



**DEPARTMENT OF DEVELOPMENT
PLANNING AND ZONING
Memorandum PZ 16-025**

TO: Chair and Members
Planning & Development Board

FROM: Michael Rumpf
Planning and Zoning Director

DATE: May 11, 2016

RE: Approve amendments to the LAND DEVELOPMENT REGULATIONS, Chapter 4, Article V. *Minimum Off-Street Parking Requirements*, Section 3. *Special Reductions for Sustainability* to include lowering the heat island effect as an additional eligibility criterion for infill or redevelopment projects, and Section 4. *Exceptions to Providing Required Off-Street Parking* to allow, in limited circumstances, parking spaces on both sides of the street to count toward project parking requirements.

OVERVIEW

The rewrite of the City's land development regulations (LDR) in late 2010 allowed staff to perform a complete review and analysis of each standard, regulation, and process. As part of the post-adoption process, staff anticipates the periodic need for, and is prepared to expeditiously process, updates and amendments to the LDR for one or more of the following reasons:

1. Furthering business and economic development initiatives;
2. Advancing sustainability initiatives;
3. Maintaining internal consistency;
4. Achieving regulatory compliance; and
5. Incorporating implementation feedback necessary to meet original or current objectives and vision.

The proposed amendment would advance sustainability initiatives (#2).

EXPLANATION

Green and Smart Growth initiatives have incrementally been implemented into the LDR since 2005 with the addition of provisions for livework units. Subsequent amendments have regarded solar energy (2010), water-conserving landscaping (2010), wind energy (2010 and 2013), retail sales of scooters (2011), EV charging stations (2012), Transit Oriented Developments (TOD) (2013 and 2014), and most recently (2014), the introduction of on-street parking provisions and reduced parking requirements in exchange for certain sustainable development practices. Such developments are incentivized to include sustainable features such as extra open space; enhanced bike, scooter, and motorcycle accommodations; compact and electric vehicle parking and

charging facilities; maximized interconnectivity and internal/external access; and operational procedures to promote car-pooling, mass transit and use of fuel efficient vehicles. These new provisions recognize independently-prepared parking studies showing anticipated parking needs valued lower than the City's current minimum parking ratios, which warrant a reduced parking requirement for a given project. Secondly, the amendments allowed for the counting of on-street, adjacent parking spaces toward the minimum required for a given project. The desired result, in part, is minimizing the construction of excess parking spaces, thereby reducing impervious surfaces.

The first application of the sustainable parking requirements was in a suburban setting on a vacant parcel greater than 8 acres. Subsequently, the provisions have been tested on smaller and/or built properties with limited space to achieve compliance with the open space criterion of the newly established sustainable parking provisions. Staff realized the solution was not to find that the open space requirement was not applicable in such circumstances, but instead identified another opportunity for an additional LDR amendment to further the effectiveness and appropriateness of sustainable development regulations. The solution: add the requirement for decreasing the heat island effect of the development, whether retrofitting an existing development or constructing new.

A document prepared by the National EPA in 2008, titled "Reducing Urban Heat Islands: Compendium of Strategies", presented the results from studying the temperature gradient between the built urban environment and the surrounding rural environment. The warmer surface and atmospheric temperatures in the urban setting results from exposure of roof and pavement surfaces to the sun, surfaces commonly comprised of non-reflective materials which heat up under the sun's rays. Also, with less vegetation present, evapotranspiration is lower in urban areas, which means less moisture is released by plants that would lower the ambient air temperature. The elements of a site that can have the greatest impact on heat island temperatures include tree canopies and other vegetation, roof design (e.g. green roofs) and roof color, and pavement surfaces.

Trees/Vegetation: The EPA report indicates that leaves and branches of trees reduce the sun's energy that reaches the ground by 70% to 90%.

Roof materials & colors: Sustainable roof design for cooler temperatures is called "cool roofs", which are comprised of "highly reflective and emissive materials (ability to emit radiation) that can remain approximately 50 degrees to 60 degrees (Fahrenheit) cooler than traditional materials during summer periods. Most cool roof products are bright white to maximize reflectivity and can include cool roof coatings, membranes, and asphalt shingles or tile materials that include special pigments to achieve the reflectivity objective. It is not uncommon for State's to include in their respective energy codes, cool roofing as an energy efficiency option.

Pavement materials: Of the three (3) site elements targeted by urban heat island regulations, pavement materials appears to be the most complex, given, in part, the advantages and disadvantages of different surface materials and treatment options. However, any cool pavement option or technology tends to store less heat energy and may have lower surface temperatures compared with conventional products. The ultimate material used would most likely be a factor of cost. The varying options may include 1) asphalt modified with high albedo (i.e. reflectivity) materials or post-installation treatment; 2) concrete with white cement in lieu of gray cement;

various permeable pavements (i.e. pervious concrete); topping and micro-surfacing with high albedo materials; and paver/vegetation combinations.

The proposed amendment is limited to paragraph “a”, the first criterion or requirement for using the sustainable parking requirements of Chapter 4, Article V, Section 3.G. The proposed amendment is shown in underlined text in an excerpt from Section 3.G below, and with the entire Section 3.G attached as Exhibit “A”.

....

2. Application and Development Requirements. Requests for parking reduction must occur at time of site plan review, and must include a parking demand study prepared by a professional engineer and/or based on findings from an existing development or other comparable projects experienced by the applicant that include, in part, projects designed to meet lower parking requirements as allowed by this section. The study must provide evidence that the project would not be deficient of parking, that the reduced ratios would not adversely affect the project in any way, or increase the demand for parking spaces upon public streets in the immediate vicinity, or would not increase the demand for parking spaces on private properties in the immediate vicinity unless in conjunction with an approval for shared parking pursuant to city regulations.

Eligible applicants must demonstrate that proposed parking design or resources would be adequate, and shall satisfy the following requirements meeting sustainable design and operation (where basic mathematical calculations are involved, rounding will be based on the traditional mathematical rule):

a. Describe, in quantifiable terms, how the project provides an increase in green space (pervious area) which otherwise would be paved for parking spaces-, or how the proposed project provides a lower urban heat island effect if the proposed development is an urban infill or redevelopment project. At minimum, the elements to be included for compliance are all building roofs, parking and other hard surfaces, and tree canopies.

....

Requirement “a” was originally written with a limited emphasis on open space, simply requiring the applicant to justify the decreased parking, in part, by the increased green space in the project. Recognizing that smaller projects and infill developments would have little opportunity to preserve open space that likely doesn’t exist on the property, the proposed amendment adds the option for such circumstances to include planning for a lower urban heat island. Although the proposed amendments could include specific quantifiable standards involving the albedo of materials or minimum tree canopy coverage at time of maturity, staff proposes that this introduction of heat island effect standards be flexible, less stringent and less quantitative. These standards are new to the City’s Land Development Regulations, could require a level of expertise that not all development teams possess, and impacts on project costs have not been fully considered. Therefore, staff recommends that this general format is preferable for initial implementation and testing for effectiveness in meeting the objectives of sustainability and user-friendliness.

It is anticipated that compliance with this new requirement would be evaluated by, but not limited to, the following considerations:

- 1) Site design and tree species selection that facilitates maximum tree canopy coverage of parking areas and other hard surfaces;
- 2) The level of commitment to maintain the landscaping in accordance with state defined arborist standards to prevent unnecessary and drastic trimming of project vegetation and avoidable reduction in tree canopy coverage;
- 3) Whether any Energy Star or equivalent roofing materials are used to confirm or ensure that the roof has a high reflectivity property; and
- 4) The high reflective material, mixtures, or treatment process selected for the materials used on walkways and parking lots (i.e. white cement used in the concrete mix in lieu of gray cement if still considered preferable for the cooler effect);

CONCLUSION/RECOMENDATION

Staff proposes these code amendments to continue incremental addition of smart growth and sustainable standards into the City's LDR.

Attachment