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Work Session IX - The Law and Mother Nature: From Green Buildings to Natural Disasters

Green Building: Starting To Show Us The Money

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I. GREEN BUILDING: THE NEXT WAVE.

The international movement now known as "green building" began in earnest in the 1990's and is now a worldwide phenomenon. It has a definable past, a discernible present, and in some respects a predictable future. *For municipal attorneys, the question of the moment is whether municipal governments should incorporate green building standards into ordinances and regulations or leave the standards and compliance to the private sector*. The purposes of this paper are to provide municipal attorneys with the legal and practical contexts in which to address this question, by addressing: (1) the core definitions of what green building is; (2) the policy options and choices that private organizations and governments face as green building evolves; (3) the mechanisms (construction contracts and leases, for example) where green policy choices are made; (4) the issues that currently confront the green building movement; and (5) the new trends that are shaping green building's continuing evolution – by quantifying its value and attracting investment.

II. A COMMON DEFINITION OF GREEN BUILDING.[1]

Implementing the concept of green building requires the building community, governments, legislatures, and regulators to make a series of policy decisions. It is not inaccurate to think of the evolution of green building standards as a pyramid, each decision building on a prior one. Each choice, moreover, is highly consequential, because each decision forms the basis for the next level of implementation, and each has the potential to enhance or impede environmental protection, spur or deter private sector entities and municipal or state governments from embracing environmentally-friendly building practices and technologies, and promote or distort efficiencies in design, construction, and operation of structures. Simply put, governments and private organizations, and in differing locations, climates, and economic conditions, have confronted the same issues but have implemented green building differently. Green building now has a core definition, but at this time its points of consensus are still evolving.

A survey of publications suggests that a green building standard has three core purposes:

- specify performance standards and materials for the construction, operation, and maintenance of new buildings or the renovation of existing ones;

[1] The author wishes to extend thanks to Miriam Godfrey, a Shipman & Goodwin LLP Summer Associate during 2011, for her able research and writing assistance.

- promote "sustainability," meaning standards or specifications that reduce waste and depletion of non-renewable resources; and

- protect the health of occupants of completed structures, as well as the general public.[2]

Other definitions highlight efficiency, especially in energy and water consumption, but essentially parallel this definition. The U.S. Environmental Protection Agency's definition notes that green building standards are "additive" to the basic goals of construction, which are economy, utility, durability, comfort, and safety.

The next level of definition is listing the elements of a green building policy or standard. Here, the consensus set forth above begins to deteriorate, but there are commonalities. Green building standards may first be defined by identifying what is beyond their fair and proper scope. Green building is concerned with the construction and performance of new or rehabilitated structures. Thus, while discharge of greenhouse gases from an industrial process housed within a structure may contribute to climate change and global warming, such pollution is peripheral to green building standards. The level of carbon dioxide omitted into the earth's atmosphere from materials and practices used in construction of a building is a green building issue, but the use of fossil fuels and regulation of emissions from vehicles or machinery that travel to and from the completed structure is a carbon footprint / climate change issue, but not a green building one. *That is, the proper focus of a green building standard is the materials and practices used in constructing building and then operating it, as opposed to what goes on inside or outside the building*.

Green building must also be distinguished from environmental management programs that govern a single natural resource or energy source, but are not building programs *per se*. Limits on carbon dioxide emissions – classic command and control environmental regulation – are not green building elements, nor are ethanol requirements for blended gasoline or banning CFCs in cooling systems. The American ENERGY STAR program is often a component of the energy efficiency portions of green building standards, but is not a standard *per se*.[3] Similarly, "green infrastructure" programs intended to reduce, capture,

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[2] See, e.g. "Green building," Wikipedia, http://en.wikipedia.org/wiki/Green_building last checked (July 2011).

[3] ENERGY STAR, introduced by the U.S. Environmental Protection Agency (EPA) in 1992 as a voluntary labeling program to identify and promote energy efficient products and reduce greenhouse gas emissions, has evolved into a comprehensive energy program of rating systems for both residential and commercial facilities. *History of ENERGY STAR*, U.S. ENVTL. PROT. AGENCY & DEP'T OF ENERGY,

and treat pollutants in stormwater runoff before it reaches the sewer system, or regulations requiring Low Impact Design for stormwater management (rain gardens, and permeable concrete, for example), deal with one environmental concern across much more than structures. While environmental, such programs are not green building.[4]

Returning then to what *is* part of green building: one touchstone is recognizing "the myth that green building equals solar panels."[5] That is, a green building *program* is much more than energy savings from alternative sources such as solar; a green system includes policies, guidelines, or rules for locating and positioning structures on the land; water efficiency; material selection; material use efficiency (that is, conservation and avoidance of waste); indoor air quality; and owner / tenant / operator education about sustainability. As Casius Pealer of

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hhttp://www.energystar.gov/index.cfm?c=about.ab_history. The program's ratings, on a scale of 1 to 100, provide a means for benchmarking the energy efficiency of specific buildings against the energy performance of similar facilities. The program for commercial buildings stresses ongoing energy management and monitoring. Buildings performing in the top 25 percent for energy efficiency qualify for the ENERGY STAR.

More than 120,000 homes built in 2010 earned ENERGY STAR certification and the number of certified commercial buildings increased by 60 percent from the previous year. ENERGY STAR has also worked to make affordable housing more energy efficient. In 2010, more than 5,200 ENERGY STAR qualified homes were built with funding from the U.S. Department of Housing and Urban Development (HUD) HOME program. *ENERGYSTAR: Overview of 2010 Achievements*, U.S. ENVTL. PROT. AGENCY & DEP'T OF ENERGY http://www.energystar.gov/ia/partners/publications/pubdocs/2010%20CPPD%204pgr.pdf.

[4] For example, Philadelphia, Pennsylvania has required stormwater retrofits throughout the city. Installed improvements include: stormwater tree trenches, rain gardens, porous pavement, stormwater wetlands, and downspout planters. *Green Stormwater Infrastructure Project Map*, City of Phila., Office of Watershed, (Jun. 3, 2011), http://www.phillywatersheds.org/BigGreenMap. Chicago, Illinois has implemented extensive green infrastructure on public property and offers incentives to owners and developers of private property. The City's efforts have produced 100 new green alleys, more than 70 new green roofs, and the expansion of the urban tree canopy by more than 580,000 trees. *Green Infrastructure: Green Municipalities*, U.S. Envtl. Prot. Agency, http://cfpub.epa.gov/npdes/greeninfrastructure/gicasestudies.cfm#Municipal. Strictly speaking, these are environmental protection programs aimed at water quality, not green building programs.

[5] C. Pealer, "Green Building as a Tool for Achieving and Sustaining Affordability," *Journal of Affordable Housing*, Vol. 20, No. 2 (2011) at 233.

the Affordable Housing Institute has observed, "Renewable energy sources always make for better photo ops than properly installed insulation or sealed ducts, but attention to key construction details is where the greatest energy savings exist"[6]; green building is much more than alternative energy.

Put another way, a green building standard is not just rules for using less electricity, achieving a smaller carbon footprint, or renovating stormwater, but hundreds of small-bore items, often hidden and mundane, that are collected into an integrated whole that achieves efficiencies and sustainability and avoids unnecessary pollution in the construction and performance of buildings. A green building *policy or standard*, then, should include best practices and performance measures for these parameters:

- where a particular type of building should be located, taking into account the existence, status, and proximity of infrastructure, utilities, transportation and services (these criteria approximate what is known as "smart growth");

- the position of the structure on the subject property, taking into account such factors as solar orientation, slopes, and minimization of excavation and earth-moving, and extensions of utilities such as sewer and water lines;

- energy efficiency, including heating and cooling techniques, availability of renewable / sustainable / alternatives-to-fossil-fuel sources;

- water efficiency, through the use of low-use appliances and Low Impact Design techniques, such as the avoidance of so-called "structural drainage" and use of infiltration (favoring in-place collection and infiltration of stormwater, as opposed to catch basins, storm sewers, treatment and renovation equipment, and discharge outlets);

- materials efficiency through careful planning, ordering, cutting, and use of building materials to avoid sending substantial left-over quantities to landfills or incineration;

- indoor air quality, through use of materials with low Volatile Organic Compounds and other air pollutant and emissions, and installation of efficient circulation systems to bring fresh air into the structure; and

[6] Id.

- education of structure occupants and operators, to ensure that green technologies installed or green building techniques employed are not undermined through lack of maintenance, later renovations, or ignorance.

These criteria must be measureable during construction. However, the newest trend in green building is to then subject the completed structure to periodic "life-cycle assessments," which are performance measurements of how each of the parameters above is achieved or maintained during the useful life of the building.

In summary, a true green building standard reflects the core purpose outlined above by specifying standards, promoting sustainability, and avoiding pollution by pulling together best practices for building location, structure orientation, energy, water, waste avoidance, air quality, and occupant education.

III. CRITICAL DECISIONS IN THE ADOPTION AND IMPLEMENTATION OF GREEN BUILDING STANDARDS.

While the evolution of a green building standard is not perfectly describable as a linear process, it is helpful to conceive of green building as a pyramid, a series of choices and decisions that build on one another. This section outlines the pyramid, from bottom to top. It should be noted at the outset that in constructing the pyramid, each nation confronts four critical stages: (1) whether to pull individual best practices into a comprehensive standard; (2) deciding whether the private or non-profit sector or the government will take the lead in setting and promulgating the standard; (3) deciding whether the standard is voluntary and incentive-based, or mandatory / regulatory; and (4) inducing the financial sector to ascribe value and thus provide financing for green building construction and performance. Each of these four major steps then subsumes a series of sub-decisions. The purpose of this section of this paper is to outline the approximate sequence of major and subsidiary choices.

The green building movement began in the 1990's as a private sector initiative. In the U.S., the federal and state governments took a hands off approach as the U.S. Green Building Council (USGBC) and other private entities tackled green building. In the absence of government-issued standards, Leadership in Energy and Environmental Design (LEED) emerged from the USGBC not only as the most widely used standard, but nearly a brand name for the green building movement, at least in the U.S. In recent years, American federal, state, and municipal programs have begun to incorporate the LEED rating system into ordinances. LEED is now referenced in the U.S. in executive orders, resolutions, ordinances, and policies in at least 45 states, including 442 localities, 14 federal agencies or departments, and numerous public school jurisdictions and

institutions of higher education.[7] (In the U.K., the European Union, and the major industrialized nations, green building rating systems have been assembled, promulgated, and administered primarily by private sector organizations, and in some cases fervently embraced by national and regional building communities, but with far less regulatory participation by governments).

As discussed below, the overarching issue at this time appears to be whether governments will take private sector green building initiatives and programs and make them, in whole or in part, public policy or regulations. Set forth below is a list of issues that are defining this worldwide debate, along with a list of considerations that inform each issue.

1. Components Or A Comprehensive Standard?

The base of the green building pyramid is the act of taking best practices for each of the parameters of construction and performance – location, orientation, energy, water, materials, air quality, and education – and pulling them into an integrated whole. This step differentiates environmental regulation and individual construction techniques from the more comprehensive concept of green building. In most countries, this step has been initiated by a private sector organization.

2. Which Sectors: Residential, Office, Industrial, Commercial, Retail?

The second level of decision-making is whether the integrated program will cover residential, office, industrial, commercial, or retail structures, or some combination. The LEED standard began and evolved for private-sector commercial, institutional, office structures; LEED did not develop a standard for residential construction until 2008, more than a decade after it promulgated its first standards. (The major green building program in the U.K. primarily focuses on retrofits of residential structures, while among the European Union the main target is offices and institutional structures.[8])

3. New Construction, Rehabilitation, Or Both?

Whether a green building standard will include both new construction and rehabilitation appears to depend on two elements. The first is the scope of rehabilitation. If a "rehab" preserves an architectural façade but otherwise guts and rebuilds the structure, following green building practices and seeking a

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[7] *Public Policies Adopting or Referencing LEED,* U.S. Green Bldng. Council, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852.

[8] See "Green Building, A Summary of the European Union Green Building Programme," available at www.eu-greenbuilding.org, at 50-52.

particular rating is more likely than if the rehab is minor or does not involve an overhaul of heating and cooling equipment. Rehabilitation is also usually defined as a minimum formula, such as renovation of at least 50 percent of existing floor area. The second factor is whether the green building program has targeted the residential sector; setting standards for green rehabs is easier for residential structures, especially single-family homes, than for non-residential structures.[9]

4. Performance Standards, Emission Limits, Or Both?

The next differentiating characteristic of green building programs is whether they focus on efficiency (saving on resource use), emissions (adverse impacts on natural resources during or after construction), or both. Efficiency is the measure of achieving comfort and utility for building occupants – heating, cooling, electricity, clean water, and healthy air – through technology and construction techniques that reduce the consumption of natural resources or energy (recycled materials, for example). Emission controls, which may also be labeled pollutant avoidance, are the reduction or elimination of so-called "negative externalities" and impacts on abutters or neighbors that may result from construction. Soil erosion from building on steep slopes is often cited as the most significant pollution impact in construction, with its potential to transport sediment and silt and degrade water quality. Another branch of emissions control is the discharge of pollutants from building operations, such as greenhouse gases from building systems that rely on fossil fuels. An optimum green building standard, therefore, addresses both minimum standards and best practices for building construction and life cycle performance, as well as limiting or prohibiting negative environmental consequences.

5. Specify Materials And Products, Or Allow Market Forces To Dictate?

Green building standards are supposed to be best practices, and thus logically they should identify specifically for the building community the best and most cost-effective technologies, equipment, and products available. This becomes problematic, however, if a green building program endorses a specific company's product. Doing so raises antitrust concerns and creates an obstacle to

[9] See, e.g., E. Rosenthal, "Falling Behind on the Business of 'Green,'" *The New York Times*, June 8, 2011, describing the renovation for energy conservation in nearly 80 percent of the homes in the U.K., as compared to "the nearly untouched market of 120 million American homes." The article also describes how many European countries, Japan, China, and Korea, through incentives, policy, and public investment, have retrofitted residential homes as part of national energy policy, while imposing green building standards on non-residential.

innovation, since green building standards cannot be expected to be revised every time a new, superior product comes along.

The Sherman Antitrust Act[10] permits a cause of action in federal court for anti-competitive business practices. To succeed on an antitrust allegation, a plaintiff must prove both anticompetitive conduct and injury resulting from that conduct.[11] The Federal Trade Commission Act[12] bans unfair methods of competition and unfair or deceptive acts or practices.

A branch of antitrust law specifically addresses standard-setting organizations like the USGBC. When bringing an antitrust suit against a standard-setting organization, a plaintiff must show either that its products were barred from inclusion in the standard on a discriminatory basis, or that the conduct of the organization as a whole was manifestly anticompetitive and unreasonable. Thus, legislation that adopts one specific building rating system may raise anticompetitive concerns if its standard specifies a product by name or (more likely) characteristics that only one or a small range of products satisfy.

LEED illustrates this critical evolution issue. Under the LEED system, points can be awarded in five categories, one of which is Materials & Resources (MR). To comply with LEED MR Credit 7 requirements, fifty percent of wood-based materials and products used in construction must be certified by the Forest Stewardship Council (FSC).[13] As such, forest companies that do not supply FSC-certified wood cannot contribute to LEED MR Credit 7 and are more likely to be dismissed by contractors looking to attain certification on a particular project. Products that are not FSC-certified are therefore at an extreme disadvantage when government moves to incorporate LEED standards into legislation.

In October 2009, the Coalition for Fair Forest Certification (CFFC)[14] filed a complaint with the Federal Trade Commission, alleging anti-competitive behavior by the FSC and the USGBC.[15] The CFFC asked the FTC to investigate

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[10] 15 U.S. Code §§ 1-7 (2006).

[11] See 15 U.S. Code § 15.

[12] 15 U.S. Code §§ 41-58.

[13] *LEED for New Construction and Major Renovations, LEED 2009*, U.S. Green Bldng. Council at 55 (May 2011) http://www.usgbc.org/ShowFile.aspx?DocumentID=8868.

[14] The CFFC is made up of North American forest product companies, landowners, businesses affected by forestry certification, and trade and landowner associations that promote sustainably produced fiber and wood products.

[15] Letter to Federal Trade Commission on Behalf of the Coalition for Fair Forest Certification (Oct. 20, 2009) available at http://www.fairforestcertification.com/sitebuildercontent/sitebuilderfiles/coalition_letter_1.pdf.

the allegedly deceptive and unfair trade practices arising out of FSC's certification standards; to address concerns about anticompetitive activities and monopolization arising out of LEED's exclusive endorsement of FSC-certified products; and to provide guidance to standard-setting organizations concerning behavioral standards for compliance with antitrust law.[16]

Then, in March 2010, the CFFC wrote to directly to the USGBC because the latest proposed draft of the Forest Benchmark standard for recognition of Certified Wood in LEED would continue to provide FSC with a monopoly for certified wood for green building with no justifiable reason for doing so. According to the CFFC, USGBC "may face exposure to liability under federal antitrust laws."[17] In this letter, the CFFC asserted that LEED's exclusive endorsement of FSC certified products would be detrimental to landowners and manufacturers who were certified under different, though allegedly equivalent, standards.[18] They contended that it would be impossible to differentiate between products certified by each company and that "neutral but knowledgeable observers cite no meaningful differences between the major forest certification systems."[19]

The CFFC further voiced concerns with USGBC's decision-making process and their interactions with FSC.[20] In the letter, they alleged that USGBC's endorsement of FSC was arbitrary and that the USGBC had ignored negative commentary in what should be an open process.

The USGBC recently issued an Antitrust Compliance Policy,[21] but their newest version of LEED does not eliminate the exclusive endorsement of FSC-certified wood. There may be, however, a push to revise MR Credit 7 to require builders to use materials that are certified in accordance with "a forest certification scheme that is recognized after evaluation against the USGBC Forest Certification Benchmark."[22] At the moment, there is no indication of when or if this will actually occur.

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[16] Id. at 14.

[17] *CFFC Comments on USGBC Benchmarks*, Coal. for Fair Forest Cert., at 3 (Mar. 14, 2010) *available at* http://www.fairforestcertification.com/id6.html.

[18] CFFC specifically mentions The Sustainable Forestry Initiative (SFI), the American Tree Farm System (ATFS), Programme for the Endorsement of Forest Certification (PEFC). Id. at 1.

[19] Id. at 4, 8.

[20] Id. at 8.

[21] *Antitrust Compliance Policy*, U.S. Green Bldng. Council, http://www.usgbc.org/ShowFile.aspx?DocumentID=3573.

[22] *LEED for New Construction 2009, Draft Changes to MRc7*, U.S. Green Bldng. Council https://www.usgbc.org/ShowFile.aspx?DocumentID=6231.

Specifying or endorsing products in a way that avoids anticompetitive issues is a critical step in green building standard setting.

6. Who Pays For Green?

As private sector organizations deploy green building standards, and governments consider elevating green building from a private rating program or voluntary incentive program to some form of regulation, the issue of cost allocation arises. This criterion has four elements: (1) will building to meet a certain level of green increase construction costs? (2) will building green lower life-cycle / operating costs? (3) will lenders ascribe financial consequences or value to the green features of a building? and (4) to what extent can a green builder pass on any increased costs to a buyer or tenant of a new or rehabilitated structure?

Recent news articles identify several entry points for lenders and financing sources into green building. One is venture capital firms and other investors targeting energy efficient and green buildings as part of their portfolio (so-called "environmentally-conscious" investment funds). Another is public and quasi-public housing finance agencies including green building levels into their point systems for the allocation of tax credits, low interest loans, or grants.[23] A third connection, addressed further below, is whether appraisers ascribe value to green building efficiencies, most likely in the form of lower energy costs through life-cycle energy efficiency. If lenders decline to recognize value, then builders lose a key incentive to go green because they cannot recover their green expenditures or pass along the costs of their green building efforts.

7. When Does Government Step In?

Progressing further up the pyramid, we arrive at the predominant, current, critical issue in the evolution of green building, which is whether and when green building moves from a private sector rating system to government policy, whether incentive-based or regulatory. Two critical issues underlie this progression. The first is whether the efficiencies that can be achieved – energy use and cost reduction primarily – by green building on a broader or even society-wide basis are so substantial as to justify elevating private sector practice to public policy. The best example is: can mandating that a certain sector or percentage of new construction to achieve savings through the use of non-renewable fossil fuels in new buildings (or retrofits) be justified as part of national energy policy seeking independence from reliance on imported oil? Will mandating that new buildings

[23] See, e.g., "Housing Finance Agencies Embrace Enterprise Green Building Standards," *Sustainable Communities*, Jan. / Feb. 2011 at 5, regarding 18 housing finance agencies that have adopted green building into their grant criteria.

or rehab projects be built to achieve lower operating costs create green jobs? Will lower life-cycle operating costs free up money for reinvestment in business growth? Put another way, when a private sector has developed a sufficiently robust green building standard as to allow identifiable energy efficiency and financial benefits, does the standard then become fit for adoption by government?

The second factor, a counterweight to these questions, is the so-called "non-delegation doctrine." Despite the laudable effects of going green, there is growing concern that the delegation of lawmaking authority through the incorporation of privately-developed and updated green standards into law or regulation violates the non-delegation doctrine. This argument is rooted in the fact that rating systems exclude certain types of products, materials, and industries. When governments require newly-constructed buildings to receive a specified green certification, they effectively not only codify these biases but also leave changes in laws in the hands of private organizations.

Simply put, the non-delegation doctrine prohibits a legislature from delegating its constitutionally-granted lawmaking functions. To keep legislative power separate from the executive and judicial branches of government, constitutions and charters empower legislatures to take legislative action and to assign the power to execute the law, but forbid conferring upon other bodies the discretion and authority to determine what the law is.[24] The constitutional analysis of a legislative delegation concerns first whether a constitution will permit the legislature to delegate a task to another body, and second whether the body delegated such power has acted within bounds of the authority granted to it. The doctrine is rooted in the constitutional principle of separation of powers.

A legislature may delegate certain legislative tasks and powers to executives and governmental agencies, provided that the legislative act limits the delegated power and provides a standard to guide the executive's and agency's actions.[25] The modern test in American law is whether the legislature has set forth an "intelligible principle" to guide the agency or body in their actions.[26] In this way, agencies are not creating law; they are executing the law within specific parameters in accordance with legislative intent.

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[24] See *Loving v. United States*, 517 U.S. 748, 758 (1996) (stating that even though Article I, Section 1 vests lawmaking power solely with Congress, that "does not mean . . . that only Congress can make a rule of prospective force").

[25] See *City of Amsterdam v. Helsby*, 332 N.E.2d 290, 293 (N.Y. 1975) ("There is no constitutional prohibition against the legislative delegation of power, with reasonable safeguards and standards, to an agency or commission established to administer an enactment."); 16A Am. Jur. 2d Constitutional Law § 316.

[26] 16A Am. Jur. 2d Constitutional Law § 316.

In 2005, the State of Washington became the first state to mandate the American construction of new buildings in compliance with the LEED silver standard.[27] Like many of the state statutes that followed it,[28] the Washington law applies not only to state agency buildings, but also to many buildings that receive direct or indirect state funding.[29] These statutes implicitly delegate lawmaking authority to the USGBC by mandating compliance with the LEED silver certification for state projects in particular circumstances. By requiring only that certain buildings comply with the LEED silver standard, and by not specifying a particular version of the standard, the USGBC is free to change the existing standards, as it has done in the past.[30] In this way, the legislatures essentially give the USGBC power to create new standards and require new construction projects to comply with them.[31] As some have put it, entrusting a private organization to perform governmental functions is like asking the fox to guard the henhouse.[32]

These legislative measures do not merely charge the USGBC or the LEED committees with the duty of executing the law or determining if a building complies with the law, but they empower the USGBC to determine the law through the evolving criteria of the LEED silver standard. The adoption of LEED standards provides no "intelligible principle" guiding the LEED committees in setting LEED standards.

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[27] Wash. Rev. Code § 39.35D.030 (2011).

[28] Connecticut has adopted the LEED rating system by statute. See Conn. Gen. Stat. § 16a-38k(a) (West 2007 & Supp. 2010). Under the terms of this statute, new state facilities with projected costs of more than $5 million and other state renovation projects must comply with the LEED silver standard (or its equivalent) for the specific project type. Local and municipal governments have adopted LEED standards as well. In New York City, buildings costing the city $2 million or more must achieve the LEED silver rating. See N.Y.C. Local Law No. 86, § 2 (2005).

[29] Wash. Rev. Code § 39.35D.030 (2011) ("All major facility projects of public agencies receiving any funding in a state capital budget . . . must be designed, constructed, and certified to at least the LEED silver standard.")

[30] The USGBC developed LEED Version 1.0 in 1998. Version 2.0 emerged in 2000, followed shortly thereafter by LEED 2.1 in 2002. These later evolved into a suite of LEED rating systems for New Construction (LEED-NC), Schools, Existing Buildings (LEED-EB), etc. These were then succeeded by LEED 2009.

[31] On the other hand, if a state were to mandate compliance with LEED Version 2.2, specifically, contractors would have problems attaining LEED certification once the USGBC updates the rating system.

[32] See Shirley L. Mays, *Privatization of Municipal Services: A Contagion in the Body Politic*, 34 Duq. L. Rev. 41, 69 (1995).

Members of the USGBC who create and promulgate the LEED standards are not public officials. They are not elected by the public at large, appointed by a public official, or employed by the government in any way. Nor are they subject to the Freedom of Information Act or required to create their rating system in the open, transparent process that society demands of state actors.

Admittedly, there are limited benefits to having a private entity developing strategies for green building. The non-government organization bears the cost of researching and developing environmentally-conscience building techniques.[33] When many states are implementing green building codes to reduce energy spending, it is beneficial for a private party to bear some of the cost rather than having the cost shifted to the public sector by way of tax increases to fund research for green building technologies. Moreover, the USGBC can likely attract more qualified individuals and experts than individual legislatures.

8. Incentives vs. Regulation?

Tied closely to government's decision whether to enter the green building field as a policy matter is whether to do so as incentives or regulations. In other words, should government reward those who follow a green building standard, penalize those who do not on the ground that they are wasting precious, non-renewal resources or causing pollution, or both? Green building incentives reward builders and renovators for their voluntary compliance. These include zoning bonuses, tax credits, property tax abatements, and allocation of tax-exempt bonds. For example, the New York state legislature enacted laws incorporating the LEED system, which allow buildings complying with LEED-inspired green building standards to receive tax credits.[34]

Examples of prohibitory green regulations include prohibiting: construction on steep slopes; construction where passive solar techniques are not possible, if other locations are feasible; direct discharges of stormwater to sensitive receptors; and use of materials with high VOC emissions.

9. Private Or Public Buildings?

We examined earlier the decision about what types of buildings will be covered by a green building standard. A related issue for government is whether

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[33] LEED committees use green building experts to assess the implementation of green technology in the LEED rating system. See *LEED Technical Advisory Groups*, U.S. Green Bldng. Council, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1795.

[34] See N.Y. Tax Law § 19(e)(3)(A) (McKinney 2005 & Supp. 2010) (requiring that the New York Department of Environmental Conservation's (DEC) new regulations be "informed by the LEED rating system").

to impose green building regulation on publicly-financed or utilized buildings, or private sector initiatives? Governments find it easier to adopt rules for their own projects rather than to engage in the political and controversial process of imposing rules on private owners. Imposing green mandates on private owners raises serious cost issues, which can lead to legal challenges. Nonetheless, more and more governments are imposing green mandates on private projects.[35]

10. Preemption And Uniformity Or Local Variation?

Another important legal issue in any governmental program is preemption, that is, whether government will establish a single standard that preempts all others ("occupies the field") or establishes a national standard while allowing smaller, localized jurisdictions to pass their own standards. A middle ground is for the higher level of government to set a minimum standard but to allow inferior jurisdictions to exceed this standard. Preemption of regulation by inferior governmental entities is most often found in areas involving technical standards, where economic growth can be constrained by too many local variations. To date, it appears that most national and state governments have steered away from preemptive and uniform green building standards, because standards and innovation continue to evolve, and regional and climate differences warrant different standards.

11. Accounting Green Performance In Valuation And Appraisals?

As noted, venture capital firms and public financing agencies are increasingly attracted to green building. Their involvement in the long-term, however, requires the investment and appraisal community to ascribe positive values to green building programs. Green value-enhancing features include: lower construction costs; lower life-cycle energy costs; lower life-cycle maintenance expenses; avoidance of pollution mitigation or clean-up costs; and enhanced marketability due to green building being a socially desirable policy goal. Each of these parameters, to show up in appraisals, valuations, and forecasts, needs to be measureable or verifiable. It appears that this aspect of green building is in its earliest stages, but will evolve as green construction gives way to measurement of green performance.

12. Public Awareness vs. Consumer Protection?

A final issue is advertising. Companies around the world have jumped on the green bandwagon, promoting their products or services as green. In response,

[35] For example, Los Angeles, San Francisco, Boulder (Colorado), Albuquerque, Dallas, and New York City all have green codes that in some form apply to private non-governmental projects. Britell, *Green Buildings: Law Contract and Regulations* § 3.04 (2010).

the Federal Trade Commission (FTC), in cooperation with the EPA, has issued Guides for the Use of Environmental Marketing Claims (Green Guides), to prevent the false or misleading use of environmental terms in product advertising and marketing and to reduce consumer confusion.[36] The Guides are periodically revised, most recently in October 2010. The Guides include: (1) general principles that apply to all environmental marketing claims; (2) how consumers are likely to interpret particular claims and how marketers can substantiate these claims; and (3) how marketers can qualify their claims to avoid deceiving consumers.

Recently, the FTC reviewed Internet sites to investigate the nature and incidence of particular environmental marketing claims. Their research revealed that the highest proportion of web pages with claims addressed by the study – carbon, renewability, sustainability, and general environmental – occurred in the "Building, Home Improvement & Appliances" industry.[37] Not surprisingly, with so many states and municipalities adopting or incorporating LEED standards into their own regulations, manufacturers have begun to market their products based on the number of LEED credits contractors can attain by using their products.[38]

The Green Guides are administrative interpretations of the law, and are not enforceable. However, if a marketer makes claims that are inconsistent with the Guides, the FTC may bring a claim of unfair and deceptive practices under general, established, advertising laws.[39] The FTC has already brought law enforcement actions targeting allegedly false or unsubstantiated environmental claims. For example, the FTC charged four textile companies with false and unsubstantiated "green" advertising when the companies claimed that they used an environmentally-friendly manufacturing process, that their textiles were

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[36] 57 Fed. Reg. 36363 (Aug. 13, 1992). The Green Guides are available at 16 C.F.R. § 260; http://www.ftc.gov/bcp/grnrule/guides980427.htm.

[37] FTC Division of Enforcement, *Green Market Internet Surf*, Fed. Trade Comm'n, at 14, http://www.ftc.gov/bcp/edu/microsites/energy/documents/ftc-staff-internet-surf.pdf. Across the total data set of 1,000 web pages, the greatest proportion of pages occurred in the "Building, Home Improvement & Appliances" industry (22.1 percent) and the "Utilities & Energy" industry (11.6 percent). Id. at 6.

[38] See, e.g., *Leadership in Energy and Environmental Design – LEED*, Elmwood Reclaimed Timber, http://www.elmwoodreclaimedtimber.com/elmwood.aspx?pgID=2641 (advertising that "[a]ll of Elmwood Reclaimed Timbers Antique Products can help a project earn up to 5 LEED credit points.").

[39] *Reporter Resources: FTC's Green Guides*, Fed. Trade Comm'n, http://www.ftc.gov/opa/reporter/greengds.shtm.

biodegradable, and that the textiles were made bamboo fiber, when they were actually made of rayon.[40]

IV. WHERE WE FIND GREEN BUILDING STANDARDS.

We have addressed above the formulation of green standards. Implementation, in addition to actual construction, is influenced by where green standards are found and utilized. Green building standards are found in (1) construction or performance rating systems devised, administered, and amended by private organizations; (2) national, regional, or local statutes, regulations, codes, or ordinances requiring compliance and policies outlining goals or incentives; and (3) private contracts, including purchase and sale agreements, construction contracts, and leases.

A. Private Organization Rating Systems.

The most prevalent green building standards are privately-published rating systems. It is important to understand that green building began in the private sector as a compilation of best practices that morphed into scoring systems. One of the most prominent of these is LEED,[41] published by the USGBC, which is composed of stakeholders in the building, energy, and environmental sectors, including contractors, builders, manufacturers, and government entities.

LEED provides a scorecard with which a building must comply in order to obtain a specific rating. A building's rating depends upon the amount and types of LEED approved green features incorporated into the building's design. Using a scale system, a building earns points toward one of four LEED ratings: LEED certified, silver, gold, or platinum.[42]

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[40] *FTC Charges Companies with 'Bamboo-zling' Consumers with False Product Claims*, Fed. Trade Comm'n (Aug. 11, 2009), http://www.ftc.gov/opa/2009/08/bamboo.shtm.

[41] The USGBC has, since the mid-1990's developed LEED standards for homes, commercial interiors, core and shell, new construction, schools, healthcare facilities, retail sites, and neighborhood development. See *About USGBC*, U.S. Green Bldg. Council, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=124.

[42] For example, LEED for New Construction ratings are awarded according to the following scale: 100 base points; 6 possible Innovation in Design and 4 Regional Priority points; Certified 40–49 points; Silver 50–59 points; Gold 60–79 points; Platinum 80 points and above. *FAQ LEED for New Construction*, U.S. Green Bldg. Council, http://www.usgbc.org/ShowFile.aspx?DocumentID=3352.

LEED is, if nothing else, nearly ubiquitous in the U.S. However, LEED in the past several years has been widely criticized, with some commentators predicting its demise.[43] LEED has been called inflexible, by imposing many mandatory / baseline requirements; cumbersome in its registration and certification paperwork; costly on a per unit basis; anti-competitive in its product designations; insensitive to regional climate differences; and incomplete, with residential being at most an afterthought.

A newer and rapidly emerging rating system for residential development is the National Green Building Standard (NGBS). This standard was promulgated in 2009 by the Research Center (an independent entity) of the National Association of Home Builders. The NGBS is the only green building rating system that has been certified by the American National Standards Institute (ANSI), signifying that the NGBS is a consensus national standard. It too is a points-based rating system.

B. Statutes, Ordinances, And Regulations.

A number of states have implemented mandatory LEED or green building requirements for public or public-funded buildings. California has gone further than any other, with the 2011 adoption of its CALGreen program.

In California, in 2004, the Governor issued an Executive Order that all new and renovated state-owned facilities paid from state funds should be designed, constructed and operated as a LEED silver or higher certified building. In January 2011, California became the first state in the U.S. to issue mandatory building requirements for both state and private buildings. "CALGreen"[44] contains mandatory requirements for new residential and nonresidential buildings, including buildings for retail, office, public schools, and hospitals. In short, CALGreen aims to reduce construction waste, to make buildings more efficient in the use of materials and energy, and to reduce environmental impact during and after construction.

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[43] See "Duany Predicts Decline of LEED Standards," *Sustainable Communities*, March / April 2011 at 10.

[44] The code is Part 11 of the California Building Standards Code in Title 24 of the California Code of Regulations. Key mandatory provisions include: 20 percent reduction in water consumption from the previous code; 50 percent diversion of construction waste from landfills to reuse or recycling facilities; use of low pollutant-emitting materials; and mandatory inspection of HVAC (heating, ventilation and air-conditioning) and lighting systems in non-residential buildings over 10,000 square feet to ensure the systems are operating at maximum efficiency.

Several other states have created green programs for public buildings. More specifically, some green initiatives have focused on the building of public schools, because of the privileged position public schooling often has with voters and the growing evidence of increased student performance and reduced illness-related-absences for students in LEED-certified schools.

At the municipal level, various cities have adopted green building programs. Most programs have used incentives instead of a "command and control" approach. Incentives have included expedited permit processing, waivers of height limitation, waivers of density limitations and refunds of permit fees.

C. Purchase And Sale Agreements.

Terms and conditions covering green subjects are becoming commonplace in purchase and sale agreements. Typically, representations and warranties cover facts not available or easily accessible in land records or through physical inspection of the subject property. Thus, facts pertaining to green topics are becoming seller disclosure and verification steps, such as warranties that construction has occurred or will occur in compliance with specific green rating system levels.

Emerging areas where green standards are found in P&S agreements include: (1) current, ongoing validity of a certification level; (2) disclosure of materials submitted to obtain a green rating; (3) compliance with contractual obligations adjunct to a green rating (such as ongoing life-cycle assessments); (4) compliance with green government regulations; (5) education of tenants, managers, mortgagees or users as to green obligations; and (6) allocation of green tax credits, abatements, or subsidies relating to the property. For instance, a buyer's prospective lender may require confirmation of a green rating as a condition to the buyer's financing. Or, the buyer may need the green rating to qualify for government grants, income tax credits, property tax abatements, or tenant improvement allowances. Buyers negotiating for properties with tax credits that are already in use need to confirm the amount of credits remaining unused as of the closing date, that the credits follow title, and that the property still qualifies under the particular program.

D. Construction Contracts.

Obviously, since green building standards are primarily construction specifications and techniques, contracts that specify achieving a particular green rating need to be crystal clear about how compliance will be achieved, who is responsible, and who pays. An evolving (and interesting) confluence of green building and construction contracting is the use of Building Information Management (BIM) systems, which monitor whether as-built structures follow approved plans, and whether building operations follow procedures that deliver green life-cycle results.

E. Leases.

For the same reasons that green rules appear in P&S agreements, they are increasingly present in leases. When a property has one or more major tenants, buyers now require the sellers to covenant that they have complied with green requirements imposed by tenants. Because a major lease is vital to a buyer's investment, and because such leases may now have special damages for noncompliance with the tenant's green rules, such covenants may be very specific. With the growth of LEED-EBOM (LEED for Existing Buildings: Operations and Management), the increasing legal and competitive pressure to run energy efficient buildings, and the market demand for the higher quality-of-life aspects of green buildings, combined with the long lead-time and capital necessary to retrofit a building, leases are a tool for spelling out obligations and responsibilities.

Major tenants may impose green rules on a landlord, or a lender may impose green rules as a condition of a new loan. A landlord may also impose green rules before approving new alterations by an existing tenant, new sublease, or assignment. This can result in cost issues for existing tenants, who need to carefully review their existing lease clauses for pass-through of operating expenses and capital costs and for "compliance with law" provisions.

V. WHERE WE GO FROM HERE.

A. The Current Shape Of Green Building.

Thus, in 2012, it is fair to summarize the political, practical, and legal choices that have been made – the pyramid from the bottom up, if you will – as follows:

- Green building programs have been devised worldwide, and are now found in some form in most major, industrialized countries.

- We have a common, core definition of what green building is and is not.

- Green building standards are created and promulgated primarily by private organizations, which saves government from the effort and expense but can be problematic because such organizations are not open to public scrutiny.

- The primary focus of green building standards has been offices, commercial structures, institutions, and publicly-funded buildings such as schools.

- Although standards cover rehabilitations, most are used for new construction.

- In all sectors, including residential, the primary rehabilitation / retrofit activity has been energy savings, through reductions of consumption and better insulation / building envelope techniques.

- Many national, regional, and local governments have incorporated a green building standard into policy and guidelines or encouraged compliance through incentives; regulations mandating achievement of specific green building rating system levels (LEED Silver, for example) remain relatively infrequent, though the trend is toward more such activity.

- The State of California's new CALGreen program appears to be the most far-reaching, specific regulatory program in existence.

- To the extent that governments have adopted green standards, they have not preempted other or lower jurisdictions from devising their own standards.

- While standards for new construction are now well established, tools for life-cycle assessments of building performance are new and evolving.

- Among the core elements of green standards, energy, water, and materials efficiency remain the primary goals, with sustainability and pollution avoidance secondary.

- Appraisers and lenders have been slow to ascribe value to achievement of particular green building certification levels, most likely because added value will be based on demonstrated lower construction costs, faster rentals at higher rates, and life-cycle energy or maintenance cost savings, each of which is still in its earliest stages.

- The principal, on-going legal issues in implementation of green standards are antitrust / anticompetitive concerns stemming from specifications that favor particular products; government incorporating privately-promulgated and evolving standards as public policy; national uniformity vs. local variation; and curbs on misleading advertising claims.

Anecdotally, it appears that two kinds of buyers are embracing green building: those who do so based on moral, social, or political sense of obligation to promote environmentally sustainability, and those who do so to save money, principally on energy costs. The resource-preservation benefits of green building

have been extensively written about, but the economic benefits have been difficult to quantify for lack of long-term performance data and a standardized approach to valuation of green features. *This latter factor is about to change*.

B. The Appraisal Institute's 2011 Addendum.

In September 2011, the Appraisal Institute issued its long-awaited Addendum (copy attached) to the Fannie Mae Form 1004, the nation's most widely used valuation form in mortgage lending. The Addendum allows appraisers to identify and describe a home's green features beyond mere energy-efficiency of appliances, and more importantly *allows them to make positive or negative adjustments to value based on green features*. It is difficult to predict exactly what the effect of this Addendum will be on the inclusion or addition of green features to homes, but also it is not difficult to envision the Addendum as nothing less than transformative, as valuation professionals begin to put dollar values, positive and negative, on particular green features.

The Addendum goes well beyond energy efficient kitchen appliances; it covers insulation, windows, lighting, heating, air conditioning, solar, water saving, water reclamation, landscaping, and even access to public transportation as a way for purchasers to save on community expenses. The Addendum takes note of particular energy ratings or green building standards that the home has achieved, such as LEED or NGBS certification, or HERS rating. In addition, the Addendum takes note of the age and maintenance of green features, such as the age of installed solar panels. Finally, the Addendum notes federal, state, or local tax credits or other incentives that were utilized by the owner or are available to the prospective purchaser.

There is no doubt that use of the Addendum will require a learning curve for all parties, but the simple fact that green features are on their way to having dollar value attached promises a market shake out, as money will flow more readily to the features that save expenses and add value, while those that add expense while achieving minimal sustainability will at least be spotlighted for lenders, sellers, and buyers.

C. Measurement And Valuation Of Long-Term Structure Performance.

Recent news articles have spotlighted four trends in energy use in buildings:

- Large institutional users such as schools are learning that they can achieve substantial savings by proactive management of their electricity use;

- Private sector investors have discovered potential profits in acquiring buildings for the primary purpose of renovating them for energy efficiency and using a deferred property tax surcharge authorized by state law (known as "PACE" programs) to pay for upgrades;

- More and more multi-year studies are being completed of energy use in buildings that were originally built to green standards or were retrofitted, allowing more precise quantification and valuation of the energy features of these buildings; and

- Appraisal and brokerage companies are beginning to attribute value increases to green-certified and energy efficient buildings.

Energy use is often "low hanging fruit" for large institutional users such as schools and other public buildings.[45] Simple techniques include installation of motion detectors, unplugging equipment used only on a seasonal basis, lowering temperatures in places like swimming pools and cafeterias, and turning off exhaust fans when not in use. Other programs include appointing staff as energy managers and issuing "tickets" to energy wasters.

As to private investors who retrofit buildings and use deferred property tax surcharges, a consortium led by entrepreneur Richard Branson has put together a model, focused on commercial properties such as offices, of investing private funds in energy-saving upgrades, and recovering the investment over a period of up to twenty years through a PACE property tax surcharge that is less than the annual energy savings.[46]

Regarding quantification of long-term performance, in November 2011, Deutsche Bank released a report examining energy use of 19,000 retrofitted housing units in New York City. The study demonstrated 19 percent savings on fuel bills for heat and 10 percent on electricity use.[47] Traditionally, lenders and investors have been unable and unwilling to base underwriting on promised results of energy retrofits due to lack of reliable data. This new study appears to be a step toward changing that practice.

In a January 2012 market report, CB Richard Ellis reported that nationwide, energy efficiency is being quantified and capitalized, with each

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[45] W. Hu, "With Post-Its and Checklists, Schools Cut Their Energy Bills," *The New York Times*, Aug. 15, 2011, p. A1.

[46] J. Gillis, "Tax Plan to Turn Old Buildings 'Green' Finds Favor, *The New York Times*, Sept. 20, 2011, p. B1.

[47] J. Satous, "Study Clarifies the Energy Savings in Retrofitted Buildings," *The New York Times*, Nov. 9, 2011, p. B5.

$1.00 in energy cost reduction resulting in a $0.95 increase in rent; and certified green buildings commanding 13 percent higher values.

D. The Primacy Of Energy Efficiency.

Despite all of this good news about the economic benefits of green features being quantified and attracting investment, there remains among the residential building community a buyer attitude issue that appears problematic and perhaps intractable: *most residential buyers are interested in energy efficiency that will save them money, but relatively few are ready and willing to pay for features that promote environmental sustainability or reduce pollution if added cost is the result*. While this attitude is understandable, especially amid current economic difficulties, one wonders if the future of green building for the vast majority of residential buyers will be focused almost exclusively on energy use, with green techniques such as material efficiency, waste reduction, water use efficiency, and Low Impact Design for stormwater playing a subsidiary or marginal role.

E. Recognizing The Downside Of Green Standards.

Another concern about green building, and one that emerges directly from current economic strains, is the issue of when governments require or encourage green building and lower carbon footprints in a way that is economically detrimental to large segments of the population. In an incisive article, "The Dark Side of the 'Green' City,"[48] Professor Andrew Ross of NYU pointed out why "not everyone can afford low-carbon living." Ross explains that environmental sustainability, as opposed to energy-efficiency, features in housing are still more likely to add cost and thus negatively impact affordability; metropolitan programs, to improve mass transit and lower carbon footprints, need to consider bringing mobility to citizens who can least afford transportation costs; and public investment in green features should not favor wealthy areas or residents.

F. Product Innovation – Passive Homes?

Lastly, we have the ongoing role of innovation in products and building techniques. Recently, several companies in the U.S. have started to build and offer "passive houses," which are hyper-insulated homes with no furnace or fuel-using heat source, and rely on energy recovery ventilators and a principle called "counterflow," in which inside air is conditioned through a heat-trapping membrane, while outside air is pulled in and warmed by the membranes. Passive houses have existed in Germany for years, but are just now being introduced here in the U.S. They can add ten percent to construction cost, but with no furnace or fuel costs, result in a substantially less expensive house to operate. Passive

[48] *The New York Times*, Nov. 7, 2011, p. A21.

houses typically use 10 percent of the energy of a conventional home (that is, a 90 percent reduction).[49] Such homes have been more popular in Europe where energy costs are higher, but increased energy costs in the U.S., combined with the substantial energy reduction, are creating a market here for companies that have learned passive home construction techniques.

VI. CONCLUSION.

So where does green building go from here? For the private sector, a primary focus on energy efficiency, with the hope of adding value and attracting private investment, and a secondary focus on environmental sustainability and pollution reduction. For municipal and state government, attention to when and where government should intervene in green building to address market excesses or deficiencies that are not in the public interest.

ATTACHMENT: Residential Green and Energy Efficient Addendum, The Appraisal Institute, September 2011

[49] E. Rosenthal, "No Furnace But Heat Aplenty In Innovative 'Passive Houses,'" *The New York Times*, Dec. 27, 2008; A. Gregor, "'Zero Energy' Construction Crosses The Ocean," *The New York Times*, Dec. 4, 2011, Real Estate p. 1.

AI Reports®
Form 820.03*

Client File #: | Appraisal File #:

Residential Green and Energy Efficient Addendum

Client:
Subject Property:
City: | State: | Zip:

Additional resources to aid in the valuation of green properties and the completion of this form can be found at http://www.appraisalinstitute.org/education/green_energy_addendum.aspx

ENERGY EFFICIENT ITEMS

The following items are considered within the appraised value of the subject property:

Insulation	☐ Fiberglass Blown-In ☐ Foam Insulation ☐ Cellulose ☐ Fiberglass Batt Insulation ☐ Other (Describe): ☐ Basement Insulation (Describe): ☐ Floor Insulation (Describe):	R-Value: ☐ Walls ☐ Ceiling ☐ Floor
Water Efficiency	☐ Reclaimed Water System (Explain): ☐ Cistern - Size: Gallons Location: ☐ Rain Barrels - #: ☐ Rain Barrels Provide Irrigation	
Windows	☐ ENERGY STAR® ☐ Low E ☐ High Impact ☐ Storm ☐ Double Pane ☐ Triple Pane ☐ Tinted ☐ Solar Shades	
Day Lighting	☐ Skylights - #: ☐ Solar Tubes - #: ☐ ENERGY STAR Light Fixtures ☐ Other (Explain):	
Appliances	ENERGY STAR Appliances: ☐ Range/Top ☐ Dishwasher ☐ Refrigerator ☐ Other:	Water Heater: ☐ Solar ☐ Tankless (On Demand) Size: Gal.	Appliance Energy Source: ☐ Propane ☐ Electric ☐ Natural Gas ☐ Other (Describe):
HVAC (Describe in Comments Area)	☐ High Efficiency HVAC - SEER: ☐ Heat Pump ☐ Thermostat/Controllers ☐ Passive Solar ☐ Programmable Thermostat ☐ Wind ☐ Radiant Floor Heat ☐ Geothermal	
Energy Rating	☐ ENERGY STAR Home ☐ HPwES (Home Performance with ENERGY STAR) ☐ Other (Describe):	☐ Indoor Air PLUS Package ☐ Energy Recovery Ventilator Unit ☐ Certification Attached
HERS Information	Rating:	Date Rated:	Monthly Energy Savings on Rating: $
Utility Costs	Average Utility Cost: $ per month based on:		☐ Dashboards - #:
Energy Audit	Has an energy audit/rating been performed on the subject property? ☐ Yes ☐ No ☐ Unknown If yes, comment on work completed as result of audit.		
Comments			

*NOTICE: The Appraisal Institute publishes this form for use by appraisers where the appraiser deems use of the form appropriate. Depending on the assignment, the appraiser may need to provide additional data, analysis and work product not called for in this form. The Appraisal Institute plays no role in completing the form and disclaims any responsibility for the data, analysis or any other work product provided by the individual appraiser(s).

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Client:		Client File #:	
Subject Property:		Appraisal File #:	

Solar Panels

The following items are considered within the appraised value of the subject property:

Description	Array #1 ☐ Leased ☐ Owned	Array #2 ☐ Leased ☐ Owned	Array #3 ☐ Leased ☐ Owned	Array #4 ☐ Leased ☐ Owned
KW				
Age of Panels				
Energy Production Kwh per Array				
Source for Production				
Location (Roof, Ground, Etc.)				
If Roof/Slope for Array				
Azimuth per Array				
Age of Inverter(s)				

Name of Utility Company:	Cost per Kwh charged by Company: $ /Kwh
Comments (Discuss incentives available for new panels, condition of current panels, and any maintenance issues)	

Green Features

The following items are considered within the appraised value of the subject property:

Certification	Year Certified:	Certifying Organization:	☐ Reviewed on site	☐ Certification attached to this report
Rating	Score:	☐ LEED® Certified: ☐ Silver ☐ Gold ☐ Platinum ☐ Other:		
		☐ ICC-700 *National Green Building Standard* Certified: ☐ Bronze ☐ Silver ☐ Gold ☐ Emerald		
		Certifying Organizations Green Score Range - High Score:	Low Score:	
Additions	Explain any additions or changes made to the structure since it was certified:			
	Do changes require recertification to verify rating is still applicable? ☐ Yes ☐ No			
Comments				

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Location - Site			
The following items are considered within the appraised value of the subject property:			
Walk Score	Score:	Source:	
Public Transportation	☐ Bus - Distance: Blocks	☐ Train - Distance: Blocks	☐ Subway - Distance: Blocks
Site	Orientation - front faces: ☐ East/West ☐ North/South	Landscaping: ☐ Xeriscaped ☐ Zero Impact ☐ Natural	
Comments			

Incentives - Amount of Incentive and Terms	
The following items are considered within the appraised value of the subject property:	
Federal	
State	
Local	
Source	
Comments	

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