MEMORANDUM

To: Planning & Zoning Commission
From: Pat Deegan and Jenna Montesano
Date: January 27, 2015
Re: Low-Impact Development and Bicycle-Related Provisions

SUMMARY

One City One Plan addresses goals to both encourage bicycling and promote environmentally-friendly development. Hartford’s zoning regulations only briefly address these matters. Bicycle-related provisions and low-impact development provisions are two sides of the same coin, and are both aimed at making Hartford a more environmentally-friendly and livable city.

Low-impact development supports stormwater management practices and encourages functional landscape components that filter water through design features such as pervious paving and green roofs, which are currently lacking in Hartford. Stormwater runoff is a local resource asset, and when it is not treated as such, it has detrimental effects on ecosystems, water quality, and the public water supply. Low-impact development is an alternative set of design principles aimed at controlling stormwater runoff close to the point of generation, keeping it from draining into local waterways. Low-impact development is currently only addressed briefly in Hartford’s zoning regulations.

Hartford’s current lack of bicycling infrastructure adds to traffic congestion and the need for parking lots, thus contributing significantly to environmental degradation through stormwater runoff. The current lack of bike racks, lanes, and signage in Hartford prompts the need for bicycle-related zoning provisions. With more bicycle transportation and low-impact development techniques, Hartford will be a more environmentally-friendly and livable city.

To encourage bicycling in Hartford, its zoning regulations should contain provisions requiring bicycle parking and shower stations in certain developments and redevelopments. Further, low-impact development should be encouraged by amending Hartford’s regulations to condition the granting of special permits on the use of low-impact development designs, incentivize the use of green roofs, and require buffer zones between residential and non-residential uses.

This memo will proceed in four parts:

(a) Current Treatment in Zoning Regulations
(b) Best Practices
(c) Most Appropriate Approach
(d) Specific Revisions
(A) **Current Treatment in the City’s Zoning Regulations**

We have examined the regulations for any low-impact development or bicycle-related provisions and found that they were only briefly addressed in the following ways.

1. **Low-Impact Development**

   The regulations generally appear to support low-impact development through a suggestion that where feasible, low-impact development measures be adopted.\(^1\) The regulations also encourage, and may in some cases require, low-impact development principles in surface parking lot design in the B-1 and B-2 districts.\(^2\)

2. **Bicycle-Related Provisions**

   The regulations require a certain amount of bicycle parking for stadiums,\(^3\) and motor vehicle fueling stations in I-1, I-2, C-1, and B-3 districts are required to have an apparatus for filling bicycle tires with air.\(^4\) Additionally, including provisions for bicycle commuters is listed as a technique that would qualify as part of a comprehensive transportation management plan for special permit applicants that wish to reduce the required number of on-site parking spaces in the B-1 downtown development district.\(^5\)

(B) **Analysis of Best Practices Elsewhere**

We have analyzed the best practices used elsewhere concerning Low-Impact Development and bicycle-related provisions to get a better idea about what Hartford should do concerning these same matters. We broke down our two main topics into smaller, sub-issues for the purpose of analyzing best practices elsewhere and our recommendations.

1. **Regulations Encouraging or Requiring Pervious Paving**

   Several nearby municipalities encourage or require the use of low-impact paving designs such as the use of pervious pavement. In Newtown, except for residential zones, parking is required to be concrete or bituminous concrete or another equivalent with adequate drainage. The Newtown commission is granted broad authority to require pervious materials to reduce runoff and increase stormwater filtration. In Wilton, “Driveway, parking and walkway paving shall be functional, low maintenance and visually compatible to the existing structure(s). The selection and use of paving materials shall consist of a stable material, such as: crushed stone, gravel, concrete and/or brick

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\(^1\) Hartford, Conn. Code § 28(a) (2014).
\(^3\) Hartford, Conn. Code § 924(m) (2014).
pavers.” In East Hartford, “Except for single and two family dwellings, such paved areas shall have a minimum base of four (4) inches of processed stone or gravel and a minimum surface course of two (2) inches of asphalt or bituminous concrete.”

2. Buffer Area Requirements

Buffer areas are areas between residential and non-residential zones that are generally planted with trees or other vegetation. Newington’s zoning regulations establish that buffers may sometimes be required to protect residential neighborhoods from proposed uses. They must be at least 25 feet wide, or in some instances 50 feet, and must be planted with evergreen trees. These buffer areas may be used for stormwater management and vegetative low-impact development techniques, where authorized by the commission.

In Durham, North Carolina, buffer zones are used to separate residential zones from more noxious uses. Buffers are undisturbed, natural vegetation which is permitted to be cleaned up or thinned so long as the intent to maintain a buffer is preserved. Buffer provisions apply to all non-residential and multifamily uses submitting a site plan to locate next to residential uses. One half of the required buffer width is required when nonresidential uses are going next to residential areas not zoned as such and next to vacant residential plots. Durham bases the width of the buffer on the type of non-residential use desirous of a permit. Less noxious uses such as cemeteries and golf courses only require a 10 foot buffer between the use and the residential area, while industrial uses and car dealerships must provide a buffer of 80 feet. Durham requires landscaping and plantings in buffer zones with trees and shrubs at specified distances apart, but this requirement may be waived by the approving authority if certain, provided conditions are met, such as the buffer zone being naturally sufficient to screen or if plantings would interfere with powerlines.

3. Construction Conforming with a Low-Impact Development and Stormwater Manuals

The town of Newington has taken a unique approach at making sure Low-Impact Development techniques are used. It requires any new development or redevelopment that passes a certain threshold to demonstrate that its design corresponds to outlined low-impact development standards. In Newington, any new construction or development on a residential lot that increases impervious surface area on the lot by 600 square feet or more must demonstrate that the new construction conforms with the Low-Impact Development and Stormwater Manual for the town of Newington. Any other construction or development, other than on residential lots, that increases impervious surface area at all, must also demonstrate conformance with the Low-Impact

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7 NEWINGTON, CONN. CODE § 6.10.5(B) (2015).
8 NEWINGTON, CONN. CODE § 6.10.5(B) (2015).
9 DURHAM, N.C. CODE § 10.2.3 (2006).
Development and Stormwater Manual for the town of Newington. This manual provides an explanation of the purposes of low-impact development, sets forth stormwater management standards, provides an overview of low-impact development planning and maintenance, and elucidates design standards for low-impact development controls.

4. Green Roof Incentives

Green roofs are a great Low-Impact Development provision for Hartford because they reduce and cleanse runoff, extend roof lives by two to three times, insulate buildings, improve air quality, and only cost approximately $18 to $25 per square foot. They are best implemented on flat and slightly sloped roofs. In Austin, Texas, there is an incentive based program to encourage developers to include green roofs in downtown zones. When 30%-49% of the roof is green roofing, there is 2 bonus square feet granted per one square foot of planted bed. If 50% or greater of the roof is green roofing, 3 bonus square feet are granted per one square foot of green roofing beds. An additional 2 square foot bonus area is granted when the green roofs are publicly accessible and when the area complies with Public Plaza Standards.

Cambridge, Massachusetts’ regulations provide a thorough, adaptable definition of Functional Green Roof Area. It is defined as:

The area atop a roof surface on a building, open to the sky and air, which is surfaced with soil and living plant materials for the purpose of retaining rainwater and absorbing heat from sunlight. The depth of soil and planted material shall be at least two (2) inches to be considered Functional Green Roof Area. For the purposes of maintaining the plant material, Functional Green Roof Area may be accessible by means of a roof entrance.

Functional Green Roofs Areas in Cambridge are intended to be functional spaces, so permit applications for Green Roofs must demonstrate that the plants chosen can withstand the anticipated foot traffic, and need to take into account the potential visual, noise, and privacy impacts on neighbors.

Cambridge regulations state that deck and patio space is not considered part of the calculation of Gross Floor Area of the building. In non-residential zones, the total space that is not part of the Gross Floor Area, e.g. decking, shall not exceed 15% of the amount of Functional Green Roof Area. All usable outdoor space must be set back at least 10 feet from all outer roof edges.

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11 NEWINGTON, CONN. CODE § 6.15.3 (2015).
13 CAMBRIDGE, MASS. CODE § 22.34.1 (2013).


Cambridge, Massachusetts has included extensive language within its zoning code dedicated to bicycle parking provisions, in order to ensure the ongoing viability of bicycle travel as a transportation option that mitigates automobile use. Its bicycle parking requirements apply to construction of new buildings or establishments of open-air uses on a lot, increases of 15% in the amount of residential dwellings on a lot or non-residential gross floor area, or when existing gross floor area is converted to a new category of non-residential use and results in a 15% increase in the total number of required bicycle parking spaces that would be required for the entire building. Bicycle parking requirements are exempted from certain developments as well, including detached one and two-family dwellings, changes to existing buildings that would result in the requirement of less than two additional parking spaces, or changes to existing buildings resulting in a dwelling containing three or fewer dwelling units. 14 Bicycle parking is split between long-term and short-term parking, and a detailed table is included that indicates a rate for calculating the total number of required bicycle parking spaces based on the zoning district and the land uses within such districts.

Chicago also includes bicycle parking provisions. In Chicago, commercial and institutional buildings are required to have indoor bicycle parking rooms for a minimum of 10% of all building users. It is required that secure locks are provided, and that bike rooms are conveniently located on the ground floor or at an elevator accessible place. For buildings over 100,000 square feet, there must be a security camera, bicycle work stand, bicycle repair tools, air pump, and vending machines stocked with bicycle repair parts. Commercial and institutional buildings must provide on-site showers and changing facilities with lockers for 1% of their full-time occupants. For residential buildings, there must be bike rooms equivalent to 30% or more of the building’s occupants AND there must be outdoor bicycle racks for 2% or more of the building’s users located within 100 feet of the building entrance. Chicago regulations emphasize that racks must be secure, well-lit, and sheltered from the elements.

Pittsburgh, Pennsylvania incentivizes bicycle riding and lessens car-related congestion by allowing for a reduction in required automobile parking when the bicycle parking provisions are accommodated. The number of required bicycle parking spaces are separated by the type of use. 15 For all non-residential uses except for hotels/motels, commercial parking, parking structure, and low occupancy facilities, the number of required parking spaces is determined by the gross floor area of the use, with no requirement for developments of 6,000 square feet or less. For multi-unit residential uses, bicycle parking requirements are determined by the number of dwelling units. Commercial parking and parking structure uses require bicycle parking units based on the number of automobile spaces. For low occupancy and hotel/motel uses, the number of employees determines the required amount of bicycle parking spaces.

(C) MOST APPROPRIATE APPROACH

The most appropriate approach for Hartford is going to be one that takes the best practices from other municipalities into account while considering Hartford’s current position in terms of Low-Impact Development and bicycling.

For Low-Impact Development, provisions should take into account the difficulties associated with math-heavy calculations. Therefore, Hartford should adopt more permissive regulations rather than stricter, mandatory provisions. It is currently appropriate to provide discretion to the Commission to encourage Low-Impact Development. We focused on non-residential zones since the Low-Impact Development could be considered onerous to the homeowner. Low-Impact Development in Hartford should include “no net effect” provisions, additional landscaping requirements, and green roof incentives to help reduce and slow stormwater runoff.

To make Hartford more bicycle-friendly and green, we focused on bicycle parking provisions because they are not burdensome and are within the purview of the Planning and Zoning Commission. Bicycle parking should appear in new construction and retrofitted, especially in parking lot expansions. While the ultimate goal is more enclosed or indoor bicycle parking, currently Hartford should strive for more accessible, convenient bicycle racks.

With more bicycle racks and less surface parking lots and stormwater runoff, Hartford will be on its way to becoming more sustainable.

(D) SPECIFIC REVISIONS

Sec. 2. Definitions.

*Functional green roof area* means a green roof for which the depth of soil and planted material is at least two (2) inches, which is accessible and usable for human activity.

*Green roof* means the area atop a roof surface on a building, open to the sky and air, which is surfaced with soil and living plant materials for the purpose of retaining rainwater and absorbing heat from sunlight, and which may be accessible by means of a roof entrance if required to maintain plant material.

*Long-term bicycle parking* means parking for bicycles in a limited-access enclosure that protects them from precipitation and theft. This term includes, for example: enclosed spaces within a building such as bicycle rooms; bicycle sheds; bicycle lockers; and weather-protected bicycle parking spaces that are monitored by an attendant or security system, such as bike boxes.

*Low-impact development* is an alternative way of developing land and managing stormwater that is aimed at minimizing the impacts of urbanization on natural habitats and hydrology. The overall goal of low-impact development is to design with nature in mind: work with the natural landscape, hydrology and unique features of a site to avoid unnecessary water pollution, environmental degradation, and flooding. Low-impact development accomplishes
this by controlling runoff close to the point of generation and retaining more water on the site where it falls, rather than funneling it into pipes that drain into local waterways.

Short-term bicycle parking means covered bicycle parking that is located in a publicly accessible place in which users may quickly store bicycles, for a period of several hours. This term includes, for example: a covered bicycle rack.

Sec. 28. Stormwater management, drainage channels, and floodplains, and low-impact development.

(a) Stormwater management on developed sites is necessary to maintain public health and safety and improve water quality for the people of the city. Low-impact development reduces stormwater runoff and protects public water quality by diminishing the use of impervious pavement. These regulations shall require that, where feasible, measures in accordance with the latest version of the Low-Impact Development Appendix to the Connecticut Stormwater Quality Manual be employed to control stormwater at its source and to minimize the generation of runoff collected by the municipal storm sewer system. Sites shall be graded, drained, and landscaped as to dispose of all surface water accumulation on site, and to prohibit surface water draining onto an adjoining property. In no case shall any zoning permit, including a zoning permit for a parking lot, allow the volume of stormwater runoff from a site to exceed the volume existing prior to the application for such permit or approval. These regulations and decisions made by the commission in accordance with these regulations shall encourage innovative design solutions to control the quality of storm runoff from development sites during and after construction. Natural landscape solutions such as minimization of impervious surfaces, undisturbed buffers, and filter strips shall be preferred over structural solutions such as detention ponds. Any development or redevelopment which caps impervious surface lot coverage at fifteen (15) percent less than the maximum allowed under section 182 of these regulations may increase its maximum floor area allowed under section 182 of these regulations by five (5) percent, …

(c) This provision aims to incentivize the installation of green roofs because green roofs cleanse and slow stormwater runoff, extend roof life, insulate buildings, reduce pollution, and provide myriad other environmental and health benefits while being cost effective and beautifying the city. To achieve this goal, the following provisions shall apply to all zoning lots in the business and residential office zoning districts:

(1) A determination of whether an application contains a green roof or a functional green roof area may be made by commission staff, provided that for functional green roof areas, decking and patio areas shall not exceed fifteen (15) percent of the overall roof area and any functional green roof area shall be set back at least five (5) feet from the roof edges.

(2) When considering an application involving a green roof, the commission or staff, as applicable, shall give preference to local, native plant varieties and, in the case of a functional green roof area, shall take into account the potential visual, noise, and
privacy impacts on neighbors and shall require the applicant to demonstrate that any plants chosen can withstand the expected foot traffic.

(3) The area underneath any green roof shall not count toward a site’s total impervious surface lot coverage, for the purposes of calculating maximum permitted lot coverage.

Sec. 163. Site plan review.

The purposes of site plan review include: … to assure that low-impact development practices and principles are implemented to reduce stormwater runoff; …

Sec. 170. Special permit review.

The commission shall exercise its powers to review special permit applications in each and every instance where an application for a special permit is required by these regulations. The commission shall have the authority to grant, grant with conditions, or reject a special permit. Specifically, the commission will consider and encourage low-impact development practices and principles.

Sec. 172. Special permit review criteria.

In reviewing any application for a special permit, the commission shall consider, and shall base its approval or disapproval upon, all aspects of the proposal and in particular whether the proposal in the application: … provides landscaping, including vegetation and trees, which are appropriate to the district and enhance the public realm; will not be detrimental to the control of stormwater at its source and the minimization of runoff…”

Sec. 292(k). Purpose.

The purpose of the B-1 downtown development district is to promote the health, safety, social and economic welfare of the residents of the city… These regulations further the additional goals to: …

(i) Provide for an increased presence and integration of the arts and related cultural activities in the downtown development district; and

(j) Further and enhance the goals of the downtown development plan; and

(k) Provide incentive for environmentally conscious development, reduction of stormwater runoff and pollution, which will promote the health of residents and beautification of the city.

Sec. 296. Schedule of bonuses.

<table>
<thead>
<tr>
<th>Use, improvement or facility</th>
<th>Bonus ratio</th>
<th>FAR cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green roof</td>
<td>1:6</td>
<td>1</td>
</tr>
</tbody>
</table>

Sec. 951. Parking areas; development and maintenance.
Sec. 962. Bicycle Infrastructure.

(a) **Purpose.** The purpose of this section is to encourage bicycle use as a mode of transportation and lessen the impacts of automobile use, by ensuring quick, convenient and safe access to secure bicycle parking.

(b) **Applicability.** Bicycle parking requirements apply to the following projects:

2. Establishment of a new open air use on a lot.
3. Projects that increase the number of residential dwelling units by fifteen (15) percent.
4. Projects that increase the floor area of non-residential uses by fifteen (15) percent.

(c) **Schedule.** Minimum long-term and short-term bicycle parking spaces for specified land uses are set forth in the table below. Wherever the result of a minimum bicycle calculation results in a fractional value, if such fraction is less than one-half (½) it shall be disregarded, and if such fraction is one-half (½) or greater it shall require one (1) bicycle parking space.

<table>
<thead>
<tr>
<th>Use</th>
<th>Minimum Long-Term Bicycle Spaces</th>
<th>Minimum Short-Term Bicycle Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-family dwellings, two-family dwellings, three-family dwellings</td>
<td>No minimum requirement</td>
<td>No minimum requirement</td>
</tr>
<tr>
<td>Multiple family dwelling units</td>
<td>One (1) per every thirty (30) dwelling units</td>
<td>One (1) per every fifteen (15) dwelling units</td>
</tr>
<tr>
<td>Hotel and motels</td>
<td>One (1) per every sixty (60)</td>
<td>One (1) per every thirty</td>
</tr>
<tr>
<td></td>
<td>sleeping rooms</td>
<td>(30) sleeping rooms</td>
</tr>
<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td>Hospitals and hospital related</td>
<td>One (1) per every thirty thousand (30,000) square feet</td>
<td>One (1) per every fifteen thousand (15,000) square feet</td>
</tr>
<tr>
<td>Office</td>
<td>One (1) per every twenty thousand (20,000) square feet</td>
<td>One (1) per every twenty-five thousand (25,000) square feet</td>
</tr>
<tr>
<td>Retail</td>
<td>No minimum requirement</td>
<td>One (1) per every three thousand (3,000) square feet</td>
</tr>
<tr>
<td>Colleges and universities</td>
<td>One (1) per every fifteen thousand (15,000) square feet of building area</td>
<td>One (1) per every five thousand (5,000) square feet of building area</td>
</tr>
<tr>
<td>Commercial parking lots and garages</td>
<td>One (1) per every thirty (30) automobile parking spaces</td>
<td>One (1) per every fifteen (15) automobile parking spaces</td>
</tr>
<tr>
<td>Open air and parks</td>
<td>No minimum requirement</td>
<td>One (1) per every fifteen thousand (15,000) square feet</td>
</tr>
</tbody>
</table>

(d) Reduction in required parking spaces. A reduction in the number of parking spaces required by section 954 (excluding accessible parking spaces for persons with disabilities) shall be permitted for the provision of bicycle parking, provided that no fee is required for using the bicycle parking made available. The reduction in the number of required automobile parking spaces shall be reduced by one (1) automobile parking space for each five (5) bicycle parking spaces, but shall not be reduced by more than fifteen (15) percent of the total number of automobile parking spaces otherwise required by these regulations.

(e) Bicycle showers. For office uses, retail uses, hospital and hospital-related uses, colleges, and universities, one shower and changing facility shall be provided for every one-half (½) percent of full-time occupants.

Sec. 1051. Trees and landscaping.

Open space within lots and outdoor parking areas shall be landscaped with trees, groundcover and shrubs to enhance the environmental and aesthetic quality of the city and to reduce the visual impact of parking areas from the public right-of-way and from adjoining properties and to promote the principles of low-impact development...
Sec. 1052. Buffer Zones.

(a) To preserve natural vegetation, encourage landscaping, improve property and community appearance, and aid in the welfare of residents by separating different uses, semi-opaque, landscaped vegetation will be installed and maintained to obscure views from adjacent properties.

(b) Nonresidential and multifamily uses adjacent to zoning lots in residential zoning districts or adjacent to residential uses in any zoning district must preserve and maintain buffer zones as provided in this section. The appropriate reviewing authority (commission or staff) may require the planting of trees or shrubs, and rock walls or fencing, within the buffer zone in order to assure it is semi-opaque. The buffer zone must be maintained and landscaped. The width of the buffer zone depends on the type of use:

<table>
<thead>
<tr>
<th>Class</th>
<th>Uses</th>
<th>Buffer zone width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Cemeteries, golf courses, leisure and ornamental parks, day care homes</td>
<td>Ten (10) feet</td>
</tr>
<tr>
<td>Class 2</td>
<td>Offices (three (3) stories or less), churches, schools, public facilities including playground, general recreation parks, community swimming pools and similar facilities, day care facilities, multifamily dwellings (four (4) or more units)</td>
<td>Twenty (20) feet</td>
</tr>
<tr>
<td>Class 3</td>
<td>Neighborhood commercial and service activities, including but not limited to retail operations, eating places without drive-in, banks without drive-up windows, convenience stores, offices (over 3 stories), multifamily housing</td>
<td>Thirty (30) feet</td>
</tr>
<tr>
<td>Class 4</td>
<td>Commercial activities with higher vehicle activities, including but not limited to motor vehicle repair and service stations, gasoline service stations, automobile laundry and self-service automobile washes, drive-in establishments, hotels, motels, shopping centers, recreation centers, light manufacturing activities, laboratories</td>
<td>Fifty (50) feet</td>
</tr>
<tr>
<td>Class 5</td>
<td>Industrial uses, motor vehicle wrecking yards, junk yards, vehicle sales</td>
<td>Eighty (80) feet</td>
</tr>
</tbody>
</table>
MEMORANDUM

To: Planning & Zoning Commission
From: William Fuentes & Samuel Volet
Date: January 27, 2015
Re: Renewable Energy Zoning: Solar & Wind

SUMMARY

The current regulations do not mention or address renewable energy. Hartford’s One City One Plan presents a future goal of promoting renewable energy for commercial and residential properties as well as achieving the goal of 100% clean energy for the city government by 2030.

In promoting renewable energy development, a major concern for developers is the risk of uncertainty. To address this uncertainty, Hartford’s Planning and Zoning Commission should create specifically tailored definitions and regulations in order to minimize ambiguity and confusion. Uncertainty created by the current regulations might discourage private investment and implementation of renewable energy systems, hampering Hartford’s renewable energy development.

There are several issues related to renewable energy systems that impact property owners and communities that would benefit from careful thought and zoning. Renewable energy systems can cause aesthetic concerns relating to placement, height, and overall appearance. Additionally, some of these renewable energy systems have health and safety concerns that must be considered. Finally, there are ecological concerns that must be taken into account, many of which are related to wind turbines, e.g., bat and bird deaths. Regarding wind energy, the most appropriate approach for Hartford is to require special permits for wind energy systems less than one (1) megawatt and prohibit larger wind energy system. For solar energy, the most appropriate approach for Hartford would be to consider a few common solar energy systems separately. Some of the visually less obtrusive solar energy systems should be considered an as-of-right accessory use in every zoned district and other more visually obtrusive solar energy systems should be limited only to certain zoned districts.

This memo will proceed in four parts:

(a) Current Treatment in Zoning Regulations
(b) Best Practices
(c) Most Appropriate Approach
(d) Specific Revisions

(A) CURRENT TREATMENT IN HARTFORD’S ZONING REGULATIONS

Currently, wind and solar energy systems are not discussed in the Hartford zoning regulations. The most analogous definition in the Hartford zoning regulations that could be applied to renewable energy systems would be “structure,” which the Hartford Planning and Zoning Commission defines as, “anything constructed or erected including a building, which requires permanent location on the ground or attachment to something having location.”16 Several energy systems could qualify as permanent structures as defined in the regulations but is ambiguous where

best practices provide specific definitions for these systems. Less certain is the categorization of rooftop solar and wind energy systems. However, it also limits installation to ten (10) percent of the roof area.\(^{17}\) Properly sized solar and wind systems may require greater area and an exception should be included within any proposed regulation.

Height and setback restrictions must also be considered for regulating wind and solar energy systems because these systems may both be considered aesthetically displeasing to some. Industrial zones have many characteristics that would make them ideal for locating wind energy systems—small, such as proximity to the city’s inhabitants and the fact that there is no height requirement per Sec. 182. The most analogous regulation to wind energy systems is Sec. 33 commercial radio and television towers. The setback on these structures requires a minimum of 1.5 feet for every foot of height.\(^{18}\) This would conceivably exclude all residential zoned districts from installation but many commercial, business, and industrial installations would also be excluded. Additionally, there are no setback exemptions for solar energy systems which, as you will see, are an integral part of promoting free standing solar energy on residential lots that do not have sufficient southerly roof access.

Finally, noise pollution is another consideration for the use of wind energy systems, because most wind energy systems create a low frequency noise that might disturb neighbors. The regulations do not currently consider noise pollution for most projects. However, in some cases, the owners of bars, stadiums, and concert establishments may have to submit a “noise mitigation plan” with their applications for such uses. Noise pollution must be considered in regulations if wind energy systems to be allowed and regulated in the city.

**(B) BEST PRACTICES**

There were two major considerations while researching how other municipalities have addressed the implementation of wind and solar renewable energy systems. First, we looked at examples of some of the APA’s recognized best practices in other municipalities. These examples, generally in the form of municipal zoning codes or regulations, provide some of the best crafted regulations in the nation for zoning requirements that address solar and wind generation. Second, we refined the quantity of the aforesaid APA recognized municipalities to select only those municipalities we considered most analogous with Hartford, so that we could adopt regulations that would best fit Hartford’s circumstances. In deciding which cities were most analogous to Hartford we considered the following: population, population density, and climatic and physical geographic characteristics indicative of a city in the Northeast.

By using some the APA’s examples of best practice for solar and wind energy zoning, and then refining those examples down to municipalities that would be most similar to Hartford, we can hopefully create a cohesive, thorough, and progressive set of regulations that will promote green energy generation, while conforming to the sustainability aspirations set forth in Hartford’s One City, One Plan. Additionally, because of the complexity and lot size requirements of larger renewable energy systems, we have chosen to focus only on non-utility grade wind and solar energy collection systems. We will not discuss zoning regulations for concentrated solar power energy generation, which are typically implemented for utility scale operations.

When reviewing our refined best practices list, several common regulatory schemes became evident. First and foremost, solar energy systems and wind energy systems should be treated separately, as the other municipalities we researched have done, because these two technologies are schematically very different. As such, wind energy systems should be clearly defined and so should

\(^{17}\) *Id.* § 8.

\(^{18}\) *Id.* § 2.
solar energy systems. Second, significant consideration must be given to the desire of the commission, the city, and its residents to support renewable energy systems. The support for renewable energy systems in our chosen best case examples range from highly supportive policies that are encouraged through potential incentives and widely accepting of most small scale systems to regulations that are more restrictive and consider issues such as visual appearance, zone and setback limitations more significantly. This is especially true regarding solar energy systems that currently have multiple methods of implementation. The term we have chosen to use for wind systems is “Wind Energy System” (WES). Similarly, we have chosen to title general solar systems as Solar Energy Systems (SES).

1. Wind

Freestanding wind energy systems require careful consideration because of their size, noise and general noticeability of the up to two hundred (200) feet height. As with any good regulations, it is important to include succinct definitions and a comprehensive set of rules that detail the requirements and exemptions to any potential installer.

(a) Important Definitions

Brown County, Minnesota provides an excellent definition for a wind energy system that also gives the installer as well as a reviewer a good idea of the structure as well as some of the accessory facilities that must be considered. Their zoning ordinance defines a “wind energy system” as:

[a]n electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to: power lines, transformers, substations, and meteorological towers that operate by converting the kinetic energy of wind into electrical energy. The energy may be used on site or distributed into the electrical grid.\(^\text{19}\)

This definition provides a great deal of flexibility for its implementation. Conversely, nearby Providence defines WES as “[a]n energy system operated by a public, private, or cooperative company for the generation, transmission, distribution, or processing of wind energy.”\(^\text{20}\). This definition would appear to limit wind energy to commercial enterprises and this is played out in the zoning. WESs are only allowed in industrial and riverfront zones within the city of Providence.

Hartford should adopt a similar definition for “wind turbine” such as the one used by Brown County, which states the following:

A wind turbine is any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind. Other definitions that are typically used relate to items such as accessory use structures, roof top turbines appurtenances, ice throw and shadow flicker which all must be considered in the limitations.

Brown County has further categorized WECs by size, stated in the following:

Large Wind Energy Conservation System (LWECS)– means any combination of WECS with a combined nameplate generating capacity of 5,000 kW or more (see Minnesota Statue 216F.01).

\(^{19}\) Brown County, Minn. Zoning Ordinance § 402 (2012).

\(^{20}\) Providence, R.I. Zoning Ordinance § 1204 (2014).

\(^{21}\) Brown County, Minn. Zoning Ordinance § 226 (2012).
Small Wind Energy Conservation System (SWECS) means any combination of WECS with a combined nameplate generating capacity less than 5,000 kW, but more than 2kW (see Minnesota Statute 216F.01). 22

Minneapolis has created an even more specific categorization for WECs, by defining “Wind energy conversion system, building mounted” as, “a wind energy conversion system located on a building.” Minneapolis has also defined “Wind energy conversion system height” as follows:

The height of a freestanding wind energy conversion system shall be measured as the distance from ground level to the highest point on the tower, including the vertical length of any extensions such as the rotor blade. The height of a building mounted wind energy conversion system shall be measured as the distance from the point where the base of the system is attached to the building or to the lowest point on the wind energy conversion system, whichever is closer to the ground, to the highest point on the wind energy conversion system, including the vertical length of any extensions such as the rotor blade. 23

(b) Permitting Considerations

There are several limitations that must be considered when regulating wind energy. The height of the structure or the height above a building or parapet must be considered. Additionally, setbacks are a major concern regarding freestanding wind turbines. With a proposed height allowance of two hundred (200) feet, the safety of adjacent property, structures and occupants must also be considered. Other important considerations are lighting, signage, and discontinued usage. Each of these building standards presents an individually unique issue, but collectively represents a common aesthetic concern for wind energy systems.

Height is considered in a few ways. First, the height of a freestanding wind energy system must be considered similar to Brown County, which states that, the total height of, “Micro and Small Wind Energy Conservation Systems (SWECS) shall have a total height of less than 200 feet.” Additionally, Hartford should consider the height of roof-mounted wind systems. Because we have agreed that restricting wind power to business, commercial and industrial uses, concern regarding height above a roof or ridgeline can follow a similar height limitation that will be discussed in the solar section of this paper. This requires that for every foot of height above a roof or parapet, the device must be placed one foot from the roof edge or parapet wall. This creates a 45° angle line of sight. This would also suggest that roof-mounted wind systems in this area are allowed only on nearly flat roofs. Further, Hartford should consider the city of Minneapolis’ regulations which have limited roof-mounted wind systems to fifteen (15) feet in height and to buildings greater than 4 stories, including those in residential areas.

Another important consideration is setbacks. The most reasonable practices require at a minimum one foot setback from any adjacent property line or street for every foot in height. This assures that in case of catastrophic structural failure, the turbine will fall only within the property line of the owner.

Lighting is another issue to consider. Because small freestanding wind energy systems can be as high as two hundred (200) feet tall there are Federal Aviation Administration requirements. It is discussed in the Minneapolis regulations which suggest a red light or similar type that does not impact migratory birds. It also prohibits incandescent lighting.

22 Id. §§ 95, 179.
23 Minneapolis, Minn. Ordinance § 535.700 (2014).
A final limitation to consider is signage. While strictly an aesthetic issue, the size of wind turbines should give them similar considerations and regulation as billboards. For this purpose, we have chosen to restrict signage for WECs entirely – no variances shall be allowed.

Included below is an abridged section of the Brown County application procedures for your review, which are specific to WES and should be used as a template to guide Hartford’s Planning and Zoning Commission in tailoring its own zoning application procedures:

(1) Applications for all WECs project(s) shall include: . . .

D) A description of the project that includes:
   1. Number of turbines
   2. Type of turbine
   3. Name plate generating capacity
   4. Total height of all wind turbines and means of connecting them to the electrical grid.
   5. Rotor diameter (RD)
   6. Engineer’s certification

E) A site layout for the proposed project that includes:
   1. The location of the project area boundaries (purchased and legal wind rights).
   2. Property lines
   3. Roads
   4. Location of all proposed and existing wind turbines
   5. Electrical wires and interconnection points with the electrical grid
   6. All other related structures

   NOTE: The site layout shall include all distances and be drawn to scale.

F) Documentation of land ownership or legal control of the property and current land use of the site and surrounding area.

G) Signed copy of the power purchase agreement or documentation that the power will be utilized on-site.

H) Location of all wetlands, scenic, and natural areas including bluffs within a one (1) mile radius of the proposed WECS. (A certified wetland delineation may be required as part of the application and is at the discretion of the Wetland Administrator or their designee.)

I) Location of all known communications towers within a five (5) mile radius of the proposed project.

J) Location of all known public or private airports or heliports within a five (5) mile radius of the proposed project.

K) Detailed decommissioning plan including how decommissioning costs will be covered.

L) Engineer’s Certification of the proposed WECS.  

2. Solar

(a) Important Definitions

Generally, “solar energy” should be defined as, radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.  Brown County, which has done an exemplary job with its solar energy zoning regulations, has defined “Solar Energy System” as follows:

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24 Brown County, Minn. Zoning Ordinance §§ 735.2(D)-(L) (2012).
[a] complete design or assembly consisting of a solar energy collector, an energy storage facility (where used), and components to the distribution of transformed energy (to the extent they cannot be used jointly with a conventional energy system). Brown County has also defined “solar collector” as, “[a] device, or combination of devices, structure, or part of a device or structure that transforms direct solar energy into thermal, chemical or electrical energy and that contributes significantly to a structure's energy supply.” This differs slightly than Minneapolis’ regulation that separately defines the “solar collection surface” as, “[a]ny part of a solar energy system that absorbs solar energy for use in the system's transformation process. The collector surface does not include frames, supports, and mounting hardware.” This is an important distinction if the Hartford Planning and Zoning Commission wants to regulate solar mounts and solar support structures separately from the photovoltaic cells.

Minneapolis has separated solar energy systems into three categories: “building-integrated”, “building-mounted”, and “freestanding”. This is an excellent idea. There should not be identical regulations for the three different designs used in collecting solar energy and, as such, they should have three separate definitions.

Minneapolis’ zoning regulations describe the three different solar energy systems as follows:

- “freestanding solar energy systems” – a solar energy system with a supporting framework that is placed on, or anchored in, the ground and that is independent of any building or other structure. See figure 1 in Appendix A.
- “building-mounted solar energy systems” – a solar energy system affixed to a principal or accessory building. See figure 2 in Appendix A.
- “building-integrated solar energy systems” – a solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. See figure 3 in Appendix A.

(b) Permitting Considerations

From our research of other municipalities we noticed that use, setbacks, height, area coverage, and aesthetics were all common concerns for solar zoning permitting regulations. Brown County states the permitted uses for both “solar energy systems” and “solar energy structures” in the following:

(1) Solar energy systems and solar structures shall be a permitted accessory use in all districts provided the system is in compliance with minimum lot requirements and setbacks.

(2) Solar energy systems and solar structures may be exempted from setback, height, and lot coverage restrictions in all districts by variance.

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27 Brown County, Minn., Zoning Ordinance § 181 (2012).
28 Minneapolis, Minn., Ordinance § 535.830 (2014).
29 Id. § 535.830.
30 Id.
31 Id.
32 Id.
33 Brown County, Minn., Zoning Ordinance § 182 (2012).
Minneapolis’ regulations state that solar energy systems shall be permitted in all zoning districts, subject to the zoning standard and including compliance with minimum yard requirements. Further, Minneapolis does not require screening of solar collection surfaces. Minneapolis has also created a “Solar” section in its zoning ordinance code that discusses that the application process for a residential solar energy system. According to Minneapolis’ regulations, whether ground mounted or building-mounted, solar energy systems should meet minimum accessory structure zoning setbacks allowed and the height of the structure these solar systems are located on cannot be taller than the maximum allowed height of a structures in that zoning district.34

Minneapolis’ zoning regulations impose the following limitations on “freestanding solar energy systems”:  
1) in residential and commercial districts, the area of the solar collector surface of freestanding solar energy systems can’t exceed five percent of the lot area; 2) no supporting framework for freestanding solar energy systems can include unfinished lumber; 3) within twelve months of the cessation of operations abandoned or unused freestanding solar energy systems must be removed; 4) systems that use reflectors to enhance energy production must minimize associated glare that affects adjacent or nearby properties.35

Minneapolis’ zoning regulations also limit the height of “building-mounted solar energy systems” as follows:

1) these systems cannot extend higher than three (3) feet above the ridge level of a roof on a structure with a pitched roof and cannot extend higher than ten (10) feet above the surface of the roof when installed on a flat roof.
2) solar collector surfaces and mounting devices for these systems shall be set back no less than one foot from the exterior perimeter of a roof for every one foot that the system extends above the parapet wall or roof surface, if no parapet wall exists, on which the system is mounted. Solar energy systems that extend less than three (3) feet above the roof surface shall be exempt from this provision.
3) systems that use reflectors to enhance energy production must minimize associated glare that affects adjacent or nearby properties.36

Another comparable municipality that has extensive solar zoning regulations is Rock Hill, South Carolina. See figure 6 for Rock Hill’s Zoning Ordinance table of permitted uses of “ground-mounted solar installations”, i.e., freestanding solar energy systems. Rock Hill has regulated ground-mounted solar installations separately for residential and commercial zones as follows:

(a) Residential  
1. Must be located to the rear of the principal structure and screened from view from public streets.
2. Must be as close to the ground as practicable and in no case higher than the principal structure.
3. The mounting framework must be neutral in color or screened from view from surrounding residential properties.

(b) Commercial/Institutional/Industrial

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35 Minneapolis, Minn. Ordinance § 535.840 (2014).
36 Id.
1. Every effort must be made to completely screen the devices from view from public streets. In instances where complete screening is not possible, the devices must be screened and/or located as to have a minimal visual impact as seen from public streets.
2. Must be as close to the ground as practicable and in no case higher than the principal structure.
3. The mounting framework must be neutral in color or screened from view from public streets.\textsuperscript{37}

The Rock Hill Zoning Ordinance has design standards for single-family detached dwellings in residential zones concerning “Roof Penetrations,” which states: solar installations, and other roof penetrations and equipment (except chimneys) shall be located on the rear elevations or otherwise configured to the degree practicable to have a minimal visual impact as seen from the street. Solar installations that are visible from the street must be either composed of building-integrated components that are not readily evident, or be designed and mounted to match the shape, proportions, and slope of the roof.\textsuperscript{38}

See figure 5 in exhibit A for examples unacceptable visible residential solar installations. The Rock Hill Zoning Ordinance similarly has Commercial and Institutional Design standards for single family detached dwellings concerning “Roof Penetrations and Equipment”, which states: solar installations, and other roof penetrations shall be located, to the degree practicable, on the rear elevations or screened with a parapet or screen wall having a three dimensional cornice treatment. The cornice of a parapet wall shall include a perpendicular projection a minimum of four inches from the parapet façade plane. This standard is intended to minimize visual impact as seen by the public.\textsuperscript{39}

Further, Rock Hill’s ordinance states that solar installations that are visible from the street by must be either building-integrated solar energy systems or designed and mounted to match the shape, proportions, and slope of the roof, or to serve as a feature of the building (such as awnings).\textsuperscript{40}

\textbf{(C) MOST APPROPRIATE APPROACH}

\textbf{1. Wind}

Regarding wind energy, the approach most appropriate for Hartford is to require special permits for wind energy systems less than one (1) megawatt and prohibit wind energy systems that generate more electricity or that exceed two hundred feet in height. As such, free standing wind energy systems should have an enhanced review permitting requirement and be allowed in P, I-1, and I-2 zone districts along the highway only. Roof-mounted wind energy systems should require basic review procedures and be allowed in zones RO-1, RO-2, RO-3, P, I-1, I-2, C-1, and B-1, B-2, B-3, B-4. They should also only be permitted in buildings four stories or greater. This, along with setback requirements will minimize the view from the street.

Additionally, for small wind energy systems there is a concern for the impact of structural failure (a turbine falling) as well as ice throw. For this, we have chosen a reasonable setback requirement that will protect adjacent properties and streets and necessarily restrict implementation to the properties best suited for this type of installation.

\textsuperscript{37} Rock Hill, S.C. Zoning Ordinance §§ 4-400(D)(19)(a),(b) (2014).
\textsuperscript{38} \textit{Id.} § 6-800(e).
\textsuperscript{39} \textit{Id.} § 6-800(C)(9)(e).
\textsuperscript{40} \textit{Id.}
2. Solar

Regarding solar energy, Hartford should create definitions similar to those mentioned above in part (c) of this memo for the following: solar energy, solar energy system (SES), solar energy collection surface, and five types of SESs: 1) large ground-mounted SES, 2) small ground-mounted SES, 3) parking lot canopy SES, 4) building-mounted SES, and 5) building-integrated SES. Parking lot canopy SES should be considered because they create a dual use for developed land (parking and energy creation), and it can also potentially double as a charging station for electric cars. Additionally, solar mounting equipment should also be defined to help reduce ambiguity. For an example of a solar canopy see figure 8 in exhibit A. If possible, Hartford’s Planning and Zoning Commission should use figures to help define these systems similar to the figures we have provided.

Hartford’s zoning regulations should also elaborate on the accessory use, setbacks, location, height, code compliance, and design standards for each design type. Special permitted uses for large ground-mounted SES and parking lot canopy SESs should be presented to and accepted by the Hartford Planning & Zoning Commission. The five types of SESs should be added to a table of permitted uses. Hartford’s zoning regulations should include as many figures as possible for aesthetically pertinent standards similar to Rock Hill’s zoning ordinance.

(D) SPECIFIC REVISIONS

Sec. 2. Definitions.

Building-integrated SES means a solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building.

Building-mounted SES means a solar energy system affixed to a principal or accessory building, as differentiated from a building-integrated solar energy system.

Ice throw means the effect of ice being shed from a wind turbine towards the ground and other structures below either through gravity or centrifugal force.

Large ground-mounted SES means a solar energy system with a supporting framework that is placed on, or anchored in, the ground and that is independent of any building or other structure. These systems are similar to small ground-mounted solar energy systems, however, they must exceed a generation capacity of one (1) megawatt and be used as a special permitted primary use.

Parking lot canopy SES means a canopy-style solar energy system with a supporting framework that must be placed on and anchored in a parking lot that is independent of any building or other structure. These systems are similar in design as small ground-mounted systems SESs, but have a much greater height ranging from eight (8) to fifteen (15) feet, so as to provide for parking underneath the system.

Photovoltaic cell means a specialized semiconductor diode that converts visible light into direct current and collectively comprise a photovoltaic module.

Photovoltaic module means a collection of photovoltaic cells sealed in an environmentally protective laminate.

Photovoltaic panels means a grouping of photovoltaic modules that produce electricity from sunlight. Typically a collection of Photovoltaic Panels will comprise a Solar Energy System.

Shadow flicker means the visible effect of moving shadows that are created by wind turbines.
Small ground-mounted solar energy system means a solar energy system with a supporting framework that is placed on, or anchored in, the ground and that is independent of any building or other structure. Garages, carports or similar structures that incorporate building-integrated or building-mounted solar energy systems shall not be classified as freestanding solar energy systems and shall instead be subject to regulations governing accessory structures. These systems must be an accessory use of the lots they sit upon and cannot exceed one (1) megawatt of electrical generation.

Solar mounting equipment means a piece of equipment or combination of pieces of equipment, structure, or part of a device or structure that helps secure a solar energy collection surface to either the ground or a structure.

Solar energy means radiant energy received from the sun that can be collected in the form of heat or light by a solar energy system.

Solar energy collection surface means any part of a solar energy system that absorbs solar energy for use in the system's transformation process. The collector surface does not include frames, supports, and mounting hardware.

Solar energy system (SES) means a complete design or assembly consisting of a solar energy collection surface, solar mounting equipment, an energy storage facility, and components to the distribution of transformed energy to the extent they cannot be used jointly with a conventional energy system.

Wind access corridor means any required area surrounding a small wind energy system that a certified engineer has identified as integral for optimal operation of a wind turbine.

Wind energy system means an electrical generating facility comprised of one or more wind turbines and accessory facilities that operate by converting the kinetic energy of wind into electrical energy. The energy may be used on site or distributed into the electrical grid.

Wind energy system accessory facilities means external facilities required to operate and utilize wind energy systems including but not limited to: power lines, transformers, and substations.

Wind energy system, large means wind energy systems that produce one (1) megawatt of electricity or greater.

Wind energy system, roof-mounted means wind energy systems that are attached to the roof of a building.

Wind energy system, small means wind energy systems that produce less than one (1) megawatt of electricity. These consist of wind turbines and must be mounted on the ground per manufacturer specifications.

Wind turbine means any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

Sec. 8. Permitted height, density, or bulk.

No structure shall be erected, enlarged, reconstructed or structurally altered to exceed the height limit, density provisions or bulk provisions established for the district in which the structure is located except as provided in section 40(g) (relating to nonconforming building or structures) and except that penthouses or roof structures for the housing of elevators, stairways, tanks, ventilating fans or similar equipment required to operate and maintain a building, and fire or parapet walls, skylights, towers, steeples, stage lofts and screens, flagpoles, chimneys, smokestacks, roof mounted wind energy systems, building-mounted SESs, individual domestic radio, television aerials and wireless masts, water tanks or similar structures may be erected above the height limits prescribed in these regulations. No such structure may be erected to exceed by more than fifteen (15) feet the
height limits of the district in which it is located; nor shall such structure have a total area greater than ten (10) percent of the roof area of the building; except that roof mounted wind energy systems and building-mounted SESs shall be exempt from this provision; nor shall such structure be used for any residential purpose or any commercial or industrial purpose other than a use incidental to the principal use of the building, except as provided in section 40(gi).
Sec. 854. Table of permitted uses.

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Sec. 990. Small wind energy systems.

(a) General provisions.
   (1) Small wind energy systems shall be permitted by special permit in the zoning districts shown in section 854, provided, however, that the site must be located within one thousand (1,000) feet of an interstate or the Connecticut River.
   (2) Small wind energy systems may be a principal use only in the industrial zoning districts; small wind energy systems must be an accessory use in all other zoning districts.
   (3) Small wind energy systems shall be installed only by professional installers certified to install wind turbines.
   (4) Signage or writing of any kind is not permitted on any portion wind turbines other than required manufacturer plates.

(b) Setbacks and height.
   (1) Setback and height requirements for small wind energy systems contained in this section shall supersede those of section 182.
   (2) Setback shall be a minimum of one and one-tenth (1.1) feet for every foot in height from all adjacent property and street lines. Setback shall also be required from existing utility, private and public rights of way.
   (3) Wind turbine height shall not exceed two hundred (200) feet and shall be measured from the ground to highest point of the blade arc.
   (4) Property owner shall be required to obtain required access across neighboring parcels to prevent future wind access interference. This provision shall not require the removal of any such interferences that exist or are under contract at the time of approval.

(c) Additional requirements.
   (1) Small wind energy systems shall provide lighting per Federal Aviation Administration regulations.
   (2) Lighting shall be red and may not be of the incandescent variety.
   (3) Inoperable turbines must be removed within twelve (12) months of last date of operation.

(d) Application requirements.
In addition to the enhanced review requirements contained in section 68, applicants for small wind energy systems shall provide the following information to the commission:
   (1) Number of turbines;
   (2) Type of turbine;
   (3) Name plate generating capacity;
   (4) Total height of all wind turbines and means of connecting them to the electrical grid;
   (5) Rotor diameter;
   (6) Engineer’s certification;
   (7) Documentation of land ownership or legal control of the property and current land use of the site and surrounding area;
   (8) Signed copy of the power purchase agreement or documentation that the power will be utilized on-site;
   (9) Location of all wetlands, scenic, and natural areas including bluffs within a one (1) mile radius of the proposed system;
   (10) Location of all known communications towers within a five (5) mile radius of the proposed project;
   (11) Location of all known public or private airports or heliports within a five (5) mile radius of the proposed project; and
(12) Detailed decommissioning plan including how decommissioning costs will be covered.

(c) If a dispute arises out of installation of either a wind energy system or the construction of adjacent structures, accessory structures, or vegetation within this provision, parties are encouraged to seek mediation pursuant to section 77 of these regulations.

Sec. 991. Roof mounted wind energy systems.

(a) General provisions.

(1) Roof-mounted wind energy systems shall be conditionally permitted in zones per section 854.

(2) A development proposed to have a roof mounted wind energy system or an application to establish a system shall provide an engineer’s certification as part of the building permit application.

(3) Roof mounted wind energy systems are only permitted on structures a minimum of four (4) stories tall or forty (40) feet.

(4) Residential or mixed residential/office uses in in any permitted zone must contain a minimum of twelve (12) tenant spaces.

(5) Net metering shall be allowed in all permitted installations.

(b) Setbacks, location and height.

(1) Roof mounted wind energy systems shall not exceed heights as required in section 8 (relating to permitted heights) to the highest point of the device or any attachment.

(2) Roof mounted wind energy systems must be set back from the roof or parapet wall one foot for every foot in height of the device above the roof or parapet wall.

(3) Roof mounted wind energy systems shall only be permitted on roofs with a slope of one inch per foot.

(c) Additional requirements.

(1) Inoperable turbines must be removed within twelve (12) months of the last date of operation.

(d) Application requirements.

In addition to the enhanced review requirements contained in section 68, applicants for roof-mounted energy systems shall provide the following information to the commission:

(1) Number of turbines;

(2) Type of turbine;

(3) Name plate generating capacity;

(4) Total height of all wind turbines and means of connecting them to the electrical grid;

(5) Rotor diameter;

(6) Engineer’s certification;

(7) Documentation of land ownership or legal control of the property and current land use of the site and surrounding area;

(8) Signed copy of the power purchase agreement or documentation that the power will be utilized on-site;

(9) Location of all wetlands, scenic, and natural areas including bluffs within a one (1) mile radius of the proposed system;

(10) Location of all known communications towers within a five (5) mile radius of the proposed project;

(11) Location of all known public or private airports or heliports within a five (5) mile radius of the proposed project; and

(12) Detailed decommissioning plan including how decommissioning costs will be covered.
Sec. 992. Building-integrated solar energy systems.

(a) Building-integrated SESs shall be allowed as an accessory use in the zoning districts shown in section 854, subject to the conditions in this section.

(b) Setbacks, location, design standards, and height.

(1) Building-integrated SESs (such as solar shingles) should be designed and mounted to match the shape, proportions, and slope of the roof.

(2) There are no restrictions on setbacks or area coverage for building-integrated SESs.

(3) These systems have no height requirements.

(4) Building-integrated SESs may be located on an accessory structure.

(5) A development proposed to have a building-mounted SES on the roof or attached to a structure, or an application to establish a system on an existing structure, shall provide a structural certification as part of the building permit application.

(6) The use of reflectors to enhance energy production must be granted a special permitted use by the commission.

Sec. 993. Building-mounted solar energy systems.

(a) Building-mounted SESs shall be allowed as an accessory use in the zoning districts shown in section 854, subject to the conditions in this section.

(b) Setbacks, location, design standards, and height.

(1) Building-mounted SESs shall be located in the rear-yard of a property in a historic residential lot.

(2) Building-mounted SESs should be located a minimum of five (5) feet from all property lines and other structures, except the structure on which it is mounted.

(3) For pitched roofs, these systems shall not exceed by more than three (3) feet the maximum height permitted in the zoning district in which it is located or shall not extend more than twelve (12) inches above the roofline or parapet of the structure upon which it is mounted, whichever is less.

(4) A building-mounted SES may be located on an accessory structure.

(5) A development proposed to have a building-mounted SES on the roof or attached to a structure, or an application to establish a system on an existing structure, shall provide a structural certification as part of the building permit application.

(6) Solar energy collection surfaces and solar mounting equipment for these systems shall be set back no less than one foot from the exterior perimeter of a roof for every one foot that the system extends above the parapet wall or roof surface, if no parapet wall exists, on which the system is mounted. Solar energy systems that extend less than three (3) feet above the roof surface shall be exempt from this provision.

Sec. 994. Small ground-mounted solar energy systems.

(a) Small ground-mounted SESs shall be allowed as accessory use in the zoning districts shown in section 854, subject to the conditions in this section.

(b) Only the surface area actually disturbed by a small ground-mounted SES shall count towards the calculation of maximum permitted lot coverage.

(c) Setbacks, location, design standards, and height.
A small ground-mounted SES shall not be located in the front yard between the principal structure(s) and the public right-of-way.

A small ground-mounted SES shall be located a minimum of five (5) feet from all property lines and other structures.

A small ground-mounted SES in any residential district shall not exceed the greater of one-half the footprint of the principal structure or six hundred (600) square feet, whichever is greater.

A small ground-mounted SES must be as close to the ground as practicable and in no case higher than the six (6) feet from the surface of the ground.

The solar mounting equipment for a small ground-mounted SES must be neutral in color or screened from view from surrounding residential properties.

The solar mounting equipment for a small ground-mounted SES cannot include any unfinished lumber.

Within twelve months (12) of the cessation of operations, abandoned or unused small ground-mounted SES must be removed.

Sec. 995. Parking lot canopy SES standards.

(a) Parking lot canopy SESs shall be allowed as specially permitted accessory use in the zoning districts shown in section 854.

(b) Only the surface area actually disturbed by a parking lot canopy SES shall count towards the calculation of maximum permitted lot coverage.

(c) Parking lot canopy SESs.

(1) Parking lot canopy SESs shall not be located in the front yard between the principal structure(s) and the public right-of-way.

(2) Parking lot canopy SESs shall only be allowed in parking lots.

(3) Parking lot canopy SESs shall be located a minimum of five (5) feet from all property lines and other structures.

(4) Parking lot canopy SESs shall not cover more than fifty (50) percent of a parking lot.

(5) Parking lot canopy SESs must be between eight (8) and twelve (12) feet high.

(c) In addition to the enhanced review requirements contained in section 68, applicants for parking lot canopy SES projects shall provide the following information to the commission:

(1) The total number of photovoltaic panels;

(2) The type of photovoltaic panels;

(3) The generating capacity of the SES;

(4) The total height of the SES and means of connecting the SES to the electrical grid;

(5) The total surface area of the SES;

(6) The surface area actually disturbed by the SES;

(7) The engineer's certification;

(8) The electrical wires and interconnection points with the electrical grid.
Appendix A: Figures

Figure 1. *Ground-mounted or freestanding* solar energy generation system.

Figure 2. *Building-mounted or rooftop* solar energy system on Colonial style house.

Figure 3. *Building-integrated* solar energy system, i.e., *solar shingles*.
Figure 4. Rock Hill’s examples of acceptable visible residential solar installations.

Figure 5. Rock Hill’s examples of unacceptable visible residential solar installations.
Figure 6. Rock Hill’s Zoning Ordinance table of permitted uses

(2) Allowable Yard Encroachments
Every part of every required yard shall be open and unobstructed from the ground to the sky except as provided in Table 5-200(C)(2), Allowable Yard Encroachments, or as otherwise permitted in this Ordinance:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movable awnings</td>
<td>Shall not project over three (3) feet into a required yard, provided that where the yard is less than five (5) feet in width, the projection shall not exceed one-half (1/2) of the width of the yard.</td>
</tr>
<tr>
<td>Chimneys, Fireplaces, Bay Windows, or Fireplaces</td>
<td>Shall not project more than two (2) feet into a required yard</td>
</tr>
<tr>
<td>Playground Equipment &amp; Non-Illuminated Athletic Fields</td>
<td>Shall not project more than five (5) feet into a required yard or more than three (3) feet into a required yard for a multiple family dwelling, hotel, or motel</td>
</tr>
<tr>
<td>Hoods, Canopies, Roof Overhangs, or Foundation Planters Or Maintents</td>
<td>Shall not project over three (3) feet into a required yard, and shall come no closer than one (1) foot to the lot line</td>
</tr>
<tr>
<td>Fences, Walls, and Hedges</td>
<td>Permitted in yards subject to the requirements of this section</td>
</tr>
<tr>
<td>Cornices, Eaves, and Gutters</td>
<td>Shall not project more than three (3) feet into a required yard, provided that where the yard is less than six (6) feet in width, the projection shall not exceed one-half (1/2) the width of the yard.</td>
</tr>
<tr>
<td>Ground-Mounted Solar Panels or Solar Thermal Collectors</td>
<td>Installations that are six (6) feet or less in height shall not project more than two (2) feet into a required yard, based on the required yards for accessory structures. Installations taller than six (6) feet may not encroach into required yards unless approved as a variance by the Zoning Board of Appeals.</td>
</tr>
</tbody>
</table>

Figure 7. Rock Hill’s Allowable Yard Encroachments
Figure 8. An example of a parking lot solar canopy system.
MEMORANDUM

To: Planning and Zoning Commission
From: Andrew Cascudo and Yandy Reyes
Date: January 27, 2015
Re: Draft Mediation and Informational Session Provisions for the Hartford Planning and Zoning Commission

SUMMARY

Mediation is a voluntary, consensus-based conflict prevention and resolution strategy involving interested parties and a mediator. The mediation process allows particular groups to consult with each other while being guided by a mediating party to arrive at an acceptable solution.

Mediation provisions have been used by other localities to facilitate development consistent with the comprehensive plan and the zoning regulations. Municipalities take different approaches to mediation both in the aggressiveness with which they encourage parties to participate in mediation and the most suitable timing.

Additionally, other municipalities have enacted mandatory “neighborhood meetings” or “informational sessions.” These are meetings which are a required part of an application before the zoning board and offer an opportunity for applicants and residents to discuss the application before the public hearing takes place.

It is recommended that the commission adopt standards for mediation that will allow applicants and residents to have a meaningful opportunity to coalesce around an application. In addition, it is recommended that the commission enact a mandatory “informational session” requirement before the public hearing at which the applicant and residents can discuss the application and voice their concerns. Lastly, it is recommended that the commission enact additional requirements to the contents of the hearing notice in light of the required “informational session.”

This memo will proceed in four parts:

(a) Current Treatment in Zoning Regulations
(b) Best Practices
(c) Most Appropriate Approach for Hartford
(d) Specific Revisions

(A) CURRENT TREATMENT OF IN THE CITY’S ZONING REGULATIONS

There are currently no mediation provisions in the regulations as amended on December 9, 2014.

(B) BEST PRACTICES

There are three key concepts that the commission should consider when enacting a mediation provision. First, staff should develop procedures for screening applications and identifying those that would benefit the most from mediation sessions early on the application phase. Second, the commission should encourage
mediation sessions to take place as early as possible. Finally, the commission should require that the notice issued to interested parties contain the applicant’s contact information and language encouraging the notice recipients to seek a mediation session with the applicant.

Vermont – Screening Applications for Mediation

Vermont has an effective application screening process with the aid of its court system. The Consensus Building Institute and Green Mountain Environmental Resolutions conducted an 18-month study to assess whether the screening increased the effectiveness of reaching settlement through mediation.\(^{41}\)

Generally, Vermont does mediation one of two ways, either the parties agree to mediation or the court orders mediation. That happens after the filing of an application or appeal, respectively. The study states that the timing is crucial, that is, effective mediation must start before a formal administrative or court hearing. Additionally the study places a high importance to the screener’s credibility and qualifications. In Vermont, the screeners were judges empowered to do so through the Act 250.\(^{42}\)

While there is no formula, the study indicates that the type of case helps to indicate if mediation would be helpful; for instance, permitting cases are better suited than enforcement cases and residential or commercial are better suited than industrial cases. Factors not important in considering if a case is suitable for mediation: whether the parties spoke prior or even tried to settle informally; whether the parties had future relationship interests (that is, parties cared about finding a solution not repairing or maintaining a relationship); the number of parties did not indicate a need or lack of need to mediate (two parties were as likely to need mediation as many parties).

In Hartford, the commission’s staff is best suited to do the screening because they have the credibility and qualifications to do so—the staff works within the organization approving or denying the applications. The commission’s staff already informally advises developers to seek agreement with the neighborhood revitalization zone groups, other neighborhood groups, and/or abutters during the pre-application stage. This staff is best equipped to screen applications for which applicants are ideal candidates for mediation.

Berkeley, California – Timing of Mediation and Use of Non-Profit Mediation Services

The city of Berkeley, California has codified a voluntary mediation process in its city ordinances. The ordinance states that a zoning officer may refer an applicant and affected residents to any mediation service "deemed acceptable by the Board."\(^ {43}\) Mediation can only begin after a complete application has been filed with the Zoning Adjustment Board and can take place either before or after a public hearing.

In addition, the ordinances lay out a twelve point set of "rules and expectations" of the mediation process.\(^ {44}\) These "rules" layout critical factors that parties should be aware of such as that mediation is voluntary, the

\(^{41}\) Patrick Field, Kate Harvey & Matt Strassberg, Integrating Mediation in Land Use Decision Making: A Study of Vermont, 22 Land Lines 14 (2010).
\(^{43}\) Berkeley, Calif., Ordinance §23B.16.010.
\(^{44}\) Berkeley, Calif., Ordinance §23B.16.020.
mediator must provide a final report of the outcome of the mediation process and all mediation must conclude within forty-five days.

Mediation participants in the city of Berkeley have the advantage of being able to rely on free mediation services provided by a non-profit community mediation services (SEEDS Community Resolution Center). In fact, the Berkeley Zoning Adjustment Board has a special partnership with the SEEDS Community Resolution Center and refers applicants to it as part of its zoning application instructions.

While New Haven has a similar non-profit mediation service (Community Mediation, Inc.), there are no comparable non-profit mediation centers serving the greater Hartford area.

**Tucson, Arizona – Mandatory Neighborhood Meeting**

The city of Tucson, Arizona’s Office of Planning and Development (“OPD”) has required that applicants hold a pre-application neighborhood meeting (also called an “informational session”) with property owners that would already be noticed as a result of the project application and any relevant neighborhood associations.45 Tucson makes this pre-application neighborhood meeting a requirement of an application so that the applicant cannot move his application forward until the pre-application neighborhood meeting has occurred.

The pre-application neighborhood meeting takes place after the applicant has had an opportunity to meet with the OPD and any other relevant city departments. Once the OPD staff have determined that the project plan as presented satisfies the city’s regulations the next step is for the applicant to meet with city residents.

The regulations require that the project applicant send a notice notifying that the project applicant will hold a neighborhood meeting at a specified time and place to all affected residents (this group is the same as the group of residents that would have to be noticed when the project application is filed), any affected neighborhood groups and any political subdivision such as a city council ward or district representative. The regulations require that the project applicant hold the neighborhood meeting within fifteen to sixty days of submittal of the application.

The notice serves not only to notify the affected residents of the forthcoming application but the neighborhood meeting allows project applicant to identify if there is any opposition to the project. If there is opposition by affected residents the neighborhood meeting provides a forum for residents to have a discussion with the project applicant and discuss their concerns and possible avenues for consensus on the project before the application is formally presented the OPD. In addition, the project applicant is required to provide a summary of the meeting along with the formal application; this summary (in conjunction with a copy of the actual notice) acts as proof that the meeting took place.

The benefit of the neighborhood meeting that it is not expensive, and it is not a lengthy process. Therefore, even unsophisticated applicants seeking inexpensive projects can still comply with the requirement. The neighborhood meeting requirement also dovetails with non-compulsory mediation by providing a basis for whether or not mediation should be sought; neighborhood meetings that are especially contentious may

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45 Tucson, Ariz., City Ordinance § 5.4.2.1
Indicate that the project would be served well by formal mediation. The neighborhood meeting is especially important in assisting inexperienced project applicants or developers that are unfamiliar with neighborhood trends or local politics. The neighborhood meeting also assists the OPD’s staff and voting members by outlining the level of potential opposition to the application before the application gets to the phase of a public hearing and negative comments are filed.

**(C) MOST APPROPRIATE APPROACH FOR HARTFORD**

While the absence of mediation provisions does not preclude group participation, it does not promote it and can lead to a scenario where the commission itself must play the role of mediator by providing conflicting parties with a forum to communicate their differences via the public hearing phase of an application. A formal mediation structure would promote the benefits arising from a mediation process by encouraging parties to come to an understanding early in the process. Doing so will yield several benefits: first, applicants will have more certainty that their application is supported by the community; second, residents will have a more meaningful and constructive voice in plan development; third, the application process will be smoother as conflicts resolution is removed from the public hearing and into a forum that can lead to well thought-out resolutions between applicants and residents; and fourth, the commission itself will have more confidence that an application has reached a satisfactory level of support by interested parties as it makes its final determination.

In addition, it is recommended that the commission enact a mandatory “informational session” that would create a requirement for the applicant make him or herself available for one hour during the two week period before the public hearing. The purpose of the informational session would be to allow residents to meet with the applicant, ask questions about the proposed application and discuss their concerns before the public hearing. Holding these informational sessions will give applicants a better sense of the level of opposition that they might face during the public hearing and will also serve as a way for residents to know more about the project being proposed before they comment at the public hearing.

Lastly, in conjunction with the required information session, the commission should enact additional notice requirements. At present time the notice that is published and that sent to abutting residents only contains the time and place of the public hearing; it is recommended that new notice requirements also include a statement of general purpose of the application, the applicant’s contact information and the date, time and location of the informational session.

**(D) SPECIFIC REVISIONS**

Sec. 2. Definitions

*Interested party* means an applicant seeking a land use approval, as well as any other individual or group having a substantive concern in the outcome of a given planning, zoning or other land use matter under the jurisdiction of the commission. The commission intends to interpret the term “interested party” broadly to include but not be limited to the residents receiving notice of a public hearing in

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46 Unlike the pre-application meeting required by the Tucson’s OPD discussed above, the “informational session” would take place after the application is filed but before the public hearing at a time when information about the application is readily available.
accordance with section 41(a)(3), the applicable NRZ for the effected site (if any) and any individual(s) who have submitted oral or written comments regarding the application at issue, except that the commission’s members and staff members shall not be deemed interested parties for the purposes of this article.

Mediation means a voluntary negotiating process in which parties in a dispute mutually select a neutral mediator to assist them in jointly exploring and settling their differences, culminating in a written agreement which the parties themselves create and consider acceptable.

Mediator means an individual admitted to practice law in the State of Connecticut, or a person who has been selected by agreement of all known interested parties to the dispute; or a person selected with the assistance of a reputable and neutral private alternate dispute resolution provider.

Voluntary mediation means a proceeding, initiated at the request of an interested party or the commission in which interested parties to a dispute or potential dispute pertaining to certain applications, may, at their discretion, and with the assistance of a neutral mediator, jointly seek to prevent or resolve differences and reach an agreement.

Sec. 41. Amendments to these regulations and public hearing requirements.

(a) Provided for; hearings; notice; applications.

(3) Notice; sign.

a. The commission shall publish every proposed change together with notice of such hearing in a newspaper having a general circulation in the city at least twice at intervals of not less than two (2) days, the first not more than fifteen (15) days, nor less than ten (10) days, and the last not less than two (2) days, before the date set for the hearing. Such notice shall include the time and place of such hearing, the general purpose of the application as well as contact information for the applicant and the date, time and location at which the applicant will hold an informational session in accordance with Section 68(b)(7). A copy of the application and maps and documents relating thereto shall be filed (i) in the office of the city clerk and (ii) in the office of the commission and be available for public inspection at least ten (10) days before such hearing.

Notice of [the time and place of such hearing] the time and place of such hearing, the general purpose of the application as well as contact information for the applicant and the date, time and location at which the applicant will hold an informational session in accordance with Section 68(b)(7) shall also be given by mail to the owners of all lots included within the area proposed to be changed and the owners of all lots within one hundred fifty (150) feet of the boundary of such area by the applicant. The notices shall be sent to the best obtainable addresses of such owners at least ten (10) days prior to the date of such hearing. Before the hearing on such application, the applicant shall file a certificate of mailing or equivalent with the commission affirming that said notice has been timely given. No errors made in the giving of such notices shall invalidate the proposed change.

Sec. 68. Application requirements.
(b) Enhanced review set.

7. A narrative describing the applicant’s a good faith effort to hold an informational session for one (1) hour between the hours of 8 a.m. and 8 p.m. at any reasonably accessible location within the city of Hartford. Information regarding the location and time of the informational session shall be included in the public notice issued in accordance with section 41(a)(3)a.

Sec. 77. Mediation.

(a) Intent.

It is the intent of the commission to provide a flexible framework for the voluntary submission of certain applications to a mediator for the purpose of resolving disputes and threatened disputes. By enactment of this article, the commission hopes to strongly encourage interested parties to explore options that could result in agreement on disputed issues and avoid litigation. It finds that the public good will be served by the submission of disputes to a neutral mediator, thereby aiding and encouraging the voluntary exchange of information and ideas among interested parties while also avoiding expensive and time-consuming litigation and unnecessary expenditure of the commission’s time and resources. For those and other reasons, the commission will view properly mediated agreements in a favorable light.

(b) Effects and limitations.

1. The commission’s staff members may use their judgment in recommending applicants to mediation using factors such as the type of application and the location of the project site. This commission believes that applications involving special permits, other than applications for projects in the B-1, I-1, or I-2 zoning districts and other than applications for buildings that exceed four stories or 48’ (whichever is less) in the B-3 or B-4 districts, are suitable candidates for mediation.

2. The outcome of a mediation proceeding undertaken pursuant to this article shall not be deemed to bind or otherwise limit the discretion of the commission in the matter being mediated.

(c) Authorization.

1. At any point in a project review process of an application, an interested party may appoint a mediator, with the consent of other interested parties therein, to work informally to address any and all issues relevant to the proposed application or other land use matters.

2. The mediator shall have no power to impose a settlement or bind the parties or the commission, or to make any recommendation, except to the interested parties participating in the mediation process. On a matter referred to mediation, the mediator shall notify all parties of interest that:
   a. The mediator has no duty to protect their interests or to provide them with information about their legal rights;
   b. A mediated settlement agreement may adversely affect their legal rights; and
   c. They should consult an attorney before entering into the mediated settlement agreement if they are uncertain of their rights.

3. Any settlement reached shall require approval by the commission, agencies and/or departments with jurisdiction to assure compliance with applicable provisions of law.

4. Notwithstanding anything contained herein to the contrary, the parties to a dispute referred to mediation are required to attend at least one (1) mediation session.
The use of mediation shall be voluntary and shall be determined in each case by the willingness of interested parties to participate, except for the requirement that the parties participate in one mediation session as set forth in subsection (4) above.

Any applicant actively seeking an approval by the commission who participates in mediation must consent to the suspension of relevant time limits for municipal review and approval on such terms as the applicant and the commission, agency or department with jurisdiction agree. The default suspension of relevant time limit shall be thirty (30) days.

In the event of a mediated agreement, such agreement shall be prepared in writing, signed by the respective interested parties, and submitted to the commission. It shall contain the following:

a. Name of the mediating party;
b. Summary of the issues/dispute;
c. Names of the interested parties and how/why are their interests involved;
d. Terms agreed upon/scope of the mediation;
e. Signature of interested parties and the mediating party; and
f. Affidavit verifying that no party was unduly influenced or compensated for their agreement.

The mediator is responsible for managing the mediation process. After attending at least one mediation session, any party may withdraw at any time upon written notice to the mediator. The mediator may terminate the mediation whenever deemed it appropriate, whence he will submit a concise written statement stating the reasoning of the decision.
MEMORANDUM

To: Planning & Zoning Commission
From: Ashkon Roozbehani & Liza Fletcher
Date: January 27, 2015
Re: Visual Blight: Temporary rental signs and communications facilities

SUMMARY

Sources of visual blight are regulated to reduce visual disturbances, enhance the aesthetic character of a community, and promote civic pride. This memorandum details our proposal to address two particular visual blight concerns in the Hartford community: Communication Facilities (“CFs”) and Temporary Rental Signs (“TRS”).

In many instances TRS have been seen as a source of visual blight due to their unappealing appearance and impact on the community, which is further exacerbated by their frequency throughout Hartford (particularly in residential zones where they appear most out of place). In many instances TRS are displayed year-round in residential communities. Our recommendations below represent a workable solution to improving the aesthetic character of Hartford by regulating TRS.

Communications facilities are pervasive in the Hartford community and serve important public and private purposes. Regulations must exist to minimize conflict with adjacent uses and the surrounding area, to assure the health and safety of the public, and ensure that their visual and operational effects will not contribute to the blighting of the surrounding neighborhood.

In this memorandum, we recommend a reorganization of provisions that address CFs as well as stricter regulation of TRS in order to improve the aesthetic character of the Hartford community. This memo will proceed in four parts:

(a) Current Treatment in Zoning Regulations
(b) Best Practices
(c) Most Appropriate Approach
(d) Specific Revisions

(A) CURRENT TREATMENT IN ZONING REGULATIONS

1. Temporary Rental Signs

The Hartford Zoning Regulations (hereafter the “Regulations”) currently permit TRS in all zoning districts as long as certain specified criteria are met. The regulations define temporary signs as “[A]

47 Hartford, Conn., Zoning Regulations (hereafter “Regulations”). Signs in general are treated in sections 1007-1013 of the Regulations, and temporary signage receives separate treatment in section 1015 [etc.].
sign that is intended to advertise community or civic projects, construction projects, real estate for sale or lease, or other special events on a temporary basis.\textsuperscript{48}

Section 1015 of the Regulations allows a specified list of temporary signs, subsection (b) of which discusses rental and sale signs in particular. Under the Regulations, TRS are not to be allowed unless they meet the following criteria: they are not illuminated, they do not extend over the sidewalk, and they meet the requirements as to size and the number of days which they are allowed to remain on the premises beyond the rental or sale of the units advertised, a number based on the district classification (for instance, TRS are permitted to remain displayed for fourteen (14) days in residential districts after a dwellings occupancy).\textsuperscript{49}

2. Communications Facilities

Currently, the Regulations do not comprehensively address the uses and dimensional requirements for all types of communications facilities in use today. While the Regulations do articulate standards regarding “transmitting and exchange stations,” “relay towers,” “relay towers” (microwave), “transmitting towers,” and “commercial radio towers,” it is not clear from the language what these terms encompass and whether they specifically include things such as communications antennas or structures used for the purposes of wireless communications.\textsuperscript{50}

Depending on the type of communication structure, Hartford has imposed varying permitted uses and conditions in the applicable districts. Under section 908 of the Regulations, transmitting and exchange stations, relay towers and similar structures are permitted uses in all residence-office districts and all but one residential district, subject to conditions. Dimensional conditions on the structures include minimum lot size (6,000 sq. ft.), total lot coverage (not more than thirty (30) percent of the lot), and setback requirements (must be set back a minimum distance of that equal to the height of the tower from any adjacent residential property). Additional specific conditions are also imposed; “transformers”\textsuperscript{51} are required to be locating within “buildings”\textsuperscript{52} and lines between “stations”\textsuperscript{53} and the street must be underground. The only

\begin{flushleft}
\textsuperscript{48} \textit{Id.} Signs are currently defined in the Regulations as a device, “used to advertise products, goods, services or otherwise promote the sale or rental of objects or identify objects for sale or for rent or the occupancy or use of any land, structure or building, including signs painted on windows and paper signs attached to windows.” \textit{Id.}
\end{flushleft}
way the current provision addresses the visual blight of such structures is by requiring “stations” to be “suitably screened from any adjacent residential property by a solid fence or planting screening” in order to provide year-round screening.\textsuperscript{54}

Section 33 of the Regulations also addresses towers and communication structures by imposing an additional series of setback requirements.\textsuperscript{55} Under this provision, such structures must be set back from all abutting streets and adjacent property a distance of not less than one and one-half (1-1/2) times the height of the structure.\textsuperscript{56}

\textbf{(B) BEST PRACTICES}

1. Temporary Rental Signs

This memo will now briefly survey the treatment of temporary signs in three Connecticut municipalities with population sizes and concentrations similar to those of Hartford - New Haven, Hamden and Bridgeport. Each of these municipalities restricts temporary sign usage in some way, however the degree of restriction and methodology implemented to accomplish the desire restriction differs among the municipalities, as discussed below.\textsuperscript{57}

New Haven, for instance, regulates temporary signs the same regardless of zoning district. The New Haven Zoning Ordinance thus permits temporary signs to be used to advertise the sale or rental of lots or buildings in every zoning district, as long as the signs utilized meet the several requirements. These requirements include that the sign not be illuminated, not exceed ten square feet, and that it be set back five (5) feet from the lot line.\textsuperscript{58}

In contrast, Hamden and Bridgeport have taken different approaches with regard to temporary signs in certain zoning districts. By way of example, in Hamden’s business districts, “temporary signs”\textsuperscript{59} are permitted to be placed in windows or on doors (as long as they do not exceed ten percent of such window or door space), and are permitted to remain posted for thirty (30) days.\textsuperscript{60} It is worth noting here that Hamden’s zoning regulations further specify that despite the

\textsuperscript{54} \textit{REGULATIONS} § 908 (2014).
\textsuperscript{55} \textit{REGULATIONS} § 33 (2014).
\textsuperscript{56} \textit{Id}.
\textsuperscript{57} It should be noted that municipalities with lower population sizes and densities than cities like Hartford have a tendency to allow larger TRS’ for longer periods of time. \textit{See}, \textit{e.g.}, COLCHESTER, CONN., ZONING REGULATIONS § 16.3.5 (2010).
\textsuperscript{58} NEW HAVEN, CONN., ZONING ORDINANCE, Art. 4, § 27 (2014).
\textsuperscript{59} Defined in Hamden’s Zoning Regulations as “A banner, pennant, poster, or advertising to be displayed for a short period of time”. \textit{HAMDEN, CONN., ZONING REGULATIONS} (hereafter “HAMDEN REGS.”) § 830 (2010).
\textsuperscript{60} HAMDEN REGS. § 550.2.8(a) (stating, “Signs temporarily attached to a window or door, announcing sales or special features are permitted, provided that they do not exceed 10% of the area of a window or door, and provided that they are in place for not more than 30 days.”).
abovementioned regulations, if a temporary sign is deemed a public nuisance, it may not be posted.\footnote{HAMDEN REGS. § 550.2.8(b) (stating, “Special advertising devices, including but not limited to plaques, banner, pennants and streamers, are permitted for a period of not more than 30 days after the opening of a new business, provided that they do not constitute a public nuisance.”).}

Bridgeport’s treatment of temporary signs in residential districts differs still from Hamden’s approach. Bridgeport’s zoning regulations specify that temporary signs near property that is not located in a residential zone are permitted as long as the sign does not exceed twenty-four (24) square feet and is removed within one (1) month from the cessation of the accompanying use (for which it was erected).\footnote{BRIDGEPORT, CONN., ZONING REGULATIONS (hereafter “BRIDGEPORT REGS.”) § 2 (2010).}

In Hamden’s residential districts, however, only a short list of permissible purposes exist for signs.\footnote{This list includes, in addition to those listed subsequently in the paragraph this footnote corresponds with, bulletin boards, signs for Special Permit Uses, and signs on churches, schools and non-profits on the premises. HAMDEN REGS. § 550.2.14.} “Name-plates,”\footnote{This term is undefined in the Hamden zoning regulations.} for instance, are allowed as long as they state only the name of the occupant, or the use of the premises, and do not exceed one and a half (1-1/2) square feet.\footnote{HAMDEN REGS. § 550.2.14(a).} In addition, “real estate signs”\footnote{While this term is not defined, Hamden’s zoning regulations specify “a real estate sign advertising the sale or lease of the premises on which the sign is displayed”. HAMDEN REGS. § 550.2.8.} are limited to six (6) square feet (set back by five (5) feet) and must only advertise the sale or lease of property on site.\footnote{HAMDEN REGS. § 550.2.8(e) (stating, “A real estate sign advertising the sale or lease of the premises on which such sign is displayed shall not exceed 6 square feet in total area and shall be set back from any street line at least 5 feet. When a property is sold or rented, this sign may be replaced by one temporary sign not exceeding 6 square feet in total area, noting the sale or rental. Such sign shall be removed upon occupancy of the land or structure, or within 90 days of the sale or lease, whichever is less.”). N.b. these restrictions on real estate signs apply in every zone.} The signs to which this regulation apply must be removed by the time of occupancy, or within ninety (90) days of sale, whichever is less.\footnote{Id.} As previously noted, Bridgeport does not permit temporary signs in residential zones.\footnote{BRIDGEPORT REGS. § 2.}

2. Communication Facilities

Two Connecticut municipalities that have addressed communication facilities within their regulations are Waterbury and New Haven:

**Waterbury**

Waterbury explicitly defines the term “wireless communications facility” within the “Permitted Uses” section of its zoning regulations. The definition includes all structures such as antennas, satellite dishes, towers, monopoles, and support structures which are used in the conjunction
with provision of wireless communication services. Wireless communications facilities are addressed under the category of “Industrial Uses;” their placement is permitted in the city’s Industrial Park, Limited Industrial, and General Industrial districts, subject to special permit approval.

The Waterbury Planning Commission has the authority to approve wireless communications facilities pursuant to a special permit. Waterbury’s regulations set out the conditions for granting zoning permits/special permits of wireless communications facilities. Different facilities are subject to varying limitations.

- For example, any building used for wireless communications is not to exceed twelve (12) feet in height and must be set back at least fifty (50) feet from any adjacent property that is used/zoned for residential use.
- On the other hand, towers that are used for wireless communications must not exceed one hundred and sixty (160) feet in height and towers must be located a distance equivalent to the height of the tower away from the nearest residential property (measured from the base of the tower to the property line).
- Additionally, any antennas that are mounted on top of a building/structure must not exceed fifteen (15) feet in height. In certain districts, antennas may only be mounted on top of existing structures.

Importantly, Waterbury also sets out standards to be shown in an application for a zoning/special permit for wireless communication structures. The applicant must present, among other things, a map of the proposed location and radius of the structure, a plan detailing where and how any antennas will be affixed to buildings/structures, and a justification statement that details why the particular proposed site/structure was selected and why any feasible alternatives were not selected.

New Haven

New Haven takes a very similar approach to Waterbury by regulating “wireless communications” under Article V: Business and Industrial Districts. The terms explicitly defined within the provision include “wireless communication sites,” which encompasses all equipment and structures involved in the receipt or transmission of telecommunications or radio signals, “towers,” and “antennas.” Because the various structures serve different purposes in the context of wireless communication, they are separately defined and afforded specific conditions on their use. Unlike Waterbury, New Haven allows the placement of antennas on existing

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71 Id.
72 Id.
73 Id.
74 Id.
75 Id.
76 Id.
77 Id.
78 New Haven, Conn., Zoning Ordinance § 49 (2014).
79 Id.
structures in all business and industrial districts as-of-right.\textsuperscript{80} New Haven only requires special permits when developers seek to construct new towers to mount antennas on in these districts.\textsuperscript{81}

New Haven, like Waterbury, also sets out factors for the city plan commission to take into account when approving special permits for wireless communication sites.\textsuperscript{82} However, New Haven’s list of factors is much more extensive, and many factors touch on the applicant’s opportunities to mitigate the visual blight of wireless communication sites.\textsuperscript{83} For example, the applicant must show the screening potential of existing vegetation, preservation of existing view corridors, and the potential for the preservation of the existing character of the site.\textsuperscript{84}

A common principle that runs implicitly throughout the regulations of both municipalities is the encouragement of the use of existing structures to host wireless communication equipment.\textsuperscript{85} The requirements of building of new antennas, satellites, etc. on existing structures are more lenient than the building of a new tower to accommodate such devices. For example in New Haven, the commission reserves the right to deny any application for a permit to construct a new tower if the applicant has not made a good faith effort to mount an antenna to an existing structure. By doing so, the city has made an effort to reduce the visual blight associated with the implementation of wireless communications.

**(C) MOST APPROPRIATE APPROACH**

Our proposal to modify the zoning regulations that pertain to communication facilities and temporary signage was developed by synthesizing the best practices of other municipalities (discussed above in section B) with the aesthetic preferences of the city, as described in the City Plan.\textsuperscript{86}

1. Temporary Rental Signs

We propose that the use of TRS be restricted in residential districts. Our proposal permits landowners to advertise rental availability while reducing visual blight in Hartford’s residential communities. We acknowledge the business interests rental property owners have in advertising rental availability, and therefore, we have determined not to completely prohibit temporary signage in residential districts, as Bridgeport has. Instead, in residential districts, facilities meeting the criteria described in proposed section 1015, below, are permitted only one

\begin{itemize}
\item \textsuperscript{80} Id.
\item \textsuperscript{81} Id.
\item \textsuperscript{82} Id.
\item \textsuperscript{83} Id.
\item \textsuperscript{84} Id.
\item \textsuperscript{85} See, NEW HAVEN, CONN., ZONING ORDINANCE § 49 (2014); WATERBURY, CONN., ZONING REGULATIONS § 10.20 (2011).
\item \textsuperscript{86} See ONE CITY ONE PLAN, §§ 14-26 & 14-27 (2010) (describing the goal of maintaining and improving Hartford’s neighborhoods by maintaining the community facade and strictly enforcing blight-related ordinances).
\end{itemize}
small eight and one-half by 11 (8.5” x 11”) window sign. These proposed amendments regulate temporary sign presence more thoroughly in residential districts, and circumvent some of the provisions in the current Regulations that were attributed to an inability to enforce. Our proposed approach thus balances the economic interests of local property owners with considerations for the aesthetic character of the community as a whole.

2. Communications Facilities

Noting the similarities between the approaches taken by New Haven and Waterbury, Hartford should adopt some of the common themes that run throughout both sets of regulations in its treatment of communication facilities.

Hartford should allow communications antennas, towers, and equipment to be installed in all its commercial, business and industrial districts, subject to special permit approval. Unlike New Haven, Hartford should not allow the construction of any communications towers or antennas without special permit approval. A list of factors for the zoning commission to take into account when approving these permits should be articulated within the section.

Importantly, Hartford should considering mimicking New Haven by clearly defining relevant terms. Technical yet potentially ambiguous terms such as “communications towers,” “communications antennas,” and “other communications equipment” should be defined clearly so that they can be distinguished from the equipment Hartford currently regulates under § 908 (transmitting/exchange stations, relay towers, etc.).

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87 See, Section (D)(1) of this paper, Sec. 1015.
88 See, REGULATIONS § 908 (2014).
(d) **Specific Revisions**

1. **Signs**

**Sec. 1007. Zoning districts where signs are permitted.**

Signs shall be permitted in the zoning districts as set forth below and subject to the conditions of this section: …

(e) Temporary signs are permitted in each and every zoning district, subject to the limitations of section 1015(b) of these regulations; …

**Sec. 1008. Size of signs.**

Signs shall be subject to the following limitations of size: …

(g) R-1, R-2, R-3, R-4, R-5, R-6, R-7 and R-8 districts: …

(7) Temporary signs, other than “For Sale” or “For Rent” signs, exempting signs for which section 1015(b) of these regulations shall apply, shall have a maximum area of twelve (12) square feet, and shall be limited to one (1) sign per lot, …

**Sec. 1009. Location and height of signs.**

Signs shall be subject to the following limitations on location and height: …

(b) No business sign, including its structure, shall be attached to any building used in whole for residential purposes or situated on any property used in whole for residential purposes. This provision does not apply to section 1015(b) of these regulations. …

**Sec. 1015. Temporary signage.**

The following temporary signs are permitted in all districts: …

(b) Rental or sale signs, freestanding or attached to the premises, pertaining to the prospective rental or sale of the property on which they are located; provided that such signs shall not be illuminated, nor extend over the sidewalk, and further provided that:

(1) In the residential and residence-office districts, such signs shall not exceed a total area of four (4) six (6) square feet and shall be removed within fourteen (14) days of the real estate closing or lease transaction.

(2) In the residential zoning districts, rental signs for entities that have more than one dwelling on the relevant lot, which are either currently being advertised for rental, occupied by tenants, or readied for future rental purposes, and for which leases are available for periods of less than six (6) months, shall not exceed one eight and one-half (8-1/2) by eleven (11) inch area, and shall be displayed on a first floor door or window.

(32) In the B-3, and B-4 districts, such signs shall not exceed a total area of twelve (12) square feet, and shall be removed within thirty (30) days of the real estate closing or lease transaction.
In the B-1, B-2, C-1, I-1, and I-2 districts, such signs shall not exceed a total area of thirty-two (32) square feet, and shall be removed within thirty (30) days of the real estate closing or lease transaction. …

2. Communications Facilities

Sec. 2. Definitions.

Communications means radio, telecommunications, telegraph, telephone, and television.

Communications antenna means a device – such as a panel, a satellite dish, a microwave dish, or a single pole device known as a whip – used to collect or transmit communications signals, which is installed on a structure, instead of being integrated into a communications tower, and which serves end users not located on the zoning lot on which the communications antenna is located.

Communications broadcasting studio means a facility used to create or produce radio, television, or other electronic media programming. A communications broadcasting studio may include studios, stages, editing facilities, production facilities, and equipment for program distribution and receipt via satellite, wire, or fiber optic cable. A communications broadcasting studio does not include a communications tower on the same zoning lot.

Communications facility means one or all of the following located jointly on one (1) zoning lot: communications antenna, communications tower, and other communication equipment.

Communications tower means a structure, which is not a building, which is intended to support equipment used to transmit or receive communications signals. Examples of such structures include monopoles and lattice construction steel structures.

Essential services means the erection, construction, alteration, or maintenance by public utilities or municipal departments of underground, surface or overhead gas, communications, electrical, steam, fuel or water transmission or distribution systems, collection, supply or disposal systems, including towers, poles, wires, mains, drains, sewers, pipes, conduits, cables, fire alarm and police call boxes, traffic signals, hydrants and similar accessories in connection therewith but not including structures which are necessary for the furnishing of adequate service by such utilities or municipal departments for the general public health, safety, convenience and welfare.

Other communications equipment means the equipment and structures involved in receiving, exchanging, or transmitting communications signals from the signal source and transmitting those signals to another wireless site, another communications source or receiver, or to a central switching computer which connects the mobile unit with land-based telephone lines, other than antennas or communications towers. Examples of such structures include transmitting stations and exchange stations.
*Site justification statement* means a statement describing the evaluation process for the siting of a communications facility, including: a detailed explanation of existing locations within a network (if applicable); any alternatives considered (including alternatives for an antenna instead of a tower); and the reasons for rejecting the alternatives in favor of the proposal contained in the application.
Sec. 8. Permitted height, density, or bulk.

No structure shall be erected, enlarged, reconstructed or structurally altered to exceed the height limit, density provisions or bulk provisions established for the district in which the structure is located except as provided in section 40(j)(g) (relating to the restoration of nonconforming building or structures) and except that penthouses or roof structures for the housing of elevators, stairways, tanks, ventilating fans or similar equipment required to operate and maintain a building, and fire or parapet walls, skylights, towers, steeples, stage lofts and screens, flagpoles, chimneys, smokestacks, and antennas individual domestic radio, television aerials and wireless masts serving the zoning lot on which they are located; communications antennas that receive a special permit pursuant to section 908; and water tanks or similar structures may be erected above the height limits prescribed in these regulations. No such structure may be erected to exceed by more than fifteen (15) feet the height limits of the district in which it is located; nor shall such structure have a total area greater than ten (10) percent of the roof area of the building; nor shall such structure be used for any residential purpose or any commercial or industrial purpose other than a use incidental to the principal use of the building, except as provided in section 40(j)(g).

Sec. 33. Reserved. Commercial radio and television towers.

Commercial radio, television and other transmitting or relay antenna towers, when permitted, shall sit back from all abutting streets and adjacent property a distance of not less than one and one half (1-1/2) times the height of the tower.
Sec. 854. Table of Permitted Uses.

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Other Transportation, Communication & Utilities
Sec. 908. **Communications facilities.** Transmitting and exchange stations, relay towers, etc.

Transmitting and exchange stations, relay towers, etc., are permitted uses in the RO-1, RO-2, RO-3, R-1, R-2, R-3, R-4, R-5, R-6 and R-7 districts, subject to the following conditions:

(a) There shall be a minimum lot area of six thousand (6,000) square feet;
(b) The total lot coverage of all buildings and structures shall be not more than thirty (30) percent of the area of the lot;
(c) All buildings and structures shall be set back from every adjacent property a minimum distance of twenty-five (25) feet and, in addition, not closer than fifty (50) feet from any adjacent residential property, except that any tower shall be set back a minimum distance of that equal to the height of the tower from any adjacent residential property;
(d) Transformers shall be located within buildings;
(e) The lines between the station and the street shall be underground;
(f) The station shall be suitably screened from any adjacent residential property by a solid fence or planting screen which shall provide year-round screening.

(a) Communications facilities shall be permitted as of right or pursuant to a special permit, as shown in section 854.

(b) The following conditions shall apply to all communications facilities:

(1) **Minimum lot area.** There shall be a minimum lot area of six thousand (6,000) square feet for any communications facility.
(2) **Fencing.** Unless the antenna is mounted on an existing structure, a permanent, secure fence with a maximum height of eight (8) feet shall be required around the tower and other equipment.
(3) **Landscaping.** To soften the appearance of a wireless site and screen as much of the tower as possible, ground landscaping shall be required on the perimeter of the fencing required in the preceding section, and in addition the applicant shall comply with the provisions of article X of these regulations.
(4) All communications facilities shall be designed and constructed to all applicable standards of the American National Standards Institute, ANSI/EIA-222-E manual, as amended, where applicable.

(c) The following criteria shall be applied to any special permit for communications towers and communications antennas:

(1) **Communications tower.** If a new communications tower is constructed, the tower shall not exceed the height of one hundred and sixty (160) feet, shall be a monopole, and shall be located a minimum of one hundred and sixty (160) feet or the height of the tower from the property line of the nearest residential property, measured from the base of tower to the property line. This tower setback provision may be altered based upon engineering documentation prepared by a professional engineer demonstrating to the Planning and Zoning Commission’s satisfaction that the proposed design shall prevent collapse of the tower off of the site.
(2) Communications antenna. If the equipment is located on an existing building or structure other than a tower, the area of the equipment building and other equipment structures shall not occupy more than twenty-five (25) percent of the roof area. Setbacks from roof edge shall be ten (10) feet, or ten (10) percent of roof depth (measured from edge facing public street to opposite edge of roof), whichever is greater. The applicant shall demonstrate that the antenna is the minimum height required to function satisfactorily. No antenna that is taller than this minimum height shall be approved. Antennas shall in no case exceed a height of fifteen (15) feet above the highest part of the structure or building.

(d) In all instances where a special permit is required for a communications facility, the commission shall evaluate the special permit application using the criteria in section 172 and the following criteria:

1. Availability of suitable structures for antenna mounting;
2. Efficiency of proposed site, including any topographic or other barriers to transmission;
3. Screening potential of existing or proposed vegetation, structures and topographic features;
4. Compatibility with adjacent land uses, provided that the commission shall not look favorably on sites proximate to single family zoning districts;
5. Least number of sites to serve desired area;
6. Proposals to mitigate possible visual impact, including the preservation of view corridors and vistas;
7. Potential for preservation of preexisting character of site;
8. Minimal impact on residential areas surrounding commercial, business or industrial zoned sites; and
9. Accessibility of roads, electric power, land based telephone lines or microwave link capability, other utilities required for the proper functioning of the communication facility.

The commission may deny an application to construct a new communications antenna if it is determined that the applicant has not made a good faith effort to mount the communications antenna on an existing structure. In addition, the commission shall give consideration to the site selection criteria for communications facilities as follows:

1. On existing buildings, communications towers, and smokestacks.
2. In locations where the existing topography, vegetation, buildings or other structures provide the greatest amount of screening.
3. In locations that mitigate the visual and operational effects that contribute to blighting or deterioration of the surrounding neighborhood.
4. In locations that do not mitigate such visual and operational effects.

(e) Application requirements. All applications for communications facilities shall be filed with the City of Hartford and concurrently with any Connecticut Siting Council filing, if applicable. In addition to any requirements in section 68, the application for a communication facility shall include:
(1) A map showing the extent of planned coverage within the city;
(2) Approved locations of the applicant’s other communications facilities in the city;
(3) The location and service area of the proposed communications facility;
(4) A site justification statement;
(5) If a proposed communications tower exceeds one-hundred sixty (160) feet in height or is within twenty thousand (20,000) feet of any airport, proof is required that the applicant has filed a notice of proposed construction with the Federal Aviation Administration; and
(6) A soil report complying with Appendix I: Geotechnical Investigations, ANSI/EIA-222-E manual standards, as amended, shall be submitted to verify the design specifications of the foundation for the tower and anchors for the guy wires, if used.

Notwithstanding anything to the contrary in section 68, if the communications antenna is to be mounted on an existing structure and all associated equipment is contained within the structure or on its roof, a full site plan shall not be required.