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REGULATING GREEN BUILDINGS
Present and Future of Green in Nebraska

By

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A THESIS

Presented to the Faculty of
The Graduate College at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Community and Regional Planning

Major: Community and Regional Planning

Under the Supervision of Professor Zhenghong Tang

Lincoln, Nebraska

July, 2010

REGULATING GREEN BUILDINGS

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University of Nebraska, 2010

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Green buildings are becoming the new fixation for the building industry because of the impact they have on the carbon footprint and the cost savings they offer for utility costs. Governments have begun to produce policies and regulations that implement and mandate green buildings due to these successes. However, the policies are having troubles increasing the popularity and quantities of green buildings. There is a need for a way to produce better policies and regulations that will increase both the amount of green buildings their popularity. A decision-making tool, such as a decision tree, should be created to help policymakers who do not have the backgrounds to produce well thought out regulations. By researching the green building industry and its current status, key points can be graphed out in a decision tool that will provide the needed education for policy makers to produce better green building regulations.

Table of Contents

Abstract	
Table of Contents	
Chapter 1	1
Section 1.1: Introduction	1
Section 1.2: Literature Review	3
Section 1.3: Methods	7
Chapter 2: Research	8
Section 2.1: History and Current Status of Green Buildings	8
Section 2.2: Defining Green	9
Section 2.3: Current Third-Party Systems	11
Section 2.4: Methods of Green Regulations	14
Section 2.4.1: Incentive Based Regulations	14
Section 2.4.2: State and Local Regulations	19
Section 2.4.3: Mandates	25
Section 2.4.5: Green in Litigation	26
Chapter 3:	40
Section 3.1: Case Studies	40
Section 3.1.1: Portland, Oregon	42
Section 3.1.2: Nevada	48
Section 3.1.3: Washington D.C.	51
Section 3.1.4 Nebraska	52
Chapter 4	55
Discussion of Results	55
Conclusion	63
Further Research	64
Acknowledgment	65
References	66

Chapter I

Section 1.1: Introduction

A moralistic governmental society views government as a “mechanism for advancing public interest”¹ and a popular current interest has been the push for sustainability. Green buildings are a way of contesting the need for lowering the emissions of green house gasses. Government entities are catching on by creating laws and regulations that increase the quantity of sustainable and green buildings. However, many lawmakers are lacking in the knowledge of the current trend of green technologies and green buildings. The problem currently is that lawmakers are creating unsuccessful laws with regards to green buildings. There is a need for systematic methods for lawmakers that increase the amount of green buildings built because there are no tools or decision support systems yet that help lawmakers create a more knowledgeable and well thought out law for green building regulations.

Why is there a need for green buildings laws and regulations? According to a study done for the U.S. Green Building Council from 2000 to 2008, “the green construction market generated over \$173 billion in gross domestic product and supported over 2.4 million jobs.”² Another study done by the Council showed that buildings accounted for “65 percent of electricity consumption, 36 percent of energy use, 30 percent of waste output and 12 percent of potable water.”³ One can see that savings in these areas are needed and green buildings can attack this problem. With the predicted construction of over fifteen million new buildings over the next five years,⁴ green building regulations are a step to combat a building’s energy problems.

While green buildings are becoming increasingly important, the demand for knowledge on the subject is a valuable tool to have. As Shari Shapiro wrote in her blog dated March 31, 2009, “in theory, everyone should be on board with green building practices. Save the environment, save money in utilities, get federal, state and local incentives and have a great marketing tool.”⁵ This quote makes the building of green buildings seem like an easily achievable idea. So what is stopping the industry from being at the point where every newly constructed building, whether it is a one-story strip mall, a 90-floor high-rise in a large city or even a brand new home is green? Why is there a need for better laws relating to green buildings?

There are two large inhibitors of building green, cost and education. First, the initial costs of green buildings are shown to be greater than building with traditional methods, although studies have shown green building products are decreasing in cost. The second inhibitor is the education of the owners as regards to building green. Owners may not understand or know about the opportunities and relatively acceptance of building green. There are places like Nebraska where green buildings are an afterthought because of the lack of knowledge, education, and market for building green. Conversely, there are places such as California in which green buildings are now the norm.

A good green building regulation or law has the possibilities to address all of these issues. They can increase the quantity of green buildings constructed in a particular area in many ways. Governments can have a lasting effect on the green building industry by mandating for more green buildings or by pushing for an increase in the market for education of green buildings by mandating all government buildings be green. This would introduce green building materials and methods into the culture of the area's

building industry and make green buildings a norm instead of a new and not fully understudied area of construction. Government entities also have the ability to use incentives to promote the green building industry. Consequently, a government entity would greatly be enhanced with a tool to help with the knowledge of green buildings and the help ease the transition into a new norm for buildings.

Why should the government intervene with a current trend in the construction industry? Carl J. Circo introduces the main policy question for why government promoted green buildings regulations are needed in his article *Using Mandates and Incentives to Promote Sustainable Construction and Green Building Projects in the Private Sector*. The question Circo attempts to answer is “should we depend on construction and design industries and the real estate development market to be the primary forces for sustainable design and construction, or should the government intervene?”⁶ It is difficult in today’s economy to advise owners to put more money into their investments when the return is seen to be 20 years into the future. The city of Seattle, Washington’s investment of an additional \$2.64 million to obtain LEED™ accreditation for the Justice Center and McCaw Hall projects was met with dissatisfaction from short-term lookers; however the city projected the projects to be cost effective when examined over a 25-year period.⁷ Green buildings are the way of the future, there must be an effective way to introduce them into the culture today.

Section 1.2: Literature Review

The question that is at the center of this paper is to find a method of creating better policies for the purpose of increasing the quantity and quality of green buildings,

which in return would hopefully decrease the effects that buildings have on the carbon footprint. Research in this area has been very minimal and has not really focused towards the topic of sustainability. Instead research has been focused on bettering the quality of regulations and policies within all aspects of the law.

A policy formation is defined as the “nature of public problems, agendas and the process of agenda setting, and the formulation of proposed policies to resolve problems.”⁸ A good policy or law is one that “entails activities intended to determine what a policy is accomplishing, whether it is achieving its goals, and whether it has other consequences.”⁹ When a policy does not meet its full potential or fails to reach its goals, the policy makers as a whole receive the most criticism. Research has begun to show that it is the academic setting that is being underutilized when preparing and providing input for the preparation and implementation of local and state policies.¹⁰ The resources are available, but policy makers do not understand how to best utilize them.

Research has shown that policy makers need better research that is conducted by not only their peers and community groups but also by academic researchers. Research conducted on the relationship of families and children and policies by Kristin Anderson Moor reported that “scientists who study children don’t necessarily set out to inform public policy, and policy makers don’t very often seek out advice from academic researchers.”¹¹ Academic researchers have the provided background that will help produce quality analysis of problems within the problems of a given area. Personal communication was made with Ari Kohen, a Political Science professor at the University of Nebraska-Lincoln, agreed with the statement that policymakers are failing to utilize

the assets provided in the academic institutions. The research conducted at this level will provide policy makers with more tools to better produce policies and laws.

So how can researchers at the higher institutions provide a tool to implement better policies by working together with policymakers? According to Kristin Anderson Moore's article, researchers must first recognize that the policy makers do not have backgrounds in research and methodology.¹² Ari Kohen stated that the educational background of policymakers may not include policymaking even if their diplomas were focused on political science, because many institutions do not focus on such areas as, like policy creating, in great depth.

Without a background in policymaking or research, Moore states the best way to provide for better information for policymakers is to provide them with findings and research "that is meaningful to a nontechnical audience."¹³ She proposes to provide findings in summarized words and graphics that provide a storyline.¹⁴ Research conducted for the construction industry has used the same type of findings in order to produce decision models that help focus on construction related problems.¹⁵¹⁶ The models used are simple graphs that have proven to be a successful and easy way to provide information that improves the quality of policies, especially in the sustainable and green building industry.

The decision tools that are being used by these researchers are known as decision trees. A decision tree is a "clear graphic presentation of situation requiring choices between alternatives."¹⁷ It is a very good way for leaders to determine a path of least

resistance, when it comes to determining the correct or best answer to help solve a political problem because it is visual and easy to understand.

The decision tree begins with a base decision and then breaks off into branches, like a tree, that make up choices. Each decision is evaluated on what the municipality feels would work within its own borders. This decision tree is used to provide information on each decision made as well as what other consequences or other information would be needed to move to the next step.

As decision trees have been used in construction related research, they have also been used in the planning industry to help with the decision making process. In 2008 Michigan State University produced a flyer through their Extension Program that tackled questions of the recent state regulation that was passed. The flyer, *Check List #1; Steps to transition an existing planning commission to comply with the Michigan Planning Enabling Act*, uses a decision tree model that acts as a checklist for communities to use to amend their ordinances to follow to meet the new rules and regulations of the newly passed Michigan Planning Enabling Act¹⁸.

This decision tree “checklist” answered the question of the towns and cities regarding what were the necessary amendments they had to make to their planning ordinances to meet the new requirements. The decision tree can be used to help towns, cities, and states decide what to include into a green building regulation. Having a step-by-step decision making tool related to green buildings will help enhance the possibilities of a growth to the industry, increased the amount of green buildings produced and decrease in the amount of lawsuits related to green building regulations.

Section 1.3: Methods

To create the decision tree, conducted research will be done to identify the elements needed to produce the nodes and branches of the tree. First, it is vital to create a strong definition of “green building.” The definitions of green building have grown lax. Most of the definitions currently in use fail to match the process with the desired out. A study of the current status of the green building industry and the parts of it that are succeeding will also be conducted. This section contains main items of third-parties, current regulations, and green building litigation. To conclude the research, case studies will be chosen that provide backgrounds of how policies are succeeding and failing within the U.S. These case studies were chosen because of the success and failure of them as well as the different elements that each possesses that will provide the deepest knowledge of the practices of green building legislation and implementation.

Chapter II

Section 2.1: History and Current Status of Green Buildings

Total construction costs continue to rise and constructing a green building adds to the overall cost, not including the additional third-party costs to gain approval. The long-term costs of a green building can be offset by the savings on utility costs as well as through the impacts on the environment. The problem, however, is that the overall short-term costs associated with the green buildings are hindering many from constructing such a building.

In the short term, a green building may cost one to two percent above the overall construction cost compared to the same structure not built to green standards.¹⁹ This one to two percent increase in initial costs then will yield a twenty percent savings in utility costs over a twenty-year building life.²⁰ It is vital that this second figure be emphasized to show the benefit of building green. The monetary costs that are saved within the owners budget have shown to also save the environment. Green buildings have increased energy efficiency and water conservation, higher air quality and even shown to have effects over worker's performances.²¹ Over the years, green building components have decreased in price and as with any other product, as green buildings became more of the norm the demand increased and the price decreased.

The need for green buildings also continues to rise. The United Nations recently reported that "on a worldwide basis, 30-40% of all primarily energy is used in buildings."²² Looking closer into the United States buildings account for energy, a 2006

report entitled “*Green Research Funding: an Assessment of Current Activity in the United States*,” the report states:

building operations account for the built environment has a profound impact on the natural environment. Building operations account for 40% of U.S. energy use; this number increases to an estimated 48% when the energy required to make building materials and construct buildings are included in the figure. Building operations alone contribute over 38% of the country’s carbon dioxide emissions and over 12% of its water consumption.¹⁵ Waste from demolition, construction and remodeling amount to 136 million tons of landfill additions annually, making up over 35% of all non-industrial waste²³

Green buildings present an opening to reduce the challenges that buildings add to the global climate change.

While buildings are not the only problem, they do affect the climate change and energy use more than anything else. Green buildings are a way to fight the climate change and “present opportunities both to decrease energy consumption and create energy with technologies such as wind turbines and photovoltaic arrays. Decreasing our dependence on finite energy sources, such as foreign oil, is a path to increased stability and security.”²⁴

Section 2.2: Defining Green

How can a building be defined as “green?” The term “green building” has grown lax and has been defined by every construction scholar and third-party entity but none have come have up with a conclusive definition. According to Jonathan Rinker in his article in *The Las Angeles Lawyer*, “there is yet no universally accepted standard for what qualifies as green or sustainable building.”²⁵ This statement holds true because of all the three major third-party “green building” entities, United States Green Building Council

(USGBC), National Association of Home Builders (NAHB), and the Environmental Protection Agency (EPA), define “green building” all differently.

Comparing the definitions given by the EPA and a professor of law offers a look into the complications created by not have a uniform definition of “green building.” EPA states that “green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a buildings life-cycle from sitting to design, construction, operation, maintenance, renovation and deconstruction.”²⁶ Carl J. Circo, an Associate Professor of Law and the University Of Arkansas School Of Law define green buildings as building practices primarily involved with the design, construction, and operation of buildings and other facilities in ways that preserve natural resources and protect the environment for generations to come.”²⁷ Some definitions focus on just what goes into the building, the impact of the new construction techniques, and the outcome from the building on the environment. Discordant definitions can translate into different expectations of people while speaking of building green.

A similarity between both definitions is that they both conclude that a “green building” is an outcome. What both definitions are lacking is that a “green building” should also be considered a process. When the building is given a certification by a third-party entity, most people believe that after all the “points” are awarded and totaled the building is considered “green” at that moment in time. But the definition of “green” should go beyond that and include the years after the original certification as well as the stage and process during construction. Consequently, the definition of “green” should be defined as a process, action, and an outcome. A proper definition for “green building”

(and the working definition for this thesis) would be: a building that was originally planned to be constructed with materials that have been shown to be more environmentally friendly compared to buildings constructed to minimum codes and with traditional methods, constructed more environmentally friendly, and after construction is complete will remain a non-hinderer to the addition of greenhouse gases and can maintain its energy usage to a minimum.

Section 2.3: Current Third-party Systems

When it comes to regulations involving “green buildings,” third-party entities are the backbone and leaders of green building regulation. These entities provide a minimum standard that must be reached to be considered “green” or sustainable. There are three main programs that are at the center of the green building movement, LEED™, which is run by the United States Green Building Council, EnergyStar, a Federal government run program overseen by the U.S. Environmental Agency, and lastly the NAHB Green, a program overseen by the National Association of Home Builders.

The United States Green Building Council, USGBC, was the first to introduce a rating system that according to their website; was to establish “that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts”.²⁸

Leadership in Energy Efficiency and Design, better known as LEED™ is USGBC’s set of certifications in which points are awarded for certain criteria areas and

when added the certification is equal to a certification level of certified, silver, gold, and platinum. The current version of LEED™ awards certification at 40-49 points, a silver certification at 50-59 points, a gold certification at , 60-79 points, and platinum at 80 points and above.²⁹

The five areas points that are awarded within LEED™ New Construction are 1) sustainable site development, 2) water savings, 3) energy efficiency, 4) materials selection, and 5) indoor environmental quality.³⁰ LEED™™ also focuses on six categories that extend beyond commercial designs. The other five are interiors, existing buildings, schools, retail, healthcare, neighborhood development and homes.

LEED™ is by far the most widely known and recognized when it comes to green building programs in the construction industry. However, this reputation has not come with faults. LEED™ is very costly when it comes to applying and achieving for a certification. In the short term, a green building may cost one to two percent above the overall construction cost compared to the same structure not built to green standards and of that a vast amount of that coming from the additional costs of achieving the certification itself.³¹ One of the large costs involved in two-percent figure is the additional costs of having a third-party verify a certification as well as having another employee who is certified as an “expert” to be located or the jobsite.

EnergyStar is a relatively inexpensive program that is a “joint program with U.S. Environmental Protection Agency and the U.S. Department of Energy helping to save money and protect the environment through efficient products and practices.”³² While EnergyStar does not concentrate on the construction methods of a particular building, it

does focus on the products used in the building and how they relate with each other. According to its website, “it identifies new homes, buildings, and more than 50 types of products that are energy efficient and offer the features, quality, and performance that today’s consumers expect. Products that can earn the EnergyStar include windows, heating and cooling equipment, lighting, and appliances.”³³

Lastly, NAHB Green, operated by the National Association of Home Builders, is a certification program used for residential houses only. NAHB Green defines a “green home” as a home that pays attention to energy efficiency, water and resource conservation, the use of sustainable or recycled products, and measures to protect indoor air quality.”³⁴

Like LEED™, NAHB Green is a program that uses levels to determine certification. Three green certification levels are available for certification under the NAHB Green program, Bronze, Silver, and Gold with an additional level, Emerald.³⁵ The levels are awarded points under six main categories: lot and site development, resource efficiency, energy efficiency, water efficiency, indoor environmental quality, and homeowner education.³⁶

A paper from Buildings and Climate Change discusses sustainable building practices: “regardless of the energy consumption in absolute numbers, there almost always exist considerable opportunities to drastically reduce the energy use in building.”³⁷ These third-party entities give a municipality or state agency a base to build their green building regulations if third-party entity is needed. There are many different

programs that focus on green building certifications; it is up to the agency to determine which best suits its jurisdiction.

Section 2.4: Methods of Green Regulations

With rising costs of utility bills, it is becoming more common for government agencies to implement regulations to combat these issues, not only in the public markets, but also in private markets. Two main methods of regulation are used, incentive based regulations and mandate based regulations. Both have been proven to be effective when given the right type of environment and both have been unsuccessful in other situations.

Section 2.4.1: Incentive Based Regulations

There are many reasons why incentive-based regulations are popular with government entities and states. The main reason is that incentives will assist in offsetting some of the financial barriers that green buildings present, especially the additional costs of a certification process. The challenge presented to government entities when it comes to choosing which direction to go is that the utilization of incentives to aid voluntary green buildings is “adequately matching the perceived value of the incentive to the perceived increase in cost associated with green buildings.”³⁸

The leader in both incentive and mandatory based regulations has been the federal government. The federal government has taken notice to the need of more policies related to sustainable construction. Under the George W. Bush administration, they pledged to hinder the environmental impacts from construction and buildings. Under the administration, Executive Order 13423 of January 24, 2007 was passed and put into law.

Executive Order 13423, called Strengthening Federal Environmental, Energy, and Transportation Management, the President set forth to

ensure that (i) new construction and major renovation of agency buildings comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings set forth in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding*, (ii) 15 percent of the existing Federal capital asset building inventory of the agency as of the end of fiscal year 2015 incorporates the sustainable practices.³⁹

Through legislation, the administration sought to be the leader in the green and sustainable building movement. While green buildings were already taking shape, the federal government took the lead by example route to help push for more of a following.

Energy efficient and sustainable buildings were also one of the top priorities for the Barack Obama administration before they even entered office in January 2010. In one of his first addresses to the nation after being elected president-elect, Obama stated one of his first plans as president was that

we [federal government] will launch a massive effort to make public buildings more energy-efficient. Our government now pays the highest energy bill in the world. We need to change that. We need to upgrade our federal buildings by replacing old heating systems and installing efficient light bulbs. That won't just save you, the American taxpayer, billions of dollars each year. It will put people back to work.⁴⁰

In office, Obama introduced the American Recovery and Reinvestment Plan, also known as the Stimulus Plan of 2009, in January of 2009. In this plan, the Obama administration outlined how they planned to get the United States out of its current recession by injecting money into the economy to help spur growth and job creation.⁴¹ Within the 258 page document, energy savings along with water resource represented its own chapter.⁴² However, of the \$900 billion plus investment, only a fraction or about 7%

is allocated to green technologies, with most of it going towards smart grid technologies.⁴³ This stimulus package breaks down like this.

- \$11 billion for smart grid research and development, pilot projects and the construction of new transmission lines to connect green energy power plants to the power grid. The government will fund 50% of the cost of utilities' smart grid investments.
- \$8 billion in loan guarantees for renewable energy transmission projects.
- \$6.9 billion in grants to state and local governments for energy efficiency and carbon reduction programs.
- \$6.7 billion for renovation of federal buildings, of which \$6 billion must be used for energy efficiency retrofits.
- \$6.2 billion for home weatherization programs for low-income families.
- \$2.5 billion for energy efficiency retrofits of public housing.
- \$2.4 billion for carbon sequestration – so-called clean coal – demonstration projects.
- \$2 billion for energy efficiency and renewable energy research (which includes \$800 million for biomass and \$400 million for geothermal research).
- \$2 billion in loan guarantees and grants for advanced vehicle battery research⁴⁴

While around \$54 billion for green technologies is quite a lot of money, it does not fully resolve the funding challenges of created through green building. Of the \$54 billion, approximately \$7 billion is allocated to green buildings for federal government agencies.⁴⁵

The federal government is also using its “leading by example” approach to mandate green building practices within their agencies. There are currently several federal government agencies that are required to meet LEED™ standards. The agencies that are currently participating in this area are,

- Department of Agriculture: New or major renovation must reach LEED™ silver certification.

- Department of Agriculture - Forest Services: "LEED™ registration and certification at the Silver level for all new construction of office buildings, visitor centers, research facilities, and climate controlled warehouses 2,500 GSF or greater in size."
- Department of Energy: "New department buildings of \$ 5M or greater" must have Gold certification; in selecting leased spaces, preference will be given to spaces with Gold certification.
- Department of Health and Human Resources: "... all construction projects built with federal funds over \$ 3 million will achieve LEED™ certification ..."
- Department of Interior: Supports LEED™ for Existing Buildings and on partnered projects.
- Department of State: "Committed to using LEED™ on the construction of new embassies worldwide over the next 10 years ..."
- Environmental Protection Agency: Gold certification required for new construction over 20,000 square feet; multiple projects currently "registered for LEED™ for New Construction certification and supported the development of LEED™ for Existing Buildings."
- General Services Administration: As of 2003, "all capital building projects" must be at least LEED™ Certified; as of 2008, it is mandatory for "all lease construction to earn LEED™ Silver certification."
- National Aeronautics and Space Administration: "New construction and major renovations of NASA facilities
- Projects planned for FY2006 and beyond are required to meet LEED™ Silver certification, and strive for LEED™ Gold."
- Smithsonian Institute: Issued a directive setting a goal to "design, build, and maintain facilities that are eligible for, and that obtain, LEED™ certification."
- U.S. Air Force: "... encourages the use of LEED™ for new or major renovations for MILCON projects ..."
- U.S. Army: "All new vertical construction projects will achieve LEED™ Silver certification. Additionally, the Army has committed to adopting LEED™ for homes ..."
- U.S. Navy: "... uses LEED™ as a tool in applying sustainable development principles and as a metric to measure the sustainability achieved."⁴⁶

The future of green building regulation within the federal government may come in the form of the Waxman-Markey Bill, also known as the American Clean Energy and Security Act of 2009. Within this bill two large goals are created, a cap-and-trade program and a National Energy Efficiency Building Code.⁴⁷

A cap-and-trade program was created to combat the release of toxic pollutants that lead to green house gas emissions. This act would minimize the amounts of pollutants released into the air by creating a permit system.⁴⁸ This system “would set a steadily declining emissions limits, and polluters would have to obtain permits for pollution they produced-in essence, a “dumping permit.”⁴⁹ This type of legislation was also used in the 1990 Clean Air Act in which forced power plants to reduce sulfur dioxide pollution.⁵⁰

The second part of the Bill would mandate a national energy efficiency building code for all residential and commercial buildings.⁵¹ These building codes are created to meet the “national building code energy efficiency targets”⁵². According to the Act

on the date of enactment of the American Clean Energy and Security Act of 2009, 30 percent reduction in energy use relative to a comparable building constructed in compliance with the baseline code...effective January 1, 2014, for residential buildings, and January 1, 2015, for commercial buildings, 50 percent reduction in energy use relative to the baseline code; and...January 1, 2017, for residential buildings, and January 1, 2018, for commercial buildings, and every 3 years thereafter, respectively, through January 1, 2029, and January 1, 2030, 5 percent additional reduction in energy use relative to the baseline code.⁵³

These savings would be first mentioned in a national code and then the individual states would have three years to show significant progress that their building codes meet or exceed the national energy codes. Significant progress would be defined as a state or city a plan for to exceed 80% of the state’s total energy use or has devised a plan that will meet those goals.⁵⁴

The bill passed through the United States House of Representatives in June of 2009 and then was turned over to the Senate for round two of approvals. The bill was sent to the Senate Energy and Natural Resources Committee where it was approved and currently sits on the Senate floor awaiting final vote.⁵⁵ While in the Energy and Natural

Resource Committee changes were proposed to the bill and approved by the House.⁵⁶

The American Clean Energy Leadership Act (ACELA) in the Senate is less restrictive compared to the bill passed in the House in terms of how it affects the states when trying to prove that they have met the new codes.⁵⁷

The most recent round of provisions came from Senator Barbara Boxer of California. In her revised bill, the mandatory section is almost completely removed. Senate Bill 1462, as it is called within the Senate, replaces the regulatory section with sections stating the President or agency head will be in charge of “establishing a national energy code for residential and commercial buildings in the most cost effective manner and MAY include provisions for state adoptions of the national building code and certification of state programs.”⁵⁸

The difference between the two is a significant when it comes to the regulating of a national code. The Waxman- Markley bill was introduced to mandate a national code while the ACELA makes it a possible provision to the bill. Opponents of the bill fear the additional household costs of utilities from the cap-and-trade program being around \$80 to \$175 per year.⁵⁹ Politics are involved with taking away the states power to regulate building codes, which will be discussed later in this paper.⁶⁰ Currently the bill is still being debated in the U.S. Senate Committee on Environmental and Public Works before going to the Senate Floor for a final majority vote and then to the President if approved in the Senate and House.

Section 2.4.2: State and Local Incentives

Currently, the states still have the power to regulate building codes and buildings within its borders. Then this power is passed down to the individual municipalities and

counties. This is currently one of the many ways that governments control and regulate green buildings. This is normally controlled and debated over at the local level where adopted, implemented and enforced.

While building codes are one way to assist with the regulation of green buildings, there are many others that also tools local governments have within their power to work with. “Building codes, comprehensive planning, and other land use regulations would seem to present the most direct means to achieve green building standards.”⁶¹ Any type of regulation will need to be created with a measuring device to demonstrate a minimum that must be met for the intended goals of green regulation. This should be one of the main determinants of the process needed to project the best way to regulate green buildings.

Many municipalities have also adopted policies on green building codes. According to an article in Climate Intel, “approximately 90 cities, 29 counties, and 20 towns across the United States have adopted some type of green building program and, so far, there have been few notable legal challenges.”⁶² The larger cities to enact such regulations have been San Francisco, CA, Boston, MA, and Washington D.C.

There are seven policy initiatives that Buildings and Climate Change recommends for creating regulations,

- 1) creating a benchmark and standard for energy efficient buildings
- imposing regulation on construction activities,
- 2) employing incentives and other economic tools,
- 3) providing education and increasing public awareness,
- 4) conducting or supporting education and increasing public awareness,
- 5) conducting or supporting research into human behavior relating to the use and performance of buildings,
- 6) applying energy efficient building policies in the public sector and
- 7) supporting technology transfer.⁶³

Like the Waxman-Markley bill, which created minimum energy reductions for a per year ranking, a benchmark is always the beginning of a good regulation. Another way to set a benchmark or standard for a green building regulation, and the most popular when it comes to for municipalities and states, has been to set a minimum third-party certification.

USGBC's LEED™ certification has clearly been the favorite among states and municipalities. San Francisco and Oakland, California, have city ordinances that were adopted for buildings owned by the respective cities to obtain LEED™™ Silver certification.⁶⁴ New York City, NY, Chicago, IL, and Atlanta Georgia also have policies that mandate any public funded construction project to meet LEED™™ certifications.⁶⁵

Washington D.C. was the first large municipality to introduce a green building regulation that mandated a certification from LEED™™ in both the public and private sector.⁶⁶ Bill 16-515, also known as the Green Building Act of 2006, was created

to establish high-performance building standards that require the planning, design, construction, operation and maintenance of building projects which help to mitigate the environmental, economic, and social impacts of built structures in the District; to establish a Green Building Incentives Program that includes an Expedited Construction Documents Review Program; to establish a Green Building Fund; to establish the Green Building Advisory Council; to amend the Construction Codes Approval and Amendments Act of 1986 to update the Construction Code to include green building practices; and to amend the Office of Property Management Establishment Act of 1998 to require priority leasing of buildings that meet certain green building standards.⁶⁷

The bill requires all private buildings over 50,000 square feet will be required to achieve a minimum of certification until 2011.⁶⁸ Starting in 2010, the minimum will be increased from certified to silver certification.⁶⁹ Residential structures are also included in the bill.

Residential projects that are over 10,000 square feet must meet or exceed the Green Communities 2006 standard.⁷⁰

The other major component that Buildings and Climate Change mentions is employing incentives and other economic tools which in turn increase the amount of construction for green buildings. This issue is the top priority currently on enhancing the popularity of green building construction in the private sector. The reason why incentives are so important on the furthering of the movement of green building popularity is because of the additional financial costs incurred through building green. As previously mentioned in this paper, a green building may cost one to two percent above the overall construction cost compared to the same structure not built to green standards.⁷¹ While much of the initial cost is increased, a lot of these costs will be redeemed in the long term from savings in utility costs.

There are many factors that are the reason for the increase in initial costs of green buildings. Since the green building concept is fairly new and the industry is considered to be the “fad” of its time, the costs are initially higher than what they will be within a few years. Popular items such as geothermal heating and cooling units may be twice the cost of installing traditional air conditioning units.⁷² There are also additional costs that are associated with higher priced material costs and specialized building practices.

Another big component of increased cost is that there is a lack of knowledge within the industry between contractors and government officials. Additional costs may include having a certified professional manager on your project; such as a LEED™ certified project manager. In addition, these costs would also be charged to the states and cities who must train building inspectors on green building principles.

Washington D.C. provides a more extreme example of adding to the initial costs. When applying for a building permit, the contractor must provide a performance bond in the full amount of the project at a set percentage based on certification levels, again adding to the initial cost. A performance bond, according to Black's Law Dictionary is an "owner's guarantee of a completion of a project upon the default of the contractor".⁷³ Under the GBA, part of the bond would be used for the guarantee of a complete LEED™ certified building. If the certification is not achieved, "all or part of the Performance Bond shall be forfeited to the District, to be deposited according to section 8, in the event that the building fails to meet the verification requirements."⁷⁴ Under normal circumstances, a performance bond would only be forfeited if the contractor was unable to complete the contract, which is usually failing to complete a project.

With all these additional costs and the United States currently in a recession, how do governments get owners to build green? Incentives have seemed to be the key that drives the industry. Many governments, including the federal government, are offering financial and non-financial incentives to push the green building movement. While more and more tax cuts are being enforced and more called for due to lack of funds in the economy, local governments are still trying to find ways to help cut the initial burden of green building costs.

Financial incentives are by far the most common and most popular among incentive based regulations. Some of these financial incentives are accomplished through payments from a utility energy efficiency program, city or statewide grants and rebates, marketing and publicity, tax credits, property or sales tax rebates, loan funds, or refunds for developer fees.⁷⁵ The most utilized financial incentives are utility energy efficiency

program payments and direct monetary payments which are being used in over fifty percent of green building initiatives according to a recently conducted survey.⁷⁶

There are many examples of initiatives currently being used throughout the U.S. those have helped areas succeed in green building practices. The State of Oregon created a Sustainable Building Tax Credit that is used for projects that achieve Silver, Gold, or Platinum LEED™ certification as well projects that “fulfill certain energy conservation, equipment efficiency and renewable energy systems requirements.”⁷⁷ This tax credit is distributed based on the gross square footage.⁷⁸

For those communities that may not have extra funds available to distribute to projects, there are many non-financial incentives available for governmental use. Examples of these types of incentives include expedited permit processing and density bonuses.⁷⁹ The cities of San Diego, CA and Chicago, IL both offer non-financial incentives for owners and builders who build green. Both offer expedited plan reviews in which plans would be reviewed and approved or disapproved within approximately two week time period, which is a savings of roughly seven to ten days.⁸⁰ While the government is not offering a direct financial incentive, for the owners and builders this expedited plan review can translate into a financial incentive though time saved. A prime example of density bonuses are setbacks. A government entity would have the power through this incentive to offer a developer smaller setbacks which would increase the square footage of building space available on the property.

Section 2.4.3: Mandates

Not all government green building regulations are voluntary. Currently, most green building programs are voluntary in the private sector and mandated in the public sector. While the private side is ripe with incentives to help private developers and owners decide whether or not to go green, it is still a volunteering incentive to build green.

Some governments are now changing their regulations to a different type of regulation. Similar to the Washington D.C. Green Building Act, some governments have mandated that all public and all private buildings meet green standards. Some scholars and industry officials have concluded that mandatory building regulations are the only way to increase the reputation of the green building movement and have an increase in green buildings. The issue that they seem to address is “while economic incentives may encourage developers to consider building green for their own business and economic reasons, will incentives alone be adequate to convince and otherwise reluctant developer to opt for greener building standards?”⁸¹

The city of Boston, MA, is one of the largest cities to mandate that private buildings meet green building standards. The city amended their zoning codes to require all public and private buildings over 50,000 square feet to meet LEED™ standards.⁸² One of Boston’s incentives is that even though they are required to meet the standards for a certification from LEED™, the owner is not required to pursue an application for LEED™ certification from the USGBC.⁸³ This would cut a great amount of cost from the initial building cost but could be lead to possible litigation if the project was not built to LEED™ standards.

The State of California is the only state in the nation currently that has enacted a statewide green building code.⁸⁴ This is a breakthrough in green regulations because it mandates that all buildings which includes commercial, public, and residential be green.⁸⁵ California is becoming the leader in green building regulation.

When creating green building regulations, which initiative do you use mandatory or incentive based? Who should regulate green buildings, federal or state governments? These are questions that have been addressed in legislation and litigation as well as by construction scholars. This has also been the great debate between many politicians and industry members. A lot determines on the type of community that is being considered and also on their culture.

Section 2.5: Green in Litigation

Green buildings are currently being regulated at the state and local level along with most land use regulations. Land use regulations have been a large part of controversy and litigation over the years. Just as land use regulations became popular earlier in the 20th century, so did land use litigation. The same can be made in the early 21st century with green building regulations and currently the influx of green litigation.

In the United States, local governments are given the power to enforce building codes from the states. Under the 10th Amendment, the federal government relinquishes powers to the states that it does not guarantee for itself, stating, *“The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”*⁸⁶ Under this Amendment, the states are given the power to police its citizens and enforce laws within its borders to

ensure the health, safety, and general welfare for its citizens.⁸⁷ Under the police power, local authorities may enforce regulations against “buildings upon owned property without violating the constitutional property rights of the owner.”⁸⁸

One of the most famous landmark cases involving land use regulations was the United States Supreme Court case, *Village of Euclid v. Ambler Realty*. In this landmark case, the Village of Euclid adopted what is one of the first zoning ordinances in the United States. When the zoning map was created, Ambler Realty’s property was located in two different zones, one for industrial use and one for residential dwellings.⁸⁹ Ambler Realty believed that the Village had violated their 5th Amendment right to use their property the way that they wanted free from government regulation without due process. The case was tried in the Ohio Supreme Court and then was appealed to the U.S. Supreme Court in 1926, where the court declared that the ordinance was legal because

the police power supports also, generally speaking, an ordinance forbidding the erection in designated residential districts, of business houses, retail stores and shops, and other like establishments, also of apartment houses in detached-house sections -- since such ordinances, apart from special applications, cannot be declared clearly arbitrary and unreasonable, and without substantial relation to the public health, safety, morals, or general welfare.⁹⁰

In other words, the police power given to Euclid, the Village had not intruded on Ambler’s right by regulating to a point, how they could use their property. The court stated that the Village and its zoning was a government interest created to protect the city and "bears a rational relation to the health and safety of the community."⁹¹

This landmark decision laid a path for possible green building regulation. First, the decision to allow zoning may have been one of the largest proponents of

the need for sustainability itself. Euclidian zoning, or just basic zoning principles as it may be called, began the trend of urban growth sprawl. As transportation transitioned from on foot and horse-drawn carriages to automobiles, cities began to expand away from the city center creating a sprawl effect. Today, cities are trying to get back to places where transportation by foot or short distance travel is the norm because of how it affects the green house gas emissions.

So how can the Euclid case help in the cause for green building regulations?

When the Justices were writing their opinions, they left some clues as to how regulations of buildings could be used. Justice George Sutherland, while writing the opinion for the court determined that

there is no inconsistency in applying background property rules differently in defect contexts, for, while the meaning of constitutional guaranties never varies, the scope of their application must expand or contract to meet the new and different conditions which are constantly coming within the field of their operation⁹²

He also goes onto say that “with great increase and concentration of population, problems have developed, and constantly are developing, which require, and will continue to require, additional restrictions in respect of the use and occupation of private lands in urban communities.”⁹³

Justice Sutherland goes on to mention that the field of property law and land use regulations, will always have the same backbone in terms of property rights, but have to change with the changing times. It can be concluded that green building regulations would fall under this jurisdiction because today the times have been changed to sustainability.

The question that now arises is what role should government play in promoting sustainable building practices in the private and public sector? Justice Sutherland in his Euclid decision stated

no serious difference of opinion exists in respect of the validity of laws and regulations fixing the height of buildings within reasonable limits, the character of materials and methods of construction, and the adjoining area which must be left open in order to minimize the danger of fire or collapse, the evils of over-crowding, and the like, and excluding from residential sections offensive trades, industries, and structures likely to create nuisances⁹⁴

Justice Sutherland is discussing his opinion on regulation of buildings using police powers. Within this quote the Justice discusses three regulating parts to buildings. The first is regulating the height of buildings regulated through zoning ordinances. The second is character of materials regulated in land use regulations usually not through a municipality but through covenants of neighborhoods. And finally the regulation for methods of construction would be found in building codes. All three of these are valid land use regulations given to municipalities and states through police powers and are possible resources for green building regulations.

Police powers broadly authorize regulations for land use and development regulations.⁹⁵ Under these powers are zoning, building codes, and now environmental protection regulations. “Contemporary courts have routinely invoked the police power to justify development regulation intended to conserve natural resources and protect the environment.”⁹⁶ Drawing from the Euclid decision, the government entity must prove it is valid thorough substantive due process. An invalid due process claim must be “clearly arbitrary and unreasonable, having no substantial relation to the public health, safety, morals, or general welfare.”⁹⁷

Showing relationships between protection of public health, safety, and general welfare is the key to a validated due process claim. Using building codes as an example, it is easy to differentiate between the two because building codes were originally created for the protection from fire. “Courts have recognized that public health and welfare objectives, including environmental protection, justify state and local regulations that broadly seek to curb unsustainable land development even when they impose significant burdens on the land owner.”⁹⁸ For green building regulation the answer to the relationship between public health and general welfare falls on global warming.

There are still differing opinions on the subject of global warming. According to a poll prepared by Yale University, forty percent of Americans believe that there are disagreements within the scientific community on whether or not global warming is occurring, seventy-one percent of Americans believe that global warming is actually occurring, and sixty-nine percent of those believe that global warming is caused by human activities.⁹⁹

While many opinions are still on the fence on the subject of global warming, the Supreme Court may have decided for us. The Supreme Court in *EPA v. Massachusetts* held that carbon dioxide was a pollutant under the Clean Air Act and so the EPA, a government agency, must combat this issue.¹⁰⁰ The court also ruled that global climate change is changing due to carbon dioxide emissions in the atmosphere.¹⁰¹ According to Leigh Kellett Fletcher, this conclusion helps local municipalities draw the link between green building regulations and public health, safety, and general welfare.¹⁰² Global warming has also been connected as a general government purpose.¹⁰³

Common with most regulations, green building regulations have encountered bumps in the road. While there are very few authorities that would question the legal justification for regulations that promote green buildings,¹⁰⁴ some regulations have pushed the boundaries of other legal issues. To date, there have been two major green building cases, *Shaw Development v. Southern Builders and Air Conditioning*, and *Heating and Refrigeration Institute v. City of Albuquerque*. These have caused governments to reexamine how their regulations are written and carefully look for what other constitutional rights may have violated.

The first case, *Shaw Development v. Southern Builders*, was one of the original green building cases. This case did not specifically deal with a regulation per se; however it did deal with the incentives offered from a green building regulation. Southern Builders was to construct a 23-unit condominium project in Maryland for Shaw Development. The project was to be certified by LEED™ at the Silver rating. If the project was completed within a timetable mentioned in the contract, the developers were to receive over a half million dollars in tax credits.¹⁰⁵ The project fell over nine months behind schedule and Shaw was unable to receive the tax credits and subsequently filed a lawsuit for breach of contract for the amount of liquidated damages, reimbursement for loss of tax credits and loan repayments.

Even though the lawsuit was settled out of court, it raised some important issues. According to the contract documents, there was no formal agreement that mentioned Southern was to obtain a certification from USGBC directly. Stephen Del Percio mentions two main conclusions from this case that should be carefully looked at for all green building contracts. First, “a thorough understanding of existing legislation that

may apply to a green project is critical.”¹⁰⁶ This is true as more and more communities are passing green building legislation. Secondly, the failure of the contractor to achieve the LEED™ certification came from the contract documents, “exposed liability on both parties” and shows the importance of mandating who is liable for gaining the certification.¹⁰⁷ While further research is needed in this area, it will not be discussed in this paper.

The contractual agreements that are being formed between municipalities and developers or owners and contractors have for years been industry made. The American Institute of Architects (AIA) contract used in the Shaw Development case was the 1997 version of the A101 Owner/Contractor agreement. These industry generated contracts do not have provisions or mention the idea of green building certification. The contract must have an addendum to the contract or owners will have to look elsewhere to write an Owner/Contractor agreement.

While contract law has been a large issue between developers and owners in green building regulation, most litigation coming out of municipality and developer agreements has been constitutional challenges. Whether or not government entities such as local, state and even the federal governments will be challenged in the courts on whether they have the power to regulate this type of land-use or impose a third-party entity certification before substantial completion can be awarded is yet to be determined.

Certain constitutional issues have already been challenged in the court system involving green regulations. The largest green building case to date occurred in New Mexico. In *Air Conditioning, Heating and Refrigeration Institute (AHRI) v. City of*

Albuquerque, recently passed city ordinances were challenged in the State Supreme Court of New Mexico. The challenge was brought forth by the plaintiffs, local and regional distributors of heating, ventilation, air condition, and water heating products as well as national trade associations that represent the manufacturers, contractors, and distributors of these products.¹⁰⁸ The plaintiffs felt that by being forced to comply with the statute, they would lose their customer base and reputation and consequently the statute would force economic harm.¹⁰⁹

The three ordinances in question imposed a minimum energy efficiency standard for commercial and residential buildings issued by a mayor elected task team called the Green Ribbon Task Force. The task force was put in charge of changing the building regulations to significantly reduce carbon dioxide and green house gas emissions for the city. The City's Green Building Manager, based on the Green Ribbon Task Force's findings, developed two volumes of the Albuquerque Energy Conservation Code. The two volumes adopted the American Society of Heating, Refrigeration, and Air Conditioning (ASHRAE), a federal government standard, 90.1-2004, and added amendments to it.¹¹⁰ These volumes stated that all new construction must achieve LEED™ certification at the silver level or an equivalent state standard, as well as have 30% efficiency improvement over AHRAE 90.1. There were also mandatory standards for HVAC systems and water heaters that were once again above the federal efficiencies laid out by national standards.¹¹¹

The plaintiffs brought an action against the city alleging irreparable injury and hardships. The court agreed with the plaintiffs on their irreparable injury claim. Chief Justice Martha Vazquez, who wrote the opinion for the court, agreed that the plaintiffs

would suffer economic harm by being forced to comply with the new version of the codes because the plaintiffs would have to increase their warehouse space and stock.¹¹² The court did not provide a ruling on the issue because even if the plaintiffs would succeed under this issue, the city was still protected under sovereign immunity.

The main issue of the action brought upon the city by the plaintiffs was that the city was unable to enforce ordinances that went beyond federal guidelines and therefore they were protected under federal preemption. This case presents a case of express preemption in analysis turns on the interpretation of the statutory provision that allegedly preempts state law.¹¹³

Justice Vazquez discusses in her brief, United States Code 6297(c), (42 U.S.C. § 6297(c)), the Energy Policy and Conservation Program for Consumer Products Other Than Automobiles chapter. This section contains a general rule for preemption. The rule states that “subject to certain specified exceptions, when a federal energy conservation standard is established for a covered product, “no State regulation concerning the energy efficiency energy use, or water use of such covered product shall be effective to such product.”¹¹⁴ Put differently, express preemption is Congress specifically stating States are unable to regulate a particular area. Vazquez goes on to articulate that the provision was created to prevent manufacturers from having state-by-state regulations that complicated designs and production.¹¹⁵ A House report states that there is a building code exception when it comes to federal preemption; however the exception was created to “ensure that performance-based codes cannot expressly or effectively require the installation of covered products whose efficiencies exceed the applicable Federal standard.”¹¹⁶

The court would go on to say that because the code is a regulation concerning energy efficiency, it must follow the Energy Policy and Conservation Act of 1992 (EPCA), which established a nationwide standard for the energy efficiency and energy use of major residential and commercial appliances and equipment.¹¹⁷ Consequently, because the code contains performance based codes where the efficiencies are greater than the federal standards, it violates the EPCA.¹¹⁸ Even though the code was optional, not mandatory, the code's compliance with green building standards, such as LEED™, was in violation of EPCA.

Justice Vazquez concludes with one last point on the issue of green buildings. She states, "if a homeowner chooses to replace an existing furnace with a federally-compliant furnace, that homeowner must make other revisions to the home to make up the energy differential between a federally-compliant furnace and a furnace that meets the code."¹¹⁹ This means that the home owner would have to take it upon themselves to meet and close the gap of energy savings between the new furnaces that meets the federal guidelines, to the code of the city. Examples would be to install new energy efficient windows, and ultimately costing the homeowner more than they probably wished to spend.

The three ordinances were never signed into law because of the federal preemption. The policy makers were never aware of the federal codes that governed over them. When cities begin to write such legislation, they "must be aware of federal regulations concerning building and appliance efficiency."¹²⁰

Federal preemption is not the only constitutional hinderer for green building regulations. State preemption also hinders local municipalities from creating strict green building regulations because of state statutes that govern over them, just like federal preemption. Shari Shapiro mentions that the Commerce Clause as other possible hinderers of green building regulations in her article entitled *Who Should Regulate? Federalism and Conflict in Regulation of Green Buildings*.¹²¹

State statutes play a large role in determining the validity of ordinances and statutes at the local level. State preemption exists just as federal preemption does except local municipalities are bound to state statutes and ordinances and cannot regulate stricter than their state. The State's regulation of construction codes best shows the government's use of State Preemption. Every state has adopted building codes at the state or municipal level some form of the national standard of building codes created by the International Construction Council (ICC).¹²² This code was created to be a national set of standards without regional bias to protect the health, safety, a general welfare of the people of the United States. When a state adopts this set of codes, it becomes the minimum for statewide construction standards and a state may elect to adopt them or make adjustments for issues specific to their specific state.

An issue was created in Pennsylvania when an ordinance was raised in a community questioning whether a local community could enforce stricter regulations than the state. The state of Pennsylvania adopted a Uniform Construction Code (UCC), which used the ICC codes as a base.¹²³ The UCC could be adopted by a municipality or town within the state and made stricter if the town elected to. This was the issue that was challenged in *Schuylkill Township v. Pennsylvania Builders Association*.

In this case the builders brought the issue that the township was forcing a stricter regulation when it came to fire sprinklers in new construction.¹²⁴ The ordinance was designed to be more stringent than the state adopted UCC. When this occurs, the state has the obligation to review the ordinance and determine whether the ordinance is beyond the reach of the municipality. The town must show four things to prove to that it is within the scope of the ordinance,

- (i) that certain *clear and convincing local climatic, geologic, and topographic or public health and safety circumstances or conditions* justify the exception;
- (ii) the exception shall be adequate for the purpose intended and shall meet a standard of performance equal to or greater than that prescribed by the Uniform Construction Code;
- (iii) the exception would not diminish or threaten the health, safety and welfare of the public; *and*
- (iv) the exception would not be inconsistent with the legislative findings and purpose described in section 102.¹²⁵

The first issue of the plaintiffs was the issue of the ordinance that could not justify by going beyond the state minimum. The justification must be “clear and convincing,” which the court defined was “not general or widespread.”¹²⁶ The plaintiffs in the case were not able to prove this condition and the ordinance was overturned and is now up for appeal. This case was about state preemption of building codes as well whether some green building statutes would pass in the courts.

The Commerce Clause is the last mentionable constitutional hinderer of green building regulations. The reason this is mentionable is because it may be the hinderer of the Waxman-Markley Bill if it were ever questioned in courts in the event the bill is passed. Questions such as whether the bill is constitutionally legal for failing under the Commerce Clause could be raised. If the bill is passed with the mandatory issues written in, the bill may be illegal under the Commerce Clause. Also, if the statute tells the states

how to do something, similar to the wording in the Waxman-Markley Bill, the statute may be unconstitutional because it orders the states to carry out a federal program. Eric Berger, a constitutional law professor at the University of Nebraska-Lincoln College of Law, believes that the bill not be constitutionally sound if the bill is passed without the mandatory clauses within it, because it would only set incentives for green buildings and this would be hard to prove a constitutional problem, (personal communication, April 13, 2010)

The constitution gives the authority to the federal government to be a “paramount authority to regulate commerce with foreign nations and among States”.¹²⁷ Commerce is defined as “commerce among states consisting of intercourse and traffic among their citizens, in all its branches, and includes transportation of persons and property and navigation of persons and property and navigation of public waters for that purpose, as well as purchase, sale, and exchange of commodities.”¹²⁸

With one of the most awarded LEED™ points needing to buy regional materials,¹²⁹ the Commerce Clause could be used to challenge certain regulations. This clause could also be used if a government mandated the use of LEED™ certifications. According to Shari Shapiro in her blog article entitled *A Constitutional Primer*, this type of regulation would be questioned under the Commerce Clause. She mentions that if the government acts as a market participant, such as pushing economic growth, this would be not being questionable.¹³⁰

Examples in green building litigation involving the Commerce Clause can be seen in the AHRI case. Although the court in the AHRI v. City of Albuquerque case did not

comment on the issue, it was mentioned in the brief provided to the court by the plaintiffs. In the brief to the court, John Cooney, lead attorney for the plaintiffs, discussed that the Commerce Clause creates open national markets and prohibits unreasonable burdens upon interstate commerce. Volume I of the Code “violated the rights of all the plaintiffs to freedom of commerce as guaranteed by the interstate Commerce Clause.”¹³¹ Even though the court did not rule on the matter, it was still an important subject to defend

Chapter III

Section 3.1: Case Studies

An easy method for a governmental entity on whether or not to pursue new legislation, especially with green building regulations, would be to research what has already been done, what has succeeded and what has failed. This data will determine the most appropriate way to write and introduce legislation whose goal is to increase the stock of green buildings within their jurisdiction. An entity can then start extremely small, like in the State of Nebraska, in which every state owned appliance must be energy star rated. Or the entity can go to the opposite side of the extreme spectrum and mandate all buildings at the state level, public or private, be certified as a green building, like the state of California.

To evaluate each case study, there are a few aspects that will be closely looked at. The first aspect evaluated is whether or not the regulation is mandatory, incentive-based, or a hybrid of both. By evaluating what type of regulation was used, it will help other communities or states determine which type of regulation works for them. The second aspect that will be looked at is whether or not a third-party was used. The issue with using a third-party is it brings up different liabilities and is usually the leader for having green building litigation.

The next key aspect that will be looked at is what are the ultimate goals that the entity was trying to achieve? Was the entity attempting to lower carbon or greenhouse gas emissions, were they trying to build the economy, or maybe also attempting to focus on prevention from natural disasters by possibly looking at storm water runoffs? Going

along with this topic, which part of the market is the regulation looking at? Is the regulation for all commercial and residential, or is it for only commercial buildings that have state funding attached to it? These aspects will be closely looked at and compared to whether or not the regulation is successful.

A broader aspect which will be looked at is how the regulation is doing, meaning whether it was successful or has had failures. Since green building regulations are fairly new, it is hard to determine whether or not the regulation has been successful. In a blog dated on March 10, 2009 entitled *Credibility in an Age of Skepticism*, Shari Shapiro states that a good regulation needs not to only discuss certifications, but must also start to measure performance¹³². This statement holds true that determining the successfulness of the regulations is important and should be calculated.

There are many green building current regulations that can be studied to determine how the green building regulations are doing in the U.S. The case studies chosen are Portland, Oregon, the State of Nevada, Washington D.C., and will finish with a look at what is currently the situation in the State of Nebraska. These few studies will compare regulations that have many facets involved within them, such as commercial, residential, and governmental buildings. Portland has been named to many green city lists while Las Vegas has had troubles with their original regulations. Also the case studies will look at a statewide regulation and a few city/municipality regulations.

The intended goal of these case studies is not to view them to their fullest, but to achieve and overall background of what government entities can use in a future green

building regulation. Bits and pieces will be evaluated, especially the financial systems involved with green building regulations.

Section 3.1.1: Portland, Oregon

The city of Portland, Oregon is considered by many comparisons as the greenest city in the United States. Like the previous discussion of what is considered to be “green building,” it is yet to be determined what exactly the “greenest city” is. According to Popular Science magazine Portland is the greenest city in America based on their rating system.¹³³ The system they have created is described how they work,

“we used raw data from the U.S. Census Bureau and the National Geographic Society’s Green Guide, which collected survey data and government statistics for American cities of over 100,000 people in more than 30 categories, including air quality, electricity use and transportation habits. We then compiled these statistics into four broad categories, each scored out of either 5 or 10 possible points. The sum of these four scores determines a city’s place in the rankings. Our categories are electricity, transportation, green living, and recycling and green perspective.”¹³⁴

The city of Portland received the lowest amount of points, which is the considered the best according to the rankings.

The city planners in Portland have been ahead of the curve for many years when it has come to sustainability. In 1993, the city became the first United States municipality that set policies for city owned and city-funded projects to meet the USGBC guidelines requiring a Silver Certification¹³⁵ and changed to Gold Certification in 2005.¹³⁶ These planners are the same group that created the urban-growth boundary for the city that stopped growth beyond the line just a few years before. Portland has been pushing sustainability as a city from the start and has not stopped since.

The next challenge for the city in their quest for sustainability was legislation that could be passed at the city and county jurisdiction. This legislation would affect every building in the areas of new construction, renovation, and residential construction. This new practice would reach “important environmental and economic goals.”¹³⁷ As research had shown, buildings were responsible for “nearly half of Portland’s greenhouse gas emissions, and Portland residents and businesses were spending \$750 million each year to heat, cool and power their buildings,”¹³⁸ and with that figure set to double in the next ten years¹³⁹, something had to be done.

In March 2007, the City Council of the City of Portland directed the Office of Sustainable Development to develop a policy that would enhance the “building environmental performance.”¹⁴⁰ The policy, known as the High Performance Green Building Policy, involved using an incentive based program attracted to all new and renovated commercial and multi-family buildings as well as all new residential structures over a specified square footage. The proposed green building policy would seek out eight primary goals for the city,

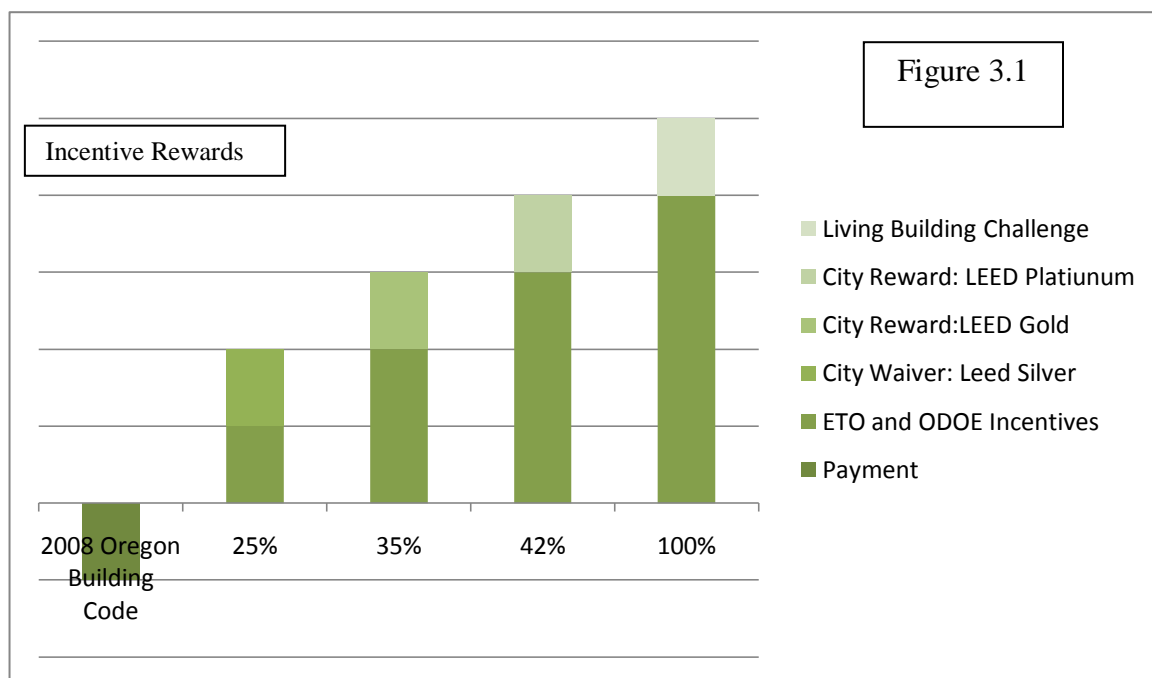
- Reduce greenhouse gas emissions that cause climate change
- Maximize energy efficiency and cost savings
- Keep housing and commercial buildings affordable over time
- Decrease consumption of potable water, especially during summer months
- Increase on-site storm water management
- Reduce waste during construction and operation
- Improve indoor environmental quality, occupant health and productivity
- Increase the number of local living-wage jobs¹⁴¹

These goals, if achieved, would create over one-hundred local jobs each year and “provide significant energy cost savings to homeowners, renters, building owners and business tenants, create healthy buildings for living, working and learning, and reduce

storm water runoff, water use and waste from building construction.”¹⁴² Most importantly the policy would reduce the greenhouse gas emission total by 80 percent by the year 2050.¹⁴³

The city chooses a new format for their regulation known as a “feebate system.” This system is a combination of a “fee” and a “rebate.” According to the policy document, a feebate is a “market-based instrument that combines a fee for conventional construction, a waiver option for moderate green improvements and a reward for high performance green building projects.”¹⁴⁴ The benchmarks proposed for new commercial buildings in the city will be the USGBC LEED™ program. New commercial buildings is defined as the new construction of multi-family buildings greater than 5,000 gross square feet and commercial buildings that exceed 20,000 gross square feet.¹⁴⁵

The policy is an interesting incentive-based program with a mandatory-based policy hybrid feeling involved because while it does not force a builder/owner to apply the principles of the policy it does punish the builder/owner if the project is not built to its standards.



The way the incentive program works is that a fee is calculated when the builder or developer presents his plans to the building inspectors. A reward of a onetime payment is calculated to the project owner for the construction of a new commercial building or a new multi-family building if it constructed with higher energy efficiency than Oregon Building Codes, or 35% more efficient. The proof of energy efficiency is the LEED™ certification of Gold or higher, or another approved third-party verification. The amount of the rebate is equivalent to a “per square foot” amount in which a \$1 to \$3 rebate per square foot is refunded to the owner.¹⁴⁶

If the owner does not wish to meet such high demands on sustainability or if it is not financially viable for the owner, they may opt to get their fee waived. In order to get a new commercial or multi-family building fee waived, the owner must improve the buildings energy efficiency by 25% higher than Oregon’s Building Code. When this is

proved with a third-party certificate of LEED™ Gold Certified or equivalent, the fee is then waived.¹⁴⁷

If the owner does not meet the following energy equivalents or constructs his structure to only meet the minimum Oregon Building Codes, a fee will be assessed based a dollar amount per square foot cost. It is a one-time fee charged to the owner before building can begin construction.¹⁴⁸

The money generated from the fees that is collected from owners that do not meet the new policy will be deposited into an account that will be distributed to those who are rewarded with a rebate. According to the proposal, “the city anticipates that a significant percentage of building square footage will achieve the waiver level of performance, but a relatively small share will receive reward payments.”¹⁴⁹

The program also had a residential component attached to it that acts exactly like the commercial policy. This policy had created targets for newly constructed residential buildings. Starting in 2009, twenty percent of the homes constructed would have to be meeting the Earth Advantage or LEED™ for homes, thirty-percent in 2010, and forty-percent in 2011.¹⁵⁰ Each year a study would be conducted to make sure the amount of residential buildings being constructed in the city was meeting city-wide goals.¹⁵¹

Like the commercial policy, the residential construction policy is based on a feebate system. When a project is built twenty percent or more above minimum Oregon Building Code, the project owner will receive a reward, or rebate for their sustainability. This percentage is equivalent to obtaining an Earth Advantage Gold, or Platinum certificate or LEED™ for Homes Silver, Gold, or Net-Zero Platinum certificate.¹⁵²

If the project is built between fifteen percent and twenty percent more sustainable than the Oregon Building Codes, the fee used to continue construction is waived. This would be equivalent to an Earth Advantage Silver certificate.¹⁵³ When the new home is built to minimum 2008 Oregon Building Codes, then a one-time fee will be charged to the owner based on the size of their gross square-footage.¹⁵⁴

This portion of the proposal came with much scrutiny. So much in fact that the residential portion of the policy was scratched before the policy went into effect in 2010. The Home Builders Association of Portland rejected the newly formed policy on the basis that the home building industry was not involved in the decision making of the policy.¹⁵⁵ They were also hesitant with the additional costs that home owners were now to pay to build their homes.

The residential section in the Green Building Policy of Portland was scaled-back to a version more desirable to the Home Builder Association. By adding realtors and home builders to the consulting committees an arrangement was made. The home building partners will try and influence the community to build more green buildings, and if not the feebate system would be instituted.¹⁵⁶

The final portion of the policy is the existing commercial and home performance measures. This portion of the policy is created to “require disclosure of environmental performance measures using the U.S. Environmental Protection Agency Energy Star Portfolio Manager tool.¹⁵⁷ This policy is required for current commercial buildings over 20,000 square-feet to get an overall status of the buildings performance and stormwater

management. This policy is making sure that the buildings are living up to the most sustainable methods that it can.

The Portland Green Building Policy is a good example to mold green building legislation from because of the well thought out methods used. The financial incentives are self-sustaining and the city would not have to invest too much money unless the green building policy was too successful. The policy also does not tie itself to one third-party system as it gives the option to meet the equivalent of other third-party systems. The policy also covers all aspects of the building industry with new construction of commercial and multi-family, new homes, and existing homes and commercials structures.

Section 3.1.2: Nevada

As well thought out as the Portland Green Building Legislation was, the State of Nevada's Green Building Policy might have been the exact opposite. Known as a place where you can hit the jackpot, developers and owners quickly found out how much of a jackpot they could make.

In 2005 the Nevada Legislature passed Special Session Assembly Bill 3 which set out the state's policy for green buildings, energy conservation, and water conservation. The policy had two green building initiatives attached to it, one for the public and one for the private sector. The public sector initiative proposed that the state government construct two LEED™ Silver or higher buildings each legislative year or every odd numbered year.¹⁵⁸

The public sector received an incentive-based policy for buildings that met or succeeded LEED™ Silver certification. The policy offered two types of tax reduction if the buildings met the certification, a sales tax reduction or a property tax reduction.¹⁵⁹ The sales tax reduction was a two-percent reduction of all materials and fittings used during construction.¹⁶⁰ The property tax reduction is a fifty-percent reduction on the taxes assessed to the owner of the property for ten years after construction.¹⁶¹

After this legislation was passed, the amount of LEED™ certified buildings constructed in the State of Nevada increased from 14 in 2005 to 92 in 2007.¹⁶² Was the regulation that convincing that owners would increase the cost of buildings to build green and increase the popularity by over six-hundred percent? The answer is that owners and developers had figured out that by building green that they were going to receive three dollars for every one dollar spent on money spent towards building green.¹⁶³ This financial mistake would have caused a great hardship for the state if it had not been found quickly. According to a Chris Cheatham post on his blog on March 6, 2009, the “budget forecasters projected a minimum loss of \$940 million to state revenue over the next biennium.”¹⁶⁴ In the Las Vegas area, where there would be the most money spent on green buildings thanks to City Center by MGM, would lose over 10% of its tax break and over \$700-900 million that would have gone towards the Clark County School District.¹⁶⁵

On May 3, 2007, the Nevada Senate voted to end the Senate Bill AB 3 and pass Senate Bill 567, a bill to stop all tax related incentives. However on May 14, 2007, Governor Jim Gibbons vetoed Senate Bill 567 entitled “an act relating to taxation; suspending all state action relating to tax exemptions applicable to energy efficient buildings; and providing other matters properly relating thereto.”¹⁶⁶ In his letter to

Senator Raggio, he stated “providing tax incentives to encourage environmentally friendly construction is basically sound policy, however as a matter of fundamental fairness to Nevada taxpayers, any efforts to amend the exemptions and abatements set forth in Assembly Bill 3 should be carefully considered.”¹⁶⁷

In June of 2007, the Senate quickly created and passed AB621 which “preserves substantial tax breaks, between 25 to 35 percent in property taxes for up to 10 years, but requires that developers meet higher standards for energy efficiency.”¹⁶⁸ This new bill does not affect the school system but did eliminate the sales tax exemptions on construction materials from the previous law.¹⁶⁹ Only a handful of buildings were grandfathered in and allowed to remain receiving funds from the previous bill. The most famous and expensive one of these was the City Center by the MGM which could receive up to \$240 million in tax breaks.¹⁷⁰

The Nevada green building regulation was an incentive based regulation that shows what can happen when a municipality rushes to create a regulation without running through all of the options. Shari Shapiro mentions that “now lawmakers are having to find a way to scale back the incentives, and crushing any further progress for green building initiatives in Las Vegas for some time to come.”¹⁷¹

This regulation was created too broad by allowing any building to gain access to the incentives and they made it too easy. Nevada and other municipalities can learn from their mistakes and learn how important it is to combat the issues at hand, which for Nevada would be energy conservation and most importantly, water conservation.

Section 3.1.3: Washington D.C.

The final case study will be a mandated regulation which is from Washington D.C. Washington D.C. is home not only home to the Federal Government, but also to one of the most thought out green building regulations of its time. In 2006, Bill 16-515 was passed and is also known as the “Green Building Act of 2006.”¹⁷² The purpose of Green Building Act (GBA) of 2006 was

*“To establish high-performance standards that require the planning, design, construction operation and maintenances of building projects which help to mitigate the environmental, economic, and social structures in the District: to establish a Green Building Initiatives Program that includes an Expedited Construction Documents Review Program; to establish a Green Building Fund to establish the Green Building Advisory Council; to amend the Construction Codes Approval and Amendments Act of 1986 to update the Construction Code to include green building practices; and amend the Office of Property Management Establishment Act of 1998 to require priority leasing of buildings that meet certain green building standards.”*¹⁷³

The GBA is intended for the new construction of all commercial and residential buildings, as well as all major renovations of commercial and residential structures as well. Commercial buildings must meet the LEED™™ accreditation and only has to at the minimum achieve the certified level until 2011 and from there the certification grows stricter.¹⁷⁴

The GBA was also one of the first green building regulations to address the incident in which green building status is not achieved. When applying for a building permit, the contractor must provide a Performance Bond in the full amount of the project. A performance bond, according to Black’s Law Dictionary is an owner’s guarantee of a completion of a project upon the default of the contractor.¹⁷⁵ Under the GBA, part of the bond will be used for the guarantee of a complete LEED™™ certified building. If the

certification is not achieved, “all or part of the Performance Bond shall be forfeited to the District, to be deposited according to section 8, in the event that the building fails to meet the verification requirements.”¹⁷⁶

The legislation has come under scrutiny due its use of surety bonds. The main question that arose was who is to obtain the bond? Is it the architect, the builder or the owner? According to a Washington Business Journal article, they fear that if the bonding companies do not issue such bonds because of fears of the uncertainty, then it will be hard to implement the law.¹⁷⁷ In 2009 a revision, Green Building Technical Corrections, Clarification, and Revision Amendment Act of 2009, was implemented to the bill and eliminating the performance bond and replacing with just a bond.

The Washington D.C. green building regulation is a well thought out progressive regulation like that of Portland. D.C. however has added protection to itself by requiring a bond in order to guarantee a LEED certified building. The main difference is that the Washington D.C. is a mandated regulation with minimal incentives and Portland is an incentive-based regulation.

Section 3.1.4: Nebraska

While Nebraska has not had or created an actual green building regulation, a case study can be done of what has happened in regards to the history of green buildings in Nebraska. Nebraska and the “Corn Belt” are currently lacking in the green building regulation department. Surrounding states of Kansas and Iowa do not have any green building regulations just like Nebraska. Colorado and South Dakota as well as Kansas City, Missouri all have some sort of green building regulation.

Currently there are two legislative bills that have been passed by the legislature and signed by the governor that involve energy and sustainability. LB 997 was passed in April of 2010 as the first step towards moving to possible regulations. This bill requires a municipality to include an energy element which “assesses energy infrastructure and energy use by sector, including residential, commercial, and industrial sectors.”¹⁷⁸ The second bill was LB 978, a bill which requires all government owned appliances to be Energy Star rated.¹⁷⁹

Nebraska currently has eleven buildings that have been newly constructed to meet LEED certifications.

Figure 3.2
Nebraska LEED Certified Buildings

Project	City	Certification
4940 Building	Omaha	Platinum
Air Force Weather Agency Headquarters	Offutt Air Force Base	Gold
CFNA	Kearney	Certified
CIS Nebraska Service Center	Lincoln	Silver
Cart T. Curtis Midwest Regional Headquarters	Omaha	Gold
DHS	Omaha	Gold
Kohl's Department Store	Lincoln	Certified
Midtown Crossing at Turner Park	Omaha	Certified
Pioneers Park Nature Center Addition	Lincoln	Silver
USDA Forest Service Bessey Ranger Dist	Halsey	Silver
Gallup Expansion	Omaha	Gold

Nebraska has been unable to find the best way to enhance the excitement to build green. An average of less than two green buildings per year is the challenge that Nebraska must fix. Within the Legislature, Senator Heath Mello has been trying to push green building regulations since he was elected into office. LB 997 and LB 978 were both introduced and pushed by Mello.

Mello has also introduced many other bills relating to green buildings that have yet to make it to the governor, one being a green building regulation. LB 632 was introduced in the First Session of 2009 was introduced by Mello and was entitled as the Nebraska Green Building Advantage Act.¹⁸⁰ This bill would “provide sales tax rebates to businesses that retrofit or build new projects to Leadership in Energy and Environmental Design Green Building Rating System certification standards.”¹⁸¹ The initiatives for this bill were to improve sustainability, conserve energy, and invest in alternatives. The reason for the failure of the bill was the timing. According to Mello, the economy at the time of the bill did not help push government incentives to help fund green buildings.¹⁸² He also mentioned that the government must lead by example in order to get the citizens to be more enthused by green buildings.

While the State of Nebraska is lacking behind the rest of the U.S. in energy savings and green buildings, senators like Heath Mello are pushing for more of it. As Mr. Mello mentioned, the government must take on the leadership by leading by example. When the economy comes back, the next step would be to start by educating the rest of the state about the need for green buildings. While Nebraska has only two to three “large” cities, it will be harder to push the smaller towns to come along. The needed regulation that will help the state is one that educates the most.

Chapter IV

Discussion of Results

The core key aspects gathered from the analysis from the current status of the green building industry correlates with the conclusions from the case studies. The core aspects to come out of both the case studies and current status analysis was a repeated message of regulations or policies must have solid goals and the writers of the policy must determine the type of buildings and most importantly the type of regulation needs to be determined. The following are the main aspects that can be broken down into individual questions and “branches” to create a decision tree that will help with the first part of creating a better green building regulation.

Goals: What is the municipality/state needing or preferring to make happen with the green building regulation? Is there a need for water consumption reduction, carbon emission reduction or energy consumption reduction? This is where the entity can establish why the regulation is needed. This is also a place to discuss the history of green buildings in this area. If a larger city/state that has already shown to be able to maintain green buildings, it may want to continue and push for more. If the city/state is new to green buildings or has a harder time producing them, it might be necessary to have a slow and broad type of regulation.

Type of Buildings to Regulate: This section of the decision tree is for the entity to determine which buildings the entity would like to regulate. Is the regulation meant for all buildings or maybe only governmental owned, or possibly could be a hybrid of both. The regulation may call out only a certain amount of buildings, such as a goal of

percentage of new homes constructed be considered green or commercial buildings over a certain square footage are considered green. Whichever building or buildings are chosen, it must be reasonable to the area. The State of Nebraska may wish to create a regulation of all new residential structures meet a certain criteria, however when the most home building is done within the two largest cities, it may not work.

Type of Regulations: The most debatable and most needed to be is the decision of whether or not to use an incentive-based or mandatory-based regulation. As discussed within the paper, many factors should be considered or problems may occur.

Incentive: If an incentive-based regulation is chosen there are a few things that must be looked at. First, the determination must be made whether the incentive is going to assist in helping green buildings be constructed, like reimbursing for third-party costs or promote in increasing the amounts of green buildings constructed, such as tax breaks. Secondly, what type of incentive should be used? There are many possibilities that may work for one area of the country and others may not. The choices of tax breaks and fee reductions are examples of what can be used. The question that must be asked is whether the budget can afford the costs or if another cost mechanism will be created, such as a green building fund as many cities and states have created.

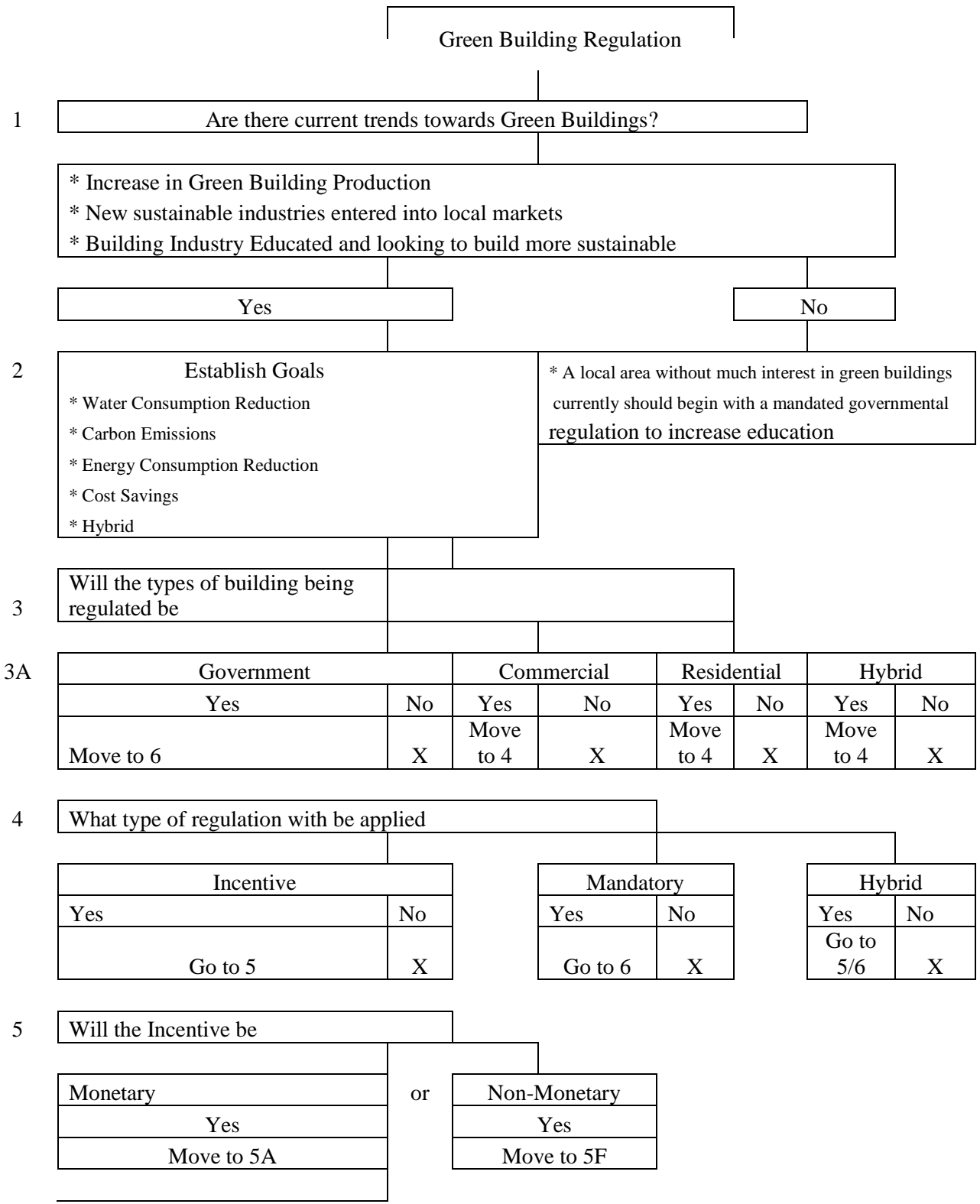
The next step that will need to be looked at would be all of the extreme conditions. As Nevada showed, an incentive-based regulation can go array when not properly researched or looked at. The entity would have to look at the best and worst case scenarios and find a happy medium that will prevent the worst from happening.

The incentive-based regulation will have to have a delegation or level of achievement that shows a green building was constructed. The entity would have to determine whether or not a third-party would be used and which one is to be used. USGBC or NAHB Green is two of the many third-party entities that can be used by an entity to determine whether or not the building was built to the regulation. The entity must remember to choose wisely and should provide alternates as to not become involved with anti-trust issues by choosing only one third-party. The problem when a third-party is used is that the government entity has a lesser amount of control. They are now bound to whatever the version or next version of the third-party may come up with, which may or may not be what is in the best for the local conditions.

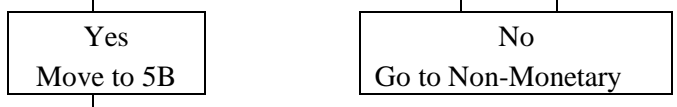
Mandatory: If a mandatory-based regulation is chosen the same process as an incentive-based regulation must also be taken with regards to delegation. The same would be for an entity to determine the extreme conditions. For a mandatory-based regulation the extreme conditions will be the litigation that is possible. Whether a takings clause suit or an action from anti-trust, mandatory regulations are susceptible to litigation.

One of the main additions to a mandatory regulation would be an effective enforcement mechanism.¹⁸³ This mechanism will help encourage the building to be constructed green and be a kind of insurance for the municipality or state. Examples of these enforcement mechanisms would be the feebate system used in Portland or the bond system used in Washington D.C. Whichever is used, they both will provide insurance for the entity.

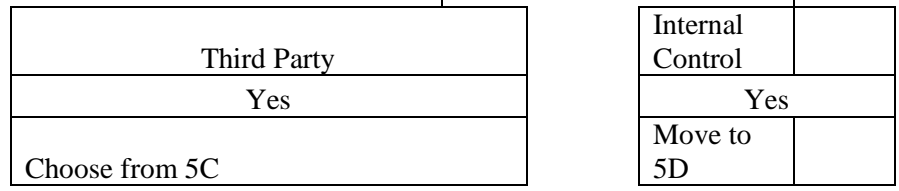
Figure 4.1
Decision Tree



5A Based on the state of the budget, do using tax funds agree with Sustainability?



5B Who will Delegate level of achievement



5C USGBC EPA NAHB

*Based on recent litigation, using a lead entity with an option of equivalent is the best

Move to 5D

5D Determine Benchmark

- * certain percentage of buildings be certified
- * Using a third-party, the building must meet a certain type of level
- * There are many different benchmarks, locations and budget will help determine

Move to 5E

5E Where will the money come from?

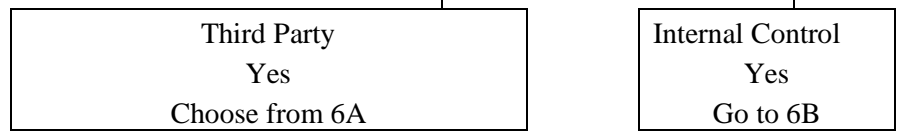
- * Tax Credits
- * Grants
- * Tax Rebates
- * Many Others

Move to 6

5F Non-Incentive Options

- * Expedited Permit Processing
- * Density Bonuses
- * Many Others

6 Who will Delegate level of achievement



6A

USGBC	EPA	NAHB
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*Based on recent litigation, using a lead entity with an option of equivalent is the best

Move to 6B

6B

Is there Federal, State, or Local Preemption for the mandated regulation?

Yes

* The mandated regulation cannot exceed the preemption

No

Go to 6C

6C

Can a monetary enforcement mechanism be used?

Yes
Go to 6D

No
Go to 6E

6D

Type of Enforcement Mechanism

* Monetary enforcement mechanisms can reward builders for achieving higher certification and cost them for lower certifications

6E * Non-Monetary enforcement mechanisms can be requiring bid bonds for proof of certification or insurance

Go to 7

7

Education of the regulation

8

Follow up system

- A follow up system is used to provide continuous upkeep of a green building. This system allows for the building to remain at the level of a green building.

Decision Tree Example

Using the decision tree to evaluate the Nebraska case study can show how the decision tree would work. By looking at Nebraska's current green building situation, it is easy to conclude that there is a current trend of green buildings in the State. Even though the state has only a handful of certified green buildings, there is a trend for more buildings to be built and as previously mentioned Nebraska has yet to really introduce a regulation would promote or assist with the production of green buildings.

Having step one finished, the next step is to determine a set of goals. The obvious goal is to plan for many different types of goals by introducing a hybrid regulation. The goal for Nebraska would be to reduce the costs of utilities and do their part for the environment and the best way to do that would be starting with the state government which would be a start to push for more green buildings. A mandated state government regulation would be the best place to start. This would also push for an increase in the amount of green buildings by introducing more competition in the green building industry.

Because the regulation would be mandated for the government only, a delegation and level of achievement or certification level would be needed. USGBC's LEED certification is the most recognizable and should be the place to start for a regulation. As previously mentioned in this article, a main entity should be mentioned in the regulation but it should have an equivalent with it. This way the state is not tied to whatever certification LEED tries to introduce.

To insure that the certification is made, an enforcement mechanism would need to be created. The budget of the state continues to be picked at by the governor and state legislature that allowing funds for incentives would be hard. Monetary investments for an enforcement mechanism would not be necessary because the owner of the building would be the government. A good mechanism would be to follow in the footsteps of Washington D.C. by having the contractor issue a performance bond stating that the building will be certified to the level that the state would choose. This would prevent from the contractor or architect to fail on their contract obligations to construct a certified building.

This regulation is a simple way to begin to introduce green buildings into the State of Nebraska. When the University and government entities across the state are introducing new buildings each year, a competition will be created within the state for those who can build green. When this competition is made prices will go down and hopefully an increase will be shown in the amount of green buildings in the State.

Conclusion

Green buildings are at the heart of the construction industry today and it looks to be for a long time. There are concerns in parts of the country that have hindered the growth of the green building industry. Green building regulations are a great way to promote and enhance the amount and quality of green buildings. To help promote the green building industry, a decision making tool can be used by decision-makers decide the most useful way to implement green buildings into the culture within their borders. This decision making tool will help promote the growth of green buildings and help prevent a regulation from going bad.

By building green an owner will save not only in future costs, such as utility costs, but will also protect the way buildings affect the natural environment. The natural environment is affected by all that we do and someday might not be able to support parts of the world. By building green we can combat these issues and help protect our future and the future of generations to come.

Further Research

The green building industry has a never ending amount of needed research to improve and enhance it. As the definition section created by this paper shows, a green building should be defined as a process, action, and an outcome. These three parts are usually shown to have been successful. The point after the final action is taken is where the future research needs to begin. What happens to a green building after it is declared green? Is the building still considered green five or ten years after its certification? These are points that will need to be addressed in years to come to enhance green buildings.

Acknowledgments

This thesis could not have been written without the help of my panel of faculty. Dr. Zhenghong Tang has helped me energetically with his time while writing this thesis and throughout my Master's program and has been very helpful as my advisor of this paper. Dr. Yunwoo Nam, also a professor in the Community and Regional Planning program has been very gracious in his efforts to make this project succeed. I would also like to thank Dr. Charles Berryman. Dr. Berryman has worked with me and has challenged me to continuously grow in my education since the beginning of my college career. Lastly I would like to thank my family and friends who have stood by me over my education career. I would like to especially thank my grandfather. Who was the main driver for me in the pursuit of post-graduate education. He believed that I should always work to achieve something better.

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Figure 3.1 – Portland Incentives Page 43

Figure 3.2 – Nebraska LEED Certified Buildings Page 53

Figure 4.1 – Decision Tree Diagram Page 58