GREEN BUILDING AND SUSTAINABLE DEVELOPMENT
AMENDMENT TO THE BUILDING CODE

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INTRODUCTION

Sustainable development builds sustainable communities; with the use of environmentally conscious practices Harrisburg can be revitalized, much like a wilting plant. Currently, the outdated city ordinances do not foster the goals of sustainable development, and as such, thwart the future development and growth of the city. However, this problem can be solved by amending ordinances to reflect the City's desire to development in a sustainable manner for all citizens. The Building Code for the City of Harrisburg is an example of an ordinance that does not foster sustainable development, because due to its outdated nature, does not reflect the City's commitment to sustainable practices. As such, I am drafting an amendment to the Building Code for the city of Harrisburg to allow for the use, and the encouragement of, sustainable materials in buildings. Specifically, this amendment will detail the use of structural sustainability, sustainable building materials, energy efficient appliances and incentives for builders who chose sustainable practices.

Throughout the course of this paper, I will discuss the notions of (1) why Harrisburg needs an updated building code, (2) how this problem can be turned into an opportunity, (3) how other cities have treated sustainable development, (4) the City's legal authority to enact ordinances, and (5) background on sustainable development and policy considerations surrounding it. The paper will conclude with a draft of the proposed amendment to the Harrisburg Building Code, allowing for the use and encouragement of sustainable materials.

For the purpose of this paper, the term sustainability means the act of making a conscious decision in an effort to conserve resources, both environmental and economic. Sustainable development means building and rebuilding the city's infrastructure to meet our current needs, without compromising the needs of future generations and other citizens of the city. However, one cannot address sustainable development in a city without addressing the buildings the city is comprised of, because in its essence, development encompasses building development.

TURNING A PROBLEM INTO AN OPPORTUNITY

Like many other cities in Pennsylvania, Harrisburg has several outdated ordinances and tools used in implementing a comprehensive city plan. The Harrisburg Building Code is one such ordinance that is outdated and not reflective of modern cities in Pennsylvania, or across the Nation. Currently, the building codes Harrisburg has adopted are fifteen years old. As such, they do not reflect the social and technological changes that Harrisburg has made. At this time, Harrisburg is faced with the opportunity to enact new ordinances, or amendments to existing ordinances, and create an updated City Code. This updated city code is not only a necessary remedy to the outdated nature of the current code, but a new code can help reinvigorate the City of Harrisburg and turn it into a bright thriving city. As it is written, the Harrisburg Building Code is effective in maintaining the structural safety of residents, patrons, and guests in the many buildings within the City of Harrisburg. What the Building Code is not effective in maintaining, is the sustainability of Harrisburg for future generations; this building code does not address environmentally sustainable practices, and does not account for the changing social climate of cities in America. Furthermore, the current building code states that it has been designed to cover

"every facet of building construction"; however, the building code is silent on sustainable measures[1].

Sustainability is catching like wild fire, seventy six (76) percent of Americans stated that even if they were unemployed, they would not take a job if the company had a bad reputation for disregarding sustainability[2]. If individuals are choosing to turn down jobs for a disregard to sustainability, they are also likely to choose where to live, or build their businesses based on a city's efforts on sustainability. Harrisburg could benefit greatly from promoting its sustainable efforts, which would further their efforts in revitalization. It is paramount to the revitalization efforts to redevelop in a sustainable manner, specifically by allowing new buildings to be constructed with sustainable building materials. Furthermore, sustainable development builds strong communities as well as strong buildings. By codifying the use of sustainable building materials and practices, the City of Harrisburg will further its commitment to revitalization for all of its residents.

WHY A NEW AMENDED BUILDING CODE IS NEEDED

The City of Harrisburg does not have a specialized building code that has been drafted to meet the city's needs. Currently, Harrisburg's Building Code amounts to the adoption and codification of two general building codes, and an appendix to the city code requiring buildings to be constructed in accordance with the 100 year flood line.[3] The two general building codes

[1] Harrisburg Code Title 8, Section 8-101.1
[2] Environmental Leader article titled Employees Want to Work for Environmentally Responsible CEOs, October 7, 2014.
[3] Harrisburg Building Code §8-101.3 Appendix K Floods

Harrisburg has adopted are: (1) Pennsylvania's Uniform Building Code[4], and (2) the International Building Code.[5] While these two universal ordinances are fairly comprehensive, covering the major structural and safety needs of every building, they do not account for the unique needs of Harrisburg, and further do not consider sustainable development. Additionally, both the International Building Code, and the Pennsylvania Uniform Building Code, are meant to be a minimum standard for safety in building construction. Harrisburg is not a "one size fits all" city, and the building codes should be reflective of the city's character, not generic ordinances designed to be a minimum standard. Harrisburg needs to be the pinnacle example for the state of Pennsylvania. As the State Capital, Harrisburg needs to lead the statewide effort towards sustainable development by example. By adopting a specialized amendment to the building code, Harrisburg could overcome the challenge of having an outdated ordinance, and become the model city in Pennsylvania for sustainable development.

As I have previously stated, many Americans are making choices towards sustainable development; by remodeling the outdated Building Code, the City of Harrisburg can expect to see an influx of economic growth. Young adults and professionals flock to the idea of sustainability, hence the popularity of the surge of "farm to table" restaurants in Harrisburg. With an updated building code, the popularity of these new restaurants can be applied to other areas within Harrisburg. Whether it is a café designed of reclaimed wood, or a new book store with a low carbon footprint, the City will be bringing in revenue and the citizens of Harrisburg will receive not only the ecological benefit, but also the specialized services they so desire.

Additionally, by adopting an Amendment to the Building Code which covers Sustainable Development, the City of Harrisburg will have adopted a regulation in advance of any State or

[4] 35 P.S. § 7210.301
[5] Harrisburg Building Code § 8-101.2

Federal mandate. We no longer live in a world where individuals can act blindly with disregard for the environment in which we live. There are regulations covering a multitude of topics from water, air, pollution, and almost every aspect of our lives in an effort to conserve the environment that we live in; it is only a matter of time before the Pennsylvania Department of Environmental Protection or the United States Environmental Protection Agency mandates regulations be in place to encourage sustainable development. Currently, there are optional programs in place, like LEED Certification, that individual building owners can take advantage of, and be recognized for their efforts in Sustainable Development; however, these certifications are often costly. The City of Harrisburg needs to capitalize on the opportunity of adopting a Sustainable Building Code before they are required to codify programs like LEED.

Finally, people are becoming more and more aware of sustainable building practices and materials, but the current Building Code does not account for the use of these products. By adopting an Amendment to the Harrisburg Building Code detailing the use of Sustainable Building Materials, individuals will know what specific building materials are sustainably safe and available for use. The citizens of Harrisburg, as well as developers will have guidelines for the use of sustainable materials, and possibly gain new ideas for implementing sustainable practices in their projects.

PENNSYLVANIA LEGAL AUTHORITY TO ENACTING AMENDMENTS TO CITY CODES

Similar to the way the federal government delegates individual powers for state governments to act under, State Governments delegate specific powers to the municipalities

within them[6]. Pennsylvania must grant specific powers to the municipal governments and, without these grants of authority, Municipal governments cannot operate[7]. The Pennsylvania State government has designated four different classes of cities based on their census data and has allocated local governmental powers accordingly[8]. Harrisburg is a City in the Third Class, and is governed by the Third Class City Code 53 P.S. §35101[9]. This code mandates how cities should be governed and allows them to adopt ordinances[10]. Additionally, this code mandates that all Cities of the Third Class adopt the Pennsylvania Uniform Construction Code[11].

HOW SUSTAINBLE BUILDING MATERIALS HAVE BEEN ADDRESS IN OTHER JURISDICTIONS

The International Code Counsel is a non-profit organization who drafts minimum standards for building development based on safety[12]. Their standards have been adopted in every state in the Nation, as well as by several foreign nations[13]. Furthermore, the International Code Council is the same group that drafted the general building code which Harrisburg has adopted in full. The International Code Council has also drafted an International Green Construction Code, or IgCC. [14] The IgCC is another building code that is geared towards

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[6] National League Of Cities, *Local Government Authority*, (2013)
[7] *Id.*
[8] The Pennsylvania Manual (2013) *available at:* http://www.dgs.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_8486_1294_244739_43/http%3B/pubcontent.state.pa.us/publishedcontent/publish/cop_general_government_operations/dgs/community_content/publications_and_media_services/subcommunities/publications/portlets/pa_manual___home/vol_121___entire_manual.pdf
[9] *Id.*
[10] 53 P.S. §35107
[11] 53 P.S. §39101-A
[12] International Code Council, *About ICC*, (2014) *available at:* http://www.iccsafe.org/AboutICC/Pages/default.aspx
[13] *Id.*
[14] International Code Council, *About ICC*, (2014) *available at:* http://www.iccsafe.org/AboutICC/Pages/default.aspx

fostering sustainable development in a modern world[15]. The IgCC encompasses not only the use of sustainable materials, but also contemplates sustainable actions from start to finish for a construction project[16]. While this is a considerably broad code, and still in the development stage, a few states as well as several cities have already adopted the International Green Construction Code. One such state that has adopted the code is the state of Maryland.

There are several states on the West Coast that can be used as examples as to how sustainable building codes have been addressed in other jurisdictions. Within their Building Codes Division, the State of Oregon has created a green building and construction team to be a unified contact for homeowners and construction companies who wish to use sustainable development in their building practices[17]. This team focuses on three major objectives of green building in Oregon with the Oregon REACH Code that calls for: (1) energy efficiency, (2) renewable energy, and (3) water conservation[18]. These three major areas encompass the energy standards for (1) construction of commercial and residential properties, as well as give the standards for in home energy efficiency; (2) permit the use of solar panels and wind turbines; and (3) discuss management of home water systems like collection of rain water[19]. Within these designated areas, the Oregon REACH code does just exactly what its name suggests, it establishes guidelines for individuals who wish to reach above and beyond the mandatory green building practices adopted by the State of Oregon[20]. The Oregon REACH code also prescribes specific building materials that can and should be used. Not only is Oregon REACH a building code for sustainable development in Oregon, there is also an Oregon Reach nonprofit that helps

[15] International Code Council, *International Green Construction Code*, (2014) *available at:* http://www.iccsafe.org/CS/IGCC/Pages/default.aspx
[16] *Id.*
[17] Oregon.gov *Green Building & Sustainable Development*
[18] State of Oregon, *Oregon Building Codes Division's Green Building Initiatives, available at:* http://www.cbs.state.or.us/bcd/programs/green/BCD_GreenInitiative.pdf
[19] *Id.*
[20] *Id.*

promote sustainable development to build strong communities[21]. The Oregon Reach non-profit uses sustainable building practices, as well as the REACH Green Building code to build low income housing and revitalize neighborhoods across Oregon and Washington[22]. Oregon Reach has gained national recognition for their efforts in development, and can be an excellent example for the City of Harrisburg[23].

In addition to a special division just for green building, a mandatory green building code, and an elevated voluntary green building code, Oregon has also adopted the International Green Construction Code. As previously stated this code is similar to the EPA RCRA statute in that it regulates building construction from cradle to grave. The IgCC regulates the types of materials that should be used, the construction of the buildings, and finally sets limits on how much material can be dissuaded into landfills[24].

In addition to Oregon, California also has one of the most comprehensive Green initiatives in the United States, including Green Building Ordinances. Cal Green, California's green initiative is the gold star standard for sustainable development. They not only focus on building and development, they have set standards for almost every area of green development, while utilizing stakeholder theory to involve the community[25]. Starting with the IgCC as a template, California has adopted CAL Green, California Green Building Standards and Codes[26]. Under this Code, California mandates Green Building techniques to be used in new construction projects, if the project meets certain requirements. Once the requirements are met, new

[21] Reach Community Development, *Going Green Sustainability Plan* (2014) *Available at:* http://reachcdc.org/about-us/green-practices-and-innovation/
[22] *Id.*
[23] *Id.*
[24] International Codes Council, *2012 IgCC overview, available at:* http://www.iccsafe.org/cs/IGCC/Documents/Media/2012_IgCC-Overview.pps
[25] State of California, *CAL GREEN, The 2010 California Green Buildings Standard Code* (2010) *available at:* http://www.documents.dgs.ca.gov/bsc/CALGreen/The-CALGreen-Story.pdf
[26] California Code of Regulations Title 24, Part 11

constructions must reduce water usage, reduce construction wastes, and increase efficiency[27]. The California Green Building Code also gives guidelines that help individuals who choose to go above and beyond the Green Building Code, by establishing additional voluntary guidelines[28].

The California Green Building code is an impressive comprehensive building plan that has been wildly successful. Every year California hosts the California Green Summit to recognize individuals and entities who are making strides in sustainable development in California[29]. Additionally, California Green Summit brings the public and private sectors together for an expo, classes, and conference on Sustainable development[30].

KEY POLICY CONSIDERATIONS

The first major policy issue that decision makers are confronted with when adopting a new, or an amendment to an ordinance, is how the municipality is going to afford to regulate the ordinance. Since this is a permissive amendment to the building code, there is no cost in regulating noncompliance with the amendment to the ordinance. This means that builders may choose to use sustainable building materials in their remodeling and construction, but they are not required to. Individuals are still allowed to construct buildings that do not use any sustainable building materials, and as such, most people will continue to use the existing code. This means, building inspectors will still inspect the buildings in the same manner they have been for years. Furthermore, the new code will inform individuals that they can use sustainable building

[27] Reach Community Development, *Going Green Sustainability Plan* (2014) *Available at:* http://www.documents.dgs.ca.gov/bsc/CALGreen/The-CALGreen-Story.pdf
[28] *Id.*
[29] Green-Technology.org *Green California Summit and Exposition* (2014) *available a:* thttp://content.yudu.com/Library/A2sqt2/ProgramGuide2014Gree/resources/index.htm
[30] *Id.*

materials within the city of Harrisburg, which is not articulated in the current building code. As such, there would not be any additional cost for training of building inspectors due to the fact that they are still inspecting for structural soundness and safety concerns. These sustainable building materials would not alter the structural construction of the building, and thus, no additional training would be required.

The second major policy consideration that decision makers face, is how to encourage people to make sustainable choices in their buildings. Traditionally, Building Codes have been drafted to maintain safety within the city buildings. However, building and acting in a sustainable manner is part of safety and must be included; sustainable development is safety for the future of the city and the citizens. The cultural mindset which includes acting and building sustainably will not occur over night, so the ordinance must contain some added benefit to citizens and developers who chose sustainable building materials and practices. Special benefits are also necessary so individuals will chose to adhere to the permissive code, thus conferring the sustainable benefit back to the city. These benefits can come through the use of incentives such as priority permitting, or expedited building inspections. The incentives do not need to come at any cost to the City of Harrisburg, but merely ease the burden on individuals who are choosing to go above and beyond the traditional building code.

The third major policy consideration facing decision makers is how to make sustainable development accessible for citizens at the poverty line. Sustainable development should be a reality for every citizen, not just the wealthy entrepreneurs. Rather, the city of Harrisburg should use sustainable development to build stronger communities, possibly through the help of a non-profit organization much like Oregon REACH. Instead of demolishing old buildings, they can

be used as scraps and reclaimed wood, and could potentially be used to build a new community center or other houses.

CONCLUSION

Across the nation, there has been a movement towards sustainable development and sustainable business practices. The EPA, as well as State Environmental Agencies have encouraged the use of sustainable practices for local governments, businesses and private individuals. By enacting this Amendment to the Harrisburg Building Code now, the City of Harrisburg will be preemptively ahead of any mandatory regulations that could be enacted within the next few years.

Harrisburg is ripe for development, and we currently sit at a pivotal point in our city's history. By enacting an Amendment to the Building Code to allow and encourage the use of sustainable building materials, Harrisburg could be on the forefront of sustainable development in Pennsylvania, as well as the Nation. Only several cities have enacted green building ordinances at this point, and Harrisburg can be one of them. Ultimately, enacting such a progressive amendment could change the public perception of the City of Harrisburg, and could help the city rebrand itself.

Appendix. Proposed Ordinance

BILL NO. _____ of 2014

Moved By: _____

An Ordinance amending Title 8 Chapter 8-101 of the Codified Ordinances of the City of Harrisburg, by adding a Code of the Use of Sustainable Materials in the Harrisburg Building Code.

WHEREAS, the Council of the City of Harrisburg hereby finds and declares sustainable building practices to be important to the social and economic vitality of the City: and

WHEREAS, the Council further finds the social and economic vitality of the City to be adversely affected by the lack of opportunity for sustainable development; and

WHEREAS, the Council for the City of Harrisburg finds that an amendment to the Building Code of the City of Harrisburg is needed to foster sustainable development in our communities through the use of sustainable building materials; and

WHEREAS, the Council for the City of Harrisburg finds that the current Building Code for the City of Harrisburg inadequately addresses these emerging types of development; and

WHEREAS, the use of these sustainable building materials will be beneficial to the longevity of the City of Harrisburg, as well as the social and economic vitality

CHAPTER 8-101

BUILDING CODE

APPENDIX J

SUSTAINABLE DEVELOPMENT AND GREEN BUILDING

SECTION L-1

APPLICABILITY AND GENERAL INFORMATION FOR GREEN BUILDING

L-1.1 Title.[31]

[31] 101.1 Title. California Green Building Code

These regulations shall be known as the Harrisburg Green Building Standards Code and may be cited as such and will be referred to herein as "this code." It is intended that it shall also be known as the PA Green Code.

L-1.2 Scope.

The provisions of this code may apply to the planning, design, operation, construction, use, and occupancy of newly constructed building or structure, or remolded, unless otherwise indicated in this code, throughout the City of Harrisburg[32]. Provision of this code shall promote increased conservation of energy within a dwelling over the requirements of the Harrisburg Residential Building Code. Materials, methods or techniques not address in this code shall be installed in accordance with the requirements set forth in the Harrisburg Building Code[33].

L-1.3 Purpose.

The purpose of this voluntary code is to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories[34]:

A. Building construction

B. Material conservation and resource efficiency

L-1.4 General Provisions

Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of

[32] 101.3 Scope California Green Building Code
[33] Oregon Code Chapter 13 Residential Provisions Section 1301 *available at:* http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Reach/PDFs/Chapter%2013%20-%20Residential%20Provisions.pdf
[34] 101.2 Purpose. California Green Building Code

slopes, management of storm water drainage and erosion controls shall comply with this section[35]

L-1.5 Authority

The Harrisburg City Department of Public Safety, office of Codes Enforcement has the authority to regulate under this code.

L-1.6 Referenced codes and standards

The codes and standards referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference[36].

L-1.7 Applicability of the Existing Building Code

The provisions of the Harrisburg Building Code, as applicable, shall apply to the construction, alteration, movement, enlargement, replacement, repair, use and occupancy, location, maintenance, removal and demolition of every structure or any appurtenances connected or attached to such buildings or structures[37].

L-1.8 Applicability of the Existing Electrical Code

The provisions of the Harrisburg Electrical Code shall apply to the installation of electrical systems, including but not limited to, alterations, repair, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto[38].

L-1.9 Applicability of the Existing Mechanical Code

The provisions of the Harrisburg Mechanical Code shall apply to the installation, alterations, repair and replacement of mechanical systems, including equipment, appliances, fixtures, fittings

[35] 4.106.1 General. California Green Building Code
[36] 101.5 Referenced codes and standards. California Green Building Code
[37] 101.5.1 Building. California Green Building Code
[38] 101.5.2 Electrical. California Green Building Code

and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems[39].

L-1.10 Applicability of the Existing Plumbing Code

The provisions of the Harrisburg Plumbing Code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances where connected to a water or sewage system[40].

L-1.11 Applicability of the Existing Fire Prevention Code

The Fire Marshal shall apply to all structures, processes and premises for protection from the hazard of fire, panic and explosion[41].

L-1.12 Applicability of the Existing Energy Regulations

The provisions of the Harrisburg Energy Code shall apply to the minimum design and construction of buildings for energy efficiency[42]

L-1.13 Difference Between the Building Code, and Green Building Code

In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern. In the event a local amendment to this code results in differences between these building standards and the amendment, the text of the amendment shall govern[43].

L-1.14 Documentation.

Documentation shall be provided to the enforcing agency which demonstrates compliance with this section and sections L2.1- 2.3, for the purposes of determining availability of incentives[44].

[39] 101.5.3 Mechanical. California Green Building Code
[40] 101.5.4 Plumbing California Green Building Code
[41] 101.5.5 Fire prevention. California Green Building Code
[42] 101.5.6 Energy. California Green Building Code
[43] 101.6.1 Differences. California Green Building Code
[44] A4.408.1.1 Documentation. California Green Building Code

L-1.16 Phased Projects

For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply[45].

SECTION L-2

INCENTIVES FOR USES

L-2.1 Setback Requirements

A reduced setback from the otherwise codified zoning setback requirements, set forth in the Harrisburg Zoning Code, is available for individuals who implement and document six of the subsections contained within this code. The setback reduction shall be proportionate to lot size and proposed project.

L-2.2 Priority Permitting

Priority permitting is available for individuals who implement and document six of the subsections contained within this code.

L-2.3 Expedited Inspection

Expedited inspections are available for individuals who implement and document six of the subsections contained within this code.

SECTION L-3

SUSTAINABLE MATERIAL SELECTION

L-3.1 Renewable Ready

[45] 303.1 Phased projects. California Green Building Code

Residential dwellings, built to this section shall provide a means for the installation of future on-site energy generation facilities[46]. This should be achieved by providing hookups for solar electric panels, solar hot water heaters, and/or geothermal heating.

L-3.2 Alternate Materials, Designs and Methods of Construction.

The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design, or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternate shall be approved on a case-by-case basis where the enforcing agency finds that the proposed alternate is satisfactory and complies with the intent of the provisions of this code and is at least the equivalent of that prescribed in this code in planning and design, energy, water, material conservation and resource efficiency, environmental air quality, performance, safety and the protection of life and health. Consideration and compliance provisions for occupancies regulated by adopting state agencies are found in the sections listed below[47]

L-3.3 Documentation for Alternative Methods and Materials

The materials, methods or techniques in this section may be used when building to the provisions of this code. Materials, methods or techniques used to satisfy the requirements of this code shall be documented within the construction documents[48]

L-3.4 Material Selection and Properties[49]

Building materials may conform to this code where the materials are chosen by the owner

L-3.5 Material Selection[50]

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[46] 1301.1.1 Renewable Ready Oregon Reach Code
[47] 101.8 Alternate materials, designs and methods of construction. California Green Building Code
[48] Oregon Code Chapter 13 Residential Provisions Section 1307.1 *available at:* http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Reach/PDFs/Chapter%2013%20-%20Residential%20Provisions.pdf
[49] Oregon Code Chapter 5 Material Resource Conservation and Efficiency Section 503.1 *available at:* http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Reach/PDFs/Chapter%205%20-%20Material%20Resource%20Conservation.pdf

Building Owners should strive to achieve that no less than 55 percent of the total *building* materials used in the project, based on mass or material cost, comply with this code. Compliance may be demonstrated in accordance with those sections singularly or in combination.

L-3.6 Used Materials[51]

Used materials shall comply with the provisions for such materials in accordance with the applicable codes referenced in Section L-3.13 and L-3.14, and applicable requirements of this code

L-3.7 Bio-based Materials Generally

Select bio-based building materials and products made from solid wood, engineered wood, bamboo, wool, cotton, cork, straw, natural fibers, products made from crops (soy-based, corn-based) and other bio-based materials with at least 50 percent bio-based content[52].

L-3.8 Bio-Based Materials Use[53]

Where bio-based materials are used, they shall comply with one or more of the following:

A. Wood and wood products used to comply with this section, other than salvaged or reused wood products shall be labeled in accordance with the SFI Standard, FSC Indicators of Sustainable Forestry, PEFC Council Technical Document or equivalent fiber procurement system. As an alternative to an on-product label a certificate of compliance indicating conformance with the fiber procurement system shall be permitted. Manufacture's fiber procurement systems shall be audited by an accredited third party.

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[50] *Id.*
[51] *Id.*
[52] A5.405.2 Bio-based materials. California Green Building Code
[53] Oregon Code Chapter 5 Material Resource Conservation and Efficiency Section 503.2.4 *available at:* http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Reach/PDFs/Chapter%205%20-%20Material%20Resource%20Conservation.pdf

B. The requirements of the USDA 7 CFR Part 2902

L- 3.9 Regional Materials

Compared to other products in a given product category, select building materials or products for permanent installation on the project that have been harvested or manufactured in Pennsylvania or within 500 miles of the project site[54].

A. For those materials locally manufactured, select materials manufactured using low embodied energy or those that will result in net energy savings over their useful life.

B. Regional materials should make up at least 10 percent, based on cost, of total materials value.

L-3.10 Indigenous Material[55]

Indigenous materials or components shall be composed of resources that are recovered, harvested, extracted and manufactured within a 500 miles (800 km) radius of the building site. Where only a portion of a material or product is recovered, harvested, extracted and manufactured within 500 miles (800 km) only that portion shall be included. Where resources are transported by water or rail, the distance to the building site shall be determined by multiplying the distance that the resources were transported by water or rail by 0.25, and adding that number to the distance transported by means other than water or rail.

L-3.11 Use of Building Materials From Renewable Sources.

One or more of the following materials manufactured from rapidly renewable sources or agricultural by-products is used[56]:

A. Insulation

[54] A5.405.1 Regional materials. California Green Building Code
[55] Oregon Code Chapter 5 Material Resource Conservation and Efficiency Section 503.2.5 *available at:* http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Reach/PDFs/Chapter%205%20-%20Material%20Resource%20Conservation.pdf
[56] A4.405.4 Use of building materials from renewable sources. California Green Building Code

B. Bamboo or cork

C. Engineered wood products

D. Agricultural based products

E. Solid wood products

F. Other products acceptable to the enforcing agency

Note: The intent of this section is to utilize building materials and products which are typically harvested within a

10-year or shorter cycle.

C. If regional materials make up only part of a product, their values are calculated as percentages based on weight

D. Provide documentation of the origin, net projected energy savings and value of regional materials.

L-3.12 Rapidly Renewable Materials

Use materials made from plants harvested within a ten-year cycle for at least 2.5 percent of total materials value, based on estimated cost[57].

L-3.13 Deconstruction and Reuse of Materials

Existing buildings on the site are deconstructed and the salvaged materials are reused. Reused materials or products must comply with current building standards requirements or be an accepted alternate method or material[58].

L-3.14 Reuse of Materials.

Materials which can be easily reused include but are not limited to the following[59]:

A. Light fixtures

[57] A5.405.2.2 Rapidly renewable materials. California Green Building Code
[58] A4.105.1 General. California Green Building Code
[59] A4.105.2 Reuse of materials. California green Building Code

B. Plumbing fixtures

C. Doors and trim

D. Masonry

E. Electrical devices

F. Appliances

G. Foundations or portions of foundations

Note:

Reused material must be in compliance with the appropriate provisions of the Harrisburg Building Code

L-3.15 Building Systems

Use pre-manufactured building systems to eliminate solid sawn lumber whenever possible.

One or more of the following pre-manufactured building systems is used[60]:

A. Composite floor joist or pre-manufactured floor truss framing

B. Composite roof rafters or pre-manufactured roof truss framing

C. Panelized (SIPS, ICF or similar) wall framing system

D. Other methods approved by the enforcing agency

L-3.16 Pre-cut Materials and Details.

Material lists are included in the plans which specify the material quantity and provide direction for on-site cuts to be made from the material provided. Material lists and direction shall be provided for the following systems:

A. Floor framing

B. Wall framing

C. Ceiling and roof framing

[60] A4.404.3 Building systems. California Green Building Code

D. Structural panels and roof sheathing

L3.17 Prefinished Building Materials

Utilize prefinished building materials which do not require additional painting or staining when possible. One or more of the following building materials that do not require additional resources for finishing are used[61]:

A. Exterior trim not requiring paint or stain

B. Windows not requiring paint or stain

C. Siding or exterior wall coverings which do not require paint or stain

L-3.18 Choice of Materials for Durability

Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following[62].

A. Service Life

B. Reduced maintenance

C. Recyclability

L-3.19 Service Life

Select materials for longevity and minimal deterioration under conditions of use.

[DSA-SS] Use materials, equivalent in performance to virgin materials, with postconsumer or pre-consumer recycled content value (RVC) for a minimum of 10 percent of the total value,

[61] A4.405.1 Prefinished building materials. California Green Building Code
[62] A5.406.1 Choice of materials for durability. California Green Building Code

based on estimated cost of materials on the project. Provide documentation as to the respective values[63].

L-3.20 Reduced Maintenance

Select materials that require little, if any, finishing. For those with surface protection, choose materials that do not require frequent applications of toxic or malodorous finishes[64].

L-3.21 Recyclability

Select materials that can be reused or recycled at the end of their service life in the project[65].

L-3.22 Concrete Floors

Floors that do not require additional coverings are used including but not limited to stained, natural or stamped concrete floors[66].

SECTION L-4

APPLIANCES AND FIXTURES

L-4-.1 Ceiling Fans

ENERGY STAR ceiling fans are installed in all bedrooms and living areas[67]

L-4.2 Tank Type Water Heater Efficiency

The Energy Factor (EF) for a gas-fired storage water heater is higher than .60.[68]

L-4.3 Tankless Water Heater Efficiency

The Energy Factor (EF) for a gas-fired tankless water heater is .80 or higher[69].

L-4.4 Hot Water Distribution Systems

[63] A5.406.1.1 Service life. California Green Building Code
[64] A5.406.1.2 Reduced maintenance. California Green Building Code
[65] A5.406.1.3 Recyclability. California Green Building Code
[66] A4.405.2 Concrete floors. California Green Building Code
[67] A4.207.10 Ceiling fans. California Green Building Code
[68] A4.208.1 Tank type water heater efficiency. California Green Building Code
[69] A4.208.2 Tankless water heater efficiency. California Green Building Code

Where the hot water source is more than 10 feet from a fixture, the potable water distribution system shall convey hot water using one of the following methods[70]:

A. A central manifold plumbing system with parallel piping configuration ("home-run system") is installed using the smallest diameter piping allowed by the Pennsylvania Plumbing Code or an approved alternate.

B. The plumbing system design incorporates the use of a demand controlled circulation pump.

C. A gravity-based hot water recirculation system is used.

D. A timer-based hot water recirculation system is used.

E. Other methods approved by the enforcing agency

L-4.5 Lighting

Building lighting consists of at least 90 percent ENERGY STAR qualified hard-wired fixtures[71].

L-4.6 Appliance Rating

Each appliance provided by the builder meets ENERGY STAR if an ENERGY STAR designation is applicable for that appliance[72]

SECTION L-5 Delegation

Appropriate City officials are authorized and directed to take such actions as are necessary to effectuate this ordinance[73]

SECTION L-6 SEVERABILITY

If any provision, sentence, clause, section, or part of this ordinance or the application thereof to any person or circumstance is for any reason found to be unconstitutional, illegal or invalid by a

[70] A4.208.3 Distribution systems. California Green Building Code
[71] A4.209.1 Lighting. California Green Building Code
[72] A4.210.1 Appliance rating. California Green Building Code
[73] Template ordinance for city of Harrisburg- budget transfer with personnel

court of competent jurisdiction, such unconstitutionality, illegality or invalidity shall not affect or impair any of the remaining provisions, sentences, clauses, sections or parts of this ordinance. It is hereby declared as the intent of the Council of the City of Harrisburg that this ordinance would have been adopted had such unconstitutional, illegal or invalid provision, sentence, clause, section or part not been included herein[74].

SECTION L-7 REPEALER

All ordinances or parts of ordinances in conflict herewith be and the same are herby repealed[75]. Nothing herein shall be constructed to repeal or supersede Chapter 7-329, Floodplain Overlay District, of the Codified Ordinances[76].

SECTION L-8 EFFECTIVE DATE

This ordinance shall take effect in accordance with the law[77].

[74] Harrisburg Ordinance Template- Budget Transfer Within Personnel
[75] Harrisburg Ordinance Template- Budget Transfer Within Personnel
[76] Harrisburg Building Code § 8-101.3, Section K-5
[77] Harrisburg Ordinance Template- Budget Transfer Within Personnel