



MORGANTOWN PLANNING COMMISSION

July 14, 2016
6:30 PM
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Vice-President:

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VACANT, City Administration

STAFF REPORT SUPPLEMENT

CASE NO: TX16-03 / Administrative / Bicycle Storage

REQUEST:

Administratively requested Zoning Text Amendments to Articles 1329.02, 1349.08, and 1365.04 of the City's Planning and Zoning Code as they relate to establishing bicycle storage requirements for Developments of Significant Impact.

SUPPLEMENTAL INFORMATION:

At the Planning Commission's May 12, 2016 hearing, the Bicycle Board's proposed zoning text amendments concerning minimum short- and long-term bicycle storage and requirements and design standards were tabled for further study and to schedule a workshop with the Bicycle Board.

A workshop was held on June 2, 2016 during the Bicycle Board's regular monthly meeting. Planning Commissioners in attendance included Blosser, Loretta, Petros, Kawecki, Shuman, and Pyles. Staff in attendance included Fletcher and Whitmore. Bicycle Board members in attendance included D. Gatlin, C. Wamsley, C. Hunt, B. Ricketts, H. Grandon, J. Nellis, and J. Rosenbaum.

The Planning Commission was tasked with identifying three (3) bullet point items corresponded to concerns regarding the proposed bicycle storage requirements for Development of Significant Impact (DSI) projects. The following points were developed based on comments at the workshop and one-on-one following telephone calls to Planning Commissioners.

1. That the storage requirement may be overly difficult for developers to achieve.
2. That existing bicycle infrastructure is lacking.
3. That more parties need to be engaged with bicycle storage.

The following bullet points summarize matters raised by Planning Commissioners attending the workshop. Responses to these items are presented below each bullet points and were developed by Staff with the assistance of the Bicycle Board.

- What is the construction cost per square foot for new commercial or mixed-use buildings in Morgantown and how does that relate to proposed indoor bicycle storage standards? (Blosser)
 - The North Central West Virginia Home Builders Association provided that new construction for finished space is generally \$90 to \$140 per square foot, depending on the type of construction and quality of the finishing materials.
- The proposed standards do not appear to require bicycle storage for stand-alone parking lot or parking garage uses. (Whitmore)

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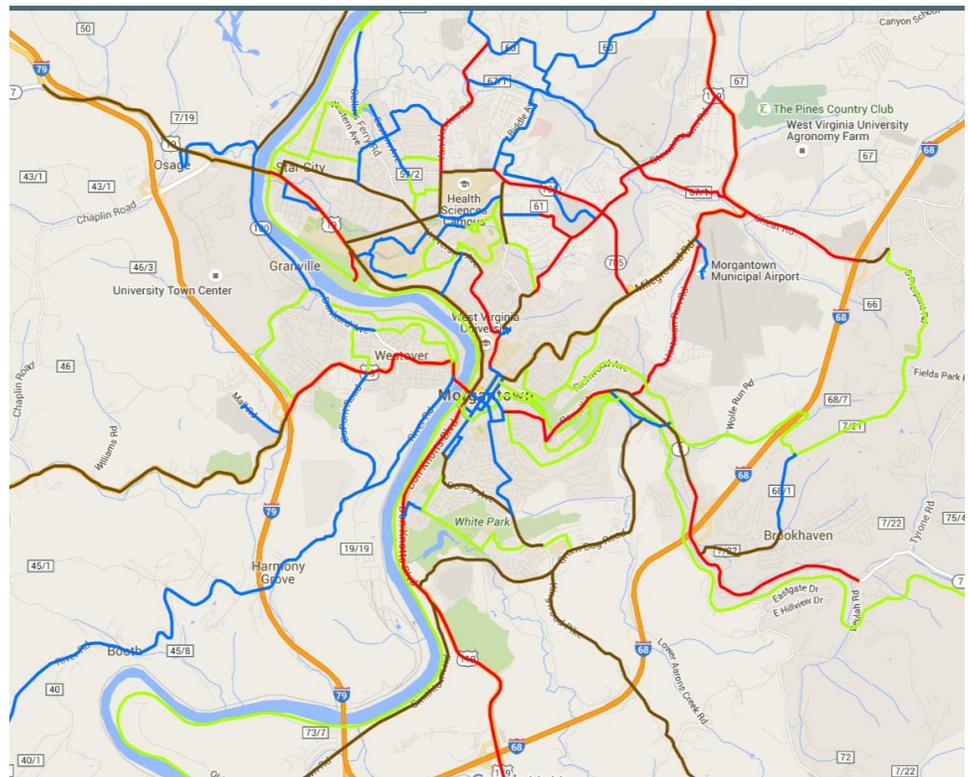
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- Parking garages and parking lots do not have a minimum parking requirement, negating the ability to calculate a bicycle storage requirement under the proposed amendments. As these uses are space rental in nature, their offering of bicycle storage could be made based on market demands. However, governmental or similarly owned or managed parking facilities are generally encouraged to provide bicycle facilities through the use of grant funding or specific performance metrics.
- Mapping developed by the Bicycle Board illustrating alternate biking routes through the City for commuting purposes should be provided to the Planning Commission. This mapping will help to illustrate biking opportunities. (Petros)
 - All public roads in the City of Morgantown are available to bicycle users. Even when a road is not identified as a bicycle route, it can be used by cyclists. While some roadways may appear unfavorable for bicycle use, their use for cyclists should not be discounted. Additionally, the City of Morgantown is currently working with the West Virginia Division of Highways for installation of bicycle use identification that includes signage on the road surface as shown in the illustrations on the following page. Signage does not replace segregated bicycle route facilities or bike lane markings, but do provide a visual stimulus to promote mixed-mobility on the roadway. The map below shows bicycle routes identified in the MPO Long Range Transportation Plan. These routes are in sync with probable DSI development sites, as will be shown below.



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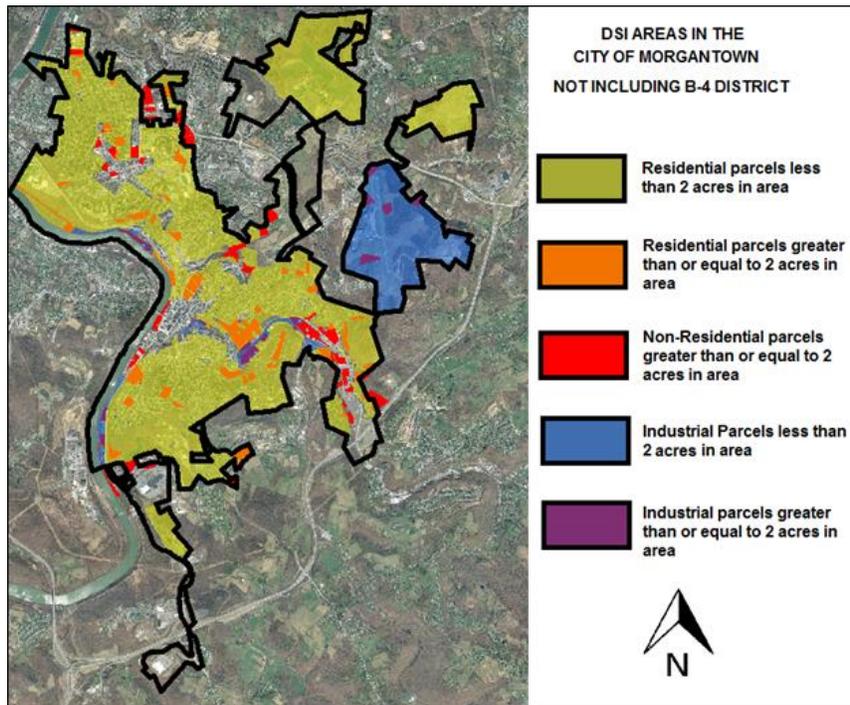
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- A concern was expressed that proposed standards may result in creating infrastructure in areas of the City that are not accessible or not easily accessible to bicycling. A map of the City illustrating areas within which DSI projects are more likely would be helpful when compared to the Bike Board's alternative bicycling routes map. (Petros and Blosser)
 - The 2016 Bicycle Storage Plan developed by the Planning Division, with the assistance of the Bicycle Board, provides guidance for bicycle storage policy, as it relates to physical development. DSIs are enabled in developments throughout the city that impact parcels with areas greater than two acres. The parcels in the City of Morgantown having the highest spatial characteristics to enable DSIs are presented below. DSIs are overall envisioned to occur along collector, minor-arterial, and major-arterial roadways, which are in close proximity to existing bicycle routes.



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Staff also reviewed potential DSI areas as larger parcels being contiguous or nearly contiguous to other large parcels. Areas throughout the city that have this increased potential for DSIs are presented below.



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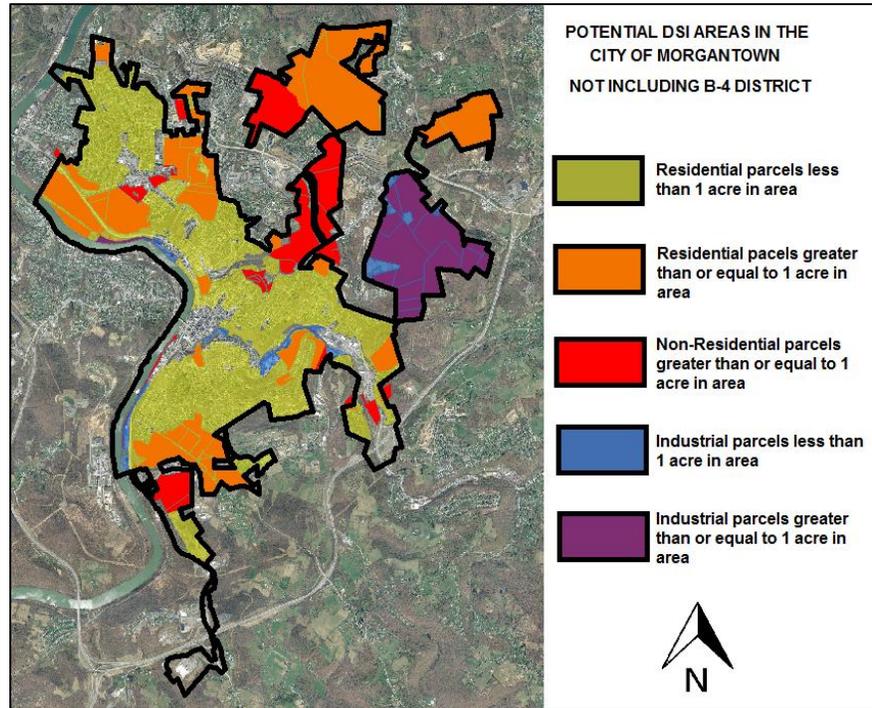
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- An explanation and illustration of shared lanes and related markings would be beneficial to understanding bicycling opportunities in Morgantown for commuting purposes. (Fletcher)
 - The following are examples of signage present in other communities used to alert motor vehicles, cyclists, and pedestrians.



Sharrow notifies motor-vehicle traffic of cyclists present on the roadway, and notifies cyclist of the route.



Bike Route Sign notifies cyclist of the route.



Share the Road Sign notifies motor-vehicle traffic of cyclists present on the roadway.

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- How were the minimum number of long-term and short-term bicycle storage spaces developed? How and why are these minimum storage spaces related to the Bike Board's desire to increase bicycle mode trips to 5% of all transport mode trips? How and why did the Bike Board identify 5% as the target for bicycle mode trips? (Kawecki, Shuman, Petros, Loretta)
 - Throughout the United States Bicycle Storage spaces follow varying metrics to determine the number of spaces required. Many jurisdictions utilize standards as found with automobile parking, with the number of required spaces determined based on the use of the property. Morgantown's method would be to enable 5% of all transit trips to utilize bicycles. The result in that there should be at least one Short-Term and one Long-Term Bicycle Storage space for every twenty automobile parking spaces. While this method does not absolutely create the complete technical mechanics for 5% of all transit trips to be made by bicycle, it does provide justification that there is space in DSIs to accommodate at least 5% of the expected automobile driving trips, as established by the Parking section of the Planning and Zoning Code, while not limiting additional bicycle infrastructure, including bicycle sharing opportunities, or causing an extreme burden on developers.

- Why is long-term storage required in the proposed standards for non-residential uses (i.e., commercial uses)? To what extent will these facilities actually be used? (Kawecki)
 - With regards to individual DSIs, the Bicycle Storage text amendment language requires the installation of bicycle racks for short-term use, and some manner of secured space for long-term use. Short-term Bicycle Storage is akin to customer parking spaces used in retail shops with frequent turn-over and ease of access, while Long-Term Bicycle Storage is more similar to employee parking, or the parking used in our homes. A bicycle commuter benefits from Long-Term Bicycle Storage, as their bicycle will be secured in a setting that protects the bicycle from inclement weather, as may occur over the period of a day, and provides increased security. Commercial, Industrial, and Office uses benefit from Long-Term Bicycle Storage, just as long-term automobile parking is often provided in different settings as compared to customer parking. Additionally, Long-Term Bicycle Storage facilities can be configured to offer Short-Term Bicycle Storage, similar to a parking deck or in combination with a parking deck.

- How would the proposed bicycle storage standards be applied to retrofitted (reuse) buildings? (Shuman)
 - The reuse of existing buildings or improvements do not limit the DSI review requirement for development or other requirements such as parking, signage, life-safety, etc. In some instances, the inclusion of bicycle storage infrastructure can be utilized to facilitate new development in older buildings for grant and tax credit purposes.

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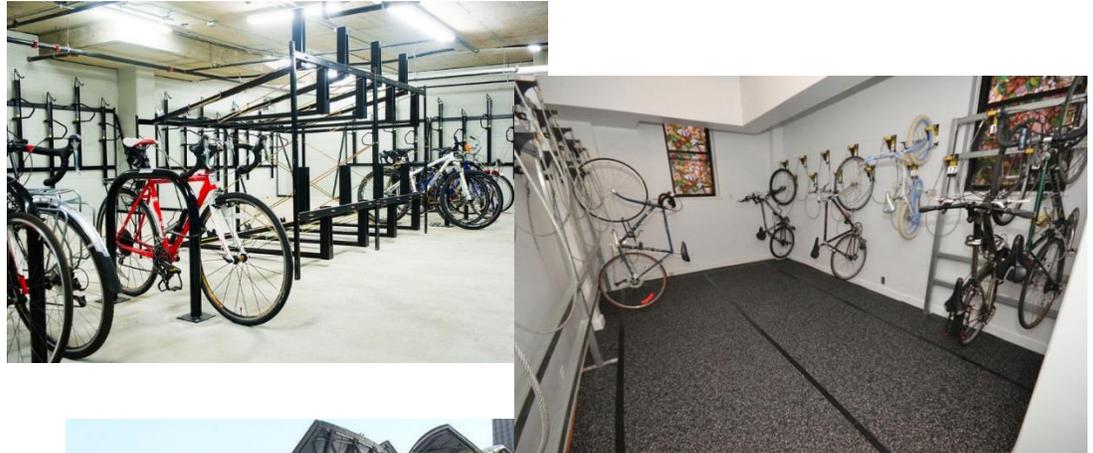
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- Images of long-term bicycle storage options (from various single units to amassed systems) would aid in illustrating compliant approaches and space consumption needs under the proposed standards. (Kawecki)
 - The following images highlight examples of long-term bicycle storage systems.



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- How would a proposed Planned Unit Development (PUD) be required to comply with the proposed bicycle storage standards? (Loretta, Blosser)
 - A PUD development utilizes a different planning process, as opposed to developments that occur under DSI Type III Site Plan Reviews, or general improvements to a site (Type II or Type I administrative site plan reviews). The PUD utilizes a specific development plan for the site, and includes all aspects of the City of Morgantown's existing zoning regulations into a site specific regulation. The developer presents this plan to the Planning Commission to achieve a Zoning Map Amendment, which requires ordinance approval, necessitating Planning Commission and City Council review. In the event a PUD is proposed that would not provide necessary bicycle storage, the Planning Commission would be presented with an opportunity to evaluate the facility's omission with the developer, allowing for negotiations to potentially provide increased bicycle facilities and/or infrastructure.
- How would a bicycle sharing company (e.g., Hubway, Zagster, Motivate, etc.) affect implementation of the proposed bicycle storage standards? (Blosser)
 - Bicycle sharing programs should serve to expand market-driven infrastructure development, promote use, and capitalize on minimum storage requirements; particularly, the need for and utilization of short-term bicycle storage. Bicycle sharing companies generally use their own specific infrastructure to facilitate the rental of bicycles (long-term storage), allowing users to pick-up and drop-off bicycles in areas that allow for the turn-over necessary for the system to operate. An increase in short-term storage facilities only serves to promote the use of bicycle sharing programs/services. Current operational systems are shown below and highlight their specific infrastructure.



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- One (1) long-term bicycle storage space per dwelling unit might be a concern. Providing one (1) storage space within a dwelling unit might not be attractive to property owners concerning wear and tear caused by bicycles in common areas of a building between the entrance and the dwelling unit as well as wear and tear (damage) caused by bicycles inside the unit (e.g., carpeting, pulling hocks out of walls/ceiling, etc.). Are there other minimum policy approaches that could be considered? (Shuman, Kawecki)

- Individual long-term bicycle storage spaces would be required for all newly constructed DSIs, in accordance with those structure's automobile parking standards. In the B-4 District, DSIs may not be required to provide any automobile parking, and would likewise, not be required to provide any short-term bicycle storage spaces. However, all DSIs that include a residential component of the development plan in the B-4 District would be required to provide one long-term bicycle storage space per dwelling unit. The bare minimum functional requirement for a long-term bicycle storage space, would consist of a 3 x 4 x 6 foot space, that can be lit at night. For context, this space could be achieved in an apartment as a closet or even a space within the living area designated for the use of the bicycle.

During the workshop, Planning Commissioners asked for more clarification on the bicycle storage metric of one (1) bicycle storage space per twenty (20) automobile parking spaces for all short-term and all non-residential component long-term bicycle storage. A review of all non-residential, non-mixed-use, DSI developments since 2006 showed that total nonresidential use areas handle the short-term and long-term storage requirements with ease. The largest square footage of proposed bicycle storage would have been for the 2010 Mylan application for the abandoned Wal-Mart facility at the Mountaineer Mall. The applicant would have been required to provide 2,016 square feet of bicycle parking, both short and long term, which is 14 bicycle parking spaces each.

Modified Nonresidential Parking Requirements

(excludes developments with no required spaces)

	Square Footage	No. of Short-Term Spaces	No. of Long-Term Spaces
Mean	864	6	6
Median	720	5	5
Mode	432	3	3
Range	432	3	3

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A review of all residential, non-mixed-use DSI developments not in B-4 zone since 2006 showed that totally residential use areas, handle the short-term and long-term parking requirements as follows. The largest square footage of proposed bicycle parking would have been for the *UClub* development on University Avenue in Sunnyside. The applicant would have been required to provide 10,656 square feet of bicycle parking, which is 14 short-term spaces and 134 long-term spaces.



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Modified Residential Parking Requirements, Not in B-4

(numbers rounded-up)

	Square Footage	No. of Short-Term Spaces	No. of Long-Term Spaces
Mean	3,836	4	50
Median	2,700	2	36
Mode	1,224	1	15
Range	648-10,656	1-14	8-134

A review of all mixed-use DSI developments not in B-4 zone since 2006 showed that these use areas handle the short-term and long-term parking requirements with relative ease. Of the four (4) DSI mixed-use projects, the largest square footage of proposed bicycle parking would have been for the Beechurst property with 87 apartment units. The applicant would have been required to provide 6,624 square feet of bicycle parking, which is 4 short-term spaces and 88 long-term spaces.

Mixed-Use Parking Requirements, Not in B-4

(numbers rounded-up)

	Square Footage	No. of Short-Term Spaces	No. of Long-Term Spaces
Mean	3,836	4	50
Median	2,700	2	36
Mode	1,224	3	N/A
Range	1,152-6,624	1-4	20-88

A review of all B-4 DSI developments since 2006 showed that these use areas handle the short-term and long-term parking requirements with the most burden. Of the eleven DSI projects in the B-4 District, the largest square footage of proposed bicycle parking would have been for the 19 story mixed-use project on University Avenue in 2006. The applicant would have been required to provide 31,608 square feet of bicycle parking, which is 37 short-term spaces, and 402 long-term spaces. This contrasts with the 737 automobile parking spaces that would have been required (under today's minimum parking requirement), totaling, at most, 112,761 square feet of area.

Parking Requirements in B-4 not including parking garage projects

(numbers rounded-up)

	Square Footage	No. of Short-Term Spaces	No. of Long-Term Spaces
Mean	9,864	11	126
Median	7,200	11	89
Mode	1,224	0-3	0
Range	0-6,624	0-37	0-402

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Additional information was provided at the Planning Commission workshop highlighting the physical space that bicycle storage would occupy in cubic feet. While this information does provide some insight into the space a development would have to provide for bicycle storage, the context of storage is difficult to examine. For instance, while a bicycle storage space may be 72 ft³, an automobile parking space could be 1,071 ft³ given the need for an 18 feet long, 8.5 feet wide, and 7 feet of height required for an automobile parking space in an enclosed space. Additionally, the aisle width and space required for automobiles as compared to bicycles is similarly skewed.

At the conclusion of the workshop, the Bicycle Board was tasked with developing three (3) bullet point items succinctly stating the need for minimum bicycle storage standards in the Planning and Zoning Code. The Bicycle Board offered the following affirmations.

- Current transportation and land use plans for the City of Morgantown encourage the expanded use of bicycles as a mode of transportation, necessitating increased infrastructure to include bicycle storage;
- The proposed bicycle storage standards are not unique to the City of Morgantown and are utilized throughout the United States to encourage and facilitate bicycle use; and
- The proposed bicycle storage standards provide flexibility for developers to deliver bicycle storage amenities at a level that is of minimal disturbance.

STAFF RECOMMENDATION:

Staff respectfully advises the Planning Commission to forward a favorable recommendation to City Council to amend the Planning and Zoning Code as presented in the Addendum A of this report (deleted matter struck-through; new matter underlined) based on the information and findings presented herein.

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TX16-03 / Admin / Bicycle Storage

**Information following this slip sheet was included
in the Planning Commission's
May 12, 2016 hearing packet**



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STAFF REPORT

CASE NO: TX16-03 / Administrative / Bicycle Storage

REQUEST:

Administratively requested Zoning Text Amendments to Articles 1329.02, 1349.08, and 1365.04 of the City's Planning and Zoning Code as they relate to establishing bicycle storage requirements for Developments of Significant Impact.

BACKGROUND and ANALYSIS:

Currently, the Planning and Zoning Code provides for bicycle storage development standards for Developments of Significant Impact only in the B-4 District. The current bicycle storage standards present the following deficiencies.

1. They do not recognize the difference between short-term and long-term bicycle storage needs or demand.
2. They only apply to indoor bicycle storage, with no language for short-term bicycle storage; particularly the design of racks, which limits functionality of the bicycle storage space.
3. They only apply to residential uses.
4. They are limited to the downtown core.

Increasing access to bicycle facilities throughout the City and greater region is identified in the City of Morgantown Comprehensive Plan and other City planning documents. The proposed bicycle storage standards will create additional opportunities for bicycle storage facilities throughout the City of Morgantown and would correct deficiencies identified above.

With the leadership and assistance of the Bicycle Board, Staff drafted text amendments are presented in Addendum A of this report addressing these deficiencies. Additionally, the Bike Board's 2016 Bicycle Storage Plan is attached hereto providing an extensive overview of the proposed bicycle storage requirements and their functional effect on Developments of Significant Impact.

The Morgantown Traffic Commission is scheduled to review these proposed text amendments at their 04 MAY 2016 meeting and then formally vote in June to submit their respective support to City Council prior to City Council's public hearing and second reading of the related ordinance anticipated for 05 JUL 2016, provided the related ordinance continues to move forward at each step of the process.

STAFF RECOMMENDATION:

Staff respectfully advises the Planning Commission to forward a favorable recommendation to City Council to amend the Planning and Zoning Code as presented in the Addendum A of this report (deleted matter struck-through; new matter underlined) based on the information and findings presented herein.

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STAFF REPORT ADDENDUM A

TX16-03 / Administrative / Bicycle Storage

Staff recommended text amendments to the Planning and Zoning Code as they relate to proposed bicycle storage standards (deleted matter struck-through; new matter underlined).

1329.02 DEFINITION OF TERMS

AMENITY – Aesthetic or other characteristics of a development that increase its desirability to a community or its marketability to the public. Amenities may differ from development to development but may include such things as a unified building design, recreational facilities (e.g. swimming pool, walking trails, bicycle trails, lakes, tennis courts, picnic areas, playgrounds, fitness center, etc.), views, landscaping, bicycle storage, etc.

~~BICYCLE STORAGE—An indoor, secure, and sheltered storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development.~~

BICYCLE STORAGE, SHORT-TERM – A secure storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development for temporary purposes.

BICYCLE STORAGE, LONG-TERM – An indoor, secure, and sheltered storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development.

~~PARKING, BICYCLE—Parking of bicycles on a temporary basis with a minimum width of three (3) feet, a minimum length of six (6) feet, and a means of securing individual bicycles.~~

1349.08 PARKING AND LOADING STANDARDS

~~(C) Bicycle Storage—For all Developments of Significant Impact in this district, the following minimum bicycle storage amenities must be provided:~~

- ~~(1) One (1) indoor, secure, sheltered bicycle storage space per dwelling unit.~~
- ~~(2) Each space shall be a minimum of 3 feet X 6 feet X 4 feet.~~
- ~~(3) Each bicycle shall be individually secured with a lock to a permanent structure.~~
- (4) There should be sufficient space for easy access to each bicycle.

1365.04 DETERMINING THE NUMBER OF SPACES REQUIRED.

(C) Shared Parking Facilities in the B-4 District.

- (2) Shared parking facilities for two or more uses, whose main traffic generation peak times do not substantially overlap, may be approved as a conditional use provided that:

STAFF REPORT ADDENDUM A

TX16-03 / Administrative / Bicycle Storage

- (c) This reduction may, with the approval of the Board of Zoning Appeals, be in addition to the reductions allowed for proximity to public transit, and/or motorcycle parking, ~~and/or bicycle parking~~.
- (3) Shared parking facilities for two or more uses, whose main traffic generation peak times substantially overlap, may be approved as a conditional use provided that:
 - (c) This reduction may, with the approval of the Board of Zoning Appeals, be in addition to the reductions allowed for proximity to public transit, and/or motorcycle parking, ~~and/or bicycle parking~~.
- (P) In the B-4 district, minimum parking requirements may be reduced as a conditional use under one or more of the following provisions:
 - (4) ~~By a factor of one (1) automobile parking space for every three (3) bicycle parking spaces provided, up to a maximum reduction of three (3) automobile parking spaces. This reduction shall not be permitted for uses that are required to provide six (6) or fewer parking stalls. Nor shall this reduction be permitted for uses that primarily sell large, bulky merchandise not typically transported via bicycle. Required bicycle storage may not be used to reduce minimum parking requirements.~~
- (Q) Bicycle Storage – Long-term bicycle storage and short-term bicycle storage shall be provided in all Developments of Significant Impact.
 - (1) For all Developments of Significant Impact, the minimum Long-term bicycle storage amenities described in this Subsection must be provided. The minimum Long-term bicycle storage amenities are as follows:
 - (a) For residential uses and for residential use components of mixed-used development, one (1) long-term bicycle storage space per dwelling unit.
 - (b) For non-residential uses and for non-residential use components of mixed-used development, one (1) Long-term bicycle storage space increasing by one (1) additional space for every twenty (20) automobile parking spaces as required in accordance with Table 1365.04.01: Minimum Off-Street Parking Requirements.
 - (c) Long-term bicycle storage is required to be covered and shall include use of one of the following:
 - (i) A locked room;
 - (ii) An area enclosed by a fence with a locked gate;

STAFF REPORT ADDENDUM A

TX16-03 / Administrative / Bicycle Storage

- (iii) An area within view of an attendant or security guard or monitored by a security camera; or,
- (iv) An area visible from employee work areas.
- (d) The long-term bicycle storage area should be located within fifty (50) feet of the primary entrance of the building it serves and shall be in a location that can be reached by an accessible route. Long-term bicycle storage must be located either:
 - (i) On the same site as the use it serves; or,
 - (ii) Off-site within 300 feet of the use it serves; provided, conditional use approval is granted by the Board of Zoning Appeals. Conditional use approval shall include a condition that the off-site long-term bicycle storage amenity is encumbered by an easement or similar agreement duly executed and acknowledged, which specifies that the land upon which the off-site long-term bicycle storage amenity is located is encumbered by the bicycle storage use. Said instrument shall specify and bind the time period to the anticipated life of the building or use to which the long-term bicycle storage amenity are accessory. Said instrument shall be filed with the applicable Building Permit files of the Department of Planning, and placed on public record in the Office of the Clerk of the County Commission of Monongalia County, WV. Further, if the pedestrian access between the off-site long-term bicycle storage amenity and the use(s) it serves is to cross an arterial street, appropriate safety measures, as determined by the Planning Director and City Engineer, must be in place to ensure pedestrian safety.
- (e) If the long-term bicycle storage is provided in an auto storage garage, the bicycle storage spaces shall be clearly marked as such and shall be separated from automobile parking.
- (f) Long-term bicycle storage designs must adhere to the design standards in section 1365.04(Q)(3), Bicycle Rack Requirements.
- (2) For all Developments of Significant Impact, the minimum short-term bicycle storage amenities described in this Subsection must be provided. The minimum short-term bicycle storage amenities are as follows:
 - (a) One (1) short-term bicycle storage space increasing by one (1) additional space for every twenty (20) automobile parking spaces as required in accordance with Table 1365.04.01: Minimum Off-Street Parking Requirements.
 - (b) Each short-term bicycle storage space shall be located:

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- (i) Outside a building, but not within the public right-of-way, or within an automobile garage; provided, that in the B-4 District where the public right-of-way may also be used with the approval of the City Engineer.
 - (ii) Within fifty (50) feet of a main building entrance; and
 - (iii) At the same grade as the sidewalk or at a location that can be reached by an accessible route.
 - (c) Short-term bicycle storage space designs must adhere to the design standards in 1365.04(Q)(3): Bicycle Rack Requirements.
 - (d) Short-term bicycle storage spaces should be placed under roof to encourage cycling and bicycle rack use.
 - (e) Short-term bicycle storage shall consist of a physical improvement that is installed on a permanent foundation (e.g., concrete pad) to ensure stability; is securely anchored into or on the foundation with tamper-proof nuts if surface mounted; provides support for an upright bicycle by its frame horizontally in two (2) or more places; keeps both bike wheels on the ground; is designed to prevent the bicycle from tipping over; is able to support a variety of bicycle sizes and frame shapes; provides space to secure the frame and one or both wheels to the rack with a cable, chain, or u-lock; and has a locking pole with a diameter of no more than 1.5 inches.
- (3) Bicycle Rack Requirements. Long-term and short-term bicycle storage spaces using bicycle rack facilities shall observe the following design standards:
- (a) Each bicycle storage space shall a minimum dimension of three (3) feet in width by six (6) feet in length by four (4) feet in height.
 - (b) Bicycle storage areas shall include a minimum of three (3) feet of clearance around racks or lockers to give cyclists room to maneuver and to prevent conflicts with pedestrians or parked automobiles.
 - (c) Adequate lighting (no less than 2.0 footcandles) must be provided for a bicycle storage area and the route from the storage area to the nearest building entrance intended for the cyclist.
 - (d) Racks shall conform to Americans with Disabilities Act (ADA) standards for protrusions in the right-of-way including the ability to detect the rack with a white cane. To be detected by a white cane the protruding or leading edge of the rack shall be 27" or less above the sidewalk surface. Between 27" and 80" above the sidewalk surface, protruding or leading edges may overhang a maximum of 12".
 - (e) The top of the bicycle rack design shall be a minimum of 36 inches tall. Except for the bicycle rack supporting brackets, the shortest section of the

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bicycle rack must be a minimum of 27 inches tall to be perceived by pedestrians and avoid tripping hazards.

- (f) The space between rack features shall be larger than 9" and smaller than 3.5" to avoid children trapping their heads.
- (g) The design shall not include sharp edges.
- (h) Areas having more than one row of racks shall be separated by aisles. An aisle is measured from tip to tip of the bicycle storage spaces between racks. The minimum separation between aisles shall be a minimum of four (4) feet.
- (i) Racks near walls should be placed so the rack's two (2) bicycle connection points are perpendicular to such wall. Racks placed near walls shall maintain a four (4) foot minimum separation between the edge of the bicycle storage space and the wall.
- (j) Racks placed near curbs should maintain a minimum separation between the edge of the bicycle storage space of four (4) feet.
- (k) Racks should have protective coatings designed to protect bicycle frames from scratching and damage.
- (l) Racks should be able to resist being cut or detached using common hand tools, such as bolt cutters, pipe cutters, wrenches, and pry bars.

2016 BICYCLE STORAGE PLAN

PROPOSED STANDARDS FOR DEVELOPMENTS
OF SIGNIFICANT IMPACT LOCATED IN THE CITY
OF MORGANTOWN, WV



May 5, 2016

This plan was made with assistance from the City of Morgantown City Council, Planning Commission, Traffic Commission, and Bicycle Board members.

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Proposed Bicycle Storage Standards for Developments of Significant Impact

Relationship to Other Plans

Bicycle parking or the storage of bicycles, is a necessary component for a complete street. The use of bicycles as a form of transit requires that the bicycle be placed in a safe and convenient location, when not in use. The City of Morgantown and the Morgantown Monongalia Metropolitan Planning Organization recognize the value of bicycle use, and is reflected within future planning documents and other organizational policy. The City of Morgantown's 2013 Comprehensive Plan, the 2012 Greater Morgantown Bicycle Plan, and the 2040 Morgantown Monongalia Metropolitan Planning Organization Long Range Transportation Plan each include specific implementation strategies to increase bicycle usage, and increase mobility. The 2016 Bicycle Storage Plan provides proposed land-use reviews/ordinance to implement these plans' strategies.

City of Morgantown's 2013 Comprehensive Plan

The City of Morgantown's 2013 Comprehensive Plan, a guide for future physical development within the city, provides guidance for land uses and transportation. The comprehensive plan's transportation element establishes the goal of providing "a balanced, safe attractive, well-connected transportation system that offers reduced congestion, supports and encourages desirable growth, and integrates private vehicles, public transportation, biking, and walking." This goal is achieved through objectives and strategies that encourage wider mobility options and biking, in particular Objective 5.

Objective 5. Increase bicycle use through infrastructure improvements and education.

- TR 5.1 Implement the Morgantown Bicycle Plan.
- TR 5.2 Develop a bicycling education plan.
- TR 5.3 Develop a traffic enforcement plan to improve bicycling safety and to reduce the perceived risk of bicycling in Morgantown.
- TR 5.4 Implement the "Complete Streets" policy adopted by City Council in December 2007 to guide development review and approval, roadway maintenance, right-of-way improvements, and right-of-way expansion wherever practical.
- TR 5.5 Develop a feeder trail system that connects neighborhoods with the Caperton and Decker's Creek Trails.

The 2012 Greater Morgantown Bicycle Plan

The 2012 Greater Morgantown Bicycle Plan utilizes the 6 E's elemental format to establish planning priorities for bicycling and bicycle infrastructure. The 6 E's are Education, Enforcement, Engineering, Encouragement, Evaluation, and Equity. Each element of the bicycle plan establishes actions to complete a wider vision and goal. The bicycle plan's vision is that:

"All Morgantown residents can enjoy bicycling safely and fearlessly anywhere, anytime for any reason. Morgantown residents choose to ride bicycles for transportation as well as recreation. Our state and our nation recognize Morgantown for the benefits of bicycle to our health, our environment, our economy and our quality of life."

The vision of the bicycle plan is achieved through the Goals of:

- Increasing use while decreasing crashes;
- Providing that 5% of all trips in and through Morgantown will be made by bicycle; and
- That 1 in every 20 vehicles on Morgantown streets will be a bicycle.

The 2012 Greater Morgantown Bicycle Plan's Engineering and Encouragement elements involve objectives and actions that encourage the increased development of short-term and long-term bicycle storage facilities. Additionally, the Equity element provides the objective of treating a bicycle and an automobile as the same in activities related to storage.

Engineering

Objective: Remove roadway impediments to bicycle use and build appropriate improvements to make bicycling a safer and more attractive transportation mode than motor vehicle use.

Action 9: Advocate secure short-term bicycle parking within 100 feet of bicyclist destinations in commercial districts.

Encouragement

Objective: Provide amenities, rewards and support to citizens for riding their bicycles rather than driving their cars. Encouragement moves people from contemplating riding their bicycles for transportation to actually doing it.

Action 14: Review current implementation and consider expansion of the Planning Zoning Code requiring developers of multi-family dwellings to provide bicycle parking and storage.

Equity

Objective: Treat bicyclists as equals to motorists in all City activities.

5% Target

The 2012 Greater Morgantown Bicycle Plan (2012 Plan) has the overall Goal of increasing bicycle use, while decreasing bicycle crashes. One objective in completing this goal is for bicyclists to be treated as equals to motorists in all activities. This 2012 Plan Goal also aims for bicycles to be used for 5% of all trips in and through Morgantown by 2020.

In keeping with the 2012 bicycle plan's use and safety goal, stated objective to this goal, and bicycle use target, the intent of these storage standards is to provide safe bicycle storage opportunities in all Developments of Significant Impact (DSI). Safe bicycle parking is achieved using existing automobile storage standards based on property use and applying a one long-term and one short-term bicycle storage space for every twenty automobile storage spaces requirement for DSI developments. The following example highlights these bicycle storage standards' requirement:

A 20,000 square-foot pharmacy is seeking approval to build in the City of Morgantown. A pharmacy is required to provide 2.5 automobile parking spaces per 1,000 square feet of gross floor area, per section 1364.04.01 of the City of Morgantown Planning and Zoning Code. At 20,000 square feet, the pharmacy would be required to provide 50 automobile parking spaces. With the new bicycle storage standard, the pharmacy would also have to provide 3 long-term

and 3 short-term bicycle storage spaces. Half spaces are rounded to the nearest whole number per section 1365.04(A)(1) of the Planning and Zoning Code, dealing with parking computations.

2040 MMMPO Long Range Transportation Plan

The 2040 Morgantown Monongalia Metropolitan Planning Organization Long Range Transportation Plan is a regional guide for transportation infrastructure planning, with emphasis on state and federal projects. The long range transportation plan encourages bicycle infrastructure and use. The vision of the long range transportation plan is made up of elements of a county-wide transportation network, and are expressed in the plan, as follows:

- **Growing**

Managed growth that is efficient, attractive, and well-connected through appropriate infrastructure will balance land consumption with redevelopment while protecting and preserving open space, local agriculture, energy resources and the environment.

- **Moving**

A balanced, safe, attractive, and accessible transportation system will reduce congestion, improve connectivity and support and direct future growth while integrating private vehicles and expanding public transportation, biking, and walking networks.

- **Living**

Job and income growth, improved community services, support for the arts, accessible and connected parks and recreational facilities, good schools, desirable, diverse, and affordable housing, and safe neighborhoods that have access to local shops and markets, will be hallmarks of our region's quality of life.

- **Competing**

A regional approach to economic development and infrastructure investments that is founded on cooperative relationships will make the region competitive and capable of attracting and supporting existing and new businesses.

- **Collaborating**

An engaged community with leaders that embrace continued citizen engagement and stronger collaboration among municipalities, the County, the State, WVU, neighborhoods and major employers will enable the sharing of resources and lead to successful implementation.

Increased options for mobility, provided with cycling and other non-motorized forms of transit, establish the regional vision of the 2040 Morgantown Monongalia Metropolitan Planning Organization Long Range Transportation Plan. Additionally, the following goal and objective of the plan encourage increased bicycle use at 5% of trips, level.

Goal #7 Reduce automobile trip demand, especially during peak travel hours

Objective 7E: 5% of all trips made by bicycle by 2025.

Increasing bicycle storage access in the City of Morgantown will help complete this objective, and assist in lowering transit congestion in our complex regional transit system.

Basis for Action

In keeping with the City of Morgantown's 2013 Comprehensive Plan, the 2040 Morgantown Monongalia Metropolitan Planning Organization Long Range Transportation Plan, and the 2012 Greater Morgantown Bicycle Plan, the Bicycle Board is seeking text amendments to Morgantown's zoning ordinance to enable increased access to bicycle storage. The Bicycle Board is a committee of the Traffic Commission, and is tasked with making Morgantown, a bicycle friendly community, in addition to advising the City on bicycle related issues.

Development of Significant Impact

The proposed standard will apply to higher impact, new development, defined by the City of Morgantown Planning and Zoning Code as Developments of Significant Impact (DSI). Developments of Significant Impact are defined per the code, as shown on Table 1: Development of Significant Impact, on Page 2.

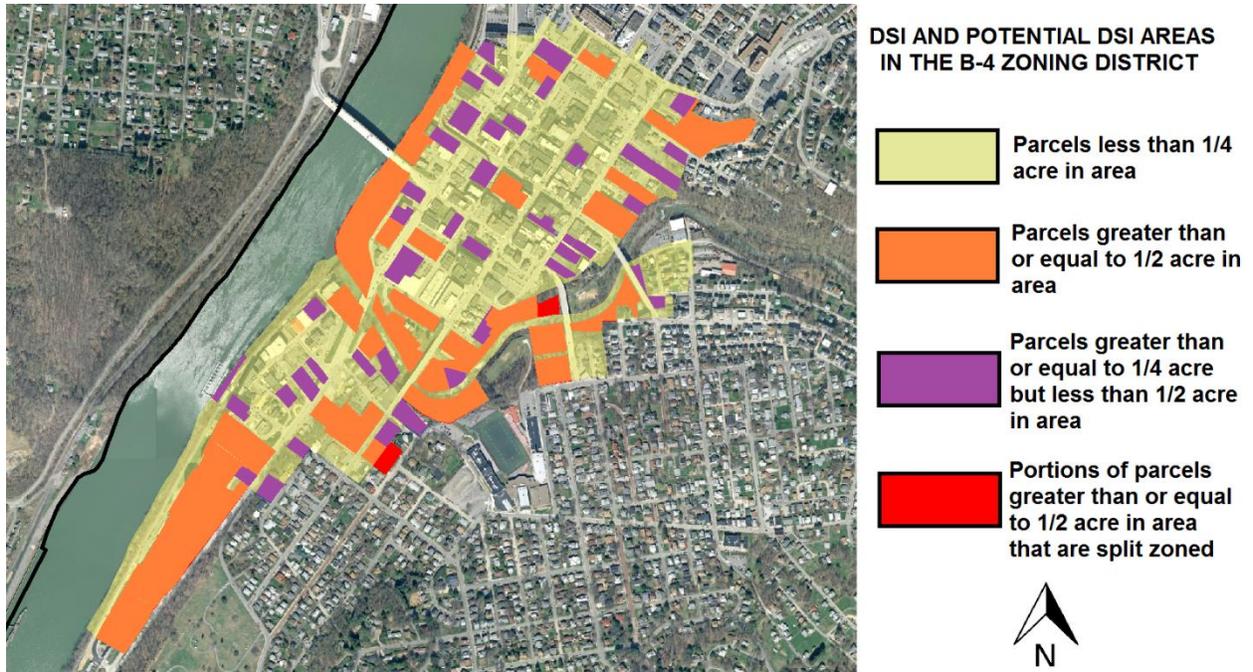
Table 1: Development of Significant Impact

Land Use Category/District	Development of Significant Impact
Residential	A development that is 12 or more dwelling units
Non-Residential	A development that is either 15,000 square feet or more of gross floor area or a site of 2 acres or more of net acreage
Mixed-Use	A development that exceeds any of the following: 15,000 square feet or more of gross floor area of non-residential use(s); or, 12 or more dwelling units; or, 2 acres or more of net acreage
Industrial	All industrial development, regardless of gross floor area or net acreage of the site
Development in the B-4 District:	
All Land Use Categories	New construction of a principal structure, regardless of land use category or net acreage of the site
Residential	A development that is 12 or more dwelling units
Non-Residential	A development that is either 10,000 square feet or more of gross floor area or a site of one-half (1/2) acre or more of net acreage
Mixed-use	A development that exceeds any of the following: 10,000 square feet or more of gross floor area of non-residential use(s); or, 12 or more dwelling units; or, one-half (1/2) acre or more of net acreage
Industrial	All industrial development, regardless of gross floor area or net acreage of the site

All new principal structures in the downtown core, developments with net acreages of two acres or more, all new industrial development, new housing subdivisions with 12 or more units, and all new non-residential development of 15,000 square feet or more (at the very least) will be required to install bicycle storage. Additional restrictions are placed onto development in the downtown area.

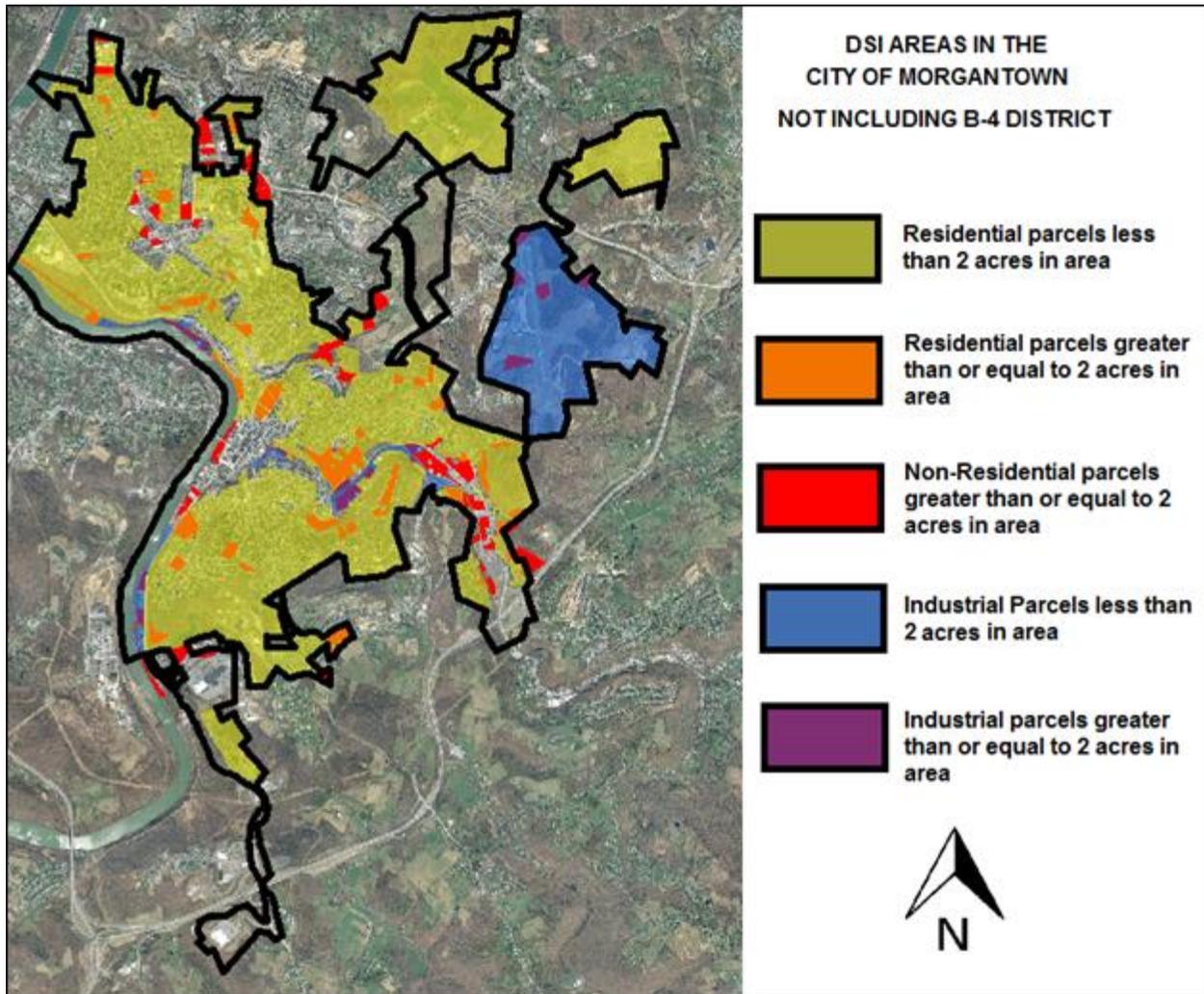
The following images highlight existing parcels currently within the corporate boundary of the City of Morgantown that do or have the potential to meet acreage thresholds identified by the Development of Significant Impact area thresholds. Image 1 provides information related to the B-4 zoning district, primarily in the area of the downtown. Images 2 and 3 provide Information for Developments of Significant Impact in areas outside of the B-4 Zoning District. Images 2 and 3 also highlight the amount of area within the City of Morgantown that is zoned for residential uses. This data does not include newer development in the most southern portion of the City of Morgantown (Walmart and associated pad-sites).

Image 1: DSI and Potential DSI Areas in the B-4 Zoning District



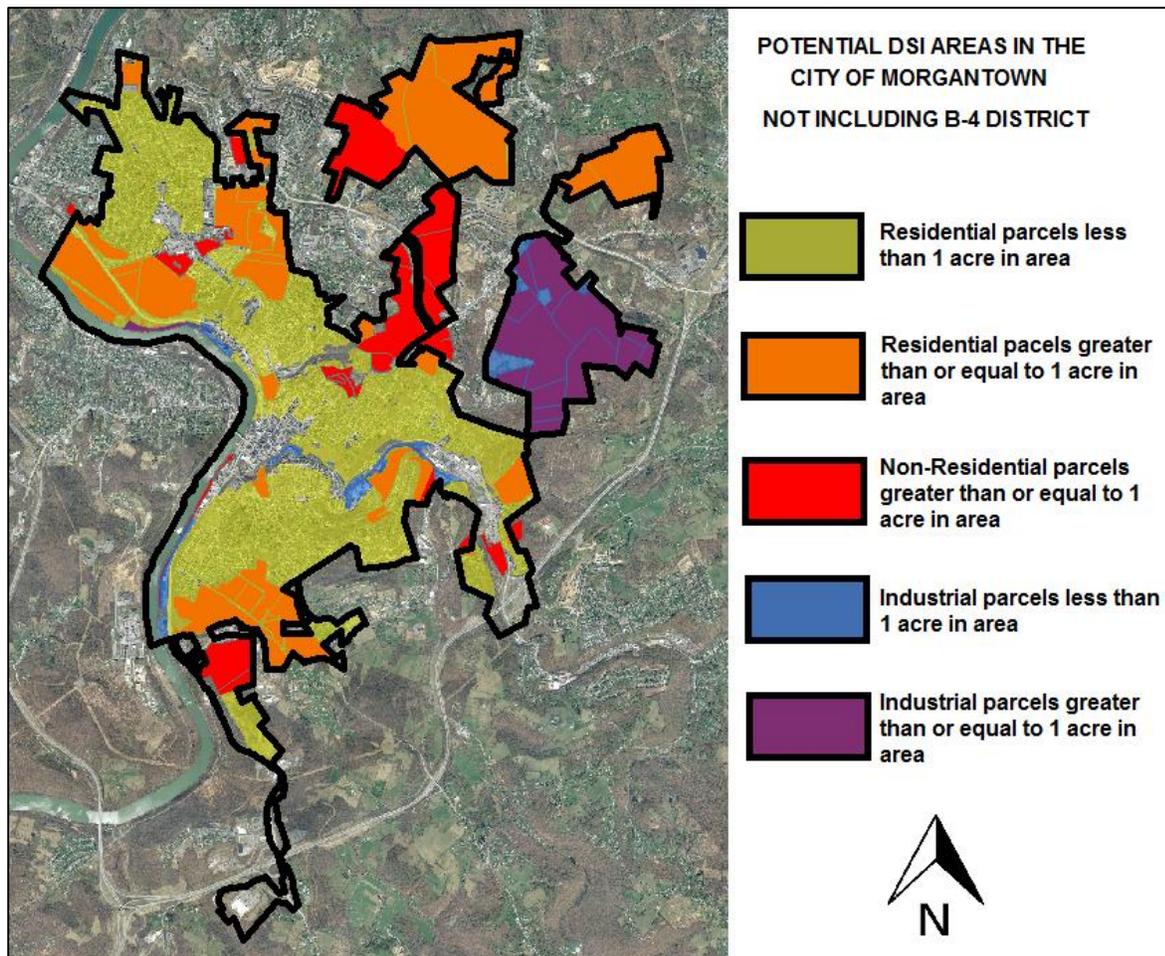
As shown in Image 1, parcels identified with the color orange and red, could be affected by the bicycle storage requirement. In addition to orange parcels, all new principal buildings on any parcel in the B-4 zone would also be affected.

Image 2: DSI Areas in the City of Morgantown Excluding B-4 Zoned Parcels



As shown in Image 2, parcels identified with the colors red, blue, and purple could be affected by the bicycle storage requirement. In addition, new development on parcels identified with the color orange may be required to conform to bicycle storage requirements if a mixed-use development is provided on site.

Image 3: Potential DSI Areas in the City of Morgantown Excluding B-4 Zoned Parcels



As shown in Image 3, parcels identified with the colors red, blue, and purple could be affected by the bicycle storage requirement, if combined with adjoining parcels. In addition, new development on parcels identified with the color orange may be required to conform to bicycle storage requirements if consolidation of parcels is utilized for a mixed-use development.

In addition to identifying acreage area thresholds for Developments of Significant Impact, gross floor area is also important to conceptualize. A building in the downtown area that includes a non-residential use that has a gross floor area of 10,000 square feet would be affected by the bicycle storage requirement. A floor area of 10,000 square feet can be conceptualized as a one story square building that is 100 feet by 100 feet square, a four-story rectangular building that is 20 feet by 125 feet per floor, or any number of other building footprint configurations. It is important to remember that while these non-residential uses may not currently be planned for the downtown, other cities in the United States have experienced neo-urban infill development in their downtown cores in the form of mixed-use apartment, office, and commercial buildings or building clusters, such as the Google's Bakery Square development in Pittsburgh and Charleston West Virginia's Urban Renewal Authority activities.

For areas outside of the B-4 Zoning District, non-residential development with a gross floor area of 15,000 square feet or more, is also regulated by the Development of Significant Impact. Smaller retailers

on individual parcels would not have to comply with the bicycle storage requirements, alleviating a potential impediment to small business entrepreneurship. Bicycle storage opportunities and improvements for smaller businesses should be encouraged by the City of Morgantown and civic institutions.

Examples of national retailers and nonresidential uses that routinely have stores that are 15,000 square feet or more in gross floor area include supermarkets, pharmacies, private recreational facilities, and combined doctors’ offices. In addition to those consumer uses, mixed-use town centers and office parks are also found to have gross square footage that would require a Development of Significant Impact designation.

Finally, residential housing developments with twelve or more units would require a Development of Significant Impact review. As permitted by the zoning ordinance and permissible under existing spatial constraints, a residential housing development outside of the B-4 zone is limited. In the R-1 Zoning District, individual single family houses are required to be on parcels that are greater than or equal to 7,200 square feet in area. Twelve housing units in the R-1 zone would thus require 1.98 acres of developable land, just for the housing sites. In the R-1A Zoning District, parcels are required to be greater than 3,500 square feet in area. Twelve housing units in the R-1A zone would thus require 0.96 acres of developable land, just for the housing sites. Additional land uses including right-of-way and open space increase area requirements, while the topography of developable land further increases needed land for a DSI residential development.

How do the Proposed Bicycle Storage Standards Compare to Other Cities in the United States?

The Proposed Bicycle Storage Standards are similar to other active cycling communities’ storage standards. The proposed standards out-perform many jurisdictions, but also provide additional room for future modification. The following table compares the Proposed Bicycle Storage Standards for Developments of Significant Impact, with other jurisdictions’ bicycle storage standards. Comparison cities were chosen based on Bicycle Friendly Community, information availability, and proximity to Morgantown.

Table 2: Bicycle Storage Comparison

	Cities				
	Cambridge, MA	Portland, OR	Boulder, CO	Pittsburgh, PA	Burlington, VT
Long-Term Residential Storage	More	Fewer than	Fewer than	More	More
Short-Term Residential Storage	More	Fewer than	Fewer than	More	Fewer than
Long-Term Retail Storage	More	Similar	Fewer than	More	More
Short-Term Retail Storage	Fewer than	More	Fewer than	More	More
Long-Term Office Storage	More	More	Fewer than	More	Similar
Short-Term Office Storage	Fewer than	More	Fewer than	More	More
Long-Term Restaurant Storage	More	More	More	More	More
Short-Term Restaurant Storage	Fewer than	More	Fewer than	More	Fewer than

Design Standard for Bicycle Racks

The City of Cambridge, MA 2013 Bicycle Parking Guide provides a detailed analysis of acceptable and unacceptable Short-Term bicycle Storage Racks. The following guide highlights characteristics for racks of both short-term and long-term types, based on Cambridge’s 2013 Bicycle Parking Guide.

Table 3: Bicycle Racks Comparison

Acceptable Bicycle Racks	Unacceptable Bicycle Racks
<ul style="list-style-type: none"> • Area is installed on a permanent foundation (e.g., concrete pad) to ensure stability; • Securely anchored into or on the foundation with tamper-proof nuts if surface mounted; • Provides support for an upright bicycle by its frame horizontally in two (2) or more places; • Keeps both bike wheels on the ground; • Is designed to prevent the bicycle from tipping over; • Is able to support a variety of bicycle sizes and frame shapes; • Provides space to secure the frame and one or both wheels to the rack with a cable, chain, or u-lock; • Has a locking pole with a diameter of no more than 1.5 inches. 	<ul style="list-style-type: none"> • Support the bicycle at only one point; • Allow the bicycle to fall, which can damage the bike and block pedestrian right-of-way; • Have sharp edges, that can be hazardous to the visually impaired; • Support the bicycle by one wheel; • Connect to each other with a bar on top (that can block handlebars and baskets); • Suspend any part of the bike in the air or require that the bicycle be lifted to get it into position.

The following image from the City of Cambridge, MA 2013 Bicycle Parking Guide, shows examples of unacceptable Short-Term Bicycle Storage Racks:

Image 4: Unacceptable Short-Term Bicycle Storage Racks



The Proposed Bicycle Storage Standards for the City of Morgantown incorporate design characteristics for bicycle racks, by using Table 3: Bicycle Racks Comparison, as the basis for bicycle storage ordinance text. Additional language specifies one (1) bicycle storage space, as three feet in width, by six feet in length, and four feet tall (3'x6'x4'), at a minimum, and provides for safety and ADA compliance aspects for rack design. A developer would be permitted to construct a bicycle rack that meets these acceptable bicycle rack design standards, as they see fit, and potentially in a creative manner for the specific development site.

Additional Design Standard for Long-Term Bicycle Rack

Long-Term bicycle storage is required to be indoor, secured, and sheltered (e.g. a room with walls, a roof, and a door that can shut). Spaces are counted based on physical volume, at a standard of one (1) bicycle storage space, as three feet in width, by six feet in length, and four feet tall (3'x6'x4'), at a minimum. Additionally, each space must permit the bicycle to be secured with a lock to a permanent structure. How this standard is achieved is at the purview of the developer. Long-Term Bicycle Storage can be located in the primary structure or as an accessory structure (e.g. shed) within a reasonable distance to the primary structure's entrance. Indoor long-term bicycle storage could be accomplished in a closet of a building, assuming spatial requirements are met and is functioning. A door opening into the room will negate the space of a bicycle storage space and would have to be accounted for, by the developer.

Zoning Ordinance Text Amendment

The Proposed Bicycle Storage Standards will be achieved by amending the Zoning Ordinance. A text amendment to the ordinance will require recommendation by the Bicycle Board to the Traffic Commission, recommendation by the Traffic Commission to the Planning Commission, recommendation by the Planning Commission to the City Council, and City Council Action.

Zoning Ordinance Text Amendment Implementation Schedule

Item	Hearing/Information Date
Bicycle Board Draft Amendments	Thursday, April 07, 2016
Traffic Commission Draft Amendments	Wednesday, May 04, 2016
Planning Commission Draft Amendments	Thursday, May 12, 2016
City Council Review	Tuesday, May 24, 2016
City Council Ordinance 1st Reading	Tuesday, June 07, 2016
City Council Ordinance 2nd Reading	Tuesday, July 05, 2016

Addendum A: Draft Ordinance Language.

1329.02 DEFINITION OF TERMS

AMENITY – Aesthetic or other characteristics of a development that increase its desirability to a community or its marketability to the public. Amenities may differ from development to development but may include such things as a unified building design, recreational facilities (e.g. swimming pool, walking trails, bicycle trails, lakes, tennis courts, picnic areas, playgrounds, fitness center, etc.), views, landscaping, bicycle storage, etc.

~~BICYCLE STORAGE – An indoor, secure, and sheltered storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development.~~

BICYCLE STORAGE, SHORT-TERM – A secure storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development for temporary purposes.

BICYCLE STORAGE, LONG-TERM – An indoor, secure, and sheltered storage space for bicycles, which is provided as an amenity for residents, tenants, etc. of a development.

~~PARKING, BICYCLE – Parking of bicycles on a temporary basis with a minimum width of three (3) feet, a minimum length of six (6) feet, and a means of securing individual bicycles.~~

1349.08 PARKING AND LOADING STANDARDS

~~(C) Bicycle Storage – For all Developments of Significant Impact in this district, the following minimum bicycle storage amenities must be provided:~~

- ~~(1) One (1) indoor, secure, sheltered bicycle storage space per dwelling unit.~~
- ~~(2) Each space shall be a minimum of 3 feet X 6 feet X 4 feet.~~
- ~~(3) Each bicycle shall be individually secured with a lock to a permanent structure.~~
- (4) There should be sufficient space for easy access to each bicycle.

1365.04 DETERMINING THE NUMBER OF SPACES REQUIRED.

(C) Shared Parking Facilities in the B-4 District.

- (2) Shared parking facilities for two or more uses, whose main traffic generation peak times do not substantially overlap, may be approved as a conditional use provided that:
 - (c) This reduction may, with the approval of the Board of Zoning Appeals, be in addition to the reductions allowed for proximity to public transit, and/or motorcycle parking, ~~and/or bicycle parking.~~

- (3) Shared parking facilities for two or more uses, whose main traffic generation peak times substantially overlap, may be approved as a conditional use provided that:
- (c) This reduction may, with the approval of the Board of Zoning Appeals, be in addition to the reductions allowed for proximity to public transit, and/or motorcycle parking, and/or bicycle parking.
- (P) In the B-4 district, minimum parking requirements may be reduced as a conditional use under one or more of the following provisions:
- (4) ~~By a factor of one (1) automobile parking space for every three (3) bicycle parking spaces provided, up to a maximum reduction of three (3) automobile parking spaces. This reduction shall not be permitted for uses that are required to provide six (6) or fewer parking stalls. Nor shall this reduction be permitted for uses that primarily sell large, bulky merchandise not typically transported via bicycle. Required bicycle storage may not be used to reduce minimum parking requirements.~~
- (Q) Bicycle Storage – Long-term bicycle storage and short-term bicycle storage shall be provided in all Developments of Significant Impact.
- (1) For all Developments of Significant Impact, the minimum Long-term bicycle storage amenities described in this Subsection must be provided. The minimum Long-term bicycle storage amenities are as follows:
 - (a) For residential uses and for residential use components of mixed-used development, one (1) long-term bicycle storage space per dwelling unit.
 - (b) For non-residential uses and for non-residential use components of mixed-used development, one (1) Long-term bicycle storage space increasing by one (1) additional space for every twenty (20) automobile parking spaces as required in accordance with Table 1365.04.01: Minimum Off-Street Parking Requirements.
 - (c) Long-term bicycle storage is required to be covered and shall include use of one of the following:
 - (i) A locked room;
 - (ii) An area enclosed by a fence with a locked gate;
 - (iii) An area within view of an attendant or security guard or monitored by a security camera; or,
 - (iv) An area visible from employee work areas.
 - (d) The long-term bicycle storage area should be located within fifty (50) feet of the primary entrance of the building it serves and shall be in a location that

can be reached by an accessible route. Long-term bicycle storage must be located either:

- (i) On the same site as the use it serves; or,
 - (ii) Off-site within 300 feet of the use it serves; provided, conditional use approval is granted by the Board of Zoning Appeals. Conditional use approval shall include a condition that the off-site long-term bicycle storage amenity is encumbered by an easement or similar agreement duly executed and acknowledged, which specifies that the land upon which the off-site long-term bicycle storage amenity is located is encumbered by the bicycle storage use. Said instrument shall specify and bind the time period to the anticipated life of the building or use to which the long-term bicycle storage amenity are accessory. Said instrument shall be filed with the applicable Building Permit files of the Department of Planning, and placed on public record in the Office of the Clerk of the County Commission of Monongalia County, WV. Further, if the pedestrian access between the off-site long-term bicycle storage amenity and the use(s) it serves is to cross an arterial street, appropriate safety measures, as determined by the Planning Director and City Engineer, must be in place to ensure pedestrian safety.
- (e) If the long-term bicycle storage is provided in an auto storage garage, the bicycle storage spaces shall be clearly marked as such and shall be separated from automobile parking.
- (f) Long-term bicycle storage designs must adhere to the design standards in section 1365.04(Q)(3), Bicycle Rack Requirements.
- (2) For all Developments of Significant Impact, the minimum short-term bicycle storage amenities described in this Subsection must be provided. The minimum short-term bicycle storage amenities are as follows:
- (a) One (1) short-term bicycle storage space increasing by one (1) additional space for every twenty (20) automobile parking spaces as required in accordance with Table 1365.04.01: Minimum Off-Street Parking Requirements.
 - (b) Each short-term bicycle storage space shall be located:
 - (i) Outside a building, but not within the public right-of-way, or within an automobile garage; provided, that in the B-4 District where the public right-of-way may also be used with the approval of the City Engineer.
 - (ii) Within fifty (50) feet of a main building entrance; and
 - (iii) At the same grade as the sidewalk or at a location that can be reached by an accessible route.
 - (c) Short-term bicycle storage space designs must adhere to the design standards in 1365.04(Q)(3): Bicycle Rack Requirements.

- (d) Short-term bicycle storage spaces should be placed under roof to encourage cycling and bicycle rack use.
 - (e) Short-term bicycle storage shall consist of a physical improvement that is installed on a permanent foundation (e.g., concrete pad) to ensure stability; is securely anchored into or on the foundation with tamper-proof nuts if surface mounted; provides support for an upright bicycle by its frame horizontally in two (2) or more places; keeps both bike wheels on the ground; is designed to prevent the bicycle from tipping over; is able to support a variety of bicycle sizes and frame shapes; provides space to secure the frame and one or both wheels to the rack with a cable, chain, or u-lock; and has a locking pole with a diameter of no more than 1.5 inches.
- (3) Bicycle Rack Requirements. Long-term and short-term bicycle storage spaces using bicycle rack facilities shall observe the following design standards:
- (a) Each bicycle storage space shall a minimum dimension of three (3) feet in width by six (6) feet in length by four (4) feet in height.
 - (b) Bicycle storage areas shall include a minimum of three (3) feet of clearance around racks or lockers to give cyclists room to maneuver and to prevent conflicts with pedestrians or parked automobiles.
 - (c) Adequate lighting (no less than 2.0 footcandles) must be provided for a bicycle storage area and the route from the storage area to the nearest building entrance intended for the cyclist.
 - (d) Racks shall conform to Americans with Disabilities Act (ADA) standards for protrusions in the right-of-way including the ability to detect the rack with a white cane. To be detected by a white cane the protruding or leading edge of the rack shall be 27" or less above the sidewalk surface. Between 27" and 80" above the sidewalk surface, protruding or leading edges may overhang a maximum of 12".
 - (e) The top of the bicycle rack design shall be a minimum of 36 inches tall. Except for the bicycle rack supporting brackets, the shortest section of the bicycle rack must be a minimum of 27 inches tall to be perceived by pedestrians and avoid tripping hazards.
 - (f) The space between rack features shall be larger than 9" and smaller than 3.5" to avoid children trapping their heads.
 - (g) The design shall not include sharp edges.
 - (h) Areas having more than one row of racks shall be separated by aisles. An aisle is measured from tip to tip of the bicycle storage spaces between racks. The minimum separation between aisles shall be a minimum of four (4) feet.
 - (i) Racks near walls should be placed so the rack's two (2) bicycle connection points are perpendicular to such wall. Racks placed near walls shall maintain

a four (4) foot minimum separation between the edge of the bicycle storage space and the wall.

- (j) Racks placed near curbs should maintain a minimum separation between the edge of the bicycle storage space of four (4) feet.
- (k) Racks should have protective coatings designed to protect bicycle frames from scratching and damage.
- (l) Racks should be able to resist being cut or detached using common hand tools, such as bolt cutters, pipe cutters, wrenches, and pry bars.