

# Improving the Regulatory and Cultural Framework of Green Building in NYC

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Fernando Maimon LL.M  
Michael Podolsky 2L  
David Ragonetti 2L  
Dovid Schattner 2L

## I. INTRODUCTION

Buildings in the United States contribute 38.9 percent of the nation's total carbon dioxide emissions: 20.8 percent from the residential sector and 18 percent from the commercial sector. And the cost is high. The average household spends at least \$2,000 a year on energy bills, over half of which goes to heating and cooling.<sup>1</sup> Energy efficient construction, or green building, can help society and the individual consumer by reducing the impact on the environment and on the pocketbook.

Leadership in Energy and Environmental Design (LEED) is the best-known green initiative related to building. LEED provides the rating system for building design, construction and operation developed by the United States Green Building Council. The system provides a framework for developing practical and measurable green building.<sup>2</sup> LEED certification is a voluntary program that builders can opt into and be recognized for.

Legislatures have taken cues from LEED initiatives to various degrees. New York City, for example, has launched a LEED-informed energy efficiency effort that is expected to reduce emissions of CO<sup>2</sup>e by 4.5 million metric tons by the year 2030.<sup>3</sup> The city is also working on a plan that focuses on the 16,000 largest properties, which constitute roughly half of NYC square footage and 45 percent of the city's gas emissions. The objective is to reduce total emissions by 4.75 percent.<sup>4</sup> By analyzing a sample of legislation and policies implemented to date and the results realized, we have identified practical solutions that will improve the energy usage ratio and reduce carbon emissions from NYC buildings while tracking the necessary steps needed to implement these changes.

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<sup>1</sup> <http://www.epa.gov/greenbuilding/pubs/gbstats.pyedf>

<sup>2</sup> <http://www.usgbc.org>

<sup>3</sup> [www.nyc.gov/planyc2030](http://www.nyc.gov/planyc2030)

<sup>4</sup> Id.

### A. Problems Addressed

Current legal and societal pressures alone are not enough to encourage widespread green development and retrofitting implementation in New York City. Problems and complications include:

1) Regulation v. LEED status.

Because LEED certification and other green building initiatives are voluntary for builders and owners, building with an eye on lowering the carbon footprint typically takes a back seat to economics and meeting NYC building code. Thus, LEED status alone is insufficient to encourage significant change in New York City. Pursuing LEED certification offers no incentives for compliance. While voluntary compliance, perhaps, projects a positive image and helps in marketing real estate, unless there is some regulatory necessity, typically such compliance efforts are unsuccessful.

2) Continuous monitoring of LEED projects.

To remain LEED-certified efficient, buildings require specialized maintenance.

3) Competing interests between builders, owners and occupants.

Many occupants are unwilling to pay the higher prices that usually accompany green building because the costs take more time to recoup than non-green construction, and these occupants don't set low environmental impact as a priority and/or don't accept responsibility for negative externalities (i.e. costs to society).

### B. Relevance of the Problem and the Importance of a Solution

Reduction of emissions from new and old construction should be an imperative of modern society. Roughly 41 percent of the total energy consumption in the United States, or 40

quadrillion Btu, comes from buildings.<sup>5</sup> In NYC, carbon emissions stemming from energy use of buildings spikes to 70 to 80 percent.<sup>6</sup> We believe that a system that requires, encourages and otherwise incentivizes development and implementation of green building would add more energy efficient housing and significantly decrease energy usage in NYC. And there would be additional benefits, including a decrease in dangerous housing conditions and such health issues as asthma and lead poisoning that can be traced to these conditions. Requiring green building and retrofitting also may address the lack of affordable housing in NYC. Furthermore, a change to a greener building process may result in economic benefits, including lower energy costs and job creation.<sup>7</sup>

Despite the virtues of refining our system to develop more energy-sustainable building practices, there are obstacles, not the least of which will be securing the cooperation of the city's owners and builders. Without meaningful regulation, many if not most owners and builders will be unwilling to update preexisting energy inefficient buildings. Incentives are often ineffective, failing due to a lack of legal weight and/or penalties behind them or because the public does not understand fully the environmental, financial and health benefits they support. Implementing strong regulations comes with a different set of problems. Regulations requiring property owners to spend more on green building and retrofitting will make those investments less attractive and may scare away some investors altogether. (There will always be other cities where building costs are lower and therefore more appealing to investors.) Such migration would further slow a housing economy that already has been slow to recover from the last housing crisis.

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<sup>5</sup> <http://205.254.135.7/tools/faqs/faq.cfm?id=86&t=1>

<sup>6</sup> <http://www.nyc.gov/html/planyc2030/html/about/ggbp.shtml>

<sup>7</sup> [http://www.bka.org/pdf/Clearinghouse\\_Review\\_Sept-Oct\\_2010.pdf](http://www.bka.org/pdf/Clearinghouse_Review_Sept-Oct_2010.pdf)

In NYC there are more than 2 million rental apartments, 30 percent of whose energy is used inefficiently or unnecessarily (NYSERDA). To cut down on unnecessary usage, therefore, incentives for building owners would need to be passed to tenants, although creating incentives that will motivate all sides of the industry has proven difficult. That said the ripple effect of successful implementation of a green building program in one of the most populated cities in the U.S. would be great. Cities with relatively smaller challenges could take cues from NYC's sustainability model and improve on their own.

A building can, in some cases, attain green certification (from LEED or one of several lesser-known certification programs) without necessarily being more energy efficient than its “non-green” uncertified counterparts.<sup>8</sup> Builders of non-green projects may have chosen not to be certified, or they use materials and equipment that are not within the purview of the certification program. There is no one size fits all option. Materials and resources vary substantially. In other words, there are numerous variations in design approaches and models, materials used, environmental and sustainability objectives, and overall philosophy to green buildings. It is estimated that, despite an effort to reduce the consumption of energy, by 2030 total energy consumption nationwide will increase by 31 percent, petroleum by 30 percent, natural gas by nearly 19 percent, coal by 49 percent, and electricity by 43 percent.<sup>9</sup> Commercial buildings are responsible for 18 percent of total US energy consumption and contribute an estimated 15 percent of U.S. greenhouse gas emissions.<sup>10</sup> Given such data, we have to consider that green building, despite its relatively higher costs, will create a reduction of costs in the not-too-distant future and the long term. Typically thirty percent of a commercial building's operating cost is its

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<sup>8</sup> [http://www.energystar.gov/index.cfm?c=green\\_buildings.green\\_buildings\\_index](http://www.energystar.gov/index.cfm?c=green_buildings.green_buildings_index). Energy Star E-newsletter summer 2006.

<sup>9</sup> <http://www.yourenergyfuture.org/energy-facts/>

<sup>10</sup> Energy Star E-newsletter summer 2006

energy consumption. According to “Assessing Green Building Performance” by GSA Public Building Service, the benefits of “green buildings” include decreased energy use (-26 percent), lower aggregate maintenance (-13 percent), greater occupant satisfaction (+27 percent), fewer CO2 emissions (-33 percent), and water efficiency.

In addition to saving energy, following green construction guidelines involves other environmentally-friendly factors. The way building materials are extracted and/or manufactured, as well as repair, maintenance, disposal and recycling processes are all addressed in terms of sustainability. Using recycled materials in the construction of buildings can reduce critical deforestation. (The Brazilian Amazon is estimated to have diminished from deforestation by 2,408 square miles in 2010-11<sup>11</sup>, an area equivalent to the size of the state of Delaware, and, worse, this is the least harmful period to date). Although not all wood from the Amazon is used in construction, consider that 90 percent of houses built in the U.S.—predominantly in suburban areas—use wood for framing.<sup>12</sup>

And the use of recycled materials introduces other benefits. Local production means the reduction in the gas emissions and fuel consumption involved in transportation.

## **II. CURRENT REGULATORY AND POLICY REGIME IN NEW YORK**

Policymakers have begun to promote green building initiatives, including some supported by legislation. More importantly, in seeking to identify “green building” standards and reach consensus on policies and laws, many programs—at federal, state, and municipal levels—have adopted LEED methodology and practices.<sup>13</sup>

### *A. Federal Regime*

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<sup>11</sup> [http://www.inpe.br/ingles/news/news.php?Cod\\_Noticia=271](http://www.inpe.br/ingles/news/news.php?Cod_Noticia=271)

<sup>12</sup> *Timber Construction*, Chris Arnold, Building System Developments, USA, (1984)

<sup>13</sup> See USGBC Introduction to LEED <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>.

The federal government has in the past created policies to improve efficiency of our nation's buildings and reduce the carbon footprint generally. But some incentive-based programs are nearing termination.

In 2005, Internal Revenue Code section 179D allowed owners to deduct part or all of the cost of certain "energy efficient commercial building property" meeting certification requirements.<sup>14</sup> Section 48 of the Code yielded similar credits for qualifying "solar energy properties."<sup>15</sup> And section 45L offers a tax credit of \$2,000 to homebuilders of "qualified new energy efficient homes."<sup>16</sup> The tax deductions were initially offered through a window that ended January 1, 2009, but the sunset date was extended through 2012.<sup>17</sup>

Additionally, the budget of the American Recovery and Reinvestment Act, inter alia, includes funding to improve energy efficiency for domestic homes, low-income housing, and in commercial and industrial buildings.<sup>18</sup>

Finally, the current administration continues to pursue a policy to develop the green economy and cut down on energy consumption nationally. President Obama recently launched the Better Business Initiative, a push to improve, by 20 percent, energy efficiency of commercial buildings by the year 2020.<sup>19</sup> The President hopes Congress will enact new tax deductions for retrofitting upgrades that improve properties' energy efficiency. The administration also

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<sup>14</sup> The property must be (1) the interior lighting systems of a building; (2) the heating, cooling, ventilation and hot water systems of a building; or (3) the building envelope, and must have been installed as part of an overall plan to improve the building's energy efficiency, in addition to several other qualifying requirements. There was, however, a cap of \$1.80 per square foot per tax payer. See <http://www.stoel.com/webfiles/lawofgreenbuilding.pdf> at 30.

<sup>15</sup> Property must use the solar panels for heat or light (via fibre optics) inside the structure and similar additional requirements to the 179D deductions. See <http://www.stoel.com/webfiles/lawofgreenbuilding.pdf>

<sup>16</sup> *Id.*

<sup>17</sup> See <http://www.mondaq.com/unitedstates/article.asp?articleid=68282>.

<sup>18</sup> 2009, see

[http://en.wikipedia.org/wiki/American\\_Recovery\\_and\\_Reinvestment\\_Act\\_of\\_2009#Energy\\_efficiency\\_and\\_renewable\\_energy\\_research\\_and\\_investment](http://en.wikipedia.org/wiki/American_Recovery_and_Reinvestment_Act_of_2009#Energy_efficiency_and_renewable_energy_research_and_investment).

<sup>19</sup> See White House Press Release, Feb. 3, 2011, available at <http://www.whitehouse.gov/the-press-office/2011/02/03/president-obama-s-plan-win-future-making-american-businesses-more-energy>.

proposes financial aid for retrofits through the Small Business Administration and a pilot program through the Department of Energy. Both these programs have yet to be activated.

### B. State and City Regime

In New York, the state and municipal governments have proceeded with a policy to improve the region's energy consumption efficiency. In 2000, New York provided a tax credit program for new green buildings and retrofits.<sup>20</sup> Up to \$25 million in credit certificates are available annually to claimants who qualify and apply for certification under the plan.<sup>21</sup> Furthermore, the state has endorsed a policy that attempts to standardize definitions of green buildings as a starting point for creating future green building incentives and green laws. In 2001, Governor Pataki issued Executive Order 111, which encouraged state projects to incorporate LEED criteria and/or certifications in programs wherever possible, a policy that is supported by legislation. More recently, in September 2009, Governor Paterson signed the State Green Building Construction Act into law.<sup>22</sup> The act requires that new building construction and considerable renovations to existing buildings comply with baseline green building standards adopted by the Office of General Service.<sup>23</sup> Under this act, the OGS has largely incorporated LEED standards into its requirements.

Seventy to 80 percent of New York City's carbon emissions come from energy use in buildings.<sup>24</sup> So it is no surprise that at the municipal level there also has been support for green building standards. These policies have been supported in law.

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<sup>20</sup> Green Building Tax Credit program. See <http://www.dec.ny.gov/regs/4475.html>.

<sup>21</sup> Certificates are issued by the New York DEC by meeting a relatively high threshold of energy efficiency improvements. See <http://www.stoel.com/webfiles/lawofgreenbuilding.pdf>.

<sup>22</sup> See <http://www.ogs.ny.gov/EO/GBCA/Default.asp>.

<sup>23</sup> See

<http://www.usgbc.org/content/images/stories/Eastern%20States%20April%202010%20SLHDAC%20Final.pdf> at 17.

<sup>24</sup> See *id.* at 21.

One of the nation's first green building laws is New York City Local Law 86.<sup>25</sup> Enacted in 2005, Law 86 incorporates LEED standards developed by the USGBC and requires that new building projects that use municipal funds satisfy those standards. The goal is to reduce the City's carbon footprint by 4.75 percent.<sup>26</sup> In addition, the law increases the requirements of these municipal-funded projects beyond local code requirements, affecting such energy-using structural components as lighting, HVAC, and plumbing, among others.<sup>27</sup>

Local Law 87/2009 further amended the city's charter and administrative code to require all commercial buildings over 50,000 square feet to file a one-time Energy Efficiency Report with the Department of Buildings, due by 2013. The audit, however, provides exemptions for properties that satisfy certain levels of LEED certification, attain the EPA Energy Star label for several years, or show that they surpass similar standards.<sup>28</sup> After the results of the audit are tabulated, there will be "retro-commissioning" studies of base building systems.<sup>29</sup> This LL87 is limited in that it does not focus on dwelling units but instead applies to commercial or common areas of multi-family buildings.<sup>30</sup>

### C. Private Regimes

Other incentives include private support. The Clinton Foundation's Energy Efficiency Building Retrofit Program provides financing to municipal and private commercial owners for retrofits. This initiative pays itself back through energy savings. New York has joined this

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<sup>25</sup> See *id.* (describing Local Law 86/2005).

<sup>26</sup> See *id.*

<sup>27</sup> See the update on the progress of LL86 available at [http://www.nyc.gov/html/oec/downloads/pdf/green\\_building/110822\\_LL86\\_2010\\_report%20print\\_version\\_FINAL.pdf](http://www.nyc.gov/html/oec/downloads/pdf/green_building/110822_LL86_2010_report%20print_version_FINAL.pdf).

<sup>28</sup> See <http://www.fsenergyservices.com/law87.html>.

<sup>29</sup> Again, i.e., HVAC, boilers, lighting, etc.

<sup>30</sup> *Id.*

program.<sup>31</sup> In addition, there are private cap-and-trade systems available to earn buildings either Renewable Energy Credits (RECs) or Energy Efficiency Credits (EECs). These can be purchased in the market. Thus far, these credits can serve as points toward, for example, LEED certification standards and are tradable in the secondary market.

In short, initiatives to promote green building have been pursued at all major levels of government. While they are somewhat discrepant in their approaches, a few common threads have emerged, specifically the use of tax-based incentives and the adoption of the more popular “green building” standards, LEED and EPA Energy Star. However, the focus mainly has been on commercial or large, multifamily common spaces. And because these programs adopt or exempt LEED and EPA certifications, the power to set the pace for green building is in the hands of those institutions<sup>32</sup>, instead of with the federal and state legislatures.

### **III. GREEN BUILDING IN THE EUROPEAN UNION**

Since the 1970’s, the European Union has been concerned with stabilizing and reducing emissions. After several individual recommendations, the Council of Environment and Energy Ministers agreed at their meeting on October 29, 1990, to act to stabilize at the 1990 level total carbon dioxide emissions by the year 2000. This resolution and an earlier one, reached on September 16, 1986, and related to the energy policy objectives, are the source of several European regulations that, in turn, influenced U.S. regulations. The primary historical regulations related to the application of energy savings in the building sector are:

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<sup>31</sup> <http://www.stoel.com/webfiles/lawofgreenbuilding.pdf>

<sup>32</sup> USGBC and EPA.

A. Council Resolution of 9 June 1980 concerning new lines of action by the Community in the field of energy saving<sup>33</sup> and Council resolution of 15 January 1985 on the improvement of energy saving programs in the Member States<sup>34</sup>.

Resolution goals were that member States would have to adapt their energy-saving programs to cover all the main sectors of energy use. These programs should be based on recommended energy-pricing guidelines and measures. According to the resolution, one factor to determine the consumer price should be the cost of replacing and developing energy resources; and energy prices should be characterized by transparency.

Measures that encourage the rational use of energy are individual metering, billing and control of heating systems in multi-occupied residential buildings; publicity campaigns for energy savings; financial aids for necessary improvements; labeling to indicate the energy consumption of domestic appliances; and educational programs in schools, technical colleges, and universities.

In the sector of offices and commerce, the resolution encouraged States to establish a compulsory minimum performance standard for new buildings (Annex B.4. of the Council Resolution of 9 June 1980).

The second resolution, in addition to stressing previous goals and measures, focuses on heating systems and boilers; implementation of individual meters in residential and commercial buildings; and development of effective standards for ventilation and air-conditioning, with particular respect to heat recovery.

B. Decision 91/565/EEC Adoption of SAVE Program<sup>35</sup>

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<sup>33</sup> Official Journal C 149 , 18/06/1980 P. 0003 - 0005

<sup>34</sup> Official Journal C 020 , 22/01/1985 P. 0001 - 0004

<sup>35</sup> Official Journal No L 307, 8. 11. 1991, p. 34

This decision was reached to bolster measures taken by States to achieve the objective of saving 20 percent of energy consumption by 1995. Because of this decision, a program called “Specific Actions for Vigorous Energy Efficiency” (SAVE) was created to reduce the energy consumption. It lasted five years, from January 1, 1991, to December 31, 1995. Article 2 lists the goals that the program financed; (i) technical evaluations; (ii) measures to create or extend infrastructures concerned with energy efficiency; (iii) an information network aimed at promoting better coordination between the different agents (countries, European Community, etc.); (iv) implementation of a program for the efficiency of electricity.

C. Directive 2002/91/EC of December 16<sup>th</sup> 2002, on the energy performance of buildings (EPBD)<sup>36</sup>.

The purpose of this directive is to comply with the goal of a prudent and rational utilization of natural resources and with the Kyoto Protocol. It calls for “heating, cooling and ventilation installations to be designed and built in such a way that the amount of energy required in use will be low, having regard to the climatic conditions of the location and the occupants.” The directive requires the application by the States of minimum requirements on the energy performance for new buildings and in large existing building subject to major renovation, as well as energy certification buildings and regular inspection of boilers and air conditioning systems. The directive does not set a minimum rate of acceptable emissions, and States are free to establish (or not) a cap on those emissions.

Today, there are many programs and policies designed to help States reduce carbon dioxide emissions in the building sector. In March 2004, the European Commission developed a standardized approach for the delivery of environmental performance of construction products

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<sup>36</sup> Official Journal No L 1, 4.1.2003, pp. 65-71

and whole buildings. The standards are voluntary, but the expectation is that member States will use them.

D. *The European Greenbuilding Program (GBP)*<sup>37</sup>

Greenbuilding is a voluntary program aimed at improving the energy efficiency of non-residential buildings in Europe. The program addresses owners of non-residential buildings to realize cost-effective measures, which enhance the energy efficiency of their buildings in one or more technical services. The program covers both existing and new buildings. The building sector in Europe consumes 40 percent of energy demanded, and one third of that is for non-residential buildings (factories, schools, hospitals, etc.)

E. *Directive 2010/31/EU of the Energy Performance of Buildings (EPBD-recast)*<sup>38</sup>

This is the revision of the Directive 2002/91/EC. It aims to comply with the Kyoto Protocol and its commitment to maintaining the global temperature rise at below 2°C and reducing overall gas emissions by 2020 by at least 20 percent below 1990 levels. According to this directive, cost-effective energy saving in the building sector is critical to achieving the goal.

Paragraph 7 says, “It is necessary to lay down more concrete actions with a view to achieving the great unrealized potential for energy savings in buildings and reducing the large differences between Member States’ results in this sector.”

The methodology for calculating energy performance should cover the annual energy performance of a building according to the existing European standards. Paragraph 10 gives States the following message: “It is the sole responsibility of Member States to set minimum requirements for the energy performance of buildings and building elements. Those requirements

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<sup>37</sup> <http://re.jrc.ec.europa.eu/energyefficiency/greenbuilding/index.htm>

<sup>38</sup> Official Journal of the European Union No L 153, 18.6.2010, pages 13-35

should be set with a view to achieving the cost-optimal balance between the investments involved and the energy costs saved throughout the lifecycle of the building, without prejudice to the right of Member States to set minimum requirements which are more energy efficient than cost-optimal energy efficiency levels.”

Another perspective is that this directive is designed to promote major renovations of existing buildings to fulfill the requirements of States’ regulations concerning energy consumption. Because of the cost-effectiveness, the minimum energy performance of the building could be limited. With the objective of obtaining a reduction of both energy consumption and carbon dioxide emissions, the European Union encourages States to incentivize the zero-energy buildings<sup>39</sup>. According to article 5, the States shall take the necessary measures to ensure that new buildings meet the minimum requirements with different methods. It listed as an examples energy supply from renewable sources; cogeneration; district or block heating or cooling; and heat pumps.

The new goals for Europe are listed in article 9: (a) by December 31, 2020, all new buildings are to be nearly zero-energy buildings; and (b) after December 31, 2018, new buildings occupied and owned by public authorities are to be nearly zero-energy buildings. Defining “nearly zero-energy buildings” is left to the States. Nevertheless, there is an exception for the application of sections *a* and *b* of article 9. Point 6 establishes that “Member States may decide not to apply the requirements set out in points (a) and (b) of paragraph 1 in specific and justifiable cases where the cost-benefit analysis over the economic lifecycle of the building in question is negative.”

To allow the achievement of this goal, the regulation devotes one article to financial incentives through public funds (article 10), taking into account the cost-optimal level of energy performance (article 10.6).

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<sup>39</sup> Official Journal of the European Union No L153, 18.6.2010, page 15, paragraph 17.

Regarding the energy performance certificate, the regulation will inform the tenants and consumers about the energy consumption and carbon dioxide emission of the building as well as the grade of the building with regard to those and other factors. The validity of the energy performance certificate shall not exceed 10 years (article 11.8). So far, only public buildings are obliged to show this certificate.

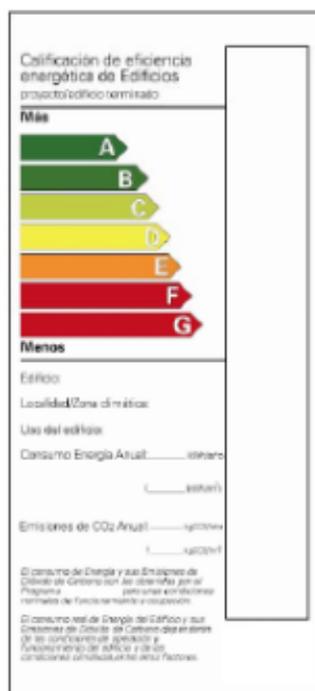
#### F. Future regulation<sup>40</sup>

Since March 2011, the European Commission has been engaged in the development of another directive with binding measures to reduce carbon emissions and reach the goal of saving 20 percent of primary energy consumption by the year 2020. Among the proposals are that 3 percent of the total floor area over 250 m<sup>2</sup> (2,690 ft. sq.) owned by public institutions shall be renovated each year and meet at least the minimum energy performance requirements.

#### G. Individual European State Regulations

##### 1) Spain

Spain has adopted Directive 2002/91/EC in 2007<sup>41</sup>, creating as a result the Energetic Efficiency Tag (“Etiqueta de Eficiencia Energética”). The following construction has to have an Energetic Efficiency Tag (art. 2); new buildings and alterations or rehabilitations in buildings with an area more than 1,000 square meters (10,763.91 square feet) where more than 25 percent of the closure is renewed. There are some exceptions for historical, religious and provisional constructions, among others. The Energetic Efficiency Tag has a validity of 10 years (art. 10) and regional



<sup>40</sup> <http://www.electrical-efficiency.com/2011/07/proposal-for-a-directive-on-energy-efficiency/>

<sup>41</sup> Real Decreto 47/2007, por el que se aprueba el Procedimiento básico para la certificación de eficiencia energética de edificios de nueva construcción (Basic Procedure for the energetic efficiency of new buildings.)

governments will establish the procedure to renew it. The owner of the building is responsible for obtaining and renewing the Energy Efficiency Tag. In a grading system ranging from A to G, the minimum certificate grade for a new building is “E”. The methodology measure is a combination of formulations. However, this tag does not mean that the building is a green building, but rather provides a measure of the quality of energy consumption. Nevertheless, the goal of the regulation is to encourage energy efficiency in the buildings.

The qualification depends on the CO<sub>2</sub> emissions of the building in relation to the consumption of energy of the installations<sup>42</sup>. LEED points, on the other hand, are assigned on the basis of energy efficiency and the materials used in the construction. According to the Código Técnico de Edificación (Technical Building Code), there are minimum levels of efficiency in the closure of a building. Additionally, to cover part of the demand, the code establishes the necessity of solar panels for sanitary hot water<sup>43</sup>.

## 2) France<sup>44</sup>

France adopted, in 2006, a regulation<sup>45</sup> that established a certificate called *Energy Performance Certificate* (“*Diagnostic de Performance Energétique*”, DPE, in French.) The DPE defines the energy consumption and the impact of this consumption on greenhouse effect. This certificate is mandatory in new and retrofitted buildings. There is a maximum consumption of primary energy for heating, cooling and production of sanitary hot water in new residential

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<sup>42</sup> *Green Building Certification, Energy Ratings, and Life Cycle Analysis methods: Sustainability for Building Renovations*, Lara Mabe, Patxi Hernandez, Sergio Saiz; Sustainable building conference.

<sup>43</sup> Id.

<sup>44</sup> <http://www.epbd-ca.eu/country-information>

<sup>45</sup> Décret no 2006-1147 du 14 septembre 2006 relatif au diagnostic de performance énergétique et à l'état de l'installation intérieure de gaz dans certains bâtiments

buildings depending on the climatic zone—France is divided in three climatic zones—and the type of heating. The range goes from 250 kWh primary/m<sup>2</sup>/year to the 80 kWh/m<sup>2</sup>/year<sup>46</sup>.

In France, the building industry uses up to 70 million tons of oil equivalent. It represents 43 percent of total energy consumption, making it the biggest consumer industry in France<sup>47</sup>. The goal of the French Environment and Energy Management Agency (ADEME) is to achieve a widespread implementation of high-energy performance buildings by 2030.

### 3) Italy<sup>48</sup>

Italy has adopted the LEED certificate.<sup>49</sup> In order to fulfill the requirements of European



regulations, it has created what is called the Energy Certification of Buildings (“*Attestato di certificazione Energetica*”), which applies to new buildings, major renovations, public buildings, and all buildings that are sold. The minimum requirements depend on the type of building, surface and climatic zone. For new buildings and major renovations the minimum requirement is “C”. There are maximum levels for summer cooling levels depending on climatic zones.

In conclusion, the application of limits and labels in the European Union is not yet standardized. What is common among many countries is the way they are looking to achieve the objective, through energy-pricing, individual metering, publicity campaigns to persuade

<sup>46</sup> In France it is considered that 1 kWh primary = 2.58 kWh final for electric energy or 1 kWh for other energy source.

<sup>47</sup> <http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=17778>

<sup>48</sup> <http://www.epbd-ca.eu/country-information>

<sup>49</sup> <http://www.greenbiz.com/news/2010/05/13/italys-green-builders-adopt-leed-rating-system>

consumers to invest in their houses and thus care of the planet, financial aids (with public or private funds), labeling, and educational programs.

#### **IV. SOLUTIONS FOR IMPROVEMENT**

A careful examination of different issues that have arisen despite the efforts of state and federal governments can help us determine which factors were successful at motivating the implementation of green building in New York City. For example, many of the worst culprits of inefficient energy usage in the city are older buildings.<sup>50</sup> Older-model heat and electricity systems, coupled with old, minimal or otherwise inefficient insulation, create inefficient usage of energy and raise energy costs.

Fundamental tenets of our nation's free private market principles have handcuffed federal and New York City legislators who remain loath to create legislation compelling building owners to retrofit existing buildings. It is, after all, a major challenge to retrofit buildings with new energy efficient materials without a huge cost because by and large existing buildings were constructed prior to regulations that dictated the use of energy efficient materials. Only a phased approach with proper incentives could over time result in all buildings becoming energy efficient. Thus, regulations typically only reach new construction or those buildings whose owners have decided to renovate. Not surprisingly, the goal to convince private owners to retrofit their properties has come to a standstill. Buildings that haven't required immediate reconstruction remain unchanged, using energy inefficient materials.

Government incentives—tax credits and deductions, and various other financial incentives previously discussed—to motivate building owners and landlords to retrofit their

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<sup>50</sup> In New York City over 792,800 homes were built before 1919, accounting for a large chunk of the older homes in New York state. <http://www.oldhouseweb.com/how-to-advice/how-old-are-americas-houses.shtml>

buildings with energy efficient equipment have proven ineffective. These financial benefits and tax breaks failed to materially motivate green building and mass retrofitting in New York City for three main reasons: the restrictiveness in which these benefits are provided, the lack of good information and advertising to inform building owners of the benefits, and the absence of incentives to convince reasonable business people to sign on.

1) The restrictiveness of the benefits has precluded many building owners from taking advantage of potential benefits. The weatherization assistance program (WAP) is a good example. The program will only provide financial incentives to retrofit a house or rental apartment building with energy efficient equipment if the owner or occupants meet certain income requirements. If the owner or occupants earn more than a certain amount, they are ineligible to receive benefits from this program.

2) Complex requirements for available benefits make it difficult for many building owners and their advisors to accurately determine whether they are eligible for various benefits and tax breaks.<sup>51</sup> Compounding this issue is the lack of advertising or other promotions designed to inform lay building owners of these benefits and explain how to pursue them. As a result, many building owners are unaware of the benefits they are entitled to and have not retrofit their buildings.<sup>52</sup>

3) The cost that a building owner would incur if he pursued these financial and tax benefits actually outweighs the benefits. This is likely the principal reason these benefits fail to encourage more retrofitting and green building in New York City. When the motivating factor is financial, any reasonable businessperson will make a cost benefit analysis of the question, Will

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<sup>51</sup> <http://www.nysher.org/Programs/weatherizationassistance/>

<sup>52</sup> <http://www.journalofaccountancy.com/Issues/2009/Aug/20091640.htm>

this result in a profit? Many benefit programs are simply too insignificant to create a difference in the decision making involved in a multimillion dollar structure.

A simple example illustrates why these factors have not made good business sense for homeowners and are thus ineffective in motivating retrofitting and green building in New York City. Under IRC § 45L, a tax credit of \$2,000 is offered to homebuilders of “qualified new energy efficient homes.” In order to qualify as a new energy efficient home, however, the building had to have been built in a specific manner, using specific materials and installing energy efficient machinery (newer water heaters, etc.). Any reasonable businessperson would understand that if using more expensive energy efficient material will cost more than \$2,000, the benefit is not worth pursuing.

Furthermore, when making decisions regarding the building of multi-million dollar structures, the weight assigned to a \$2,000 tax credit pales in comparison to other factors such as the soundness of the material that will serve as the structure and the effect using such material will have on the value and profitability of the building. Simply put, no one is going to risk constructing his home or building with unproven materials in order to take advantage of a \$2,000 tax credit.

As such, we propose combining stronger regulations on existing buildings that don't meet minimal energy efficient standards, as well as more meaningful incentives with the teeth to impact decisions regarding multimillion-dollar buildings. We believe a two-step process of strong regulation that requires changing out older equipment along with stronger regulation incentivizing maximum sustainable building will convince a significantly greater percentage of building owners to retrofit their buildings with sustainable technology.

#### A. Regulation

Strong regulations on existing buildings (similar to regulations that compel and regulate the removal of asbestos)<sup>53</sup> should require these buildings to upgrade to more efficient materials, where the government will repay the building owner for any loss (in order to avoid unconstitutionally effecting a confiscation). Failure to comply with these regulations would result in heavy fines levied against the property. For example, just as with the overall structure of the building, the building owner has allowed the energy-using machinery to depreciate over time. New regulations can require building owners to replace the machinery (such as an old furnace), with the government paying the remaining depreciation on the old machine and structures. Considering these are old buildings and systems, paying the remainder of the depreciation should not create a significant cost to government.

### B. Incentives

We would support requirements with incentives that the government will pay the difference it costs the owner to install energy efficient materials and machinery. Instead of a \$2,000 tax credit, the government will pay the difference in cost for the upgrade over standard boilers (cost of sustainable materials – cost of industry standard materials + depreciation loss of old boiler = amount government will pay to building owner for replacement of the old boiler with new industry leading energy efficient materials). A similar concept of tying the amount of reimbursement to the cost of replacing with energy efficient materials can be seen in the European Council Resolutions.<sup>54</sup>

An example of how this would play out can be illustrated with an old boiler. Let's say that a building's boiler is 20 years old and has depreciated 90 percent. Also, because of the

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<sup>53</sup> <http://www.asbestosremovalhelp.com/asbestos-abatement-regulations.html>

<sup>54</sup> See *infra*, Section II and accompanying text.

boiler's age and inefficiency, monthly heating bills run around \$5,000. New regulations will require the owner to replace the boiler. He will be compensated for the last 10 percent of depreciation that he lost in throwing out the old boiler. The building owner will then be rewarded further for purchasing the most energy efficient boiler because it will lower costs of heating. The owner will not be concerned with the extra cost of purchasing an energy efficient boiler, as the government would make up the difference in price.

Another potential incentive for building owners who retrofit would be through lower interest rates for green building. Freddie Mac and Fannie Mae can incentivize building owners of older energy inefficient buildings to refinance with lower interest rates, based on the level of sustainable renovations involved. Considering that loans often make up the largest expense a building owner has in maintenance, there is potential in incentivizing a building owner to retrofit in exchange for lower interest rates. An added advantage of pursuing this option would be that we can incentivize retrofitting in the least efficient buildings with little to no cost to the government, without burdening the building owners with over regulation.

In addition, such a policy will change the market for manufacturers of building materials. If building owners buy only materials made through sustainable building technology, manufacturers would be forced to prioritize more advanced sustainable products. After a number of years, a market that is driven by energy conscious purchasers will cause inefficient models to become obsolete.<sup>55</sup>

### C. Conclusion

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<sup>55</sup> This reaction would be similar to the market correction that happened a few years back with the decline in popularity of gas guzzling pickup trucks. Once the cost of gas became too onerous, trucks sales began declining, and are now a more expensive item due to their lack of volume sales.

As mentioned, this policy paper proposes the following changes to the current legal and social regime that will help to achieve sustainability while maintaining efficiency. By requiring replacement of existing non-efficient models with leading green building and retrofitting materials and by increasing incentives to a level in which pursuing them would be “business reasonable,” we believe we can create a market in which inefficient buildings would no longer be economically viable, thus increasing sustainable and green building in New York City.