



Comprehensive Bicycle Master Planning

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THE Conference

Building the Future...Together!

rpc CHAMPAIGN COUNTY
REGIONAL PLANNING
COMMISSION

Why Plan for Bikes?

- Benefits

- User

- Recreation
 - Active Transportation
 - Transportation Necessity
 - Mobility
 - Health
 - Safety

- Community

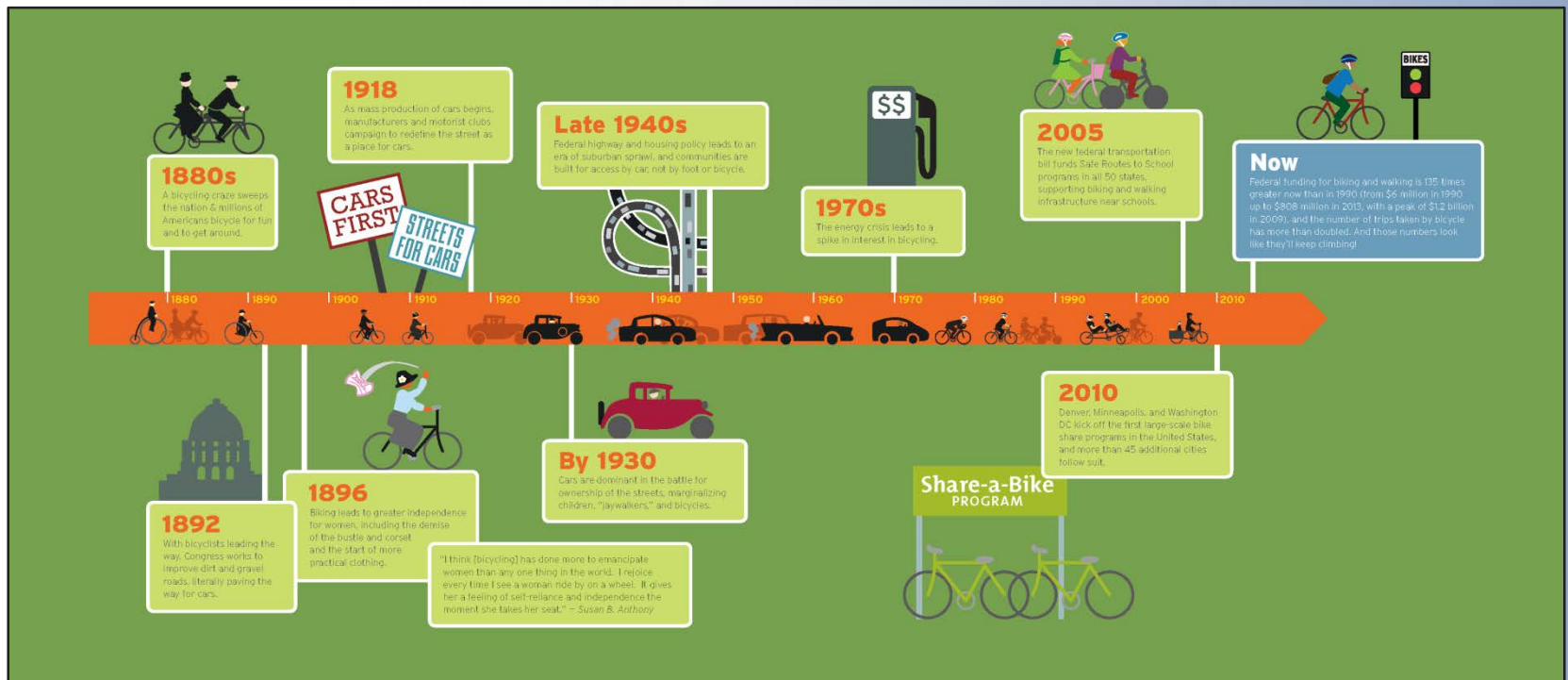
- Reduced automobile use
 - Improved livability
 - Fiscal benefits
 - High quality of life
 - Sense of community
 - Bicycle Friendly America recognition



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Historical Growth of Bicycling in the U.S.

- U.S. Bicycling History: 1880s-2016
 - Rise of automobile & suburbanization in mid-20th century
 - Renaissance of bicycling in mid 2000s



Credit: ChangeLab Solutions

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Step 1: Create a Steering Committee

- Led by project staff
- Representatives
 - City Government
 - Public Works (engineers)
 - Planning (planners)
 - Police
 - BPAC chairperson = Bicyclist & Pedestrian Advisory Committee
 - Park District
 - School District
 - University/College (if applicable)
 - Transit District
 - Public Health District
 - Local bike group
 - Interested residents
- Hold regular meetings to keep the committee abreast of progress



- Pictured: Urbana Bike & Trails Plan Steering Committees Bike Tour (optional)

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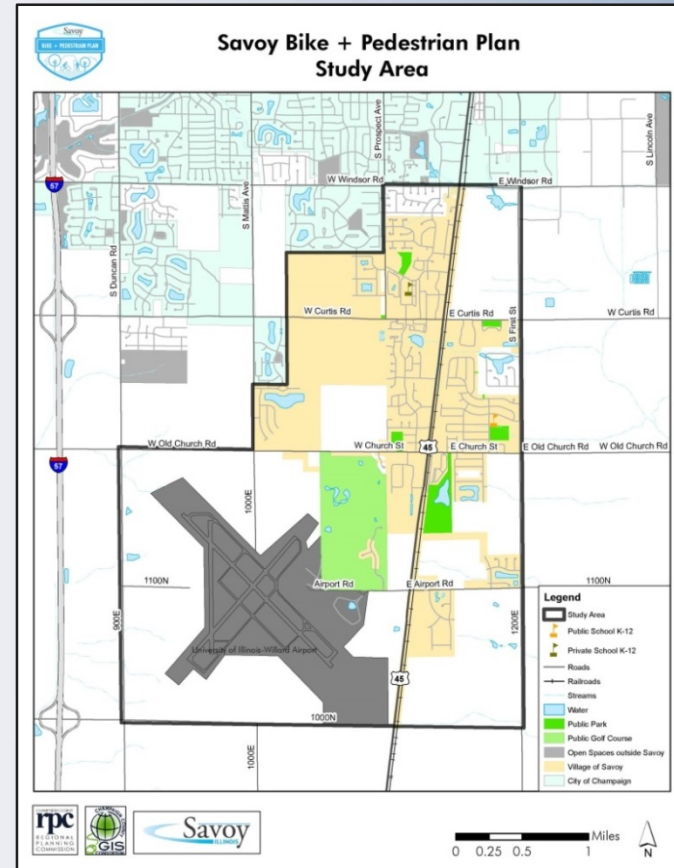
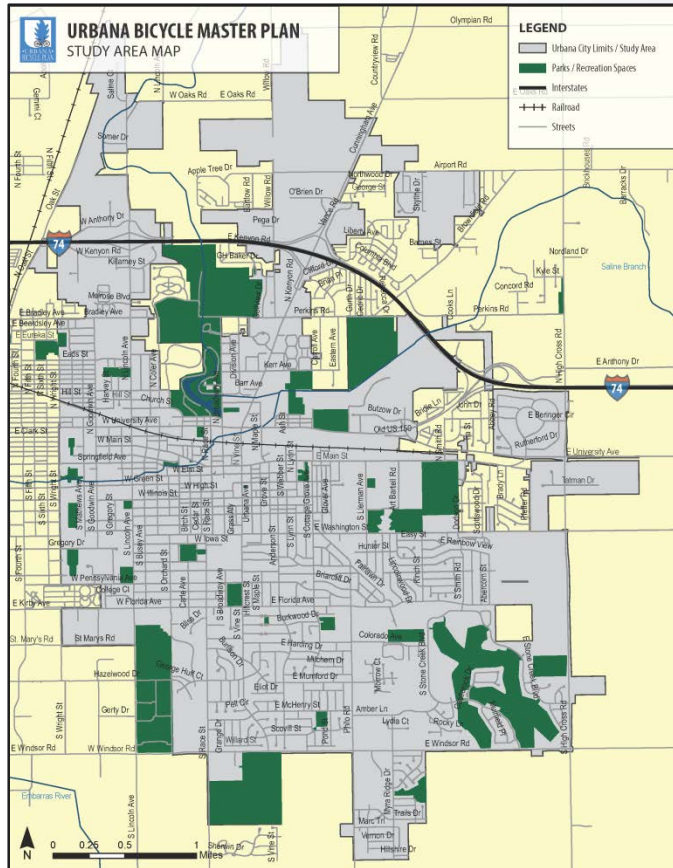
Step 2: Create a Vision

- Use your local framework
 - City Council Goals or policies
 - Other local or regional plans
- 2016 Urbana Bike Master Plan vision:
 - Creating a community where the casual or less confident bicyclist can use their bike for every day trips
 - Move its Bicycle Friendly Community (BFC) status up to Platinum or Diamond
 - Achieve Vision Zero where there are zero bicyclist fatalities or injuries

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Step 3: Define a Study Area

- One city: city limits
 - May include unincorporated areas
- Multiple cities: larger planning area

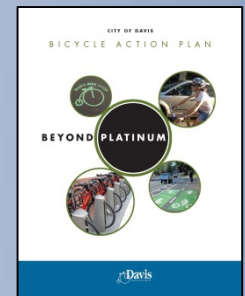
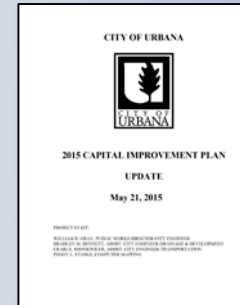


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Step 4:

Conduct Literature & City Reviews

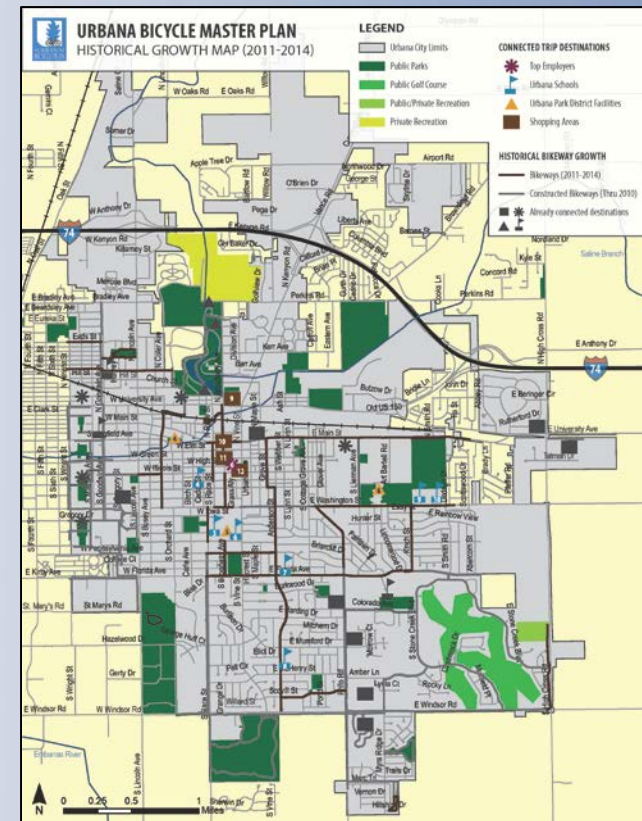
- Literature Review
 - City documents
 - Related area planning documents
- Peer & Model City Reviews
 - 3 Big Ten peer cities (Bloomington, Ann Arbor, Madison)
 - 2 peer Midwest cities (LaCrosse, WI; Columbia, MO)
 - 2 Large Midwest Cities (Chicago, Minneapolis)
 - 5 Model U.S. Cities (Cambridge, Boulder, Portland, Davis, Berkeley)
 - Gold & Platinum BFCs
 - Bike/Ped Coordinators
 - Programs
 - Revenue sources



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Step 5: Review and Analyze Bike Network Growth

- Urbana Bikeway Network Growth: 2007-2014
 - Bikeways
 - Pre-2007: mostly off-street facilities
 - 2007-2014: large increase in on-street facilities
 - 37% increase in bikeways in 2013
 - 79% increase in bikeways from 2007 to 2014
 - Trip Purpose
 - Recreational (no destination) vs. Utilitarian (destination)
 - AASHTO Bike Guide lists 8 different reasons for both
 - Some trips are both
 - Destinations
 - The following bikeways are now connected to Urbana bikeways:
 - 6 out of 8 top employers
 - All 10 public schools
 - All 6 Urbana Park District facilities
 - 12 out of 14 major shopping areas
 - Not all bikeways are connected to other bikeways or the rest of Urbana



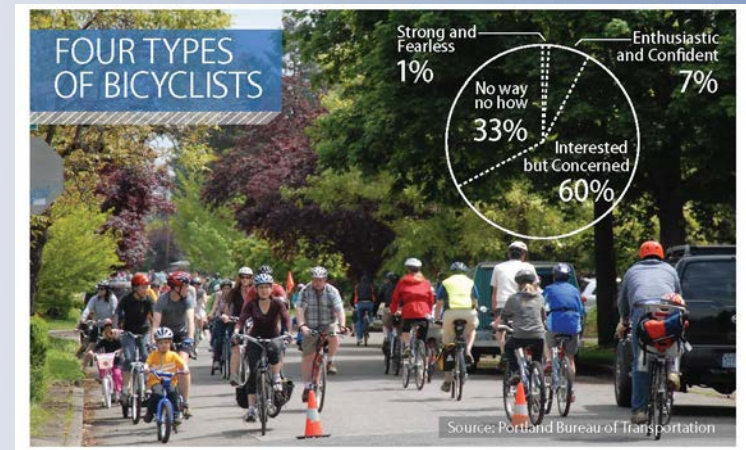
Step 6:

Define Concepts, Process & Methodologies

- Bicyclist Types
- Requirements for People to Bike
- Ideal Road Characteristics
- Other Bikeway Pre-Selection Guidance
- Bikeway Types
- Bikeway Preferences
- Bicycle Level of Service (BLOS)

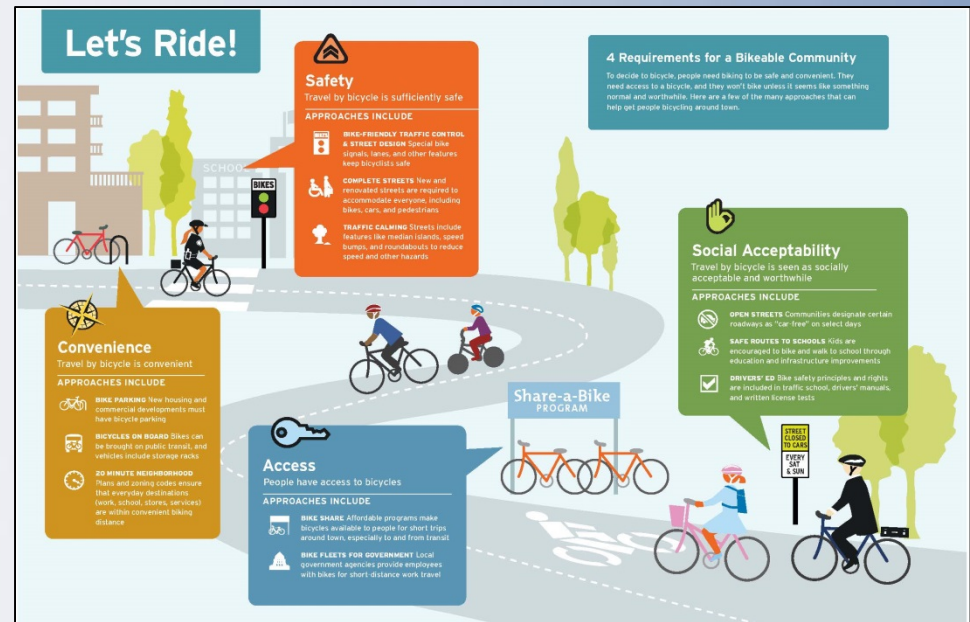
Bicyclist Types

- Type of Bicyclists
 - AASHTO Bicyclist Types
 - 1999: Advanced, Basic, Children
 - 2012: Experienced & Confident vs. Casual & Less Confident
 - Four Types of Bicyclists:
 - Strong & Fearless (<1%)
 - Enthusiastic & Confident (7%)
 - Interested but Concerned (60%)
 - No Way No How (33%)
 - UBMP Target Audience
 - Basic
 - Casual / Less Confident
 - Interested but Concerned



Requirements for People to Bike

1. Safety
2. Convenience
3. Access
4. Social Acceptability



Credit: ChangeLab Solutions

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Ideal Road Characteristics

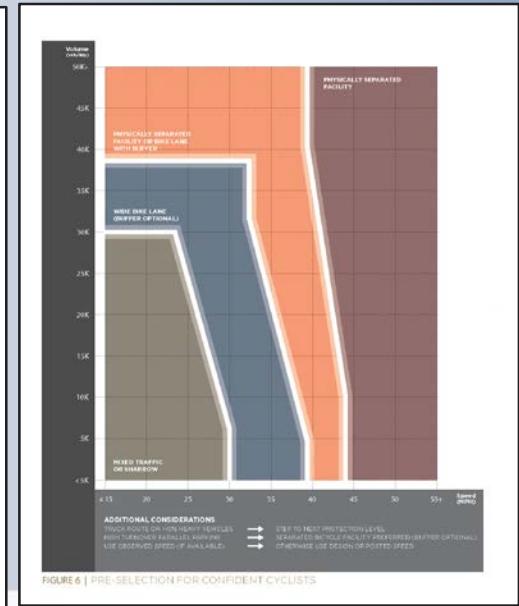
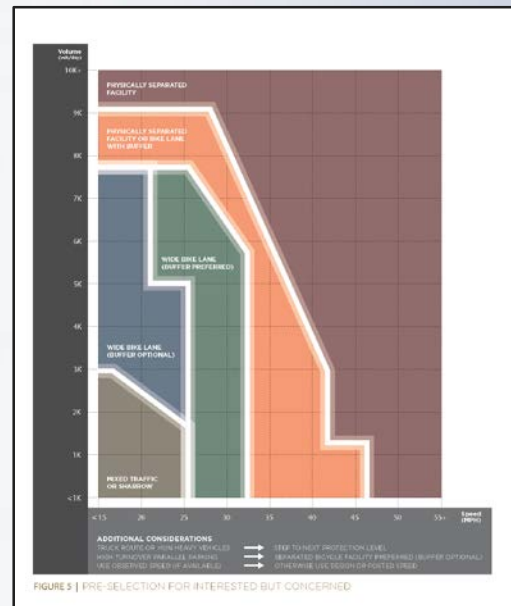
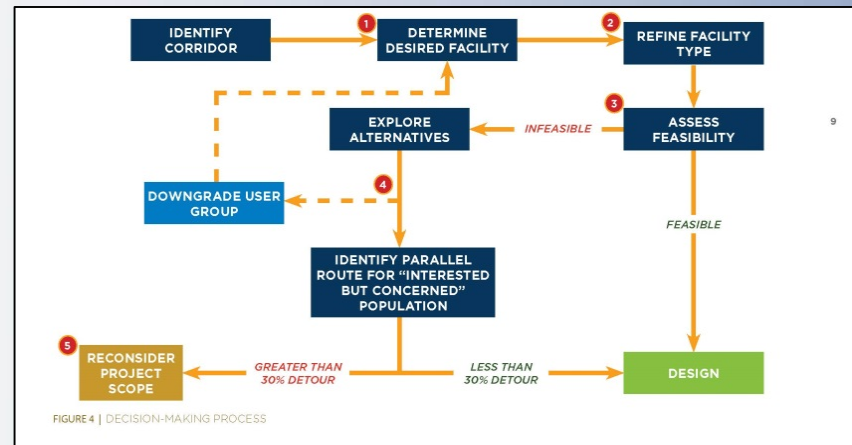
- To include in the on-street bikeway network:
 1. Continuous
 2. Direct
 3. Serves destinations
 4. Highly requested by the public
 5. Feasible bikeway installation
 6. Good crossings of busy roadways
 7. No brick streets
 8. Lower traffic volumes
 9. Efficient w/ few stops &/or turns
 10. Provides a sense of security
 11. Aesthetically pleasing



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Other Bikeway Pre-Selection Guidance

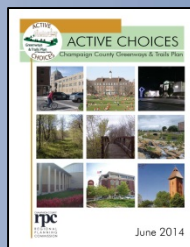
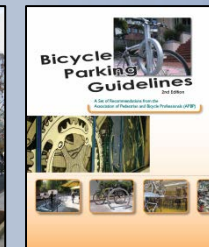
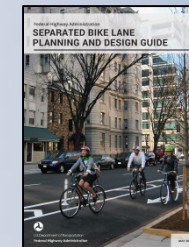
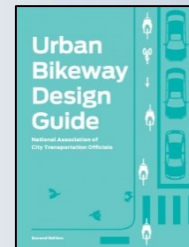
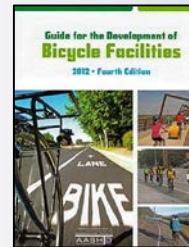
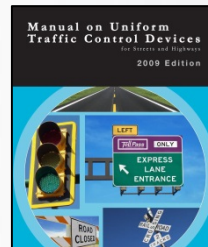
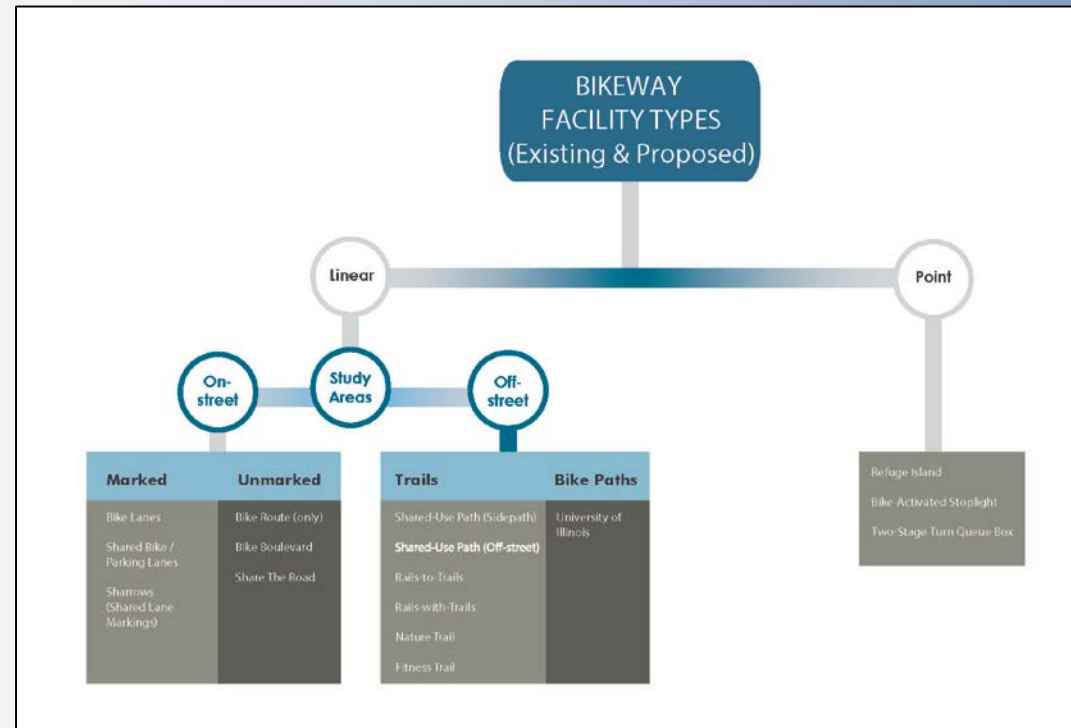
- Montgomery County, MD Bike Planning Guidance
 - Kittelson & Associates
 - Toole Design Group
- Process: iterations to accommodate casual & advanced users
- Charts using traffic volumes & speeds to determine appropriate facilities



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Bikeway Types

- Linear
 - On-street vs. Off-street
- Point
- Main sources:
 - MUTCD (Chapter 9)
 - AASHTO Bike Guide 2012
 - NACTO Urban Bikeway Design Guide
 - FHWA Separated Bike Lane Planning and Design Guide
 - APBP Bike Parking Guidelines, 2nd Edition
 - Champaign County Greenways & Trails Design Guidelines



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Bikeway Types

- On-Street Facilities
 - Bike Lanes
 - Bike Route
 - Wayfinding signage w/ destination, distance/time, and direction
 - Placement
 - Consolidation
 - Adjacent Pedestrian Facilities
 - Shared Bike/Parking Lanes
 - Sharrows (shared lane markings)
 - Bikes May Use Full Lane (sign only)
 - Bike Boulevard
 - “Enhanced” bike route
 - Gives priority to bicyclists

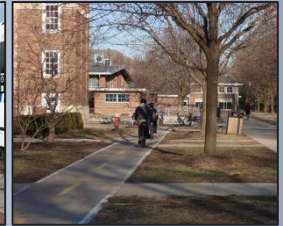
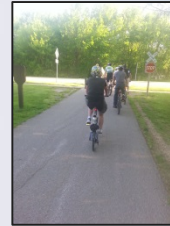


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Bikeway Types

- Off-Street Facilities

- Shared-Use Path (trail)
 - Off-Street
 - Sidepath
 - Rail-Trails
 - Rails-to-Trails
 - Rails-with-Trails
- University Bike Path
 - Campus Bike Plan: being phased out or upgraded



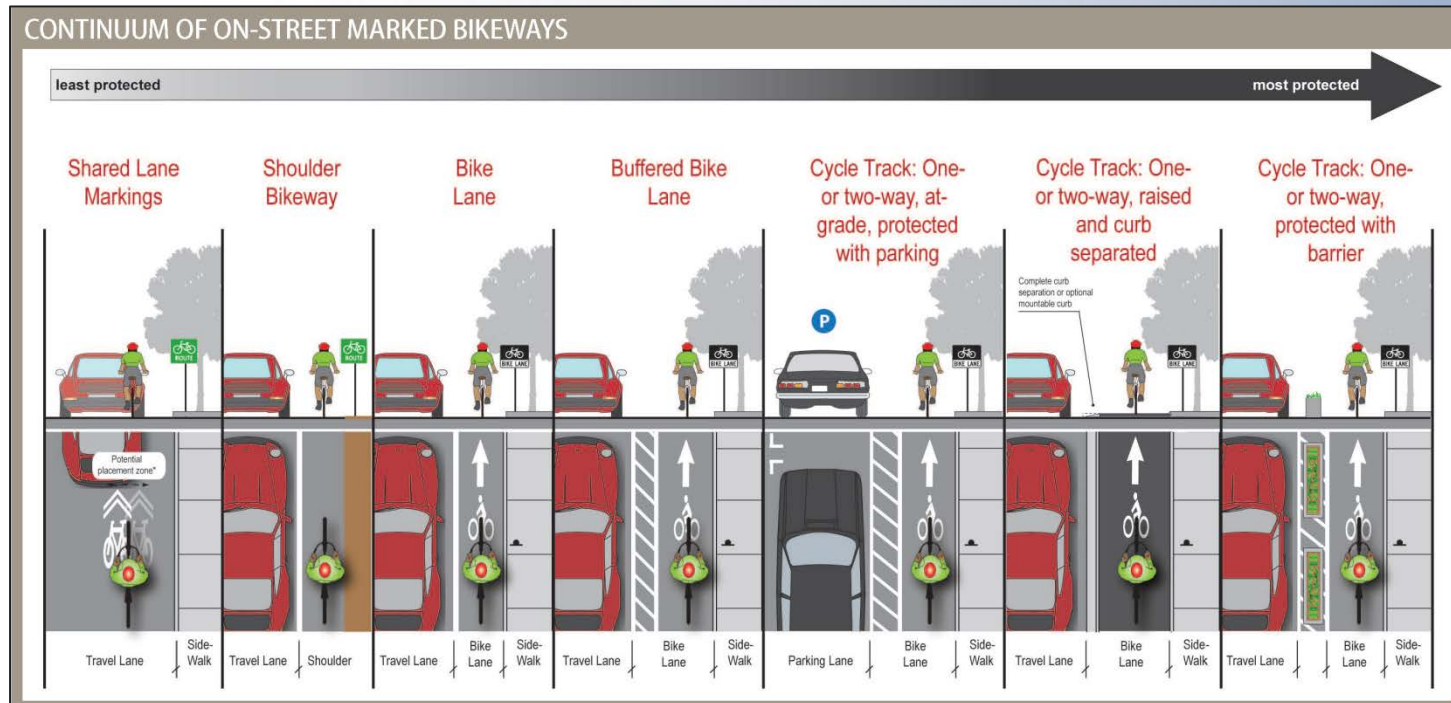
- Point Facilities

- Refuge Island
- Bike-Activated Stoplight
- Bike Parking
- Two-Stage Turn Queue Boxes



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Bikeway Types



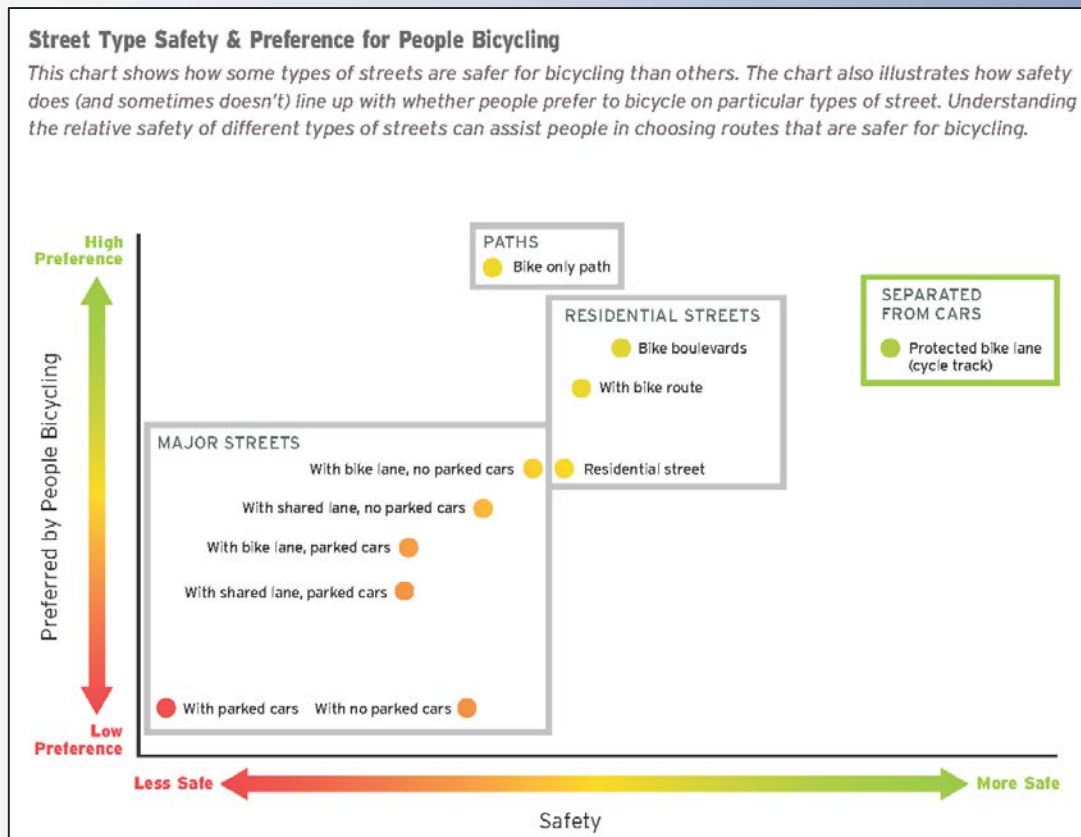
Credit: Creating Walkable + Bikeable Communities

- Facilities by separation (see above)
- Markings & Signage Installation Table created for 2016 UBMP

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Bikeway Preferences

- User Preferences
 - Protected bike lanes
 - Bike boulevards
 - Bike routes on residential streets
 - Bike lanes with no parked cars
 - Bike paths
- Additional design considerations



Credit: ChangeLab Solutions

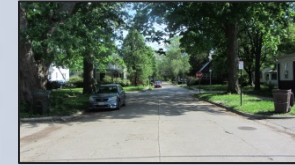
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Bicycle Level of Service (BLOS)

- Measure for quantifying the “bike-friendliness” of a roadway
- Indicates bicyclist comfort level for specific roadway geometries & traffic conditions
- BLOS & Bicyclist Types:
 - Grades A-B (Scores 0-2.5) = Basic / Casual Adult Cyclist
 - Target audience of UBMP, target score for bikeway installation
 - Grade C-High D (Scores 2.5-4.0) = Advanced / Confident Cyclist
 - Some segments may be appropriate to recommend facilities



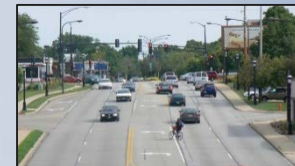
BLOS A
Main St. E. of Lierman



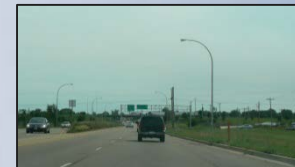
BLOS B
McCullough St. SB at Illinois



BLOS C
Main St. E. of Central



BLOS D
Vine St. S. of RR bridge



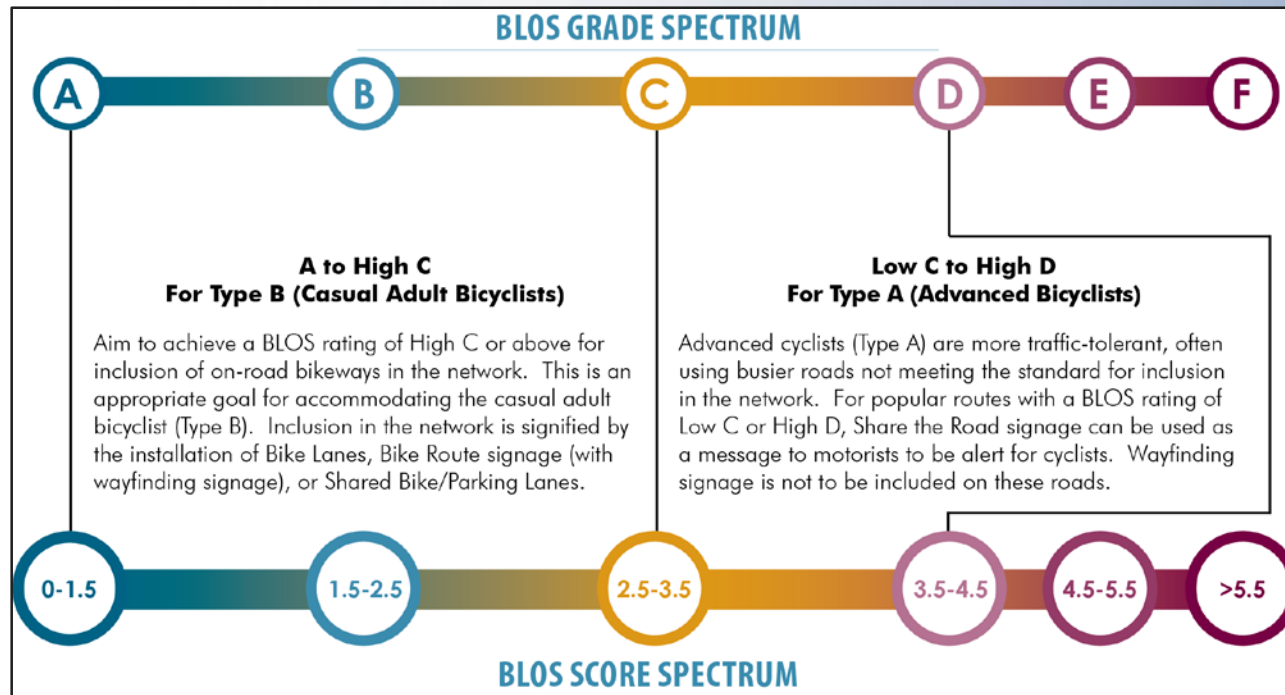
BLOS E
Cunningham S. of O'Brien



BLOS F
University EB at Central

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Bicycle Level of Service (BLOS)

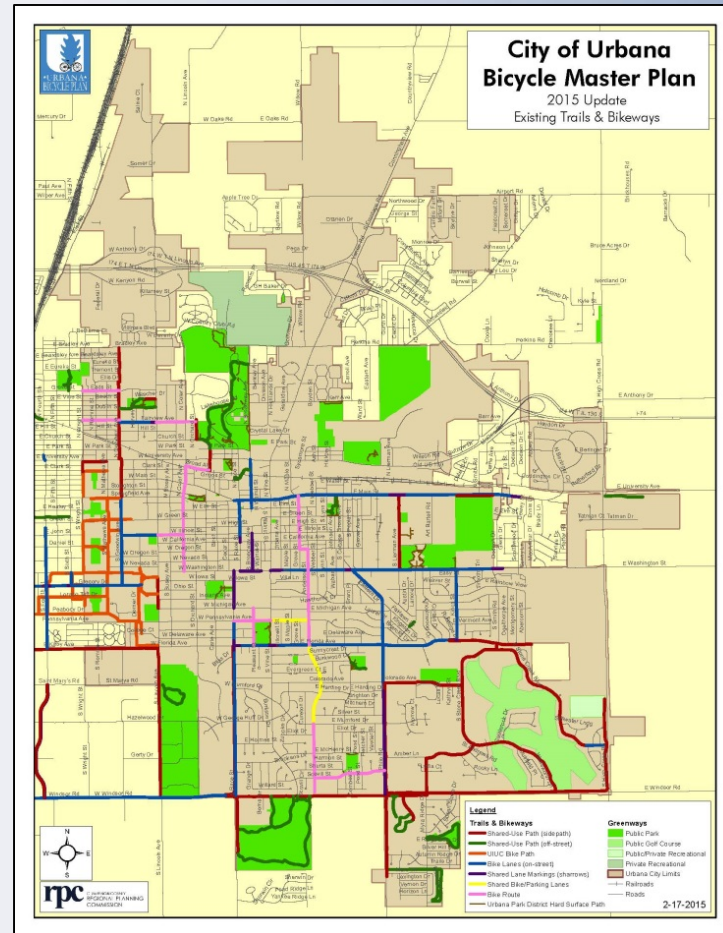


- Target planning audience in terms of BLOS:
 - A to High C (0 – 2.5) = Casual adult cyclists
 - Low C to High D (2.5 – 4.0) = Advanced cyclists

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Step 7: Inventory Existing Conditions

- **Existing Facilities**
 - Bike Lanes & Sharrows
 - Shared-Use Paths
 - Bike Routes
 - Shared Bike/Parking Lanes
- **Existing Bike Parking**
 - By land use

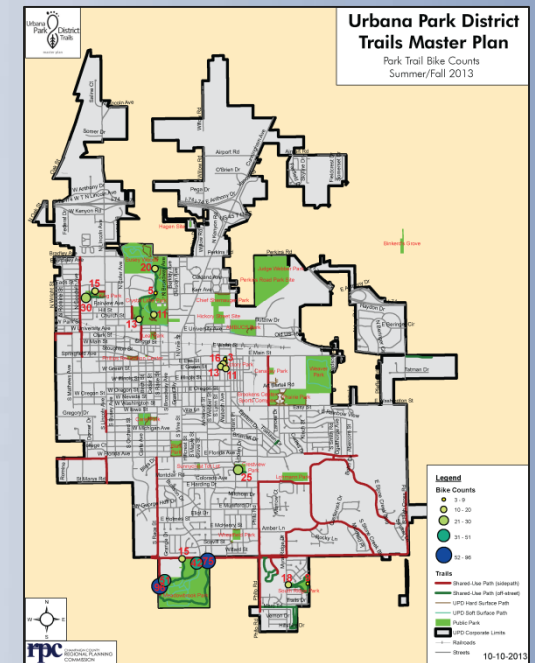
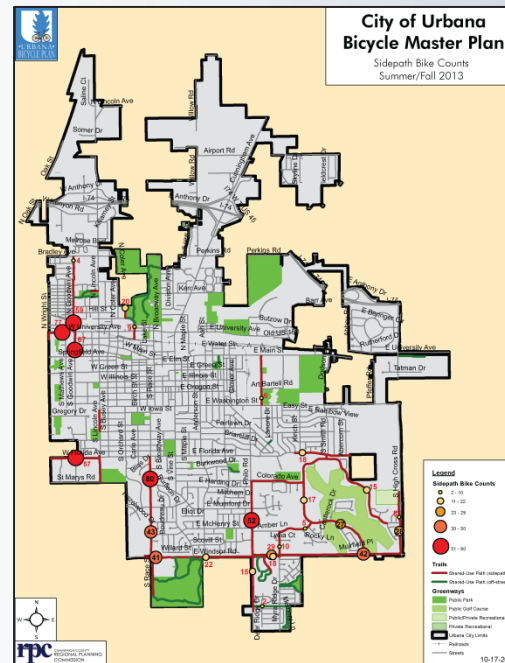
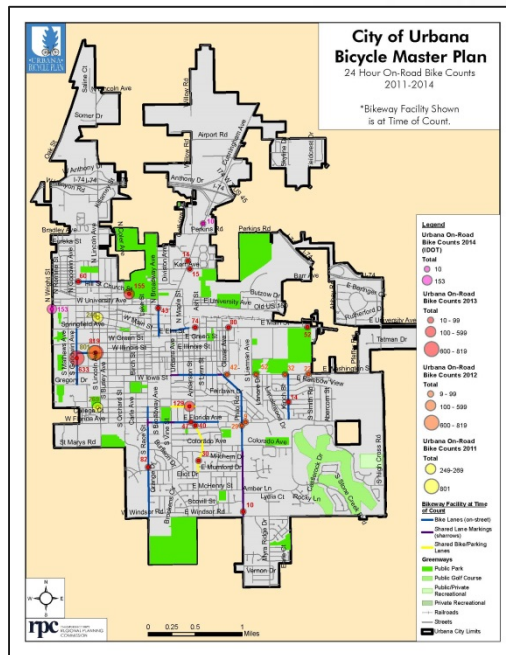


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Step 7: Inventory Existing Conditions

- Bicycle Counts**

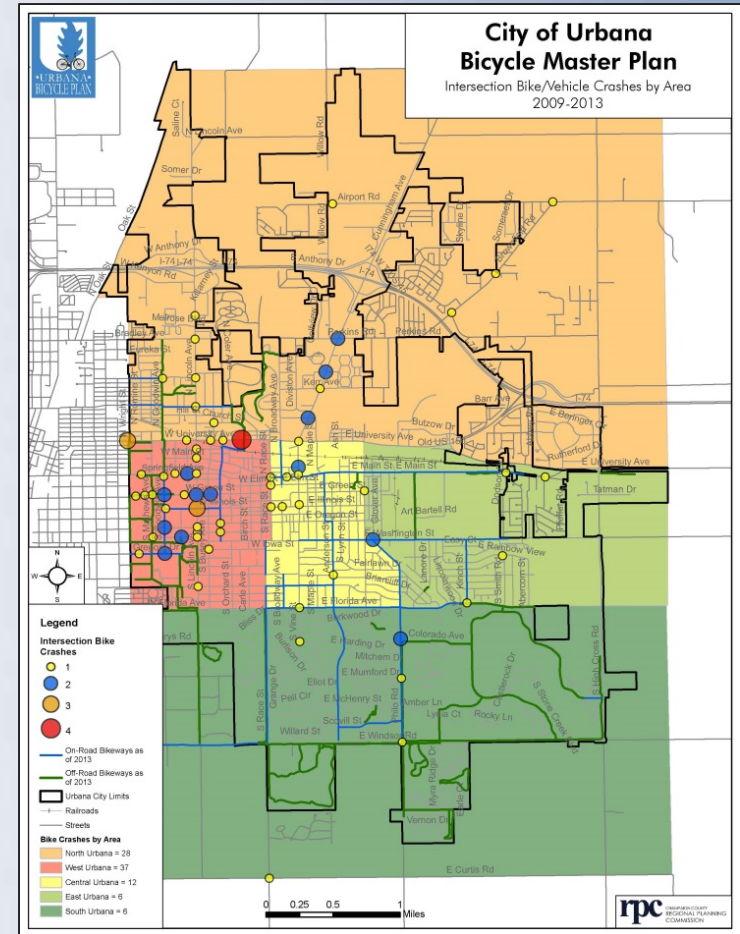
- Conducted in Urbana annually since 2011, with plans to continue
- Before & after bikeway installation
- On-road bikeways
- Off-road sidepaths & park trails



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Step 7: Inventory Existing Conditions

- **Bicycle/Vehicle Crashes**
 - Latest 5 years of available data
 - UBMP 2016: 2009-2013
 - Fatalities
 - Injuries
 - Crashes
 - Analysis by Corridor
 - Analysis by Area



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Step 8: Seek Public Input

- PABS (Pedestrian & Bicycle Survey)
 - Based on the Mineta Transportation Institute PABS
 - UBMP update:
 - 2013
 - Targeted mailings across Urbana
 - Posted online
 - 2014
 - Additional in-person public outreach

CITY OF URBANA **Urbana Park District** **rpc** CHAMPAIGN COUNTY REGIONAL PLANNING COMMISSION

URBANA RESIDENT PEDESTRIAN AND BICYCLE SURVEY (PABS)
The City of Urbana and Urbana Park District are collecting this data for our bicycle and pedestrian planning efforts. Because of this, this survey is limited to Urbana residents.

* = Required Question

QUESTIONS ABOUT YOUR RECENT TRAVEL

1. What is today's date? _____ [Month] [Day]

2. Did you leave Urbana-Champaign during the last 7 days (up to yesterday)?
 No
 Yes - if "Yes," circle the number of days here: 1 2 3 4 5 6 7

3. Check one box for each line below to tell us THE MOST RECENT TIME you used each type of travel. Note that some trips you make may fit into multiple categories below. For example, if you walked to the store yesterday to get exercise AND to buy bread, then you would check "Last 7 Days" for both row "c" and row "f".

	Last 7 Days	Last Month	Last 3 Months	Last 12 Months	Not Used in the Last 12 Months
a) Passenger or driver in a vehicle (for example, a car, truck, motorcycle, or taxi)					
b) Public transit (for example, a bus or train)					
c) Bicycle to or from public transit					
d) Bicycle to a destination OTHER THAN public transit (for example, to a job, store, park or friend's house)					
e) Bicycle for recreation or exercise (do not include riding a stationary bicycle)					
f) Walk to or from public transit					
g) Walk to a destination OTHER THAN public transit (for example, to a job, store, park or friend's house)					
h) Walk for recreation, exercise or to walk the dog					

QUESTIONS ABOUT HOW OFTEN YOU BICYCLED IN THE LAST 7 DAYS

In the last 7 days (up to yesterday), on how many days did you:

4. Bicycle to OR from public transit?
For example, to a bus or train stop 0 1 2 3 4 5 6 7

5. Bicycle to OR from work or school? 0 1 2 3 4 5 6 7

6. Bicycle to somewhere OTHER than work, school or public transit? 0 1 2 3 4 5 6 7
For example, to go shopping, see a friend, or eat at a mall. Do NOT include trips with no destination, such as a bike ride solely for exercise.

7. Bicycle for exercise or recreation, without having a destination? 0 1 2 3 4 5 6 7

Urbana Pedestrian And Bicycle Survey (PABS)



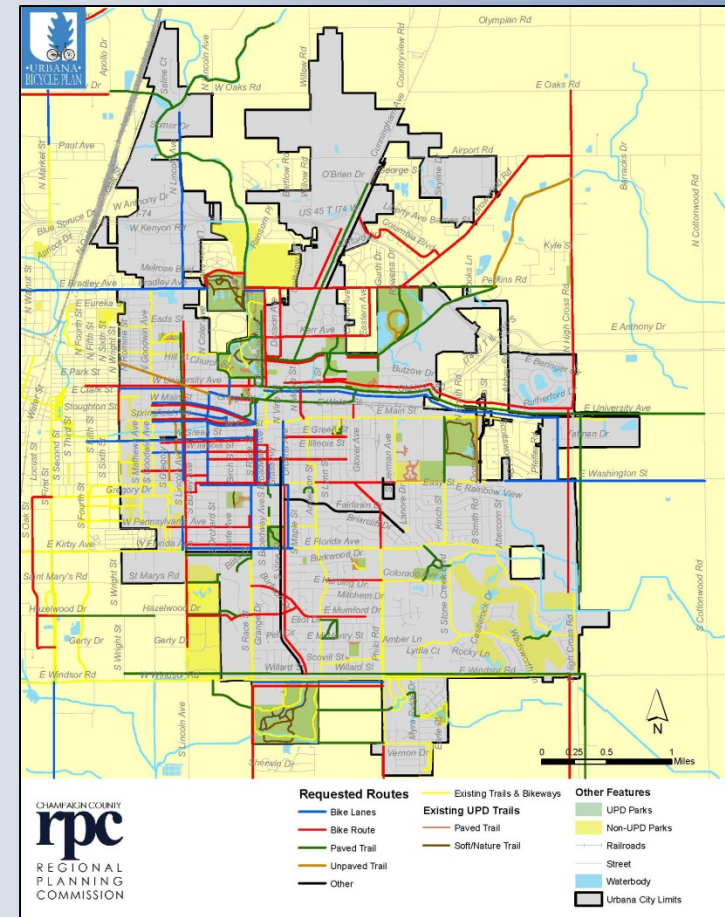
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Step 9: Conduct Public Workshop #1

- Public Workshop [Series] #1
 - Ask residents to mark their desired places to bike
 - UBMP update:
 - Communitywide workshop
 - Neighborhood workshops (3)
 - 58 total participants



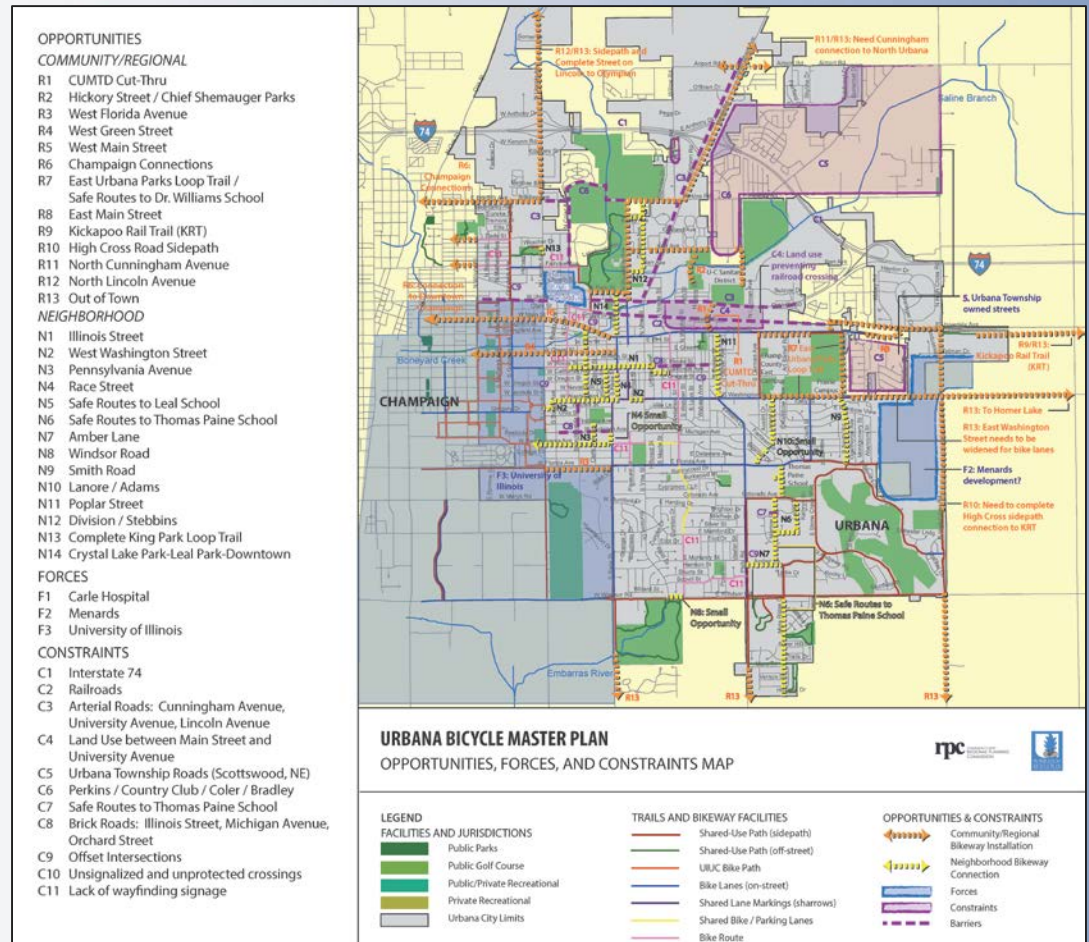
Public Workshop Series #1 Requested Routes



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Step 10: Identify Opportunities & Constraints

- Opportunities
 - Most Needed Connections
 - Regional
 - Community
 - Neighborhood
- Forces
- Constraints
 - Challenges
 - Barriers



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Step 11: Define Goals & Objectives

- Goal: end state that will be brought about by implementing the UBMP
- Objectives: sub-goals that help organize the implementation of the UBMP into measurable and manageable parts
 - SMART:
 - Specific
 - Measurable
 - Attainable
 - Realistic
 - Time-bound
- Performance measures: help agencies track the progress of each objective over time
- Strategies
- Responsible Parties

THEME: EDUCATION			
Goal 4: Educate residents about alternative modes of transportation and bicycle facilities.			
Objectives	Performance Measures	Strategies	Responsible Parties
1. Identify 3 new partners to provide bicycle education, enforcement, and encouragement programs by 2020.	A. Number of new partners identified	I. Take advantage of opportunities to partner with private entities (e.g. Health Alliance).	• City of Urbana
		II. Take advantage of opportunities to partner with public entities interested in the benefits of bicycling.	• City of Urbana
2. Produce and distribute a regularly updated map that includes existing bicycle facilities in Urbana at least every 3 years.	A. Frequency of map publication and distribution	I. Champaign-Urbana Area Bike Map	• Champaign County Bikes • League of Illinois Bicyclists
		II. Champaign County Greenways & Trails Map	• Champaign County Regional Planning Commission
		III. City of Urbana bicycle map	• City of Urbana
		IV. IDOT Regional Bicycle Map	• IDOT
3. Continue to provide at least one opportunity per new bikeway project for citizens to express concerns over bicycling issues and public reaction to new treatments.	A. Number of public comment opportunities A. Number of new public outreach methods	I. Urbana BPAC (Bicyclist and Pedestrian Advisory Commission)	• City of Urbana
		II. Project Open Houses	• City of Urbana

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Step 11: Define Goals & Objectives

- Can define goals via Themes
 - UBMP 2016 Themes:
 1. Multi-Modal Connectivity
 2. Safety
 3. Convenience
 4. Education
 5. Funding
 6. Implementation
 7. Equity

Step 12:

Estimate Bicycle Level of Service (BLOS)

- BLOS Score Estimation Elements:
 1. Number of Thru Lanes
 2. Rightmost Lane Width
 3. Gutter Seam Width
 4. Marked Extra Width
(e.g. shoulder, parking, bike lane)
 5. Average Daily Traffic (ADT) counts
 6. Posted Speed Limit
 7. Percentage of Heavy Vehicles (trucks)
 8. Pavement Condition Rating
(1 = worst, 5 = best)
 9. On-Street Parking Percentage Estimate

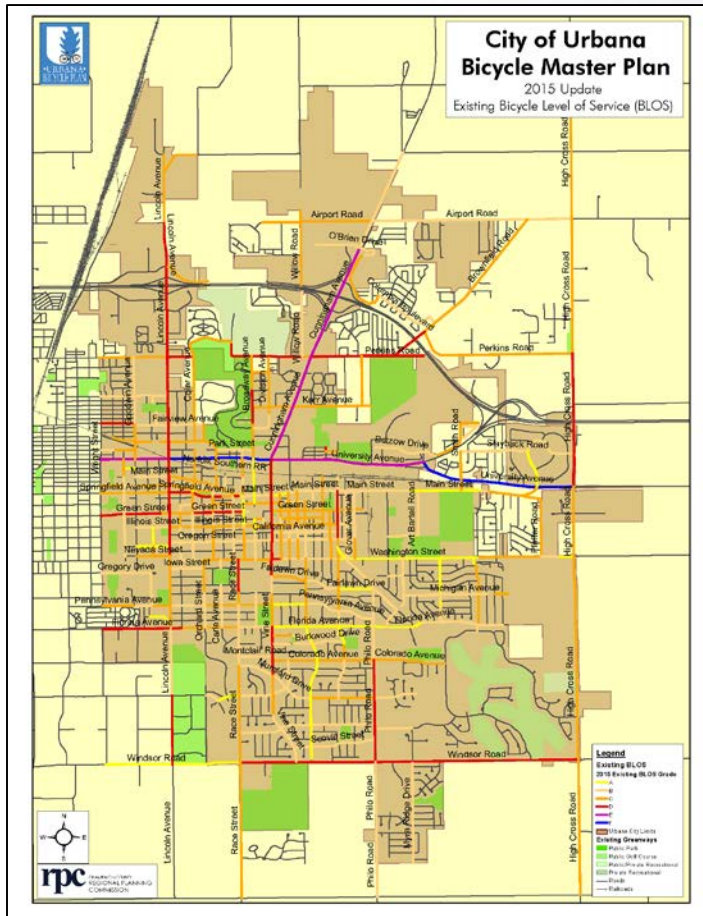
- Analyses:
 - Existing BLOS
 - Future BLOS
 - BLOS Change

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

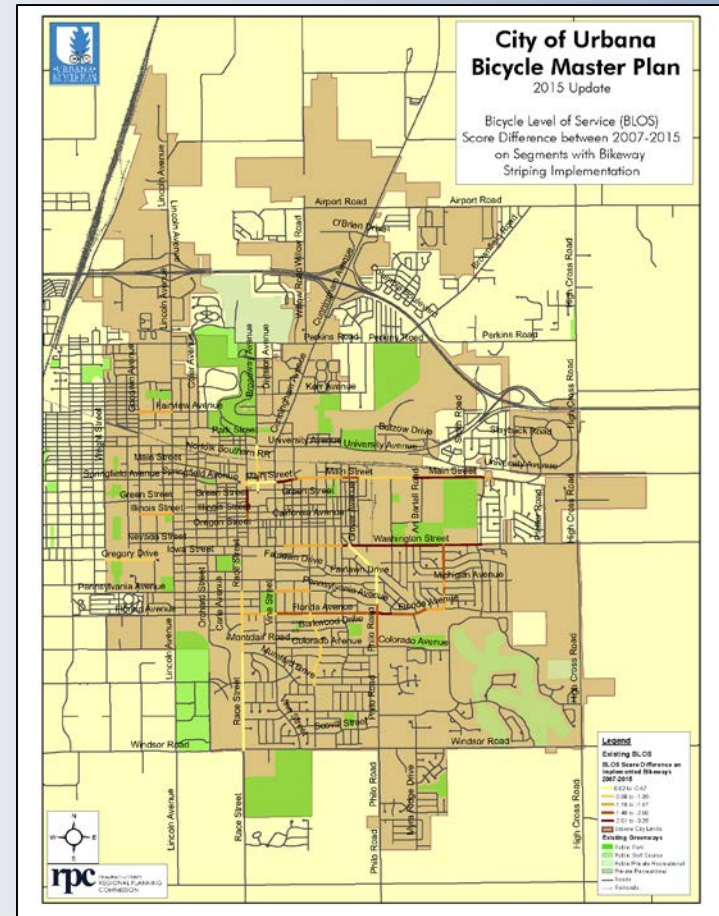
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Existing Bicycle Level of Service (BLOS)

Existing BLOS Map



BLOS Score Difference Map between 2007-2015 on Segments w/ Bikeway Striping Implementation



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Step 13: Propose Recommendations

- Infrastructure

- Concepts

- Urbana Green Loop
- Connecting destinations

- Corridors

- Area maps (dozens)
- Existing pictures & proposed renderings

- Point Improvements

- Unsignalized crossings of major roads
- Grade-separated crossings
- Bike-Activated Stoplights

- Drainage Grates

- Transverse does the least damage to bicycle wheels
- Inlet should be flush with pavement

- Parking

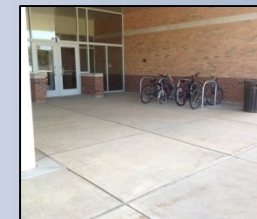
- Inverted U
- A
- Post & Loop
- Within 50 feet of entrances
- Covered



Existing Conditions



Proposed Rendering

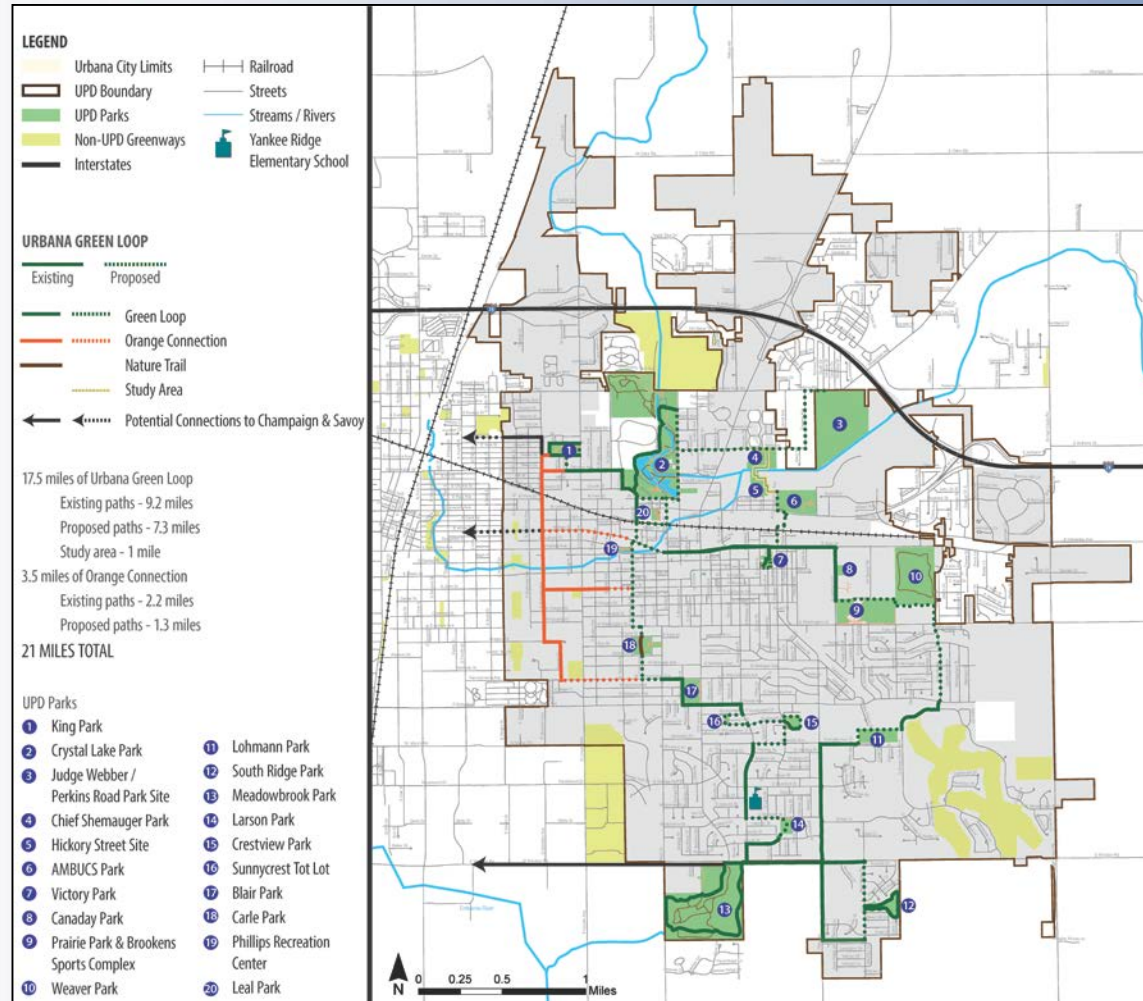


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Step 13: Propose Recommendations

- **Urbana Green Loop**

- Loop path consisting of trails and bikeways to connect all Urbana Park District parks
- Goal is to be family-friendly, and give bicyclists destinations to explore and get exercise
- Signature recommendation of Urbana Park District Trails Master Plan (UTMP)



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Step 13:

Propose Recommendations

- Recommended Bikeway Network Concepts
 1. Bikeway & Trail Wayfinding Signage
 2. Urbana Green Loop
 3. MCORE Project
 4. Safe Routes to Schools (SRTS)
 5. Rail Corridors
 6. Bikeway Access in Low-Income Neighborhoods
 7. Bikeway Access to Employers
 8. Northern Access Across I-74
 9. Future Development
 10. Arterial Roads
 11. Stream Corridors
 12. Loop Trails Between Parks
 13. Fitness Trails (CLP, Weaver Park)



Constitution Trail signage installed in Normal in 2015



Douglass Park fitness trail installed in Champaign in 2015

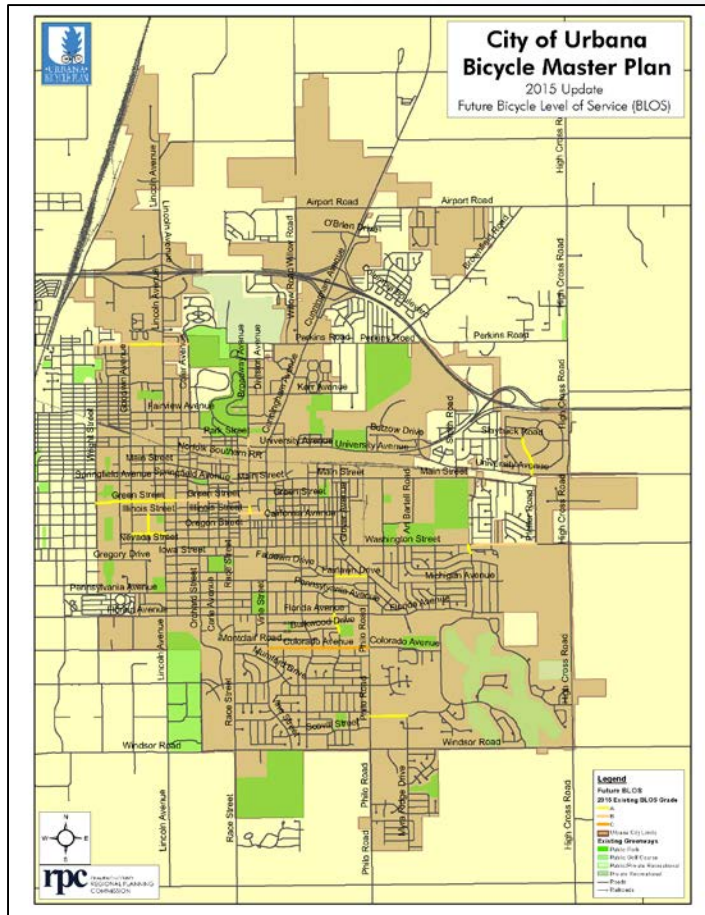


Rendering of fitness trail in Crystal Lake Park along Park Street

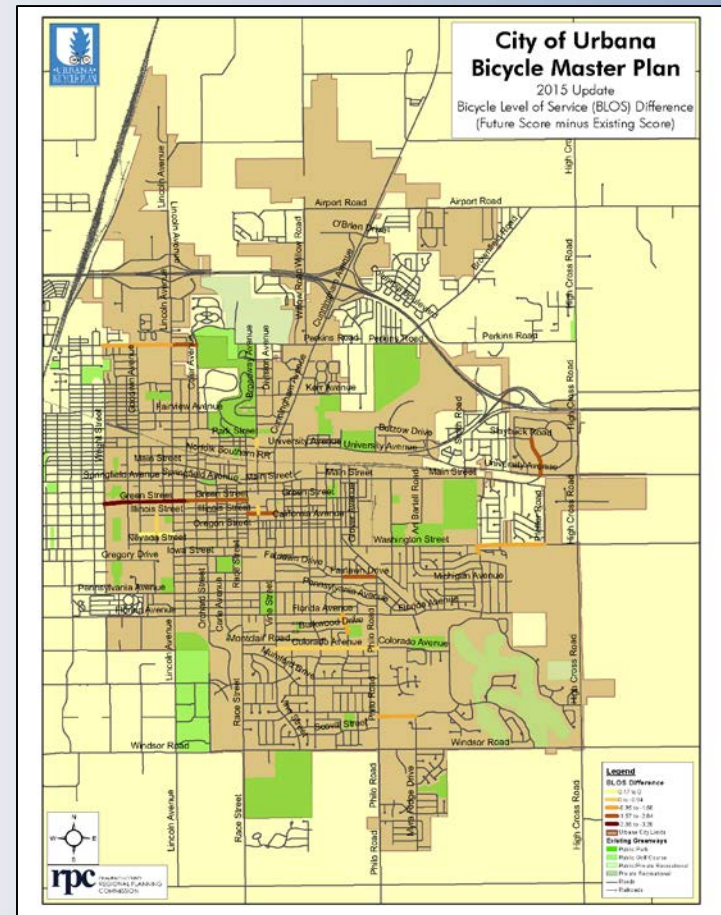
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Future Bicycle Level of Service (BLOS)

Future BLOS Map



BLOS Difference Map
(Future Score minus Existing Score)



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Step 13: Propose Recommendations

- Non-Infrastructure
 - Education (11)
 - Encouragement (13)
 - Enforcement (7)
 - Evaluation (11)
- Policy
 - Zoning Ordinance changes for bike parking
 - By land use
 - Based on best practices, model cities



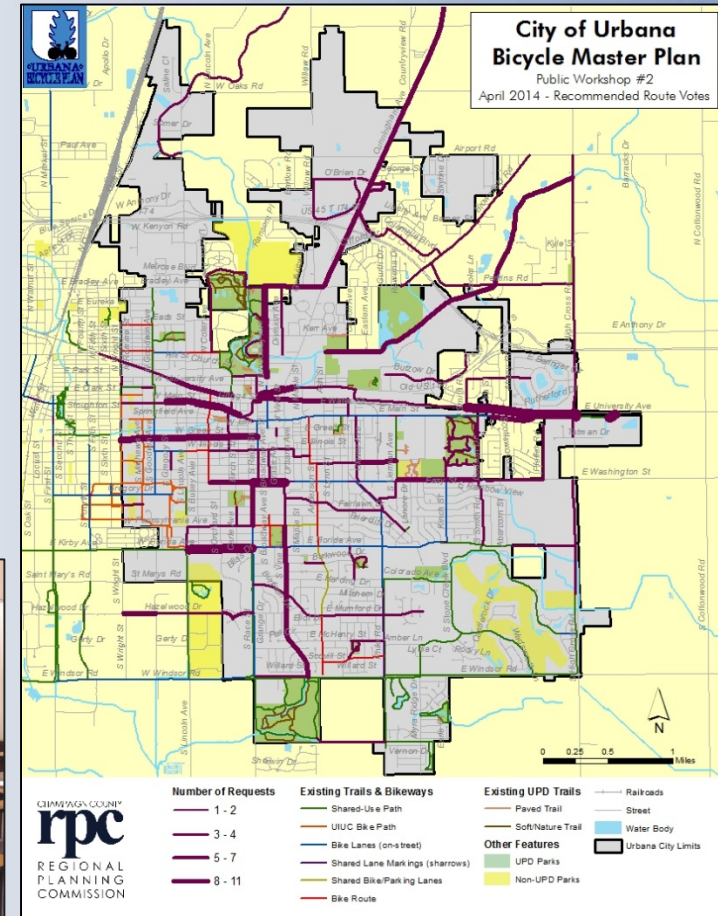
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Step 14: Conduct Public Workshop #2

- Present draft recommendations
- Participants vote to prioritize their recommendations
- UBMP update:
 - Communitywide workshop
 - 19 participants



Public Workshop #2 Requested Routes

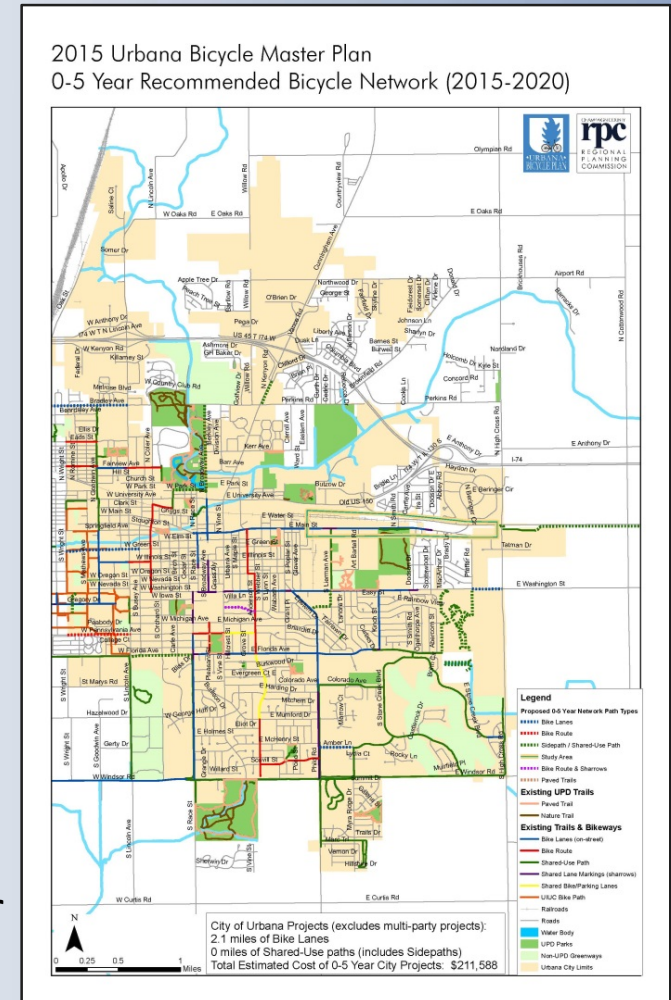


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Step 15: Prepare Implementation Plan

- 5 year review of bike network & bike plan
- List Maintenance recommendations
 - Street cleaning
 - Potholes
 - Snow plowing
 - Sign inventory
- Create 5 year timeframe maps
- Create Implementation Matrices
 - Project location
 - Treatment type
 - Agenc(ies) responsible
 - Estimates of striping, signage and/or construction cost
 - Proposed timeframe of facility installation
 - Future status of on-street parking
 - Other relevant comments
- Identify Funding Sources
 - Private, public, non-profit
 - Deadline, maximum amount, description, website
- Full-Time [Regional] Bicycle/Pedestrian Coordinator recommended for Urbana

Five-Year Timeframe Map (2015-2020)



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Thank You! Questions?

Main Street, Downtown Urbana



2007 (Existing)



2008 (Rendered)



2015 (Implemented)

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