



British
Columbia
Construction
Association

[A STUDY ON THE RISKS AND LIABILITIES OF GREEN BUILDING]

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EXECUTIVE SUMMARY

Green building continues to gain momentum, but legal issues related to green building also continue to arise in the United States as well as here in Canada. This paper focuses on LEED, but also addresses concerns regarding rating systems. This paper discusses trends in green building policy as well as legal cases as yet unresolved during the release of the previous Study Paper, “A Study on the Risks and Liabilities of Green Building” (2011), as well as cases which have since emerged.

The legal cases discussed here involve every level of the construction industry and a host of legal claims and issues. These cases demonstrate how Limitation Acts may defeat an otherwise valid legal claim; how external funding linked to certification of a project can add complexity and additional oversight; how green leases may require third-party certification or other green requirements; how industry resistance to green building codes has resulted in divergent legal outcomes in the United States; and how legal disputes involving LEED have involved material suppliers in patent disputes.

New cases which have arisen in the past year can be grouped into three broad categories, including: cases which demonstrate how builders and regulators often conflate LEED with green or sustainable design; cases that demonstrate how common legal claims often involve tenant’s unmet expectations; and cases that involve bidding disputes, tax assessment, and material suppliers. Industry participants should be careful to temper client expectations and avoid language such as “built to a LEED-like standard”, as this may form the basis of misrepresentation claims.

Buildings continue to be a prime target for energy and emission reduction strategies, given their status as the largest consumer of natural resources. Governments and industry both pursue a wide range of green building strategies including: third-party certification; energy and water efficient building codes; green roofs; on-site energy production; public disclosure of energy use and emission rates; and financial incentives to encourage high efficiency buildings.

These trends also indicate a particular focus by regulators on existing building stock. Governments increasingly reference standards which underpin rating systems rather than the rating systems themselves (i.e. ASHRAE). Further, the outcome of the American GSA review of rating systems may signal the end of the exclusive use of LEED by the American Federal government.

Greener building codes will continue to be developed and enforced alongside third-party rating systems. An unresolved issue for industry is the extent to which buildings will be evaluated post-occupancy, as the use of buildings by final tenants can have a significant impact on a building’s efficiency. Public policy focused on green building should reflect this reality. Further education for a new generation of building managers is essential to fully benefit from high performance buildings.

Another unresolved issue is the extent to which rating systems should be incorporated in standard contract documents. Canada currently lacks national consensus on this issue.

The construction industry should consider developing an innovation strategy in order to account for the scrutiny placed on it by the public and by regulators. It is difficult for participants in the construction industry to assess and respond to the changing green building landscape, from novel building products targeting the construction industry to government green building policies. Understanding the challenges and opportunities presented by green building will be the key to success for every participant in the Canadian construction industry.

PART ONE

INTRODUCTION

WHY WRITE AN UPDATED STUDY PAPER ON GREEN BUILDING?

Since the release of the previous Study Paper in 2011ⁱ, green building has continued to shape the construction industry in Canada and around the world. Some issues covered in the previous paper have been resolved while others remain to be settled. The construction industry in British Columbia now has greater experience with green building and we can take this opportunity to reflect on those experiences as we plot the course forward.

Many drivers which have been pushing the industry as a whole towards green building remain active. Public pressure on government and industry to respond to environmental concernsⁱⁱ as well as the financial benefits often associated with green buildingⁱⁱⁱ support a growing green building market.

Strategies vary across the world, but the need to address carbon dioxide emissions^{iv} and accelerated rates of sea level rise^v find common ground in the construction industry as the built environment accounts for an overwhelming percentage of energy use and GHG emissions.^{vi} Several sources have indicated that relatively easy gains can result from focusing on the construction sector – it is low-hanging fruit for government policy on climate change.

Government regulation of the built environment dates back at least 4000 years and continues for much the same purpose: protection of the public from perceived harms.^{vii} Today, perceived harms drive much of public policy, seeking efficiency gains and reductions in GHG emissions, as shown in government policy (which references rating systems in local bylaws or focuses on the standards underpinning rating systems (ASHRAE, MNECB, etc.)). This can also be seen in jurisdictions requiring public disclosure of a building's energy use and incorporation of on-site energy generation. In addition, some jurisdictions will soon implement mandatory compliance with project management tools such as Building Information Modeling (BIM) in hopes of reducing waste.^{viii}

This paper updates several topics previously covered while addressing issues which have arisen over the past year. International sources will be used but the paper focuses on developments affecting British Columbia's construction industry. Rating systems and performance standards continue to emerge, with government reliance on these to demonstrate commitment to fighting climate change.

As codes and standards continue to evolve, the concept of building performance gains traction. As the rationale for improving building efficiency zeroes in on GHG emission reduction, there have been several indications that the American national "green building strategy" may not continue to depend upon rating systems such as LEED. If so, what does this signal for users of LEED here in Canada with resources invested in developing business practices to comply with LEED requirements? What other trends are emerging and what can they tell us about the future of green building?

The paper focuses on developments around LEED and legal cases that demonstrate how – for better or worse – LEED and “green” have become synonymous for builders and regulators alike. This is, in part, a result of how LEED has been able to provide an accessible template for regulators and builders to follow. The goal of the paper is to help the reader better understand the impact of green building on the construction industry generally and how these trends affect British Columbia specifically.

LAYOUT OF THE PAPER

PART ONE

The paper begins with an introduction and describes the layout of the paper. Updates to legal cases covered in the 2011 Study Paper are provided. New cases that have emerged over the previous year are discussed.

PART TWO

The second part of the paper discusses trends in Canadian, American and international government green building policy, market projections for the green building industry, and the relationship between third-party rating systems and green building codes.

PART THREE

The final part of the paper concludes with a discussion of issues left to be addressed by the construction industry. Should the construction industry continue to support green building initiatives through third-party rating systems? If so, should changes be made to standard contract documents? If not, should the construction industry focus on greener building codes?

As with the previous paper, the discussion that follows is intended for informative purposes only and should not be relied upon as legal advice in any way.

GREEN BUILDING CASE STUDIES

In the previous Study Paper, several examples of green building litigation were examined in order to identify some common issues that participants on green projects might encounter. At the time of writing many of these cases were as yet unresolved. With the passing of another year we can now update the status of these disputes and also provide an overview of new cases that have since arisen.

This section will begin with an update to projects that were discussed in the previous Study Paper and move on to new examples of green building issues from the United States and now also from Canada. Please refer to the previous Study Paper for a more in-depth discussion of cases previously covered.

PREVIOUS CASE STUDY UPDATES

Chesapeake Bay Foundation Inc., et al. v. Weyerhaeuser Company

Background

This case involved claims made against Weyerhaeuser in relation to a wood-based building product known as “Parallams”. The plaintiffs include the Chesapeake Bay Foundation, SmithGroup Inc. (the principal designers), and Clark Construction Group (the contractors commissioned to complete the project). In total, five claims totaling more than \$6 million were made against Weyerhaeuser including (i) breach of contract, (ii) common law indemnity, (iii) contribution, (iv) negligent misrepresentation, and (v) negligence.

These claims arose out of allegations that “Parallams” (supplied by and treated by Weyerhaeuser) had been exposed to exterior weather conditions resulting in deterioration to the point of posing a risk of death or serious injury.^{ix} According to the court documents, the building experienced problems relatively early on and the Owners took steps to identify, understand, and remediate the problem. The allegations were based upon water ingress either due to improper sealant, supplied building material, or both.

Update

A District Court in Maryland recently granted Weyerhaeuser summary judgment dismissing all claims as a result of their expiration under that State’s applicable limitation period.^x The court held that the plaintiff’s claims had accrued in 2001 and had expired in 2004, nearly seven years before the claims were brought forward.^{xi}

Analysis

The plaintiffs may have had a meritorious claim but lost their right to pursue it when they failed to initiate timely legal action. While the outcome of this case turns on an interpretation of limitation periods specific to Maryland, the way in which the legal claims arose highlights a potential issue common to many green building projects. What this case demonstrates most fundamentally is the risk tied to novel green building materials and design. Weyerhaeuser, as the material supplier, was able to avoid liability but all other parties are now left to determine who will incur the costs of remediation.

Given the recent changes to British Columbia's *Limitations Act*, the case becomes more salient. Under the new *Limitations Act*, the basic limitation period is now two years for most claims and an ultimate limitation period of 15 years applies to all claims.^{xii} This shortened window means that those involved in a dispute will have less time to commence legal action once a claim becomes discoverable. These changes to the ultimate limitation period in British Columbia may shield Contractors and Designers from liability.

For example, defects based on inappropriate material choice or design may not become apparent for many years, if at all. However, after 15 years passes from the date of construction, no claim may be brought forward.

While we are not able to have the benefit of a judicial determination of the claims based on their merits, the case still demonstrates potential issues associated with novel green building material.

Destiny USA Mega Mall, Syracuse, NY

Background

Perhaps one of the more ambitious “green” developments around, the Destiny USA centre has drawn a great deal of media attention; both positive and negative.^{xiii} The project is a LEED Gold-certified 850000 square foot expansion of the hundred-year-old Carousel Center owned by developer Robert Congel. Rick Fedrizzi, the CEO of the USGBC, described the development as a showcase of what LEED is capable of on a large-scale and publicly endorsed the project in 2002.^{xiv}

The project was initially supported by “green building” provisions of the Federal *American Jobs Creation Act* of 2004 and through a tax exempt bond program controlled by the Syracuse Industrial Development Agency (SIDA). The Internal Revenue Service was charged with providing oversight of the loan program. The capital raised by sale of the bonds went towards an interest-free loan which, according to the developer, saved \$120 million on the project.

To qualify for the \$238 million loan, the project had to seek LEED certification for 75% of its square footage, be “reasonably expected” to receive certification, and incorporate other sustainable features.^{xv} Some of the sensational features publicly touted by the developer to qualify for the loan were dropped, including a 45 megawatt biofuel plant and 290000 square feet of photovoltaic cells.^{xvi}

Update

In an apparent win for investors holding the green bonds, the project recently obtained a favorable review by the IRS which affirmed the continued tax exempt status of the bonds. If the status had been lifted, the developer would have had to forfeit over \$2 million held in reserve by SIDA and face potential recourse from investors. According to the IRS, the sustainable features initially promised were not required to materialize due to the downturn in the American economy.^{xvii}

A separate deal between the City of Syracuse and the developer continues to create friction. The City and developer had originally agreed to a three-phase expansion of the mall in return for exempting certain lands held by the developer from property tax. In 2011, Robert Congel attained a six month extension on the tax exemption deadline because the first phase had yet to be completed.^{xviii} Further negotiations between the City and the developer resulted in an agreement whereby quarterly payments totaling \$4.4 million could be made in lieu of taxes.

The developer made payments in January and April but made the July payment “under protest”, claiming that no further payments would be made as their obligations are now complete. SIDA may seek legal recourse to recover the remaining \$1.1 million – apparently the parties do not agree on whether or not the first phase (now the only phase) can sufficiently be described as the “final phase” in order to satisfy the terms of their original agreement.^{xix}

While the particulars of the disputed agreement may not be critical to our discussion, the project still shows the risk associated with funding tied to final certification under a third-party rating system.

Green Leases & Destiny USA

Perhaps the most interesting aspect of the development is the fact that tenants seeking retail space inside the mall will all have to achieve LEED certification as part of their lease agreement.^{xx}

The main expansion was certified under LEED 2010 Application Guide for Multiple Buildings and On-Campus on February 6, 2012.^{xxi} Individual tenants seeking certification may draw upon common credits approved under the expansion’s certification. Two tenants have already been individually certified under this arrangement and all future tenants will apparently have to follow suit.^{xxii} With Destiny USA, LEED certification was a substantial component of the lease agreement but may not be required for every green lease – each agreement may have a differing definition of “green”.

An alternative approach can be seen in the green lease arrangement between New York law firm WilmerHale and developer Larry A. Silverstein at 7 World Trade Center.^{xxiii} The lease incorporates contract language from Mayor Bloomberg’s Office of Long Term-Planning and Sustainability^{xxiv} which builds upon work done by the Natural Resources Defense Council (NRDC) Green Lease Forum.^{xxv}

This kind of agreement provides an incentive to Owners to pursue upgrades which would typically only benefit the Tenant through lowered operating costs. Following the model language, the Owner is able to include a portion of the projected cost savings into the operating expenses to be paid by the Tenant. The Owner is then able to charge up to 80% of these costs over the projected time it would take for the energy savings to pay off the initial investment in upgrades.^{xxvi}

A more modest approach to green leasing can be seen in a commercial space owned and operated by Allan and Anita Malbranck in Winnipeg, Manitoba. Under their lease, tenants agree to certain “green terms” such as using energy efficient lighting, eco-friendly building materials, and participating in recycling programs.

While some shied away from the green requirements of the lease, final tenants got on board largely because the terms aligned with their own philosophy. Importantly, and in contrast to the Destiny USA example, tenants are not required to achieve third-party certification.^{xxvii} Further information on the first model green lease developed in Canada can be found on the Real Property Association of Canada’s (REALPAC) website.^{xxviii}

It remains to be seen how the leasing arrangements will play out in Syracuse and whether an approach to “green leasing” that requires third-party certification continues to gain popularity. However, the approach being spearheaded by the Destiny USA project begs the question, what will happen if a potential tenant invests in building their suite to meet the lease requirements but then fails to achieve certification?

Air Conditioning Heating & Refrigeration Institute, et al. v. City of Albuquerque; and the Building Industry Association of Washington v. Washington State Building Code Council

Background

As previously reported, past cases in America demonstrate industry resistance to the introduction of stringent energy efficient building codes. At least two cases have emerged which differ in their interpretation of an American legal theory known as “preemption”, which refers to the inability of a lower level of government to legislate in an area already occupied or controlled by a higher level of government. Final decisions have now been released in both cases but with opposite outcomes. As with *Chesapeake* above, the specific jurisprudence of the country and court involved come to bear on the outcome of the case. The issues raised are still relevant to the future of green building in Canada.

In *AHRI*, the plaintiffs successfully argued that new energy efficient building codes introduced by the City of Albuquerque had been preempted by federal law. In 2011, the court held that the prescriptive path of compliance had been preempted and was therefore invalid and unenforceable. At that time, the court had not ruled on the validity of an alternative performance path of compliance.

Update

In 2012, the court determined that a separate performance path could not be severed and was therefore invalid along with the prescriptive path. The dispute took four years but ultimately removes the ability of the City to enforce its proposed green building code. The outcome is ambiguous as to whether a standalone performance path of compliance would be valid.^{xxix}

In contrast, the plaintiffs in *BIA* were not ultimately successful and the State of Washington will be able to enforce energy efficient changes to their building code. The Building Industrial Association of Washington had attempted to argue that the state-level codes exceeded federal standards and that certain paths to compliance were unfairly weighted. Both the Sierra Club and Natural Resources Defense Council assisted Washington with their successful defence.^{xxx}

Analysis

The cases demonstrate two things; first, that not all industry groups are completely onside with the movement towards energy efficient building codes; and second, they demonstrate the potential difficulty in creating local green building regimes without considering their integration at a national level. This latter point can be seen in the way green building trends have emerged in Canada.

Several jurisdictions have moved towards mandatory compliance with third-party rating systems such as LEED or Green Globes.^{xxxi} However, this requirement often applies only to public projects and more importantly introduces an independent party who has the ability to determine when a construction contract is complete. One major issue with this arrangement is that responsibility for achieving credits towards certification is distributed among multiple parties. This creates a situation where no single party is able to guarantee final certification or contract completion.

As discussed in the previous Study Paper, this introduces a significant level of uncertainty and risk which may be accounted for in contract documents. The American cases discussed above differ in that they involve building codes rather than rating systems, yet still highlight difficulties encountered by jurisdictions moving toward more stringent energy and water efficient building codes.

RB Rubber Products, Inc. v. ECORE International Inc.

Background

The previous Study Paper covered a pair of cases involving material supplies and allegations of improper patent enforcement and antitrust. One of those cases, *Kenetics Noise Control v. ECORE*^{xxxii}, was dismissed in March 2011 due to lack of jurisdiction while the other, *RB Rubber Products v. ECORE*, had yet to be resolved.

Update

The defendant in *RB Rubber Products*, ECORE has recently had the case against them dismissed on grounds of (i) estoppel and (ii) insufficient pleadings. On March 13, 2012 a District Court in Oregon agreed with ECORE that previous litigation in Pennsylvania had resolved the substantive issues in favour of ECORE and therefore barred any further litigation.^{xxxiii} Perhaps more than anything, these cases show the currency that green has in the marketplace. As novel building materials proliferate to meet the demand in the green building marketplace, these kinds of disputes will likely continue.

NEW CASE STUDIES

Many new cases have emerged since the completion of the previous Study Paper. Some of the following cases are intimately tied to rating systems while others could be described as more incidentally connected. However, even those cases that turn on issues not directly tied to third-party certification still demonstrate the extent of LEED's market penetration and the popularity of green building strategies as a whole. The cases below can be roughly grouped into three broad themes.

Some cases use third-party rating systems to satisfy the environmental or sustainability requirements of zoning bylaws. In four of the cases, LEED is relied upon by applicants and courts to show how statutory language requiring certain standards of "green design" have been met. In the Canadian case from Ontario, the opposite conclusion is reached; third-party certification is not deemed to be a sufficient guarantee of sustainable construction or satisfy the requirements of the local zoning plan.

Other cases more closely align with issues covered in the previous Study Paper. Five cases described below involve allegations of misrepresentation, fraud, or breach of contract. These cases can be broadly described as disputes arising from buyer's expectations not being met due to issues with green building materials, HVAC systems, energy efficiency, or failing to achieve certification. Most of these cases turn on the way green features of high end condominium units are promoted.

Finally, there is a group of cases which reinforces how prevalent third-party certification systems are in the construction industry. These involve LEED requirements as part of a bidding dispute, LEED certification being taken into account by a state level tax assessor, a patent dispute over a building material able to qualify for LEED points, or more incidentally involve a LEED project. The cases covered seem to indicate that third-party certification is now mainstream in the building industry.

ZONING DISPUTES

A consistent theme across several recent cases is the use of third-party rating systems to demonstrate a project's compliance (or non-compliance) with statutory language that requires a consideration of environmental factors. To some extent in each case, LEED is used as a proxy for

“sustainable design” or “green design”. Some cases have held that LEED certification (or proposed certification) is sufficient to address the environmental concerns contained in local zoning laws while others have reached the opposite conclusion.

As these cases fundamentally turn on statutory language specific to each jurisdiction, much of the judicial reasoning underlying their outcomes cannot be easily translated to the British Columbian context. However, the cases are important in other ways. They clearly demonstrate how environmental concerns have become embedded in local zoning requirements and how third-party rating systems may be used to satisfy these concerns.

League to Save Lake Tahoe v. Tahoe Regional Planning Agency

Background

Our first example of LEED being referenced in a zoning dispute comes to us from Nevada. In this case, a non-profit group called the League to Save Lake Tahoe^{xxxiv} unsuccessfully sought a judicial order preventing the construction of a development called “The Sierra Colina” which would consist of 50 LEED certified homes bordering on Lake Tahoe. The League was not successful in their petition as the court dismissed their claims on August 29, 2011.^{xxxv} More recently, however, the League was largely successful in their objection to \$76 259.86 in costs being sought by the developer, Sierra Colina.^{xxxvi}

The Tahoe Regional Planning Agency (TRPA) is responsible for reviewing projects in the area and is required by law to consider the environmental impact of proposed developments. Standards and thresholds have been established for several categories including air, water, and soil quality, as well as scenic and recreational resources. No approval can be given unless the TRPA has sufficient evidence to support a conclusion that a proposed development complies with the mandate of the regional plan. One of the considerations taken into account by the TRPA in approving the project seems to be the fact that the development would include LEED certified homes which would also be seeking Energy Star certification.

The TRPA relied upon these rating systems to demonstrate the project’s compliance with “the Goals and Plans of the Regional Plan”.^{xxxvii} The TRPA also concluded that LEED certification would result in lower energy use, more efficient use of building material, and ultimately result in a reduced environmental impact:

The Project would promote energy conservation programs and the development of alternative energy sources to lessen dependence on scarce and high-cost energy supplies by specifically seeking to achieve a LEED rating from the U.S. Green Building Council.^{xxxviii}

It seems clear that third-party certification was given weight by the TRPA when considering the energy efficiency of the development.

Analysis

This is not a case that turned on LEED certification, building materials, or unmet timelines. The dispute itself focused more on the potential integration of a local bike path into a larger regional system which the developer had initially supported and then later moved away from. For our purposes, however, the case shows how LEED certification may be used by administrative bodies charged with zoning and land use decisions to determine a project’s environmental impact and potential conflict with local zoning requirements.

Further, it demonstrates how LEED certification may be inappropriately conflated with “sustainable design”. Those seeking LEED certification have many options for securing credits which results in many paths of compliance being possible. As a result, not every LEED certified building will result in similar water use or energy performance. It is difficult to determine from the court documents the extent to which the proposed LEED certification satisfied the environmental thresholds established by the regional development plan but the outcome can be contrasted to a recent zoning dispute in Toronto.

Ontario Municipal Board v. Joyce Kite & Rob Smith

Background

A recent Canadian residential zoning dispute provides another example of LEED certification acting as a “stand-in” for “sustainable design”. The outcome of this dispute, however, can be contrasted to the *League* case above. In this case, Joyce Kite and Rob Smith (“Applicants”) wanted to renovate their home but required variance orders to account for the increased height, floor space index, and encroachment on existing side yards.^{xxxix}

Initially, the variances were approved. The Applicants then decided to demolish the existing home and construct a modern, 3 storey LEED certified home. The City reviewed the proposal as a new building rather than a renovation but again gave approval for the variance orders necessary for the changes. Following the approval, a neighbour of the Applicants filed an appeal seeking to overturn the approval.

At issue here was the fact that the proposed design would not match the existing neighborhood. The proposed home would exceed the height of surrounding bungalows by 2 stories, be almost double the size of the existing building, and include a “viewing tower” likened to an eight metre high “small aircraft control tower” by the Board considering the appeal.^{xi}

The neighbour seeking to have the variance orders overturned argued that the new home’s design failed to conform to the requirements of the *Planning Act*. Failing compliance, a variance order can be provided but requires a consideration of certain factors prior to approval: “... a variance may be authorized if it is minor, desirable for the appropriate development or use of the property, and maintains the general intent and purpose of both the *Zoning By-law* and the *Official Plan*”.^{xii}

Critical to our discussion is a provision of the *Planning Act* allowing “extenuating circumstances” to be taken into account. If held to be legitimate, a project involving extenuating circumstances is supposed to receive a favourable review. Of note, one of the extenuating circumstances identified in the *Planning Act* includes the promotion of sustainably constructed buildings.

As a result, the Applicant’s Architect heavily relied upon the fact that the home would be seeking LEED certification as a guarantee of sustainable design. It follows, the Applicant argued, that the necessary variance orders should be given in order to promote the project’s sustainable design. In short, the Board did not agree.

The Board stated that third-party certification should not be considered analogous to sustainable design or practice:

That is not a matter of the planning system being Luddite or anti-green: there is simply no statutory authority for such brands [i.e. LEED] to sidestep land-use planning

requirements, and no policy reason why any one given trademark-holder (non-governmental), among several, should be so empowered. “Certification by a (private) third-party” is no substitute for a transparent and legally- mandated public process, and is no guarantee of good planning (nor does it usually purport to be).^{xlii}

The Board went on to question the sustainability of constructing a brand new building rather than renovating the existing one:

Does this project nonetheless deserve favorable treatment for “promoting environmental sustainability”? In a province where sending a plastic bag to landfill is considered environmentally problematic, the notion of turning entire buildings into landfill – in the name of environmental sustainability – would surprise at least some observers. For present purposes, it is sufficient to note that such claims are no shortcut around the Planning Act.^{xliii}

The Board ultimately held that the “supposed extenuating circumstances” (i.e. LEED certification) were not sufficient to uphold the variance orders.

Analysis

In this case, the use of a rating system was not sufficient to satisfy statutory language which referenced green design or sustainability. However, while the applicants were not successful in this case, it is likely that other Canadian zoning disputes will involve similar strategies by proponents trying to highlight the environmental benefits of third-party certified projects.

Quartz Hill Cares v. City of Lancaster

Background

Another recent case involving green building and zoning variances comes from California. In this dispute, a community group opposing the development of a Walmart Superstore attempted to seek a judicial order overruling municipal approval of the project.^{xliv}

The development would have encompassed almost 400 000 square feet and included several retail outlets including a Walmart Superstore. The land in question was purchased by Walmart Stores, Inc., and consisted of nine residential zoned lots spanning 40 acres. When the City of Lancaster approved the necessary rezoning of the lots in order to allow the development to proceed, a local community group sought judicial assistance in preventing the project from going ahead.

The plaintiff, Quartz Hill Cares^{xlv}, was initially unsuccessful at trial in seeking a judicial order to overturn the zoning change. However, the Court found on appeal that the City had improperly certified a necessary Final Environmental Impact Report (FEIR) and thus reversed the lower court’s finding. Several claims were put forward but only one – which was ultimately unsuccessful – is directly relevant to our discussion of green building.

Part of the review process required that the City consider alternative development plans. Only those alternatives which could reasonably achieve the objectives of the development needed to be included in the final assessment by the City. The plaintiff argued that Walmart had already successfully built a “green” version of its superstore in Nevada and so should have been able to do the same in Lancaster. This prototype design had been announced by Walmart in 2008 and used solar panels to reduce energy use by 40%. However, the Court did not accept this argument holding that

“the record contains evidence that [...] economic, environmental, and technological barriers render the green alternative infeasible”.^{xlvi} As a result, the Court held that the “greener” Walmart design did not need to be considered by the City.

Analysis

If this argument had been upheld, it may have signaled a future where Walmart had become a victim of its own success. Assuming a similar dispute arises in a similar regulatory environment and the barriers mentioned by the Court continue to disappear, it may be more difficult to justify building less efficient buildings in the future. Indeed, Walmart has recently announced the completion of its 100th rooftop solar installation in California, claiming that the green initiative has created thousands of construction jobs.^{xlvii} While the case was ultimately resolved on procedural legal grounds, the dispute is interesting in that the plaintiff used Walmart’s own green building initiative as a basis for showing why a less-green development was unacceptable.

Wisconsin-Newark Neighborhood Coalition et al. v. District of Columbia Zoning Commission

In this case from the District of Columbia, LEED certification is again cited in the context of a zoning dispute.^{xlviii} The dispute itself does not appear to turn on LEED certification *per se* but the Commission responsible for approving the development and necessary zoning applications did take LEED certification into account. Among other aspects of the project, LEED certification was cited by the Commission as a public benefit, noting that the project would be subject to a “high environmental standard”.^{xlix} The Commission’s decision was ultimately upheld by the Court and the necessary zoning amendments were made.

Tagliarini v. New Haven Board of Aldermen et al.

Background

Our final example of a zoning dispute involving third-party rating systems comes to us from Yale University in Connecticut where the project’s potential LEED certification informed part of the court’s approval of the project.^l The development in question would allow Yale to consolidate its School of Management (SOM) services currently spread across its campus into one building.

Yale had engaged in several years of consultation with members of the New Haven community in an attempt to address and respond to concerns raised by those surrounding the proposed development. Some residents had opposed the project due to a potential increase in traffic, the size of the building, and how the development would impact the overall character of the area.

Approval was initially given by the New Haven Board of Aldermen *et al.* (Board) to create a Planned Development District (PDD) in order to allow Yale to construct their 230 000 square foot building which will pursue LEED certification.^{li} In upholding the zoning approval, the Superior Court of Connecticut gave weight to the fact that the development would be seeking LEED certification.^{lii}

The plaintiff in this case, Joseph Tagliarini, was one among many in the community who opposed the project and sought judicial review to overturn the approval by the Board. The plaintiff argued that the decision to create a PDD had been reached in an “arbitrary” and “procedurally flawed” manner, and should therefore be overturned.^{liii} After concluding that Yale’s public consultations had satisfied the procedural requirements, the Court went on to interpret the City’s *Comprehensive Plan* which provides in part the requirements for creating a PDD.

Part of the Court’s analysis included a determination of the extent to which the PDD aligned with the objectives of the Comprehensive Plan. Most pertinent to our discussion are the sections of the Plan which speak to environmental factors. Chapter II and Chapter IV of the *Comprehensive Plan* specifically state that the purpose of the Plan is “to promote the urban environment through *energy efficient design*, green spaces, community gardens and other pervious landscape treatments”.^{liv}

The Plan further states in the Chapter on Economic Development that:

[E]conomic development in the city is dependent on the quality of surrounding environments to support high-end business development. *To achieve this, attention must be paid to environmental design*, pollution control, aesthetics, transportation/access and the public infrastructure within and around the city's business districts.^{lv}

Furthermore, in a section entitled “Green Design”, the Plan states that:

[A]ttention must be paid to green building design by encouraging the development of environmentally sustainable buildings that meet or exceed energy targets (e.g. Energy Star, LEED certification); provide for daylighting; minimize transportation movements; and recycle and/or control waste streams. . .^{lvi}

In reaching the conclusion that the environmental sections of the *Comprehensive Plan* aligned with creation of the PDD, the Court considered Yale’s submissions to the Board that dealt with their sustainability goals.

Yale’s submission stated in part that: “The University is seeking to achieve a LEED gold certification for the new SOM building. To that end, considerable efforts have been made to reduce energy use”.^{lvii} Yale’s submissions then go on to outline the specific features the building would incorporate in order to reach their energy reduction targets. Following a consideration of these sustainability goals, the Court ultimately concluded that “there would appear to be sufficient compliance with the environmental concerns of the *Comprehensive Plan*” and upheld the creation of the PDD necessary for the project to move forward.^{lviii}

Analysis

When reading the decision, it is difficult to determine the extent to which the Court relied upon LEED certification in reaching the conclusion that Yale’s project satisfied the environmental sections of the Plan. It is possible that Yale could have described energy efficient features of the building in their submissions absent official LEED certification and still been granted the PDD. However, given LEED’s prominence and market penetration, it is possible that the rating system effectively served as a proxy for “sustainable design” and “green building” in the minds of the Board members and the Court.

Conclusion

The above cases demonstrate how rating systems are working their way into many aspects of City planning and governmental green building strategies. They also signal the different weight that may be afforded to third-party certification to satisfy a jurisdiction’s sustainable design requirements.

In the *League* case, third-party certification was given weight in satisfying the sustainable requirements of that jurisdiction while the *Ontario Municipal Board* dispute demonstrates the opposite. In the Canadian example, little weight was given to LEED in satisfying the “sustainable”

criteria necessary to provide an exemption to the City's own zoning requirements. When the Ontario case is considered alongside the other zoning disputes, it is likely that similar scenarios will continue to emerge with third-party rating systems being used to satisfy the environmental requirements of zoning bylaws.

CONDOMINIUM DISPUTES

Another common group of cases involve high end condominium projects that incorporate green design elements such as high efficiency HVAC systems, on-site energy production, and low impact eco-friendly building material. Many of these cases involve claims of misrepresentation and alleged building deficiencies. As discussed in the previous Study Paper, green building disputes may involve both tort and contract legal theories. The following cases primarily involve high end condominium contractual disputes.

Control Air Conditioning Corporation v. WSP Flack & Kurtz, Inc.

Background

An ongoing dispute from California involving an underperforming HVAC system (Heating, Ventilation, and Air Conditioning) highlights the potential for litigation stemming from high performance expectations linked to LEED certification – or, in this case – a “LEED-like standard”.

Many of the claims initially put forward in this case have been thrown out due to a lack of proximity between subcontracted engineering and HVAC companies. However, it remains to be seen whether an amended pleading to include negligent misrepresentation will be successful. The amended claims would involve the subcontracted Engineering firm responsible for the design of the HVAC system.^{ix}

The Rand Corporation (“Owner”) sought to construct a green building to house a new campus in Santa Monica. The building was to incorporate operable windows and an underfloor air distribution system. The Owner retained the services of both DMJMH+N, Inc. (“Architect”) and Turner Construction Company (“General Contractor”).

The Architect then subcontracted engineering services required for interrelated components of the window and underfloor air distribution system to WSP Flack & Kurtz (“Engineer”). The General Contractor subcontracted the supply and installation of certain HVAC units to Control Air Conditioning Corporation. Importantly, there was never any contractual relationship between the subcontracted engineer and Control Air Conditioning Corporation as the subcontracted air conditioning company.

Legal Claims

The Owner was apparently dissatisfied with the cooling capacity and energy performance of the installed HVAC units and requested that the General Contractor replace them. The General Contractor complied with the Owner's request but did not pay Control Air Conditioning Corporation the outstanding \$600 000 for the units. Further, the General Contractor sought indemnification for their own costs of replacing the units. In response, Control Air Conditioning sued the General Contractor's engineering firm as well as the manufacturer of the HVAC units in dispute. Essentially, Control Air Conditioning has put forward two arguments.

First, they argued that the Engineer’s flawed design led to the discomfort experienced by the Owner and that the Engineer held the HVAC units to an “unfairly rigorous” LEED-like standard. According to the air conditioning company, it follows that either the flawed design would ultimately result in the rejection of the supplied HVAC units by the Owner or that the Owner improperly rejected the HVAC units due to the onerous LEED-like standard they applied.

Second, they argued that the Engineer made representations about the performance of the HVAC units that were relied on by the Air Conditioning Company to their detriment (i.e. the units did not meet the Owner’s expectations and resulted in losses). It is alleged that these representations led to the Engineer specifically specifying the HVAC units in question.

Analysis

The case boils down to the Owner’s expectations about the performance they would get out of the building’s green design. The case also demonstrates the risk faced by subcontractors who may simply be fulfilling their obligations as per design documents. In this case, Control Air Conditioning Corporation is claiming that they followed representations made by the Engineer’s employers about which units to install. The substantive legal outcomes in this case have so far resulted from an interpretation of third-party beneficiary and contractual jurisprudence specific to California but the relationship between the parties is common to many construction disputes.

The Court recently dismissed all but one claim from Control Air Conditioning Corporation. It remains to be seen whether an amended pleading will be made to more clearly lay out the negligent misrepresentation claim put forward by the air conditioning company against the subcontracted Engineer and firm. The case is ongoing but demonstrates some issues that may arise from a green building project.

Steven Gidumal, et al. v. Site 16/17 Development LLC, et al.

Background

A high profile condominium development in New York’s Battery Park^{lx} has received attention due to apparent problems with the building’s green heating system and other sustainable features. The Riverhouse development enjoys endorsements from celebrities like Leonardo DiCaprio and promotes its solar cells and window blind system as “only two of the many sustainable design initiatives that help Riverhouse meet the strict standards of the U.S. Green Building Council’s LEED rating system”.^{lxi}

The building is seeking LEED Gold certification and has been prominently marketed as part of Battery Park’s green development:

In 2000 the Battery Park City Authority created the Residential Environmental Guidelines ensuring that all the new construction in the neighborhood would be built in an environmentally friendly manner. In 2002, the BPCA followed up those guidelines with the Commercial/Institutional Environmental Guidelines to create a community in which residents and workers could enjoy the benefits of living in a “green” community.^{lxii}

The Battery Park development as a whole spans approximately 35 acres and promotes itself to be a leader in the environmental green movement.

Legal Claims

Allegations from tenants Steven Gidumal and Allison Keeley include fraud and breach of contract.^{lxiii} They purchased their unit for \$4.2 million in 2008, but have experienced problems with the building's HVAC system claiming that the high performance green features initially advertised have not materialized.^{lxiv} The project has yet to be LEED certified but the allegations closely align with other cases of buyer's high "green design" expectations not being met.

Barber v. West Chelsea Development Partners LLC

Another case involving a green condo dispute also comes from New York State.

The Plaintiff, Roseann Barber, sought the return of her \$459 000 deposit on a unit valued at close to \$2.3 million. The developer refused to return it when the deal did not go forward.^{lxv} The Plaintiff attempted to rescind the purchase agreement, citing misrepresentations about an unobstructed water view as well as promotional material stating that the building was to be LEED certified.

At paragraph 48 of the court documents, the Plaintiff states that:

[...] one of the selling points stressed in offering materials was that the Building was be a 'green' building and have so-called LEED certification to 'preserve the health of the environment' [...] the Building has yet to be LEED certified and, upon information and belief, will not be a LEED certified 'green' Building, also in breach of the commitment made in the Offering Plan.^{lxvi}

The action has been discontinued but still offers a warning to developers and others promoting their project's green features or third-party certification prior to completion.

TSCC No. 1898 v 743 Queen Street East Toronto Inc., et al; Keefe v. Base Village Owner, LLC Pitkin Co. Dist. Ct. (CO)

Other cases that mirror those above include a dispute filed in 2010 from Toronto, *743 Queen Street East Toronto Inc.* and another from Colorado, *Keefe v. Base Village Owner*. The Canadian case involves allegations that certain high performance green features initially promised failed to materialize. The dispute is apparently ongoing with some deficiencies being fixed while others remain.^{lxvii}

The latter case from Colorado involves allegations of misrepresentation by 61 condo owners who argue that their decision to purchase units was based on the Developer's promise that LEED certification would be achieved.^{lxviii} The condominium itself was supposed to be LEED certified as part of a LEED for Neighborhood Development. The case has apparently been resolved but aligns with other cases involving litigation based upon a developer's representation of LEED certification or other green features that final tenants found lacking.

TAX, PATENT, AND BIDDING DISPUTES

Finally, there is a group of cases that do not fit easily into one category. These disputes range from bidding disputes and tax assessment to patent claims. This group of cases really demonstrates the scope of third-party rating systems acceptance and use in the construction industry.

ACC Construction Company et al. v. The United States et al.; the Nascent Group v. United States

Another ongoing dispute involves a bid protest and the way in which the plaintiff was evaluated by the United States Army Core of Engineers shows the potential weight given to LEED certification during bid evaluations.

The plaintiff, ACC Construction *et al.*, unsuccessfully argued that their bid submission had been unfairly evaluated in several categories. One of the disputed categories referred to the plaintiff's sustainability plan which was given a rating of "satisfactory" because "plaintiff indicated enough points for the required Silver LEED rating, but not enough for the next level".^{lxxix}

A similar case involving the United States Army Core of Engineers demonstrates the integration of third-party certification in the American Federal green building strategy. In the case of *The Nascent Group*, the dispute centered on changes to contract documents which would have required LEED certification.^{lxxx} The Plaintiff argued that additional costs would be associated with third-party certification and resubmitted their proposal. This element forms a relatively minor aspect of the dispute as a whole but still demonstrates the integration of third-party rating systems at the American Federal level of government.

CLP Elements LLC v. Benton County Assessor

Background

LEED certification has even been considered in an Oregon tax assessment dispute. In *CLP Elements*, a state assessor took into consideration the many "green features" of a mixed use commercial building including "potential certification" to increase the assessed value of the building by 1 to 3.3%.^{lxxxi} In contrast, the Owner's lower value assessment did not include a LEED certification value, stating that official certification was not complete nor was it likely ever to be. The Court ultimately decided to uphold the higher value given by the state assessor.

Analysis

While it is important to keep in mind that this decision comes from the United States, it provides evidence that "LEED-like" designs (or other green features) may result in claims based on misrepresentation. Indeed, some in the British Columbia construction industry have noted that recent developments have been promoted as being "built to a LEED standard" but never seek official certification.^{lxxxii} These types of claims will depend upon the way in which a project was advertised or promoted and may also depend upon the steps that a Developer took to clarify what is meant by "LEED-like".

If "LEED-like language" is used to promote a project knowing that potential buyers will associate this with increased energy performance then there may be a risk of misrepresentation. For example, if a Developer promotes their project as being "LEED-like" or "built to a LEED standard" knowing that this

will increase the value of their project but does not seek official certification, then they may be subject to a misrepresentation claim if they do not take steps to clarify the project's status to potential buyers. There are three levels of misrepresentation available to plaintiffs and are based upon the level of culpability shown: innocent, reckless, and fraudulent misrepresentation.

Clearline Technologies LTD v. Cooper B-Line, Inc

Finally, following in the footsteps of patent disputes covered in the previous Study Paper such as *RB Rubber Products*^{lxxiii} and *Kenetics Noise Control Inc.*^{lxxiv}, another patent dispute has emerged in relation to a building product for the roofing industry. The roofing product in question is able to qualify for LEED credits because it is made in large part from recycled tires. The plaintiff, Clearline Technologies Ltd., alleged that the defendant, Cooper B-Line, had misrepresented and infringed Clearline's patent. In response, Cooper B-Line was able to get summary judgment dismissing the allegations.^{lxxv} As stated in the previous Study Paper, the rise in green building products will likely continue to result in patent disputes among material suppliers.

CONCLUSION

When looking at the individual cases above, they may not initially appear to be relevant to those in the British Columbia construction industry. Many cases turn on judicial interpretations of statutes specific to their American jurisdiction and do not translate directly into the Canadian context. On the other hand, trends emerge when looking at the cases from a broader perspective.

First, the cases demonstrate the range of green building in both building type and project scale, varying from residential condominium disputes to large-scale commercial developments involving elite corporations and government entities. Rating systems have formed part of bid disputes and informed state level tax assessment. This clearly shows the pervasiveness of green products, practices and goals which are now present across the entire real estate and construction spectrum.

Second, many cases discussed here turn on tenants' unmet expectations or disagreements between subcontracted parties about rights and duties when delays or extra expenses were incurred. Cases include zoning applications, misrepresentation, breach of contract, issues with green HVAC designs, and patent disputes. The breadth of legal theories within these cases mirrors traditional construction disputes in many ways. Some may involve LEED intimately or more incidentally.

LEED has played a valuable role as a market transformation mechanism. For several years, regulators have encouraged builders to strive for greener buildings through bylaw relaxation, density bonus schemes and other incentives. Will these systems continue to remain relevant or necessary? In the *Tagliarini* case, the Board gave approval for the zoning change in part due to Yale's application which cited the energy saving features being incorporated *in pursuit of* LEED certification. Today, building performance metrics (such as kWh/m²/yr, kg CO₂ e/m²/yr, tonnes of solid waste diverted, etc.) are becoming increasingly familiar. As a result, progressive jurisdictions are moving to carbon and energy performance targets which may be achieved with or without the pursuit of rating system certification. For example, the City of Vancouver has set a goal for all new buildings to be carbon neutral by 2020 and is already shifting to outcome-based codes.

Inevitably, the opportunity to gain such development advantages using LEED as the proxy for sustainable design is diminishing. For example, the *Ontario Municipal Board* denied an application for a variance order expressly rejecting LEED certification as any guarantee of sustainable design.

Each case is defined by its own set of facts, yet other reviewing authorities may follow the Ontario example and scrutinize the "sustainability" aspect of third-party certification. As the goals championed by third-party rating systems become incorporated into building codes, it is worth noting the importance of rating systems in driving the green agenda forward, improving industry knowledge and articulating green building to society. The lessons learned by industry participants so far will be valuable even if regulators move toward outcome-based rather than performance-based standards.

Finally, the review of the cases raises the point that a green building is, in essence, one that performs to a defined (and, in theory, high) level across a number of criteria – most commonly, energy, CO₂ emissions, water consumption, solid waste, indoor air quality, etc. As yet, few cases bring forward disputes directly about performance. This is partly due to the fact that rating systems are still largely prescriptive. It will be intriguing to monitor the legal landscape as codes and standards begin to shift to performance-based outcomes (i.e. energy use per unit of floor area).

PART TWO

GREEN BUILDING TRENDS

PUBLIC PRESSURE, CLIMATE CHANGE, AND GREEN BUILDING STRATEGIES

Buildings are considered “game-changers” in the fight against climate change. They are currently the largest consumer of natural resources (40% of global energy, 25% of global water, 40% of global resources and emit 35% of global GHG emissions). However, by using commercially available technologies, buildings can offer the greatest potential for achieving 1.8bn tonnes of CO₂ (3 x Kyoto targets), at least cost, in developed and developing countries. In 2008, B.C. emitted 68.7 million tonnes (MT) of greenhouse gas emissions measured in carbon dioxide equivalent (CO₂e), representing approximately 8.9 per cent of Canada's total GHG emissions. Buildings represent 11% of community GHG emissions^{lxxvi}.

The vast majority of governments here in Canada and in the United States have some sort of green building policy or initiative. This is clearly evidenced cases discussed above which relate to zoning disputes. In fact, governments all over the world have developed some kind of green building strategy,^{lxxvii} due to many factors which include public pressure pushing for government action on climate change. Similarly, given the connections established between GHG emissions and climate change, government attention on curbing emission level should come as no surprise.^{lxxviii} Numerous jurisdictions have implemented carbon trading markets^{lxxix}, carbon taxes^{lxxx}, and GHG emission inventories.^{lxxxi} All of these approaches focus on emission levels and relate to green building in that lower energy use – possible through high performance design – is viewed as a vehicle for lowering emission levels.

Environment Canada attributes success in bring down Canada’s national GHG emission levels over the past five years in part due to improvements being made in the commercial building sector.^{lxxxii} The report goes on to state that emissions in the residential building sector will remain stable even though the number of households over the next 15 years is expected to increase by 2.8 million. This is due to “federal and provincial measures aimed at increasing the energy efficiency of residential buildings (e.g., building code regulations and incentives/rebates for energy efficiency improvements)”^{lxxxiii}.

FINANCIAL REPERCUSSIONS OF CLIMATE CHANGE

Public pressure on governments to address the environmental impacts of climate change is not the only driving force pushing green building. Several studies have argued that green building makes financial sense by reducing municipal operating costs.^{lxxxiv}

Interest in sustainability issues among sophisticated investors is also on the rise; a recent report from PricewaterhouseCoopers notes that over 40% of funds included in their survey are giving more weight to sustainability and the risk associated with failing to address this “new reality”. Of note, only 13% of participants in the survey stated that they place “a low importance on sustainability, down from 25% a year ago”.^{lxxxv}

Focusing on sustainability truly impacts the bottom line of business and governments alike. The Secretariat of the United Nations International Strategy for Disaster Reduction has recently stated that over the last five years, economic losses due to natural disasters topped \$800 billion worldwide. Importantly, over half of the 468 cities included in the report (mostly American) cited climate change as a factor in these losses.^{lxxxvi} This aligns with global insurance industry reports which estimate over \$380 billion in global economic losses in 2011 alone are attributable to catastrophic events. The same report indicates that in 2012, insurance markets have already lost \$116 billion, making it the second highest figure on record.^{lxxxvii}

The Insurance Bureau of Canada (IBC) agrees, stating that “climate change is likely responsible, at least in part, for the rising frequency and severity of extreme weather events, such as floods, storms and droughts, since warmer temperatures tend to produce more violent weather patterns”.^{lxxxviii} Another report prepared for the IBC states that:

In Canada, catastrophic events cost roughly \$1.6B in 2011 and almost \$1B in each of the two previous years. The majority of these insured losses were caused by extreme weather events, but Canada’s home and business insurers are also seeing an increase in claims resulting from smaller weather events that nevertheless result in significant property damage for consumers. These losses are driven in part by Canada’s aging sewer infrastructure, which is often incapable of handling the new, higher levels of precipitation. . .^{lxxxix}

The report further reiterates the connection between changing weather patterns, GHG emissions, and anthropogenic causation of this phenomenon.^{xc}

RANGE OF GREEN BUILDING STRATEGIES

Third-party rating systems are the focus of this paper; however, green building can be thought of as a “big tent” and many different strategies and approaches fit underneath it. Reducing GHG emissions is not the sole goal of green building but it has received significant attention by governments citing a rationale for developing and implementing green building strategies. These strategies include on-site energy generation, public disclosure of energy use, green roof by-laws, green building codes, property management tools, reporting of greenhouse gas emissions, financial incentives for retrofits and efficiency gains, as well as mandatory compliance with third-party rating systems. In some jurisdictions these approaches are voluntary; in others they are mandatory.^{xc}

Several reports indicate steady growth in renewable energy sources with global investment in solar cells reaching \$147 billion.^{xcii} Other global approaches include the creation of “Green Banks” and “Clean Energy Finance Corporations” in order to encourage development of green, energy efficient buildings around the world. Examples include efforts in Australia, the United Kingdom and by the World Bank where bond sales used to finance green building has exceeded \$500 million.^{xciii}

Some of these green building strategies directly impact the construction sector while others can be seen to have incidental effects. One example of a direct effect is the widespread policy of mandatory third-party certification on public buildings. An incidental effect can be seen in the relationship between third-party rating systems and jurisdictions which require public disclosure of a building's energy use and GHG emissions. This has the effect of putting pressure on commercial owners and tenants alike to seek office space which reflects their company's public stance on sustainability issues. If their corporate social responsibility code states that they seek reductions in GHG emissions, office space in a building that reports low GHG emissions more readily allows that business to publicly promote their sustainability achievements.^{xciiv}

Incidentally, requiring disclosure of energy use may reduce the appeal of third-party certification. If certification (and associated brand recognition) is being used to demonstrate an Owner's commitment to energy efficiency, then incorporating green features absent of official certification may be all that is necessary – potential tenants can simply check the public record of the building's energy use. On the other hand, brand recognition may still be very appealing to parties trying to demonstrate their commitment to sustainability to a wider audience.

The sections which follow will discuss strategies that governments here in Canada and abroad are currently pursuing in order to demonstrate their commitment to addressing climate change. These sections will also discuss the possible future of third-party rating systems (including LEED), American resistance to LEED at the Federal level of government, as well as touch on possible alternatives such as greener building codes.

LOCAL STRATEGIES

INTERNATIONAL MUNICIPAL STRATEGIES

Cities all over the world recognize the need to identify and confront the changes rendered by our changing climate. In response, green building has been widely accepted as a key strategy for addressing climate change; government coalitions have been created in order to share strategies.

C40 CITY COALITION

One international coalition is known as C40, a group which describes itself as “a network of the world’s megacities taking action to reduce greenhouse gas emissions”. There are currently over 50 participating cities, including New York, Chicago, Rio de Janeiro, Bogota, Rome, London, Tokyo, and Toronto. Strategies include waste management, transportation, energy reduction, and green building. The group hopes to encourage information sharing between cities in pursuit of drastically reducing GHG emissions.^{xcv}

BETTER BUILDING CHALLENGE

A second coalition has targeted nearly 300 million square feet of buildings for energy upgrades. The initiative has been created by President Obama and is called the *Better Buildings Challenge*. Over 100 American public and private sector partners are now on board including 36 states, local governments, and school districts. The program aims to reduce energy use in buildings by about 20% over the next decade and is complimented by numerous American Federal grant and bond programs.^{xcvi}

VANCOUVER’S GREEN BUILDING STRATEGY

Introduction

According to a Massachusetts Institute of Technology study, Canadian cities are among the most proactive in terms of identifying issues associated with climate change and developing strategies to deal with these changes.^{xcvii} One example of this includes Vancouver’s continued commitment to requiring LEED Gold certification on new municipal projects. This requirement forms part of the City’s *Greenest City Action Plan* and states that “as of July 2010, all new building rezoning in Vancouver is required to meet the building industry’s LEED (Leadership in Energy and Environmental Design) Gold standard for environmental performance”.^{xcviii}

Other commitments found in this strategy include reducing GHG emissions and energy use in existing buildings by 20% compared to 2007 levels as well as requiring all buildings built after 2020 to be carbon neutral. The strategy expressly targets the construction industry as a prime source for GHG emission reductions. It suggests that capacity building at all levels of the construction industry is needed to achieve this including education and training in the “design, construction and operation of energy-efficient green buildings”.^{xcix}

Vancouver's Green Building Strategy Priorities

Importantly, the top three priorities identified in relation to the construction industry include:

- Updating the Vancouver Building Bylaw to improve energy efficiency and reduce greenhouse gas emissions in both new and existing buildings.
- Developing and promoting financing tools that enable energy efficiency by bridging some of the gaps between when expenses are incurred and when cost savings are achieved.
- Use of price signals in permit fees for new construction as well as renovations to existing buildings to reward energy efficiency and greenhouse gas reductions.^c

The City of Vancouver is unique in British Columbia in that it is governed under a separate provincial statute. The Vancouver Charter enables the City to effect legislation including building and energy efficiency by laws.^{ci} As a result, the Vancouver Building Bylaw (VBBL) has been updated to higher levels of energy efficiency than those expressed in the BC Building Code. Currently, the VBBL references ASHRAE 90.1 (2007) for high-rise residential buildings with the prospect of an update to ASHRAE 90.1 (2010) in 2012.

In February 2010, the Amended Green Buildings Policy for Rezoning (subsequently amended) was adopted which requires all rezoned projects to achieve LEED Gold plus 6 energy points. To achieve 6 energy points means an energy efficiency performance level of 22% better than ASHRAE 90.1 (2007). The United States Department of Energy estimates that the approximate average site energy savings improvement from ASHRAE 90.1 (2007) to ASHRAE 90.1 (2010) is 18.5%.^{cii} It is reasonable to assume for the purposes of this study that buildings which comply with Vancouver's Green Building Policy for Rezoning will perform on a par with ASHRAE 90.1 (2010).

In 2011, the City amended its policy for "higher buildings" (which significantly exceed current height limits (e.g. taller than 500ft or 150m) and/or enter into key view corridors).^{ciii} It now requires all such buildings to "significantly demonstrate and advance the city's objective for carbon neutrality for new buildings" with a stated objective to achieve a 40-50% reduction in energy consumption from 2010 levels. The City believes this standard should result in an energy use intensity of approximately 115 kWh/m² per year for high-rise residential buildings based on ASHRAE assessment criteria.

The first and third priorities found in *The Greenest City Action Plan* also mirror other municipalities who have adopted bylaws requiring stricter energy performance as well as providing financial incentives to build green. For example, New York is currently offering a graduated property tax reduction for buildings that are third-party certified (LEED, Green Globes, etc.). Increases in the value of a building due to certification will not be included in tax assessments.^{civ} Given the *CLP Elements LLC* discussed above, this approach may gain traction.

The second priority identified by Vancouver also mirrors statements found in the British Columbia provincial government's green building strategy:

"The government is developing a regulation under the *Clean Energy Act* to establish a financing model that allows home or building owners to undertake energy efficiency retrofits with no upfront payment, and to pay some or all of the costs over time out of savings on their utility bill".^{cv}

This approach aligns with the green lease arrangement discussed above in relation to 7 World Trade Center. The contract language in that example attempts to offset the immediate expenses of upgrades over the lifetime of the lease.

The third priority regarding regulations which favour renovations over new construction also aligns with sources indicating that the green retrofit market is poised for steady growth.^{cv} For example, the U.S. Green Building Council claims that LEED certification for existing buildings has outpaced certification on new construction projects by more than 15 million square feet. *ReNew Canada* reported that this trend has been growing since 2009 and continued through 2010 and 2011.^{cvii} Indeed, some of the most iconic buildings in the world have received a green facelift, including the Empire State Building which has been LEED Gold certified.^{cviii} Some estimates have concluded that upgrading existing buildings in America would require Owners to spend approximately \$400 Billion on upgrades - an estimate that reflects to some extent the potential size of the green retrofit market.^{cx}

MANDATORY COMPLIANCE

Green Roofs

Toronto's Green Roof Bylaw

Other Canadian examples of mandatory incorporation of green features include Toronto's green roof bylaw. First introduced in 2009 under the authority of Section 108 of the *City of Toronto Act*, the mandatory incorporation of green roofs has encountered some resistance.^{cx}

Under normal circumstances, all commercial, institutional, and residential projects greater than 2000 square metres in Toronto require a green roof. The size of the green roof required depends upon the size of the project with 60% green roof coverage being the maximum. After April 20, 2012, industrial buildings were supposed to follow similar requirements. However, the real estate sector was able to secure provisions in the bylaw to grant variances and allow industrial projects to install metal "cool roofs" instead of green roofs. A "cool roof" is a highly reflective roof while a "green roof" consists of organic material. Any variance must meet certain requirements:

A Variance allows a smaller amount of green roof than is required under the Bylaw, provided that a cash-in-lieu payment of \$200/m² is made for the reduced green roof area. An Exemption from the green roof requirement is necessary when a green roof is not proposed for a development. An Exemption requires approval by City council and a cash-in-lieu payment of \$200/m² if the application is approved.^{cx}

The possibility of a complete exemption for educational buildings (public and private) exists and has been put to City Council.^{cxii} The exemption would operate in the same way previously approved variances operate for the industrial sector (described above).

Growth in Green Roofs

The green roof trend is also gaining momentum in the United States and in Canada. A report by green roof advocates, *Green Roofs for Healthy Cities* states that "the green roof industry in the U.S. and Canada increased 115% between 2010 and 2011".^{cxiii} Vancouver had two projects noted in a "top ten largest green roof list" in a recent ENR.com article: one from the Vancouver Convention Centre and one from the Village on False Creek.^{cxiv} Some jurisdictions have mandatory green roof requirements

while others provide incentives to encourage voluntary incorporation.^{cxv} Aside from Toronto, another example in Portland, Oregon requires any roofs replaced on public buildings to be at least 70% green.

Solar Power

Introduction

Another significant trend from the United States seems to be the move towards mandating onsite energy production for new buildings. This trend includes requirements for buildings to either be built in a way which allows future incorporation of on-site energy production to occur easily (“solar roof ready”) or requires new projects to incorporate on site energy production.

Many jurisdictions across British Columbia have already adopted “solar hot water ready” building provisions. This approach does not mandate the incorporation of solar powered hot water heaters at this time but does require new residential construction in participating municipalities to build homes able to easily adopt solar powered hot water heaters in the future.^{cxvi}

American Examples

There are similar requirements found in many American jurisdictions. The Ohio School Facilities Commission (OSFC) has proposed new regulations that would require the creation of standards for “solar ready” school roofs including “roof space limitations, shading and obstruction, building orientation, roof loading capacity and electric systems”.^{cxvii}

In New York, a proposal for a “*Rooftop Revolution*” by Manhattan Borough President, Scott M. Stringer provides more evidence of this trend. According to Stringer’s report, 1094 schools in New York would be able to have solar panels incorporated in the building’s design, resulting in more than 20.8 million square feet of usable space.^{cxviii}

Another proposal from New York would see over 700000 rooftops supporting solar panels. Among other partners, IBM would provide the analytic backbone for an integrated approach to solar power across the city.^{cxix} The collaboration is part of the *Rooftop Solar Challenge* competition supported by American Energy Secretary, Steven Chu. The winner of the challenge is required to install 5000 small-scale rooftop solar systems able to produce energy at an average price of \$2 / watt or better.^{cxx}

The City has recently established a series of building code and zoning amendments to help ease the regulatory burden associated with green buildings including solar panels. The changes should encourage a host of green features on new and existing buildings including: energy efficient wall upgrades; sun control devices; solar panels; wind turbines; green roofs; and rooftop greenhouses. New York hopes that by changing the way in which floor space and height restrictions are calculated that the changes will have a significant effect on existing buildings.^{cxxi}

California, famous for its sun and smog, also supports solar power in a big way.^{cxxii} As part of the state level goal of producing 12 000 megawatts from solar sources by 2020, Governor Jerry Brown recently “signed Executive Order B-18-12, which sets a target of achieving zero net energy consumption for 50% of the square footage of existing state- owned buildings by 2025, and zero net energy consumption for all new or renovated state buildings designed after 2025”.^{cxxiii} Among other sources, on site power generation from residential solar panels are expected to form a large part of the strategy which will require further changes to the state’s building code.^{cxxiv}

Increasing the use of residential and commercial solar cell systems have also been supported by more than 25 state level bond programs across America including: the Property Assessed Clean Energy (PACE) program^{cxxv}; mandatory incorporation of solar sources by energy companies in New Jersey^{cxxvi}; and support at the American Federal level for large scale solar networks that may span 285 000 acres of public land by 2030.^{cxxvii}

Other reports indicate the steady growth of renewable energy markets with about 1/4 of all energy being produced in this manner worldwide.^{cxxviii} Several American solar cell associations have indicated that solar cell energy production across America is up 85% compared to last year.^{cxxix} Taken together with the regulatory initiatives in New York and California it seems likely that small scale solar projects will become much more affordable and therefore more easily mandated as part of green building strategies.

CONCLUSION

While Canadian jurisdictions have not been as proactive as American jurisdictions in requiring solar panels on buildings, there is support for large scale solar projects in Ontario. A recent project in Brockville, Ontario should produce enough energy to power roughly 1700 residential homes annually.^{cxxx} Related changes to Ontario regulations would make small-scale ground-mounted solar projects easier to develop and construct.^{cxxxi} If Canada were to see a movement towards mandatory incorporation of solar panels on buildings then this would support a step in that direction.

REPORTING AND DISCLOSURE REGIMES

A related “mandatory compliance” trend includes jurisdictions that will require building Owners to publicly disclose their property’s energy use. So far, this approach has taken two forms: (i) requiring disclosure to buyers only or (ii) requiring disclosure to government authorities or the public at large. There are examples of this approach from several American jurisdictions.

Philadelphia, Pennsylvania: Disclosure of Energy Use

On June 21, 2012, Philadelphia City Council passed an ordinance which will require owners of “covered buildings” to report their building’s energy use (electric, gas, steam and oil), water use, and building characteristics to the City.^{cxxxii}

The ordinance applies to “commercial buildings containing 50,000 or more square feet of indoor floor space, and the commercial portion(s) of mixed-use buildings with 50,000 or more square feet devoted to commercial use”.^{cxxxiii} Failure to comply with the new law may result in an initial fine of \$300 plus \$100 for every day that compliance is lacking.

The most interesting element of the law is the public disclosure requirement. Under the law, the energy performance of buildings must be disclosed to potential buyers or lessees.^{cxxxiv} The ordinance also allows for future regulations to be passed which would allow for broad public disclosure of reported energy usage.^{cxxxv}

This broad disclosure was criticized by BOMA’s chairman, Doug Hoffman. On June 5, Hoffman expressed concern that some buildings may receive inaccurate and unfair representation due to a single energy-intensive tenant rather than poor operation or design. The bill’s sponsor, Reynolds Brown, defended the City’s approach, stating that the public and potential tenants deserve to know which businesses are serious about sustainability.^{cxxxvi} Originally set to include all buildings over 25000 square feet, the ordinance was increased to 50000 square feet to ensure the City could cope with the large amount of data. The Philadelphia ordinance is set to take effect on June 1, 2013.^{cxxxvii}

California: Disclosure of Energy Use

California has continued to pursue a robust green building strategy. Governor Jerry Brown has recently issued an executive order requiring state agencies to reduce their GHG emissions by 10% from 2010 levels by 2015 and a further twenty percent reduction by 2020. This approach also relies on third-party certification; all new or renovated public buildings larger than 10000 square feet will be required to achieve LEED Silver at a minimum.^{cxxxviii}

Related changes to California’s building code should also help achieve Governor Brown’s GHG reduction goals. The California Energy Commission has adopted a range of green building requirements to take effect January 1, 2014. Under the changes, new commercial buildings will have to construct roofs able to support solar panels, include high performance windows, and efficient lighting controls.^{cxxxix} A more in-depth overview of California’s green building code is provided below.

Other regulatory changes should also encourage further green features in both the residential and commercial sectors.^{cxl} Of note, California is set to require virtually all non-residential building owners to record and disclose their building’s energy use to potential buyers, tenants, or lessees. Under

Section 25402.10 of the *Public Resources Code*, Owners will be required to disclose the building's operating characteristics, energy use, and Energy Star Portfolio Manager ratings. While the current regulations do not require disclosure of water use, it may be required in the future.^{cxli}

Australia: Disclosure of Energy Use

Similar disclosure requirements already exist in Australia. Under the *Building Energy Efficiency Disclosure Act 2010*, most "sellers or lessors of office space of 2,000 square metres or more are required to obtain and disclose a current Building Energy Efficiency Certificate" which consist of an Energy Star Rating, a lighting assessment of the building, and general energy efficiency guidance.^{cxlii} Failure to comply with these requirements can result in criminal liability.^{cxliii}

United Kingdom: Disclosure of GHG Emissions, Energy Use

Other robust disclosure requirements can be seen in the United Kingdom. Under new regulations proposed to take effect in April 2013, all companies quoted on the Main Market of the London Stock Exchange will be required to record and report their GHG emissions.^{cxliv} Companies will be required to report carbon dioxide, methane, hydrofluorocarbons, nitrous oxide, perfluorocarbons and sulphur hexafluoride emissions or face penalties. This would be the first such program in existence and would affect nearly 1800 of the world's best known corporations.^{cxlv}

The reporting requirements form part of the United Kingdom's larger Carbon Reduction Committee (CRC) Energy Reduction Scheme.^{cxlvi} Recent penalties totaling nearly \$140 000 CAD for non-compliance with the CRC Scheme signal that non-compliance with the new reporting requirements may be treated quite harshly.^{cxlvii} The reporting requirements are set to be reviewed in 2015 with private companies potentially being brought under the ambit of the scheme as well.^{cxlviii}

New steps being taken in the United Kingdom form part of that government's broader construction strategy: following an announcement in 2011, the UK federal government remains committed to requiring use of Building Information Modeling (BIM) on all government projects by 2016.^{cxlix}

CONCLUSION

As discussed in the previous Study Paper, government policy requiring third-party certification has been identified as a significant driver of green building projects. The other strategies discussed above which focus on disclosure of a building's energy and water use may have several effects on the prominence of rating systems. On one hand, if third-party certification can be seen to reduce energy and water use, their prominence may continue. On the other hand, if similar reductions can be achieved absent certification, the marketability of third-party certified buildings may decrease.

Part of LEED's popularity comes from the ability of Owners to set their certified building apart from the rest. However, if Tenants or Buyers are interested in a third-party certified property because they believe this reflects a high standard of energy performance, then under mandatory disclosure requirements such as California's, certification may not be as appealing. Potential Tenants or Buyers can simply look to the building's record rather than third-party certification in order to judge a building's energy performance.

CANADIAN GREEN BUILDING STRATEGIES

BRITISH COLUMBIA GREEN BUILDING STRATEGY

Canadian provincial governments also continue to rely upon rating systems to demonstrate their commitment to addressing climate change through reduction in GHG emissions and energy use. Specifically, the British Columbia Provincial Government continues to require LEED certification on new public projects. Several policy statements outline the government's commitment to using third-party certification as part of their efforts to reduce GHG emissions. As discussed in the previous Study Paper, the government's 2008 *Climate Action Plan* initially set out the requirements for third-party certification on new and renovated public buildings.

A recent update to this approach reiterates the provincial government's commitment to a green building strategy that incorporates third-party rating systems. The document, *Making Progress on B.C.'s Climate Action Plan*, describes previous green building strategies already in effect but also suggests that existing buildings may be the focus moving forward:

Working together, by 2050 B.C.'s building stock can achieve world-class energy efficiency, with new buildings as close to carbon neutral as technology and economics allow, and with energy efficiency retrofits of existing buildings supported through financing, incentives and regulations. The sector can also achieve energy savings through increased efforts to reuse and recycle older buildings in place of demolition.^{cl}

The document claims that 66% of the province's 2050 building stock has already been built and in order to meet the government's GHG reduction targets, "policies that drive energy retrofits of existing buildings will be crucial".^{cli} Again, this move follows many other jurisdictions that will be pursuing a green building strategy with a focus on upgrades to existing buildings. The document also calls for higher-density construction and further changes to the building code with the possibility of developing "harmonized standards with California, Oregon and Washington State".^{clii}

Other legislative initiatives include the *New Energy Efficiency Act* and the proposed *Energy and Water Efficiency Act*. This later proposal would apparently target manufactures, distributors, and retailers by creating administrative penalties for non-compliance with set energy standards. Additionally, the proposed Act would provide some sort of sector-by-sector baseline against which businesses could compare their own performance.

As stated above, Vancouver's green building strategy aligns with the BC government's approach in several respects, including mandatory use of third-party rating systems on public projects.^{cliii}

FEDERAL GREEN BUILDING STRATEGY

Even the Federal Government's approach to addressing GHG emissions impacts the construction industry. Under the *Copenhagen Accord*, Canada has agreed to reduce our national GHG emissions by 17% below 2005 levels by 2020.^{cliv} In pursuit of this target, the Federal Government has pursued a self-described "sector by sector" approach with electrical generation and transportation being

addressed first. This strategy is apparently working as Environment Minister Peter Kent recently announced that Canada is halfway to meeting its emission targets under the *Copenhagen Accord*.^{clv} However, the construction industry has not been left out and has also received attention under the Federal approach to reducing GHG emissions.

Part of the Federal government's strategy includes the use of third-party rating systems in hopes of improving the efficiency of publicly owned buildings. This can be seen in Public Works and Government Services Canada's (PWGSC) green procurement strategy which requires mandatory LEED Gold certification on new buildings and the use of BOMA Go Green for building operation and management.^{clvi} This approach allows the Government to target both new construction and existing buildings for efficiency gains:

[...] the Government of Canada is committed to ensuring that *new office buildings it constructs and that existing office buildings it renovates* be at least 30 percent more energy efficient than the Model National Energy Code for Buildings.^{clvii}

There are no indications that the Federal government will move away from the use of third-party rating systems as part of its strategy to reduce GHG emissions.

As discussed above, reporting of GHG emissions is part of climate change strategies in many other jurisdictions and the same is true here in Canada. Environment Canada has published two reports outlining national GHG emission projections with the most recent report projecting further declines in GHG emissions from buildings.^{clviii} The report cites improved building efficiency and stricter building code requirements as two (among many) reasons for the decline in emission levels.^{clix}

EMERGING RATING SYSTEMS

GOVERNMENT, ACADEMIC, AND INDUSTRY RATING SYSTEMS

New rating systems continue to emerge from all sectors in order to meet government GHG targets and increase energy efficiency. Governments, universities, and industry have all created various systems and programs that target different sectors of the built environment. However, as discussed in more detail below, there is the possibility that the United States Department of Defense will move away from third-party systems altogether and instead rely on their own green building code.

One new rating system, *Envision* – tailored to horizontal infrastructure projects – was recently launched by The Harvard School of Design and the Institute for Sustainable Infrastructure (ISI).^{clx} The system is currently setup as a self-assessment tool but there are plans to ultimately expand it into a third-party rating system. Another rating system, *GreenRoads*, was developed by the University of Washington and applies exclusively to road building.^{clxi}

Industry groups have also responded to the push for green building by developing certificate programs that evaluate construction *companies* rather than *projects*. The Vancouver Regional Construction Association (VRCA) has created the Excellence in Sustainable Construction (ESC) certificate program to help promote corporate sustainability strategies.^{clxii}

NEW CAGBC RATING SYSTEMS

New rating systems also continue to emerge from established players as well. The Canadian Green Building Council (CaGBC) has two notable additions to their range of existing LEED based programs.

LIVING BUILDING CHALLENGE

The first of these programs, the *Living Building Challenge*, attempts to align the built environment with its existing surrounding and is described by the CaGBC as “a philosophy, advocacy tool, and certification program”.^{clxiii} The program challenges participants to create buildings that draw upon their own energy sources, close the loop on their water systems, and ultimately add to rather than detract from their natural environment.

In Canada, the program is administered by the Canada Green Building Council (CaGBC) and operates similar to LEED: credits are spread across multiple categories (Site, Water, Energy, Health, Materials, Equity, and Beauty) which allow applicants to choose their own path to certification. The CaGBC describes the program as “rigorous” and claims that the *Living Building Challenge* “defines the most advanced measure of sustainability in the built environment possible today and acts to diminish the gap between current limits and ideal solutions”.^{clxiv}

Apparently more than 60 projects across North America are currently pursuing certification under this rating system.

GREENUP

The second system, *GreenUp*^{clxv}, seems to expressly address some of the criticisms of LEED while targeting a growing market in retrofits and upgrades to existing buildings. Some have criticized LEED as being short on measurable, concrete performance outcomes and long on administrative delay and cost. In response, this program focuses on metrics such as energy and water use which allows building owners to demonstrate and track financial incentives often cited in support green building.

GreenUp exclusively applies to existing buildings. The program measures a building's existing energy and water use, compares the performance to a CaGBC database, and suggests areas of improvement. As higher energy performance targets are met, higher levels of certification are awarded. According to the CaGBC, *GreenUp* was created in response to demand for a third-party program that expressly considers performance outcomes:

Responding to a clear industry need for a performance-based approach to energy and environmental improvements, the program will offer access to a national repository that includes building performance data for office, multi-family, long-term healthcare, hotel, retail, K-12 school, and government buildings.^{clxvi}

GROWTH IN EXISTING BUILDING MARKET

As described above, several sources have indicated that even while the green building market as a whole will continue to grow, the market in retrofits is expected to experience marked growth. For example, McGraw Hill Construction recently estimated that by 2015 commercial retrofits and renovation will account for \$14 - \$18 billion or up to 33% of the American commercial building market.^{clxvii} Other sources have indicated that Canada will likely experience a similar trend.^{clxviii} The CaGBC estimates that by pursuing efficiency upgrades, the commercial building sector would be able to cut its current GHG emissions in half.^{clxix} From an ecological standpoint, these numbers look promising as the "greenest" building is most likely the one already standing.^{clxx}

RESISTANCE TO LEED

Introduction

Third-party rating systems have enjoyed strong support from governments seeking to reduce GHG emissions as well as energy and water consumption. Many jurisdictions here in Canada and abroad have relied upon these independent rating systems to various extents within their respective green building strategies.

Many examples from this paper and the previous Study Paper demonstrate how mandatory compliance with these rating systems may lead to liability if participants on green building projects do not understand potential additional obligations required on these kinds of projects. Notwithstanding the relatively few cases of green building litigation in Canada, many issues have been encountered by participants on green projects seeking certification.

Third-party rating systems (and LEED in particular) have become integrated into provincial, state, and federal building requirements and have become so well known that their brand is often synonymous with “green building” or “sustainable design” (see zoning cases above for fuller description and analysis).

The U.S. Green Building Council now claims that the range of products offered under LEED account for nearly 9 billion square feet of certified space, with approximately 1.6 million square feet being certified around the world every day.^{clxxi} The organization further claims that LEED requirements have been incorporated or referenced by all levels of governments across America:

Various LEED initiatives including legislation, executive orders, resolutions, ordinances, policies, and incentives are found in 442 localities (384 cities/towns and 58 counties and across 45 states), in 34 state governments (including the Commonwealth of Puerto Rico), in 14 federal agencies or departments, and numerous public school jurisdictions and institutions of higher education across the United States.^{clxxii}

LEED has also been widely referenced as a requirement for various “green building” incentives provided by all levels of American governments.^{clxxiii} However, there are signals that LEED may not indefinitely remain the defining shade of green in the United States or here in Canada.

U.S. Department of Defense and LEED

A series of events involving the American Federal government and its choice of rating systems and building codes may signal that LEED may not continue to dominate the rating system market. Several developments are discussed below: recent restrictions on the military’s ability to pursue high levels of LEED certification; the ongoing review of third-party rating systems by the American General Services Agency (GSA); and the decision by the U.S. Army to incorporate the ASHRAE 189.1 standard into its building code.

Following President Obama’s approval of the *National Defense Authorization Act 2012*, the continued prominence of LEED military projects may not continue. Under section 2830(b)(1), the Act states that no additional funds may be used in order to achieve LEED gold or platinum certification.^{clxxiv}

The Act does, however, allow Department of Defense projects to seek LEED certification if it can be shown that no additional expenses will be incurred. If extra costs are expected to result from pursuing third-party certification, then express authorization must be provided by the Secretary of Defense.^{clxxv} The Act also requires the Secretary of Defense to provide a cost-benefit analysis of “ASHRAE 189.1-2011, ASHRAE 90.1-2010, LEED silver, gold, and platinum certification, as well as the LEED volume certification, and other ANSI accredited standards”.^{clxxvi}

Within the Federal government, the Department of Defense is the largest single consumer of energy, accounting for 1% of the total energy consumption in America.^{clxxvii} The Department of Defense alone spent \$15.2 billion on energy in 2010 with \$3.8 billion being used to power permanent foreign military bases around the world.^{clxxviii} According to recent statements, the Department of Defense spent \$16 billion in 2011 and \$19 billion in 2012 on energy.

These numbers account for all types of fuel and include operational costs. When looking at the Department of Defense’s building operation costs alone, the numbers are still impressive. According to recent testimony at the House Armed Services Subcommittee on Readiness, the Department of

Defense spends approximately \$4 billion operating more than 300 000 buildings. Deputy Undersecretary of Defense Dr. Dorothy Robyn described the Department of Defense's energy use in the following way:

With more than 300,000 buildings and 2.2 billion square feet of building space, DoD [Department of Defense] has a footprint three times that of Wal-Mart and six times that of GSA. Our corresponding energy bill is \$4 billion annually.^{clxxxix}

Energy efficiency has been identified as both an economic and security issue by the American government and has resulted in legislation requiring federal agencies to identify and pursue green building design and procurement.^{clxxx} In pursuit of efficiency, the Department of Defense is currently requesting that Congress provide \$1.1 billion for energy efficient retrofits on existing buildings.^{clxxxix}

U.S. Army Green Building Code

A related decision by the United States Army to follow its own construction code may also impact the use of third-party systems by the Federal government.^{clxxxii} The new code will be based on the ASHRAE 189.1 standard which may remove the incentive to use a third-party rating system altogether although the policy does not preclude this.^{clxxxiii} This standard is developed by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) and serves as one path to compliance under the International Green Construction Code (IgCC) published by the International Code Council.^{clxxxiv} The IgCC allows individual levels of government to incorporate the code as a whole or choose individual sections. It has already been adopted by a wide range of state and local governments across America.^{clxxxv}

The outcome of these audits may have two consequences. First, and notwithstanding the GSA review discussed below, if the audits show that LEED certification adds cost but does not deliver expected efficiency gains then this may result in LEED losing prominence as a sustainable building tool. Second, and in contrast, if the audits demonstrate efficiency gains then LEED's dominance may be strengthened. The outcome of these reviews may also have significance here at home and may result in changes to green building strategies here in Canada which largely incorporate LEED requirements.

General Services Agency Review of Rating Systems

Another development that may have consequences for green building here in Canada involves America's General Services Agency (GSA). The GSA is responsible for overseeing much of the United State's Federal building fleet which includes over 9600 buildings representing around 3.4 billion square feet of real estate.^{clxxxvi} When looking at the total number of buildings under Federal control, the number exceeds 500 000.^{clxxxvii} This makes the Federal government the largest consumer of energy in the United States.

The GSA is currently undertaking a mandatory five year review of available third-party certification systems that are "deem(ed) to be most likely to encourage a comprehensive and environmentally sound approach to certification of green buildings".^{clxxxviii} The review panel is co-chaired by the GSA, the Department of Energy, and the Department of Defense. As of 2003, the GSA has required all federal buildings to be LEED Silver certified and has required LEED Gold since 2010.^{clxxxix} During the last review in 2006, the USGBC's LEED system was identified as best meeting the goals of the GSA.

In accordance with statutory requirements, the GSA completed an internal review of three systems screened from an initial 180 available rating systems in March 2012. The final assessment included (i) the Green Building Initiative's Green Globes® (2010), (ii) the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) (2009), and (iii) the International Living Building Institute's Living Building Challenge™ (2011).^{cxci} Given the size of the American federal government's building stock, the GSA's choice of rating system could have a huge impact on the green building market. In fact, almost 27% of all LEED projects involve government buildings.^{cxci}

The review identified multiple categories against which each rating system was evaluated for new construction and existing buildings applications. While no single system was able to meet 100% of the criteria identified for new construction, Green Globes came out ahead meeting 25 of 27 identified categories. LEED came second with 20 and the Living Building Challenge met 14.^{cxcii} LEED came out ahead when considering rating systems for existing buildings, meeting 27 of 28 identified categories of importance. Green Globes came second with 22 and the Living Building Challenge met 17 of the GSA's criteria.^{cxciiii}

The GSA's review cites many of the differences between the user interface (reporting requirements) and methodology between these three systems but does not expressly endorse any one system over another, and will not do so until the close of a public comment period during the fall of 2012.^{cxciiv} However, the report's conclusion may provide some indication as to which system may come out ahead:

To meet Federal sustainable design and high-performance operations requirements, agencies need to focus on the existing Federal building stock. Quality, integrated design may make it easier for buildings to meet the Federal requirements, but in the end, there is a need for quality building operations professionals to achieve long term, high-performing buildings. The building occupants also need to be committed to contributing in a positive manner to optimize building operations.^{cxciv}

This conclusion is interesting for at least two reasons. First, it highlights the focus on existing buildings and may indicate that LEED has a chance to continue to enjoy endorsement by the GSA as this system scored higher in the existing building section of the review. Second, it recognizes that certification alone is no guarantee of energy performance; the operation of buildings by their inhabitants has a huge impact on the performance of the building.

Coalitions Advocating For and Against GSA Endorsement of LEED

There are also several coalitions currently advocating for or against the American federal government's policy requiring LEED certification on public projects. These coalitions are advocating at a critical time given that the GSA's internal review is complete and is now open to public comments.

One such coalition is called the *American High-Performance Building Coalition* which represents over 30 industry groups drawn from the petrochemical, roofing, and chemical manufacturing industry as well as the U.S. Chamber of Commerce among others.^{cxci} This group has been critical of the USGBC and has supported the recent delay in the release of LEED 2012 (now renamed LEED v 4)^{cxci}:

“Our organizations will not cease their efforts to improve the LEED process until USGBC embraces openness, balanced interests on committees and true consensus, and provides a meaningful opportunity to consider scientific comments”.^{cxviii}

Part of this dispute involves a proposal by the USGBC to penalize the use of certain building products under LEED 2012 made from toxic chemicals such as polyvinyl chloride (PVC). Instead, the next version of LEED will award points for “preferred” materials, dropping any potential penalties.^{cxix}

The *American High-Performance Building Coalition* apparently has some sympathy in the House of Representatives. Eight Democrats and 48 Republicans sent a letter on May 18 to the acting chair of the GSA stating that proposed changes to LEED restricting the use of certain “chemical products” could raise the cost of construction on federal green buildings. The bi-partisan group further requested that the GSA drop LEED unless changes are forthcoming.^{cc}

Similar sentiments were expressed during a House of Representatives’ Science, Space, and Technology Committee’s Subcommittee on Investigations and Oversight entitled “The Science Behind Green Building Rating Systems”.^{cci} The opening statements made by Chairman Paul Broun (R-GA) expressed concern about the financial benefits of using LEED on federal buildings. He went on to reiterate the above coalition’s concern with the USGBC’s approach to chemical products:

Recent proposed changes to LEED for 2012 also appear to penalize some common building materials with little to no basis in science such as PVC piping. I’m not sure why PVC piping in a warehouse is such a concern. Shouldn’t we instead be focusing on saving taxpayer dollars rather than social engineering?^{ccii}

Chairman Broun’s statements also briefly addressed the possibility of the Department of Defense or Department of Energy developing their own “green” building code. This may result in policy similar to that of the U.S. Army discussed above in relation to using the ASHRAE 189.1 standard.

While it should not come as a surprise that politics play a role in how debate regarding the efficiency or benefits of rating systems are evaluated, it is important to note that the outcome of these debates could have significant consequences in both the public and private sector. Several speakers at the subcommittee hearing have stressed the impact the American federal government has on private markets by effectively endorsing certain standards (and materials) over others. Were the American government to go with LEED over Green Globes, the suppliers of building material given preference under LEED may enjoy increased access to this particular market.

In relation to GSA’s review of third-party rating systems, the *American High-Performance Building Coalition* has come out in favour of Green Globes over LEED. Mark Collatz, director of Government Relations with the Adhesive and Sealant Council, and member of the *American High-Performance Building Coalition*, stated in a news release that:

The danger in endorsing LEED as the single acceptable green building rating system for the federal government is it can lead to the USGBC’s further monopolization in these types of programs. GSA must foster competition and give full consideration to other rating systems such as the Green Building Initiative’s Green Globes program, which is an ANSI [American National Standards Institute] accredited standard.^{cciii}

The *American High-Performance Building Coalition* is not the only group advocating for a particular third-party rating system to be endorsed by the GSA. Another group consisting of over 1200 signatories has sent a letter to the GSA advocating for the continued use of LEED on federal projects. The letter states in part that:

According to the OMB [Office of Management and Budget], investments in efficiency over the last four years are expected to save \$18 billion in energy costs over the life of the projects.

In an effort to continue this success, GSA is evaluating the building rating tools at its disposal, as required by the Energy Independence and Security Act of 2007. LEED is the most widely used high-performance building rating system in the United States. The private sector uses LEED to both verify and communicate the quality of high performance buildings. *If GSA, as the “landlord of the federal government,” were to require or use something else, it would add cost to the building and leasing process across the building industry. We are not in favor of adding cost.*^{cciv}

The final outcome of the GSA review, including the agency’s final recommendations, will be announced after the close of the public comment period and is expected sometime in the fall of 2012.^{ccv}

Canadian Examples of Non-LEED Green Building Projects

There appears to be a movement away from LEED in Canada as well, with several recent or upcoming projects pursuing certification under a rating system other than LEED.

A cutting-edge health care facility located in Stouffville, Ontario will pursue BREEM^{ccvi} (Building Research Establishment Environmental Assessment Method) certification as opposed to LEED. The City of Stouffville and the developer wished to try something other than LEED when incorporating sustainable design features into the facility. Andrew Bowerbank, former executive director of the World Green Building Council^{ccvii}, advised the developers about models to assess “sustainability”. Through this, the decision was made to go with BREEM over LEED in part due to the impression that LEED lost some of its prestige due to the number of projects promoted as LEED certified. Instead, the developers felt that going with BREEM would set their project apart from the rest.^{ccviii}

Other examples of non-LEED projects includes two University of British Columbia buildings recently certified under Green Globes. Both the Arts and Sciences building and the new Fipke Centre, which uses a geo-exchange groundwater energy system, have been awarded five Green Globes.^{ccix} Other Green Globe projects include the Royal Bank Building in Winnipeg, the Federal Court Building in Toronto, and the Integrated Learning Centre on Queen’s University campus.^{ccx} In Canada, Green Globes is administered by Building Owner and Managers Association under the BOMA BEST (Best Environmental Standards) program.^{ccxi}

GREEN BUILDING CODES

Introduction

Many approaches to green building and sustainable development have incorporated LEED requirements (or similar rating systems) into their zoning bylaws or green building policies. This

reliance on third-party rating systems to minimize energy and water use is common in America as well as in Canada. While these rating systems were originally envisioned as voluntary programs, they have become mandatory building requirements under these strategies. An alternative approach has been to move toward green building codes which may have several advantages.

For example, one issue discussed in the previous Study Paper is the inability for any one party to control final third-party certification. This is because the responsibility for achieving credits is dependent upon the actions of many participants at every level of planning and construction. In contrast, addressing energy and water efficiency through building codes may address this issue in part. If the building code provides sufficient efficiency, then third-party rating systems may not be required to achieve the green building goals of governments or private parties alike.

The reliance upon third-party rating systems to achieve a greener built environment also means that there is no uniform standard of “building green” and that the private sector is involved only to the extent they decide to be. In contrast, developing an enforceable mandatory green building code at the national level would increase consistency in the metrics used to define a “green building”, more consistency between public and private development, and a removal of the administrative burden often associated with third-party certification in Canada (registration, delays, record keeping, coordination, etc.).

Furthermore, because building codes operate as a “floor” and rating systems operate as a “ceiling”, using the building code to increase efficiencies does not preclude the use of a rating system.^{ccxii} This approach has been considered and endorsed by proponents of LEED and other rating systems. In fact, the USGBC has launched a campaign called “Build Better Codes” aimed at ensuring that model green codes align with LEED requirements:

Over the course of the last six years, green building policy experts from government, NGOs, and all sectors of the industry have created a national set of "model" green building codes that serve as a first-ever common language for minimum green commercial building practice. The result of this work is now available in the International Green Construction Code (IgCC) and its Standard 189.1 compliance pathway. *USGBC is working with its partner organizations in code development to ensure that buildings designed and built to comply with this set of green building codes are well positioned to contribute to the outcomes that LEED projects deliver.*^{ccxiii}

The USGBC expressly envisions their continued success alongside greener building codes. In fact, the USGBC is one of the sponsors that helped develop the IgCC so future alignment between LEED products and the IgCC should be expected. There may always be a place for rating systems however. As discussed above, one of the benefits often cited by proponents of rating systems is brand recognition: “A code tells you what to do, and LEED tells the world how well you did”.^{ccxiv}

American Green Building Codes: CALGreen

Several jurisdictions have combined water use and energy efficient requirements into their building code, in addition to requiring compliance with third-party rating systems. For example, several American states have (i) adopted their own water and energy efficient building codes or (ii) adopted parts of the International Green Building Code into their local law.^{ccxv}

California enacted the first mandatory green building code in the form of CALGreen. The objective of the CALGreen Code is “to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impact during and after construction”.^{ccxvi} CALGreen has been in effect since January 1, 2011 across the state and is incorporated into the California Building Standards Code under Part 11.^{ccxvii}

Similar to jurisdictions here in Canada, legislation that required reductions in GHG emissions drove the creation and implementation of CALGreen. However, earlier attempts to achieve GHG emissions through green building requirements that would have affected residential, commercial, and state-owned buildings were vetoed by then Governor Schwarzenegger in 2008. The Governor gave several reasons for rejecting the earlier approach, among which was the concern that private entities should not be defining building standards for the state as a whole. He noted that the development of green building standards “should not be statutory, conflict with current safety standards, and rely on private entities to set standards”.^{ccxviii} As a result, he charged the California Building Standards Commission to create a California green building code drawn from other American jurisdictions.

There are both mandatory and voluntary sections of CALGreen. The code currently applies to residential, commercial and state-owned buildings including “state university and community college buildings, privately owned buildings used for retail, office, and medical services, and others listed in Section 103”.^{ccxix} Municipalities that wish to enact stricter energy and water use requirements that exceed the green code are still able to do so.

International Green Construction Code

Another popular approach has been to rely upon green building standards developed by the International Code Council (ICC). The most recent model green building code is the 2012 International Green Construction Code (IgCC) which has been developed in hopes of providing a model code applicable to all stages of green construction projects:

The IgCC creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems which may extend beyond the customizable baseline of the IgCC. The code acts as an overlay to the existing set of International Codes, including provisions of the International Energy Conservation Code and ICC-700, the National Green Building Standard, and incorporates ASHRAE Standard 189.1 as an alternate path to compliance.^{ccxx}

Part of attraction of the IgCC is the ability of local jurisdictions to adopt the “core provisions of the code” along with different levels of compliance but to modify other aspects of the code for local conditions or priorities. The additional use of voluntary third-party rating systems is also expressly considered within the IgCC.

As a result, many state and municipal American governments have adopted the IgCC or incorporated parts of it into local law with some modification. While Maryland was the first state-level adopter, other jurisdictions have followed, including Rhode Island, Oregon, and cities such as Richland, Washington and Phoenix, Arizona.^{ccxxi} Greener building codes are also being developed in Canada through another set of model construction codes.

Canadian Green Building Codes

In Canada, a volunteer-based partnership established by the National Research Council of Canada (NRC) develops the National Model Construction Codes and Guides. These model codes are then adopted by provincial and territorial governments across Canada with the Constitutional authority to determine the standards by which buildings are constructed and operated in their jurisdiction. The building codes developed by this group can be modified by each jurisdiction as they see fit but tend to be largely adopted without radical modifications.^{ccxxii}

In October of 2011, the Canadian Commission on Building and Fire Codes (CCBFC) released a report concluding that the building code is an appropriate vehicle to address water use and efficiency. The report follows the addition of a “water use efficiency objective” to the 2015 National Building and Plumbing Codes of Canada. Concerns addressed in the report include prioritizing the health and safety implications of allowing the use of grey water, black water, and harvested rainwater while other changes such as low flow toilets and fixtures were viewed as less complex or problematic.^{ccxxiii}

More recently, the CCBFC stated that they are working toward developing the technical standards required to give effect to the water use efficiency objective adopted in 2011. A gradual approach is envisioned, to begin by mirroring requirements currently found in provinces such as British Columbia:

First would be mandatory requirements for water-use reduction features in all buildings similar to those implemented in some provinces, such as low flush toilets, and low flow faucets and shower heads. Next would be enabling provisions to limit the health and safety risks of voluntary systems using water that may be contaminated (e.g., grey water or harvested rainwater). Additional mandatory requirements would be considered in future stages.^{ccxxiv}

The technical requirements are expected to be out for public review in the fall of 2013. If adopted, these would be included in the 2015 Codes.

Similar changes have already been adopted by the British Columbia Provincial Government in pursuit of reducing GHG emissions. Change to the building code is an ongoing project but has so far focused on reducing energy and water consumption in both the residential and commercial sector.^{ccxxv} Some municipalities have adopted changes to the building code which require new homes to be built “solar hot water ready”. This means that new homes are to be built ready to install solar powered hot water heaters, but do not necessarily require them at this time.^{ccxxvi} High-efficiency toilets and urinals are also required for new residential construction or when renovations occur that involve plumbing fixtures.^{ccxxvii}

The code changes originally considered high-efficiency toilets for commercial and industrial buildings as well, but this has been on hold while drainage transport issues are further researched. Several studies have shown that drainage issues may result in commercial buildings due to the lower amount of water used in high efficiency toilets.^{ccxxviii} Further changes to the building code which will affect complex buildings (including large residential, industrial, commercial and institutional) and smaller residential buildings are expected to be released for public comment during the fall of 2012.^{ccxxix}

Energy efficiency has also been brought under the ambit of the 2011 National Energy Code of Canada for Buildings (NECB). Compliance with the NECB reflects the objective based approach of the code’s

development. The most recent code includes a focus on “excessive energy use” under a new principle objective - the Environment.^{ccxxx}

A review of the existing Code by the Standing Committee on Energy Efficiency in Buildings (SCEEB) is currently underway in order “to develop recommendations for enhanced energy efficiency based on a rational analysis that considers enforcement implications, costs/benefits, technical feasibility, and industry readiness”.^{ccxxx} It seems that more stringent energy requirements may not be on the immediate horizon but requirements around automated lighting control to reduce energy use may be:

Initial indications are that, based on current costs and benefits, further energy improvements to the building envelope beyond what is dictated in the 2011 NECB edition would not be economically justified. Additional energy efficiency gains may be possible in other areas, however; for example, by enhancing requirements for automatic controls that reduce building energy use.^{ccxxxii}

Whether achieved through third-party rating systems or greening the building code, increased water use and energy efficiency is a consistent trend across jurisdictions.

SUMMARY OF GREEN BUILDING TRENDS

As can be seen from the range of initiatives canvassed above, there are many different green building strategies and trends at work. While approaches may vary, the underlying theme is in the desire for greater energy and water efficiency, financial return on investment, and reduced GHG emissions.

Vancouver continues to seek GHG emission reductions by targeting the construction industry. The municipality continues to require LEED certification on new rezoned buildings and will likely enact other changes to the *Vancouver Building Bylaw* in order to reduce GHG emissions in both new and existing buildings. Other initiatives include the development of some form of financing in order to reduce the lag between energy efficiency upgrades and the resulting cost savings. This later approach is also cited in the B.C. provincial government’s green building strategy under the *Clean Energy Act*.

Toronto’s mandatory green roof bylaw continues to be in effect although with some concessions to the industrial sector. The City has approved a sector-wide variance allowing cash payment in lieu of otherwise mandatory green roof coverage. The educational sector is currently seeking a similar sector-wide exception but the outcome remains to be seen. Other sources suggest that mandatory inclusion of green roofs is gaining traction in other jurisdictions as well.

American jurisdictions such as Ohio, New York, and California all have or are considering various mandatory solar-related building provisions. In Ohio, the School Facilities Commission has proposed a rule that would require all schools to be “solar ready”. In New York, several proposals also envision the school system as a hub of solar power. In California, net-zero energy use for all new or renovated state buildings after 2025 is expected to be achieved through on-site energy production including solar cells. Similar provisions can be found in British Columbian jurisdictions that have adopted amendments to the B.C. building code requiring new residential homes to be built ready for solar hot water systems. While the changes do not currently require the actual installation of these systems, homes must be built to allow easy installation at a future date.

Philadelphia, among other jurisdictions, has enacted an ordinance that will require owners of commercial buildings to report their energy use to the City. Potential buyers will have access to this information and future amendments may also provide public access. California and Australia have similar legislation while the United Kingdom has gone even further, requiring that all publicly-traded companies report their GHG emissions annually.

The British Columbian provincial government continues to endorse third-party certification on public projects as part of their approach to reducing GHG emissions. Recent policy statements seem to indicate that the province's existing building stock will be the focus of future government action. Further changes may also come about under the *New Energy Efficiency Act* or the proposed *Energy and Water Efficiency Act*. Part of the Canadian Federal government's plan also includes the use of rating systems.

Recent events may signal that LEED will not remain the rating system predominantly used by the American Federal Government. Part of the *Defense Authorization Act* limits the ability of the Department of Defense to pursue LEED Gold or Platinum while the outcome of the GSA rating system review may endorse Green Globes or the Living Building Challenge over LEED.

Finally, greener building codes are being developed abroad as well as here in Canada. While California has enacted the state-wide green building code called CALGreen, other American states have adopted parts of the International Green Construction Code. British Columbia has enacted stricter water use requirements and changes to the National Model Construction Codes and Guides also contemplate stricter energy and water efficiency.

While many approaches to green building have been developed, all jurisdictions seem to be moving in the direction of higher energy and water efficiency requirements in one form or another.

Inevitably, it remains to be seen whether green rating systems will continue to be the defining feature of green building policy and regulation. When they entered the North American market over 10 years ago, they were intended as a voluntary, leadership-level goal. However, they distilled the complexities of green building into accessible criteria so effectively and were quickly co-opted by regulators as an easy way to drive forward their green building policy as a result.

Today, the market is familiar with the concepts of green building. Regulators are now starting to integrate those facets of green building most applicable to their communities into their codes and standards.

PART THREE

MOVING FORWARD

GREEN BUILDING IN THE FUTURE

WHERE ARE GOVERNMENTS GOING?

Continued Use of Third-party Rating Systems

Over the past year, green building has continued to grow in popularity even though issues remain to be resolved. Trends over the past year include: indications that existing buildings will be targeted for upgrades; new legal cases involving green projects; a wide variety of government sponsored green building strategies; and a quickly changing green building landscape for industry participants.

A broad range of options is open to governments seeking to reduce energy and water use as well as GHG emissions. Some jurisdictions have initiated energy-use disclosure requirements, mandatory inclusion of solar energy, and mandatory use of green roofs.

However, the approach across jurisdictions continues to be the reliance on third-party certification, whether through a rating system or a letter of assurance from a certified professional (as used in Europe). This can be seen in Canadian and American building strategies alike.

The outcome of the ongoing GSA review will likely have a large impact on the rating system market, given the size of the United States Federal building stock. In British Columbia, both Vancouver and the Provincial Government will continue to require LEED certification as part of their approach to reducing GHG emissions.

Green Building Codes

Another significant trend is the movement towards continually “greener” building codes which in effect means “outcome-based” codes. Changes to British Columbia’s and Vancouver’s building codes promise to require higher levels of energy and water efficiency. Similar trends at the national level are also present as can be seen in changes to the National Building Code of Canada.

One challenge moving forward will be the extent to which stricter building codes are complimented by stricter operating requirements. Buildings can be built to perform in a highly efficient way but may fail to do so if the operation of the building does not align with design requirements. Code trends in Europe are performance based and are on a trajectory to carbon neutrality.

WHERE IS INDUSTRY GOING?

Innovation Strategy

The definition of green building is constantly evolving. The term “green” is fraught with ambiguity leading to misunderstanding, misaligned expectations, and disappointment. As performance standards start to take hold, industry is starting to segment products, approaches, practices, and solutions into “business as usual”, which are proven and familiar; and “innovative”, which involves uncertainty and risk.

Innovation is the catchword for many of Canada’s large and important industries. Forestry, agriculture, and mining are all engaged in grooming their sector for the green economy and the investments that power it. Given that buildings are hosts to a wide range of green technologies, the construction industry is the focus of intense scrutiny. Current concerns come from the lack of an industry-wide innovation strategy framework within which builders can assess opportunities and gauge risks.

An innovation strategy is needed to establish clear terms of engagement for British Columbia real estate and construction businesses seeking export opportunities and for foreign investors interested in establishing themselves in British Columbia. It also enables the large number of businesses that support real estate and construction to better align with market trends and leverage opportunities. British Columbia’s construction industry needs to be able to support and advance innovation in order to:

1. Spur the development of new products and skills in British Columbia.
2. Enhance British Columbia’s attractiveness to foreign investment.
3. Position British Columbia real estate and construction businesses favorably in international markets.
4. Articulate and define the risks involved in the new technologies products and approaches bearing down on the industry.^{ccxxxiii}

While construction comprises 20% of Canada’s GDP, R&D spending is not keeping pace. In 2006, Canadian construction companies spent less than \$50m on R&D which is about 0.5% of total national R&D spending in the manufacturing sector. Canada’s construction industry understands the shortcomings. A 2002 study by the now-defunct National Steering Committee for Innovation in Construction called for the following key short-term initiatives:

- Develop a pilot program to move the government’s procurement ethos away from lowest- bid towards best-value;
- Initiate a review of the regulatory framework to address any regulatory barriers to innovation;
- Increase support for R&D, demonstration and dissemination activities in construction- related areas, with particular emphasis on process technologies;
- Begin the development and implementation of a HR Action Plan specifically focused on the construction sector;

- Provide catalytic support to NSCIC in the form of seed funding during the development of the National Action Plan and a second Canadian Construction Forum.^{CCXXXIV}

In the ten years since the release of the study, the market has changed substantially. However, while the recommendations are still relevant, any expectation of public funds to support further efforts is unrealistic.

Litigation

While litigation involving rating systems has been slow to emerge in Canada, the cases canvassed in this paper demonstrate that legal issues do pervade many levels of green building. Many of the cases discussed above involved situations where local zoning environmental standards were satisfied by a project's pursuit of third-party certification. Even in cases where certification was not expressly used to satisfy environmental standards, certification was cited as 'being in the public benefit'. The one outlier to this pattern was a Canadian case which held that third-party certification was no guarantee of sustainable design or good city planning.

Another group of cases involved claims involving misrepresentation based on promotional material; or, in one case, the statements made between subcontracted parties. Many of these cases involved condominium cases and issues with HVAC systems which failed to meet the purchaser's expectations. Green building material and design continues to be cited as a concern by many construction participants and will likely continue to present issues going forward.^{CCXXXV}

Third-party Rating Systems

Rating systems are well-entrenched within policies and regulations and will remain so for some time. Their widespread use means that industry participants must continue to engage with and understand them, although opportunities for alternate compliance paths are emerging. Therefore, several issues remain unresolved here in Canada, the most common being the administrative burden and delay associated with record keeping and documentation requirements for achieving certification.

The CaGBC currently reports that there is approximately a three month delay for certification under LEED Canada for Existing Buildings: Operations and Maintenance. However, industry reports that the review and audit process varies widely in both time and investment of effort. While the CaGBC has attempted to speed up and streamline the certification process for commercial projects, it remains to be seen whether these changes will be effective.^{CCXXXVI}

Another issue to be resolved is whether or not rating systems should be more explicitly accounted for in standard contract documents. This approach has been endorsed by several organizations in the United States, as can be seen in updates to existing standard contract forms. For example, the American Institute of Architects (AIA) has developed a new catalogue of contract documents which expressly recognizes the role of rating systems on green building projects.^{CCXXXVII} These documents reflect the concerns of design professionals but also reflect the extent to which green building has become mainstream.^{CCXXXVIII} The AIA, along with other industry associations, are moving forward with the firm belief that "the industry standard is now the green standard" and are trying to find ways to cope with the unique challenges this trend presents through contract documents.^{CCXXXIX}

The ConsensusDocs Coalition has also developed standard contract forms which recognize third-party rating systems as well as BIM.^{CCXL} A Green Building Addendum Form allows parties to designate a

Green Building Facilitator who then oversees the assignment of green building duties to individual parties. Another BIM Addendum also expressly assigns duties to parties involved in changes to a project's shared BIM specifications.^{ccxli} If rating systems are here to stay, then should the Canadian construction industry follow suit? Are contract documents one of the appropriate forums in which to address the unique challenges green building presents?

How Can Government Help Industry Meet the Future Challenges of Building Green?

Moving forward, the role that building operators and tenants have on the ultimate performance of a building must be recognized and addressed. High-performance buildings can only operate to the extent that their use aligns with their design. Studies show that many building operators lack the necessary training to effectively work with the highly complex systems found in modern high-performance buildings.^{ccxliii} Training and educational programs need to be designed to attract a new generation of building operators able to understand the challenges presented by green buildings. Tenants of green buildings must also understand the impact they have on the building's performance if the goals the green building movement professes are to be achieved.

CONCLUSIONS

RECOMMENDATIONS

The cases surveyed above involve every level of the construction industry and a host of legal claims and issues. Updates to cases pending at the time of the previous Study Paper demonstrated the importance of understanding how Limitation Acts can operate to defeat an otherwise valid legal claim; how external funding linked to certification of a project can add complexity and additional oversight; how green leases may require certification or other green requirements; how industry resistance to green building codes have resulted in opposite legal outcomes in the United States; and how legal disputes involving LEED have involved material suppliers in patent disputes.

New cases over the past year can be grouped into three broad categories, including: cases that demonstrate how builders and regulators often conflate LEED with green or sustainable design; cases that demonstrate how common legal claims often involve tenant's unmet expectations; and cases that involve bidding disputes, tax assessment, and material suppliers. Taken together, all the cases surveyed can be used to provide recommendations to those involved in the green building industry.

First, the updated cases show the importance of understanding how external funding linked to certification can add complexity and additional oversight to a green building project. This will be especially relevant in cases where the special requirements of green leases are not well understood by potential tenants. It is important to understand how timelines and external obligations may be affected by delays due to certification or material sourcing.

Second, caution needs to be taken when relying on LEED or other systems to satisfy the green building requirements found in local zoning regimes. While the American cases demonstrate the ability of LEED to satisfy these kinds of requirements, the Canadian case came to the opposite conclusion. This will be an increasing concern going forward, given the prevalent trend of regulators

moving towards requirements directly linked to the standards that underpin third-party rating systems (i.e. ASHRAE) and LEED's lack of focus on GHG and CO₂ emissions.

Third, a large number of cases discussed involve legal claims which turn on unmet expectations by final tenants. This may arise in situations where a building is being promoted as built to a "LEED-like" standard or where performance outcomes often implied by third-party certification are not tempered or clarified by Owners or Developers. Given the number of cases underpinned by this feature, it would be wise to ensure that clients understand the specific benefits they may receive given the building's design and potential certification.

Finally, an ongoing issue may emerge from the way the building industry responds to future regulation which references the standards which underpin rating systems, rather than referencing rating systems themselves. This was discussed in relation to Vancouver's recent changes under the Vancouver Building Bylaw which currently references ASHREA 90.1 (2007) for high-rise residential buildings but may soon reference ASHRAE 90.1 (2010). As stated, the building's ultimate operation by final tenants has a significant impact on energy and water use as well as emissions levels. From a public policy standpoint, assessing compliance with building requirements must take into account this critical factor.

BARRIERS GOING FORWARD

Finally, there are a number of challenges to implementing carbon emissions and energy consumption reduction policies specific to high-rise market residential buildings. Many of these issues also exist more generally across green building projects. Barriers to consider going forward involve the procurement process; occupation and operation of completed buildings; limits on ASHREA as an effective policy tool; and accounting for envelope design.

Accountability Amid a Fractured Procurement Process

Accountability is key to the success of any strategy aimed at substantially reducing building energy use. For Multi-Unit Residential Buildings (MURBs), the process from design through construction to operation is complex, fragmented, and often involves many players. Designers have only limited control of the construction and startup processes and almost no control of building operations. Contractors and operators typically have even less influence on the elements of building design which affect energy performance.

The high-rise residential development industry is specifically characterized by the developer's lack of ongoing involvement in the building once it is complete. Even with rental MURBs, the developer and owner are often entirely different corporate entities. Ongoing management of operations is placed in the hands of a building management (strata) council, which then hires a property management company when the building is handed over. It is therefore difficult to enforce energy standards that require many months of post-occupancy data to prove compliance with policy standards. Further, it is unreasonable to hold a developer accountable for the actions of occupants with whom they have no contractual relationship. As a result, there are potential liabilities associated with standards that are not validated until after the developer has left the project.

Limitations of ASHRAE as a Policy Compliance Tool

ASHRAE 90.1 is a methodology for optimizing systems and equipment design and it is well-known within the design industry. It is a robust and powerful tool for energy efficient design. Complex – and costly – computer simulation models are developed which are intended to predict and assess energy performance over a theoretical baseline, with the intention of reflecting reality as closely as possible. These models require inputs for building envelope, heating, ventilation, air conditioning, service water heating, electrical power distribution and metering provisions, electric motors, belt drives and lighting. Ideally, they are prepared at the stage of maximum value to the design process. As a tool for policy regulation and enforcement, both industry and regulators concur that ASHRAE is complex, expensive and difficult to enforce. Due to scheduling, the models are often prepared for regulatory compliance rather than for design benefits; therefore, data quality may be affected.

Rather than offering consistent and comparable metrics, ASHRAE measures relative energy cost measures against a model baseline based on parameters for a specific design. Although the model attempts to predict actual performance, it allows for trade-offs and workarounds which tend to undermine end results. In the context of MURBs, ASHRAE models include energy performance measures such as in-suite electricity consumption over which design and construction professionals have no control.

Third-party Rating Systems

Some regulators have opted to leverage third-party rating systems such as LEED, the Living Building Challenge and BuiltGreen as a means to implement green building policy goals. There have been challenges with this approach in terms of alignment with community priorities, length of time for certification and cost. While these systems may work for certain building owners, the high-rise development industry requires regulations to proceed in sync with the building process. LEED and the Living Building Challenge particularly require lengthy post-occupancy reviews.

The particular challenge with LEED (the most common rating system) is that it references both ASHRAE and the Model National Energy Code for Buildings. It not only suffers the shortcomings related to ASHRAE as cited above but also adds another suite of metrics which are not easily comparable. Notably, neither LEED nor BuildGreen specifically address carbon emissions. In addition, the development industry has expressed some concern that reliance on third-party rating systems may be perceived as the offloading of regulatory responsibilities.

Envelope Performance

Improving building envelope performance requires attention to the façade assembly performance, glazing area and airtightness from the design stage through construction to the pressurization test at building prior to occupancy. While moisture control is part of current building envelope design considerations in BC, thermal performance is only indirectly considered and airtightness testing is not part of current practice at all. Further, addressing air leakage is not a mandatory part of the usual building deficiency process as it adds complexity and cost.

Building Data Quality and Availability

These comments have been made possible by the availability of building performance data gathered by the City of Vancouver of existing MURB energy consumption. The availability of such baseline data is critical to benchmarking current practice, determining the resulting performance outcomes and assessing the degree of stretch necessary to achieve proposed targets; however, actual measurable data from recently complete buildings is generally not consistently gathered by local governments. This is partly due to the reliance on third-party rating systems as a way to implement policies and which do not deliver quantitative and comparable performance data (see above). The challenge is exacerbated by the number of different metrics and modelling procedures in use and the tendency to present energy performance as a relative value rather than as an absolute measure.^{ccxliii}

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^{xi} *Ibid* at 17.

^{xii} *Limitation Act*, RSBC 1996, c 266, online: <http://canlii.ca/t/845q>.

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