reported incorrectly or of EPA adds a requirement.

   c. ***Whichever method SRA chooses, SRA should inform EPA of any potential issues or limitations.***
2. All numbers should be displayed/stored as numbers ***not*** as text (strings)
3. Please provide units with each column that contains a number (e.g. kBtu, feet, percent).
4. All yes/no variables (for example Cooking) should be displayed as either 0 or 1 (i.e. 0 for "no" and 1 for "yes"). Please do not display these as coefficient values or as text values.
5. All attribute values (including gross floor area) should be presented as the time-weighted attribute value that is used to predict the energy consumption for the building.
   a. Attribute values should be the value the user has entered. For example, if the user has entered 50 workers on the main shift, the report should contain a value of 50. The report should ***not contain*** the worker density, or any other interim calculation.
6. The attribute values for non-supermarket spaces (e.g. upscale hotel) should only be included if the sample contains a building with that space (e.g. if a there are no buildings in the sample that contain k-12 school spaces, then there is no need for any k-12 attribute columns). ***For this reason, there should be no need for any Hospital or Wastewater attribute columns as neither of these spaces can be combined with a supermarket.***
7. For the Office/Bank/Court spaces (if needed) please report the Percent Heated/Cooled value to be used in the equation. For example, if the building is greater than 50% heated, this value should be 1.0 (i.e. 100%). ***Again, it is always more useful for EPA to have numbers, not text.***

Table 5 Attributes required for Supermarket Score Change Report			
General Buliding Information	**Supermarket Information**	**Other Primary Spaces (if needed)**	**Other Primary Spaces (if needed)**
Building ID	SUPERMARKET_CASES	BANK_FLOOR_AREA	MEDOFFICE_HOURS
Old Score	SUPERMARKET_FLOORS	BANK_HOURS	MEDOFFICE_WORKERS
New Score	SUPERMARKET_FLOOR_SPACE	BANK_PCS	MIDSCALE_WFB_FLOOR_SPACE
Delta Score	SUPERMARKET_FOOD_PREP	BANK_WORKERS	MIDSCALE_WFB_ROOMS
ZIP Code	SUPERMARKET_HOURS	Bank_Percent Heated	MIDSCALE_WOFB_FLOOR_SPACE
Total Sq Ft (w/o Parking)	SUPERMARKET_PCS	Bank_Percent Cooled	MIDSCALE_WOFB_ROOMS
Total Sq Ft (w/Parking)	SUPERMARKET_STAFFING	COURTHOUSE_FLOOR_SPACE	OFFICE_FLOOR_SPACE
Building Type	SUPERMARKET_WALKIN	COURTHOUSE_PCS	OFFICE_HOURS
Label (Y/N)	**Secondary Space Information (if needed)**	COURTHOUSE_HOURS	OFFICE_PCS
Label Year(s)	CDC_FLOOR_SPACE	COURTHOUSE_WORKERS	OFFICE_WORKERS
Total Site Energy (kBtu)	CDC_HOURS	Court_Percent Heated	Office_Percent Heated
Total Source Energy (kBtu)	OTHER_FLOOR_SPACE	Court_Percent Cooled	Office_Percent Cooled
Weather Normalized Source Energy (kBtu)	OTHER_HOURS	DORM_AC	UPSCALE_FLOOR_SPACE
Secondary Space Source Energy (kBtu)	OTHER_PCS	DORM_FLOOR_SPACE	UPSCALE_FOOD_PREP
Predicted Source Energy (kBtu)	OTHER_WORKERS	DORM_HEATED	UPSCALE_ROOMS
CDD_Actual	PARKING_ENCLOSED	DORM_ROOMS	UPUPSCALE_FLOOR_SPACE
HDD_Actual	PARKING_FLOOR_SPACE	ECONOMY_FLOOR_SPACE	UPUPSCALE_ROOMS
CDD_30YrAvg	PARKING_HOURS	ECONOMY_FOOD_PREP	UPUPSCALE FOOD_PREP YN
HDD_30YrAvg	PARKING_NONENCLOSED	ECONOMY_ROOMS	WAREHOUSE_REFRIG_AC
Number of Secondary spaces	PARKING_OPEN	ECONOMY LAUNDRY YN	WAREHOUSE_REFRIG_COOLERS
Number of Primary spaces	POOL_FLOOR_SPACE	K12_AC	WAREHOUSE_REFRIG_FLOOR_SPACE
Ownership Information	POOL_MONTHS	K12_COOKING	WAREHOUSE_REFRIG_HEATED
BLDG_OWNER_NAME	POOL_SIZE	K12_FLOOR_SPACE	WAREHOUSE_REFRIG_HOURS
PM_SURVEY_ORG_NAME	**Other Primary Spaces (if needed)**	K12_HEATED	WAREHOUSE_REFRIG_LIGHTING
BDA_USERID	Retail_Floor_Space	K12_HOURS	WAREHOUSE_REFRIG_WORKERS
BDA_NAME	Retail_Hours	K12_MONTHS	WAREHOUSE_UNREFRIG_AC
BDA_EMAIL	Retail_Workers	K12_PCS	WAREHOUSE_UNREFRIG_COOLERS
LABEL_OWNER_ORG_NAME	Retail_PCs	K12_STUDENTS	WAREHOUSE_UNREFRIG_FLOOR_SPACE
LABEL_PROPMGR_NAME	Retail_Registers	K12_VENTILATED	WAREHOUSE_UNREFRIG_HEATED
	Retail_WalkIn	MEDOFFICE_AC	WAREHOUSE_UNREFRIG_LIGHTING
	Retail_OpenClosedCases	MEDOFFICE_FLOOR_SPACE	WAREHOUSE_UNREFRIG_WORKERS
	Retail_Percent_Heated	MEDOFFICE_HEATED	WAREHOUSE_UNREFRIG_HOURS
	Retail_Percent_Cooled		

VII. Lookup table

Table 6 presents the lookup table for the new Supermarket benchmarking model. This table lists energy efficiency ratios. It should be read as follows:

- If the ratio is less than 0.4919, the building should receive a 100.
- If the ratio is greater than or equal to 0.4919 and less than 0.5359, the building should receive a 99.
- If the ratio is greater than or equal to 0.5359 and less than 0.5653, the building should receive a 98.
- If the ratio is greater than or equal to 1.5631 and less than 1.6580, the building should receive a 2.
- If the ratio is greater than or equal to 1.6580, the building should receive a 1.

Table 6 Supermarket Lookup Table						
Rating	**Cumulative Percent**	**Ratio**		**Rating**	**Cumulative Percent**	**Ratio**
100	0%	0.4919		50	50%	0.9657
99	1%	0.5359		49	51%	0.9719
98	2%	0.5653		48	52%	0.9782
97	3%	0.5881		47	53%	0.9846
96	4%	0.6071		46	54%	0.9909
95	5%	0.6236		45	55%	0.9974
94	6%	0.6384		44	56%	1.0039
93	7%	0.6518		43	57%	1.0104
92	8%	0.6641		42	58%	1.0170
91	9%	0.6756		41	59%	1.0237
90	10%	0.6865		40	60%	1.0304
89	11%	0.6967		39	61%	1.0372
88	12%	0.7065		38	62%	1.0441
87	13%	0.7158		37	63%	1.0511
86	14%	0.7248		36	64%	1.0582
85	15%	0.7334		35	65%	1.0654
84	16%	0.7418		34	66%	1.0728
83	17%	0.7499		33	67%	1.0802
82	18%	0.7578		32	68%	1.0878
81	19%	0.7655		31	69%	1.0955
80	20%	0.7730		30	70%	1.1034
79	21%	0.7804		29	71%	1.1114
78	22%	0.7876		28	72%	1.1196
77	23%	0.7947		27	73%	1.1280
76	24%	0.8017		26	74%	1.1367
75	25%	0.8086		25	75%	1.1455
74	26%	0.8153		24	76%	1.1546
73	27%	0.8220		23	77%	1.1640
72	28%	0.8286		22	78%	1.1737
71	29%	0.8351		21	79%	1.1837
70	30%	0.8416		20	80%	1.1941
69	31%	0.8480		19	81%	1.2048
68	32%	0.8544		18	82%	1.2161
67	33%	0.8607		17	83%	1.2278
66	34%	0.8670		16	84%	1.2401
65	35%	0.8732		15	85%	1.2530
64	36%	0.8794		14	86%	1.2667
63	37%	0.8856		13	87%	1.2813
62	38%	0.8918		12	88%	1.2968
61	39%	0.8979		11	89%	1.3135
60	40%	0.9041		10	90%	1.3317
59	41%	0.9102		9	91%	1.3516
58	42%	0.9163		8	92%	1.3737
57	43%	0.9225		7	93%	1.3986
56	44%	0.9286		6	94%	1.4275
55	45%	0.9347		5	95%	1.4618
54	46%	0.9409		4	96%	1.5048
53	47%	0.9470		3	97%	1.5631
52	48%	0.9532		2	98%	1.6580
51	49%	0.9594		1	99%	>1.6580