SUSTAINABLE LAND USE CODE PROJECT

Capitol Region Council of Governments

MODEL LAND USE REGULATIONS

2014

In Association with:
Shipman & Goodwin
Seth Harry and Associates

CLARION

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Chapel Hill, NC 27516
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MODEL REGULATIONS: ALTERNATIVE ENERGY
February 2013

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Introduction

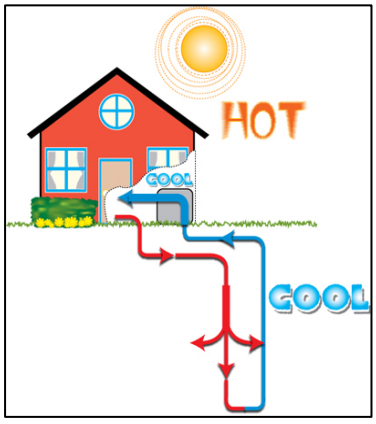
Residential solar panels

Alternative energy sources such as wind, sun, geothermal, and biofuels are becoming more viable sources for power as technology advances. In the U.S. only about 12 percent of energy is generated from renewable sources, and only about 0.2 percent from solar.[1] Some experts believe these percentages will increase rapidly as solar energy system costs decrease and the price of fossil fuels rises--to the extent that solar energy may be on par with the cost of energy from fossil fuels by 2015 and cheaper by 2025. Awareness and interest in these issues have also increased as funding and incentives for energy conservation, and alternative energy projects have become more readily available to local governments, businesses, and homeowners.

Below some of the alternative energy sources with the greatest potential in the Capitol Region are summarized.[2]

The CNC Software facility in Tolland uses free-standing solar panel arrays to generate electricity. The facility also uses geothermal systems for heating.

- Solar hot water systems are appealing because they are technically simple and tend to be less expensive than other types of renewable energy systems for most applications. The most cost-effective application of solar hot water systems in Connecticut is for domestic hot water heating, particularly if it displaces electric water heating. While the capital cost of installing a residential solar hot water system is higher than that of installing a conventional water heater, the fuel savings can pay back the cost of the system in approximately 6 to 10 years, with federal and state incentives. A typical residential solar hot water system supplies about 70 percent of a home's hot water, saving 7.7 barrels of oil per year, and avoiding the production of almost 3.5 tons of carbon dioxide. The average commercial solar hot water system supplies about 109 MMBtu (210,000 gallons) of useful hot water, saving about 800 gallons of fuel oil per year and eliminating the production of almost 10 tons of carbon dioxide. Solar electric systems for residential energy supply also have potential in Connecticut in specific locations.



Ground source heat pump

- Geothermal systems such as ground source heat pumps draw upon the relatively constant temperature (~50-55° F) of the soil or ground water deep beneath the earth's surface to efficiently heat buildings during colder months and cool buildings during warmer months. Because the heat pump transfers heat from one location to another (like an air conditioner), most of the heat delivered is "free" and does not have to be supplied by fossil fuels or electric energy. Energy savings for a typical home geothermal heating/cooling system typically range from 30 percent to 70 percent, with the geothermal system being most attractive

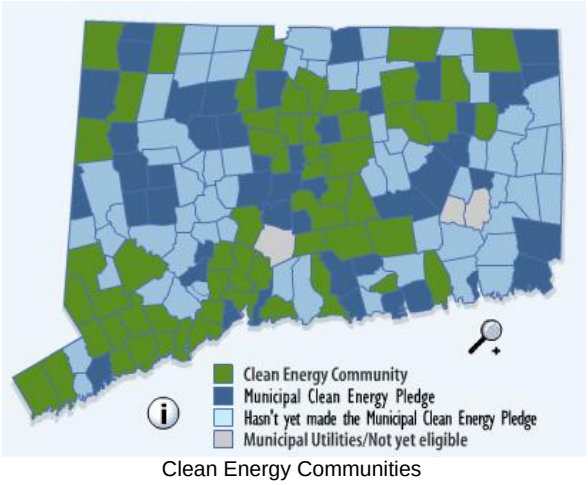
[1] U.S. Energy Information Administration / *Monthly Energy Review June 2012*.
[2] Information from Clean Energy Finance and Investment Authority. http://www.ctcleanenergy.com

compared to electric resistance heating.

Small wind system

- Wind turbines or windmills convert kinetic energy from the wind into mechanical power that can then be converted into electricity. New technology has improved their efficiency and thus reduced their cost and size. Although there are few sites in the region suitable for large-scale wind energy systems, there are more location-specific opportunities for use of small wind systems.
- District heating with combined heat and power (CHP) (also known as cogeneration) involve electric generation systems that recover waste heat byproduct and deliver both the electrical and thermal energy to the host site. The Connecticut Academy of Science and Engineering (CASE) examined the potential for district heating and cooling and combined heat and power (CHP), as well as waste heat applications. The initial findings from its study indicate that large commercial CHP and district heating and cooling systems in Connecticut have the potential to reduce carbon dioxide by up to 8.1 million metric tons.

Connecticut has been one of the leaders in addressing energy conservation (including recycling) and the use of alternative energy sources. The state adopted Renewable Portfolio Standards (RPS) that call for renewable energy sources to produce 16 percent of the electric generation provided to Connecticut consumers by 2012, increasing to 19.5 percent by 2015 and 27 percent by 2020. The Connecticut Global Warming Solutions Act of 2008 (GWSA) requires the state to reduce greenhouse gases to 10 percent below 1990 levels by 2020 and to 80 percent below 2001 levels by 2050. A number of state programs address energy conservation and alternative energy systems. The Clean Energy Finance and Investment Authority (CEFIA), offers a number of financial assistance programs for alternative energy systems, including: the Connecticut Clean Energy Communities program (which allows municipalities agreeing to assess energy use in municipal facilities to earn free clean energy systems to meet energy reduction targets those facilities); Solarize Connecticut (a pilot program using education, marketing, and pricing incentives to encourage use of residential solar photovoltaic systems); grants to residents for the purchase of solar hot water and photovoltaic systems; a program to create incentives for the use of ground source heat pumps for residential and commercial space and water heating; and help in financing equipment for energy generating projects using on-site anaerobic digestion (OAD) and combined heat & power (CHP).[3]



Clean Energy Communities

In addition, the Connecticut Energy Efficiency Fund (CEEF), adminisitered by major utility companies in the state, supports a number of energy efficiency programs. It has a rebate program for small photovoltaic solar systems and is creating a similar rebate program for small wind energy systems.[4]

Municipalities within the Capitol Region have incorporated a number of provisions into their land use regulations that address alternative energy systems. Several expressly allow small wind energy systems

[3] See Clean Energy Finance and Investment Authority. http://www.ctcleanenergy.com.
[4] See Connecticut Energy Efficiency Fund. http://ctsavesenergy.org/.

in multiple zoning districts (e.g., Avon, Ellington, Farmington, Simsbury, Windsor). Enfield recently adopted detailed, modern standards for the installation of solar energy systems. A few include solar access among those aspects required to be considered when laying out subdivision streets and lots (e.g., Ellington, Manchester). Windsor goes a step further in providing the incentive of increased lot coverage limits for developments in industrial zones that use geothermal or solar energy. Hartford has provisions in its zoning regulations addressing district heating and cooling facilities.

KEY TOPICS:

- Solar collection systems
- Small wind energy systems
- Ground source heat pumps
- District heating and cooling

SCALE-UP OPTIONS MENU

- Solar access provions
- Solar-ready homes
- Alternative energy incentives

However, many jurisdictions in the region do not address alternative energy systems in their land use regulations, although some do process applications using existing general accessory use standards. Others reportedly review applications informally on an ad hoc basis. Several recent national studies have established that the lack of clear local zoning standards for alternative energy systems creates uncertainty for installers and constitutes a major stumbling block to increased use of such systems. Moreover, variable and sometimes contradictory regulations among local governments in a region also has been documented as another significant hindrance.

Based on the potential of specific alternative energy sources and the priorities indicated by the project municipalities, we have drafted land use regulations to accommodate and promote the installation of solar, wind, geothermal, and district energy systems. In several sections, we have set forth what are called “scale-up options” that represent additional regulatory or incentive provisions a local government might want to consider.

Model Code Provisions for Alternative Energy

1.1. ALTERNATIVE ENERGY SYSTEMS--GENERAL

1.1.1. PURPOSES

The purposes of these provisions relating to alternative energy systems are to:

A. Promote the use of wind, solar, ground source heat pumps and other alternative energy systems;

B. Provide opportunities for homeowners to save fuel costs;

C. Encourage single-family residential subdivision design that allows the orientation of structures to maximize solar access;

D. Encourage orientation of single-family dwellings on solar-oriented lots to take maximum advantage of solar access;

E. Promote street design that supports solar access;

F. Ensure that site elements do not excessively shade potential solar system locations;

G. Preserve access to wind for small wind energy systems;

H. Establish standards to encourage the use of ground source heat pumps; and

I. Ensure that alternative energy system are safe and compatible with surrounding developments.

1.1.2. DEFINITIONS

Note: Relevant definitions are set forth in each subsection that follows. These definitions should be included in the definition section of the local land use regulations.

1.2. SOLAR COLLECTION SYSTEM

Solar collection systems are solar panels mounted on roofs and walls as accessory uses. Solar arrays are collection of smaller solar units that work together as a single system. This section and the next provide standards for solar collectors as an accessory use and solar arrays as both a by-right permited accessory use and as a limited primary use. Some local ordinances collectively address both freestanding solar devices (solar arrays) as well as building-mounted solar panels, applying the same standards. Since freestanding ground-mounted solar arrays are becoming more common, we have included them as a separate use type for discussion. We have organized collectors and arrays under separate headings and drafted the definitions to reflect a clear distinction between the two types of facilities and their potentially different impacts.

1.2.1. DEFINITION: SOLAR COLLECTION SYSTEM, SMALL

A "solar collection system, small" shall mean a roof-mounted, wall-mounted panel, or other solar energy device other than a solar array with a rated capacity of up to 10 kilowatts.[5] The primary purpose of a small solar collection system is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating on-site; however, any excess energy output may be delivered to a power grid to offset the cost of energy on-site.

Solar collection system

1.2.2. STANDARDS

All small solar collection systems shall comply with the following requirements. If there is any conflict between the provisions of this section and any other requirements of the zoning or subdivision regulations, the provisions of this section shall take precedence.

A. Accessory Use

Small solar collection systems shall be allowed as a permitted accessory use in every zone district. However, small solar collection systems are not subject to the dimensional requirements of the accessory land use and development provisions in any zone district or other section of these regulations, to the extent they conflict with this section.

B. Setbacks, Location, and Height

1. A solar collection system shall be located a minimum of five feet from all property lines and other structures, except the structure on which it is mounted.
2. A solar collection system shall not exceed by more than three feet the maximum height permitted in the zoning district in which it is located or shall not extend more than 12 inches above the roofline or parapet of the structure upon which it is mounted, whichever is less.[6]
3. A solar collection system may be located on an accessory structure.
4. A development proposed to have a solar collection system located 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.

[5] The average size of a grid-connected residential solar system is currently six kilowatts and has been on an upward trend for a decade. We have established the standard in these model regulations at 10 kilowatts to reflect what is commonly recognized as the dividing line between small residential systems and larger systems, as well as to account for estimated increases in size over the next few years. Each local government will need to adjust this measurement in the future as residential systems become more efficient.

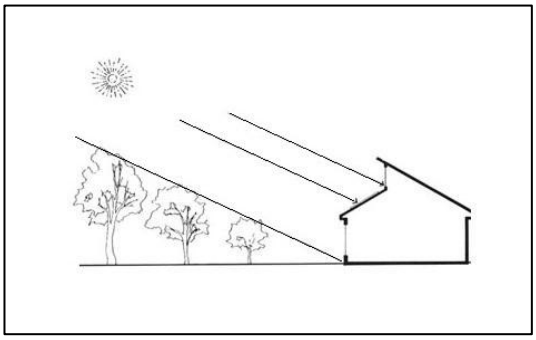
[6] Some communities require flush-mounted panels, but this can compromise function depending on the roof orientation and angle.

C. Code Compliance

Solar collection systems shall comply with all applicable state building and electrical codes.

D. Solar Access Preservation

No vegetation or site features such as tall fences shall be planted, installed, or constructed on any lot in a new subdivision subject to this section that would block solar access to the south wall of a dwelling unit in the subdivision or would block sunlight 50 percent or more of the time on any day of the year from the south facing roof of the dwelling. This provision shall not apply to the planting of vegetation or trees on any existing lot and shall not be interpreted to require the cutting down of existing trees or removal of existing vegetation.[7]



Sun access to south facing roof

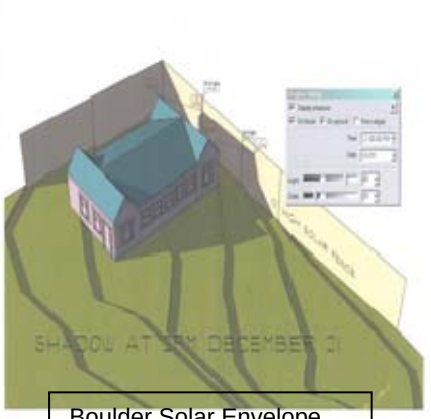
E. Off-Street Parking and Loading Requirements

None.

[7] This provision can be enforced like many local landscaping provisions and can be enforced through typical zoning enforcement measures, most likely as identified on a complaint basis. See also Footnote 8 herein.

Scale-Up Option—Solar Access Protection

The solar access provision set forth in Section 1.2.2.C is minimal and applies only to lots in new subdivisions, not to existing lots. Protecting solar access is important to ensuring the viability of solar power. Communities that are serious about promoting solar energy approach this in a variety of ways, including: 1) requiring solar users to negotiate necessary solar access with neighboring property owners; 2) establishing basic standards that prevent the construction of structures or planting of vegetation on adjacent property that would block the sun; and 3) establish a formal system to protect "solar access" and "solar access rights," administered by the local government, and requires applicants to apply for a solar access permit. For example, Teton County, Wyoming, has had such a process in place since 1982 that establishes parameters for such permits. Boulder, Colorado, has a detailed system that creates a protective solar envelope for every single-family dwelling unit and requires an analysis of any development that may impinge on that solar envelope (link to Boulder, Colorado, http://joomla.ci.boulder.co.us/files/PDS/codes/solrshad.pdf). In many communities, solar access is required to be available from 9:00 a.m. through 3:00 p.m. on December 21st, the day of the year with the longest shadows. The provision in this draft is written slightly less stringently, allowing some sunlight to be blocked by the neighbors provided sunlight is available at least 50% of the time on any day. For a detailed discussion of solar access laws in the United States with suggested model ordinance standards, see Kettles, A Comprehensive Review of Solar Access Laws in the United States (2008). http://www.solarabcs.org/about/publications/reports/solar-access/pdfs/Solaraccess-full.pdf. See also the California Solar Shade Control Act, Cal. Pub. Res. Code 25980-25986, which offers protection for solar collection systems from shading by trees and other structures.



Boulder Solar Envelope

1.3. SOLAR ARRAY

1.3.1. DEFINITION: SOLAR ARRAY

A "solar array" shall mean a free-standing, ground-mounted system consisting of a linked series of photovoltaic modules, the primary purpose of which is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating on-site. However, excess energy output may be delivered to a power grid to offset the cost of energy on-site. Solar arrays may be permitted as principal uses in the (e.g., industrial, office, large-lot residential) zone districts.

Residential solar array

1.3.2. STANDARDS

All solar arrays shall comply with the following requirements. If there is any conflict between the provisions of this section and any other requirements of the zoning or subdivision regulations the provisions of this section shall take precedence.

A. Use Classification

Solar arrays shall be treated as accessory uses in the following zone districts: (for example, insert residential and neighborhood-scale commercial districts). However, solar arrays are not subject to the dimensional requirements of the accessory land use and development provisions in any zone district or other section to the extent they conflict with this section. Solar arrays in the (insert districts) may be principal uses and as principal uses shall be processed according the procedures set forth in Section (insert applicable process such as special permit or site plan review process).

B. Residential Solar Arrays

1. A solar array serving a residential use shall not exceed a capacity of ten kilowatts per dwelling unit on the property.
2. A solar array shall not be located in the front yard between the principal structure(s) and the public right-of-way.
3. A solar array shall be located a minimum of five feet from all property lines and other structures.
4. An accessory solar array in any residential district shall not exceed the greater of one-half the footprint of the principal structure or 600 square feet, whichever is greater.
5. A residential solar array shall not exceed six feet in height

C. Non-Residential Solar Arrays

1. A solar array serving a non-residential use or mixed-use development shall exceed a capacity of one megawatt (MW).[8]
2. A solar array shall not be located in the front yard between the principal structure(s) and the public right-of-way, except in industrial districts.
3. A solar array shall be located a minimum of five feet from all property lines and other structures.
4. The size of accessory solar arrays in mixed-use and non-residential districts shall not exceed one-half of the footprint of the principal structure.
5. There shall be no size limit on solar arrays as a primary use on a site in any (insert appropriate zone district) district. However, the maximum lot coverage of any solar array shall not exceed 80 percent.
6. A non-residential solar array shall not exceed 20 feet in height.

[8] One megawatt is a unit for measuring power that is equivalent to one million watts. One MW is approximately equal to the power generated by 10 auto engines.

D. Code Compliance

Solar arrays shall comply with all applicable state building and electrical codes.

E. Solar Access Preservation

A property owner who has installed or intends to install a solar array shall be responsible for negotiating with other property owners in the vicinity for any necessary solar access preservation and shall record the restriction with the _____ (add appropriate agency or official).

F. Off-Street Parking and Loading Requirements

None.

1.4. SOLAR LOTS AND STRUCTURES

1.4.1. SOLAR-ORIENTED SUBDIVISIONS AND SINGLE FAMILY DWELLING UNITS

Solar-oriented subdivision and solar-oriented single family dwelling units are designed to obtain help maximize passive solar benefits. Solar-oriented design can produce savings in heating and cooling costs that range between 10 and 40 percent.[9]

A. Applicability

1. **Subdivisions of 10 or More Lots**

   The requirements of this section shall apply to subdivisions (including resubdivision) with 10 or more single family, single family attached, or two family residential lots.

2. **Subdivision of Fewer than 10 Lots**

   Subdivision of fewer than 10 lots shall meet the solar-oriented residential lots requirement of Section 1.4.1.C.1 to the maximum extent practicable[10] given zoning requirements, site location and topography, and available access. Where solar-oriented lots are not practicable, solar-oriented homes may still be provided.

B. Definition: Solar-Oriented Lot

A "solar-oriented lot" shall mean:

1. A lot with a front line oriented to within 30 degrees of a true east-west line. When the lot line abutting a street is curved, the "front lot line" shall mean

[9] Conn. Gen. Stat. Section 8-25b requires: "…any person submitting a plan for a subdivision to the [planning] commission under subsection (a) of this section to demonstrate to the commission that such person has considered, in developing the plan, using passive solar energy techniques which would not significantly increase the cost of the housing to the buyer, after tax credits, subsidies and exemptions. As used in this subsection and section 8-2, passive solar energy techniques mean site design techniques which maximize solar heat gain, minimize heat loss and provide thermal storage within a building during the heating season and minimize heat gain and provide for natural ventilation during the cooling season. The site design techniques shall include, but not be limited to: (1) House orientation; (2) street and lot layout; (3) vegetation; (4) natural and man-made topographical features; and (5) protection of solar access within the development." This section helps to implement the requirements of Section 8-25b.

[10] Maximum extent practicable is defined as: "under the circumstances, reasonable efforts have been undertaken to comply with the regulation, that the costs of compliance clearly outweigh the potential benefits to the public or would unreasonably burden the proposed project, and reasonable steps have been undertaken to minimize any potential harm or adverse impacts resulting from noncompliance with the regulation."

the straight line connecting ends of the curve. For a flag lot, the "front lot line" shall mean the lot line that is most parallel to the closest street, excluding the pole portion of the flag lot, or

2. A lot, when a straight line is drawn from a point midway between the side lot lines at the required front yard setback to a point midway between the side lot lines at the required rear yard setback, is oriented to within 30 degrees of true north along such line, or

3. A corner lot with a south lot line oriented to within 30 degrees of a true east-west line, where the south lot line adjoins a public street or permanently reserved open space and the abutting street right-of-way or open space has a minimum north-south dimension of at least 50 feet. For purposes of this definition, "permanently preserved open space' shall include, without limitation, parks, cemeteries, golf courses and similar outdoor recreation areas, drainage ditches and ponds, irrigation ditches and reservoirs, lakes, ponds, wetlands, open spaces reserved for use of residents of the development, and other similar permanent open space.

C. Standards

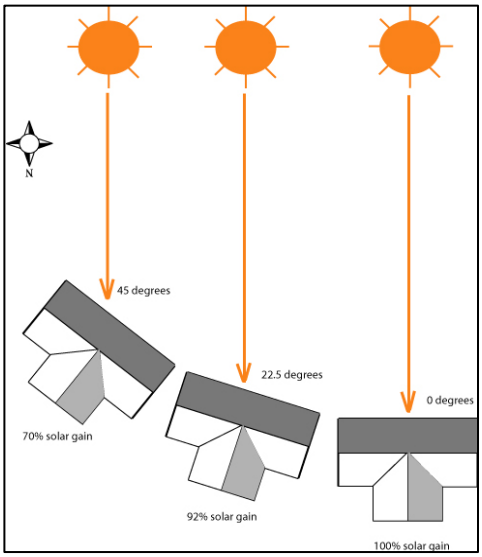
All developments with single-family lots subject to this section shall comply with the following requirements:

1. **Solar-Oriented Residential Lots**

   At least 25 percent of lots less than 15,000 square feet upon which single-family dwelling units are planned for construction shall conform to the definition of "solar-oriented lot" in order to preserve the potential for usage of solar energy systems.

2. **House Orientation**

   The long axis of all dwelling units on solar-oriented lots shall be oriented so that the long axis faces within 25 degrees of true south.



Preferred house orientation to maximize solar gain

3. **Street Layout**

   Where topographic, environmental, soil conditions, and existing street configurations permit, as determined by the _____ (insert name of local government), the predominant pattern of new streets in subdivisions subject to this section shall be laid out within 30 degrees of east-west orientation.

4. **Site Features**

   No vegetation or site features such as tall fences shall be planted, installed, or constructed on any lot in a new subdivision subject to this section that would block solar access to the south wall of a dwelling unit in the subdivision or would block sunlight 50 percent or more of the time on any

day of the year from the south facing roof of the dwelling. This provision shall not apply to the planting of vegetation or trees on any existing lot and shall not be interpreted to require the cutting down of existing trees or removal of existing vegetation.

5. **Modifications**

Where existing street and development patterns or unusual topographic, environmental, soil, and similar conditions exist that, as determined by the _____ (insert name of appropriate local official), make compliance with these provisions either physically or economically infeasible, the (insert name of appropriate local official) may modify the standards in this section. However, the modifications shall be the minimum necessary and shall maintain overall solar access in the subdivision.

Scale-Up Option—Solar-Ready Houses

An increasing number of communities such as Tucson, AZ, are requiring developers and home builders to build all or a percentage of the units in a project to be solar-ready. A "solar-ready" dwelling unit is a new home constructed with upgraded structural, mechanical, electrical, and plumbing systems that are capable of providing either solar hot-water heating or solar electric power. Initial studies show that these homes can command a higher initial sales price for the builder, hold higher resale value for the buyer, and can significantly lower energy bills. A solar-ready house typically costs only $300-500 more at the outset, the cost of which can be spread out over a 15-30 year mortgage period. To install wiring and pipes for a solar system after initial construction can cost from $2,000-5,000 and more depending on the structure ad size of the solar collection system.

1.4.2. SOLAR-READY DWELLING UNITS

A. Applicability

The requirements of this section shall apply to all new single family, single family attached and two family dwellings.

B. Definitions

1. **Solar-Ready Residential Dwelling**

A "solar-ready residential dwelling" shall mean a home that is equipped with upgraded plumbing, electric, roofing, and other systems to accommodate future installation and use of a solar energy system that provides either solar hot-water heating, solar electric power, or both.

2. **Solar Energy System**

A "solar energy system" shall mean a system including solar panels and related equipment, pipes, and wiring that converts sunlight to heat or electricity.

3. **Solar Hot-Water System**

A "solar hot-water system" shall mean a domestic hot water heating system consisting of solar energy collection equipment (typically roof-mounted panels), heat transfer through a heat exchanger, and hot water

storage.

4. **Solar Electric System**

A "solar electric system" shall mean a solar photovoltaic system that converts solar energy to electricity and consists of solar energy collection equipment (typically roof- or ground-mounted panels) and an inverter that changes DC to AC current or storage batteries. Such systems usually have a capacity of 2kW to 5kW.

C. Standards

1. **Requirement for Solar-Ready Dwelling Units**

All new single family, single family attached, and two family dwellings shall either come equipped with fully functioning solar hot-water and solar electric systems or shall include a method acceptable to the (insert name of local government) to allow for later installation of such systems.

2. **Solar Hot-Water Systems**

The builder shall provide for future installation of a solar hot-water system by:

a. Installing two labeled insulated pipes and a suitable sized conduit (for two pairs of monitoring and control wires) that run from the proposed water heater area through the roof and are capped, or installing a labeled sleeve or conduit of sufficient size to accommodate the two insulated pipes and wires. This option shall be available only if the sleeve or conduit can be run from the water heater area to the roof without bends or angles.

b. Specifying in construction plans the interior location of components such as a hot water heater or storage tank;

c. Providing extra plumbing valves and fittings on any installed hot water heater to accommodate a solar hot-water system;

d. Providing an electrical outlet at the planned solar hot water tank location; and

e. If a roof is the specified location for future installation of solar panels, structural support to accommodate such panels.

3. **Solar Electric (Photovoltaic) Systems**

The builder shall provide for future installation of a solar electric system by:

a. Submitting a site plan identifying a suitable location on site (e.g., on the roof or in a yard) in terms of size and orientation for the solar photovoltaic panels.

b. Specifying in construction plans a minimum area of four square feet suitable for the location of necessary equipment (e.g., inverters, meters, disconnect);

c. If a roof is the specified location for future installation, provide a roof

with a pitch, orientation, and structural support to accommodate the solar photovoltaic panels; and

d. Installing necessary labeled reserved electrical service and wiring for the solar electric system in the specified location.

1.5. SMALL WIND ENERGY SYSTEMS[11]

Small wind energy systems produce a limited amount of energy and are typically a single tower with a turbine designed for a single industrial, commercial, or residential use. These are not commercial wind energy systems that typically have much larger towers (300+ feet) and multiple turbines grouped as a "wind farm."

1.5.1. DEFINITION: SMALL WIND ENERGY SYSTEM

A "small wind energy system" shall mean a wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics that has a rated capacity of not more than 100 kilowatts (kW) and that is intended primarily to reduce on-site consumption of utility power.

1.5.2. STANDARDS

All small wind energy systems shall comply with the following requirements. If there is any conflict between the provisions of this section and any other requirements of the zoning, site plan, and subdivision ordinances, the provisions of this section shall take precedence. Specifically, small wind energy systems are not subject to the height or dimensional requirements of the accessory land use and development provisions in any zone district or other section of these regulations, to the extent they conflict with this section.

Small wind energy system

A. Setback

The base of the tower shall be set back from all property lines, public right-of-ways, and public utility lines a distance equal to the total extended height (e.g., if on a roof, roof height + tower height) plus five feet. A tower may be allowed closer to a property line than its total extended height if the abutting property owner(s) grants written permission and the installation poses no interference with public utility lines or public road and rail right-of-ways. Guy wires and other support devices shall be setback at least five feet from all property lines.

[11] This section is based codes Clarion has drafted recently for communities such as Anchorage, Alaska, and Laramie, Wyoming, national research we have conducted on other recent local codes, and a model code prepared by the American Wind Energy Association.

B. Tower Height[12]

Option 1: Where the total extended height meets the sound (Section 1.5.2.C) and setback (Section 1.5.2.A) requirements of this section, there shall be no specific height limitation, except as imposed by Federal Aviation Administration (FAA) regulations per subsection J, below.

Option 2: The maximum height of any small wind energy system shall be the maximum height allowed in the zone district plus 50 feet.

C. Noise

Noise produced by the turbine under normal operating conditions, as measured at the property line of any adjacent property improved with a dwelling unit at the time of the issuance of the zoning certificate, shall not exceed 55 dBA for any period of time or shall comply with applicable state standards, whichever are more restrictive . The 55 dBA sound level may be exceeded during short-term events beyond the owner's control such as utility outages and/or severe wind storms.

D. Appearance, Color, and Finish[13]

The turbine and tower shall remain painted or finished in the color that was originally applied by the manufacturer. Bright, luminescent, or neon colors as determined by the (insert name of local government) are prohibited

E. Clearance[14]

The blade tip or vane of any small wind energy system shall have a minimum ground clearance of 15 feet as measured at the lowest point of the arc of the blades.

F. Signage Prohibited

All signs on a wind generator, tower, building, or other structure associated with a small wind energy system visible from any public road, other than the manufacturer's or installer's identification, appropriate warning signs, or owner identification, shall be prohibited.

G. Lighting

No illumination of the turbine or tower shall be allowed unless required by the FAA.

H. Access[15]

Any climbing foot pegs or rungs below 12 feet of a freestanding tower shall be removed to prevent unauthorized climbing. For lattice or guyed towers, sheets of

[12] The language in Option 1 allows for maximum flexibility. On small lots, setbacks required in Section 1.5.2.A effectively limit height. However, other communities have opted to impose specific height limitations. For example, the Washington County, Maryland, ordinance specifies that, "Small Wind Energy Systems attached to any building shall not exceed the permitted height for principle structures within the zoning district." Laramie, Wyoming, has tentatively approved a 75-foot height limit for small wind systems. The downside of imposing such restrictions is that the height limitations may reduce the effectiveness of the systems due to the inability to clear surrounding obstacles to wind flows. Most small wind systems are manufactured so that they do not exceed a total height of 120 feet. To be effective, turbines must be at least 25 to 35 feet above all surrounding obstacles such as trees and buildings within 300 feet and ideally twice that height above a potential obstacle.

[13] Some communities specify matte neutral colors (such as gray or white), which blend into a range of sky colors/conditions.

[14] Not all communities regulate clearance on private property. Some limit clearance regulations to public access areas.

[15] We do not recommend special fencing regulations, because fencing is not as effective or attractive as the suggested method to limit unauthorized access.

metal or wood or similar barriers shall be fastened to the bottom tower section such that it cannot readily be climbed.

I. Requirement for Engineered Drawings

Building permit applications for small wind energy systems shall be accompanied by standard drawings of the wind turbine structure and stamped engineered drawings of the tower, base, footings, and/or foundation as provided by the manufacturer.

J. Compliance with FAA Regulations

No small wind energy system shall be constructed, altered, or maintained so as to project above any of the imaginary airspace surfaces described in FAR Part 77 of the FAA guidance on airspace protection.

K. Compliance with Municipal Code

Small wind energy systems and all associated components shall comply with all applicable state building and electrical codes.

L. Utility Notification

No small wind energy system shall be installed until evidence has been submitted to the (insert name of local government) that the relevant electric utility company has been informed of the customer's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

M. Abandonment

If a wind turbine is inoperable for six consecutive months the owner shall be notified that they must, within six months of receiving the notice, restore their system to operating condition. If the owner(s) fails to restore their system to operating condition within the six-month time frame, then the owner shall be required, at his or her expense, to remove the wind turbine from the tower for safety reasons. If the owner(s) fails to remove the wind turbine from the tower, the (insert name of local government) may pursue legal action to have the wind generator removed at the owner's expense.

N. Off-Street Parking and Loading Requirements

None.

Scale-Up Option--Incentives

Because alternative energy systems sometimes have higher up-front costs or involve technology that a developer may be unfamiliar with or be untested in the local market, many communities provide incentives to encourage their use. For example, Windsor provides an incentive of increased lot coverage limits for developments in industrial zones that use geothermal or solar energy. Many communities such as Asheville, NC, waive building permit and plan review fees for alternative energy systems or provide accelerated plan reviews. Others such as Portsmouth, VA, and Biloxi, MS, provide a variety of density, lot coverage, and other bonuses for developments that include alternative energy sources. One of the most important incentives the local governments in the region could offer would be to have consistent regional solar energy system permitting requirements as has been

done by Pima County, AZ, and its constituent municipalities, thereby eliminating confusing, overlapping, and contradictory regulatory requirements.

1.6. GROUND SOURCE HEAT PUMP SYSTEM

Ground source heat pump systems use the constant temperature of the earth to move heat into or out of a home or business.

1.6.1. DEFINITIONS

A. Geothermal Boreholes

A hole drilled or bored into the earth into which piping is inserted for use a closed vertical loop geothermal system.

B. Ground Source Heat Pump System

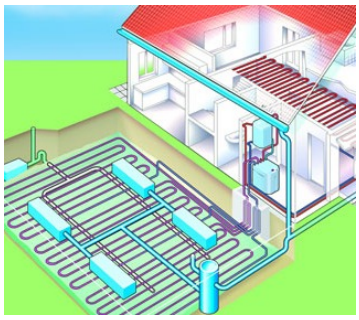
A system that uses the relatively constant temperature of the earth or a body of water to provide heating in the winter and cooling in the summer. System components include open or closed loops of pipe, coils or plates; a fluid that absorbs and transfers heat; a heat pump unit that processes heat for use or disperses heat for cooling; and an air distribution system.

C. Ground Source Heat Pump System, Closed Loop

A mechanism for heat exchange that circulates a heat transfer fluid, typically food-grade anti-freeze, through pipes or coils buried beneath the land surface or anchored to the bottom in a body of water.

D. Ground Source Heat Pump System, Horizontal

A closed loop ground source heat pump system where the loops or coils are installed horizontally in a trench or series of trenches.



E. Ground Source Heat Pump System, Open Loop

A system that uses ground water as a heat transfer fluid by drawing groundwater from a well to a heat pump and then discharging the water over land, directly in a water body or into an injection well.

F. Ground Source Heat Pump System, Vertical

A closed loop ground system heat pump system where the loops or coils are installed vertically in one or more borings below the land surface.

G. Heat Transfer Fluid

A non-toxic, biodegradable, circulating fluid such as potable water, a food-grade aqueous solution of propylene glycol not to exceed 20% by weight, or a food-grade aqueous solution of potassium acetate not to exceed 20% by weight.

1.6.2. REGULATIONS FOR GROUND SOURCE HEAT PUMP SYSTEMS

A. Permitted Districts

Ground source heat pump systems in accordance with the standards in this section are allowed as an accessory use in all zoning districts.

B. Installation of Vertical Systems

1. Vertical systems may only be installed by a geothermal installer or vertical closed loop (VCL) driller accredited by the International Ground Source Heat Pump Association (IGSHPA) or installer with an equivalent accreditation or certification from a nationally-recognized organization, as determined by the (insert name of appropriate decision-making official).

2. Detailed plans of a vertical system shall be reviewed and approved by the _____Department prior to installation. (Insert name of appropriate department such public works, utilities, planning department, etc.)

C. Standards

1. **System Requirements**

   a. Only closed loop ground source heat pump systems utilizing heat transfer fluids as defined in Section 1.6.1 are permitted. Open loop ground source heat systems are prohibited.[16]

   b. Ground source heat pumps and related boreholes shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI), the International Ground Source Heat Pump Association (IGSHPA), the American Society for Testing and Materials (ASTM), the Air-Conditioning and Refrigeration Institute (ARI), or other similar certifying organization and shall comply with adopted state building code standards. The manufacturer specifications shall be submitted as part of the application.

2. **Depth**

   All horizontal closed loop systems shall be installed to no more than __ feet in depth.[17]

3. **Setbacks**

   a. All components of ground source heat pump systems including pumps, borings, tanks, and loops shall be setback at least five feet from all property lines.

   b. Above-ground equipment associated with ground source heat pumps shall not be installed in a front yard of any lot or in the side yard of a corner lot adjacent to a public right-of-way except in industrial districts.

   c. All parts of the heat pump system shall be located a minimum distance of 25 feet from any on-lot or adjacent lot wells.

[16] Open loop systems are typically permitted for agricultural uses where there is an on-site need for the water and in communities with numerous lakes and ponds. We have recommended prohibiting open loop systems but would like staff feedback about this choice.

[17] This number will depend on the local depth to groundwater. The loops should not extend into groundwater/aquifers.

d. Ground source heat pumps systems shall not be located in or encroach upon any public drainage, utility roadway, or trail easement.

4. **Screening**

Ground source heat pump systems are considered mechanical equipment and are subject to mechanical screening requirements of the zoning district.

D. Abandonment

If the ground source heat pump system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The property owner shall shut down the system as follows:

1. The heat pump and any external mechanical equipment shall be removed.
2. Pipes or coils beneath the land surface shall be drained and filled with grout. The top of the pipe, coil, or boring shall be uncovered and grouted.

1.7. DISTRICT HEATING AND COOLING SYSTEMS

1.7.1. DEFINITIONS

A. District Heating and Cooling Facility

Any property or structure used as an integral part of a district heating or cooling system.

B. District Heating and Cooling System

Any system consisting of a pipeline or network, which may be connected to a heating or cooling source, that provides hot water, chilled water, or steam to two (2) or more users

1.7.2. SPECIAL USE PERMIT

A district heating and cooling facility or system may be allowed by _____ (insert decision-making body) as a special use if it complies with the applicable standards set forth in Section 1.7.3 and all requirements as provided in Section _____ of these regulations (insert cross-reference to generally applicable special or conditional permit requirements).

1.7.3. REGULATIONS FOR DISTRICT HEATING AND COOLING SYSTEMS AND FACILITIES

A. Residential Zone Districts

District heating and cooling facilities located in residential districts shall comply with the following standards:

1. District heating and cooling facilities shall be allowed only in the _____residential zone districts.
2. No facility in a residential district shall exceed a capacity of 1MW.
3. The maximum daily amount of fuels that may be brought into a facility located in a

A district heating facility in Denmark

residential district shall not exceed 50 tons.

4. Underground fuel storage tanks associated with a facility in a residential district shall be permitted.

5. The minimum lot area shall be 20,000 square feet.

6. The total lot coverage of all structures shall not be more than 50 percent of the lot area.

7. The minimum setback distance of any facility or system shall be 100 feet from any adjacent property line.

8. All facilities or systems shall be screened from adjacent residential, commercial, or institutional property by a solid fence or planting screen that shall provide year-round screening with a height of at least six feet.

9. All activity associated with the facility shall be wholly within an enclosed structure. There shall be no open storage of materials or fuel associated with the facility.

10. Parking and loading facilities shall be provided as set forth in Section____. (add reference to parking and loading regulations—calibrate to number of employees and expected size of fuel shipment vehicles).

11. Noise from the facility shall not exceed 55dB (day) and 45dB (night) measured at the property line.

12. All lighting associated with the facility shall have full cut-off shielding.

13. Control of air pollution shall be in accordance with (add reference to local or state air pollution standards).

B. Commercial and Institutional Zone Districts

District heating and cooling facilities located in commercial and institutional zone districts shall comply with the following standards:

1. District heating and cooling facilities shall be allowed only in the _____residential zone districts.

2. No facility in a commercial or institutional zone district shall exceed a capacity of 20MW.

3. The maximum daily amount of fuels that may be brought into a facility located in a residential district shall not exceed 100 tons.

4. Underground fuel storage tanks associated with a facility shall be permitted.

5. The minimum lot area shall be 20,000 square feet.

6. The total lot coverage of all structures shall not be more than 50 percent of the lot area.

7. The minimum setback distance of any facility or system shall be 100 feet from any adjacent property line.

8. All facilities or systems shall be screened from adjacent residential, commercial, or institutional property by a solid fence or planting screen that shall provide year-round screening with a height of at least six feet.

9. All activity associated with the facility shall be wholly within an enclosed structure. There shall be no open storage of materials or fuel associated with the facility.

10. Parking and loading facilities shall be provided as set forth in Section____. (add reference to parking and loading regulations—calibrate to number of employees and expected size of fuel shipment vehicles).

11. Noise from the facility shall not exceed 55dB (day) and 45dB (night) measured at the property line.

12. All lighting associated with the facility shall have full cut-off shielding.

13. Control of air pollution shall be in accordance with (add reference to local or state air pollution standards).

C. Industrial Districts

District heating and cooling facilities located in industrial zone districts shall comply with the following standards:

1. District heating and cooling facilities shall be allowed only in the _____industrial zone districts.

2. There shall be no maximum MW capacity limit in industrial zone districts.

3. There shall be no maximum daily limit on the amount of fuels that may be brought into a facility located in an industrial zone district.

4. Underground fuel storage tanks associated with a facility in an industrial zone district shall be permitted.

5. The minimum lot area shall be 40,000 square feet.

6. The total lot coverage of all structures shall not be more than 75 percent of the lot area.

7. The minimum setback distance of any facility or system shall be 100 feet from any adjacent property line of an industrial use and 200 feet from any adjacent property line of a residential or commercial use.

8. All facilities or systems shall be screened from adjacent residential, commercial, or institutional use by a solid fence or planting screen that shall provide year-round screening with a height of at least six feet.

9. All activity associated with the facility shall be wholly within an enclosed structure. There shall be no open storage of materials or fuel associated with the facility.

10. Parking and loading facilities shall be provided as set forth in Section____. (add reference to parking and loading regulations—calibrate to number of employees and expected size of fuel shipment vehicles).

11. Noise from the facility shall not exceed 55dB (day) and 45dB (night) measured at the property line of any adjacent residential, commercial, or institutional use or shall comply with applicable state standards, whichever are more restrictive.

12. All lighting associated with the facility shall have full cut-off shielding.

13. Control of air pollution shall be in accordance with (add reference to local or state air pollution standards).

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments

MODEL REGULATIONS: OUTDOOR LIGHTING
August 2013

CLARION

In Association with:
Shipman & Goodwin
Seth Harry and Associates

101 Market Street
Suite D
Chapel Hill, NC 27516
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CONTENTS

Introduction

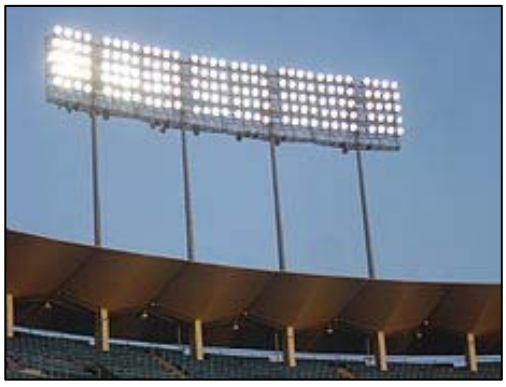
Parking lot lighting

One of the major sources of consumption of electricity is outdoor lighting. Lighting was estimated to have consumed about 11 percent of the total electrical demand by the nation's residential sector in 2007. While indoor lighting makes up the bulk of this usage, outdoor lighting still represents a substantial amount. And large commercial establishments like shopping centers use huge amounts of electricity to light parking lots and other outdoor areas.

Pedestrian lighting

Many communities throughout the United States have adopted strong standards to govern outdoor lighting in their development codes to reduce potential adverse impacts on surrounding properties, to preserve the dark, and, more recently, to reduce energy consumption and greenhouse gas emissions. However, most local development codes in the region contain minimal standards addressing outdoor lighting, and those that do focus primarily on light trespass onto neighboring property. These model regulations propose three main requirements that, if implemented, can save substantial amounts of energy by:

- Establishing a maximum overall lighting budget for each building or site based on the latest recommended practices by the Illuminating Engineering Society of North America (IESNA) and International Dark Sky Association (IDA), thus reducing overlighting and energy waste.
- Setting limits on the brightness of individual light fixtures to prevent glare and light trespass on adjacent property, while still providing adequate light for security, commercial, and other purposes; and
- Requiring that outdoor lighting be turned off or reduced when a business or use is not open or operating.



Sports stadium lighting

Different standards are proposed for residential and nonresidential uses depending on the zone district that is applicable. Single-family and two-family dwellings are exempt.[1] Compared to most of the existing local government lighting regulations in the region, all of the proposed

[1] As discussed below, there are two options proposed regarding single and two-family dwellings. First, they could be exempted. Second, they could be regulated in a modest way as recommended by the IESNA. This issue has been left open for TAC discussion.

standards will give much clearer guidance to applicants and municipal review staff alike because they establish metrics that are clear, measurable, and enforceable. Because the model regulations employ some technical lighting terminology, an extensive definition section is included at the end of this document.

Model Code Provisions for Outdoor Lighting

1.1. PURPOSE

The general purpose of this section is to require outdoor lighting that is: adequate for safety and convenience; in scale with the activity to be illuminated and its surroundings; directed to the surface or activity to be illuminated; and designed to clearly render people and objects and contribute to a pleasant nighttime environment in an efficient manner. Additional specific purposes are to:

1.1.1. Provide safety and personal security as well as convenience and utility in areas of public use or traverse, for uses where there is outdoor public activity during hours of darkness;

1.1.2. Permit reasonable use of outdoor lighting for nighttime safety, enjoyment, and commerce;

1.1.3. Control glare and excessive brightness to improve visual performance, allow better visibility with relatively less light, and reduce trespass light onto neighboring properties to protect inhabitants from the consequences of obtrusive light;

1.1.4. Conserve energy by reducing the use of electricity and gas and cut down on greenhouse gas emissions; and

1.1.5. Control light pollution to minimize the negative effects of misdirected light and recapture views to the night sky.

1.2. APPLICABILITY

1.2.1. NEW DEVELOPMENT AND NONCONFORMING USES

As of the date of adoption of this ordinance, the following standards shall be applicable to all new developments in all zone districts and to any new lighting added as part of an expansion of an existing nonconforming use or noncomplying structure subject to (Add cross reference to nonconforming use/structure regulations if applicable.)

1.2.2. EXISTING LIGHTING

When in any three-year period 50 percent of existing outdoor light fixtures are being replaced or modified on a mixed-use or nonresidential site or building, then all lighting shall be made to conform to the provisions of this ordinance. However, the (insert name of local government) strongly encourages all existing uses to adhere to the requirements in this ordinance to reduce energy use and costs as well as to reduce glare and light trespass.

1.2.3. EXEMPT LIGHTING

The following types of lighting are exempt from the requirements of this section.

A. Soffit or wall-mounted luminaires that are permanently attached to single- and two-family residential dwellings, not to exceed the height of the eave, except as provided in Section 1.5, Generally Applicable Outdoor Lighting Standards.

B. Lighting for transportation corridors, public streets and rights-of-way, and abutting pedestrian sidewalks, trails, paths, and walkways. No exemption shall apply to any street or other public right-of-way lighting when the purpose is to illuminate areas outside the public right-of-way.

C. Lighting for public monuments, statuary, and landmark sites.

D. Lighting for signage as regulated under (Add reference to lighting provisions in local sign regulations if applicable.).

E. Temporary decorative seasonal lighting.

F. Temporary lighting for emergency conditions, nighttime work and construction, theatrical, television, and performance areas, or for special public events or private events approved by the (insert name of local government).

G. Lighting for a special district, street, or building that, according to an adopted municipal plan or ordinance, and as approved by the (insert name of decision-making official such as planning director) is determined to require special lighting aesthetics as part of its physical character.

H. Lighting required and regulated by the Federal Aviation Administration or other federal or state agency.

I. Lighting for tunnels, covered parking garages (not including uncovered floors), garage entrances, and similar conditions, provided that lighting at entrances to such facilities employ full cut-off shielding to prevent light from causing glare on adjacent properties or exceeding 0.10 footcandles at the property line within or adjacent to any residential zone, or 0.2 footcandles in nonresidential zones.

J. Lighting for public and private outdoor recreational uses such as athletic playing areas (e.g., soccer fields, ball diamonds, playing fields, tennis courts) and similar uses, provided that such uses comply with the following standards. If any of these standards are exceeded or not complied with, then such lighting shall be subject to the special permit requirements in Section 1.5.4.

1. All site lighting not directly associated with the outdoor recreational use shall conform to the lighting standards in this ordinance.

2. All lighting for athletic playing areas or fields shall utilize full cutoff luminaires that are installed in a fashion that maintains the full cutoff characteristics unless certified by a licensed electrical engineer that such shielding is impractical. Every such lighting system design shall be certified by a licensed electrical engineer as conforming to all applicable restrictions of this ordinance. Where full cutoff fixtures are not utilized, acceptable luminaires shall include those that:

    a. Are provided with internal and/or external glare control louvers and installed so as to limit direct uplight to less than five percent of the total lumens exiting from the installed fixtures and minimize offsite light trespass, and;

b. Are installed and maintained with minimum aiming angles of 25 degrees downward from the horizontal. The aiming angle shall be measured from the axis of the luminaire maximum beam candlepower as certified by independent testing agency. The manufacturer shall supply a drawing showing the aiming alignment of each fixture with the measurement referencing the field and the pole locations.

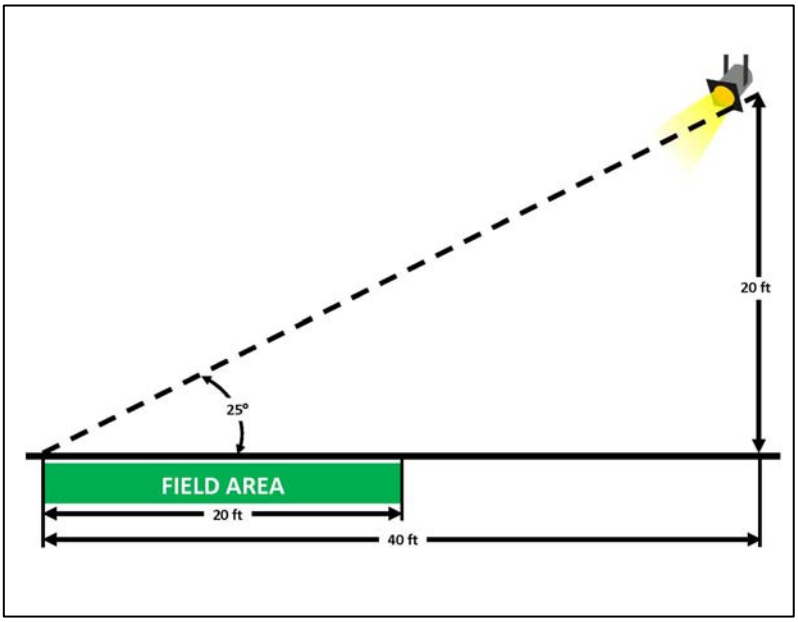


Figure 1.2-1: Aiming angle

3. Maximum permitted light post height: 80 feet at finished grade.
4. Maximum permitted illumination at the property line: 2.0 footcandles.
5. Limits on hours of illumination: Outdoor recreational lighting shall be extinguished between the hours of 11 p.m. and 7 a.m., or one hour after activities or games on the site are completed, whichever is later.

1.2.4. CONFLICT WITH EXISTING STANDARDS

If the standards prescribed by this ordinance conflict with an existing standard relating to outdoor lighting in (insert cross reference to other municipal regulations addressing lighting, if any), the more restrictive shall apply.

1.3. LIGHTING PLAN SUBMITTAL REQUIREMENT

1.3.1. PLAN REQUIRED

All nonresidential developments and all residential developments with more than five lots or dwelling units shall submit a proposed outdoor lighting plan prepared by a qualified electrician, electrical engineer, or similarly qualified profession acceptable to the (insert name of local government). The plan must be submitted concurrently with any application for development or site plan if required.

1.3.2. PLAN INFORMATION

A. The outdoor lighting plan shall include plans and specifications for streetlights, parking lot and garage lights, and exterior building lights.

B. The specifications shall include details of the pole, fixture height and design, luminaire type and specifications (including initial lamp lumens), number of lamps per luminaire, lumens, spacing of lights, and proposed hours of operation.

C. The outdoor lighting plan shall include necessary calculations and information demonstrating compliance with the requirements of this ordinance including the site lighting budget for nonresidential uses.

1.4. LIGHTING CLASSIFICATIONS ESTABLISHED

The following lighting classifications are hereby established within the (insert name of local government). All zone districts listed (insert cross reference to zone district section of local zoning regulations) shall be classified as set forth in Table 1.4-A:

TABLE 1.4-A: LIGHTING CLASSIFICATIONS

Lighting Classification	Description	Applicable Zone Districts[2]
Class 1	Intended for low-density single, and two-family, and multifamily residential areas, open space, and parks	• All agricultural districts • All open space districts • All large-lot or low-density residential districts (Review with staff)
Class 2	Intended for high density residential, mixed-use developments, low and moderate intensity commercial areas, and light industrial areas	*Local staff to insert*
Class 3	Intended for major business districts and manufacturing and heavy industrial areas	*Local staff to insert*

1.5. GENERALLY APPLICABLE OUTDOOR LIGHTING STANDARDS

1.5.1. STANDARDS APPLICABLE TO ALL USES

The following standards shall apply to all outdoor lighting associated with both residential and nonresidential uses.

A. No flickering or flashing lights shall be permitted, except for temporary decorative seasonal lighting.

B. Maximum lighting level uniformity (maximum to minimum) for parking lots that have outdoor lighting shall be 20:1.[3]

[2] Local planning staff should insert existing local zone districts into the appropriate lighting classification based on the description in Column 2.

[3] This is the recommended maximum/minimum ratio from the IESNA. Some model codes use an average/minimum ratio of 4:1.

C. All fixtures shall utilize one of the following bulb types: metal halide, induction lamp, compact fluorescent, incandescent (including tungsten-halogen), LED, solid state lighting, or high-pressure sodium with a color rendering index above 70.

D. Lighting installations shall not have an adverse impact on traffic safety and shall not shine onto or produce glare beyond the lot line or exceed 0.1 footcandles at the property line within or adjacent to any residential zone or 0.2 footcandles in nonresidential zones unless specifically provided otherwise in this ordinance.

E. The maximum height of any lighting pole serving a residential use shall be 16 feet. The maximum height serving any other type of use shall be 25 feet, except in parking lots larger than five acres, the maximum height shall be 35 feet if the pole is located at least 100 feet from any residential use or except as provided in this ordinance for outdoor recreational uses in Section 1.2.3.

F. For upward-directed architectural, landscape, and decorative lighting, direct light emissions shall not be visible above the building roof line or beyond the property line.

1.5.2. RESIDENTIAL (SINGLE-FAMILY, TWO-FAMILY, AND SMALL MULTIFAMILY) OUTDOOR LIGHTING STANDARDS[4]

A. Applicability[5]

Option 1: All outdoor lighting for single-family, two-family, and small multifamily[6] uses shall be exempt from the provisions of this ordinance except as provided in Section 1.5.

Option 2: Outdoor lighting is not required for any single-family, two-family, or small multifamily residential use, except for purposes of public safety. However, if installed, all residential outdoor lighting shall meet the following standards in addition to those in Section 1.5.

B. General Requirements

1. Except for motion-activated security lighting and floodlighting permitted by this section, all lamps and bulbs more than 600 lumens[7] located in residential zone districts shall be within a fully shielded fixture or shall be within a light fixture where the bulb or lamp is obscured from view by a material that diffuses the light (e.g., frosted glass), except as otherwise permitted in this ordinance.[8]

2. Shielded directional floodlighting must be aimed away from adjacent properties and not exceed 1800 lumens.

Illustration of open flame gas lamp

[4] As noted above, many communities exempt single and two-family dwellings from outdoor lighting controls. For purposes of this ordinance, multifamily residential buildings with more than three units and all mixed-use buildings containing residential units shall be defined and regulated as nonresidential uses under Section 1.5.3.

[5] We have provided two options for applicability for local governments to consider.

[6] As defined by the local government (generally those with 3 to 5 dwelling units).

[7] 600 lumens is approximately 40 watts.

[8] Illustrations of a range of cut-off lighting is set forth in Figure 1.5-2

3. Open flame gas lamps without mantels are exempt from regulation under this ordinance.

4. Lighting installed with a vacancy or motion sensor shall be set to extinguish the light no more than 15 minutes after the area is vacated or motion ceases. Motion sensors shall not activate lighting when motion is generated from a source outside the property boundary.

5. Lighting systems that provide lighting for recreational purposes such as sports courts and similar facilities shall direct lighting downward and inward from the perimeter lot boundary, shall not exceed 16 feet in height, and shall be turned off between the hours of 10:00 p.m. and 7:00 a.m.

C. Landscape Lighting

All lighting associated with landscaping shall comply with the requirements set forth above and in Section 1.5. Landscape lighting shall not be aimed onto adjacent properties.

1.5.3. NONRESIDENTIAL AND LARGE MULTIFAMILY RESIDENTIAL OUTDOOR LIGHTING[9]

Outdoor lighting for nonresidential uses and large multifamily[10] residential uses shall meet the following requirements.

A. Site Lighting Budget

The total installed initial lamp lumens on all lighting systems on the site shall not exceed the site lumen limit set forth in Table 1.5-A. The total initial lamp lumens is calculated as the sum of the initial lamp lumens for all luminaires tested with relative photometry and 140% of initial lamp lumens for all luminaires tested with absolute photometry.

B. Light Budget Calculation Option 1

Comment: These model regulations propose two options for calculating a site lighting budget to allocate the amount of lighting used on a site. Option 1, described in this Subsection B, breaks-up the lighting across different lighting applications, such as parking lots or building entrances. This provides a detailed and fairly precise distribution of lighting across different lighting areas on a site, but it is somewhat difficult to calculate and administer. Option 2, described below in Subsection C, provides a single, simple calculation for the site and a minimum amount of lighting provided to smaller sites. This approach is more straightforward to calculate and administer. This approach does not, however, attempt to distribute the lighting across the site. This may result in unintended consequences where most of the lighting is aggregated on a site such as in a parking lot.

1. **Maximum Lighting**

The maximum allowed lighting limit shall be calculated as follows:

a. Applying the rules set forth in Section 1.5.3.B.2, multiply the area (square footage) of each lighting application type (e.g., parking lot, building

[9] Most local government outdoor lighting ordinances enacted over the past two decades have required full cut-off shielding for lighting as the primary means of control. While this approach helped reduce light escaping upwards and reduced light trespass on adjacent properties to a certain extent, it did not address the intensity of the lighting/energy consumption in any measurable way. This model ordinance goes beyond simply requiring full cut-off shielding.

[10] As defined by the local government (generally those with 6 or more dwelling units).

entrance, building façade) in Table 1.5-A by the maximum allowed lamp lumens for the appropriate lighting classification of the development.

b. Add up the total of lumens for each lighting application type.

2. **Calculation Rules**

a. A lighting budget is not allowed for any lighting application types not listed, unless exempted by this ordinance or classified as special purpose in Section 1.5.4.

b. If two lighting application types are within one area, the lighting application type with the lower number of lumens shall be used.

c. Canopy allowances include only the area within the drip line area of the canopy.

d. The entire area of a site shall not be used for calculating the site budget. Areas that are not designed to be illuminated may not be counted toward the total lighting limit for the site.

TABLE 1.5-A: SITE LIGHTING BUDGET
In maximum lumens per square foot

Lighting Application	Allowed Area For Purposes of Calculating Lighting Budget	Lighting Class 1	Lighting Class 2	Lighting Class 3
		Lighting classes are described at the bottom of this table		
Parking lots, plazas, hardscape lighting, driveways, on-site private drives	Paved areas plus 5 feet of the perimeter of adjacent unpaved land. Includes planters and landscaped areas less than 20 feet wide that are enclosed by hardscape on at least 3 sides.	0.3 maximum lumens/sq ft	0.6	1.2
Sidewalks, walkways, and bikeways	Paved area plus 5 feet of unpaved land on either side of the path of travel.	0.6	1.2	2.25
Building entrances without canopy	Width of doors plus 3 feet on either side times a distance outward from the building from the surface of the doors 20 feet.	5.25	7.5	10.5
Building entrances with canopy and canopies for drive-up sales, loading docks, and general use	Drip line area under canopy. 200 lumens plus the value in the Lighting Class column.	1.5	3.0	6.0
Vehicle service stations	Drip line area under canopy or 500 square feet per double-sided fuel dispenser unit not under canopy.	4.5	9.0	16[11]
Building facades	Entire vertical area of facade	Not Allowed	2.7	3.0

[11] The IESNA model outdoor lighting code recommends a range of from 16 to 24 for major commercial and industrial areas. We have selected the lower end of the range to prevent overlighting of service stations.

TABLE 1.5-A: SITE LIGHTING BUDGET In maximum lumens per square foot				
Lighting Application	**Allowed Area For Purposes of Calculating Lighting Budget**	**Lighting Class 1**	**Lighting Class 2**	**Lighting Class 3**
		Lighting classes are described at the bottom of this table		
Outdoor sale lots	Portion of uncovered outdoor sales lot used for display of vehicles or other merchandise for sale. All adjacent access drives, walkway areas, customer parking areas, vehicle service or storage areas that are not surrounded on at least three sides by sales area shall be considered hardscape.	Not Allowed	7.5	7.5
Outdoor sales frontage (frontage in linear feet and the allowance is per linear foot)	Valid only for sections of an outdoor sales area that re along the frontage. A corner sales lot may include both sides provided that a different principal viewing location exists for each side	Not Allowed	Not Allowed	300 lumens/linear foot
Decorative lighting	Entire site	By Conditional Use Permit Only	0.15	0.30
Descriptions of Lighting Classifications:	Class 1: Intended for low-density single, two-family, and multifamily residential developments, open space, and parks. Class 2: Intended for high-density residential developments, mixed-use developments, low and moderate intensity commercial areas, and light industrial areas. Class 3: Intended for major business districts and manufacturing and heavy industrial areas			

Site Lighting Budget Example: The proposed development is for a small commercial use (Lighting Class 2). The total site size is 40,000 square feet and the building will be 10,000 square feet (100 ft X 100 ft) and 24 feet high. The use will have 15,000 square feet of parking and driveways, 400 square feet of sidewalks, two entry doors without canopies (one 6 feet wide and one 3 feet wide), and a total building façade of 2,400 square feet to be illuminated (100 X 24 ft X 1 facade). The site lighting budget would be calculated as follows:

15,000 square feet of parking X 0.6 lumens/square foot (from table) = 9,000 lumens

400 square feet of sidewalk X 1.2 lumens (from table) = 480 lumens

Entry doors:

6 foot width plus 3 feet on each side = 12 feet X 20 feet = 240 X 7.5 lumens (from table) = 1,800 lumens

3 foot width plus 3 feet on each side = 9 feet X 20 feet = 180 X 7.5 lumens (from table) = 1,340 lumens

2,400 square feet of building façade to illuminate (100 X 24) X 2.7 lumens (from table) = 6,480 lumens

Total Lumens Allowed On Site = 19,100 lumens (approx. 1,273 watts)

C. Lighting Budget Calculation Option 2

1. **Maximum Lighting**

The maximum allowed lighting limit shall be calculated as follows: multiply the allowed lumens for the appropriate lighting class in Table 1.5-A times the square footage of hardscape on the site. Hardscape is defined as permanent hardscape improvements to the site, including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways, and non-vegetated landscaping that is ten feet wide or less in width. Materials may include concrete, asphalt, stone, gravel, and similar materials.

2. **Minimum Lighting**

Notwithstanding the calculation set forth in C.1 above, each site shall have an allowed minimum lumens as set forth in Table 1.5-A.

TABLE 1.5-A: SITE LIGHTING BUDGET

Lighting Classification	Lighting Class 1	Lighting Class 2	Lighting Class 3
Allowed Lumens per square foot of hardscape	1.25 lumens per sq. ft.	2.5 lumens per sq. ft.	5.0 lumens per sq. ft.
Allowed minimum lumens per site	3,500	7,000	14,000

Site Lighting Example: Each site would be allowed a minimum amount of lumens whatever its size (Row 2 of the table). For example, a small industrial site (Class 3) with 2,000 square feet of hardscape would be allowed 14,000 lumens. Total lumens for larger sites would be calculated by multiplying the total square footage of hardscape times the allowed lumens per square foot from the table based on the lighting class for the use/zone district. For example, if a small commercial site (Class 2) had 10,000 square feet of hardscape, it would be allowed to have 25,000 lumens of lighting throughout the site. Such lighting could be placed wherever the applicant desired, subject to other regulations in the ordinance regarding light spillover, maximum fixture illumination, etc.

D. Alternative Site Lighting Budget Calculation

1. If an applicant or the Director determines that the lighting needs or potential impacts of a particular use are unique and that the method of calculating the allowable total lumens for a site are inappropriate, the Director may authorize the applicant to undertake an alternative site lighting budget calculation conducted and certified by an electrical engineer or similarly qualified professional. The (insert name of local government) may require the applicant to provide funding to retain an electrical engineer to review the alternative site lighting budget calculation produced by the applicant.

2. The entire proposed lighting design shall be analyzed and certified by the applicant using industry standard lighting software meeting the following requirements:

   a. Input data shall describe the lighting system, including luminaire locations, mounting heights, aiming directions, and employ photometric data tested in accordance with IESNA guidelines. Buildings or other physical objects on the site within three object heights of the property line must be included in these calculations.

   b. Analysis shall utilize a theoretical enclosure around the perimeter of the site. The top of the enclosure shall be no less than ten feet above the tallest luminaire. Calculations shall include total lumens upon the inside surfaces of the enclosure and vertical sides and maximum line of sight or "TV" illuminance (footcandles and/or lux) on the sides of the enclosure.

3. The Director may approve the lighting plan if the total lumens on the inside surfaces of the theoretical enclosure are less than ten percent of the total site lumen limit as set forth in Table 1.5-B and the maximum line of sight or "TV" illuminance on any vertical surface is less than the allowed maximum illuminance set forth in Table 1.5-B.

4. The maximum allowable illumination at any point in the plane of the property line of any property, residential or not residential, shall be as set forth in table 1.5-B.

TABLE 1.5-B: MAXIMUM LINE OF SIGHT OR TV ILLUMINANCE AT ANY POINT IN THE PLANE OF THE PROPERTY LINE		
Lighting Class 1	**Lighting Class 2**	**Lighting Class 3**
0.1 footcandles or 1.0 lux	0.3 footcandles or 3.0 lux	0.8 footcandles or 8.0 lux

E. Maximum Allowable Luminaire Lighting Intensity[12]

The maximum allowable lighting intensity of a luminaire utilized for outdoor lighting for all uses subject to this ordinance shall be as set forth in Table 1.5-C below.

TABLE 1.5-C: MAXIMUM ALLOWABLE LIGHTING INTENSITY (In Lumens)[1]				
Lighting Classification (described at the bottom of this table)	**Full Shielding Required (IESNA Full Cut-Off)**	**Must Be Shielded (IESNA Cut-Off)**	**Must Be Partially Shielded (IESNA Semi Cut-Off)**	**Can Be Unshielded (IESNA Non Cut-Off)**
	See Figure 1.5-2, below, for illustrations of IESNA cut-off standards			
Lighting Class 1	1,050	450	None Permitted	None Permitted
Lighting Class 2	2,250	825	None Permitted	Low Voltage Landscape Lighting Permitted

[12] Table 1.5-C complements the site lighting budget approach by not allowing any individual luminaire to be overly bright (for example, parking lot luminaires). Luminaire brightness is allowed to increase with degree of shielding as shown in the illustrations following the table.

TABLE 1.5-C: MAXIMUM ALLOWABLE LIGHTING INTENSITY (In Lumens)[1]				
Lighting Classification (described at the bottom of this table)	**Full Shielding Required (IESNA Full Cut-Off)**	**Must Be Shielded (IESNA Cut-Off)**	**Must Be Partially Shielded (IESNA Semi Cut-Off)**	**Can Be Unshielded (IESNA Non Cut-Off)**
	See Figure 1.5-2, below, for illustrations of IESNA cut-off standards			
Lighting Class 3	6,750	1,500	825	Landscape and Façade Lighting—1,500 or less; Ornamental lights—825 or less
Notes:	[1] 1 watt = 15 lumens (e.g., 100 watt bulb = 1,500 lumens) Lighting Classifications: Class 1: Intended for low-density single, and two-family, and multifamily residential areas, open space, and parks. Class 2: Intended for high density residential, mixed-use developments, low and moderate intensity commercial areas, and light industrial areas. Class 3: Intended for major business districts and manufacturing and heavy industrial areas			

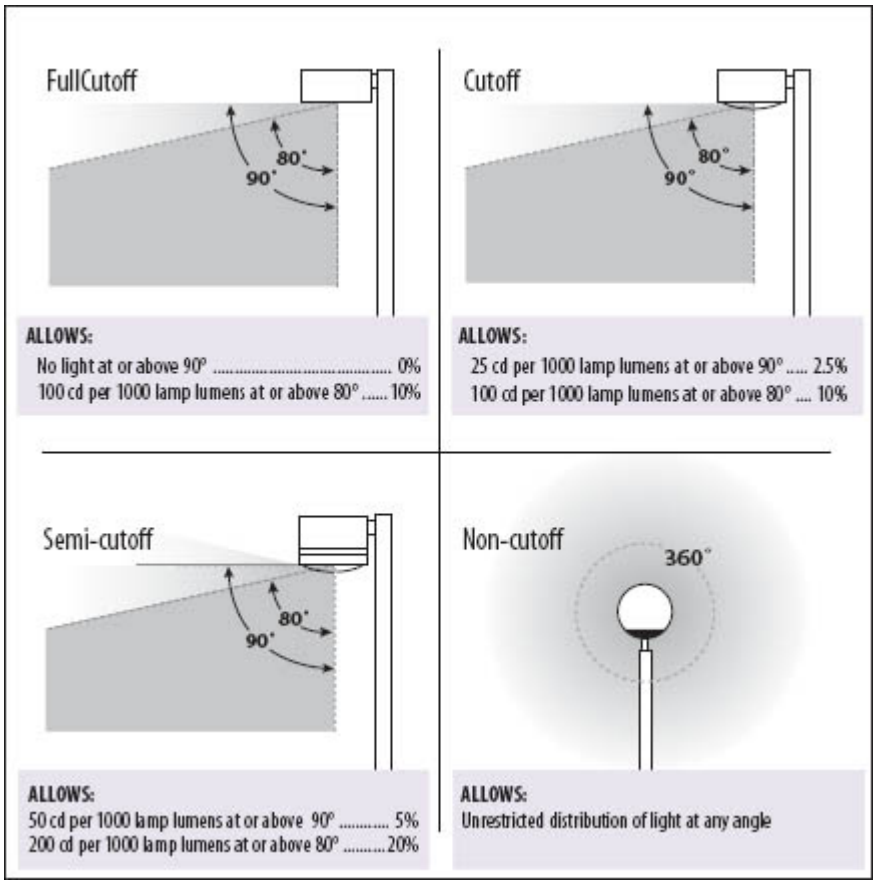


Figure 1.5-2: IESNA lighting cutoff shielding standards

F. Use Regulations

The following regulations shall be applied to specific uses as follows:

1. Lighting on automobile service station, convenience store, and other outdoor canopies shall be fully recessed into the canopy and shall not protrude downward beyond the ceiling of the canopy or shall be fully shielded.

2. Other[13]

1.5.4. USES WITH HIGH-INTENSITY OR SPECIAL-PURPOSE LIGHTING SUBJECT TO SPECIAL EXCEPTION REVIEW

The following uses with high-intensity or special-purpose lighting shall be subject to review and approval by the (insert name of appropriate decision-making body) pursuant to the procedures set forth in (Insert cross reference to conditional use or special permit provisions of local zoning regulations.) The (insert name of appropriate decision-making body for condition use or special permits.) shall impose appropriate conditions on the proposed use to mitigate any potential adverse impacts of outdoor lighting associated with the use.

A. Major Outdoor Recreation Facility

Any outdoor recreation facility that exceeds the exemption limits set forth in Section 1.2.3.J shall be subject to (insert conditional use or special permit) review. The applicant shall demonstrate that the proposed lighting installation employs lighting controls to reduce lighting at project specific curfew times as set forth in the (insert name of appropriate permit) and complies with the alternative site lighting budget calculation set forth in Section 1.5.3.C.

B. Very Intense Lighting

Any use that proposes light that exceeds:

1. 200,000 lumens or an intensity in any direction of more than two million candelas, such as aerial lasers, searchlights, or other directional luminaire.

2. Temporary lighting in which any single luminaire exceeds 20,000 lumens or the total lighting load exceeds 160,000 lumens.

C. Complex, Special Purpose Lighting

Any lighting not complying with the technical requirements of this ordinance that is used for special purposes such as construction site lighting, lighting for industrial sites with special requirements such as petrochemical manufacturing or storage, theme and amusement parks, decorative and architectural lighting of bridges and overpasses, and similar uses as determined by the Director. The applicant shall demonstrate that the proposed lighting installation employs lighting controls to reduce lighting at project specific curfew times as set forth in the conditional use permit and complies with the alternative site lighting budget calculation set forth in Section 1.5.3.C.

[13] Local government staff would add any other specific types of lighting that might be an issue in the community.

1.6. LIGHTING CONTROL AND CURFEW REQUIREMENTS[14]

1.6.1. LIGHTING CONTROLS—AUTOMATIC SWITCHING

Controls shall be provided on all nonresidential lighting that automatically extinguish all outdoor lighting when sufficient daylight is available. Control devices or systems may be photoelectric switches, astronomic switches or equivalent functions from a programmable lighting controller, building automation system, lighting energy management system, or an equivalent system approved by the Director. Automatic controls shall not be required for tunnels, parking garages, garage entrances, and similar conditions.

1.6.2. AUTOMATIC LIGHTING REDUCTIONS

All nonresidential uses shall extinguish all outdoor lighting or reduce it by a minimum of 50 percent in terms of lumens two hours after the close of business or activity on the site. Lighting reductions are not required for any of the following:

A. When there is only one conforming luminaire on the property;

B. Building code required lighting for steps, stairways, walkways, trails, and building entrances;

C. Motion-activated lighting;

D. Security lighting permitted by this ordinance;

E. Lighting governed by a conditional use or other (insert name of local government) approval in which times of operation are specifically identified;

F. Uses that operate on a twenty-four hour basis; or

G. Uses that the Director determines must retain lighting levels for purposes of safety and other public welfare considerations.

DEFINITIONS

These are definitions related to these outdoor lighting standards, which should be located with the ordinance's other definitions.

Absolute photometry

Photometric measurements (usually of a solid state luminaire) that directly measure the output of the luminaire.

Astronomic time switch

An automatic lighting control device that switches outdoor lighting relative to time of solar day with time of year correction.

Decorative lighting

Lighting used primarily to enhance or illuminate the appearance of a structure and not for safety or convenience purposes.

[14] Automatic lighting controls and lighting curfews can significantly reduce energy use.

Curfew

A time defined by the (insert name of local government) when outdoor lighting must be reduced or extinguished.

Fully shielded luminaire

A luminaire with 100 percent opaque top and sides capable of emitting light only below the horizontal plane.

Footcandle

A non-International System unit of illuminance or light intensity, defined as the amount of illumination the inside surface of a one-foot radius sphere would be receiving if there were a uniform point source of one candela in the exact center of the sphere. A footcandle is equal to one lumen per square foot.

Glare

Light entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.

Hardscape

Permanent improvements to a site, including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways, and non-vegetated landscaping that is ten feet or less in width. Hardscape shall not include buildings or structures or their footprints for purposes of this definition.

IDA

International Dark-Sky Association

IESNA

Illuminating Engineering Society of North America

Initial lamp lumens

Calculated as the sum of the initial lamp lumens for all luminaires tested with relative photometry and 140 percent of initial lamp lumens for all luminaires tested with absolute photometry.

Lamp

A generic term for a source of light, often called a “bulb” or “tube.”

Landmark Site

A building or site of historic importance designated by the (insert appropriate agency, commission, or local government).

Landscape lighting

Lighting designed specifically for illuminating exterior architectural and natural features and vegetation.

LED

Light-emitting diode

Lighting

Artificial, electric, or man-made lighting.

Lumen

The unit of luminous flux. A measure of the power of light perceived by the human eye.

Luminaire

The complete lighting fixture, including a lamp, ballasts, and other parts such as reflectors, lenses, and diffusers to position, protect, and connect the lamps to a power supply.

Luminaire lumens

The cumulative total of lumens emitted by all lamps contained with a single luminaire.

Lux

The International System (SI) unit of illumination, equal to one lumen per square meter.

Mounting height

The height of the photometric center of a luminaire above grade level.

Non-shielded luminaire

A luminaire capable of emitting light in any direction including downwards.

Outdoor lighting

Lighting equipment installed outdoors.

Photoelectric switch

A control device employing a photocell or photodiode to detect daylight and automatically switch lights off when sufficient daylight is available.

Property line

The legally defined boundary of public or private property or rights-of-way.

Relative photometry

Photometric measurement made of the lamp plus luminaire and adjusted to allow for light loss due to reflection or absorption within the luminaire

Seasonal lighting

Temporary lighting installed and operated in connection with holidays or traditions.

TV illuminance

Line-of-sight illuminance measured at the eye in a plane perpendicular to the line of sight when looking at the brightest source of the field of view.

Temporary lighting

Lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for 30 days.

Time switch

An automatic lighting control device that switches lights according to time of day.

Uplight

For an outdoor luminaire, light radiated at or above the horizontal plane.

Watt

The International System unit of power, equivalent to one joule per second and equal to the power in a circuit in which a current of one ampere flows across a potential difference of one volt. Until being replaced by lumens, was a common unit of measurement for the power of lighting.

SUSTAINABLE LAND USE CODE PROJECT

Capitol Region Council of Governments

MODEL REGULATIONS: GREEN ROOF INCENTIVES

February 2013

In Association with:
Shipman & Goodwin
Seth Harry and Associates

CLARION

101 Market Street
Suite D
Chapel Hill, NC 27516
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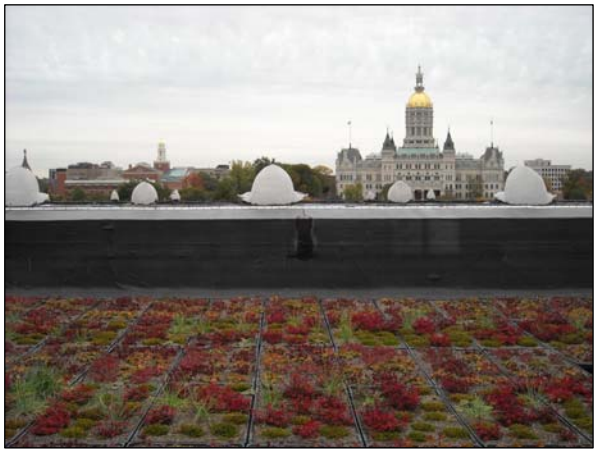
CONTENTS

GREEN ROOF INCENTIVES

Introduction

Green roofs—roofs of a building partially or completely covered with vegetation—serve several important sustainability goals, including:

- Helping to lower urban air temperatures and mitigate the summer urban heat island effect,[1]
- Reducing building energy use by providing additional insulation,
- Absorbing greenhouse gases,
- Reducing stormwater runoff,
- Providing open space for residents and employees, and
- Creating wildlife habitat.



Hollander Building, Hartford, CT

An increasing number of cities such as Chicago, Portland, Seattle, and New York City are offering significant incentives bonuses in their development codes to promote installation of green roofs. This section offers a variety of potential zoning incentives that a local government in the Capitol Region might consider to promote creation of green roofs.

Model Code Provisions for Green Roof Incentives

1.1. GREEN ROOFS--GENERAL

1.1.1. PURPOSES

The purposes of these provisions relating to green roofs are to:

A. Promote the conservation of energy;

B. Reduce the urban heat island effect;

C. Reduce stormwater runoff;

D. Encourage creation of open space and related amenities; and

E. Promote creation of wildlife habitat.

[1] Defined as an area, such as a city or industrial site, having consistently higher temperatures than surrounding areas because of a greater retention of heat, as by buildings, concrete, and asphalt and thus often use more energy for air conditioning.

1.2. DEFINITIONS AND INCENTIVES

1.2.1. GREEN ROOF DEFINITION

A "green roof" shall mean the roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems. Pre-planted tray systems with green roof layers combined into small units shall qualify as a green roof. However, container gardens with plants in pots or roofs painted a reflective color without plants shall not qualify as a green roof for purposes of this section.

1.2.2. INCENTIVES

Roofs that meet the definition of green roof shall qualify for the following incentives provided they meet the standards set forth below.

A. Height Waiver

1. Vegetation on a green roof may exceed the applicable zone district height limit by up to 35 feet.[2]
2. Buildings qualifying for a green roof floor area bonus shall automatically be allowed to exceed the maximum zone district height by 12 feet.

B. Floor Area Calculation Waiver[3]

1. The total area of a green roof shall be excluded from the calculation of gross (or net) floor area even when access to the rooftop is provided.

C. Green Roof Floor Area Bonus

1. Where the total area of a green roof is at least 30 percent but less than 60 percent of a building's footprint, each square foot of green roof shall earn two square feet of additional floor area.
2. Where the total area of a green roof is at least 60 percent of a building's footprint, each square foot of green roof shall earn three square feet of additional floor area.

D. Open Space Credit

1. The total square footage of any green roof shall be credited towards any open space requirement in the zoning regulations (Option: Offer 2-3X credit as additional incentive).
2. Decks and patios that are less than 15 percent of a green roof area and setback

[2] This would allow trees 35 feet tall at maturity. This number should be tailored to local preferences.
[3] In jurisdictions that do not use floor area ratio as a regulatory metric, the local government might consider bonuses related to other metrics and bonuses such as increasing the percentage of lot coverage or permissible building height.

three feet from all building edges may also be excluded from gross floor area calculations.

E. Stormwater Management Credit

Green roofs shall be recognized as an acceptable best management practice for purposes of calculating stormwater management requirements and credited appropriately.

1.2.3. CODE COMPLIANCE

Green roofs shall comply with all applicable state building codes.

SUSTAINABLE LAND USE CODE PROJECT

Capitol Region Council of Governments

MODEL REGULATIONS: COMMUNITY GARDENS

March 2013

CLARION

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CONTENTS

Introduction

Broadly defined, a "food system" is the sequence of activities linking the planting, raising, harvesting, storing, transporting, processing, packaging, marketing, and retailing of food, as well as all the associated supporting and regulatory institutions and activities. The food system affects many facets of modern life, including energy consumption, the environment, public health, economic development, and social equity.

Globalization has transformed our food system. Food comes from increasingly distant sources--the average food item in the U.S. travels at least 1,500 miles. While the United States considers itself the breadbasket of the world, the value of food imported into the U.S. exceeded the value of food exported for the first time in 2006 (although with the recession and increased world grain demand, USA exports again exceed imports in subsequent years). In 2010, the nation imported over $80 billion in foreign agricultural products. Also, because of globalization, consumers are less knowledgeable about the sources of the foods they consume. Moreover, our changing food system has had significant adverse impacts on public health. Thus promoting local food systems has several important benefits: They provide a boost to the local economy, help reduce fossil fuel use and associated greenhouse gases, improve public health, and provide security from supply disruptions.

Community Garden in Enfield

In addition to promoting the viability of local farms, supporting local food systems also involve promoting urban agriculture. Communities throughout the world are pioneering technologies and techniques for urban gardening. Using small spaces such as yards, roofs, street areas, vacant lots, porches, and planters to grow food not only provides healthy foods to urban dwellers but reduces greenhouse gases. Even in heavily urbanized cities such as London, 14 percent of the population produces 18 percent of the city's nutritional needs. In 2007, the Seattle Market Gardens provided produce for approximately 60 households over a 22-week period. The United Nations Food and Agriculture Organization estimates that 200 million urban residents produce food for the local urban market, providing 15 to 20 percent of the world's food. Given that agricultural land continues to be lost to urbanization and that over 50 percent of the world's population now lives in urban areas for the first time in history, it is even more critical that urban dwellers be able to produce cheap, healthy, secure, and sustainable sources of food.

A necessary task for local governments to support urban agriculture is to carefully tailor their land use regulations to existing land uses and identify lots, areas, and neighborhoods that are suitable for urban agriculture uses such as community gardens, farmers' markets, and food stands, but are not being used for such purposes due to regulatory barriers, lack of encouragement, or some other reason. Portland, OR, for example, has compiled a detailed map that shows exactly where in the city urban agriculture is prohibited, allowed as a conditional use, or allowed outright. This map led to comprehensive, but targeted, changes to Portland's zoning

Community Garden in Farmington

code to promote urban agriculture, including the creation of an "agricultural use" category that excludes most kinds of commercial-scale agriculture but provides reasonable limits on the size and location of accessory agricultural buildings. Integrating urban agriculture into existing and future urban open space areas should also be a priority.

While nearly all of the local municipalities who are part of the CRCOG project working group have provisions to allow farming and farmers' markets, few have comprehensive zoning regulations to allow and promote community gardens. The model ordinance provisions that follow promote community gardens while providing standards to help ensure neighborhood compatibility.

Model Code Provisions for Community Gardens

1.1. PURPOSE

The purposes of these community garden provisions are to:

1.1.1. Ensure that food production opportunities are planned for and implemented in appropriate areas in (insert municipality name) through the zoning code;

1.1.2. Provide for a healthy, fresh, and diverse food source for residents of (insert municipality name);

1.1.3. Enhance community health through the production, consumption, and/or sale of locally grown food and the physical practice of gardening;

1.1.4. Save energy and reduce greenhouse gas emissions through community-based and local food production that minimizes long-distance food transportation;

1.1.5. Improve the security of the food supply in (insert municipality name);

1.1.6. Provide opportunities for community education and hands-on involvement by school children, schools, and nonprofits;

1.1.7. Provide increased opportunities for local jobs; and

1.1.8. Protect against potential adverse impacts of urban agriculture.

1.2. APPLICABILITY

This section is applicable to and governs all community gardens within (insert name of municipality). It shall take precedence over any conflicting provisions within the zoning code or municipal code.

1.3. USE AND DEVELOPMENT STANDARDS

1.3.1. PERMITTED LOCATIONS

A. Neighborhood community gardens are allowed as principal or accessory uses in the following zone districts, subject to the provisions of this section: (Insert names of appropriate zone districts).[1]

B. Large-scale community gardens are allowed as principal or accessory uses by special permit (or conditional use) in the following zone districts, subject to the provisions of this section: (Insert names of appropriate zone districts).

[1] Most communities restrict community gardens to residential zones, although some allow them in commercial and office zones. The CNC Software Company Employee Gardens in Tolland, CT, are a good example of community gardens in an office/commercial area. Community gardens are typically not allowed in industrial districts if there is a potential issue with contamination or air or water pollution.

Option:

1.3.1 URBAN GARDEN OVERLAY ZONE DISTRICT[2]

A community garden overlay zone district is hereby established as part of the zoning code to ensure that community gardens are appropriately located and protected to meet the purposes of this section. Areas potentially appropriate for community gardens shall be identified, mapped, and recommended by the (insert name of local planning official) and reviewed for designation by the (insert name of local decision-making body).

1.3.2. USES PERMITTED ACCESSORY TO COMMUNITY GARDENS

The following uses are permitted as accessory uses to community gardens:

A. Greenhouses, hoophouses, cold frames, and similar structures to extend the growing season;

B. Signs limited to identification, information, and directional signs, including sponsorship information where the sponsorship information is clearly secondary to other permitted information;

C. Benches, bike racks, raised planting beds, compost bins, picnic tables, fences, garden art, rain barrel systems, children's play areas, and irrigation systems;

D. Buildings to support community garden activity such as tool sheds, sales stands, rest room facilities, and planting preparation facilities; and

E. Off-street parking and walkways in conformance with the standards of this zoning code.

1.3.3. DEVELOPMENT STANDARDS

A. Maximum size

The maximum size for a neighborhood community garden shall be one acre. There shall be no maximum size for a large-scale community garden.

Option: The maximum size of a community garden shall be as set forth in the table below:

MAXIMUM AREA FOR NEIGHBORHOOD COMMUNITY GARDENS NOTE: The numbers in this table should be adjusted to fit local circumstances.	
Low-Density Single/Two-Family (SF/TF) Residential Zones (e.g., 1 unit/acre and greater)	No maximum
Medium-Density SF/TF Residential Zones (e.g., 1-4 units/acre)	20,000 square feet

[2] Use of an overlay district may allow a local government to more precisely define exactly where community gardens are allowed in its jurisdiction.

MAXIMUM AREA FOR NEIGHBORHOOD COMMUNITY GARDENS NOTE: The numbers in this table should be adjusted to fit local circumstances.	
High-Density SF/TF Residential Zones (e.g., 4+ units/acre)	10,000 square feet
Multifamily Residential Zones (e.g.,10+ units/acre)	20,000 square feet
Nonresidential Zones	No maximum

B. Setbacks

All buildings, structures (except for fences), storage of tools and materials, and compost piles and bins shall be set back a minimum distance of five feet from the property line.

C. Height

The maximum height of any building or structure associated with the community garden shall be 25 feet or the maximum height allowed in the zone district, whichever is lower.

D. Building Coverage

The combined area of all buildings, including greenhouses and similar structures, shall not exceed 20 percent of the total community garden area.

E. Parking

Off street parking shall be required only for those gardens exceeding 20,000 square feet in area. One parking space shall be required for every 20,000 square feet of garden area.

Option: Neighborhood community gardens shall be exempt from off-street parking requirements.

F. Signs

Signs shall comply with Section 1.3.2 above and all relevant standards as set forth in (insert cross reference to the municipal sign regulations), except that they shall not exceed nine square feet in area per side or exceed six feet in height.

G. Fences

1. Fences shall not exceed six feet in height and shall be made of wood, ornamental metal, chain-link, or woven wire.

2. **Option:** Any portion of a fence constructed of chain-link or woven wire that borders a public right-of-way or residential lot shall be covered in plant material or other vegetative screening within three years of fence installation.

   Option: Fences that are taller than four feet shall be at least 50 percent open.

H. Compost

Compost areas or bins shall be setback at least five feet from the community garden property line and from any dwelling or deck on the property.

I. Front-Yard Gardens

Gardens shall be allowed in the front-yard of any residential dwelling, but garden plants in front yards shall not exceed six feet in height.

J. Gardening Equipment

Use of common gardening tools such as shovels, rototillers, hoes, and landscaping equipment designed for household use is permitted. Use of heavier mechanized farm equipment such as tractors and plows is prohibited in residential districts except that during the initial preparation of a community garden land for use, such mechanized equipment may be utilized. Use of motorized equipment shall be allowed only between the hours of 8 a.m. and 9 p.m.

K. Sales

1. Sales of produce grown on the site of a community garden may occur on-site between the hours of 7 a.m. and 8 p.m. Off-site sales to restaurants, markets, and other food vendors is permitted at all times.
2. Sales stands are limited to a surface area of 64 square feet when associated with a community garden when the garden is larger than 5,000 square feet and 32 square feet of surface area when associated with a garden 5,000 square feet or smaller.
3. **Option:** Value-added products where the primary ingredients are grown and produced on-site are permitted to be sold on-site.

L. Open Space

The total area of a community garden shall be credited towards any open space set aside requirements set forth in the zoning code or subdivision regulations on a 2:1 basis (i.e., one square foot of community garden shall count as two square feet of open space).

DEFINITIONS

These are definitions related to these community garden standards, which should be located with the ordinance's other definitions.

Community Garden, Neighborhood

An area of land one acre or less that is managed and maintained by an individual or group to grow and harvest food crops, and/or non-food ornamental crops such as flowers, for personal or group use, consumption, donation, or sale. Community gardens include, but are not limited to, home, kitchen, and roof gardens. They may be divided into separate plots for cultivation by one or more individuals, may be farmed collectively by members of a group, may include common areas maintained and used by group members, and may include composting areas. Community gardens may be located on private property lots (vacant or developed) and on public lands and right of ways as designated by the (insert municipality name).

Community Garden, Large-Scale

A community garden larger than one acre.

Coldframe

An unheated outdoor structure consisting of a wooden or concrete frame and a top of glass or clear plastic, used for protecting seedlings and plants from the cold.

Greenhouse

A temporary or permanent structure made of glass, plastic, or fiberglass in which plants are cultivated.

Hoophouse

A temporary or permanent structure made of piping or other material covered with translucent plastic, constructed in a "half-round" or "hoop" shape, for the purposes of growing plants.

Sales Stand

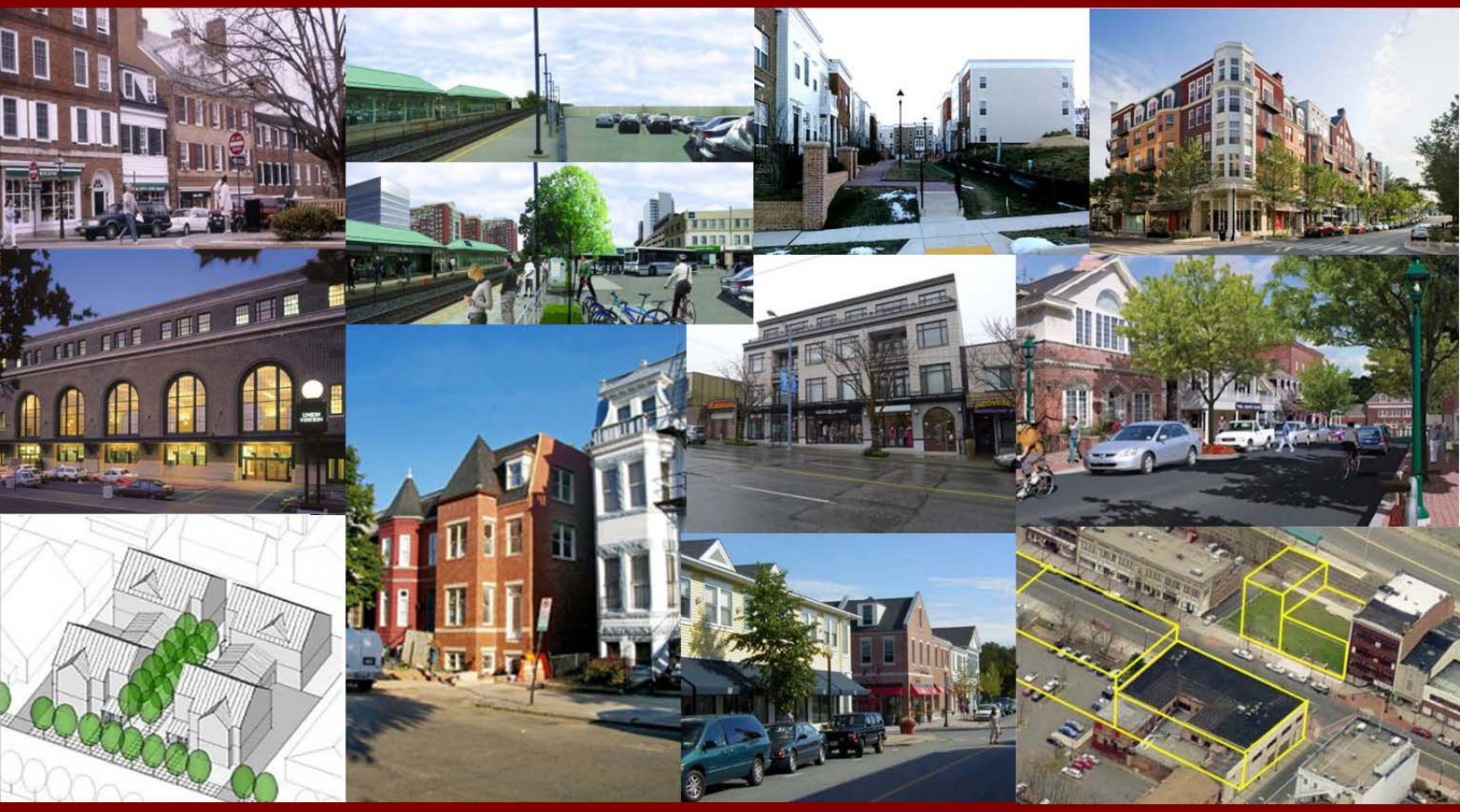
A sales table or kiosk of locally grown food crops, and/or non-food ornamental crops such as flowers, that is located at the site of a community garden and operates during the time of year coinciding with the growing season.

SALES OF HOME-GROWN PRODUCE IN RESIDENTIAL ZONE DISTRICTS

Sales of produce grown in a privately owned garden in any residential zone district may occur on-site between the hours of 7 a.m. and 8 p.m. Off-site sales to restaurants, markets, and other food vendors is permitted at all times. Stands associated with selling of produce from private residential gardens are prohibited.

SUSTAINABLE LAND USE CODE PROJECT

Capitol Region Council of Governments



MODEL REGULATIONS:
TAILORED STANDARDS FOR INFILL DEVELOPMENT

July 2013

CLARION

In Association with:
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Introduction

Successful infill development—new development that is sited on underutilized or undeveloped land within an existing community—can support mass transit, help reduce greenhouse gas emissions, help stabilize and revitalize existing neighborhoods and commercial centers, and utilize existing infrastructure. [1] Many jurisdictions in the region have adopted policies to promote infill development, often as part of an overall comprehensive strategy to spur community revitalization and redevelopment of distressed properties. Prior to World War II, much of town planning and development in this country's communities focused on city and town centers and existing neighborhoods. After World War II, automobile ownership increased dramatically and a major movement to the suburbs and greenfield development sites began. Land use planning and zoning regulations followed suit by requiring greater and greater distances between housing and nonresidential uses, and even between differing types of residential units, thus increasing dependency on the automobile. The new development codes required more parking, landscaping, and open space, further pushing development apart and making communities less walkable. Now local governments and land use planners are recognizing that infill development has some significant attractions.

Infill development can take several forms. In suburban areas, it might take the form of redevelopment of shopping malls or commercial strip centers. In urban areas it might be building single-family homes or apartments on vacant lots or larger scale redevelopment on abandoned commercial or industrial sites.

Although many of the municipalities in the region are small rural or suburban communities, local land use regulations have generally gone farther than those in some jurisdictions in recognizing mixed-use and infill development. A number of the less urban municipalities have town or village center zoning districts that allow or promote mixed-use, infill development (e.g., Avon's Village Center Zone, Bloomfield's Design Development Zone, Enfield's Thompsonville Village Center Zone, Farmington's Unionville Center Zone, Simsbury Center, Tolland's Town Center and Village Area districts, Windsor's Planned Urban Development Zone). In its downtown district, Hartford provides bonus floor area for development that mixes in residential uses and provides pedestrian-oriented retail uses, and encourages structured parking facilities. Windsor allows the transfer of density and increased building height for transit-oriented development near the Amtrak station in Windsor Center.

Overall, however, zoning codes in the CRCOG region sometimes create roadblocks to infill development. For example, they often require copious landscaping, parking, and open space more appropriate to new greenfield suburban projects, making infill more difficult and sometimes infeasible. Standards offering alternatives that recognize the often differing context for infill can help promote these projects while ensuring they respect the character of surrounding communities. These model regulations are intended to remove some of these unnecessary impediments to infill development.

[1] As used in this document, infill development means new development that is sited on vacant, undeveloped, or underutilized land within an existing community, and that is surrounded by other types of development. Infill development typically utilizes to the maximum extent practicable existing infrastructure such as street, water supply, and sanitary sewers. The term "urban infill" itself implies that existing land is mostly built-out and what is being built is in effect "filling in" the gaps.

Model Code Provisions for Infill Development

1.1. INFILL DEVELOPMENT STANDARDS—GENERAL

1.1.1. PURPOSE STATEMENT

The purposes of these infill development standards are to:

A. Support and enhance existing residential and commercial areas;

B. Promote mass transit;

C. Utilize existing infrastructure; and

D. Reduce greenhouse gas emissions.

1.1.2. APPLICABILITY

These alternative development standards shall be applied (Option: "may be applied") in the following zone districts or areas of the community. (Each community should specify particular zone districts, such as a central business or mixed-use zone district, or discrete areas in the locality where the infill standards would be optional or mandatory.)[2]

1.2. DEFINITIONS

1.2.1. **Infill Development:** Means new development that is sited on vacant, undeveloped, or underutilized land within an existing community, and that is surrounded by other types of development. Infill development typically utilizes to the maximum extent practicable existing infrastructure such as street, water supply, and sanitary sewers.

1.2.2. **Maximum extent practicable:** Means no feasible or prudent alternative exists, as determined by (Add name of appropriate agency), and all possible efforts to comply with the standards or regulation or minimize potential harmful or adverse impacts have been undertaken by an applicant. Economic considerations may be taken into account, but shall not be the overriding factor determining "maximum extent practicable."

1.3. DEVELOPMENT STANDARDS

1.3.1. LANDSCAPING AND TREE PROTECTION

These development standards are intended to provide alternative and appropriate standards for parking lot landscaping and tree protection for infill development.

A. Parking Lot Perimeter Landscaping

1. The perimeter of all parking lots that abut a public street or alley or a lot used for detached residential dwellings shall be landscaped or screened according to one of the following options:

   a. A minimum two-foot-wide planting strip containing an ornamental metal fence or masonry wall with a minimum height of three and one-half feet and a maximum height of four feet, combined with a

[2] Some communities apply infill development standards in their downtowns or central business districts. Others focus on older residential neighborhoods or obsolete industrial or commercial areas.

single row of evergreen shrubs planted a minimum of three feet on-center; or

b. A minimum four-foot-wide planting strip containing a low, continuous hedge a minimum of 30 inches tall at installation and consisting of a double row of evergreen shrubs planted a minimum of three feet on-center in a triangular pattern.

2. Curbs or parking blocks shall be installed as a protective measure adjacent to the landscaped perimeter area to prevent overhang of vehicles into the landscaped area. In cases where two or more off-street surface parking lots are located adjacent to one another, but on different lots, no perimeter landscape materials shall be required between the two parking lots.

Scale-Up Option—Interior Parking Lot Landscaping

In addition to excessive perimeter parking lot landscaping requirements, some zoning codes apply interior landscaping requirements more geared to large greenfield sites. Local governments may want to take the next step beyond tailoring perimeter landscaping regulations and address interior landscaping regulations as well.

A. Interior Parking Lot Landscaping

1. Small lots

Parking lots with fewer than ten spaces are exempt from any interior parking lot landscaping requirements. Pervious pavement shall be allowed in small parking lots.

2. Large lots with 10 or more spaces

Large parking lots shall provide interior landscaping that meets the following standards.

a. A minimum of one 2.5-inch caliper tree shall be planted in protected islands at the end of each parking row and at intervals not exceeding 100 feet within the parking rows.

b. Planting islands shall have a minimum width of four feet and minimum area of 160 square feet for double-loaded parking rows and 80 for single-loaded parking rows.

c. The total area of the interior landscaping shall not exceed ten percent of the lot unless requested by the applicant.

d. Where practicable, planting islands may incorporate low-impact design approaches to manage stormwater, such as inflow cuts in curbing.

3. General Standards

a. A minimum of 70 percent of all required islands and other landscaped areas shall be covered with trees or shrubs and continuous groundcover consisting of low-growing evergreen shrubs or evergreen ground cover.

b. Pervious pavement shall be allowed in all surface parking lots.

B. Tree Protection

1. Preservation of Significant Trees

Significant trees shall be preserved to the maximum extent practicable. For the purposes of this standard, the caliper of a "significant" tree shall be at least 24 inches for deciduous trees and 18 inches for evergreen trees.[3]

2. Significant Tree Replacement

a. Where significant trees cannot feasibly be preserved as determined by (Add decision-making agency), the total caliper inches of the tree(s) that are removed shall be replaced on site by the same caliper inches of new trees. The new trees shall either be of the same or similar species, or, if identified by the (Add appropriate city agency) for species diversification, shall be from a list of permissible species provided by the (Add appropriate city agency).

b. If site limitations affect the ability of the developer to replace the total caliper inches of the removed tree(s), the (Add appropriate city agency) may allow the developer to reduce the replacement measurement in an amount that allows for the maximum replacement of caliper inches feasible on the site. This reduction may not exceed 50 percent of the total caliper inches removed.

c. Where the (Add appropriate city agency) reduces the number of trees planted in replacement of significant trees, the developer shall make a contribution to the tree fund for the (Add jurisdiction name) for the remaining caliper inches not replaced. The amount of the in-lieu fee shall be calculated as the cost to replace and install the remaining total caliper inches not planted with new trees of the same or similar species purchased wholesale at two-inch caliper.

d. The tree fund shall be used to replace or provide new trees within the (Add jurisdiction name).

1.3.2. OPEN SPACE

A. In-Lieu Payment

Development in the (Insert appropriate reference to infill districts or areas) shall be exempt from all private open space set-aside and public land dedication requirements contained elsewhere in the zoning and subdivision regulations. In place of such requirements, the (Add appropriate decision-making body) may require the applicant to make a payment as determined by the (Add appropriate city agency) that shall not exceed 50 percent of the value of the private open space set-aside or open space land dedication requirements normally required in (Add reference to

[3] Each jurisdiction should define "significant tree" as appropriate for its existing tree cover. Some jurisdictions create lists defining "significant" for each desirable individual species so that a "significant" dogwood tree would be much smaller in caliper size than a "significant" oak.

open space set-aside or dedication requirements elsewhere in land development codes) applied to the property.[4] The in-lieu fee shall be calculated so that it does not exceed the open space impacts or demands of the proposed development. The (Insert name of local jurisdiction) shall expend such funds for the provision of trees or the purchase and maintenance of street furniture or plazas or other community amenities in the general vicinity of the development.

B. Community Amenities

1. In addition to any in-lieu payment, the applicant shall provide community amenities as set forth below in Table 1.

TABLE 1: COMMUNITY AMENITIES	
Size of Development or Redevelopment (Building Square Footage)	**Number of Amenities**
Less than 5,000 sq. ft.	1
5,000 – 10,000 sq. ft.	2
10,000 – 50,000 sq. ft.	3
Greater than 50,000 sq. ft.	4

2. Acceptable community amenities include:

   a. A public outdoor seating plaza adjacent to, or visible and accessible from, the street, with a minimum usable area of 300 square feet.

   b. Sidewalk planters between sidewalk and building.

   c. Public art, including, but not limited to, sculptures, fountains, clocks, or murals with a value equal to or greater than one percent of construction value of the structure.

   d. Other (to be added by local government as appropriate).

Scale-Up Option—Open Space

Some communities elect to provide more detailed standards to guide the provision of open space in infill areas. The standards in this section are intended to ensure that all developments in designated infill areas provide for on-site open space, and that the shape, size, and design of that open space provides spaces usable by the occupants, residents, or visitors to the property.

A. Usable Open Space Required

Usable open space required for infill varies based on gross site acreage and

[4] The state's zoning enabling legislation does not prohibit open space dedication or in-lieu fees. However, to comply with federal and state court decisions, zoning-based fees would be limited by the demonstrable open space demands or impacts of the proposed development. The Connecticut subdivision enabling legislation (which likely would not apply to infill development in most cases) provides that an in-lieu fee cannot exceed 10 percent of the value of the total land subdivided. Thus if the subdivision rules applied, as this model ordinance section is written, the in-lieu fee would not exceed five percent of the total value of the land (50% of 10%).

development type as specified in Table 1 below.

1. Developments with a gross site acreage of more than four acres may aggregate usable open space requirements into one or more designated usable open space sites, common areas, or pocket parks.

2. A minimum of 50 percent of required usable open space in the following locations shall have public access: (Add appropriate locations such as commercial areas)

3. In infill areas, where outdoor seating for eating and drinking establishments is a permitted or conditional use, up to 65 percent of the area designated for seating may be credited towards the usable open space requirements.

4. Usable open space areas may be either publicly or privately owned, as determined during the review and approval process.

TABLE 2: MINIMUM USABLE OPEN SPACE REQUIREMENTS

Gross Project Acreage	Type of Development	
	Minimum Open Space Residential or Mixed Use with Residential Component	Minimum Open Space Nonresidential
<.25	100 sq. ft./du	None
.25 to 1.0	100 sq. ft./du	5% of gross lot area
1.01 to 99	100 sq. ft./du or 5% of gross lot area, whichever is greater	5% of gross lot area
100 –149		
150 or more		
Required usable open space may be either common/shared or private		

B. Usable Open Space in Phased Developments

1. At the developer's discretion, developments constructed in multiple phases may aggregate the usable open space requirements into one or more usable open space areas, provided the following criteria are met:

   a. The location and required acreage of usable open space for the entire development is shown in the preliminary development application; and

   b. The percentage of total usable open space developed prior to, or concurrent with, occupancy in the first phase is at least proportional to the percentage of total acreage in the first phase.

2. If an approved phasing plan allocates the majority of usable open space to a particular lot, a prorated share of the usable open space may be used to calculate FAR and/or residential density on other lots in the development.

This provision shall apply whether the usable open space is retained in private ownership or dedicated to the (Insert jurisdiction name) for park or open space purposes.

C. Types of Spaces

The following types of public and private outdoor spaces may be counted towards minimum open space requirements:

1. Plazas, patios, pocket parks, and other community gathering spaces that provide opportunities for outdoor seating, dining, and social interaction;
2. Courtyards, balconies, and yards intended for individual units;
3. Community gardens or similar spaces designated for urban agricultural uses;
4. Playgrounds;
5. Indoor or outdoor exercise or recreational facilities;
6. Habitable, landscaped roofs (may include "green roof" treatments);
7. Extra sidewalk width (beyond the through pedestrian passage widths required by (Add appropriate code section)) created between the building façade and the required through pedestrian passage area and furnished for outdoor dining or seating; or
8. Interior, multi-purpose community space provided for private or public use.

D. Exclusions and Exceptions

To qualify as usable open space, an area must be planned for that purpose and of a sufficient size to provide a legitimate active or passive recreational opportunity. The following features shall not be counted towards minimum usable open space requirements:

1. Parking strips;
2. Foundation landscaping around buildings;
3. Required sidewalk and streetscape elements;
4. Parking areas;
5. Small, oddly-shaped, and/or otherwise unusable remnant parcels;
6. Areas along the property boundaries with a minimum width of less than six feet; and
7. Land area without structures, site improvements, or landscaping, unless it is located within a publicly accessible natural or wildlife viewing area.

E. Pedestrian-Oriented Features

In order to create places attractive to and usable by the public, usable open space areas shall incorporate a minimum of three pedestrian-oriented features, such as, but not limited to:

1. Benches or low walls with seating areas;
2. Trees identified in the street tree list maintained by (Add appropriate agency);
3. Free standing planters and/or raised planting beds designed to treat stormwater and allow infiltration into the underlying soil;
4. Public art or sculpture;
5. Water features and/or drinking fountains;
6. Outdoor dining areas;
7. Play structures;
8. Weather canopies or sunshades; or
9. Other pedestrian-oriented features as approved by the Review Authority.

F. Dimensions

Where provided, usable open space shall meet the following standards:

TABLE 2: MINIMUM USABLE OPEN SPACE DIMENSIONS	
Type of Usable Open Space	**Minimum Size**
Balconies or porches	Minimum average depth and width of 6 feet
At grade patios	Minimum depth of 6 feet and width of 10 feet
Private Yards	Minimum depth and width of 10 feet
Courtyards/plazas or other spaces that provide opportunities for outdoor seating, dining, and social interaction	Minimum depth of 10 feet and width of 20 feet and a minimum total area of 1,000 square feet

G. Location

1. Usable open space shall be sited and improved to provide opportunities for physical activity and social interaction. The entirety of the required usable open space shall be improved for such purposes except where significant natural resources such as wetlands are present.
2. Preference in the placement of usable open space shall be given to sites that:
   a. Enhance opportunities for recreation (active or passive) and access to nature;
   b. Enhance opportunities for interaction between residents, tenants, and/or the public;
   c. Enhance park sites adjacent to converging pedestrian routes;
   d. Preserve otherwise unprotected natural resources and wildlife

habitat on the site;

e. Can be combined with adjacent sites to create opportunities for larger contiguous tracts of usable open space; or

f. Protect lands where more intense development than open space may otherwise have an adverse impact on significant natural resources, wetlands, or floodplains on adjacent properties.

1.3.3. PARKING

The minimum parking requirements of the zoning code shall be adjusted as follows for infill development. The aggregate parking reduction for any project shall not exceed 30 percent.

A. All projects shall be eligible for a ten percent reduction in off-street parking spaces to reflect the reduced use of the automobile associated with infill development.

B. All infill projects that incorporate two or more primary use classifications (e.g., residential, commercial, office, institutional) shall be eligible for a 15 percent reduction in off-street parking spaces to reflect the reduced use of the automobile associated with mixed-use infill development.

C. All infill projects located within ¼ mile of an established bus rapid transit or mass transit line or center shall be eligible for a 30 percent reduction in off-street parking spaces. If they are located with ½ mile, a 20 percent reduction shall be granted. If an existing transit route or center is eliminated or moved, any development approved in conformance with this section shall not be deemed nonconforming in terms of required parking

D. The total number of required off-street parking spaces may be further reduced by the (Insert name of appropriate agency) if the applicant submits a parking evaluation by a qualified traffic engineer or planner or other qualified professional that demonstrates a reduction is appropriate based on the expected parking needs of the development and existence of other factors.

Scale-Up Option—Off-Street Parking Location and Structured Parking Design

In addition to parking space quantity requirements, local governments may want to consider the location of parking in infill areas as well as the design of structured parking.

A. Off-Street Parking Location

1. No off-street surface parking shall be located between a building wall and the primary street the building fronts; however, parking may be permitted between a street and a secondary entrance.

2. Off-street surface parking lots shall not abut street intersections.

3. Parking structures shall not abut street intersections unless the facades are designed to resemble building walls and include nonresidential uses on the

first floor.

4. In no instance shall off-street parking areas occupy more than 30 percent of the lot frontage adjacent to the primary street serving the lot.

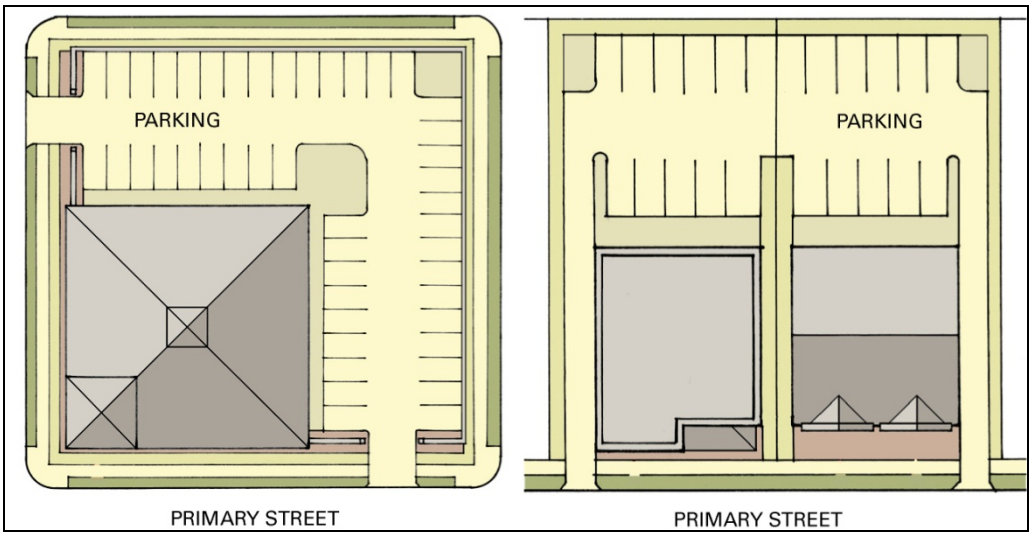

Figure 1: Buildings in infill areas should not have frontages that are dominated by off-street parking areas. These images demonstrate two acceptable options.

B. Parking Structures

1. Parking structures shall be wrapped with retail, commercial, institutional, or residential uses along a minimum of 50 percent of their street frontage to provide visual interest and to promote pedestrian activity at the street level.

2. Facades of parking decks not occupied by retail, commercial, institutional, or residential uses shall use three or more of the following architectural features:

   a. Windows or window-shaped openings.
   b. Decorative wall insets or projections;
   c. Awnings;
   d. Changes in color or texture of materials;
   e. Approved public art;
   f. Integrated landscape planters; or
   g. Other similar features approved by (insert appropriate decision-making agency).

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments

MODEL REGULATIONS:
HOUSING DIVERSITY AND AFFORDABILITY
ACCESSORY DWELLING UNITS

June 2013

CLARION

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CONTENTS

ACCESSORY DWELLING UNITS

Introduction

Accessory dwelling units (ADUs) have become an important component of the housing stock in many communities in the United States, both large and small. Noted ADU programs include Portland, OR, Santa Cruz and Chula Vista, CA, Seattle, WA, and Lexington, MA. By providing housing on existing lots in developed neighborhoods, ADUs make good use of land and public infrastructure investment. When located near employment and retail centers, ADUs can help increase use of mass transit and contribute to reductions in greenhouse gas emissions and energy use. Additionally, ADUs help communities address the nation's changing demographics—an aging population, smaller households, and young professionals moving into urban areas. The number of senior citizens is growing dramatically and many are "empty nesters" who desire to down-size. Most want to stay in their current community. Moreover, single-person households are fueling a demand for smaller, affordable units. Accessory dwelling units can also simplify some of the challenges of caring for aging parents at one end of the spectrum, or provide an affordable, stable option for young adult children at the other. Nationally, the work force continues to be challenged to find affordable housing, and ADUs can help address that demand.

Detached accessory dwelling unit

Attached accessory dwelling unit

Many communities across the country are experiencing similar demographic shifts as those in the Capitol Region and Connecticut and are adapting their land use policies and regulations to address changing housing needs. The Capitol Region Council of Governments (CRCOG) has adopted a Regional Housing Policy that addresses the need for affordable housing, the use and improvement of existing housing, the selective use and demolition of deteriorated housing, and other related issues. Adopted implementation strategies include one to support land use policies that allow for a diversity of housing types and costs in all communities.

To address housing affordability, the Connecticut legislature adopted the Affordable Housing Land Use Appeals Act of 1990,[1] which expressly reverses the burden of proof when a municipality denies a developer's application to construct affordable housing. In such a case, the act requires the municipality to prove that the need for affordable housing is clearly outweighed by the need to protect the health or

[1] Conn. Gen. Stat. § 30g.

safety of the community. Since few municipalities have sufficient affordable housing to be exempt from this requirement (i.e., where at least ten percent of the existing housing stock qualifies as affordable), the act has affected most municipalities in the state. It has been controversial, and its effect on the supply of affordable housing in the 20 years since enactment has been much debated.

One impact of the act is that it has placed many Connecticut municipalities in the position of reacting to a developer's sense of where and how affordable housing projects should be built to meet the community's affordable housing needs. Connecticut municipalities increasingly recognize they can act to accommodate and encourage affordable housing developments that meet not only the needs of the developer and the occupants, but also the needs of the community. One way to do so is to increase the range of options available to developers and property owners to provide affordable housing, including options such as accessory dwelling units.

A number of the municipalities in the region (e.g., Bloomfield, Ellington, Farmington, and Tolland), have adopted regulations to accommodate accessory dwelling units, although they tend to be quite restrictive. In some jurisdictions, ADUs are allowed only via a special permit process, and in others there are restrictions on who may occupy a unit (e.g., family members only), or ADUs must be within or attached to the principal dwelling unit.

ADUs can take a number of forms, including living units within an existing house (with or without a separate entry), in an attached structure, or in a structure separate from the main dwelling (e.g., above a detached garage). Clarion's approach to addressing ADUs is straight-forward and relatively simple. ADUs would be allowed in all residential zones, but subject to a number of design and use related standards that address neighborhood compatibility and a provision that requires that the principal unit on the property be owner-occupied.

The proposed regulations include: (1) a statement of purposes for the incorporation of accessory dwelling units into the permitted mix of housing, (2) a description of the zone districts in which ADUs will be applicable, (3) a definition of accessory dwelling unit, and (4) standards for the size, location, and design of the units.

Model Code Provisions for Accessory Dwelling Units

1.1. ACCESSORY DWELLING UNITS -- GENERAL

1.1.1. PURPOSE STATEMENT

The purposes of the proposed accessory dwelling unit regulations are to:

A. Create new housing units while respecting the look and scale of single-family dwelling development;

B. Increase the housing stock in existing neighborhoods in a manner that is less intense than alternatives;

C. Allow more efficient use of existing housing stock, public infrastructure, and the embodied energy contained within existing structures;

D. Provide a mix of housing options that responds to changing family needs and demands for smaller households;

E. Offer a means for residents, particularly seniors, single parents, and families with grown children, to remain in their homes and neighborhoods, and obtain extra income, security, companionship, and services;

F. Promote a broader range of affordable housing;

G. Provide opportunities for workforce housing in developed and new neighborhoods that are close to places of work, which reduces fossil fuel consumption through less car commuting and thus reduces greenhouse gas emissions; and

H. Support transit-oriented development and reduce auto usage by increasing density near transit stops.

1.1.2. APPLICABILITY

A. **APPLICABILITY**

Accessory dwelling units are allowed in the following zone districts: (insert appropriate districts such as all residential zone districts, mixed-use districts, etc.), subject to the provisions of this section.

B. **PERMITTED ACCESSORY USE**

Accessory dwelling units shall be a permitted accessory use to a single-family dwelling in the zone districts specified in Section 2.2.1 above. They may be incorporated within or added onto an existing house, garage, or other accessory structure, or may be built as a separate, detached structure on a lot where a single-family dwelling exists.

OPTION: Detached accessory dwelling units that exceed 800 square feet or are located on lots smaller than 6,000 square feet shall be approved only through the special permit (or conditional use) process set forth in these regulations.[2]

[2] We recommend against subjecting accessory dwelling units to any special permit or conditional use processes as this added approval step often discourages property owners from adding such a unit. However, because some jurisdictions may desire to subject accessory dwelling units to additional scrutiny, we have included an optional provisions providing for special

OPTION: No more than 10 accessory dwelling units shall be allowed to be constructed in (insert name of jurisdiction) in any calendar year on a first-come, first-served basis.[3] Furthermore, no more than two accessory dwelling units may be constructed annually on any one block.[4]

C. **BUILDING CODES**

Accessory dwelling units are subject to the applicable state building code standards.

1.2. DEFINITION

Accessory dwelling unit: A residential unit that is located on the same lot as a single family dwelling unit, either internal to or attached to the single family unit or in a detached structure. The accessory dwelling unit is a complete housekeeping unit with a shared or separate entrance, and separate kitchen, sleeping area, closet space, and bathroom facilities.

1.3. DESIGN AND DEVELOPMENT STANDARDS

1.3.1. INTENT

These design and development standards are intended to ensure that accessory dwelling units:

A. Are compatible with the desired character and livability of the zone districts and neighborhoods within which they are located;

B. Respect the general scale of buildings and placement of structures to allow sharing of common space on the lot, such as yards and driveways; and

C. Are smaller in size than the principal dwelling on the site.

1.3.2. PROPERTY OWNERSHIP AND OCCUPANCY

A. **Owner-Occupied Property Required**[5]

Accessory dwelling units shall only be permitted when the property owner or a member of his/her immediate family lives on the property, within either the principal dwelling or accessory dwelling unit. Before issuance of a (insert name of approval permit or certificate of occupancy), the owner shall submit a notarized letter stating that he/she or a member of his/her immediate family will occupy one of the dwelling units on the premises as a primary residence except for:

1. A bona fide, temporary absence of three years or less for activities such as temporary job assignments, sabbaticals, or voluntary service (indefinite periods of absence from the dwelling shall not qualify for this exception); or

permit/conditional use review for accessory units on very small lots or for larger units (note this assumes the local jurisdiction allows larger units than the 650 square feet specified in these model regulations).

[3] Such a numerical limit could result in a challenge on the ground that it violates the state zoning enabling legslation's uniformity requirement (Conn. Gen Stat. 8-124-8-2). Local officials should consult with legal counsel on this issue.

[4] In some communities where accessory dwelling units are a new use, there numbers are limited for a period until the local government can assess their impact and the effectiveness of their accessory dwelling unit regulations. The number of units allowed would be calibrated to the size of the community (e.g., a larger community like Hartford would allow more than a smaller one).

[5] Proof of residency is addressed below in Section 2.4.8, Registration.

2. Admittance to a hospital, nursing home, assisted living facility or other similar facility.

Scale-Up Option—Ownership Deed Restrictions

To ensure that the principal residence on the property is owner-occupied, which can help ensure greater day-to-day management control of the accessory unit and enhance neighborhood compatibility, some communities require filing of a formal deed restriction requiring the principal or accessory unit to be occupied by the owner of the property.

1.3.2 PROPERTY OWNERSHIP AND OCCUPANCY

A. **Owner-Occupied Property Required (See above.)**

B. **Deed Restriction**

Before obtaining a (inset name of approval permit or certificate of occupancy) for an accessory dwelling unit, the property owner shall file with the (insert appropriate agency for deed recordation) in a form acceptable to the (insert local government name), a declaration of restrictions in reference to the deed under which the property was acquired by the present owner stating:

1. That either the principal or accessory dwelling unit on the property shall be occupied by the owner of the property or a member of his/her immediate family.
2. The accessory dwelling unit shall not be sold separately from the principal dwelling unit, nor shall the lot be subdivided to provide a separate lot for the accessory dwelling unit.
3. The above restrictions shall run with the land and are binding upon any successor owner of the property.
4. The deed restrictions shall lapse upon removal of the accessory dwelling unit. Upon verification of such removal, the [insert local government name] shall record appropriate documentation releasing such encumbrance. Any fees associated with such release shall be borne by the property owner.

B. **Number of Residents**

The total number of residents that may reside in an accessory dwelling unit may not exceed the number that is allowed for a family as defined in the (insert name of local land use regulatory document).

1.3.3. UNDERLYING ZONING AND DENSITY

Unless specifically addressed in this section, accessory dwelling units are subject to the regulations for a principal building of the underlying zone district with regard to lot and bulk standards (e.g., height, setback/yard requirements, building coverage).

OPTION (Note: If zoning regulations for the principal building are more stringent than those for accessory buildings (e.g., setbacks), the local government may opt to apply the accessory building standards to facilitate construction of ADUs): Unless specifically addressed in this

section, accessory dwelling units are subject to the regulations for an accessory building of the underlying zone district with regard to lot and bulk standards (e.g., height, setback/yard requirements, building coverage).

A. Where permitted pursuant to this Section (reference this new regulatory section), one accessory dwelling unit may be permitted on a lot in addition to the principal single-family dwelling. Other permitted accessory buildings or uses, as defined herein, may be allowed in addition to the principal single-family dwelling.

B. Accessory dwelling units shall be subject to the same zone district height limitations and setbacks as applicable to the principal dwelling on the property. An existing accessory structure whose height or setback(s) does not meet the requirements for a dwelling in the zone district may be converted into an accessory dwelling unit, but the structure may not be altered in any manner that would increase the degree of non-compliance.

OPTION (if regulations for the principal building are more stringent than those for accessory buildings): Accessory dwelling units shall be subject to the same zone district height limitations and setbacks as applicable to accessory buildings on the property. An existing accessory structure whose height or setback(s) does not meet the requirements for accessory buildings in the zone district may be converted into an accessory dwelling unit, but the building may not be altered in any manner that would increase the degree of non-compliance.

C. Accessory dwelling units shall not be considered a unit of density and therefore are not included in the density calculation for a single-family residential property.

1.3.4. HOME OCCUPATIONS

Home occupations are (OPTION: are not) allowed to be conducted in an accessory dwelling unit, subject to the standards for home occupations in (reference standards for home occupations).

1.3.5. DESIGN STANDARDS

A. **Lot Standards**

1. The minimum lot size for a lot that has both a primary dwelling unit and an accessory dwelling unit is 4,500 square feet.[6]

2. One accessory dwelling unit is permitted per residential lot. The accessory unit shall be located on the same lot as the principal unit.

B. **Methods of Creation**

An accessory dwelling unit may only be created through the following methods, provided creation of the accessory dwelling unit complies with applicable lot coverage, setback, and height standards and does not eliminate required parking for the principal dwelling:

1. Converting existing living area within a principal dwelling, such as a basement or attic space;

[6] Our research indicates the minimum lot size in most local ordinances is at least 4,000 square feet.

2. Adding floor area;

3. Constructing a new principal dwelling with an internal or detached accessory dwelling unit;

4. Converting or adding onto an existing accessory structure on a lot, such as to a garage or other outbuilding; or

5. Constructing a new accessory dwelling unit within a separate detached structure.

C. **Size**

1. The maximum floor area of an accessory dwelling unit may be no more than 50 percent of the total floor area of the principal dwelling unit or 650 square feet whichever is less.[7]

2. The minimum living space of an accessory dwelling unit, not including bathrooms and closets, is 220 square feet.

D. **Location of Entrances and Access**

1. **Internal or Attached Units**

Accessory dwelling units that are internal to or attached to a principal dwelling may take access from an existing entrance on a street-facing front façade of the principal dwelling. No new entrances for an accessory dwelling unit may be added to the front façade of a principal dwelling unless such entrance is recessed at least 10 feet behind the wall plane of the front façade of the principal dwelling.[8]

2. **Detached Units**

Accessory dwelling units that are detached from the principal dwelling:

a. May utilize an existing street-facing front façade entrance as long as the entrance is located a minimum of 20 feet behind the wall plane of the front façade of the principal dwelling, or install a new entrance to the existing or new detached structure for the purpose of serving the accessory dwelling unit as long as the entrance is facing the side, rear, or interior of the lot .

b. Shall be located no closer than 30 feet from the front property line and shall take access from an alley when one is present.

3. **Corner Lots**

On corner lots, existing entrances on the street-facing sides may be used for an accessory dwelling unit, but any new entrance shall be located facing toward the rear or internal lot line or toward the back of the principal dwelling.

[7] This is on the low end of what many communities allow regarding accessory dwelling unit size. Some communities allow accessory units as large as 1,500 square feet. Some have tiered maximums, permitting larger ADUs with larger principal dwellings. The typical size is usually 500-800 square feet. This number should be discussed with the project communities to see what is appropriate for the region.

[8] In suburban and rural areas with larger lots, this setback requirement may not be necessary.

E. **Exterior Design**

An accessory dwelling unit shall be designed to maintain the architectural design, style, appearance, and character of the principal dwelling. If an attached accessory dwelling unit extends beyond the current footprint or existing height of the principal dwelling, such an addition must be compatible with the existing facade, roof pitch, siding materials, and windows as approved by the (insert name of appropriate official).

Scale-Up Option—Design Standards

Some communities have enacted enhanced design standards to ensure that accessory dwelling units are architecturally compatible with the primary dwelling unit, thus enhancing neighborhood compatibility. Set forth below are possible standards to consider:

E. **Exterior Design**

Proposals for attached or detached accessory dwelling units that would increase floor area through new construction shall meet the following standards.

1. The exterior finish on the addition shall match the exterior finish material of the principal dwelling in type, size, and placement.
2. Trim shall be of the same type, size, and location as trim used on the principal dwelling.
3. Windows on street-facing facades shall match those on the principal dwelling in terms of proportion (relationship of width to height) and orientation (horizontal or vertical).
4. Eaves shall project from the building walls in the same proportion as the eaves on the principal dwelling or project at least one foot from all elevations. If the principal dwelling has no eaves, no eaves are required.
5. The roof pitch shall be the same as the predominant roof pitch of the principal dwelling.
6. Windows that face an adjoining residential property shall be designed and located to protect the privacy of neighbors unless fencing or landscaping is provided that adequately provides such privacy.
7. Stairways to a second floor accessory dwelling unit shall not be visible from a public street.

F. **Bulk Limitation**

The building coverage for the detached accessory dwelling unit may not be larger than the building coverage of the principal dwelling and shall not exceed ten percent of the total area of the lot.

F. **Prohibited Structures**

Mobile homes, manufactured housing, industrialized housing, recreational vehicles, travel trailers, and any other wheeled or transportable structure shall not be used as accessory dwelling units.

1.3.6. PARKING

One additional on-site parking space shall be provided for an accessory dwelling unit.[9] The (insert name of appropriate official) may reduce this requirement upon a finding that the parking requirement for the principal dwelling is met and:

A. Adequate on-street parking in the immediate vicinity is available to serve the accessory dwelling unit and will not cause congestion in the area; or

B. The accessory dwelling unit is located within ¼ mile of a fixed transit line or an arterial street or road with a designated bus route.

1.3.7. UTILITY SERVICE REQUIREMENT

Accessory dwelling units may be connected to the water, wastewater, electric, gas, and other utilities of the principal dwelling or may have separate services.[10]

OPTION: An accessory dwelling unit shall be connected to the same utilities (except telephone and television) as the principal dwelling and shall not have separate services.

1.3.8. REGISTRATION[11]

A. Accessory dwelling units are required to be registered with the (insert name of local government) to ensure compliance with applicable regulations, to assist the community in assessing housing supply and demand, and to fulfill the purposes in Section 2.1, Purpose Statement.

B. No accessory dwelling unit shall be occupied until the owner obtains an occupancy permit for the dwelling unit from the (insert name of local government). The requirement for permitting is to ensure that:

1. The applicant is aware of all (insert name of local government) regulations governing accessory dwelling units;

2. The (insert name of local government) has all information necessary to evaluate whether the accessory dwelling unit initially meets and continues to comply with applicable requirements;

3. The accessory dwelling unit meets health and safety requirements; and

4. The distribution and location of accessory dwelling units is known.

[9] Some communities do not require any additional parking for accessory dwelling units, because requiring an additional off-street space can be very difficult in areas with smaller lots and can amount to a de facto prohibition.

[10] Some local governments do not allow separate utility services so that the owner of the primary unit maintains tighter control over the accessory unit. However, such a restriction can reduce the attractiveness of the accessory unit to both the owner and a potential tenant/occupant.

[11] Enforcement of the owner occupancy requirement is a key issue in most municipalities. Some communities, such as Boulder, Colorado, establish an accessory dwelling unit permit system that requires the owner to obtain an administrative permit that checks owner-occupancy before renting the accessory unit. Other communities, including many in Washington State, establish a quasi-permit system through the use of affidavits where the owner affirms owner-occupancy of either the main building or the accessory unit. A new affidavit is required if the property is sold. In both cases, violation on the part of the owner, typically identified by a complaint but also subject to inspection by the jurisdiction, is subject to enforcement through a fine and, depending on the circumstances, may be punishable by requiring the owner to remove the accessory dwelling unit. The other option is recordation of an enforceable deed restriction.

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments

MODEL REGULATIONS:
HOUSING DIVERSITY AND AFFORDABILITY
LIVE/WORK UNITS

June 2013

CLARION

In Association with:
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Introduction

Live/work units—structures that combine living quarters with work space—serve several important sustainability goals, including:

- Reducing use of vehicles for commuting, thus reducing burning of fossil fuels and greenhouse gas emissions,
- Providing an affordable housing option for small business owners, and
- Supporting mixed-use and infill development.

Live/work units are distinguished from home occupations allowed in residential zone districts in that they are primarily permitted in commercial, office, and industrial zone districts and are not subject to significant restrictions on hours of operation, types of commercial activities, and number of employees, as is usually the case for home occupations.

Live/work units in Bristol, CT

An increasing number of cities—such as Boston, Chicago, and Cleveland nationally, and Manchester, New Haven, and Bristol in Connecticut—allow and encourage live/work units. This section offers a definition of live/work units and some basic standards that a local government in the Capitol Region might consider to accommodate live/work units in nonresidential areas in a safe, compatible fashion.

Model Code Provisions for Live/Work Units

1.1. LIVE/WORK UNITS--GENERAL

1.1.1. PURPOSES

The purposes of these provisions relating to live/work units are to:

A. Promote the conservation of energy;

B. Encourage mixed-use development and reuse of existing buildings; and

C. Promote affordable, diverse house choices.

1.2. DEFINITIONS

1.2.1. LIVE/WORK UNIT DEFINITION

Option 1: Live/work unit means a building or space within a building used jointly for commercial and residential purposes by a person living within the building or space. The residential space is secondary or accessory to the primary use as a place of work.

Option 2: Live/work unit means a building or portion of building: (1) that combines a commercial or manufacturing activity allowed in the zone with a residential living space for the owner of the commercial or manufacturing activity or the owner's employee, and that person's household; (2) where the resident owner or employee is responsible for the commercial or manufacturing activity performed; and (3) where the commercial or

manufacturing activity conducted takes place subject to a valid business license associated with the premises.

1.3. LIVE/WORK UNIT LOCATION AND USES

1.3.1. PERMISSIBLE ZONE DISTRICTS

Live/work units shall be allowed by right in all (Add appropriate zone districts—for example, commercial, mixed-use, industrial). Live/work units are not allowed in any zone district that is exclusively residential.

1.3.2. USES

Any non-residential use allowed in the zone district within which a live/work unit is legally located may be conducted on the premises of that live/work unit.[1]

1.4. DEVELOPMENT STANDARDS

1.4.1. GENERAL

Live/work units shall comply with all of the following standards.

A. The residential portion of the unit shall not occupy over 50 percent of the gross floor area.

B. The nonresidential portion of the building shall be located on the ground floor and the residential unit on the second floor. An entry to the second-floor residential unit may be located on the ground floor.

C. The use shall comply with the parking, landscaping, and other development standards set forth in (include reference to municipal land use regulations).[2]

D. All nonresidential off-street parking shall be located as far as practicable from existing adjacent residential dwellings.

E. Drive-through facilities are prohibited.

F. Employees shall be limited to occupants of the residential portion of the building plus up to three persons not residing in the residential portion.

[1] Live-work units usually are geared to uses that create or produce something on premises (e.g., an artist studio). However they could allow services such as hair salons depending on local preferences.

[2] If flexibility regarding parking is desired, the local government might allow on-street parking adjacent to a live-work unit count towards any off-street parking requirements.

Scale-Up Option—Live/Work Units

Some cities have adopted more detailed standards for live/work units in certain commercial areas to preserve the commercial vibrancy and viability of those areas while still allowing for residential development. For example, Seattle has several neighborhood commercial zone districts that place additional limits on single-use residential buildings and residential units on the first floor facing the street. The following standards encourage and allow live/work units, but with the residential portion primarily in the rear of a building or on the upper floors

LIVE/WORK UNIT ADDITIONAL DEVELOPMENT STANDARDS

A. Single-use residential buildings without any commercial uses or live/work units are prohibited.

B. A minimum of 80 percent of a structure's street front façade at street level shall be occupied by nonresidential uses.

C. A minimum of 51 percent of a structure's street front façade that contains required nonresidential uses shall be at sidewalk grade.

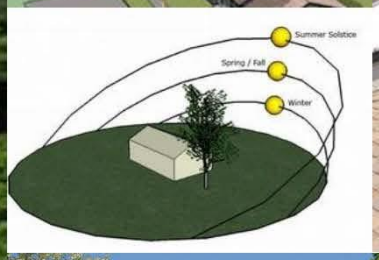
D. The live/work unit shall have a minimum floor-to-floor height at street level of 13 feet.

E. Where live/work units occupy a structure's street front façade at street level, off-street parking for live/work units is prohibited in front of the building between the building and adjacent public street.

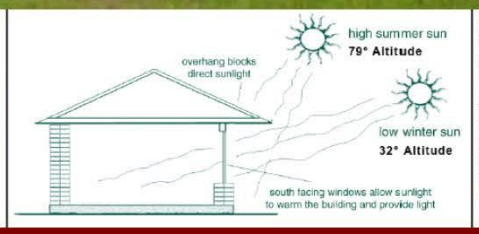
F. Within each live/work unit, the residential living area shall not exceed one-third of the total floor area of the unit.

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments







MODEL REGULATIONS: SOLAR ACCESS
November 2013

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Introduction

Residential solar panels

Alternative energy sources such as wind, sun, geothermal, and biofuels are becoming more viable sources for power as technology advances. In the U.S., only about 12 percent of energy is generated from renewable sources, and only about 0.2 percent from solar.[1] Some experts believe these percentages will increase rapidly as solar energy system costs decrease and the price of fossil fuels rises—to the extent that the cost of solar energy may be on par nationally with the cost of energy from fossil fuels by 2015, and cheaper by 2025. Already solar is cost competitive with fossil fuels in New York, California, and Hawaii. The State of Connecticut has taken a number of steps to promote solar such as recently exempting commercial solar collection systems from personal property taxes.[2] Awareness and interest in these issues have also increased as funding and incentives for energy conservation and alternative energy projects have become more readily available to local governments, businesses, and homeowners. Most jurisdictions in the region do not address solar energy systems in their land use regulations, although some do process applications for solar energy systems using existing general accessory use standards. Others reportedly review applications informally on an ad hoc basis. Several recent national studies have established that the lack of clear local zoning standards for alternative energy systems creates uncertainty for installers and constitutes a major stumbling block to increased use of such systems. Moreover, variable and sometimes contradictory regulations among local governments in a region also have been documented as another significant hindrance. For these reasons, during Phase One of this project, the Clarion Associates consultant team drafted model zoning standards to promote solar energy systems.

While these new provisions are critical, to be effective they should be coupled with standards that help assure solar access for homeowners and businesses that install solar energy systems. Improperly sited buildings and vegetation on adjacent properties can render such systems ineffective. Historically, access to sunlight was a primary purpose of zoning codes in urban areas, sunlight being considered essential to public health. Today, an increasing number of communities such as Boulder, CO, and Ashland, OR, are adopting provisions in their development codes to protect solar access for property owners who have installed solar energy systems. Connecticut state zoning law (Conn. Gen. Stat. Ann. Sec. 8-2(a)) allows cities and towns to enact zoning regulations to encourage energy-efficient development patterns and use of solar energy. However, only a few localities in the Hartford region address solar access in their development codes. For example, Ellington and Manchester include solar access among those aspects required to be considered when laying out subdivision streets and lots.

To address this important issue of solar access, we have drafted land use regulations to help protect solar access without causing undue hardship for adjacent property owners. The basic provisions allow property owners who install solar collectors to obtain a special permit for those systems with the local government and thereby obtain a right to solar access that protects those systems from shading by new structures or vegetation on adjacent property. The step-up option provides a more detailed system of solar access protection similar to ones in use in Boulder, CO, and Santa Barbara, CA. The step-up option provides automatic protection for solar collectors without the owner having to seek a special permit from the local government. As these model regulations were being drafted, the Connecticut Clean Energy and Investment Authority, working as part of the U.S. Department of Energy's SunShot Initiative

[1] U.S. Energy Information Administration / *Monthly Energy Review June 2012*.
[2] Public Act 13-61.

Rooftop Solar Challenge, issued a final report entitled Sun Rise New England—Open for Business: Connecticut's Rooftop Solar Challenge that contains numerous recommendations for promoting solar development, including ideas about protecting solar access through uniform and streamlined land use regulations and perhaps a state level solar access statute. We believe these model recommendations are consistent with the recommendations of that report and provide a set of alternative ways to implement that report's overarching proposals.

1.1 SOLAR ACCESS—GENERAL

1.1.1. PURPOSES

The purposes of these provisions relating to solar access are to:

A. Promote the use of solar collectors;

B. Provide opportunities for homeowners and businesses to save fuel costs;

C. Encourage orientation of structures on solar-oriented lots to take maximum advantage of solar access; and

D. Ensure that site elements do not excessively shade potential solar collectors on adjacent properties.

1.1.2. DEFINITIONS

Note: Relevant definitions are set forth in each subsection that follows. These definitions should be included in the definition section of the local land use regulations.

A. **Beneficial use** means the solar collector has received all necessary building and other permits required by the municipality and is operable.

B. **Potentially affected property owner** means the applicant or the owner of the fee simple title or the contract purchaser of real property that lies within 300 feet of the solar collector.

C. **Solar collector** means one of the following which is capable of collecting, storing, or transmitting at least 25,000 BTUs on a clear winter solstice day:

1. A small solar collection system: a roof-mounted panel, wall-mounted panel, or other solar energy device other than a solar array with a rated capacity of up to 10 kilowatts[3], the primary purpose of which is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating on-site—provided, however, that any excess energy output may be delivered to a power grid to offset the cost of energy on-site.

Solar collection system

2. A solar array: a free-standing, ground-mounted system consisting of a linked series of photovoltaic modules, the primary purpose of which is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating on-site—provided, however, that excess energy output may be delivered to a power grid to offset

[3] The average size of a grid-connected residential solar system is currently six kilowatts and has been on an upward trend for a decade. We have established the standard in this draft at 10 kilowatts to reflect what is commonly recognized as the dividing line between small residential systems and larger systems, as well as to account for estimated increases in size over the next few years. Each local government will need to adjust this measurement in the future as residential systems become more efficient.

the cost of energy on-site. A wall, clerestory window, or skylight designed to transmit solar energy into a structure for heating purposes;

3. A greenhouse attached to another structure and designed to provide part or all of the heating load for the structure to which it is attached;

4. A trombe wall, drum wall, massive structural element, or other wall or roof structural element designed to collect solar energy and transmit it to internal spaces for heating; or

5. Other devices or combination of devices that rely on sunshine as an energy source.

D. **Solar right** means a right to an unobstructed line-of-sight path from a solar collector to the sun that permits radiation from the sun to fall directly on the solar collector. The extent of the solar right shall be defined by that illumination provided by the path of the sun on the winter solstice day that is put to a beneficial use or otherwise limited by local or state law.

E. **Winter solstice day** means the solstice on or about December 21st that marks the beginning of winter in the northern hemisphere and is the time when the sun reaches its southernmost point.

1.1.3. SOLAR ACCESS SPECIAL PERMIT

A. A solar access special permit shall be issued by the (Insert appropriate decision-making body) prior to the granting of a solar right.

B. A solar access special permit shall be granted for any proposed or existing solar collector that complies with the requirements of this ordinance, other municipal ordinances, and state law, as relevant.

1.1.4. PERMISSIBLE ZONE DISTRICTS

Solar access special permits may be approved and solar rights granted only in the following zone districts: (ADD APPROPRIATE LOCAL ZONE DISTRICTS WHERE SOLAR RIGHTS WILL BE GRANTED.)[4]

1.1.5. APPLICATION AND REVIEW PROCEDURE[5]

A. Applications for a solar access special permit shall be filed with the (Insert appropriate local official such as the planning director) and shall consist of at least the following materials:[6]

1. An original and two copies of a completed application form (as provided by the municipality).

2. The names and address of all potentially affected property owners.

[4] Some localities do not grant solar rights in downtown, commercial, mixed-use, and multifamily areas where taller buildings (which might shade adjacent properties) are permitted and encouraged.

[5] Some local governments may choose to adopt solar collection system standards that allow installation of such a system by right if all standards are met, without the need for issuance of a solar access special permit. In such cases, the local government may elect to require a solar access special permit only if the applicant desires to secure a solar right for the collection system.

[6] This list is illustrative only. Each local jurisdiction should determine application requirements, including an application fee, as appropriate for that municipality.

3. A site plan drawn to scale depicting the following detail:

    a. Title block containing the owner's name and the legal and common addresses of the site for which a solar access special permit application has been filed;

    b. North arrow, scale, and date of preparation of the plan;,

    c. Names of all adjacent streets;

    d. Dimensions of the subject property;

    e. Dimensions, heights, and location of all structures on the site and neighboring property as required by the (Insert name of appropriate local official);

    f. Location, height, and type of trees, bushes, and shrubs on-site and on adjacent property, and their estimated height at full growth;

    g. Location and heights of all walls and fences on the site and within five feet of the property line of adjacent property;

    h. Location, height, dimensions, design, construction, and orientation of the solar collector;

    i. Such topographical information and engineering calculations as may be necessary for the (Insert name of local official) to analyze the site plan and document the solar right; and

    j. Signature block for municipal approval.

B. On determining that an application for a solar access special permit is complete, the (Insert name of appropriate local official) shall accept the application for review and notify all potentially affected property owners (See definition.).

C. The (Insert name of appropriate local official) shall review the application and site plan, inspect the proposed site if necessary, and make a recommendation to the (Insert name of local decision-making body) whether to grant, grant with conditions, or deny the application.

D. The (Insert name of decision-making body) shall review the special permit and site plan in accord with Connecticut state law.

E. After approval of the solar access special permit application, the (Insert name of appropriate local official) shall issue the applicant a solar access special permit that includes a description of the solar collector surface or that portion of the solar collector surface to which solar rights are granted. The description shall include the dimensions of the collector surface, the direction of the collector's orientation, the height of the collector above ground level, and the location of the collector on the solar user's property. The permit shall also include any conditions of approval of the solar access special permit application.

F. After issuance of the solar access special permit and expiration of the appeal period, the applicant shall record the approved solar access special permit and associated site plan in the appropriate municipal land records. The recorded special permit shall contain a list of the Assessor's lots and addresses of all property owners that received notice of

the application and its granting. After recording the permit, the applicant shall provide a copy of the recorded solar access special permit and site plan to the (Insert name of appropriate local official).

1.1.6. LIMITATIONS ON SOLAR RIGHTS

A. Solar collectors shall be located on the solar user's property so as not to unreasonably or unnecessarily restrict the uses of neighboring property. Unreasonable or unnecessary restrictions shall include, but are not limited to, any restriction that would prohibit the uses allowed by municipal code (but not including planting of trees).

B. No solar right shall attach to a solar collector or a portion of a solar collector that would be shaded on a winter solstice day by a hypothetical nonlight-transmitting, ten-foot-high wall located on the property line.

C. The solar right to radiation that would strike a solar collector before 9:00 a.m. or after 4:00p.m. Eastern Time is deemed *de minimus* and may be infringed upon without violating solar rights granted pursuant to this ordinance.

D. Blockage of less than 20 percent of the solar energy that would strike a solar collector at any point during any given day between 9:00 a.m. and 3:00 p.m. Eastern Time shall be deemed *de minimus* and may be infringed upon without violating solar rights granted pursuant to this ordinance.

E. The priority of new construction with regard to interference in solar rights shall vest as of the date of application for a building permit.

1.1.7. LAPSE AND BENEFICIAL USE RESTRICTIONS

A. Solar rights under applications filed subsequent to the effective date of the ordinance shall vest on the date the solar access special permit is issued or if an appeal is filed, the date of final action by the [Insert name of local appellate authority]. Such date shall also be the priority date of the solar right. The solar collector shall be put to beneficial use within two years of that vesting date, or within such additional time time as may be granted by the (Insert name of appropriate local official) for good cause shown. If the solar collector is not put to beneficial use within this time period, the solar access permit shall become null and void and the (Insert name of appropriate local official) shall revoke the permit and record the revocation with the county clerk.

B. Upon installation of the solar collector by the applicant, the (Insert name of local official) shall certify the beneficial use of the solar collector and record a certificate of beneficial use with the county clerk.

C. Users of solar collectors that existed prior to the effective date of this ordinance shall apply for a solar access special permit(s) within five years after the effective date. Failure to apply for and receive such permit(s) shall foreclose issuance of a solar access special permit for such solar collectors after that time. Where a solar access special permit is approved and issued for a solar collector that existed before the effective date of this ordinance, the priority date for solar rights for such solar collector shall be the first date the solar collector was beneficially used, which shall be determined by the (Insert name of appropriate local official).

1.1.8. PRIOR EXISTING USES

A. The lawful location of structures in existence prior to the time of beneficial use of an existing solar collector or in existence on the effective date of this ordinance may be continued, even though the location or impact does not conform to the requirements of this section, provided the structure conforms or is legally nonconforming in other aspects of the municipal zoning code.

B. The applicant for a solar access special permit shall be required to take the permit subject to the natural growth of all vegetation that exists at the time of filing the application.

C. Pre-existing lawful structures that have been damaged by fire or a calamity may be restored to their original condition as provided for non-conforming uses in (Add appropriate section of nonconforming uses in municipal zoning code). Pre-existing vegetation that has been damaged by fire or a calamity may be replanted, provided the replanting is commenced within 18 months of the calamity. In addition, normal and routine maintenance of pre-existing structures or vegetation may be carried out.

D. Whenever the use of an existing structure has been discontinued for a period (Add cross reference to non-conforming use section of municipal zoning code) or vegetation has been removed and not replanted within 18 months, the structure or vegetation shall not thereafter be re-established except in conformance with provisions of (Add reference to non-conforming use section of municipal zoning code) this ordinance.

Scale-Up Option

The solar access provisions set forth above are basic and require affirmative steps by the owner of the solar collector to secure solar access rights. Some communities such as Boulder, CO, Ashland, OR, and Santa Barbara, CA, have established automatic zoning provisions to protect solar access. For example, Boulder has a detailed system that creates a protective solar envelope for most single-family dwelling units and requires an analysis of any development that may impinge on that solar additional envelope.[7] This scale-up option reflects the approach in these communities that provide enhanced protection of solar collectors without having to seek a solar access special permit. **It would be adopted instead of the basic provisions above.**

1.1.1. PURPOSES

The purposes of these provisions relating to solar access are to:

A. Promote the use of solar collectors;

B. Provide opportunities for homeowners and businesses to save fuel costs;

[7] For a detailed discussion of solar access laws in the United States with suggested model ordinance standards, see Kettles, A Comprehensive Review of Solar Access Laws in the United States (2008). http://www.solarabcs.org/about/publications/reports/solar-access/pdfs/Solaraccess-full.pdf. See also the California Solar Shade Control Act, Cal. Pub. Res. Code 25980-25986, which offers protection for solar collection systems from shading by trees and other structures.

C. Encourage orientation of single-family dwellings on solar-oriented lots to take maximum advantage of solar access; and

D. Ensure that site elements do not excessively shade potential solar system locations on adjacent property.

1.1.2. **DEFINITIONS**

Note: Select relevant definitions from basic option above.

1.1.3. **APPLICABILITY**

A. **Private Property:** All private property is subject to this section.

B. **Development Approval:** No proposed development permit may be approved for any structure that would violate the basic solar access provided by this section unless the object or structure is exempt from this section in accordance with ____ or an exception is granted by the (Insert name of decision-making official or body) in accordance with Section 1.1.7.

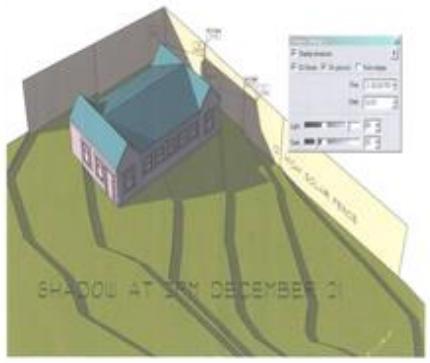
C. **Government Property:** Governmental organizations not under the jurisdiction of the (Insert name of adopting municipality) may elect to enjoy the benefits of solar access under this section if they also consent in a written agreement with the City to be bound by the requirements of this section.

D. **City Property:** Property owned or possessed by the municipality is subject to this section, and enjoys the benefits of solar access under this section. The municipality may submit applications, make objections, and take actions that are afforded to any other person or entities subject to the provisions of this section.

1.1.4. **SOLAR ACCESS AREAS ESTABLISHED**

A. The following solar access areas are hereby established: (Insert names of solar access areas or applicable zoning districts where solar protection is offered.)

B. The purpose of dividing the municipality into solar access areas is to provide maximum solar access protection for each area of the municipality consistent with planned densities, topography, and lot configurations and orientations.[8]



1.1.5. **SOLAR ACCESS PROTECTION**

A. **Solar Fence:** A hypothetical solar fence is overlaid on each lot located in the designated solar access areas or zone districts. Each solar fence completely encloses the lot in question, and its foundation is contiguous with the lot lines. Such fence is opaque and lacks any thickness.

[8] Boulder, CO, has established three distinct solar access protection areas. The first is designed to protect solar access for south yards, south walls, and rooftops. The second is more limited and protects principally rooftops because of existing lot configuration or orientation, topography, and planned density. The third is for all other areas where because of unique topography or lot layout protection is afforded only on a case-by-case special permit request basis.

B. No person shall erect an object or structure on any other lot that would shade a protected lot to a greater degree than the lot would be shaded by a solar fence 12 feet in height, between two hours before and two hours after local solar noon on a clear winter solstice day.[9]

C. **Insubstantial Breaches and Existing Structures:** Insubstantial breaches of the basic solar access protection are exempt from the application of this section. A structure or vegetation in existence on the date of establishment of an applicable solar access area, or structures and vegetation in existence on the date of issuance of an applicable solar access special permit, are exempt from the application of this section. For purposes of this section, structures are deemed to be in existence on the date of issuance of a development permit authorizing its construction.

D. **Temporary Solar Obstructions:** Unavoidable temporary obstructions of protected solar access necessitated by construction activities or other necessary and lawful purposes are exempt to the extent that they exist no more than ten days in any three-month period and 30 days in any year.

E. **Solar Analysis:** When a solar analysis is required for any review process, it shall be prepared in compliance with the methods described in materials provided by the (Insert name of appropriate local official).

1.1.6. **AMENDMENT OF SOLAR ACCESS AREA BOUNDARIES:**

A. The (Insert name of appropriate decision-making body) may amend the boundaries of established solar access areas on its own motion or on petition of any person with a property interest in the solar access area. A petitioner shall submit a list to the (Insert name of decision-making body) of the names and addresses of all potentially affected property owners.

B. **Public Hearing and Notice Required:** Before amending the boundary of a solar access area, the (Insert name of decision-making body) shall conduct a public hearing on the proposal. The [Insert name of appropriate local official] shall provide notice for the hearing pursuant to the requirements of (Insert cross-reference to appropriate notice sections of zoning ordinance.).

C. **Review Criteria:** A solar access area boundary may be amended only after the (Insert name of decision-making body) determines that one or more of the following conditions is satisfied:

1. The subject area was established as a solar access area in error, and as currently established is inconsistent with the purposes of the solar access area.

2. Permissible land uses and densities in the subject area are changing or should change to such a degree that it is in the public interest to amend the solar access area for the area.

3. Experience with application of this ordinance has demonstrated that the level of solar access protection available in the subject area can be increased without significant interference with surrounding property or application of the ordinance

[9] For more densely developed or planned mixed use and industrial areas, Boulder increases the hypothetical solar fence to 25 feet, which in effect allows higher development on adjacent sites closer to the property line.

has unreasonable interference with use and enjoyment of real property in the subject area.

D. **Impact of Changes:** When any area is amended, any solar access beneficiary whose solar access is affected by such change may apply for a solar access special permit to provide solar access protection to any solar collector installed and in use on the date the change becomes effective.

1.1.7. **EXCEPTIONS**

A. Any person or entity desiring to erect an object or structure, or increase or add to any object or structure, in such a manner as to interfere with the basic solar access protection, may apply for an exception.

B. **Public Application Requirements:** An applicant for an exception shall pay an application fee prescribed by the municipality, and apply on a form furnished by the (Insert appropriate local department) that includes, without limitation:

1. The applicant's name and address, the property owner's name and address, and a legal description of the lot for which an exception is sought;.

2. Survey plats or other accurate drawings showing lot lines, structures, solar systems, dimensions, and topography as necessary to establish the reduction of basic solar access protection expected on each lot that would be affected by the exception, together with a graphic representation of the shadows that would be cast by the proposed structure during the period from 9:00 a.m. to 4:00 p.m. Eastern Time on a clear winter solstice day. The requirements of this subparagraph may be modified by the municipality, depending upon the nature of the exception sought.

3. A list of all lots that may be affected by the exception, including the names and addresses of all owners of such lots.

4. A statement and supporting information describing the reasons that less intrusive alternatives, if any, to the action that would be allowed by the exception cannot or should not be implemented or a statement certifying that the proposed structure would not obstruct solar access protected by permit.

C. **Notice:** The (Insert name of appropriate local official.) shall provide notice pursuant to section _____ of the zoning ordinance. The (Insert name of decision-making official or body.) may grant an exception to this section following the public notification period if:

1. The applicant presents the (Insert name of decision-making official or body) with an affidavit by each potentially affected property owner declaring that such owner is familiar with the application and the effect the exception would have on the owner's lot, and that the owner has no objection to the granting of the exception;

2. The (Insert name of decision-making official or body.) determines that the application complies with the requirements in paragraph B.2 of this section; and

3. The (Insert name of decision-making official or body) finds that each of the requirements of paragraph 1.1.16.F of this section has been met.

D. **Appeal of Decision By (Insert name of local official or body):** The decision may be appealed to the (Insert name of appeals body such as a city council or board of zoning adjustment) pursuant to the appeals provisions of Section ____ of the zoning ordinance.

E. **Review Criteria:** In order to grant an exception, the approving authority must find that because of basic solar access protection requirements and the land use regulations:

1. Reasonable use cannot otherwise be made of the lot for which the exception is requested;
2. The part of the adjoining lot or lots that the proposed structure would shade is inherently unsuitable as a site for a solar energy collector, or any shading would not significantly reduce the solar potential of the protected lot;
3. Such situations have not been created by the applicant;
4. The exception would be the minimal action that would afford relief in an economically feasible manner;
5. The exception would cause the least interference possible with basic solar access protection for other lots;
6. If the proposed structure is located in a historic district designated by the city council according to [insert appropriate reference to historic district designation procedures] and conformed with the requirements of this section, its roof design would be incompatible with the character of the development in the historic district;
7. If part of a roof is proposed to be reconstructed or expanded and conformed with the requirements of this section, the reconstructed or expanded roof would be incompatible with the design of the remaining parts of the existing roof so as to detract materially from the character of the structure;
8. If the proposed interference with basic solar access protection would be due to a solar collector being installed, such system could not be feasibly located elsewhere on the applicant's lot;
9. If an existing solar system would be shaded as a result of the exception, the beneficiary of that system would nevertheless still be able to make reasonable use of it for its intended purpose;
10. The exception would not cause more than an insubstantial breach of solar access protected by permit as defined in Section 1.1.14.C of this ordinance; and
11. All other requirements for the issuance of an exception have been met.

F. The applicant bears the burden of proof with respect to all issues of fact.

G. **Conditions of Approval:** The [Insert name of approving authority] may grant exceptions subject to such terms and conditions as the [Insert name of approving authority] finds just and equitable to assist persons whose protected solar access is diminished by the exception. Such terms and conditions may include a requirement that the applicant for an exception take actions to remove obstructions or otherwise increase solar access for any person whose protected solar access is adversely affected by granting the exception.

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments

MODEL REGULATIONS:
INCLUSIONARY WORKFORCE HOUSING REGULATIONS

December 2013

In Association with:
Shipman & Goodwin
Seth Harry and Associates

CLARION

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CONTENTS

INCLUSIONARY WORKFORCE HOUSING REGULATIONS

Introduction

Like many areas across the country, the Capitol Region's population is changing—but unlike some areas, the change is more in character than size. Although the region's population growth has been slow in the last 20 years (8 percent), its growth rate is projected to slow even more, to only 4 percent, over the next 20 years. However, the number of households in the region is expected to increase by 6.5 percent over that time period, indicating that household sizes will be getting smaller.

In *Together We Can Grow Better: Smart Growth Guidelines for Sustainable Design and Development*, three major demographic issues related to housing are identified:

- There is an oncoming wave of active, aging baby boomers.
- There has been a continuous outmigration of 24- to 35-year olds since the early 1990s (30 percent between 1990 and 2006 for the state, the highest percentage of any state).
- There is great potential and need to retain the large cohort of millennials (people born between the early 1980s and early 2000s) who will be entering the job and housing market as baby boomers are retiring.

A primary factor in the local outmigration of 24- to 35-year olds is a critical lack of affordable housing choices. The "affordability gap" between the cost of housing affordable to most households and the cost of housing available on the market continues to widen—especially for younger, entry-level workers. While personal income in Connecticut rose 19 percent between 2000 and 2005, median housing prices rose 64 percent. According to the partnership for Strong Communities, 36 percent of all households in the state were spending more than 30 percent of their income on housing in 2010 (30 percent being a commonly accepted threshold for identifying whether housing is affordable). If the region is to retain its young single, married, and unmarried households, it will be important to allow for smaller units and multifamily housing to meet their needs for affordable housing. If the outmigration of younger workers does not slow, the region will likely experience a significant reduction in its workforce and a negative impact on the regional economy. Recent national surveys show that given the choice, younger homebuyers prefer smaller homes in compact, walkable communities over large-lot suburban homes, which make up most of the region's current housing stock.

The Partnership for Strong Communities reported that in 2010, a median-income family with a 10 percent down payment could afford to buy a house at the median sales price in only 16 of the Capitol Region's 29 towns. CRCOG's analysis of median home values in FY 2010 indicated that only 51 percent of owner-occupied homes were affordable to moderate-income families, and only seven percent were affordable to low-income households. The overall median home value in the Capitol Region for FY 2010 was $276,300, and ranged from a high of $421,100 (Avon) to a low of $188,000 (Hartford).

Many communities across the country are experiencing similar housing affordability issues as those in the Capitol Region and Connecticut and are adapting their land use policies and regulations to address changing housing needs. Furthermore, federal funding for land use and transportation projects has recently been driven by the application of sustainable development practices and Smart Growth principles, which clearly support the creation of a range of quality and housing affordability opportunities and choices for people of all income levels, and compact building design.

Connecticut's Department of Economic and Community Development (DECD) and the Connecticut Housing Finance Authority (CHFA) administer a number of programs to promote affordable housing. [1]

CRCOG has adopted a Regional Housing Policy that addresses the need for affordable housing, the use and improvement of existing housing, the selective use and demolition of deteriorated housing, and other related issues. Adopted implementation strategies include one to support land use policies that allow for a diversity of housing types and costs in all communities.

To address housing affordability, the Connecticut legislature adopted the Affordable Housing Land Use Appeals Act of 1990 (the "Act"), which expressly reverses the burden of proof when a municipality denies a developer's application to construct affordable housing. In such a case, the Act requires the municipality to prove that the need for affordable housing is clearly outweighed by the need to protect the health or safety of the community. Since few municipalities have sufficient affordable housing to be exempt from this requirement (i.e., where at least ten percent of the existing housing stock qualifies as affordable), the Act has affected most municipalities in the state. It has been controversial, and in the 20 years since enactment has been much debated.

One impact of the Act is that it has placed many Connecticut municipalities in the position of reacting to a developer's sense of where and how affordable housing projects should be built to meet the community's affordable housing needs. Connecticut municipalities increasingly recognize they can take positive action to accommodate and encourage affordable housing developments that meet not only the needs of the developer and the occupants, but also the needs of the community. One way to do so is to increase the range of options available to developers and property owners to provide affordable housing. Such options include, in addition to the higher-density multifamily development most commonly associated with affordable housing, live/work units, accessory dwelling units, residential over commercial, duplexes, triplexes, quadruplexes, townhouses, small-lot subdivisions, and conversions of

[1] They include the following:

- The Affordable Housing Program (AHP) provides financial assistance for a large variety of housing development activities that include construction, rehabilitation, repair, and maintenance of housing, as well as financing ancillary facilities related to affordable housing, such as a community room, laundry, day care space, playground, and other residential amenities.
- The HOME Investment Partnership Program (HOME), a U.S. HUD program administered by DECD that provides financial assistance to create affordable housing for low- and very low-income households. (HUD income limits for HOME are based on HUD estimates of median family income adjusted for family size. HOME assistance includes the American Dream Down-payment Initiative (ADDI) to target federal funds Congressional appropriations.)
- The Housing Trust Fund (HTF) that is designed to create affordable housing for low- and moderate-income households and is funded from the proceeds of the sale of the state's general obligation bonds. Fund monies may be awarded as loans or grants to eligible sponsors of affordable housing.
- The Neighborhood Stabilization Program 1 (NSP1), established as part of the federal Housing and Economic Recovery Act (HERA) of 2008, that provides communities hit hardest by the foreclosure crisis funds for acquisition and rehabilitation, financing, land banking, demolition of blighted structures, and redevelopment—with 30 percent of the acquisition and rehabilitation to be used for housing persons making less than 50 percent of the area median income.
- The Neighborhood Stabilization Program 3 (NSP3) that uses federal funds to provide emergency assistance for the redevelopment of abandoned and foreclosed homes and residential properties in municipalities qualifying under the Community Development Block Grant Program (CDBG), including Hartford in 2011.
- The Pre-Development Loan Program that provides interest-free loans to eligible nonprofit sponsors for predevelopment costs associated with constructing, rehabilitating, or renovating housing for low- and moderate-income households at prices they can afford. (Pre-development loans may also be made available to for-profit developers in communities where the supply of affordable housing is less than 10%.)
- The State-Assisted Housing Sustainability Fund that provides grants, loans, deferred loans, no interest and low interest loans, loan guarantees, and interest subsidies for repairs to eligible housing pursuant to CGS sec. 8-37uu.

nonresidential buildings. CRCOG has commissioned the drafting of model ordinances to permit and encourage live-work units and accessory dwelling units as part of this project.

Workforce housing is housing that is provided for a community's workers. Some communities more narrowly define workforce housing for the purposes of affordable workforce housing regulations to housing for the "essential workers" (e.g., teachers, police officers, firemen, EMS personnel, nurses, other health care and hospital workers) and low-wage service workers (e.g., medical and laboratory technicians, clerical workers).

Affordable workforce housing regulations commonly target households with incomes less than 80 percent (sometimes up to 120 percent) of the area median income (AMI). Some programs have multi-tiered targets, for households of different income levels. A dwelling unit is commonly deemed "affordable" to a household if annual housing costs (e.g., rent or mortgage payments, sometimes utility costs) do not exceed 30 percent of the annual income of the target household.

Some affordable workforce housing regulations apply to residential development, including subdivisions for residential development (single-family and other), multifamily developments (including duplexes, triplexes, quadruplexes, townhouse, and general multifamily development), and the residential component of mixed-use developments. They are characterized as "inclusionary" workforce housing regulations. In other communities, usually those with severe housing affordability issues, affordable workforce housing regulations are more comprehensive in nature, and apply to both residential and nonresidential development.

Connecticut General Statutes Section 8-2i, Inclusionary zoning, authorizes inclusionary zoning. [2] The model inclusionary workforce housing standards presented here apply only to residential development. They require that a certain percentage of new residential units built in the community be set-aside to be affordable to the workforce and their families. The scale-up options add flexibility to the regulations—by providing alternatives for developers as to how they may provide affordable workforce housing.

[2] Connecticut General Statutes Section 8-2i, Inclusionary zoning, states:

> (a) As used in this section, "inclusionary zoning" means any zoning regulation, requirement or condition of development imposed by ordinance, regulation or pursuant to any special permit, special exception or subdivision plan which promotes the development of housing affordable to persons and families of low and moderate income, including, but not limited to, (1) the setting aside of a reasonable number of housing units for long-term retention as affordable housing through deed restrictions or other means; (2) the use of density bonuses; or (3) in lieu of or in addition to such other requirements or conditions, the making of payments into a housing trust fund to be used for constructing, rehabilitating or repairing housing affordable to persons and families of low and moderate income.

Model Code Provisions for Inclusionary Workforce Housing

1.1 GENERAL[3]

1.1.1. FINDINGS

A. An important goal of (insert name of local government) and the plan of conservation and development is to maintain a balanced and sustainable local economy. Maintenance of a balanced and sustainable local economy requires the availability of a stable and qualified workforce.

B. A second important goal of (insert name of local government) and the plan of conservation and development is to maintain and enhance the community's character. A key element of (insert name of local government)'s character is its social, economic, and political fabric, and the general sense of community that occurs because the workforce and their families live in the community, attend schools in the community, participate in civic organizations in the community, worship in the community, and express their opinions at the ballot box.

C. An important building block for this key element of (insert name of local government)'s character is the availability of housing that is reasonably affordable to the workforce.

D. The (insert name of local government)'s Workforce Housing Support Study (hereinafter Workforce Housing Study), dated ___, demonstrates that today there is a shortage of affordable housing in (insert name of local government).[4]

[3] Over the past 20 years the United States Supreme Court has established that when local land use regulations impose "conditions of approval" on development, they must demonstrate a reasonable relationship or a "rough proportionality" exists between the legitimate governmental interest being addressed in the regulation and the "conditions of approval" being imposed as part of the development approval. See *Nollan v. California Coastal Comm'n*, 483 U. S. 825 (1987); *Dolan v. City of Tigard*, 512 U.S. 374 (1994); *Lingle v Chevron*, 125 S. Ct. 2074 (2005); *Koontz v. St. Johns River Water Management District*, 568 U.S. __ (2013). Inclusionary affordable workforce housing standards like these model regulations impose "conditions of approval" on development because they require a portion of residential development be affordable to the workforce. The legitimate governmental interest they address is ensuring housing in the community is affordable to the workforce and their families. In order to demonstrate a reasonable relationship between the legitimate governmental interest of addressing affordable housing and the "conditions of approval" (the requirement that a portion of residential development be affordable) it is important that a technical or nexus study be prepared that demonstrates this reasonable relationship before adoption of the regulation. It is assumed in this model regulation this is done. The nexus study in the model regulation is titled *Workforce Housing Support Study*.

We recommend that initially, the nexus study (Workforce Housing Support Study) identify the workforce housing problem in the community. It should then provide the technical documentation and analysis needed to establish whether and the extent to which new residential development creates a need for affordable workforce housing. This is done by first evaluating the linkage between (1) employment (workforce) needed to construct and maintain/operate (post-construction) new residential units, and in some communities, (2) critical service providers that provide public safety, law enforcement, education, and health care services to residential developments. Once this is done, the housing needs for these employees and their families/households is determined, along with whether housing is affordable for them, based on their incomes and local housing costs. Based on this part of the analysis, the need for affordable workforce housing (the portion of new residential development that needs to be affordable for the workforce) can be determined, as well as any housing assistance (a subsidy) that would be needed if an in-lieu fee option is provided. (See discussion in scale-up option.)

Most nexus studies are based on the assumption that an affordable home for households in the local workforce is defined as costing no more than 30% of annual household income, regardless of whether a home is rented or owner-occupied. This model regulation assumes that is the standard used for determining housing affordability in the model regulations (even though there is some discretion to vary this standard from community to community).

[4] This is the nexus study referenced in footnote 3.

E. It has occurred due to a dramatic increase in land and construction costs, and a rise in the price of housing.

F. Review of state and national census and other wage and labor data, in conjunction with real estate sales data, demonstrates the amount of housing within the price ranges that are affordable to the workforce has declined to a point where only a limited number of market-rate residential dwelling units are available today at prices the workforce can reasonably afford.

G. This has resulted in some residents moving elsewhere, and other workforce members never locating in (insert name of local government).

H. The Workforce Housing Study also demonstrates the jobs expected to be created in (insert name of local government) by new development is expected to pay wages that make market-rate housing unaffordable, creating an additional need for affordable workforce housing.

I. This out-migration of (insert name of local government)'s workforce and their families has placed increasing stress on the capacity of the local community to maintain a viable workforce. Estimates indicate this problem will continue to worsen in the future, potentially affecting the long-term sustainability of the local economy, unless additional housing is provided within price ranges that are affordable to the workforce.

J. In addition, if these trends continue, an essential component of (insert name of local government)'s character will be damaged since most of the workforce and their families will no longer reside in the community, attend schools in the community, participate in local civic organizations, worship in the community, or express their ideas at the ballot box.

K. In part to address this community challenge, the plan of conservation and development includes a goal that __ percent of residential development in (insert name of local government) be affordable to the workforce.

L. To implement this plan of conservation and development goal, (insert name of local government) adopts these inclusionary workforce housing standards that require new residential development provide affordable workforce housing.

1.1.2. PURPOSE

The purpose of this section is to implement the plan of conservation and development goal that __ percent of new residential development in (insert name of local government) be affordable to the workforce. This is accomplished through the establishment of these affordable workforce housing standards.

1.1.3. TECHNICAL SUPPORT

The technical support and analysis upon which these inclusionary workforce housing standards are established are based upon insert name of local government)'s Workforce Housing Support Study (hereinafter Workforce Housing Study), dated ___, attached as "Exhibit A" and incorporated herein by reference.

1.1.4. APPLICABILITY

A. The standards of this section apply to all new residential development in (insert name of local government), unless exempted in subsection B below.

B. The following is exempted from the standards of this section.

1. Remodeling or redevelopment, if it does not result in the creation of a new residential dwelling unit.

2. Development of a mobile home or mobile home park.

3. Development of an accessory dwelling unit.

4. Development of an affordable workforce housing unit, as defined by this section.

1.1.5. DEFINITIONS

A. **Administrator:** Means the official, agency, or organization to whom the (insert name of local government) has delegated the responsibility of administering these inclusionary workforce housing standards.

B. **Maximum extent practicable:** Means no feasible or prudent alternative exists, as determined by (Add name of appropriate zoning official), and all possible efforts to comply with the standards or regulation or minimize potential harmful or adverse impacts have been undertaken by an applicant. Economic considerations may be taken into account, but shall not be the overriding factor determining "maximum extent practicable."

C. **Workforce housing study:** Means the document providing the technical support and analysis upon which these inclusionary workforce housing standards are established. It is titled (insert name of local government)'s Workforce Housing Study, dated ___.

1.2 PROCEDURES

1.2.1. SUBMISSION OF MITIGATION PLAN

An applicant for a site plan or subdivision plan, as appropriate, for residential development not exempted in accordance with Section 1.1.4 B, shall submit an affordable workforce housing mitigation plan (hereinafter "mitigation plan") to the Administrator concurrent with the development application for the site plan or subdivision plan.

1.2.2. CONTENTS OF MITIGATION PLAN

A. General

The contents of the mitigation plan shall include the following:

1. Calculation of the need for affordable workforce housing created by the residential development based on the requirements of Section 1.4, Affordable Workforce Housing Standards.

2. The method by which the affordable workforce housing is to be provided to comply with the requirements of Section 1.3, Affordable Workforce Housing Standards, either by on-site or off-site construction of affordable workforce

housing units, or a combination of the above. Appropriate justification for the proposed mitigation method must also be included.

3. A conceptual site plan and building floor plan illustrating the number of proposed affordable units, their location in relation to the other development on the site and surrounding land uses, and the number of bedrooms and size of each affordable unit;

4. A tabular summary of the number of affordable units, the number of bedrooms and size of each affordable unit, the proposed sale/rental mix, and the proposed sales price or rent for each affordable unit; and

5. The proposed deed restrictions/restrictive covenants to be placed on the affordable units to ensure they will be maintained as affordable.

6. An affordable housing agreement (hereinafter "agreement") in which the applicant agrees to implement the mitigation plan. The agreement shall be in a form approved by the (insert title of local government's attorney).

1.2.3. REVIEW OF MITIGATION PLAN

A. The mitigation plan shall be reviewed and approved, approved with conditions, or disapproved by the (insert Zoning Commission for a site plan or Planning Commission for a subdivision plan), based on the standards set forth in Section 1.4, Affordable Workforce Housing Standards, prior to approval of the site plan or subdivision plan for the residential development, as appropriate.

B. An approved mitigation plan may be amended or modified only in accordance with the procedures and standards established for its original approval.

1.3 AFFORDABLE WORKFORCE HOUSING STANDARDS

1.3.1. GENERAL REQUIREMENTS FOR PROVISION OF AFFORDABLE WORKFORCE HOUSING

A. Unless exempted in accordance with Section 1.1.4. B, all new residential development constructed in (insert name of local government) shall provide affordable workforce housing units sufficient to house __ percent of the total number of occupants of all residential units proposed in the development.

B. The total number of occupants of the proposed residential units shall be calculated based on the type and number of bedrooms of the proposed residential units, as determined in Table 1.3.1.B, Calculating the Affordable Workforce Housing Units. In instances where a subdivision plan is proposed without specific dwelling units, the applicant shall estimate the characteristics of the residential units based on the average sizes and numbers of bedrooms of residential units in existing subdivisions of comparably sized and valued lots within (insert name of local government).

TABLE 1.3.1.B: CALCULATING THE AFFORDABLE WORKFORCE HOUSING UNITS	
Number of Bedrooms in Units	**Maximum Number of Occupants**
Studio	1
One Bedroom	1.5
Two Bedroom	3
Three Bedroom	3.5
Four Bedroom	4
Five Bedroom	4.5

Scale-Up Options—Inclusionary Workforce Housing

The landowner/developer's construction of affordable workforce housing units is a priority in all inclusionary affordable workforce housing regulations. However, to provide more flexibility, provisions can be added to allow landowners/developers to provide affordable workforce housing in the following additional ways, if it is determined impracticable to build affordable workforce housing units:

- Convert market-rate dwelling units to affordable workforce housing units;
- Convey land for affordable workforce housing units; or
- Pay in-lieu fees for the construction of affordable workforce housing units.

Below are additional provisions that could be added to the base provisions above to allow these alternative ways of meeting the affordable workforce housing requirement. These provisions are typical, but may vary from community to community.

1.2.2 CONTENTS OF MITIGATION PLAN

A. Where Conversion of Market-Rate Housing Units to Affordable Workforce Housing Units is Proposed

If existing market-rate residential units are proposed to be converted to affordable workforce housing units in accordance with Section 1.3.2, Alternative Means of Meeting Affordable Workforce Housing Requirement, the mitigation plan shall include:

1. A conceptual site plan illustrating the location and construction quality of the market-rate residential units that are proposed to be converted to affordable units;
2. A tabular summary of the number of market-rate residential units that will be converted, the number of bedrooms and size of each residential unit, the proposed sale/rental mix, and the proposed sales price or rent for each affordable unit; and
3. The proposed deed restrictions/restrictive covenants to be placed on the affordable units to ensure they will be maintained as affordable.

B. Where Conveyance of Land as a Site for Affordable Workforce Housing Units is Proposed

If existing market-rate residential units are proposed to be converted to affordable workforce housing units in accordance with Section 1.3.2, Alternative Means of Meeting Affordable Workforce Housing Requirement, the mitigation plan shall include:

1. A survey depicting the location, size, and topography of the land proposed for conveyance;
2. A title report demonstrating clear title, physical and legal access, liens, easements, and other information necessary to fully describe the legal status of the property to be conveyed;
3. Verification that the conditions of the land and any restrictions on the title to the land (such as covenants and easements) allow for the development of affordable residential dwelling units on the land;
4. An appraisal of the fair market value of the land; and
5. Any additional information or studies determined by the (insert appropriate official) to be necessary to verify the suitability of the land for affordable units.

C. Where Payment of a Fee In Lieu of Constructing Affordable Workforce Housing Units is Proposed

If payment of a fee in-lieu of constructing affordable workforce housing units is proposed in accordance with Section 1.3.2, Alternative Means of Meeting Affordable Workforce Housing Requirement, the mitigation plan shall include the amount of the fees to be paid and supporting calculations.

1.3.2 ALTERNATIVE MEANS OF MEETING AFFORDABLE WORKFORCE HOUSING REQUIREMENT

A. General

1. To the extent it is impracticable to construct the minimum number of affordable workforce housing units required in Section 1.3.1, General Requirements for Provision of Affordable Workforce Housing, for a new residential development, the developer may meet the affordable workforce housing requirement by one or more of the following:
    a. Converting existing market-rate housing units to affordable workforce housing units;
    b. Conveying land for use as a site for development of affordable workforce housing units; or
    c. Paying a fee in-lieu of constructing the required affordable workforce housing units.
2. Provision of required affordable workforce housing shall be considered impracticable if:
    a. The number of affordable residential dwelling units required is less than one;

b. The applicant has attempted, to the maximum extent practicable, to design the affordable housing on-site or off-site, but cannot comply with the zoning ordinance;

c. The affordable units located on-site would be incompatible with surrounding land uses;

d. The proposed affordable units are not proximate to existing or planned employment, schools, or commercial services; or

e. The affordable units cannot be designed and located in compliance with federal or state law.

B. Conversion of Market-Rate Housing Units to Affordable Workforce Housing Units

If the affordable workforce housing requirement is to be met by converting market-rate housing units to affordable housing units, the converted units shall:

1. Be located in (insert name of local government);
2. Be proximate to existing or planned employment, schools, or commercial services;
3. Be in compliance with the zoning ordinance;
4. Be in compliance with federal and state law;
5. Be designed and built in a way that is compatible with surrounding land uses; and
6. Be restricted as affordable units in perpetuity.

C. Conveyance of Land as Site for Affordable Workforce Housing

If the affordable workforce housing requirement is to be met by conveying land for use as a site for affordable workforce housing units, the land that is conveyed shall:

1. Be located in (insert name of local government);
2. Reasonably support the construction of an appropriate number of affordable units at densities that make the development economically efficient under the zoning ordinance;
3. Have all appropriate federal or state permits needed for development, or assurances such permits will be approved;
4. Be ready for development and include appropriate soils and topographic conditions, the necessary roads, water supply, sewage disposal, telephone, electricity and gas (if available) and other basic services, which are in place to the property line of each lot, as applicable;
5. Be proximate to existing or planned employment, schools, or commercial services;
6. Be free of any liens or other encumbrances;
7. Be dedicated for affordable residential units;

8. Have an established fair market value that is sufficient to mitigate the need for affordable housing created by the residential development for which it is provided, in accordance with the standards in the regulation; and

9. Be conveyed prior to or concurrent with approval of the first development permit for the residential development.

D. Payment of In-Lieu Fees

If the affordable workforce housing requirement is to be met by paying a fee in-lieu of constructing the required affordable workforce housing units, the following standards shall apply:

1. The in-lieu fee shall be based on the inclusionary goal, and calculated based on the housing assistance (subsidy) that will make the residential units needed affordable to the workforce.

   Comment. This analysis would occur in the Workforce Housing Support Study.

2. The in-lieu fee shall be paid at time of subdivision plan approval or building permit issuance, as appropriate.

3. The in-lieu fee shall be deposited into an interest-bearing affordable workforce housing trust account established by (insert name of local government), and may be spent only for the purposes of planning, subsidizing, or developing affordable workforce housing within (insert name of local government).

4. Any part of the fee that is not spent for the purposes set forth in paragraph 3 above within __ years after deposit into the affordable workforce housing trust account shall be returned to the fee payer at the fee payer's request.

5. If approval of the residential development for which the fee was paid expires without construction of any housing units, the fee shall be returned to fee payer, at the fee payer's request.

1.4 REQUIREMENTS FOR CONSTRUCTION OF AFFORDABLE HOUSING UNITS

1.4.1. GENERAL

Affordable workforce housing units constructed in accordance with this section shall:

A. Restrict and maintain the units as affordable, in perpetuity.

B. Comply with the minimum size requirements established in (insert local government)'s Affordable Housing Guidelines, attached as Exhibit __, and incorporated herein by reference. [5]

[5] In addition to the occupancy standards, local governments that establish inclusionary housing standards also establish guidelines that control the minimum size of the different types of affordable units built, as well as controls on the sale and rental of such units. The size requirements are established to ensure the affordable units are of a reasonable minimum size for the occupants. The sale and rental controls are established to ensure the units are sold or rented to members of the workforce that need affordable units (their income is such that they can only reasonably afford affordable units).

C. Restrict the sales and rental terms, and occupancy limitations to comply with (insert local government)'s Affordable Housing Guidelines. [6]

D. Use building materials that have a compatible exterior style to other units in the development.

E. Provide each unit, at a minimum, with a fully equipped kitchen and bathroom, areas for living and sleeping, and designated areas for storage.

F. Provide design features that are comparable to other market units in the development, including but not limited to: decks, patios, parking, fencing, and landscaping.

G. Comply with all applicable minimum zoning ordinance requirements, and the building code requirements.

H. Be ready for occupancy no later than the date of the initial occupancy of the free market portion of the residential development of which it is being provided (If the free market portion is developed in phases, the affordable residential units shall be developed in proportion to the phases.)

1.5 INDEPENDENT CALCULATION FOR ALTERNATIVE MITIGATION[7]

1.5.1. GENERAL

An applicant may elect to prepare an independent calculation for alternative mitigation if the applicant believes the nature, timing, or location of the proposed residential development is likely to result in less need for affordable workforce housing than otherwise required in this section. The independent calculation shall be prepared by the applicant and submitted to the Administrator with the mitigation plan. (See Section 1.2, Procedures.)

1.5.2. REQUIRED PRINCIPLES AND METHODS FOR INDEPENDENT CALCULATION

The independent calculation for alternative mitigation may provide alternative data in one or both of two areas: the need for affordable workforce housing or the occupancy rate of the affordable housing units. The applicant shall use generally accepted principles and methods and verifiable local information and data, and other appropriate materials to support the independent calculation for alternative mitigation.

[6] See footnote 5.

[7] In order to allow for a safety valve for unusual conditions, some inclusionary housing regulations include provisions (as do other exaction regulations) that allows the developer, through an independent analysis of the particular development, to demonstrate that the need for affordable workforce housing units created by the particular development is not as great as the community-wide nexus study (Workforce Housing Support Study) shows. This section allows for that type of independent analysis.

For example, an age-restricted (over 55) development run and operated by a religious institution for former ministers and church employees, subsidizes construction of the units so they can offer reduced rental rates to persons who qualify to live in the complex. The price reductions make the units much more affordable. Two other buildings with 50 one bedroom units were built and have been in operation for five years. Data shows that the rental rates for these units with this subsidy, make them much more affordable than the average one bedroom unit in the community. The development applicant could submit an independent calculation for alternative mitigation identifying these facts, and demonstrate how the developer will assure that the rental rates of these new units would remain at a level below what is generally expected in the community. Based on these circumstances, the affordable workforce housing mitigation requirements might be reduced.

1.5.3. REVIEW STANDARDS

If, on the basis of generally recognized principles of impact analysis, the Administrator determines the data, information, and assumptions used by the applicant to calculate the independent calculation satisfies the requirements of this section, the amount of affordable workforce housing needed for the proposed residential development will be adjusted, consistent with the findings in the independent calculation for alternative mitigation.

1.6 AFFORDABLE HOUSING AGREEMENT

Any adjustment made to the affordable housing needs required for proposed residential development in Section 1.3, Affordable Workforce Housing Standards, shall be set forth in an affordable housing agreement, which shall be made a part of the housing mitigation plan approval.

SUSTAINABLE LAND USE CODE PROJECT
Capitol Region Council of Governments

MODEL REGULATIONS:
MIXED-USE TRANSIT-ORIENTED DEVELOPMENT DISTRICTS
March 2014

CLARION

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CONTENTS

MIXED-USE TRANSIT-ORIENTED DEVELOPMENT DISTRICTS

Introduction

Transit-oriented development, or TOD, is an approach to physical development of a community that leverages the unique opportunities provided by access to high-quality public transportation.[1] TOD is generally defined as development close to transit stations or transit stops that is compact, mixed-use, pedestrian-friendly, and well integrated with transit. TOD zoning districts and associated standards provide a way to promote and guide development around existing or future transit stations so that people from all walks of life can conveniently get to places at which they live, work, shop, and play by transit, walking, and bicycling rather than solely by automobile. The full benefits of a TOD district typically occur over time, as the district develops and evolves to market conditions. Such benefits include:

Example of transit-orient development

- Reducing combined housing and transportation costs for households by providing diverse housing options and alternatives to automobile travel;
- Creating cohesive, yet diverse, neighborhoods with increased economic and cultural opportunities, contributing to greater livability and a healthier local economy;
- Encouraging healthier lifestyles by creating a pattern of development in which biking and walking are part of everyday travel behaviors;
- Reducing vehicle miles traveled, dependence on fossil fuels, and associated greenhouse gas emissions;
- Reducing the costs of delivering public services by encouraging infill and redevelopment in areas with existing infrastructure;
- Providing a more compact development pattern that helps preserve open space and natural resources elsewhere in the community or region;
- Encouraging a more sustainable transportation system over the long term by creating viable options for people to get to destinations by other than the automobile;

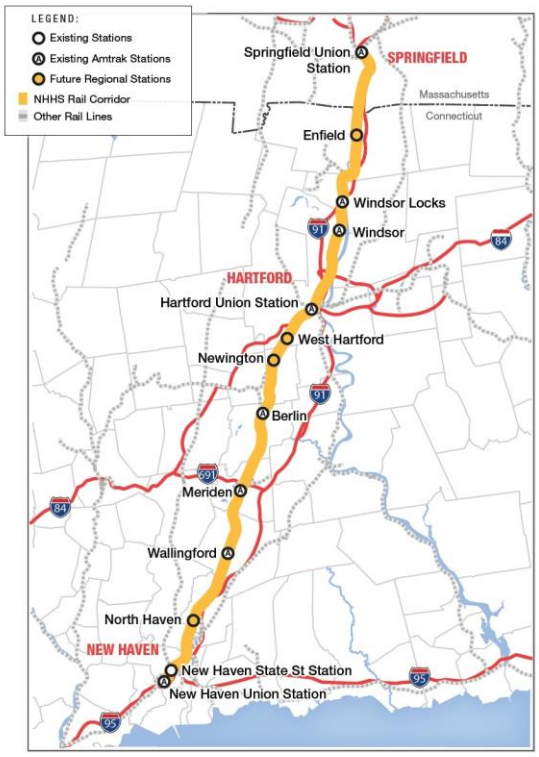
- Reducing reliance on building new roadways or widening existing roadways to meet transportation needs as a community and region continues to grow; and

[1] Center for Transit-Oriented Development. 2010. *Transit-Oriented Development Tools for Metropolitan Planning Organizations*. Oakland, CA. CTOD.

- Taking advantage of and facilitating public investments in transit infrastructure, enabling more efficient servicing of community and regional transportation needs.[2]

Transit Opportunities in the Capitol Region

The recently published *Making It Happen: Opportunities and Strategies for Transit-Oriented Development in the Knowledge Corridor*[3] studied economic opportunities likely to be spurred by the bus rapid transit and rail investments underway in the Knowledge Corridor, which includes the Capitol Region. Those investments include:



- CT*fastrak*, a new bus rapid transit (BRT) system between Hartford and New Britain, is under construction and will have 11 stations along a dedicated corridor.
- The New Haven-Hartford-Springfield (NHHS) rail program is being expanded to provide new passenger rail service connecting major destinations from Springfield to Hartford and New Haven, with shuttle serve to Bradley International Airport from a station in Windsor Locks and connecting serve to New York City and the Northeast rail corridor from Washington to Boston.

Among the report's key findings are:

- Regional demographics (e.g., the growth in aging baby boomers and young urban professionals) will create growing demand for the compact, walkable neighborhoods needed to support the transit systems.
- The large proportion of the region's economic and employment base consists of knowledge-based, health, educational, public administration, and social assistance services, which are transit-supportive sectors and are growing.
- Despite the recent economic downturn, there are promising signs that real estate conditions in the region are improving and, with some public and private help and coordination, should make transit-oriented development financially feasible in station areas throughout the region.

[2] Florida Department of Transportation and Department of Community Affairs. 2011. *A Framework for Transit Oriented Development in Florida*. Tallahassee, FL. FDOT & FDCA. See http://planfortransit.com/resources-2/florida-transit-oriented-development/.

[3] Jonathan Rose Companies and Center for Transit-Oriented Development, 2013. *Making It Happen: Opportunities and Strategies for Transit-Oriented Development in the Knowledge Corridor*. See http://www.crcog.org/SustainableKnowledgeCorridor.htm.

The report concludes that to maximize the current substantial investment in transit systems and provide opportunities for their future expansion, regional growth will need to be redirected into transit-oriented development in station areas along the new and expanded transit corridors. Transit-oriented development should also be promoted in areas in the region, both to realize potential for future transit service to those areas and to achieve the many fiscal, economic, and social benefits of the compact, walkable activity centers and neighborhoods that are characteristic of transit-oriented development.

But are Capitol Region municipalities ready to take advantage of the opportunities and face the challenges of promoting transit-oriented development?

The Regional Plan Association recently conducted a study of land use policies and development regulations applied around 42 active rail stations along Connecticut's Metro-North commuter rail service.[4] Although this study applies to an area of Connecticut outside the Capitol Region, its findings about the TOD-appropriateness of development regulations applied around transit stations may be instructive to Capitol Region municipalities. The study found that a community vision for compact, walkable development exists around only half the stations, and that transit-supportive development regulations are applied at fewer than a quarter of the stations. Furthermore, only about half of the station areas allow development intensities or a mix of residential and commercial uses deemed appropriate to TOD. And only one in five station areas have parking standards that recognize the ability to TOD to reduce parking demand.

A recent market and financial feasibility study for a proposed downtown transit center in Meriden noted that parking construction costs represented 13 percent of total project costs and current parking requirements posed a major hindrance to TOD development.[5]

In 2012, Clarion Associates conducted sustainability assessments of the development regulations of 12 municipalities in the Capitol Region. At that time, while several municipalities had mixed-use zone districts, none had districts specifically tailored for TOD, and only Windsor had regulations expressly supporting TOD. This district allows increased building height for TOD near the Amtrak station in Windsor Center and reducing parking requirements by 10 percent for developments within ¼ mile of a transit stop. Hartford has since been awarded a state grant to create a TOD overlay district around Union Station.

Principles of Transit-Oriented Development

These model standards for TOD districts are intended to reflect the following principles of transit-oriented development:

- Within walking distance of the transit station, concentrate a mix of complementary land uses that:
  - Are well-integrated;
  - Create active and secure pedestrian-friendly environments;
  - Promote balanced level of transit ridership throughout the day; and
  - Reduce reliance on the automobile.

Active, safe, and attractive pedestrian environment

[4] Regional Plan Association. 2013. *Halfway There: How to Create Land Use Policy that Makes the Most of Connecticut's Transit Network*. Stamford, CT. RPA.
[5] 4Ward Planning, Inc. 2013. "Meriden TOD Market Study and Financial Feasibility Analysis: Summary of Findings."

- Accommodate and encourage higher development intensities that:
  - Contribute to higher rates of transit ridership;
  - Support retail shops and services; and
  - Reflect acceptable development investment risks.
- Provide for traffic circulation patterns relationships that:
  - Form a safe, convenient, and accessible network for all modes of transportation;
  - Interconnect streets, walkways, and bikeways throughout the district and its surrounding development;
  - Maximize connectivity between adjacent developments; and
  - Provide direct connections to the transit station.
- Apply parking management strategies that:
  - Reflect the reduced vehicle parking demand inherent in transit-oriented and mixed-use developments;
  - Provide for increased bicycle parking;
- Create an enhanced environment around the transit station that:
  - Is attractive, safe, and orderly;
  - Organizes public and private spaces to invite pedestrian activity and social interaction in comfort and security; and
  - Encourages building facades that reinforce the human scale of a pedestrian environment and enhance pedestrian routes.


Enhanced environment of public and private places

Types of TOD Districts

TOD districts can be categorized in a variety of ways. Like other activity centers, they can be distinguished by the relative scale and character of the area that supports their retail, service, and employment uses—e.g., neighborhood/community/regional/super-regional centers. TOD districts can also be characterized by the type of transit that serves them—e.g., heavy rail transit, light rail transit, bus rapid transit. Transit type often determines the type, spacing, and intensity of station areas, as well as their service area. And TOD districts can be distinguished by community context—e.g., urban/transitional/suburban. Most communities with multiple types of TOD districts use a composite approach to categorizing them.

For example, Florida's TOD guidelines categorize TOD place types and their target intensities and characteristics in terms of a matrix of activity centers types (regional, community, neighborhood) and transit types (heavy rail, commuter/light rail, bus rapid transit/bus).[6] TOD guidelines adopted by the Metropolitan Atlanta Rapid Transit Authority (MARTA) categorize TOD district in terms of six TOD station typologies: Urban Core, Town Center, Commuter Town Center, Neighborhood, Arterial Corridor, Special Regional Destination, and Collector.[7] Some New Urbanists identify the following TOD types: Urban

[6] *Ibid.*, p. 29 *et seq.*
[7] Metropolitan Atlanta Rapid Transit Authority. 2010. *Transit –Oriented Development Guidelines*. Atlanta, GA.MARTA. See http://www.itsmarta.com/TOD-real-estate.aspx.

Downtown, Urban Neighborhood, Suburban Town Center, Suburban Neighborhood, Neighborhood Transit Zone, and Commuter Town Center.[8] The Center for Transit-Oriented Development categorizes TODs and their target intensities and characteristics in terms of eight TOD place types: Regional Center, Urban Center, Suburban Center, Transit Town Center, Urban Neighborhood, Transit Neighborhood, Special-Use/Employment District, and Mixed-Use Corridor. CRCOG's recent *Making It Happen* report uses a market approach to identify four TOD station area typologies: Infill (largely built-out areas where new development is most likely to be infill development); Outreach (suburban and auto-oriented areas where opportunities for TOD development is limited); Catalyze (where the urban environment is conducive to TOD development, though market conditions may not be strong); and Reposition (areas of economic decline with historic buildings in an urban context, where significant efforts are needed).

The characteristics that most commonly distinguish TOD types within these categorization schemes based on physical form is the range of development intensity (usually expressed in terms of residential density or floor area ratio) and the mix of land uses allowed. Although TOD districts focused on the type of transit can be found in the TOD categorization schemes noted above and in several model and actual TOD district regulations, there were few if any standards other than use and intensity standards that differentiated such districts. Thus the model code provisions for transit-oriented development districts that follow could be simplified to distinguish different types of TOD districts solely in terms of the mix of uses allowed and the applicable intensity and dimensional standards.

Clarion Associates project staff toured the BRT stations currently under construction between Hartford and New Britain and observed that except for a few stations in the highly urbanized areas such as downtown Hartford and West Hartford, the large majority of stations are currently surrounded by development of low or moderate intensity and often in a suburban context (See photos of BRT stations under construction and adjacent areas.). This includes the Newington joint BRT/Rail station; a similar suburban context can be found in the areas around the three NHHS rail stations proposed outside the Hartford/ West Hartford urbanized area: Windsor, Windsor Locks, and Enfield. Thus the base model standards presented in this document are designed for this predominant type of TOD district which is most likely to be appropriate in both suburban areas of the region's larger municipalities and the town centers of the region's smaller municipalities.

Parkville BRT Station Area

Kane Street BRT Station

Newington Junction BRT Station

[8] Dittmar, Hank. 2004. "Driving Growth Through Transit-Oriented Development." *Zoning Practice*. vol. 21, no. 8. Chicago, IL. American Planning Association.

To address stations in more urban and rural areas, following the base model TOD district standards we have included supplementary regulations. These regulations for urban and rural stations feature different mix of uses and significantly different intensity standards that are more suitable for these two other potential types of TOD district in the region. This document does not include model TOD district standards for an urban downtown because only Hartford is sufficiently urbanized to warrant this type of TOD district and that city already is developing appropriate district standards.

Transition to Transit-Supportive Development

The model code provisions for transit-oriented development districts that follow are intended to accommodate and encourage the type of transit supportive development appropriate around transit stations that already exist or whose construction is imminent. For many municipalities in the region, transit service is something only the future will bring. However, that is no reason not to plan for and facilitate the transition of current development into transit-supportive development once transit becomes available. Where a transit station is planned for a particular site, but transit service is not yet available to the site, the higher-intensity development with reduced parking that will be suitable for the future may not be appropriate now. The model provisions, therefore, are followed by another set of supplementary regulations presenting variations that limit pre-transit development to reflect current conditions, but ensure current development occurs in a manner that facilitates its future transition to a fully TOD-supportive development.

Model Code Provisions for Transit-Oriented Development Districts

1.1 PURPOSE

The purpose of the Transit-Oriented Development (TOD) District is to promote the establishment of identifiable, vibrant, and transit-supportive activity centers around existing and proposed transit stations—centers that will foster economic growth and development, reduce automobile dependency and the resultant roadway congestion and air pollution, and provide opportunities for alternative modes of travel. District standards are intended to provide the "critical mass" of development types and intensities within convenient walking distance of a transit station that is needed to support transit service and capitalize on public investment in the community's and region's existing and future transportation system. They are also intended to reduce costs by eliminating inappropriate and excessive regulations and avoid the need for time-intensive discretionary reviews. District standards are specifically intended to accommodate and promote compact, pedestrian-friendly, and mixed-use development that:

- Encourages a dynamic live/work/play environment that serves as an economic driver for the community;
- Includes a well-integrated mix of complementary high-activity uses—including transit-supportive commercial, residential, civic, and employment uses—within walking distance of each other and the transit station;
- Provides multiple, direct, and safe vehicular, bicycle, and pedestrian connections between the transit station and the surrounding uses;
- Incorporates buildings, open spaces, and other site elements that are arranged and designed to create an inviting, walkable, safe, socially-interactive, and human-scale environment that is compatible with other development in the district;
- Includes distinctive, attractive, and engaging public spaces that help create an identity and sense of place for the station area;
- Provides a range of housing options for people of different income levels and at different stages of life;
- Provides sufficient parking to accommodate transit users and district visitors and residents, but not excessive or extensive parking that could unduly detract from the district's pedestrian-oriented character;
- Incorporates building reuse and infill where appropriate;
- Connects to, complements, and is compatible with surrounding neighborhoods; and
- Is consistent with community plans and policies.

The TOD District consists of two subdistricts. The TOD-Core Subdistrict is intended to accommodate compact, high-intensity, and mixed-use development close to the station that features retail, service, employment, and other high-activity uses. The surrounding TOD-Ring Subdistrict is intended to accommodate lower-intensity development that is dominated by residential or employment uses with supporting retail, service, and civic uses, and that provides appropriate connections and transitions to surrounding development.

1.2 TOD SUBDISTRICTS

Land zoned Transit-Oriented Development (TOD) District shall be further classified as either a TOD-Core Subdistrict or a TOD-Ring Subdistrict. Land within a five-minute walk (approximately ¼ mile) from the transit station should be classified as TOD-Core Subdistrict and land between the TOD-Core Subdistrict and a convenient ten-minute walk (approximately one-half mile) from the transit station should be classified as TOD-Ring Subdistrict.

Commentary: The division of the TOD District into subdistricts is intended to recognize that although ½ mile is considered a convenient walking distance for many people, people are much more willing to forego their automobile and walk if their destination is within ¼ mile. The success of a TOD district, therefore, generally depends on concentrating most of the district's activities and destination points within ¼ mile of the transit station. Using subdistricts is an efficient way of both applying general TOD standards throughout the TOD District and applying intensity and development standards that go step further in promoting and accommodating pedestrian activity in the core area immediately around the transit station. An alternative would be to have two separate districts. For less intense TOD districts, where the difference between what would be appropriate in a core district and a ring district might be less significant, it may be appropriate to apply a single set of standards throughout a single TOD District.

1.3 PEDESTRIAN STREET FRONTAGES

When land is zoned Transit-Oriented Development (TOD) District, certain street frontages within the district shall be designated as "pedestrian street frontages." Pedestrian street frontages are those street frontages along which a high level of pedestrian activity and interaction with adjoining development is particularly necessary or desired to define and enhance the character of the TOD District. Along designated pedestrian street frontages, this section applies additional standards intended to accommodate and encourage pedestrian activity and pedestrian-friendly development to a higher extent than elsewhere in the district. Examples of street frontages that may be designated as a pedestrian street frontage include, but are not limited to, street frontages close to or extending from the transit station, street frontages that have or are intended to have a "Main Street" character, street frontages with a high level of retail sales and service-oriented office uses, and frontages opposite commons, outdoor gathering spaces, or other public open space.

Commentary: Designating pedestrian street frontages is a way to apply special building placement, form, and design standards along those streetscapes where promoting and accommodating pedestrian activity is of greatest importance to the success of the TOD District. Most pedestrian street frontages are likely to be located within the TOD-Core Subdistrict, but not all streetscapes in that subdistrict need be pedestrian-oriented. The TOD-Ring Subdistrict is likely to contain some strongly pedestrian-oriented streetscapes (especially along streets forming a gateway into the TOD District's core).

1.4 USE STANDARDS

Commentary: Development codes use a variety of ways to identify which uses are allowed by right in particular zoning districts, which uses are allowed only with a special or conditional use permit, which uses are prohibited, and the standards or conditions under which certain uses are allowed. To encourage transit-oriented development, most uses allowed in the TOD District should be allowed by right rather than require the type of time-consuming planned unit development or rezoning review used in many codes in the region.

This section provides a use table to identify allowable uses, special uses, and prohibited uses, and to reference subsequent use-specific standards where appropriate. To avoid confusion about certain uses that commonly exist as principal uses and as accessory or temporary uses or structures, this section is organized to include separate use tables and use-specific standards for principal uses, accessory uses/structures, and temporary uses/structures.

The use tables can be used as shown, or incorporated into a consolidated use table for all districts, or converted into a text listing of allowable uses, special uses, and prohibited uses. Use-specific standards are provided only for those uses that are particularly important to achieving the purposes of the TOD district or call for specific standards to make them appropriate in a TOD district. These use-specific standards can be incorporated into a section containing standards specific to other allowed uses, or follow a district listing of the use as an allowed or special use.

1.4.1. PRINCIPAL USES

A. Table of Allowed Principal Uses

Commentary: This use table list uses by use classification (rows shaded light blue), use category, and use type to facilitate interpretations of what use type (if any) a particular proposed land use activity falls under, as well as the application of subsequent use-specific and development standards. Recognizing that development codes vary considerably in how they identify allowable and prohibited uses, the use types listed in the table are relatively general—just specific enough to indicate the range of uses within the various use categories and to address uses that are particular important in a TOD district or call for specific standards to make them appropriate in a TOD district. For other purposes, a community using or incorporating such a use table may wish to include a different breakdown of use categories or additional use types, or to break up certain uses by size or capacity thresholds.

Table 1.4.1.A: Allowed Principal Uses
P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Use Category	Use Type	TOD-Core	TOD-Ring	Use-Specific Standards
Mixed-Use Development				
Mixed-use development	Live-work unit	P	P	Sec. 1.4.1.D.1
	Other residential over nonresidential	P	P	
	Other mixed-use development	P	P	
Residential Uses				
Household Living Uses	Single-family dwelling	X	P	
	Two-family dwelling	X	P	
	Three- or four-family dwelling[9]	X	P	Sec. 1.4.1.D.2
	Multifamily development	S	P	
	Townhouse development	P	P	
Group Living Uses	Group living	P	P	
Public and Institutional Uses				
Community Service Uses	Adult day care facility	P	P	
	Child day care facility	P	P	
	Community center	P	P	
	Library	P	P	

[9] Such dwellings (also called triplexes and quadplexes) are commonly treated as multifamily dwellings. However, a community should consider treating these housing types separately—whether to allow them as appropriate infill development in a lower-intensity TOD-Ring Subdistrict (to promote greater variety in housing types and costs), or to prohibit them in a higher-intensity TOD-Core Subdistrict (to better ensure pedestrian activity along street frontages).

Table 1.4.1.A: Allowed Principal Uses P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited					
Use Category	**Use Type**		**TOD-Core**	**TOD-Ring**	**Use-Specific Standards**
	Museum		P	P	
Educational Uses	Business/trade/vocational school		P	P	
	College/university		P	P	
	Elementary/ middle/high school		P	P	
Government Uses	Courthouse		P	P	
	Fire/EMS station		P	P	
	Police station		P	P	
	Government maintenance facility		X	X	
	Government administration offices		P	P	
	Post office		P	P	
Medical uses	Hospital		S	P	
	Other medical facility		P	P	
Open Space Uses	Cemetery		X	X	
	Community garden		P[10]	P	Sec. 1.4.1.D.3
	Park or greenway		P	P	
	Public square or plaza		P	P	
Transportation uses	Transit station		P	P	
	Park-and-ride facility		S	X	
Utility uses	Major utility facility		X	X	
	Minor utility facility		P	P	
	Telecommunication tower		X	S	
Other Public and Institutional Uses	Club/lodge		P	P	
	Place of worship		P	P	
Commercial Uses					
Animal Care Services	Kennel		X	P	
	Veterinary clinic		S	P	
Eating/Drinking Establishments	Bar/lounge		P	P	
	Restaurant		P	P	
	Specialty eating/drinking establishment		P	P	
Entertainment/ Recreation Uses	Cinema		P	P	
	Arena/stadium		S	S	
	Auditorium/stage theater		P	P	
	Commercial recreation facility	Indoor	P	P	
		Outdoor	X	S	
	Country club/golf course		X	X	
Office Uses	Non-service-oriented offices		P	P	
	Service-oriented offices		P	P	
Retail Sales and Service Uses	Bank or financial institution		P	P	
	Funeral home		X	P	
	Lawn care, pool, or pest control service		X	X	
	Personal services establishment		P	P	
	Plant nursery		X	S	
	Shopping	GFA ≤ 150,000 sf	P	P	

[10] Community gardens generally are too land-intensive to be appropriate in a TOD-Core, but would be appropriate if located on a building's rooftop or as a temporary use of a vacant lot pending its development. Provisions limiting community gardens in TOD-Core Subdistricts to such circumstances should be incorporated in the use-specific standards for community gardens.

Table 1.4.1.A: Allowed Principal Uses P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited					
Use Category	**Use Type**		**TOD-Core**	**TOD-Ring**	**Use-Specific Standards**
	center[11]	GFA > 150,000 ≤ 400,000 sf	P	P	
		GFA > 400,000 ≤ 800,000 sf	P[12]	X	
		GFA > 800,000 sf	X	X	
	Other retail sales and service use[13]	GFA ≤ 50,000 sf	P	P	
		GFA > 50,000 ≤ 100,000 sf	X	S	
		GFA > 100,000 sf	X	X	
Sexually Oriented Businesses[14]					
Vehicle/ Equipment Sales and Service Uses	Automotive painting or body shop		X	S	
	Automotive repair and service		X	S	
	Automotive sales or rental		X	X	
	Car wash		X	S	
	Gas station		X	S	
	Parking lot (as a principal use)		S	P	
	Parking structure (as a principal use)		P	P	Sec. 1.4.1.D.6
	Self-service storage facility		X	S	
	Taxi or limousine service facility		P	P	
	Tire sales and mounting		X	X	
	Truck/recreational vehicle sales, rental, or service		X	X	
Visitor Accommodation Uses	Bed and breakfast inn		X	P	
	Hotel or motel		P	P	
Industrial Uses[15]					
Industrial Service Uses			X	X	
Manufacturing and Production Uses			X	X	
Warehousing and Freight Movement			X	X	

[11] As a multitenant retail sales and service development, shopping centers allow customers to shop at a number of stores without having to drive out onto the streets. Although shopping centers traditionally consist of spread-out, single-story buildings with a large parking lot, they are increasingly multistory with structured parking. Shopping centers commonly are identified as neighborhood, community, regional, or superregional shopping centers, usually distinguished by floor area thresholds such as those shown in the table. Shopping centers might alternatively be distinguished by building footprint thresholds, or by both floor area and footprint thresholds. Doing so recognizes that large multistory shopping centers might be beneficial to establishing the high-intensity activity desired for the core area of an urban TOD district without diminishing its pedestrian-oriented character. Distinguishing of shopping centers may be done in the use table, in the definitions of the various shopping center types, or in the use-specific standards for a shopping center use.

[12] As noted above, a traditional large shopping center would be inappropriate in a TOD-Core Subdistrict, but would be appropriate if the floor area were stacked in a multistory building. Allowing large shopping centers in the TOD-Core Subdistrict

[13] This distinguishes general retail sales and service uses in terms of gross floor area based on the observation that large, single-tenant retail sales and service stores ("big box" retailers) tend to be very auto-oriented, with large surface parking lots—and thus inappropriate in pedestrian-oriented TOD districts. As with shopping centers, these might alternatively be distinguished by building footprint thresholds, though big box retail stores (whether a department, wholesale, grocery, or home supply store) are unlikely to be multistory.

[14] Identification and treatment of sexually oriented businesses (or adult uses) varies among communities. Some communities may find it necessary or acceptable to allow these uses in the TOD district, but should consider subjecting them to spacing or other use-specific standards targeted toward addressing safety concerns and preventing the TOD district from becoming a 'red-light district."

[15] Most industrial uses have a scale and impacts that make them inappropriate in a pedestrian-oriented TOD district. Thus this table does not identify the many use types that might fall under each of the use categories. Some communities, however, may find it desirable to allow certain small-scale industrial uses in TOD districts—e.g., craft or artisan industry uses, particularly where they have a retail sales component.

Table 1.4.1.A: Allowed Principal Uses P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited				
Use Category	**Use Type**	**TOD-Core**	**TOD-Ring**	**Use-Specific Standards**
Uses				
Waste-Related Uses		X	X	
Wholesale trade uses		X	X	

B. Mixing of Uses

1. Mixing of Residential and Nonresidential Uses

No new nonresidential use shall be approved within the district unless a residential development meeting the applicable intensity standards exists or has been approved in the district, or is proposed in conjunction with the nonresidential use.

Option: By the time 50 percent of the land area within the TOD District is developed or approved for development, residential uses shall make up at least 30 percent of the total gross floor area existing or approved within the district and nonresidential uses shall make up at least 20 percent of such floor area. No new nonresidential use shall be approved in the district until the 30 percent threshold for residential uses has been met, and no new nonresidential use shall be approved until the 20 percent threshold has been met.

Commentary: This provision is intended to ensure that the TOD District includes at least some residential uses as it is built out. The optional alternative is more flexible and addresses balancing both residential and nonresidential uses, but requires administrators to keep track of existing and previously approved floor area in the district.

2. Vertical and Horizontal Mixing of Residential Uses

a. The vertical mixing of residential uses with nonresidential uses within a single project or building, with residential development on upper floors, is encouraged—particularly in the TOD-Core subdistrict.

b. The horizontal mixing of stand-alone residential developments and adjacent stand-alone nonresidential or mixed-use developments in the district is allowed, provided the developments are well-integrated in terms of complementary uses, access and circulation, and compatible design.

3. Mixing among Nonresidential Uses

The district shall include existing or approved principal uses from at least two nonresidential use categories identified in Table 1.4.1: Principal Permitted Uses.

Commentary: This provision is intended to ensure some variety in the categories of nonresidential uses the district includes. It could be expanded to specify particular use categories or use types that should be represented in the district—e.g., eating/drinking establishments, retail sales and service uses. Communities should be careful, however, to avoid inhibiting development by setting use-mixing standards that are too specific or require too many types of use.

C. High-Activity Nonresidential Uses at Street Level

The incorporation of high-activity nonresidential uses such as retail shops and restaurants at street level is encouraged—particularly in the TOD-Core subdistrict and along pedestrian street frontages, and especially along those building facades that face the transit station, streets or pedestrian walkways connecting to the station, or public spaces near the station.

Option: New mixed use or nonresidential development in the TOD-Core Subdistrict shall incorporate high-activity nonresidential uses such as retail shops and restaurants at the street level of building facades that abut pedestrian street frontages, streets of pedestrian walkways connecting to the transit station, or public spaces adjacent to the transit station.

Commentary: To foster the district's pedestrian character, this provision encourages street level facades along pedestrian frontage streets to contain nonresidential uses that involve high interaction with sidewalk traffic. The optional provision goes a step farther to require such uses. In some communities, particularly where the local economy is not strong, requiring these high-activity uses at street level may impede district development and counter any potential benefit. An in-between alternative would be to offer incentives to developments that incorporate high activity nonresidential development at street level. Such incentives might include an expanded list of permitted uses.

D. Use-Specific Standards

As noted above, use-specific standards are provided only for principal uses that are particularly important to achieving the purposes of the TOD District, or that have standards intended to achieve TOD District purposes.

1. Live-Work Unit

[See the model standards in CRCOG's Draft Model Regulations: Housing Diversity and Affordability – Live/Work Units.]

2. Three- or Four-Family Dwelling

a. The dwelling shall be configured through massing, door placement, centralized parking location, and use of exterior materials to give the dwelling the appearance of a large single-family detached home.

Three-family dwelling designed to look like a large single-family dwelling

b. Ground-floor dwelling units shall be accessed via internal corridors or from individual exterior porches or stoops served by a designated walkway, and upper-story dwelling units shall be accessed via internal corridors, common stairways, or individual stairways.

Commentary: These standards are intended to ensure three- and four-family dwellings are compatible when located among single-family detached dwellings.

3. Community Garden

[See the model standards in CRCOG's Draft Model Regulations: Community Gardens.]

4. Shopping Center

Commentary: If shopping center types are not distinguished in the use table, they might be distinguished here, with a standard such as: "Only shopping centers with a gross floor area [or a building footprint] of ____ square feet or less are allowed in the TOD-Core Subdistrict."

5. Other Retail Sales and Service Use

If types of this catchall use are not distinguished in the use table, they might be distinguished here, with a standard similar to that used to distinguish types of shopping centers.

6. Parking Structure

See Section 1.6.4.F, Parking Structures.

1.4.2. ACCESSORY USES/STRUCTURES

A. Permitted Accessory Uses/Structures

Table 1.4.1.A: Permitted Accessory Uses/Structures [1]
A = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Accessory Use or Structure		TOD-Core	TOD-Ring	Use-Specific Standards
Accessory dwelling unit (ADU)		A	A	Sec. 1.4.2.B.1
Amateur radio antenna		A	A	
Automatic teller machine (ATM)		A	A	Sec. 1.4.2.B.2
Bed and breakfast (B&B) (as accessory to single-family dwellings)		X	A	
Drive-through service		X	A	Sec. 1.4.2.B.3
Electric vehicle charging station[16]	Level 1 or 2	A	A	Sec. 1.4.2.B.4
	Level 3	A	A	Sec. 1.4.2.B.4
Family day care home		A	A	
Home-based business		A	A	Sec. 1.4.2.B.5
Outdoor display and sale of merchandise		A	A	Sec. 1.4.2.B.6
Outdoor garden[17]	Ground area ≤ 3,000 square feet	A	A	
	Ground area > 3,000 square feet	X	A	
Outdoor recreational facility[18]	Ground area ≤ 3,000 square feet	A	A	
	Ground area > 3,000 square feet	X	A	
Outdoor seating (as accessory to eating/drinking establishments)		A	A	Sec. 1.4.2.B.7
Outdoor storage		X	A	Sec. 1.4.2.B.8
Parking lot, surface	Up to 50 spaces	A	A	
	More than 50 spaces	X	A	
Parking structure		A	A	Sec. 1.4.2.B.9
Rainwater cistern		A	A	

[16] As the number of electric and chargeable hybrid cars continues to grow, so too will the need for EV charging stations—which are generally categorized as level 1, level 2, or level 3.

[17] Distinguishing accessory gardens by size allows a code to prohibit the use of large ground space for large gardens rather than as sites for buildings that might be more beneficial to the TOD District. Any such prohibition would not apply to rooftop gardens.

[18] Accessory outdoor recreational facilities are distinguished by size for the same reason as with accessory gardens. As with the gardens, any resulting prohibition of large outdoor recreational facilities would not apply to rooftop facilities.

Table 1.4.1.A: Permitted Accessory Uses/Structures [1] A = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited			
Accessory Use or Structure	**TOD-Core**	**TOD-Ring**	**Use-Specific Standards**
Recycling bin	A	A	
Satellite dish	A	A	
Solar collection system, small	A	A	Sec. 1.4.2.B.10
Wind energy system, small	A	A	Sec. 1.4.2.B.11
Accessory use/structure other than those listed above	A	A	
NOTES: 1. This table does not list all allowable accessory uses/structures, but only those that are expressly prohibited or subject to special standards, or are expressly listed to clarify that they are allowed.			

B. Use-Specific Standards

As with principal uses, use-specific standards are provided only for accessory uses that are particularly important to achieving the purposes of the TOD District, or that have standards intended to achieve TOD District purposes.

1. Accessory Dwelling Unit (ADU)

See the model standards in CRCOG's Draft Model Regulations: Housing Diversity and Affordability – Accessory Dwelling Units.

2. Automatic Teller Machine (ATM)

a. An ATM designed for walk-up use and located in the exterior wall of a building or a parking area shall be designed to avoid obstructions to pedestrian movement along sidewalks, through public use areas, or between parking areas and building entrances, or vehicular movement in front of buildings or through parking areas.

b. If an ATM is designed for use by customers in their vehicles, it shall comply with the accessory use standards (including districts where permitted) in Section 1.4.2.B.3, Drive-Through Service.

3. Drive-Through Service

a. Vehicular access to and from the drive-through facility shall be from a street other than a pedestrian frontage street.

b. The driveway or drive aisle providing vehicular access to drive-through service facilities shall include the minimum number of stacking spaces set forth in the table below.

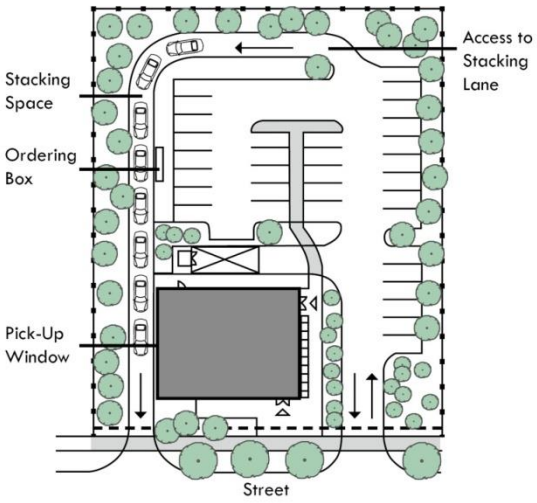
Table 1.4.2.B.3.b: Minimum Stacking Spaces for Drive-Through Service Facilities		
Principal Use	**Minimum Number of Stacking Spaces [1]**	**Measured From**
Automated Teller Machine (ATM)	2	Teller machine
Eating/Drinking Use [2]	4 per lane	Order box
Retail Sales and Service Use (e.g., bank, drug store, laundry/dry cleaning pick-up)	3 per lane	Window
Other use		
NOTES: 1. Stacking spaces shall be at least ten feet wide and 20 feet long.		

Table 1.4.2.B.3.b: Minimum Stacking Spaces for Drive-Through Service Facilities		
Principal Use	**Minimum Number of Stacking Spaces [1]**	**Measured From**
2. Restaurants with drive-through service shall provide at least 4 additional stacking spaces between the order box and the pick-up window.		

c. The drive-through service facility, including the access driveway or drive aisle and the stacking spaces, shall be designed to avoid impediments to:

i. On-site or off-site vehicular traffic movements or movements into or out of off-street parking spaces;

ii. On-site or off-site bicycle traffic movements along bikeways and to and from bicycle parking; and



Stacking spaces for a restaurant with drive-through service (not on a pedestrian frontage street)

iii. On-site or off-site pedestrian traffic movements along sidewalks, through public use areas, or between parking spaces and building entrances.

d. Stacking spaces shall be separated from other internal vehicular driveways or drive aisles by raised medians where deemed necessary for efficient traffic movement and safety by the (insert title of appropriate administrative official).

4. Electric Vehicle Charging Station

a. Except where accessory to a single-family detached, duplex, single-family attached, or manufactured home dwelling, EV charging station spaces shall be reserved for the charging of electric vehicles only. Such reserved spaces shall be posted with signage identifying the spaces as reserved only for the charging of electric vehicles, amperage and voltage levels, any enforceable time limits or tow-away provisions, and contact information for reporting non-operating equipment or other problems.

b. EV charging station equipment shall be located so as not to interfere with vehicle, bicycle, or pedestrian access and circulation, or with required landscaping.

5. Home-Based Business

Commentary: Standards for home-based businesses (or home occupations) commonly limit the area devoted to the business, require the person conducting the business to be an occupant of the home, prohibit or limit the number of nonresident business employees, restrict on-site sales, restrict customer and deliver traffic, limit signage, restrict the use of accessory structures, restrict outdoor storage, prohibit outdoor conduct of business activities, and prohibit certain noise, odors, vibrations, and similar adverse off-site impacts. In keeping with the mixed-use character of TOD districts and minimize trip generation, communities should consider encouraging home-based businesses by relaxing some of these standards—particularly standards that limit the business to less than 25 percent of the dwelling unit's total floor area, limit the number of nonresident business employees to less than two (full-time equivalent) employees, restrict the use of accessory structures, or prohibit outdoor activities.

6. Outdoor Display and Sale of Merchandise

a. Outdoor display/sales areas shall be limited to no more than one-half of the length of the front or side of the principal building. In the case of a multitenant building, the total amount of outdoor display/sales area for all the in-line tenants combined shall not exceed one-half the aggregate length of the front of the building.

b. Outdoor display/sales areas shall be located to maintain a clearance area in front of primary building entrances for a depth of at least ten feet, projected straight out from the width of entrance doors.

c. An obstruction-free area at least five feet wide shall be maintained through the display/sales area or between it and adjacent sidewalk for the length of the front building facade.

d. No goods shall be attached to a building's wall surface.

e. The height of the outdoor display shall not exceed eight feet.

f. The outdoor display/sales area shall be located on an improved surface such as a sidewalk.

g. Outdoor display/sales areas shall not include hazardous and flammable materials, such as gasoline, oil, antifreeze, kerosene, poisons, pesticides, and similar items.

Commentary: A pedestrian-friendly TOD district depends on substantial interaction between sidewalk pedestrians and fronting retail sales and service uses. Outdoor display and sale of merchandise contributes to that interaction and should be allowed, but controlled to address potential adverse visual impacts, safety concerns, and impediments to pedestrian traffic. These standards are intended to address those objectives.

7. Outdoor Seating (as accessory to Eating/Drinking Establishments)

a. Hours of operation of the outdoor seating area shall be the same as those for the eating/drinking establishment.

b. No sound production or reproduction machine or device (including, but not limited to musical instruments, loud-speakers, and sound amplifiers) shall be used, operated, or played in the outdoor seating area at a volume that is any louder than necessary for the convenient hearing of persons within the outdoor seating area, or that would disturb the peace, quiet, or comfort of adjoining properties.

c. The outdoor seating area shall not obstruct the movement of pedestrians along sidewalks or through areas intended for public use.

d. No tables, chairs, umbrellas, or other furnishings or equipment associated with the outdoor seating area shall be attached, chained, or otherwise affixed to any curb, sidewalk, tree, post, sign, or other fixture within the outdoor seating area.

e. The outdoor seating area may be permitted on a public sidewalk abutting or adjacent to the front of the property containing an eating/drinking establishment subject to the following requirements:

    i. The outdoor seating area shall be limited to that part of the sidewalk directly in front of the property containing the eating/drinking establishment unless the owner of adjoining property agrees in writing to an extension of the outdoor seating area to that part of the sidewalk in front of the adjoining property.

    ii. The operator of the eating/drinking establishment shall enter into a revocable license agreement with the municipality that has been approved as to form by the municipal attorney and:

        (A) Ensures that the operator is adequately insured against and indemnifies and holds the municipality harmless for any claims for damages or injury arising from sidewalk dining operations, and will maintain the sidewalk seating area and facilities in good repair and in a neat and clean condition;

        (B) Authorizes the municipality to suspend authorization of the outdoor seating use, and to remove or relocate or order the removal or relocation of any sidewalk seating facilities, at the owner's expense, as necessary to accommodate repair work being done to the sidewalk or other areas within the right-of-way containing or near the outdoor seating area; and

        (C) Authorizes the municipality to remove or relocate or order the removal or relocation of any sidewalk seating facilities, at the operator's expense, if the operator fails to comply with a municipal order to do so within a reasonable time period.

f. A clear pathway at least five feet wide shall be maintained to allow through public pedestrian traffic along the sidewalk and from the sidewalk to the principal entrance(s) into the eating/drinking establishment. A greater width may be required where necessary to ensure the safe and convenient flow of pedestrian traffic.

g. A clear separation of at least five feet shall be maintained between the outdoor seating area and any alley, crosswalk, fire hydrant, or similar public or emergency access feature in or near the sidewalk. A greater separation distance may be required where necessary to ensure use of the public or emergency access feature.

h. No objects shall be placed along the perimeter of the outdoor sidewalk seating area that would have the effect of forming a physical or visual barrier discouraging the use of the sidewalk by the general public.

i. Tables, chairs, umbrellas, and other furnishings associated with the outdoor seating area shall be of sufficient quality design, materials, and workmanship to ensure the safety and convenience of area occupants and compatibility with adjacent uses.

Commentary: Outdoor seating for restaurants and other eating/drinking establishments can contribute to the pedestrian activity and interaction desired in TOD districts—particularly outdoor seating on or next to the sidewalk. These standards are intended to address impacts and concerns associated with such an accessory use.

8. Outdoor Storage

a. The outdoor storage area shall be located to the rear of the development's principal building(s).

b. The outdoor storage area shall be screened from view from all property lines and adjacent street rights-of-way by any combination of an opaque fence, wall, and landscaped berm that is at least six feet high and incorporates at least one of the predominant materials and at least one of the predominant colors of the development's principal building(s). Materials shall not be stored higher than the height of the screening.

Although generally prohibited in TOD districts as a principal use, many principal uses allowed in the district may have some degree of accessory outdoor storage. These standards are intended to ensure outdoor storage area do not adversely impact the visual character of the district.

9. Parking Structure

See Section 1.6.4.F, Parking Structures.

10. Solar collection system, small

See the model standards in CRCOG's Draft Model Regulations: Alternative Energy.

11. Wind energy system, small

See the model standards in CRCOG's Draft Model Regulations: Alternative Energy.

1.4.3. TEMPORARY USES/STRUCTURES

A. Permitted Temporary Uses/Structures

Table 1.4.1.A: Permitted Accessory Uses/Structures [1] √ = Allowed by Right T = Allowed only with Temporary Use Permit X = Prohibited			
Temporary Use or Structure	**TOD-Core**	**TOD-Ring**	**Use-Specific Standards**
Farmers' market	T [1]	T [1]	Sec. 1.4.3.B.1
Food truck	T [1]	T [1]	Sec. 1.4.3.B.2
Garage or yard sale	√	√	
Mobile classroom	√	√	
Seasonal outdoor sales	√	√	
Special event	T	T	
Street vendor	T [1]	T [1]	Sec. 1.4.3.B.3
Temporary construction-related structure or facility	√	√	
Temporary real estate sales office	√	√	
Temporary portable storage unit	√	√	
NOTES: 1. The Temporary Use Permit may be issued on an annual basis, subject to renewal.			

B. Use-Specific Standards for Temporary Uses/Structures

As with principal and accessory uses, use-specific standards are provided only for temporary uses that are particularly important to achieving the purposes of the TOD District, or that have standards intended to achieve TOD District purposes.

1. Farmers' Market

a. The market shall operate on a continuous basis for no more than five months per year on a single site.

b. Market sales shall be limited to the retail sale of fresh fruits and vegetables, herbs, mushrooms, nuts, honey, raw juices, molasses, dairy products, eggs, poultry, meats, fish, shellfish, fresh-cut or dried flowers, nursery stock, seedlings, plants, and other agriculture, aquaculture, and horticulture products produced by the vendor/producer, including the sale of products made by the vendor/producer from such agriculture, aquaculture, and horticulture products (e.g., baked goods, jams and jellies, juices, cheeses) and incidental sales of crafts or similar home-made products made by the vendor/producer.

c. The market shall provide adequate ingress, egress, and off-street parking areas.

d. Items for sale shall not be displayed or stored within customer pathways.

e. The market shall have an established set of operating rules addressing the governance structure of the market, hours of operation, and maintenance and security requirements and responsibilities.

f. The market shall have a manager authorized to direct the operations of all participating vendors during all hours of operation.

g. The market shall comply with applicable signage standards in (Insert reference to section containing signage standards).

Commentary: On the surface, a farmers' market might be thought of as taking up land area that might be better used for the higher-intensity buildings that are so important to establishing a TOD district as a pedestrian-oriented activity center. But it can contribute substantially to generating the social interaction that is equally important to establishing the identity and character of a TOD district, as well as to local food production that is important to the sustainability of the community and its residents. If a farmers' market occurs in parking areas or public open space at times when such areas are not otherwise used, it can only add to the TOD district.

2. Food Truck

a. Except for ice cream trucks and food trucks associated with permitted special event, food trucks shall be located only in a parking lot serving a principal building or use, and only with the written consent of the property owner.

b. Food trucks shall be located at least 100 feet from the main entrance or outdoor seating area of any eating establishment, and at least 50 feet from any permitted food street vendor.

c. Ice cream trucks may stop and operate from a permitted curbside parking area along a street only where the speed limit is no more than 35 miles per hour.

d. Food trucks shall not locate on any street or within any area of a parking lot in a manner that impedes, endangers, or interferes with pedestrian, bicycle, or vehicular traffic.

e. Food trucks shall be located at least 15 feet from any fire hydrant.

f. Food trucks shall not occupy any handicapped parking space.

g. No free-standing signage shall be permitted as part of the food truck's vending operation.

h. No audio amplification is allowed except for ice cream trucks, which shall comply with the municipality's noise regulations.

i. Outdoor seating areas associated with a food truck's vending operation are not permitted.

j. Hours of operation of food trucks shall be limited to the hours between 6:00 a.m. and 12:00 a.m. (midnight) unless the designated location on the lot accommodating the food truck is located within 150 feet of a lot containing a single- or two-family dwelling, in which case the hours of operation shall be limited to the hours between 7:00 a.m. and 10:00 p.m.

k. Except during an emergency, the food truck's operator or designee shall be present at the food truck at all times.

l. Food trucks shall not be stored, parked, or left overnight on any public street.

m. The food truck's operator is responsible for the proper disposal of waste and trash associated with the operation. The operator shall remove all waste and trash associated with their truck at the end of each day, and shall keep all areas within five feet of the truck clean of grease, trash, paper, cups, or cans associated with the vending operation. No liquid waste or grease is to be disposed in tree pits, storm drains, or onto the sidewalks, streets, or other public spaces. Under no circumstances shall grease be released or disposed of into the municipality's sanitary sewer system.

n. All equipment required for the food truck operation shall be contained within, attached to, or located within three feet of, the food truck. All food preparation, storage, and all sales and distribution shall comply with all applicable municipal, State, and federal sanitary regulations.

o. Before starting approved food truck operations, the operator shall provide the (Insert title of appropriate administrative official) evidence of having obtained all required municipal, State, and federal permits and licenses. All such permits and licenses shall be clearly displayed on the food truck. If at any time a required municipal, State, or federal permit or license is revoked or otherwise becomes invalid, the Temporary Use Permit for the food truck shall be immediately revoked or suspended.

p. If at any time evidence is provided that food truck operations are not in compliance with these regulations, the property owner and/or food truck may be held responsible for the violation.

Commentary: Food trucks are becoming increasingly popular in urban and suburban communities and can significantly contribute to a TOD district's character as pedestrian-friendly and a center of activity. This section is representative of the types of standards commonly applied to food trucks.

3. Street Vendor

a. Carts used for street vending shall be on wheels, be no longer six feet, and be no higher than five feet (excluding canopies, umbrellas, or transparent enclosures).

b. No signage for street vendors shall be allowed other than signs permanently attached to the cart.

c. Encroachment permits and liability insurance shall be required to operate within any municipal or State right-of-way.

d. The operator of a street vending cart operating adjacent to or in front of a business other than one they own or operate shall first obtain permission to operate there from the owner of such business, and shall submit evidence of such permission to the (Insert title of appropriate administrative official). This requirement does not apply if the street vender is participating in a special event permitted by the municipality.

e. Temporary connections to potable water systems are prohibited. All plumbing and electrical connections shall be in accordance with the Building Code.

f. Mobile prepared-food vendors shall not operate as a drive-through service facility.

g. Approval by the Health Department is required for all food vendors.

h. Vendor carts shall not restrict or interfere with the pedestrian ingress to or egress from an abutting building.

i. Vendor carts shall not be located in medians.

j. The (Insert title of appropriate administrative official) may revoke any development permit issued for this use on determining that the vendor's operations are causing parking, traffic congestion, or litter problems either on or off the property where the use is located, or that the use is otherwise creating a danger to public health or safety.

Commentary: Street vendors have long been deemed the epitome of an active urban pedestrian sidewalk. This section includes the types of standards commonly applied to street vendors.

1.5 INTENSITY AND DIMENSIONAL STANDARDS

*The table below consolidates intensity and dimensional standards deemed appropriate in the TOD areas most common in the region such as low- and moderate-intensity **suburban town center TOD districts**. Similar tables depicting with intensity and dimensional standards suitable in more urban TOD Districts and in more rural TOD Districts are located in the boxes at the end of this document. The standards in any of these tables should be considered a starting point for consideration of the intensity and dimensional standards appropriate to various TOD districts in the host community, based on the characters of the community, existing development in the TOD District, and existing and planned development in areas surrounding the TOD District.*

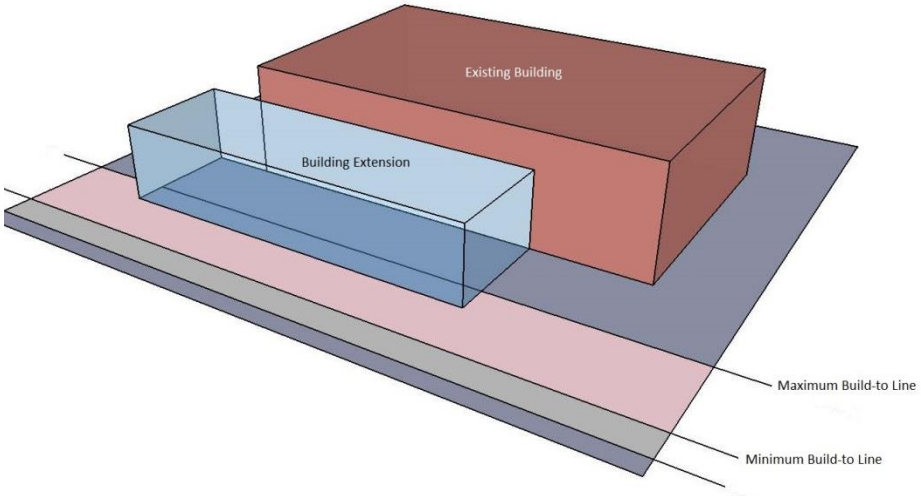
Table 1.5: Intensity and Dimensional Standards

Subdistrict:	TOD-Core	TOD-Ring	
Use:	**All Uses**	**Nonresidential & Mixed-Use**	**Residential**
Block and Lot Standards			
Block length (min|max)	200 ft | 400 ft	400 ft | 800 ft	400 ft | 800 ft
Lot area (min)	1,500 sf	3,000 sf	5,000 sf [1]
Lot width (min)	20 ft	30 ft	50 ft [2]
Intensity			
Residential density (min|max) [3]	15du/ac | 35du/ac	n/a	7.5du/ac | 17du/ac
Floor area ratio (FAR) (min|max) [4]	0.75 | 4.0	0.5 | 2.5	n/a
Lot coverage (min|max)	60% | 100%	40% | 85%	n/a | 70%
Open space (min, as % of lot area) [5]	5%	15%	20%
Building Placement			
Build-to line (min|max) [6]	0 ft/12 ft	0/20 ft	0/20 ft
Building width in build-to zone (min, as % of lot width) [5]	80% [7]	70% [7]	50% [7]
Front setback (min) [8]	0 ft	0 ft	10 ft
Side setback (min)	0 ft	0 ft	5 ft [9]

Table 1.5: Intensity and Dimensional Standards			
Subdistrict:	**TOD-Core**	**TOD-Ring**	
Use:	**All Uses**	**Nonresidential & Mixed-Use**	**Residential**
Corner side setback (min)	0 ft	0 ft	0 ft
Rear setback (min)	0 ft	0	5 ft
Height			
Structure height (min|max) [10]	2 stories | 6 stories	1 story | 4 stories	1 story | 4 stories
	25 ft | 75 ft	15 ft | 60 ft	15 ft | 60 ft

NOTES: sf = square feet; ft = feet; du = dwelling unit; ac = acre; % = percent; n/a = not applicable
1. 1,500 square feet for townhouse lots.
2. 20 feet for townhouse lots.
3. Applicable to residential-only development.
4. Applicable to nonresidential developments and mixed-use developments (including their residential components).
5. Open space may be located on rooftops and on decks or porches as well as in ground-level plazas, courtyards, lawns, and gardens.
6. Applicable only along pedestrian street frontages.
7. The remaining build-to zone street frontage may be occupied by outdoor gathering spaces, driveways, pedestrian walkways, or surface parking located to the sides of buildings.
8. Applicable only along street frontages other than pedestrian street frontages.
9. Not applicable to townhouse lots except where abutting a lot containing or designed for a single- or two-family dwelling.
10. Both story and feet standards apply.

Commentary: The build-to line standards in the above table are intended to ensure that buildings constructed along pedestrian streets are close enough to the sidewalk to encourage a high level of pedestrian activity along the streetscape. But how can a community promote pedestrian-friendly redevelopment along a street frontage consisting largely of existing buildings set well back from the street, behind the maximum build-to line? The build-to line standards certainly provide the opportunity to extend such existing nonconforming buildings towards the street. But some communities have taken the extra step of providing that existing buildings located behind the maximum build-to line may not be extended to the rear or side unless they are first extended frontwards to comply with the maximum build-to line. See graphic below.



Step-Up Option

It might be appropriate to add provisions offering an intensity bonus to developments that incorporate features important to TOD District character to an extent beyond that required by these standards. Intensity bonuses could allow new development to exceed the maximum density, maximum floor area ratio, maximum structure height standards set forth in Table 1.5 if, for example, the development provides affordable or workforce housing units, provides public amenities beyond that required by development standards, is designed to qualify for LEED certification, is a vertically mixed development with residential uses on upper floors above street-level retail sales and service and service-oriented office uses, or any other development feature important to establishing and maintaining the character of the TOD District.

There are many ways to draft intensity bonus provisions. Such provisions need to specify the particular type and level or extent of development features that qualify for a bonus and quantitatively relate them to a particular type and level of bonus. If multiple types or levels of features are to qualify for multiple types or levels of bonuses, it is probably best to use a point system. Each type and level of a qualifying feature is assigned a certain number of points, and each type and level of bonus requires a minimum point total.

1.6 DEVELOPMENT AND DESIGN STANDARDS

The following standards shall apply to development in a TOD district in addition to any applicable development and design standards in (Insert cross-reference to the chapter or article containing generally applicable development and design standards).

1.6.1. GENERAL SITE LAYOUT

The layout of streets, alleys, lots, building sites, and other elements of development shall be designed to maximize safe and convenient vehicular, bicycle, and pedestrian access to the associated transit station and provide the views and community amenities that help define the station as the focal point of the District.

1.6.2. ACCESS AND CIRCULATION

A. Connectivity

1. The internal vehicular, bicycle, and pedestrian circulation systems of mixed-use, multifamily, townhouse, or nonresidential development shall be designed to allow vehicular, bicycle, and pedestrian cross-access between the internal system and any internal vehicular, bicycle, and pedestrian circulation systems of existing or allowable mixed-use, multifamily, townhouse, or nonresidential development on adjoining lots.

2. The (Insert title of appropriate administrative official) may waive or modify the above requirement on determining that such cross-access is impractical due to site constraints, or inappropriate due to traffic safety issues, or undesirable due to the proposed development's incompatibility with existing development on the adjoining lot.

3. Easements allowing vehicular, bicycle, or pedestrian cross-access between adjoining lots, along with agreements defining maintenance responsibilities of the property owners, shall be recorded in the appropriate municipal land records.

Commentary: A well-connected system of streets, bikeways, and walkways is essential to a TOD district—both to ensure convenient access between the transit station and all major origin and destination points within and surrounding the district, and to ensure the level of access and circulation needed to establish the district as a vibrant mixed-use activity center. Although cross-access standards may be included among a code's general applicable access and circulation standards, they are included here because of the added importance of minimizing sidewalk-disrupting curb cuts in a TOD district.

B. Vehicular Access and Circulation

1. Alley Access

A continuous network of rear alleys is encouraged for all lots. Vehicular access to lots 60 feet or less in width shall be from a rear alley.

2. Curb Cuts

a. Driveway curb cuts are not allowed along any pedestrian street frontage, and are allowed along other street frontages only if vehicular access cannot be provided from an alley or cross-access easement.

b. Driveway curb cuts shall be no wider than 24 feet and shall be located at least 50 feet from a street intersection and at least 100 feet from another driveway curb cut on the same block face.

Commentary: These standards are intended to underscore the need to limit sidewalk-disrupting curb cuts in TOD districts.

C. Pedestrian Access and Circulation

1. Sidewalks and Walkways

a. Sidewalks are encouraged to be at least ten feet wide along pedestrian street frontages (to accommodate street furniture, outdoor dining, or other pedestrian amenities) and shall be at least six feet wide along all street frontages.

b. Sidewalks shall maintain a pedestrian "clear zone" that is unobstructed by any permanent or nonpermanent object for a minimum width of five feet and a minimum height of eight feet.

c. Where a sidewalk, greenway path, or other walkway crosses a street, driveway, or drive aisle, the crossing shall be clearly marked with a change in paving material, color, or height, or decorative bollards.

d. At least one walkway from an adjacent sidewalk shall be provided to each pedestrian entrance required in Section 1.6.4.D, Building Entrances.

2. Pedestrian Cut-Throughs

a. Pedestrian walkways shall be provided through approximately the centers of blocks that are more than 25 percent longer than the maximum block

length standard in Table 1.5: Intensity and Dimensional Standards, where necessary to provide convenient pedestrian access within the development or to adjacent transit stations, schools, recreational facilities, community facilities, or commercial developments.

b. Such pedestrian cut-through walkways shall be located within a public right-of-way or public access easement that is at least eight feet wide.

Commentary: These standards are intended to ensure a leading role for sidewalks and other pedestrian walkways in the TOD District. Along pedestrian frontage streets, where the highest level of pedestrian activity is expected and/or encouraged, wider sidewalks are needed to accommodate higher volumes of pedestrian traffic and the outdoor dining, street furniture, and other pedestrian amenities that serve the pedestrians.

1.6.3. OFF-STREET PARKING

A. Vehicle Parking

1. Reduced Minimum Vehicle Parking Space Standards[19]

a. The minimum required number of off-street vehicle parking spaces shall be 75 percent of the minimum requirements in (Insert cross-reference to generally applicable parking space requirements) for development in the TOD-Core Subdistrict, and 85 percent of such minimum requirements for development in the TOD-Ring Subdistrict.

b. The (Insert title of appropriate administrative official) may approve a proposal to further reduce number of off-street vehicle parking spaces required for a development, provided the development application includes a study demonstrating that because of the development's specific location, nature, or mix of uses, there is a reasonable probability the number of parking spaces actually needed to serve the development is less than the minimum specified in paragraph a above.

Commentary: Land used for excessive surface parking undermines the pedestrian-oriented character of a TOD district. Thus it is important to make sure minimum parking standards are indeed "minimum" and reflect the reduced vehicular trips and parking demand inherent with mixed-use development and with the availability of transit as an alternative means of transportation.

How minimum parking requirements for a TOD District relate to generally applicable parking standards depends on the type, intensity, and character of the TOD district as well as how well the generally applicable parking requirements themselves reflect current-day parking demands in the particular community. A 2008 Transportation Research Board report found that multifamily housing near transit stations produce an average of 44 percent fewer daily vehicle trips that ITE trip generation rates predict for the same land uses not located near transit and

[19] This recognizes that transit-oriented development generate significantly reduced parking demands due to its direct accessibility to a transit system and its mixing of uses (and thus sharing of automobile trips). The percentages are based on the assumption that generally applicable parking requirements are largely based on ITE parking generation rates and that the degree of appropriate is less than that shown as justified for more urban TODs (see Commentary). The second provision is intended to provide flexibility to consider even lower parking requirements where justified for a particular development.

that ITE trip generation rates "over-park" TODs by as much as 50 percent.[20] *Subsequent studies indicate that actual vehicle trip counts in mixed-use smart-growth sites in California average about 56 percent lower than those estimated by ITE trip generation rates.*[21] *A 2011 parking policy study for Montgomery County, MD,*[22] *recommended baseline parking space requirements for residential (1.2 per unit), office (2.25 per 1,000 sf), general commercial (1.25 per 1,000 sf), restaurants and bars (1.75 per 1,000 sf), hotels (1 per guest room), and events-based uses (1 per 1,000 sf). Transit-oriented development guidelines for Atlanta*[23] *proposed minimum/maximum parking space requirements for multifamily residential near transit stations (0.75/1.25 per unit, other residential (1.0/2.0 per unit), office (1.5/2.5 per 1,000 sf), retail and restaurant near transit stations (0/3.3 per 1,000 sf), and other retail and restaurants (1.75/3.3 per 1,000 sf).*

Given that most of these studies concerned more urban communities than those in the Capitol region, the proposed percentages for a suburban TOD district represent less of a reduction than suggested by the studies.

2. Maximum Off-Street Vehicle Parking Spaces

a. The maximum number of off-street vehicle parking spaces shall be 125 percent of the minimum requirements established in Section 1.6.3.A.1 above for development in the TOD-Core Subdistrict, and 100 percent of such minimum requirements for development in the TOD-Ring Subdistrict.

Optional Addition: Vehicle parking spaces within a parking structure shall not count towards application of this maximum standard.

b. The (Insert title of appropriate administrative official) may allow the number of off-street vehicle parking spaces proposed for a development to exceed the maximum standards establish in the Section 1.6.3.A.2.a above where the development application includes a parking demand study demonstrating how the maximum allowed number of parking spaces is insufficient for the development. The number of additional vehicle parking spaces allowed shall be limited to the minimum number of spaces justified as needed by the required parking demand study.

Commentary: Although communities are increasingly adding maximum parking standards as generally applicable standards, such maximums are particularly important in TOD districts. The optional addition provides some incentive for developers to use structured parking. A flexibility provision is provided to address situations where the demand for more spaces can be demonstrated.

[20] Arrington, G.B. and Robert Cervero. 2008. "Effects of TOD on Housing, Parking, and Travel." TCRP Report 128. Transportation Research Board.

[21] Handy, Susan, Kevan Shafizadeh, and Robert Schneider. "California Smart-Growth Trip Generation Rates Study: Final Report." 2013. University of California, Davis for the California Department of Transportation. As a follow-up to this study, the Urban Land Use and Transportation Center at the University of California, Davis, developed a "Smart Growth Trip-Generation Adjustment Tool." For more information, see http://ultrans.its.ucdavis.edu/projects/smart-growth-trip-generation.

[22] The Maryland-National Capital Park and Planning Commission and Montgomery Department of Transportation. 2011. "Montgomery County Parking Policy Study."

[23] Metropolitan Atlanta Rapid Transit Authority. 2010. *Transit –Oriented Development Guidelines*. Atlanta, GA.MARTA.

3. Off-Street Parking Arrangement and Design

a. Location

i. In the TOD-Core Subdistrict and along any pedestrian street frontage in the TOD-Ring Subdistrict, all proposed new or additional surface vehicle parking shall be located to the rear of the development's principal building(s) or in a parking structure "wrapped" with retail, office, or residential uses in accordance with Section 1.6.4.F, Parking Structures.

ii. In the TOD-Ring Subdistrict, other than along a pedestrian street frontage, no more than one bay of surface vehicle parking may be located between the development's principal building(s) and adjoining streets.

b. Break-Up of Large Parking Lots in the TOD District

Surface parking lots shall have 100 or fewer parking spaces unless they are organized into smaller modules that contain 50 or fewer spaces each and are visually separated by buildings or landscaped islands in accordance with (Insert cross-reference to parking lot landscaping standards).

c. Pedestrian Walkways Through Parking Areas

All vehicle parking lots and structures containing more than 50 parking spaces shall provide a clearly identified pedestrian route between parking areas and the primary pedestrian entrance(s) to the building(s) served by the parking areas, or to a pedestrian walkway providing direct access to the primary building entrance(s).

These standards are intended to ensure that off-street parking does not undermine a TOD district's pedestrian-friendly environment—especially in the district's core and along its most pedestrian-oriented street frontages.

B. Bicycle Parking

1. Development shall provide at least one bicycle rack, locker, or other bicycle parking facility designed to accommodate parking spaces for at least four bicycles, plus additional or larger facilities designed to accommodate parking spaces for at least two additional bicycles for each ten vehicle parking spaces over 20 parking spaces in the TOD-Core Subdistrict, and for at least one additional bicycle for each ten vehicle parking space spaces over 20 parking space in the TOD-Ring Subdistrict.

2. Bicycle parking facilities shall be located within 50 feet of the primary pedestrian entrance(s) to the development's principal building(s).

C. Alternative Parking Arrangements

These standards provide flexibility in how a developer can comply with parking standards. They probably should be generally applicable throughout a community, but are included here to emphasize the greater need for such flexibility in TOD districts, where higher development intensities and the focus on pedestrian friendliness make such flexibility even more important.

The following alternative arrangements may be used to meet the minimum number of parking spaces requirement for both vehicular and bicycle parking.

1. Shared Parking

Shared parking—i.e., use of parking spaces used or proposed to be used to meet the minimum number of off-street parking spaces required for one or more other developments—may be used to meet up to 50 percent of the minimum number of parking spaces required for a proposed development in accordance with the following standards.

a. The development application shall include a study justifying the feasibility of shared parking among the proposed uses. Such justification shall address, at a minimum, the size and type of the uses proposed to share off-street parking spaces, the composition of their tenants, the types and hours of their operations, the anticipated peak parking and traffic demands they generate, and the anticipated rate of turnover in parking space use.

b. Shared parking spaces shall be located within 500 feet walking distance of the primary pedestrian entrances to the uses served by the parking.

c. Shared parking spaces shall not be separated from the use they serve by a major or minor thoroughfare unless pedestrian access across the thoroughfare is provided by a grade-separated pedestrian walkway or appropriate traffic controls (e.g., signalized crosswalk).

d. Adequate and safe pedestrian access shall be provided between the shared parking areas and the primary pedestrian entrances to the uses served by the parking.

e. Signage complying with the standards of Section 5.16, Signage, shall be provided to direct the public to the shared parking spaces.

f. An approved shared parking arrangement shall be enforced through written agreement among all the owners or long-term lessees of lands containing the uses proposed to share off-street parking spaces. The agreement shall provide all parties the right to joint use of the shared parking area for as long as the shared parking spaces are needed to comply with this section, and shall be binding on subsequent owners or long-term lessees. The agreement shall be submitted to the (Insert title of appropriate administrative official) for review and approval. A copy of an approved and executed agreement shall be recorded in the appropriate municipal land records.

g. Any termination of the agreement does not negate the parties' obligations to comply with parking requirements. No use served by the shared parking may be continued if the agreement is terminated or the shared parking otherwise becomes unavailable to the use unless substitute off-street parking spaces are provided in accordance with this section.

2. Off-Site Parking

Off-site parking—i.e., off-street parking spaces located on a lot separate from the lot containing a proposed development—may be used to meet the minimum number of parking spaces required for the development in accordance with the following standards:

a. The zoning classification of the off-site parking area shall be one that allows the use served by off-site parking (and thus off-street parking is accessory to such use) or that allows parking as a principal use.

b. Off-site parking spaces shall be located within 500 feet walking distance of the primary pedestrian entrance(s) to the use(s) served by the parking.

c. Off-site parking spaces shall not be separated from the use they serve by a major or minor thoroughfare unless safe pedestrian access across the street is provided by a grade-separated pedestrian walkway or appropriate traffic controls (e.g., signalized crosswalk).

d. Adequate and safe pedestrian access shall be provided between the off-site parking areas and the primary pedestrian entrance(s) to the use(s) served by the parking.

e. If land containing the off-site parking area is not under the same ownership as land containing the principal use served, an approved off-site parking arrangement shall be enforced through a written agreement between the owners or long-term lessees of land containing the off-site parking area and land containing the served use. The agreement shall provide the owner or long-term lessee of the served use the right to use the off-site parking area for as long as the shared parking spaces are needed to comply with this section, and shall be binding on subsequent owners or long-term lessees. The agreement shall be submitted to the (Insert title of appropriate administrative official) for review and approval. A copy of an approved and executed agreement shall be recorded in the appropriate municipal land records.

f. Any termination of the agreement does not negate the landowner's obligation to comply with parking requirements. No use served by the off-site parking may be continued if the agreement is terminated or the off-site parking otherwise becomes unavailable unless substitute off-street parking spaces are provided in accordance with this section.

3. Deferred Parking

The (Insert title of appropriate administrative official) may approve a proposal to defer construction of up to 20 percent of the number of off-street vehicle parking spaces required for a development, in accordance with the following standards:

a. The development application shall include a study demonstrating that because of the location, nature, or mix of uses, there is a reasonable probability the number of parking spaces actually needed to serve the development is less than the minimum required.

b. The application shall include a reserve parking plan identifying: (a) the amount of off-street parking being deferred, and (b) the location of the area to be reserved for future parking, if future parking is needed.

c. The application shall provide assurance that within 18 months after the initial Certificate of Occupancy is issued for the proposed development, an off-street parking demand study evaluating the adequacy of the existing parking spaces in meeting the off-street parking demand generated by the development will be submitted to the (Insert title of appropriate administrative official) .

d. If the (Insert title of appropriate administrative official) determines that the study indicates the existing parking is adequate, then construction of the remaining number of parking spaces shall not be required. If the (Insert title of appropriate administrative official) determines that the study indicates additional parking is needed, such parking shall be provided consistent with the reserve parking plan and the standards of this section, and shall be provided within 12 months after the determination.

e. Areas reserved for future parking shall be brought to the finished grade and shall not be used for buildings, storage, loading, or other purposes.

f. Areas reserved for future off-street parking shall be landscaped with an appropriate ground cover, and if ultimately developed for off-street parking, shall be landscaped in accordance with (Insert reference to generally applicable parking lot landscaping standards).

Commentary: This alternative allows reduced parking on a trial basis, where the proposed reduction can be justified by a study and after 18 months either confirmed or not confirmed and remedied.

4. Valet and Tandem Parking

Valet and tandem vehicle parking may be established and used to meet the minimum number of parking spaces requirement only in accordance with a valet agreement that is approved by the (Insert title of appropriate administrative official) and includes provisions ensuring that a valet parking attendant will be on duty during hours of operation of the uses served by the valet parking.

5. On-Street Parking

On-street parking spaces may be used to meet up to 25 percent of the minimum number of parking spaces requirement where:

a. The on-street parking spaces are located along the development site's street frontage or within 150 linear feet of walking distance from the primary entrance of the proposed use;

b. The on-street parking spaces are not counted towards meeting the off-street parking requirement for any other development; and

c. The (Insert title of appropriate administrative official) determines there will be no negative impact to existing or planned traffic circulation patterns.

Commentary: Allowing on-street parking to count towards a development's parking requirements reflects the important role streetscape (including on-street parking) has in defining the character of a TOD district.

6. In-Lieu Payment to Municipal Parking Fund

a. The (Insert name of municipal governing body) may authorize applicable off-street parking requirements for a nonresidential use to be satisfied, in whole or in part, by the applicant's payment of a proportionate share in-lieu fee established by the (Insert name of municipal governing body) that is consistent with, but does not exceed, costs the municipality will incur to provide the equivalent number of public parking spaces that can serve the use.

b. A request to pay an in-lieu fee shall be submitted in writing to the (Insert title of appropriate administrative official) , who shall forward it to the (Insert name of municipal governing body) for review. The (Insert name of municipal governing body) may approve such a request on determining that:

   i. Due to the availability of transit or unique characteristics of the use or area, the unavailability of the off-street parking spaces for which the fee is made as part of the development will not result in traffic congestion and will be compatible with the character of surrounding properties, and

   ii. Sufficient public parking exists or is budgeted and scheduled within ¼ mile of the development to satisfy the parking demand it generates.

c. The developer shall pay an in-lieu fee before (Insert final plan approval step) for the development.

d. The municipality shall deposit the fee into an account designated for the provision of parking spaces through a municipal parking program and shall spend it within a reasonable time period only towards provision of public parking spaces that reasonably accommodate the parking demand generated by the development. Municipal costs for which in-lieu fees may be spent include, but are not limited to, the cost of land, leases, rights, easements and franchises; financing charges; interest paid before and during construction; cost of plans and specifications; cost of engineering and legal services and other expenses necessary or incidental for determining the feasibility or practicability of construction, reconstruction or use; cost of all labor and materials; and administrative expenses and such other expenses as may be necessary or incidental to the provision of public parking spaces.

e. The (Insert name of municipal governing body) may, by resolution, accept an interest in land instead of accepting all or a portion of an in-lieu parking fee on determining that land would be used in connection with the provision of public parking through the municipal parking program and the value of the land equals or exceeds the in-lieu parking fee that would otherwise be required. In making its determinations, the (Insert name of

municipal governing body) may consider the size of the land, the feasibility of constructing a parking facility on the land, and the land's proximity to parking demands identified and addressed by the municipal parking program.

Commentary: If a community is to make an effective commitment to transit-oriented development, it should take more control over the provision of parking in the TOD District. This section provides a way whereby a development contributes to meeting the parking demand it creates, but the municipality determines where and how the needed parking will be provided. It is important that the community make sure the parking for which in-lieu payments are made is in place by the time the paying development is occupied.

1.6.4. BUILDING DESIGN STANDARDS

Commentary: These building design standards are intended to promote those streetscape characteristics that are conducive to the active pedestrian environment so important to the success of a TOD district. They will need to be tailored to reflect the TOD District's context relative to the community as a whole, the existing neighborhoods and development that surround the district, and the existing and desired character of development within the district.

A. Purpose

The standards in this section are intended to ensure that the layout, massing, form, and detailing of new buildings in the TOD District contribute to the creation and maintenance of street frontages that help distinguish public and private spaces, help direct people to and from the transit station, and are pedestrian-friendly, human-scale, visually attractive, and compatible with other buildings in the district and surrounding development,

B. Configuration of Buildings

Buildings shall be configured in relation to the site other buildings so that building walls frame and enclose at least two of the following:

1. The corners of street intersections or entry points into the development;
2. A "main street" pedestrian and/or vehicle access corridor within the development site;
3. Parking areas, public spaces, or other site amenities on at least three sides; or
4. A plaza, pocket park, square, outdoor dining area, or other outdoor gathering space for pedestrians.

Commentary: These menu-based standards are intended to foster building design that helps create the public spaces and corridors that define the TOD District.

C. Building Massing and Form

If the street-facing facade of a building is more than 40 feet wide, the perceived mass and scale of the building shall be reduced by incorporating at least three of the following design elements that are consistent with the development's architectural character and create distinctive variations in the facade spaced no more than 40 feet apart:

1. Variations in roof form and parapet heights;
2. Pronounced (as least one foot deep) recesses and/or projections in the wall plane;
3. Distinct changes in texture and/or color of wall surfaces;
4. Pilasters that are at least eight inches deep and at least eight inches wide, and have a height equal to at least 80 percent of the facade's height;
5. Ground level arcades, awnings, or similar overhangs;
6. Second floor galleries/balconies;
7. Cornices;
8. Projected and recessed entries;
9. Vertical accents or focal points; or
10. Enhanced window treatments.

Commentary: These are basic menu-based standards intended to ensure a minimum degree of articulation and variability along street-facing building facades.

D. Building Entrances

1. Where the street-level facade of a principal building abuts or faces a pedestrian street frontage, at least one operable pedestrian entrance providing both ingress and egress shall be provided for every 75 feet, or major fraction thereof, along the building facade. An angled entrance at the corner of the building may count toward satisfying this requirement.
2. If the facade includes multiple tenant spaces, at least one such entrance shall be provided for each street-level tenant space at least 25 wide.
3. These required pedestrian entrances shall open directly to the outside with direct pedestrian access to a the street sidewalk without requiring pedestrians to pass through a garage, parking lot, or other non-pedestrian area located between the entrance and the pedestrian street frontage.
4. At least 50 percent of the area of a required pedestrian entrance shall be comprised of transparent material.
5. All primary pedestrian entrances into principal buildings shall be clearly defined and emphasized using changes in the wall plane or facade material, lintels, pediments, pilasters, awnings, canopies, porches, or other additional architectural elements.

Commentary: These standards are intended to ensure interaction between sidewalk pedestrians and the uses in adjacent buildings.

E. Windows/Doors/ Transparency

1. Where the street-level facade of a building other than a single-family or duplex dwelling abuts or faces a pedestrian street frontage, or faces a transit station or a public gathering space, a minimum percentage of the facade area shall be comprised of transparent window or door openings to allow views of interior spaces and merchandise so as to enhance safety and create a more inviting environment for pedestrians. Minimum percentages vary by location, as follows:

Table ___: Minimum Building Facade Transparency Requirements	
Abutting or facing a pedestrian street frontage	50%
Facing a transit station	35%
Facing a public gathering space	35%

2. Window and door openings counting toward meeting this transparency requirement shall consist of glass that is relatively clear and nonreflective, with a minimum visible light transmittance of 0.65 and maximum visible light reflectance of 0.2.

Commentary: Transparent facades along pedestrian-oriented street frontage are needed to encourage interaction between sidewalk pedestrians and the uses behind the facades.

F. Parking Structures

1. Where the street-level facade of a parking structure fronts or faces a pedestrian street frontage, at least 60 percent of the length of such street-level facade shall contain retail sales and service uses, service-oriented office uses, or entertainment uses to a depth of 30 feet to provide visual interest and create pedestrian activity at the street level. The (Insert title of appropriate administrative official) may approve alternative space arrangements designed to achieve this purpose if the site lacks sufficient depth to accommodate both a parking structure and usable retail and office space at the ground-floor level.

2. Facades of parking structures that front or face a pedestrian street frontage and do not contain retail sales and service uses, service-oriented office uses, or entertainment uses shall be articulated through use of at least three of the following features;

   a. Windows or window-shaped openings;

   b. Masonry columns;

   c. Decorative wall insets or projections;

   d. Awnings;

   e. Changes in color or texture of exterior materials;

   f. Integrated vegetation (hanging or along trellises); or other features approved by the (Insert title of appropriate administrative official).

Commentary: This standard is intended to accommodate parking structures as a preferable alternative to surface parking lots, but ensure that that they do not disrupt the pedestrian-friendly environment along a pedestrian street frontage or adversely affect the visual attractiveness of the district.

1.6.5. OUTDOOR GATHERING SPACES AND COMMUNITY AMENITIES

A. At least 25 percent of the required open space shall be devoted to outdoor gathering space (e.g., plaza, square, courtyard, rooftop or community garden) that are accessible to the public.

B. Required outdoor gathering space shall be located adjacent to and/or be integrated with any transit stops existing or planned within or adjoining the site. If no transit station exists or is planned within or adjoining the development site, required outdoor gathering space shall be located in any area of high pedestrian activity—i.e., an area adjacent to land uses or activities that attract or involve high volumes of pedestrians, such as "Main Street" shopping areas, neighborhood commercial areas, tourist destinations, colleges and universities, hospitals, schools, parks, senior centers, and youth centers.

C. Required outdoor gathering space shall be furnished with at least three of the following community amenities:

1. Benches or seating areas;
2. Raised landscape planters;
3. Shade structures;
4. Public art (e.g., sculptures, murals, water elements, carvings, frescos, mosaics, mobiles);
5. Decorative shelters for transit riders (as approved by the municipality); or
6. Similar features approved by the municipality.

Commentary: To be a vibrant activity center, a TOD district must foster social interaction among the people who live, work, and visit the district. The provision of outdoor gathering spaces and other community amenities are thus as essential an element of transit-oriented development as landscaping and parking. These standards call for district development to contribute such gathering space and community amenities.

1.6.6. STREET TREES

A. Purpose

Street trees are intended to enhance the aesthetic and environmental benefits of the TOD District streetscape environment by serving as a unifying element for street corridors (particularly those leading to and from the transit station), shading streets and sidewalks, and otherwise enhancing the appearance and livability of the TOD District.

B. Required

All new development shall provide street trees along the development's frontage along any pedestrian street frontage.

C. Location

Street trees shall be provided within a planting strip in the street right-of-way that is located between the roadway and the property line and is at least six feet wide. Where such a planting strip does not exist or is impractical to provide, the (Insert title of appropriate administrative official) may allow street trees to be provided within tree pits that are at least 25 square feet in area and located adjacent to the back of the curb, or within an adjoining landscaped area on the development site.

D. Configuration

1. Street trees shall be shade trees of species and varieties appropriate to the intended functions of street trees and their location next to roadways and sidewalks.
2. One street tree shall be provided for every 50 feet of frontage, or major fraction thereof, and the street trees shall be spaced between 40 and 60 feet apart.
3. Where possible, small and medium trees shall be planted between large trees to accommodate the canopy growth of large trees over time.
4. Where necessary to accommodate utility lines, planned street widening, and streetscape improvements, the (Insert title of appropriate administrative official) may allow variations in the spacing or location of required street trees or allow understory trees be substituted for required street trees.

Commentary: These provisions reflect the important role street trees have in making a street frontage pedestrian-friendly—in terms of moderating the immediate climate, providing separation from the vehicular roadway, and defining the streetscape as one of a "complete street."

1.6.7. RELATIONSHIP TO SURROUNDING DEVELOPMENT

A. Purpose

The standards in this section are intended to ensure that the height, mass, and form of new development along the edges of the TOD District do not adversely impact the character of surrounding established single- or two-family residential neighborhoods or the quality of life of their residents.

B. Transitional Standards

Where new mixed-use, multifamily, or nonresidential development—or any expansion of existing mixed-use, multifamily, or nonresidential development that would increase the development's gross floor area by 50 percent or more—is proposed a site abutting or across a local street or alley from land containing a single- or two-family dwelling or vacant land zoned primarily for single- or two-family dwelling (Insert names of appropriate zoning districts) , the development shall comply with the following standards.

1. For multi-building development that includes varying use and/or development intensities in different buildings, buildings with the least intense use and/or development intensity shall be located nearest to the adjacent single- or two-family dwellings or zoning and buildings with the most intense use and/or

development intensity shall be located away from the adjacent single- or two-family dwellings or zoning.

2. Any portion of a structure greater than 40 feet in height shall be set back from the lot containing or zoned for single- or two-family dwellings by a distance equal to the setback required for the structure by applicable TOD District standards plus one foot for each foot of height over 40 feet, up to a maximum additional distance equal to one-half the height of the structure.

3. Porches, balconies, and outdoor activity areas shall be oriented away from the adjacent single- or two-family dwellings or zoning.

4. Off-street parking shall be located away from the adjacent single- or two-family dwellings or zoning and screened from view from such dwellings or zoning.

5. Loading and service areas shall be located away from the adjacent single- or two-family dwellings or zoning, and integrated into the design of the buildings they serve or otherwise screened from view from the adjacent single- or two-family dwellings or zoning.

6. Exterior lighting shall be limited to full-cutoff shielded fixtures that direct light away from the adjacent single- or two-family dwellings or zoning.

7. Mechanical equipment capable of producing noise audible to the adjacent single- or two-family dwellings or zoning (e.g., heating and air conditioning units) shall be located away from such dwellings or zoning and or enclosed or screened to minimize transmission of the noise towards them.

Commentary: Where a TOD District with mixed-use and higher intensity development is located next to or across the street from established low-intensity neighborhoods of single- or two-family homes, residents and owners of those homes may see TOD development as a threat. These standards are intended to ensure new TOD development is compatible with the adjacent single- or tow-family neighborhood and mitigate potential opposition by neighborhood residents and property owners.

DEFINITIONS

These are definitions relating to these mixed-use, transit-oriented development districts, which should be located with the code's other definitions.

Accessory Dwelling Unit

See definition in CRCOG's Draft Model Regulations: Housing Diversity and Affordability – Accessory Dwelling Units.

Block Face

Properties abutting one side of a street or public right-of-way and lying between the two nearest intersecting streets or rights-of-way, or intersecting right-of-way and railroad right-of-way, unsubdivided land, water course or municipal boundary.

Build-To Line

The minimum and maximum allowable setback of a building from the abutting street.

Build-To Zone

The area between the minimum and maximum build-to lines.

Community Garden

A private or public facility for cultivation of fruits, flowers, vegetables, or ornamental plants by more than one person, household, or family.

Cornice

The uppermost horizontal molded projection or other uppermost horizontal element located at the top of a building or a portion of a building.

Cross-Access

Vehicular access provided between the vehicular use areas of two or more adjacent development sites or parcels that is intended to allow travel between the sites without the use of a street. Cross-access may also refer to bicycle and pedestrian access.

Density

The total number of dwelling units (excluding accessory dwelling units)located or proposed on a lot divided by the lot area as expressed in acres).

Drive-Through Service Facility

A facility used to provide products or services to customers who remain in their vehicles, whether through a window or door in a building, a machine in a building or detached structure (e.g., ATM), or via a mechanical device (e.g., a pneumatic tube system). In addition to the pick-up window or door, drive-through service facilities also may include remote menu boards and ordering stations. Use types that commonly have drive-through service include banks, restaurants, specialty eating or drinking establishments, and drug stores.

Electric Vehicle Charging Station

A vehicle parking space that is served by an electrical component assembly or cluster of component assemblies (battery charging station) designed and intended to transfer electric energy, by conductive or inductive means, from the electric grid or other off-board electrical source to a battery or other energy storage device within an electric vehicle. A Level 1 charging station is a slow charging station that typically operates on a 15- or 20-amp breaker on a 120-volt Alternating Current (AC) circuit. A Level 2 charging station is a medium charging station that typically operates on a 40- to 100-amp breaker on a 208- or 240-volt Alternating Current (AC) circuit. A Level 3 charging station is an industrial grade charging station that operates on a high-voltage circuit to allow for fast or rapid charging.

Farmers' Market

A public market held in a structure or open area, where farmers sell produce and other farm products they have grown, gathered, or raised directly to consumers. A farmers' market may be a principal use, occurring regularly for all or most of the year, or a temporary use, occurring only occasionally or periodically for only a limited time period during the year.

Floor Area Ratio (FAR)

The gross floor area devoted to nonresidential and non-dwelling uses on all floors of all buildings located or proposed on a lot by the lot area.

Floor Area (Gross Floor Area)

The sum of the gross horizontal areas of each floor of the principal building and any accessory buildings or structures, measured from the exterior walls or from the centerline of party walls. The term does not include any area used exclusively for the surface parking of motor vehicles (e.g., garage) or for building or equipment access, such as stairs, elevator shafts, and maintenance crawl space.

Food Truck

A licensed, motorized vehicle or mobile food unit in which food or a beverage is cooked, prepared, and served for individual portion service to the general public.

Height

The vertical distance between the average elevation of the existing or proposed finished grade at the front of a structure to the highest point of a flat roof, to the deck line of a mansard roof, or to the mean height between eaves and ridge of a gable, hip, cone, gambrel, or shed roof.

Home-Based Business

A business, profession, occupation, or trade that is conducted within a residential dwelling unit for the economic gain or support of a resident of the dwelling, and is incidental and secondary to the residential use of the lot.

Infill

See definition on CRCOG's Draft Model Regulations: Tailored Standards for Infill Development.

Live-Work Unit

A structure or portion of a structure combining a residential dwelling unit for one or more persons with an integrated work space principally used by one or more of the dwelling unit residents.

Lot Area

The amount of horizontal land area contained within the lot lines of a lot or site.

Lot Coverage

The amount of horizontal land area contained within the lot lines of a lot or site.

Lot Width

The mean horizontal distance between the side lot lines of a lot, or for corner lots, between a corner side lot line and the opposite side lot line, as measured along a line delineating the minimum front yard setback.

Mixed-Use Development

Development containing two or more principal uses from different use classifications (Residential, Public and Institutional, Commercial, or Industrial) or from two or more significantly different use categories within the same use classification (e.g., offices and retail sales and services), where the uses are functionally integrated and share vehicular use areas, ingress/egress, and pedestrian access. An example of a vertically integrated mixed-use development might be a building with retail sales and serve uses at ground level, offices (including institutional offices) on second and third floors, and multifamily residential dwelling units on upper floors. An example of a horizontally integrated mixed-use development might be an office/industrial park containing office buildings side-by side with buildings housing light industrial or industrial support uses.

Non-Service-Oriented Offices

Office uses with little to no walk-in business, or whose day-to-day clientele is not the general public.

Parapet

That portion of a façade wall that extends above the roof line.

Parking Structure

A structure, or a portion of a structure, composed of one or more levels or floors used exclusively for the temporary storage of motor vehicles. A parking structure may be totally below grade or partially or totally above grade, with levels either being open to the sides (deck) or enclosed (garage). A parking structure may be a principal use of a lot or accessory to the principal use of the lot.

Pedestrian Clear Zone

A zone in the public right-of-way that is hardscaped and unobstructed by any permanent or nonpermanent object for a minimum width of six feet and a minimum height of eight feet.

Pedestrian Street Frontage

See Section 1.3, Pedestrian Street Frontages.

Pilaster

A rectangular column with a capital and base that is attached or affixed to a wall as an ornamental design feature.

Service-Oriented Offices

Office uses with a substantial degree of walk-in business, or whose day-to-day clientele is the general public.

Setback

The shortest horizontal distance from a lot line of a lot to the nearest point of a structure on the lot. Front, side, corner side, and rear setbacks are measured from the front, side, corner side, and rear lot lines, respectively.

Shopping Center

A building or a group of connected or freestanding buildings under single or multiple ownership that contains retail goods and service uses serving the needs of a neighborhood, community, or regional customer base. A shopping center is designed, constructed, and operated on an integral and coordinated basis, with common parking, pedestrian movement, and ingress and egress.

Solar Collection System, Small

See definition in CRCOG's Draft Model Regulations: Alternative Energy.

Street Vendor

Any person or persons selling or offering for sale products on a street, sidewalk, or alley.

Subdistrict

See Section 1.2, Subdistricts.

Tandem Parking

An arrangement of vehicle parking spaces such that one or more spaces must be driven across in order to access another space or spaces.

Visible Light Reflectance (VLR)

The percentage of total visible light that is reflected by glass or other glazing system to the outside of a building. The lower the number, the less visible light reflected.

Visible Light Transmittance (VLT)

The percentage of total visible light that is transmitted through glass or other glazing system from the outside of a building. The lower the number, the less visible light transmitted.

Walkway

Any improved pedestrian accessway that is separate from vehicular accessways and traffic. Walkways include sidewalks alongside streets and off-street paved walkways and graded trails with durable surfacing.

Wind Energy System, Small

See definition in CRCOG's Draft Model Regulations: Alternative Energy.

Standards for Urban TOD Districts

The following variations of certain standards set out above are intended to reflect the more intense uses and higher intensity development appropriate in TOD districts in urban settings.

1.4 USE STANDARDS

1.4.1. PRINCIPAL USES

A. Principal Use Table

Table 1.4.1.A: Allowed Principal Uses
P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Use Category	Use Type	TOD-Core	TOD-Ring	Use-Specific Standards
Mixed-Use Development				
Mixed-use development	Live-work unit	P	P	
	Other residential over nonresidential	P	P	
	Other mixed-use development	P	P	
Residential Uses				
Household Living Uses	Single-family dwelling	X	P	
	Two-family dwelling	X	P	
	Three- or four-family dwelling	X	P	
	Multifamily development	P	P	
	Townhouse development	P	P	
Group Living Uses	Group living	P	P	
Public and Institutional Uses				
Community Service Uses	Adult day care facility	P	P	
	Child day care facility	P	P	
	Community center	P	P	
	Library	P	P	
	Museum	P	P	
Educational Uses	Business/trade/vocational school	P	P	
	College/university	P	P	
	Elementary/ middle/high school	P	P	
Government Uses	Courthouse	P	P	
	Fire/EMS station	P	P	
	Police station	P	P	
	Government maintenance facility	X	X	
	Government administration offices	P	P	
	Post office	P	P	
Medical uses	Hospital	P	P	
	Other medical facility	P	P	
Open Space Uses	Cemetery	X	X	
	Community garden	X	P	
	Park or greenway	P	P	
	Public square or plaza	P	P	
Transportation uses	Transit station	P	P	
	Park-and-ride facility	S	X	
Utility uses	Major utility facility	X	X	
	Minor utility facility	P	P	
	Telecommunication tower	X	S	
Other Public and Institutional Uses	Club/lodge	P	P	
	Place of worship	P	P	

Table 1.4.1.A: Allowed Principal Uses
P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Use Category	Use Type		TOD-Core	TOD-Ring	Use-Specific Standards
Commercial Uses					
Animal Care Services	Kennel		X	P	
	Veterinary clinic		P	P	
Eating/Drinking Establishments	Bar/lounge		P	P	
	Restaurant		P	P	
	Specialty eating/drinking establishment		P	P	
Entertainment/ Recreation Uses	Cinema		P	P	
	Arena/stadium		P	S	
	Auditorium/stage theater		P	P	
	Commercial recreation facility	Indoor	P	P	
		Outdoor	X	S	
	Country club/golf course		X	X	
Office Uses	Non-service-oriented offices		P	P	
	Service-oriented offices		P	P	
Retail Sales and Service Uses	Bank or financial institution		P	P	
	Funeral home		P	P	
	Lawn care, pool, or pest control service		X	X	
	Personal services establishment		P	P	
	Plant nursery		X	S	
	Shopping center	GFA ≤ 150,000 sf	P	P	
		GFA > 150,000 ≤ 400,000 sf	P	P	
		GFA > 400,000 ≤ 800,000 sf	P	X	
		GFA > 800,000 sf	P	X	
	Other retail sales and service use	GFA ≤ 50,000 sf	P	P	
		GFA > 50,000 ≤ 100,000 sf	X	P	
		GFA > 100,000 sf	X	X	
Sexually Oriented Business					
Vehicle/ Equipment Sales and Service Uses	Automotive painting or body shop		X	S	
	Automotive repair and service		X	S	
	Automotive sales or rental		X	X	
	Car wash		X	S	
	Gas station		X	S	
	Parking lot (as a principal use)		P	P	
	Parking structure (as a principal use)		P	P	
	Self-service storage facility		X	S	
	Taxi or limousine service facility		P	P	
	Tire sales and mounting		X	X	
	Truck/recreational vehicle sales, rental, or service		X	X	
Visitor Accommodation Uses	Bed and breakfast inn		X	P	
	Hotel or motel		P	P	
Industrial Uses					
Industrial Service Uses			X	X	
Manufacturing and Production Uses			X	X	
Warehousing and Freight Movement Uses			X	X	
Waste-Related Uses			X	X	
Wholesale trade uses			X	X	

1.5 INTENSITY AND DIMENSIONAL STANDARDS

1.5.1. TABLE OF INTENSITY AND DIMENSIONAL STANDARDS[24]

1.6 Table 1.5.1: Intensity and Dimensional Standards

Subdistrict:	TOD-Core	TOD-Ring	
Use:	**All Uses**	**Nonresidential & Mixed-Use**	**Residential**
Block and Lot Standards			
Block length (min|max)	200 ft | 400 ft	400 ft | 800 ft	400 ft | 800 ft
Lot area (min)	1,500 sf	3,000 sf	5,000 sf [1]
Lot Width (min)	20 ft	30 ft	50 ft [2]
Intensity			
Residential density (min|max) [3]	20du/ac | 40du/ac	n/a	10du/ac | 20du/ac
Floor area ratio (min|max) [4]	1.75 | 6.0	0.75 | 3.0	n/a
Lot coverage (min|max)	60% | 100%	40% | 85%	n/a | 70%
Open space (min, as % of lot area) [5]	n/a	15%	20%
Building Placement			
Build-to line (min|max) [6]	0 ft/5 ft	0/12 ft	0/20 ft
Building width in build-to zone (min, as % of lot width)	80% [7]	70% [7]	50% [7]
Front setback (min) [8]	0 ft	0 ft	10 ft
Side setback (min)	0 ft	0 ft	5 ft [9]
Corner side setback (min)	0 ft	0 ft	0 ft
Rear setback (min)	0 ft	0	5 ft
Height			
Structure height (min|max) [10]	3 stories | n/a	2 story | 6 stories	2story | 4 stories
	35 ft | n/a	25 ft | 75 ft	25 ft | 60 ft

NOTES: sf = square feet; ft = feet; du = dwelling unit; ac = acre; % = percent; n/a = not applicable
1. 1,500 square feet for townhouse lots.
2. 20 feet for townhouse lots.
3. Applicable to residential-only development.
4. Applicable to nonresidential developments and mixed-use developments (including their residential components).
5. Open space may be located on rooftops and on decks or porches as well as in ground-level plazas, courtyards, lawns, and gardens.
6. Applicable only along pedestrian street frontages.
7. The remaining build-to zone street frontage may be occupied by outdoor gathering spaces, driveways, pedestrian walkways, or surface parking located to the sides of buildings.
8. Applicable only along street frontages other than pedestrian street frontages.
9. Not applicable to townhouse lots except where abutting a lot containing or designed for a single- or two-family dwelling.
10. Both story and feet standards apply. Maximum height in the TOD core will need to be tailored to the context of each community.

[24] As with the base intensity and dimensional standards, these standards—particularly maximum height standards for the TOD-Core Subdistrict—will need to be tailored to the context in each community.

1.6 DEVELOPMENT AND DESIGN STANDARDS

1.6.3. OFF-STREET PARKING

A. Vehicle Parking

1. Reduced Minimum Vehicle Parking Space Standards

a. The minimum required number of off-street vehicle parking spaces shall be 60 percent of the minimum requirements in (Insert cross-reference to generally applicable parking space requirements) for development in the TOD-Core Subdistrict, and 80 percent of such minimum requirements for development in the TOD-Ring Subdistrict.

b. The (Insert title of appropriate administrative official) may approve a proposal to further reduce number of off-street vehicle parking spaces required for a development, provided the development application includes a study demonstrating that because of the development's specific location, nature, or mix of uses, there is a reasonable probability the number of parking spaces actually needed to serve the development is less than the minimum specified in section a above.

Commentary: These percentages are less (i.e., the reductions are more) than those suggested for suburban TODS. They are more in line with the degree of reduction indicated as appropriate in the previously noted parking studies for urban TODs, which contain higher development intensities and a greater mix of uses.

Standards for Rural TOD Districts

The following variations of certain standards set out above are intended to reflect the less intense uses and lower intensity development appropriate in TOD districts in rural settings.

1.4 USE STANDARDS

1.4.1. PRINCIPAL USES

A. Principal Use Table

Table 1.4.1.A: Allowed Principal Uses
P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Use Category	Use Type	TOD-Core	TOD-Ring	Use-Specific Standards
Mixed-Use Development				
Mixed-use development	Live-work unit	P	P	
	Other residential over nonresidential	P	P	
	Other mixed-use development	P	P	
Residential Uses				
Household Living Uses	Single-family dwelling	X	P	
	Two-family dwelling	X	P	
	Three- or four-family dwelling	X	P	
	Multifamily development	P	P	
	Townhouse development	P	P	
Group Living Uses	Group living	P	P	
Public and Institutional Uses				
Community Service Uses	Adult day care facility	P	P	
	Child day care facility	P	P	
	Community center	P	P	
	Library	P	P	
	Museum	P	P	
Educational Uses	Business/trade/vocational school	P	P	
	College/university	P	P	
	Elementary/ middle/high school	P	P	
Government Uses	Courthouse	P	P	
	Fire/EMS station	P	P	
	Police station	P	P	
	Government maintenance facility	X	X	
	Government administration offices	P	P	
	Post office	P	P	
Medical uses	Hospital	S	P	
	Other medical facility	P	P	
Open Space Uses	Cemetery	X	X	
	Community garden	X	P	
	Park or greenway	P	P	
	Public square or plaza	P	P	
Transportation uses	Transit station	P	P	
	Park-and-ride facility	S	X	
Utility uses	Major utility facility	X	X	
	Minor utility facility	P	P	
	Telecommunication tower	X	S	
Other Public and Institutional Uses	Club/lodge	P	P	
	Place of worship	P	P	

Table 1.4.1.A: Allowed Principal Uses
P = Allowed by Right S = Allowed only with Special Use Permit X = Prohibited

Use Category	Use Type		TOD-Core	TOD-Ring	Use-Specific Standards
Commercial Uses					
Animal Care Services	Kennel		X	P	
	Veterinary clinic		S	P	
Eating/Drinking Establishments	Bar/lounge		P	P	
	Restaurant		P	P	
	Specialty eating/drinking establishment		P	P	
Entertainment/ Recreation Uses	Cinema		P	P	
	Arena/stadium		S	S	
	Auditorium/stage theater		P	P	
	Commercial recreation facility	Indoor	P	P	
		Outdoor	X	S	
	Country club/golf course		X	X	
Office Uses	Non-service-oriented offices		P	P	
	Service-oriented offices		P	P	
Retail Sales and Service Uses	Bank or financial institution		P	P	
	Funeral home		X	P	
	Lawn care, pool, or pest control service		X	X	
	Personal services establishment		P	P	
	Plant nursery		X	S	
	Shopping center	GFA ≤ 150,000 sf	P	P	
		GFA > 150,000 ≤ 400,000 sf	P	P	
		GFA > 400,000 ≤ 800,000 sf	X	X	
		GFA > 800,000 sf	X	X	
	Other retail sales and service use	GFA ≤ 50,000 sf	P	P	
		GFA > 50,000 ≤ 100,000 sf	X	S	
		GFA > 100,000 sf	X	X	
Sexually Oriented Businesses					
Vehicle/ Equipment Sales and Service Uses	Automotive painting or body shop		X	S	
	Automotive repair and service		X	S	
	Automotive sales or rental		X	S	
	Car wash		X	S	
	Gas station		X	S	
	Parking lot (as a principal use)		S	P	
	Parking structure (as a principal use)		P	P	
	Self-service storage facility		X	S	
	Taxi or limousine service facility		P	P	
	Tire sales and mounting		X	S	
	Truck/recreational vehicle sales, rental, or service		X	X	
Visitor Accommodation Uses	Bed and breakfast inn		X	P	
	Hotel or motel		P	P	
Industrial Uses					
Industrial Service Uses			X	X	
Manufacturing and Production Uses			X	X	
Warehousing and Freight Movement Uses			X	X	
Waste-Related Uses			X	X	
Wholesale trade uses			X	X	

1.5 INTENSITY AND DIMENSIONAL STANDARDS

1.5.1. TABLE OF INTENSITY AND DIMENSIONAL STANDARDS

Table 1.5.1: Intensity and Dimensional Standards

Subdistrict:	TOD-Core	TOD-Ring	
Use:	**All Uses**	**Nonresidential & Mixed-Use**	**Residential**
Block and Lot Standards			
Block length (min|max)	200 ft | 400 ft	400 ft | 800 ft	400 ft | 800 ft
Lot area (min)	1,500 sf	3,000 sf	5,000 sf [1]
Lot width (min)	20 ft	30 ft	50 ft [2]
Intensity			
Residential density (min|max) [3]	7.5du/ac | 15du/ac	n/a	5du/ac | 10du/ac
Floor area ratio (FAR) (min|max) [4]	0.5 | 3.0	0.5 | 2.0	n/a
Lot coverage (min|max)	60% | 100%	40% | 85%	n/a | 70%
Open space (min, as % of lot area) [5]	5%	15%	20%
Building Placement			
Build-to line (min|max) [6]	0 ft/15 ft	0/20 ft	0/20 ft
Building width in build-to zone (min, as % of lot width)	80% [7]	70% [7]	50% [7]
Front setback (min) [8]	0 ft	0 ft	10 ft
Side setback (min)	0 ft	0 ft	5 ft [9]
Corner side setback (min)	0 ft	0 ft	0 ft
Rear setback (min)	0 ft	0	5 ft
Height			
Structure height (min|max) [10]	2 stories | 4 stories	1 story | 3 stories	1 story | 3 stories
	25 ft | 60 ft	15 ft | 50 ft	15 ft | 50 ft

NOTES: sf = square feet; ft = feet; du = dwelling unit; ac = acre; % = percent; n/a = not applicable
1. 1,500 square feet for townhouse lots.
2. 20 feet for townhouse lots.
3. Applicable to residential-only development.
4. Applicable to nonresidential developments and mixed-use developments (including their residential components).
5. Open space may be located on rooftops and on decks or porches as well as in ground-level plazas, courtyards, lawns, and gardens.
6. Applicable only along pedestrian street frontages.
7. The remaining build-to zone street frontage may be occupied by outdoor gathering spaces, driveways, pedestrian walkways, or surface parking located to the sides of buildings.
8. Applicable only along street frontages other than pedestrian street frontages.
9. Not applicable to townhouse lots except where abutting a lot containing or designed for a single- or two-family dwelling.
10. Both story and feet standards apply.

1.6 DEVELOPMENT AND DESIGN STANDARDS

1.6.3. OFF-STREET PARKING

A. Vehicle Parking

1. Reduced Minimum Vehicle Parking Space Standards

a. The minimum required number of off-street vehicle parking spaces shall be 80 percent of the minimum requirements in (Insert cross-reference to generally applicable parking space requirements) for development in the TOD-Core Subdistrict, and 90 percent of such minimum requirements for development in the TOD-Ring Subdistrict.

b. The (Insert title of appropriate administrative official) may approve a proposal to further reduce number of off-street vehicle parking spaces required for a development, provided the development application includes a study demonstrating that because of the development's specific location, nature, or mix of uses, there is a reasonable probability the number of parking spaces actually needed to serve the development is less than the minimum specified in section a above.

Commentary: These percentages are more (i.e., the reductions are less) than those suggested for suburban TODS based on the assumption that rural TODs contain lower development intensities and a lesser mix of uses, and are more auto-oriented.

Transitional TOD District Standards

Commentary: In some communities, a transit station may be planned at a particular location, but is not expected to be constructed and operational for a number of years. If the community establishes a TOD District around the future station site and authorizes the higher development intensities necessary to create a transit-supportive activity center around it, such intensities may overburden the current road network, which is designed to accommodate automobile traffic. But if the community 's development regulations limit development intensities around the station site to those can be accommodated by the current road network, by the time the station is built, it may be surrounded by development that is not insensitive enough to support transit and that is designed in a way that makes redevelopment difficult.

One way to address this problem is have a TOD District with "before transit" and "after transit" standards. A TOD District is established as soon as the station site is determined, but until the station becomes operational, the district is allowed to develop as a mixed-use activity center with intensities generating traffic levels that can be accommodated by the current road network. TOD District development would be subject to the same somewhat reduced parking standards applicable in other mixed-use districts (which are based on reduced demand due to the mixing of uses), and to lot coverage and build-to occupancy standards that allow sufficient lot area to accommodate such parking.

When transit becomes available to the station, however, the demand for parking is reduced further and lot area devoted to surface parking becomes available for additional building space (to accommodate residential and commercial market growth brought the availability of transit). Thus density, FAR, and lot coverage thresholds rise and the minimum build-to zone occupancy requirement rises. Because adding floors to an existing building is often impractical, structure height standards are set at their ultimate intended level. To facilitate this transition to higher-intensity development, Section 1.2.4 requires applications for district development to include a transition plan showing how proposed surface parking lots will be replaced by buildings after transit becomes available.

1.5 INTENSITY AND DIMENSIONAL STANDARDS

1.5.1. TABLE OF INTENSITY AND DIMENSIONAL STANDARDS

Table 1.5: Intensity and Dimensional Standards

	TOD-Core Subdistrict		TOD-Ring Subdistrict	
	Before Transit [1]	After Transit [1]	Before Transit [1]	After Transit [1]
Block and Lot Standards				
Block length (min|max)	200 ft | 400 ft	200 ft | 400 ft	400 ft | 800 ft	400 ft | 800 ft
Lot area (min)	1,500 sf	1,500 sf	3,000 sf [2]	3,000 sf [2]
Lot width (min)	20 ft	20 ft	30 ft [3]	30 ft
Intensity				
Residential density (min|max) [4]	5du/ac | 15du/ac	15du/ac | 35 du/ac	4du/ac | 10du/ac	7.5du/ac | 17du/ac
Floor area ratio (min|max) [5]	0.5 | 2.5	0.75 | 4.0	n/a | 1.5	0.5 | 2.5
Lot coverage (min|max)	n/a |65%	60% | 100%	n/a | 85%	n/a | 85%
Open space (min, as % of lot area) [6]	5%	5%	15%	15%
Building Placement				
Build-to line (min|max) [7]	0 ft | 12ft	0 ft | 12 ft	0 ft | 20 ft	0 ft | 20 ft
Building width in build-to zone (min, as % of lot width)	60% [8]	80% [8]	70% [8]	70% [8]
Front setback (min) [9]	0 ft	0 ft	0 ft	0 ft
Side setback (min)	0 ft	0 ft	0 ft [10]	0 ft [10]

Table 1.5: Intensity and Dimensional Standards

	TOD-Core Subdistrict		TOD-Ring Subdistrict	
	Before Transit [1]	After Transit [1]	Before Transit [1]	After Transit [1]
Corner side setback (min)	0 ft	0 ft	0 ft	0 ft
Rear setback (min)	0 ft	0 ft	0 ft	0 ft
Height				
Structure height (min | max) [11]	2 stories | 6 stories	2 stories | 6 stories	1 story | 4 stories	1 story | 4 stories
	25 ft | 75 ft	25 ft | 75 ft	15 ft | 60 ft	15 ft | 60 ft

NOTES: sf = square feet; ft = feet; du = dwelling unit; ac = acre; % = percent; n/a = not applicable
1. "Before Transit" standards apply before rail transit is fully operational at the rail station; "After Transit" standards apply thereafter (see Section 1.2.6).
2. 1,500 square feet for townhouse lots.
3. 20 feet for townhouse lots.
4. Applicable to residential-only development.
5. Applicable to nonresidential developments and mixed-use developments (including their residential components).
6. Open space may be located on rooftops and on decks or porches as well as in ground-level plazas, courtyards, lawns, and gardens.
7. Applicable only along pedestrian street frontages.
8. The remaining build-to zone street frontage may be occupied by outdoor gathering spaces, driveways, pedestrian walkways, or surface parking located to the sides of buildings.
9. Applicable only along street frontages other than pedestrian street frontages.
10. Not applicable to townhouse lots except where abutting a lot containing or designed for a single-family detached or duplex dwelling.
11. Both story and feet standards apply.

1.5.2. "BEFORE TRANSIT" AND "AFTER TRANSIT" STANDARDS

A. Table 1.5, Intensity and Dimensional Standards, establishes separate intensity and dimensional standards for "Before Transit" and "After Transit." The "Before Transit" standards shall apply to proposed development that the (Insert title of appropriate administrative official) determines will be completed and occupied before the transit station associated with the district is constructed and providing transit service. The "After Transit" standards shall apply to proposed development that the (Insert title of appropriate administrative official) determines will be completed and occupied after the transit station is constructed and providing transit service.

B. If an application proposes new development that is subject to the "Before Transit" standards and includes surface parking areas to the side of the development's principal building(s), the application shall include a transition plan showing how such parking might be replaced in the future by additional building space allowed under the "After Transit" standards.

1.6 DEVELOPMENT AND DESIGN STANDARDS

1.6.3. OFF-STREET PARKING

A. Vehicle Parking

1. Reduced Minimum Vehicle Parking Space Standards

a. The minimum number of off-street vehicle parking spaces required after the associated transit station has been constructed and is providing transit service ("After Transit") shall be __ percent of the minimum requirements in (Insert cross-reference to generally applicable parking space

requirements) for development in the TOD-Core Subdistrict, and __ percent of such minimum requirements for development in the TOD-Ring Subdistrict. Until then, the general requirements in (Insert cross-reference to generally applicable parking space requirements) shall govern.

Commentary: The last sentence is added to the base provision to indicate that the reduced parking requirements for TOD development will not kick in until transit service is available. The percentages should be those previously indicated for suburban, urban, or rural TODs, as appropriate.

3. Off-Street Parking Arrangement and Design

a. Location

i. In the TOD-Core Subdistrict and along any pedestrian street frontage in the TOD-Ring Subdistrict, all proposed new or additional surface vehicle parking shall be located to the rear of the development's principal building(s) or in a parking structure "wrapped" with retail, office, or residential uses in accordance with Section 1.6.4.F, Parking Structures—except that surface parking may be located to the side of the development's principal building(s) if the district's "Before Transit" standards apply (see Section 1.5.1). In accordance with Section 1.5.2.B, an application proposing new development with surface parking to the side of the development's principal building(s) may be required to include a transition plan showing how such parking might be replaced in the future by additional building space allowed by the district's "After Transit" standards.

Commentary: This modifies the base provision to allow surface parking to the side of a building before transit service is available to the TOD District provided the development is planned to replace the parking lot with a sidewalk-fronting building once transit service becomes available.