10 BICYCLE LEVEL OF SERVICE

10

| 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 |

BICYCLE LEVEL OF SERVICE

URBANA
BICYCLE 2016
MASTER PLAN

Bicycle Level of Service (BLOS) is the main tool for determining streets to include in the bicycle network.

BLOS[19] is used to measure the **on-road comfort level of bicyclists** as a function of a roadway's geometry and traffic conditions. It essentially quantifies the "bike-friendliness" of a roadway. Roadways with a better (lower) score are more attractive – and usually safer – for cyclists (see Figure 121). An online BLOS calculator can be found at http://rideillinois. org/blos/blosform.htm.

BLOS is used in the Urbana Bicycle Master Plan to measure existing and future conditions, to set standards for the bicycle network, and to justify recommendations.
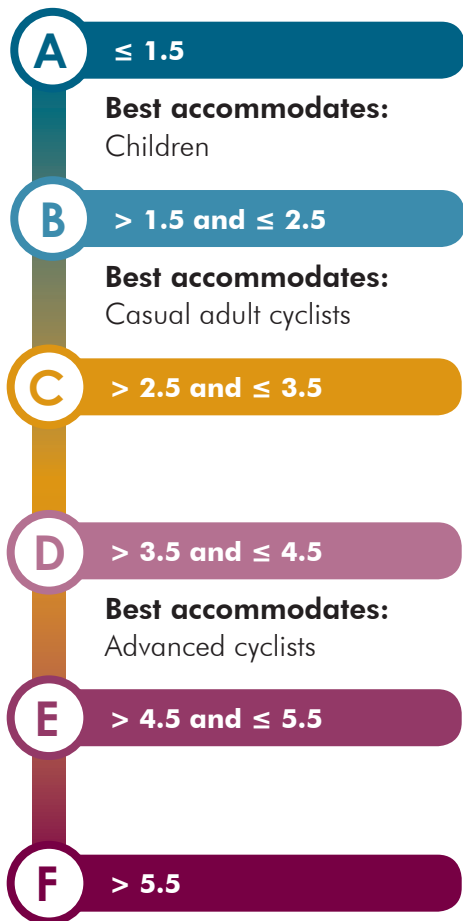
10.1 BLOS CORRESPONDENCE TO BICYCLE USER TYPES

BLOS grades relate to the type of bicycle user (as described in Chapter 4) in the following manner:
- Children and novice riders (Type C) typically feel comfortable riding on facilities with a BLOS grade of A.
- Casual adult cyclists (Type B), including many teenage and college-age cyclists, typically feel comfortable riding on facilities with a BLOS grade of a high C, B, or better. **This is the target audience of this plan.**
- Advanced cyclists (Type A) are able to use roads that achieve BLOS grades of Low C or High D. Bikes May Use Full Lane signage on highly requested routes with these grades will improve conditions for these riders by increasing motorist awareness of bicycle presence.

An alternative to the BLOS measure, Level of Traffic Stress (LTS), classifies roads more explicitly based on bicycle user types. Future updates to this plan may use the LTS measure to help measure the current and future bicycle network.

10.2 BLOS ESTIMATION

The following characteristics were used to determine BLOS:
1. Number of Thru Lanes
2. Rightmost Lane Width
3. Gutter Pan Width
4. Marked Extra Width (e.g. shoulder, parking, bike lanes)
5. Average Daily Traffic (ADT) Counts
6. Posted Speed Limit
7. Percentage of Heavy Vehicles (e.g. trucks)
8. Pavement Condition Rating (1-worst, 5-best)
   o Newly constructed or repaved streets received a rating of 5.0
   o Most streets have a rating of 4.0
   o Brick roads = 3.0
   o Gravel roads = 2.0
9. On-Street Parking Percentage Estimate

A table containing all the different values collected for each of the different characteristics was created in a similar way to the online calculator. This table was used to obtain the BLOS for all of the roadway segments selected to be part of the Urbana bicycle network. Table 39 shows a section of the table used to calculate existing BLOS for selected roadway segments in Urbana. A full explanation of the methodology to estimate BLOS can be found in Appendix 15.

A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

A Best accommodates: Children

B Best accommodates: Casual adult cyclists

D Best accommodates: Advanced cyclists

BLOS GRADE & SCORE SPECTRUM

Figure 121 BLOS Grade & Score Spectrum

19. Landis, Bruce. *Real-Time Human Perceptions: Toward a Bicycle Level of Service.* Transportation Research Record 1578, Transportation Research Board, Washington DC, 1997.

Table 39 Existing BLOS for selected segments in Urbana

From (E/N)	To (W/S)	Bi-directional Traffic ADT	Rightmost Lane Width (ft)	Directional Extra Width (ft)	Speed Limit (mph)	Parking Usage (%)	Truck Traffic (%)	Pavement Condition (5-best)	BLOS Score	BLOS Grade
Washington Street										
High Cross Rd	W of High Cross Rd	2,650	11	1.5	35	0	0	5	1.44	A
W of High Cross Rd	Pfeffer Rd	2,650	11	0	35	0	0	5	1.79	B
Pfeffer Rd	Dodson Dr	3,850	12	0	35	0	0	4	3.22	C
Dodson Dr	Cottage Grove Ave	5,325	11	8	30	0	1.5	4	0.60	A
Cottage Grove Ave	Urbana Ave	7,250	10.5	5	30	0	1.5	4	2.30	B
Urbana Ave	Vine St	9,300	10.5	0	30	0	1.5	4	3.98	D
Vine St	Broadway Ave	3,650	12.5	0	30	0	1.5	4.5	3.18	C
Broadway Ave	Race St north	2,950	12.5	0	30	0	1.5	5	3.01	C
Race St north	Race St south	2,950	16	0	30	0	1.5	4	2.67	C
Race St south	Orchard St	1,350	12	0	30	3	1.5	4	2.86	C
Orchard St	Busey Ave	1,000	8.75	3.25	30	8	1.5	3.5	2.45	B
Pennsylvania Avenue										
Philo Rd	Anderson St	475	14	0	30	5	1.5	4	2.11	B
Anderson St	Vine St	1,250	12	6.5	30	2	1.5	4	0.43	A
Vine St	Race St	2,400	15.5	0	30	6	1.5	4	2.73	C
Race St	Orchard St	3,050	15.5	0	30	3	1	3.5	2.86	C
Orchard St	Lincoln Ave	3,050	12	3.5	30	4	1.5	4	2.21	B
Lincoln Ave	Dorner Dr	6,300	12.5	4	30	58	1.5	4	3.07	C
Dorner Dr	Goodwin Ave	6,300	14	3.5	30	0	1.5	4	2.13	B
Goodwin Ave	west city limits	6,000	11	6.75	30	56	1.5	4	2.87	C
Florida Avenue										
Abercorn St	Kinch St	1,000	17.5	0	30	2	2	4.5	1.89	B
Kinch St	James Cherry Dr	3,050	11	5.75	30	0	2	4	1.51	B
James Cherry Dr	Adams St	4,600	12	7.5	30	2	2	4	0.69	A
Adams St	Sunnycrest Mall entrance	4,850	12	8.5	30	7	2	4	0.41	A
Sunnycrest Mall entrance	Vine St	6,650	12	7.5	30	8	2	4	1.11	A
Vine St	Broadway Ave	8,800	11	5	30	0	2	4	2.38	B
Broadway Ave	Race St	8,800	11	5	30	0	2	4	2.38	B
Race St	Busey Ave	10,550	12	4	30	1	2	4	2.69	C
Busey Ave	west city limits	11,550	12	0	35	0	2	4	3.78	D
Race Street										
California Ave	Washington St	4,725	14.5	0	30	5	1.5	3.5	3.34	C
Washington St	Iowa St	4,700	9.25	0	30	0	1.5	5	3.59	D
Iowa St	Indiana Ave	4,700	9.5	0	30	0	1.5	5	3.57	D
Indiana Ave	Michigan Ave	4,850	10.5	0	30	3	1.5	5	3.52	D
Michigan Ave	Pennsylvania Ave	4,850	15.5	0	30	5	1.5	4	3.07	C
Pennsylvania Ave	Delaware Ave	4,450	10	5	30	0	1.5	4	2.15	B

| 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 |

BICYCLE LEVEL OF SERVICE

URBANA
BICYCLE 2016
MASTER PLAN

10.3 EXISTING BLOS

Table 40 shows that the majority of segments measured in Urbana changed from a BLOS grade of C (scores between 2.5 and 3.5) in 2008 to a BLOS grade of B (scores between 1.5 and 2.5) in 2015. There were increases in the number of segments achieving a BLOS grade of A or B (scores of 2.5 or lower), and a decrease in the number of segments achieving a BLOS grade of C or D. This is primarily due to the implementation of several recommendations from the 2008 UBMP, where the installation of bike lanes and shared bike/ parking lanes lowered BLOS scores (see Figures 135-136 and Appendices 16-18).

Grade	# of Segments in 2008	# of Segments in 2015	Difference
A	16	38	+22
B	110	157	+47
C	158	154	-4
D	60	40	-20
E	4	5	+1
F	0	2	+2

Table 40 Number of UBMP model segments by grade in 2008 vs. 2015

Segments achieving a BLOS grade of A or B indicate that the casual adult bicyclist would feel comfortable riding on the segment in its present state. These roads are acceptable to be bike routes, but striping changes may also be implemented to further improve bicyclist comfort and/or to increase motorist awareness of bikes. Striping changes to segments currently achieving a BLOS grade of C or D would lower grades, and make them acceptable for inclusion in the bicycle network.

Most residential streets are bike-friendly because they have very low traffic volumes. However, not every street with a good BLOS rating was included in the network, because the network is intended to be continuous and direct (see Section 4.3).

Certain segments achieved BLOS grades of D, E, or F (scores 3.5 or higher), mainly due to high traffic counts and/or high heavy vehicle usage. For some segments in this range, striping changes are feasible, improving BLOS grades to an acceptable level for inclusion in the bicycle network. On-street treatment was not possible for other segments, such as Cunningham, University, and Lincoln Avenues.

Figures 123-134 show examples of streets in Urbana for each BLOS rating. Figure 135 shows the existing BLOS for Urbana streets measured for consideration in the bicycle network. Appendix 17 lists the existing BLOS data and scores for the segments measured in Urbana.

10.4 FUTURE BLOS

Following the same methodology applied to estimate the BLOS for existing conditions, the BLOS was calculated for those segments proposed to be included as part of the bicycle network. Appendix 19 lists the future BLOS data and scores for selected segments that are recommended for bicycle striping improvements.

Figures 137 and 138 show the improvements in Bicycle Level of Service (BLOS) for the fully implemented bicycle network. Figure 137 shows the future BLOS score if recommendations for on-street bicycle facilities are made. As can be seen in Figure 137, the BLOS for the proposed on-street bicycle facilities range from A to C, which indicate that they are more attractive (and usually safer) for cyclists. Figure 138 shows the reduction in BLOS score on those streets if changes are implemented.

Figure 122 CCRPC staff measuring street width in the field for BLOS calculations

EXISTING STREET BLOS EXAMPLES IN URBANA

BLOS A

Figure 123 Main Street east of Art Bartell Road

Figure 124 Beringer Circle north of University Avenue

BLOS B

Figure 125 Vine Street north of Windsor Road

Figure 126 McCullough Street southbound at Illinois Street

BLOS C

Figure 127 Main Street east of Central Avenue

Figure 128 Race Street north of Nevada Street

1 2 3 4 5 6
7 8 9 10 11 12   BICYCLE LEVEL OF SERVICE

URBANA
BICYCLE 2016
MASTER PLAN
URBANA
BICYCLE PLAN

BLOS D

Figure 129 Vine Street south of the Railroad bridge, approaching Main Street

Figure 130 Country Club Road westbound towards Broadway Avenue

BLOS E

Figure 131 Cunningham Avenue south of O'Brien Drive, approaching I-74

Figure 132 University Avenue eastbound at Cottage Grove Avenue

BLOS F

Figure 133 University Avenue east of Smith Road

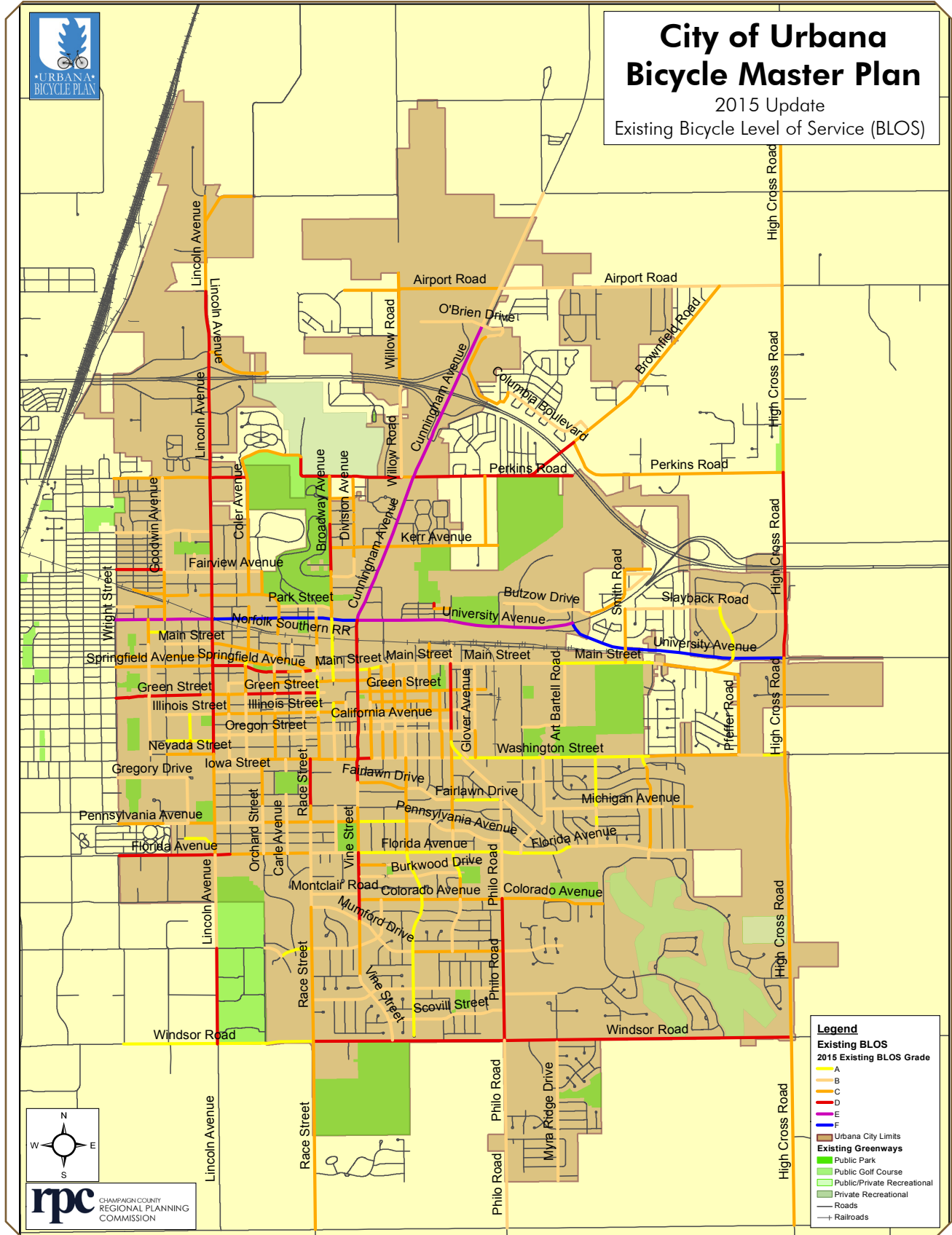**Figure 134** University Avenue eastbound at Central Avenue

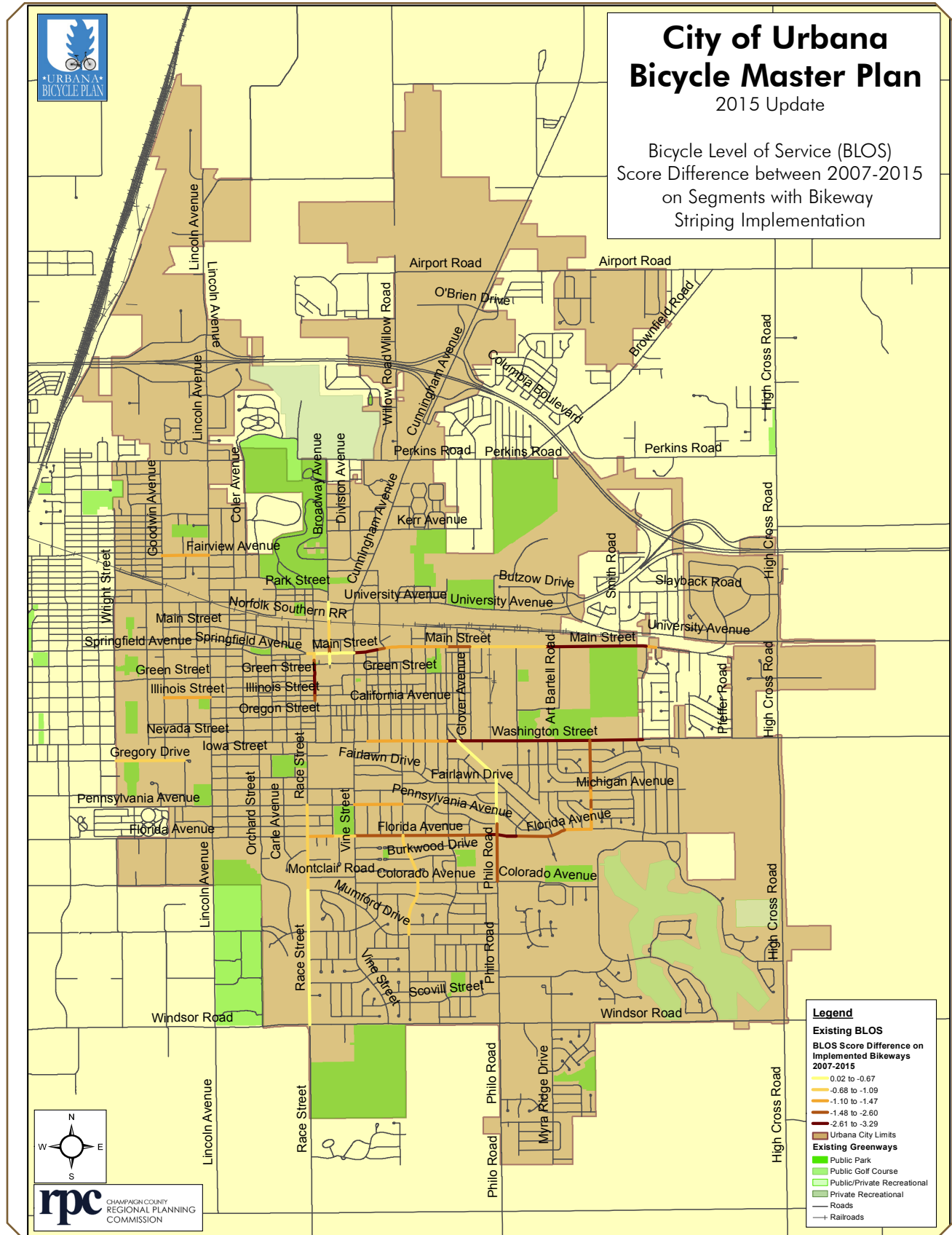**Figure 135** Existing BLOS Map

**City of Urbana
Bicycle Master Plan**
2015 Update

Bicycle Level of Service (BLOS)
Score Difference between 2007-2015
on Segments with Bikeway
Striping Implementation

Legend
Existing BLOS
**BLOS Score Difference on
Implemented Bikeways
2007-2015**
— 0.02 to -0.67
— -0.68 to -1.09
— -1.10 to -1.47
— -1.48 to -2.60
— -2.61 to -3.29
— Urbana City Limits
Existing Greenways
■ Public Park
■ Public Golf Course
■ Public/Private Recreational
■ Private Recreational
— Roads
—+ Railroads

Figure 136 Map of BLOS Score Difference between 2007 and 2015 on Segments with Bikeway Striping Implementation
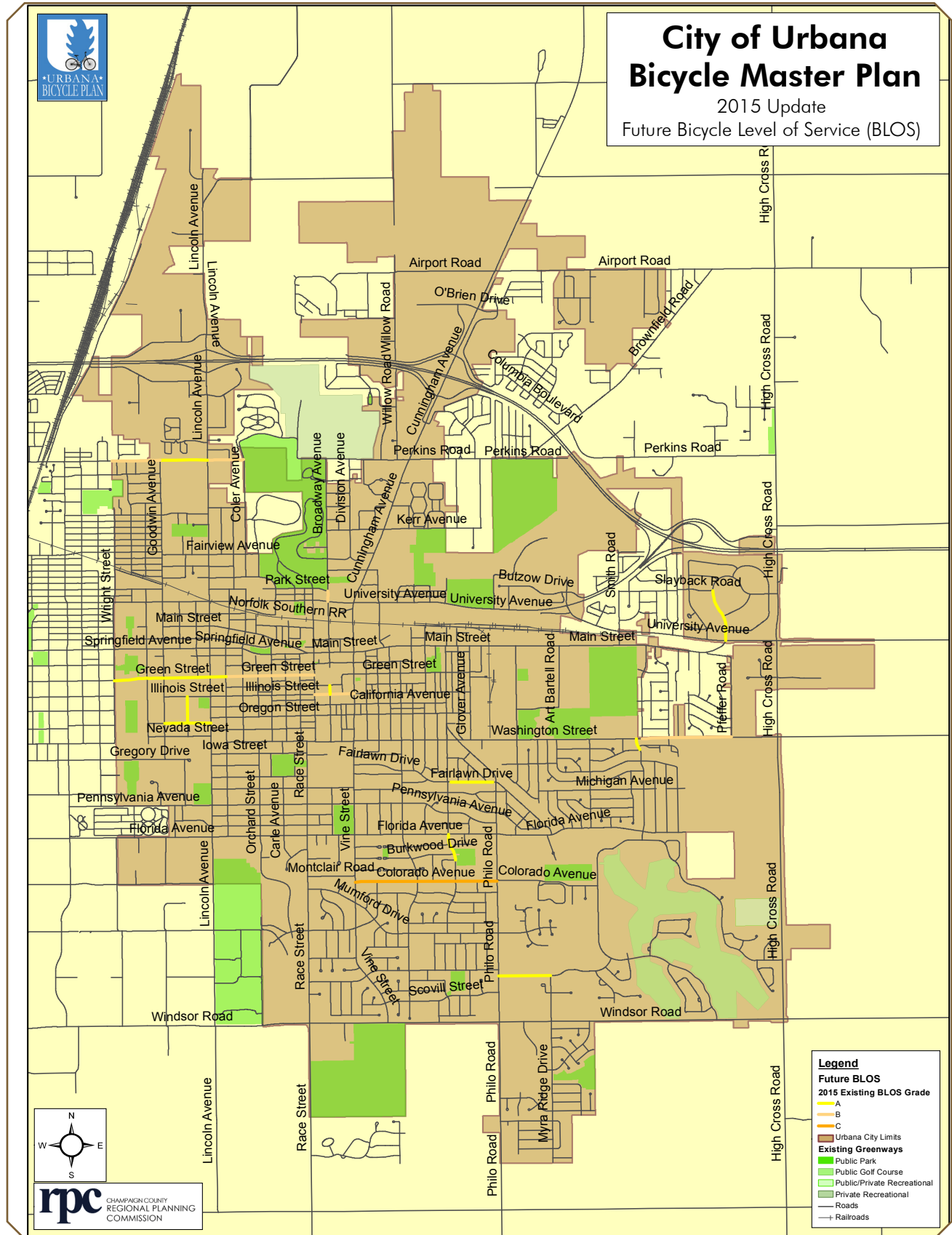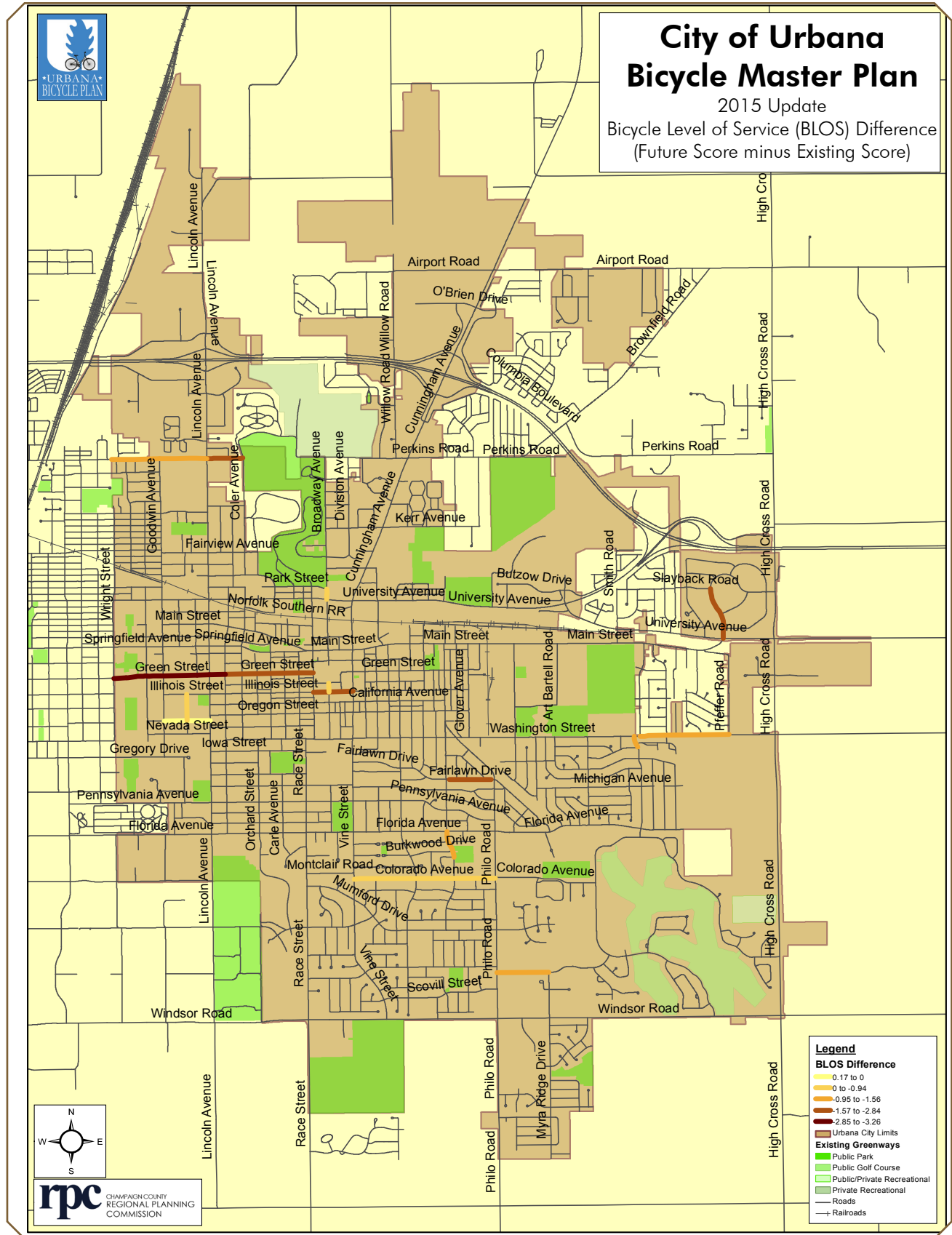
Figure 137 Future BLOS Map

Figure 138 BLOS Difference Map