EE 8: ENCOURAGE INSTALLATION OF ENERGY STAR® APPLIANCES

Summary

Issue:
Home appliances, such as refrigerators, freezers, dishwashers and clothes washers, are a significant contributor to building energy consumption. Energy Star® appliances are more efficient, and they are readily available.

Recommendation:
Require owners of buildings and apartments undertaking kitchen and/or laundry facility construction to either purchase Energy Star® appliances or undertake alternate energy-saving measures.

Proposed Legislation, Rule or Study

Amendments to the New York City Building Code:

Amend Chapter 13 to include a new Section 1302 as follows:

SECTION BC 1302

ENERGY EFFICIENT APPLIANCES

1302.1 Definitions. The following words and terms shall, for the purposes of this Chapter and as used elsewhere in this code, have the meanings shown herein.

LARGE HOUSEHOLD APPLIANCE. Any refrigerator, freezer, dishwasher or clothes washer.

ENERGY CONSERVATION OBJECTIVE. The aggregate difference between the maximum energy consumption permitted under federal law for the expected large household appliances and the maximum energy consumption of the expected large household appliances permitted under Energy Star®.

ENERGY STAR®. A designation and/or labeling indicating that a product meets the energy efficiency standards set forth by the United States Environmental Protection Agency and the United States Department of Energy for compliance with the Energy Star® program.

EXPECTED LARGE HOUSEHOLD APPLIANCE. The number and type of large household appliances typically expected to be found in any building classified in occupancy groups R-1, R-2 or R-3, or any dwelling unit within such building, to be determined based on criteria established by the department.

1302.2 Calculation of the Energy Conservation Objective. The department shall calculate the energy conservation objective and update it every two years thereafter, beginning on the second anniversary of the effective date of the local law that added this section. The energy conservation objective shall be specified in terms of the estimated total consumption of energy, which may be specified in units of energy or its equivalent cost.

1302.3 Appliance or other energy savings. Any construction, alteration or addition of a kitchen in a building classified in occupancy groups R-1, R-2 or R-3, or any dwelling unit within such building, that requires a permit from the department shall achieve the energy conservation objective. The energy conservation objective may be satisfied by either:

1. the installation of large household appliances certified as Energy Star® for all large household appliances in the applicable kitchen or kitchens of such building or dwelling unit; or

2. any other method or combination of methods that will achieve the energy conservation objective as demonstrated through energy modeling methodologies adopted by the department that are distinct from the energy modeling methodology required to comply with Section 1301.1.1, provided that such energy modeling...
methodology incorporates the applicable testing procedures set forth in title 42, section 6293 of the United States Code.

Exceptions:

1. Any building or dwelling unit that has received a permit subject to this section within a five (5) year period prior to submitting an application for a new permit.

2. If the percentage aggregate difference between the maximum energy consumption permitted under federal law for the expected large household appliances and the large household appliances is less than 20 percent.

3. Any large household appliance shall be excluded from the calculation of the energy conservation objective if:
   a. There is no Energy Star® certified large household appliance manufactured that would be of an appropriate size for installation in a building or dwelling unit such that the movement of walls or fixtures would not be necessary to create sufficient space for such large household appliance.
   b. Such large household appliance was purchased within 5 years of the permit application.

4. The commissioner may exempt any building or dwelling unit from the provisions of this section upon a determination of undue hardship.

Supporting Information

Issue – Expanded
Appliances consume over 40% of the energy in New York residential buildings. Since 1992, the U.S. Environmental Protection Agency and U.S. Department of Energy have certified appliances as Energy Star® if they are significantly more energy-efficient than required under federal law.

In a building where plug loads represent a large portion of total energy consumption, reductions in appliance energy use could result in significant energy savings. Even in buildings that have a smaller proportion of unregulated loads, installing Energy Star appliances is a simple, low-cost way to achieve reductions in energy use and cost, water use, and carbon emissions.

Under this proposal, in accordance with federal law, buildings would have the option of either installing Energy Star® appliances or undertaking other retrofit measures that would achieve equivalent energy savings.

Environmental & Health Benefits
Installing appliances that have the Energy Star® label or comply with the criteria to achieve Energy Star® will result in reduced energy consumption and cost, reduced carbon emissions, and process water savings (depending on the type of appliance). Not only will energy consumption drop substantially as old, inefficient appliances are eliminated, but the summer peak load will be reduced.

While the actual energy savings will vary by building and appliance type, LEED contemplates reductions in total building energy use of 5% or greater from improved appliance efficiency.

This proposal was found to have a low, positive impact environmental impact per building and to impact a large number of buildings. It was thus given an environmental score of 2.

This proposal was found to have no significant positive health impact.

Cost & Savings
As described in the Executive Summary, Bovis Lend Lease prepared cost estimates for each Task Force proposal in the context of well-defined construction projects in specific buildings. Where possible, members of the Technical Committees prepared savings estimates for some of these projects and buildings. These cost and savings estimates are presented in the February 1st draft version of Appendix A. The innate uncertainty in how construction and operation will vary from one building to another, the complexity of the Task Force proposals, and the wide range of applications in which the proposals may be realized mean these figures are truly estimates.

This proposal is not expected to have any significant impact on capital costs. This proposal was also estimated to generate financial savings that will pay for the capital costs in less than three years depending on the building type.

Precedents
The California Building Code and at least one proposed model code contain provisions analogous to this Task Force recommendation. The California Green Building Standards Code requires buildings to either follow a prescriptive that...
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specifies Energy Star® equipment, or follow a performance path that does not specify such equipment. Likewise, proposed ASHRAE Standard 189P follows this same model, requiring Energy Star® equipment under a prescriptive path, while also offering a performance path without the requirement.

LEED
Adherence to this provision could help a project achieve LEED points under almost all of the various LEED rating systems. Specifically, Energy Star appliances could help a project achieve the following credits: LEED for Homes EAc9: Appliances, LEED for Schools WEc4: Process Water Use Reduction, LEED for Existing Buildings MRc2.1: Sustainable Purchasing - Durable Goods, LEED for Commercial Interiors EAc1.4: Optimize Energy Performance, Equipment and Appliances. Energy Star appliances are also referred to in LEED systems that are currently in development, like LEED for Healthcare WEc4: Process Water and EAc7: Medical and Process Equipment Efficiency.

Some of these credits specifically require the use of appliances and equipment with the Energy Star label. In the cases where it is not required, a performance target is established that could be met either by products with the Energy Star label or products with equivalent performance efficiency.

Although they are not specifically cited in the Reference Guides, Credit Interpretation Requests have established that under the LEED for New Construction rating system, Energy Star appliances can contribute to a potential Innovation credit (for LEED-NC 2.1) or can contribute to EAc1 using the Exception Calculation Method (LEED-NC 2.2).

Implementation & Market Availability
Energy Star® appliances are readily available on the market.

ENDNOTES:

1 New York State Energy Research and Development Authority, Energy efficiency and renewable energy resource development potential in New York state, Vol. 5, Appendices 5-12, Table 5.12.4 (2003). The breakdown is as follows: refrigeration (20%), electronic equipment (11%), and clothes washing (washer and dryer) (11%). “Electronic equipment” consists of televisions, videocassette recorders, microwaves, stereos, computers, and laser printers.

2 Under a LEED-NC 2.1 Credit Interpretation Request, projects can receive an Innovation Credit for Energy Star appliances if the projected appliance energy savings is greater than or equal to 5% of the building’s total energy use.
