



Bicycle and Trail Master Plan

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SNYDER & ASSOCIATES
Engineers and Planners



WHAT

HOW

WHY

WHERE

WHO

WHEN



WHAT



Master Plan Outline

- Existing Conditions
- User Needs Assessment
- Bicycle and Trail Goals
- Programs and Policies
- Bicycle and Trail Network
- Project Prioritization
- Concept Plans
- Implementation Plan





WHY

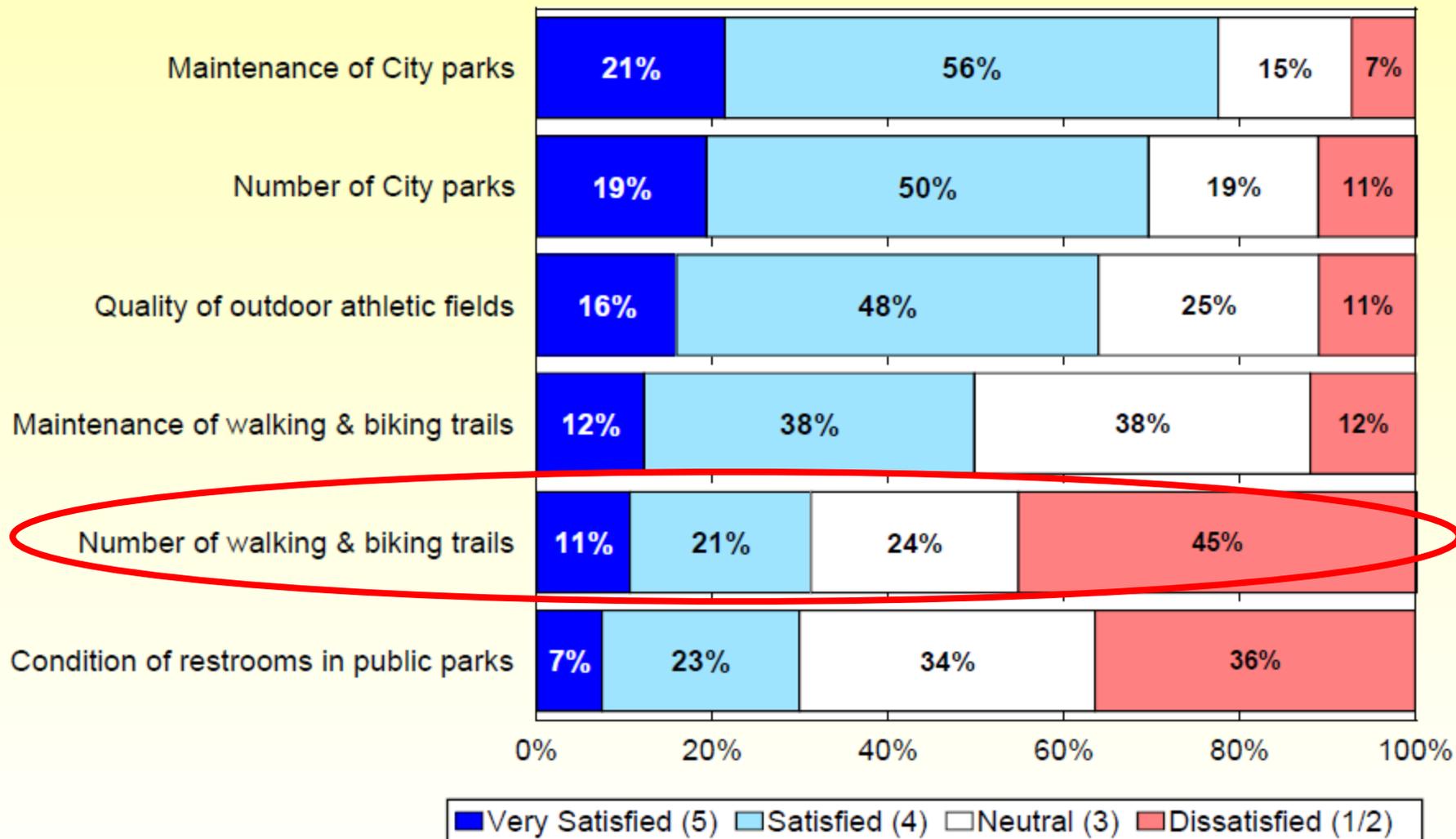
Bicycling and Walking Benefits

A word cloud of benefits for bicycling and walking. The words are arranged in a roughly rectangular shape and are written in various colors and orientations. The colors include shades of blue, green, yellow, orange, and maroon. The words are: Access, Health, Cohesion, Community, Environment, Safety, Savings, Mobility, Clean, Interaction, Equity, Breathable, Freedom, Happiness, Pleasure, and Connectivity. The word 'Connectivity' is written vertically in the center. 'Pleasure' is written vertically on the right side. 'Savings' is written horizontally on the left side. 'Breathable' is written horizontally in the middle-right. 'Happiness' is written horizontally at the top right. 'Freedom' is written horizontally below 'Happiness'. 'Community' is written horizontally in the upper middle. 'Environment' is written horizontally below 'Community'. 'Health' is written horizontally at the top left. 'Access' is written horizontally to the left of 'Health'. 'Cohesion' is written horizontally below 'Health'. 'Safety' is written horizontally below 'Environment'. 'Interaction' is written horizontally below 'Safety'. 'Equity' is written horizontally below 'Interaction'. 'Clean' is written horizontally to the left of 'Equity'. 'Mobility' is written vertically on the left side. 'Pleasure' is written vertically on the right side. 'Connectivity' is written vertically in the center.

Access Health Cohesion Community Environment Safety Savings Mobility Clean Interaction Equity Breathable Freedom Happiness Pleasure Connectivity

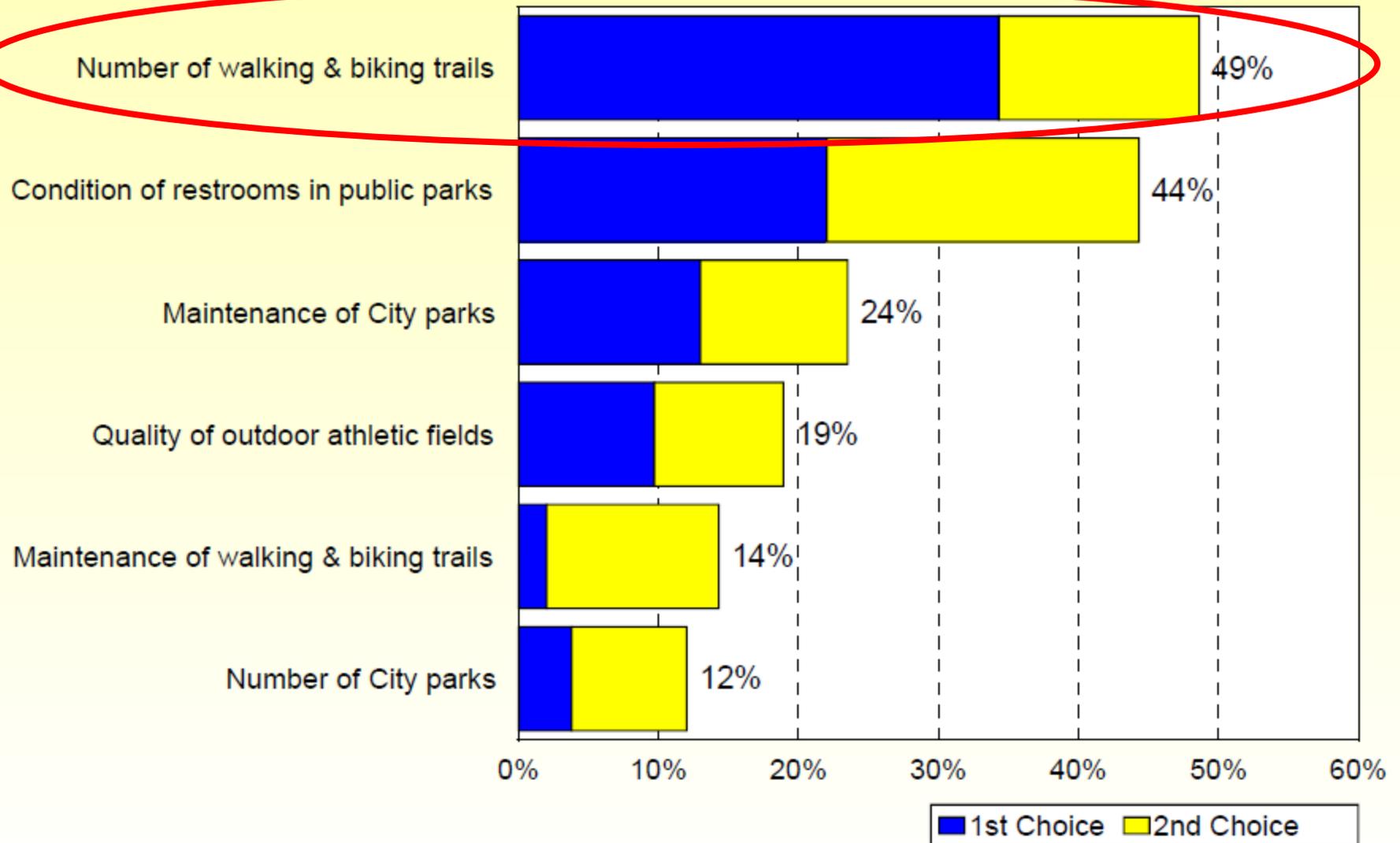
Q19. Satisfaction with Various Aspects of Parks and Facilities

by percentage of respondents who rated the item as a 1 to 5 on a 5-point scale (excluding don't knows)



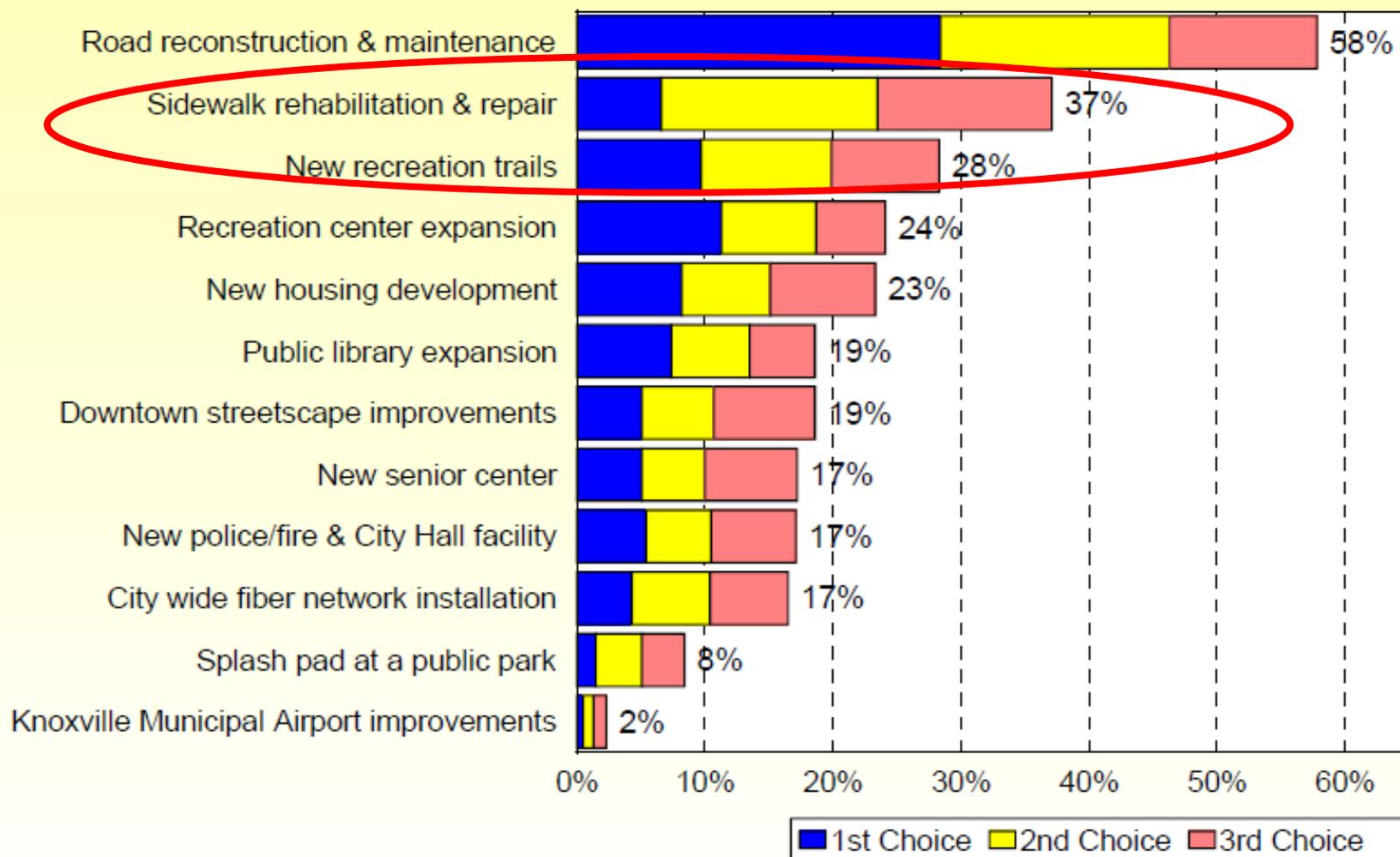
Q20. Top Parks and Facilities Priorities Over the Next Two Years

by percentage of respondents who selected the item as one of their top two choices



Q32. Future Priorities That Should Receive the Most Emphasis Over the Next Three Years

by percentage of respondents who selected the item as one of their top three choices





WHO

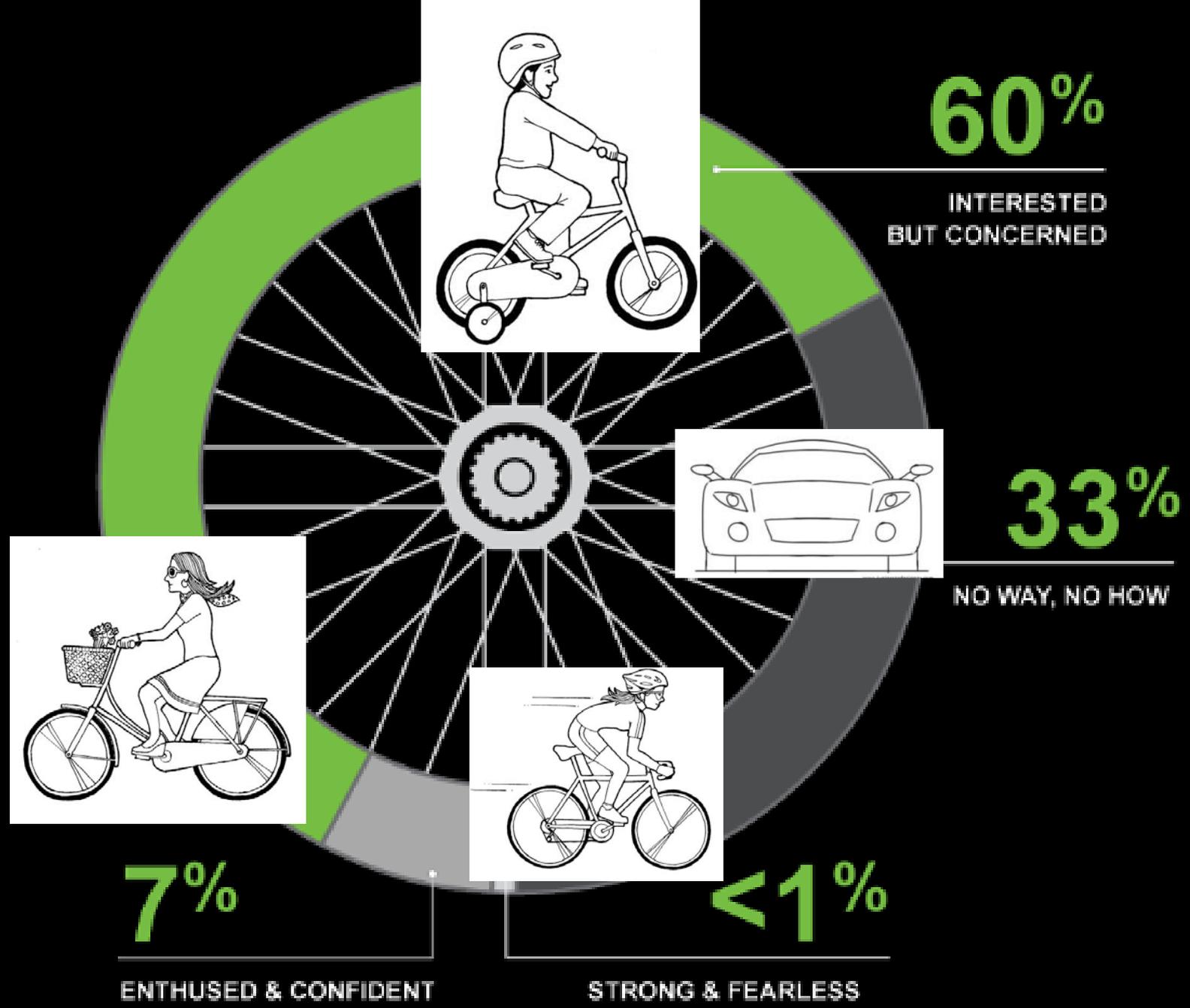


Master Planning Committees

- Internal Review Team (IRT)
 - City Departments
 - School District
 - Health Agency
 - Iowa DOT
 - CIRTPA
- Bicycle/Trail Advisory Committee (BAC)
 - Parks & Plan and Zoning Commissions
 - Citizens
 - Businesses
 - Interested Organizations



FOUR TYPES OF RIDERS





We Are All Pedestrians!



ST



HOW



Bicycle Facilities/ Bicycle Accommodations/ Bikeways

**JARGON: AN
INDUSTRY'S WAY OF
MAKING YOU THINK
THAT WHAT THEY
DO IS REALLY
COMPLICATED.**

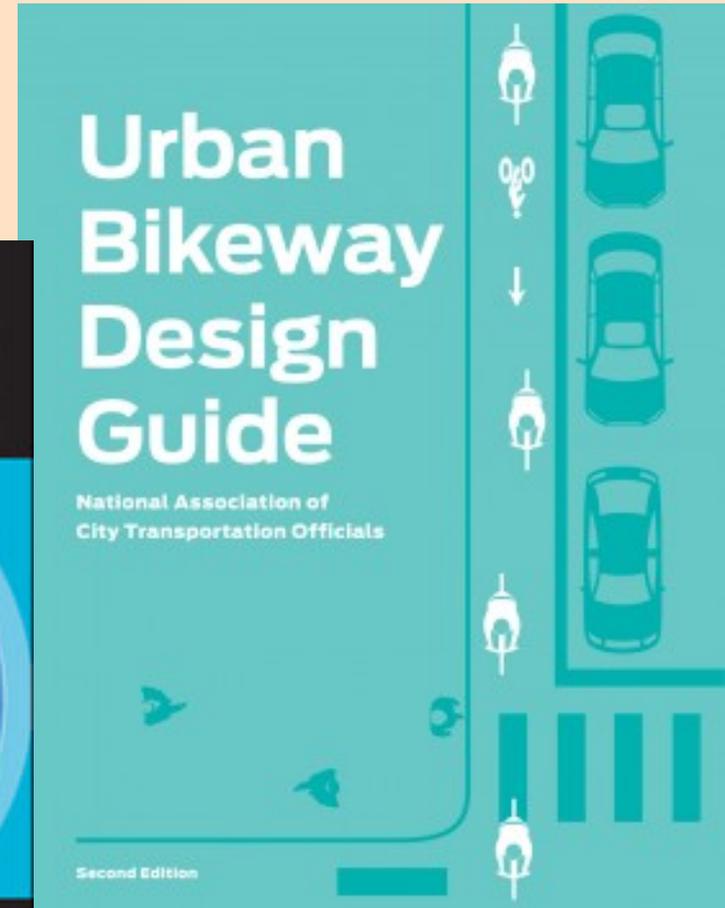
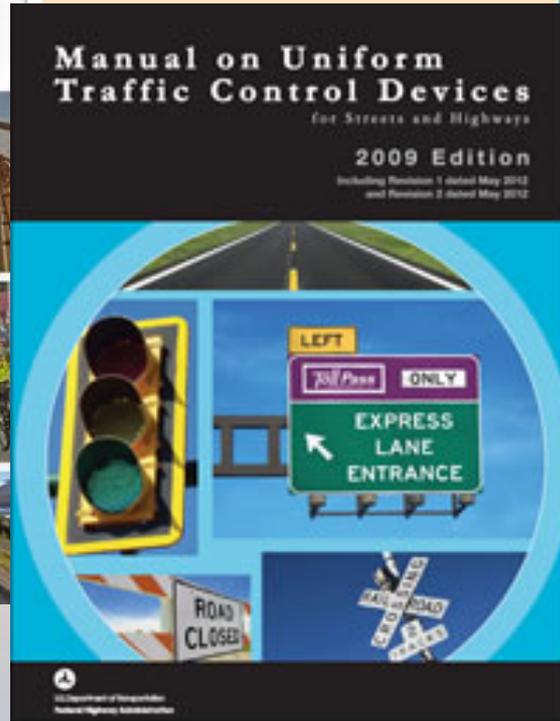
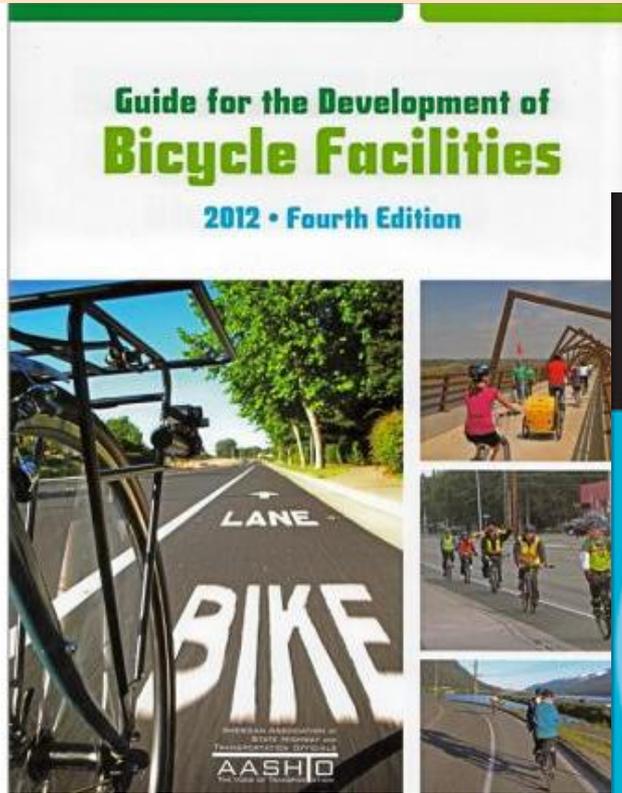
Dan of the Day.com

- Trails/Sidepaths
- Bike Lanes/Buffered Bike Lanes
- Cycle Tracks/Protected Bike Lanes
- Shared Lane Markings/Sharrows
- Bicycle Boulevards/ Quiet Streets/ Neighborhood Greenways
- Shoulder Bikeways



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Design Guidance



SUDAS
Statewide Urban Design and Specifications



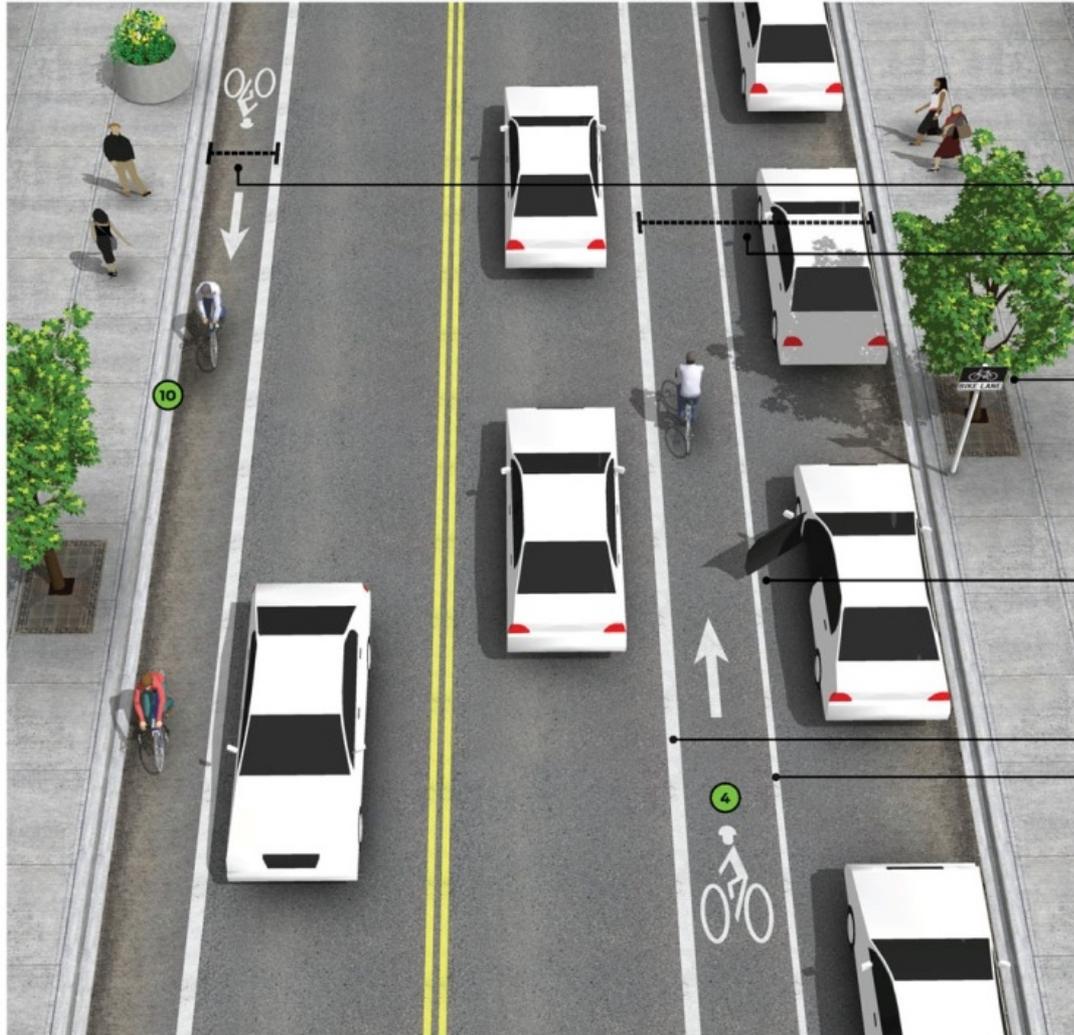
Trail

- 8 - 12' wide path
- Paved
- ADA compliant
- Follows rivers, creeks, greenways, railroad lines, streets
- Separated from the roadway
- Bicyclists AND Pedestrians





Bicycle Lanes



- 1 Desired width: 6 feet
- 2 Wherever possible, minimize parking lane width in favor of increased bike lane width.
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- BIKE LANE
MUTCD R3-17
- 6 6- to 8-inch solid white line
- 9 4 inch solid white line
- 4



Bicycle Lanes

- Increases bicyclist comfort and confidence
- Creates separation between bicyclists and automobiles
- Increases predictability
- Increases street capacities
- Visually indicates bicyclists' right to the street





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Conventional Bike Lane





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Buffered Bike Lanes





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Left Side Bike Lane



Portland, OR

Photo: www.pedbikemages.org - Laura Sandt

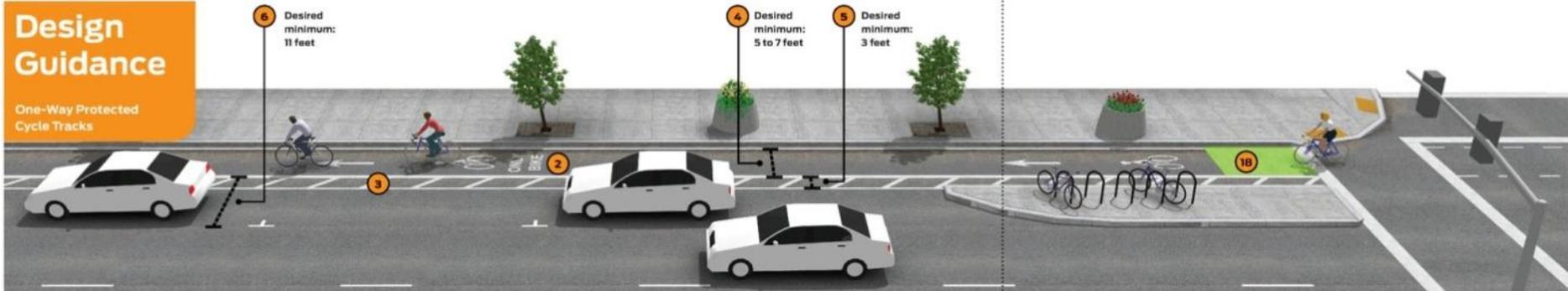


Cycle Tracks

Protected Bike Lane

Design Guidance

One-Way Protected Cycle Tracks



15 At transit stops, consider wrapping the cycle track behind the transit stop zone to reduce conflicts with transit vehicles and passengers.



12 Tubular Markers



7 Movable Planters



14 Raised Curb





Cycle Tracks



- Bicycle-only facility
- Mixes trail and bike lane aspects
- Separated from traffic by barrier
- Increases ridership



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Raised Cycle Tracks



Bend, OR



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Two-way Cycle Track





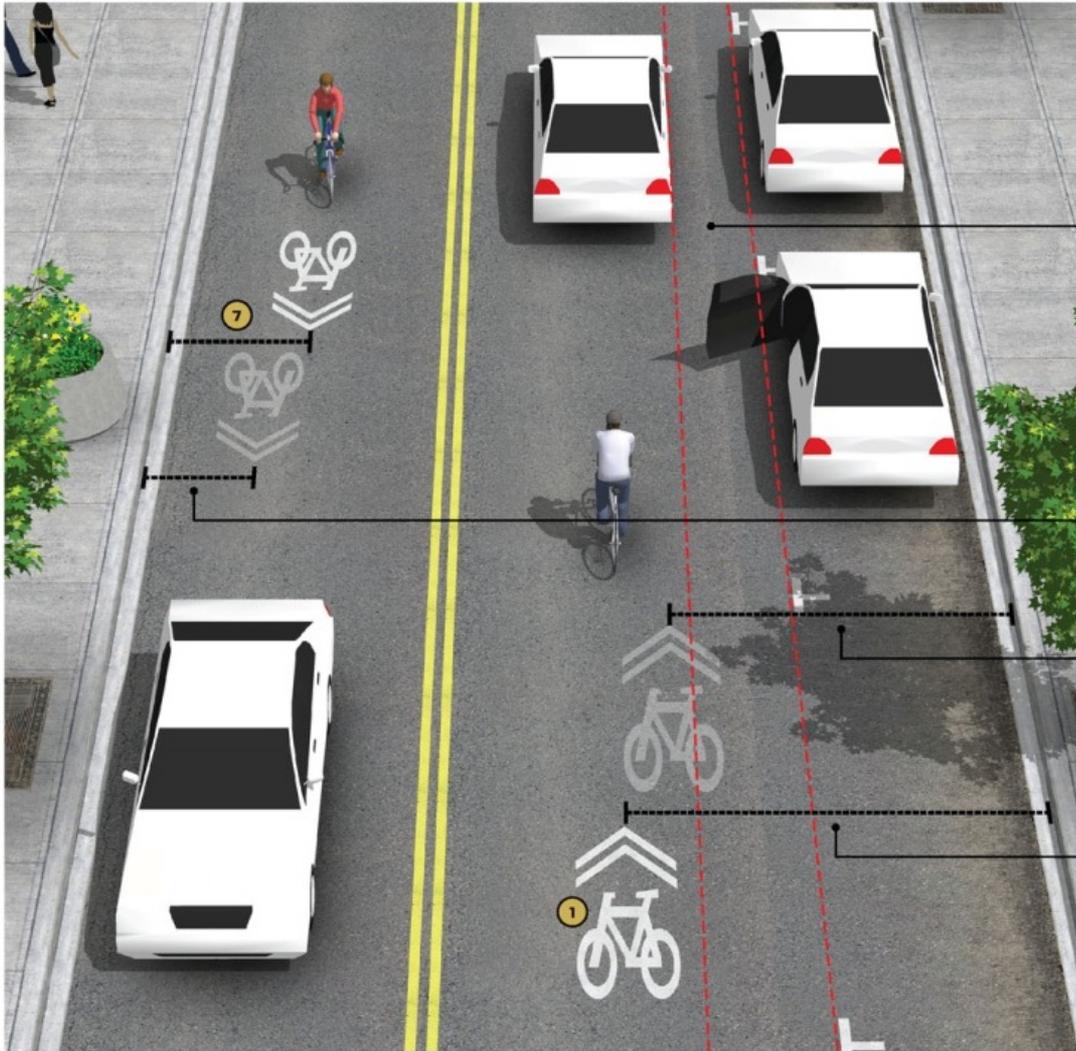
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Shoulder Bikeways





Shared Lane Markings



4 Lateral placement is critical to encourage riders to avoid the "door zone."

The door zone represents an area where bicyclists must be especially aware of hazards that could be presented by the driver side door. Dedicated bicycle facilities can be designed to heighten this awareness. See guidance for Bike Lanes and Cycle tracks for more information.

7 Minimum placement: 4 feet

4 Minimum placement: 11 feet

5 Preferred placement on 25 mph streets: center of travel lane



Shared Lane Markings

- Helps position bicycles on streets
- Notifies motorists to expect bicycle traffic
- Encourages bicyclists to ride in straight line
- Used on streets where bike lanes are preferred, but lack space
- Use on lower volume, lower speed streets





Shared Lane Markings



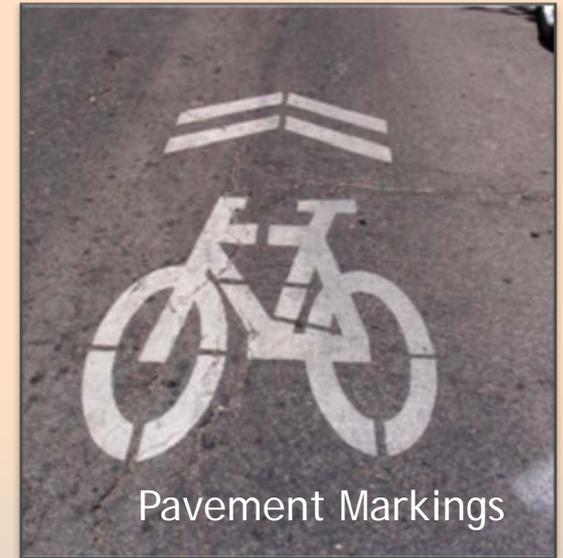
Mason City, Iowa



Quiet Street/Bike Boulevards



Signage



Pavement Markings



Intersection
Treatments



Traffic Calming

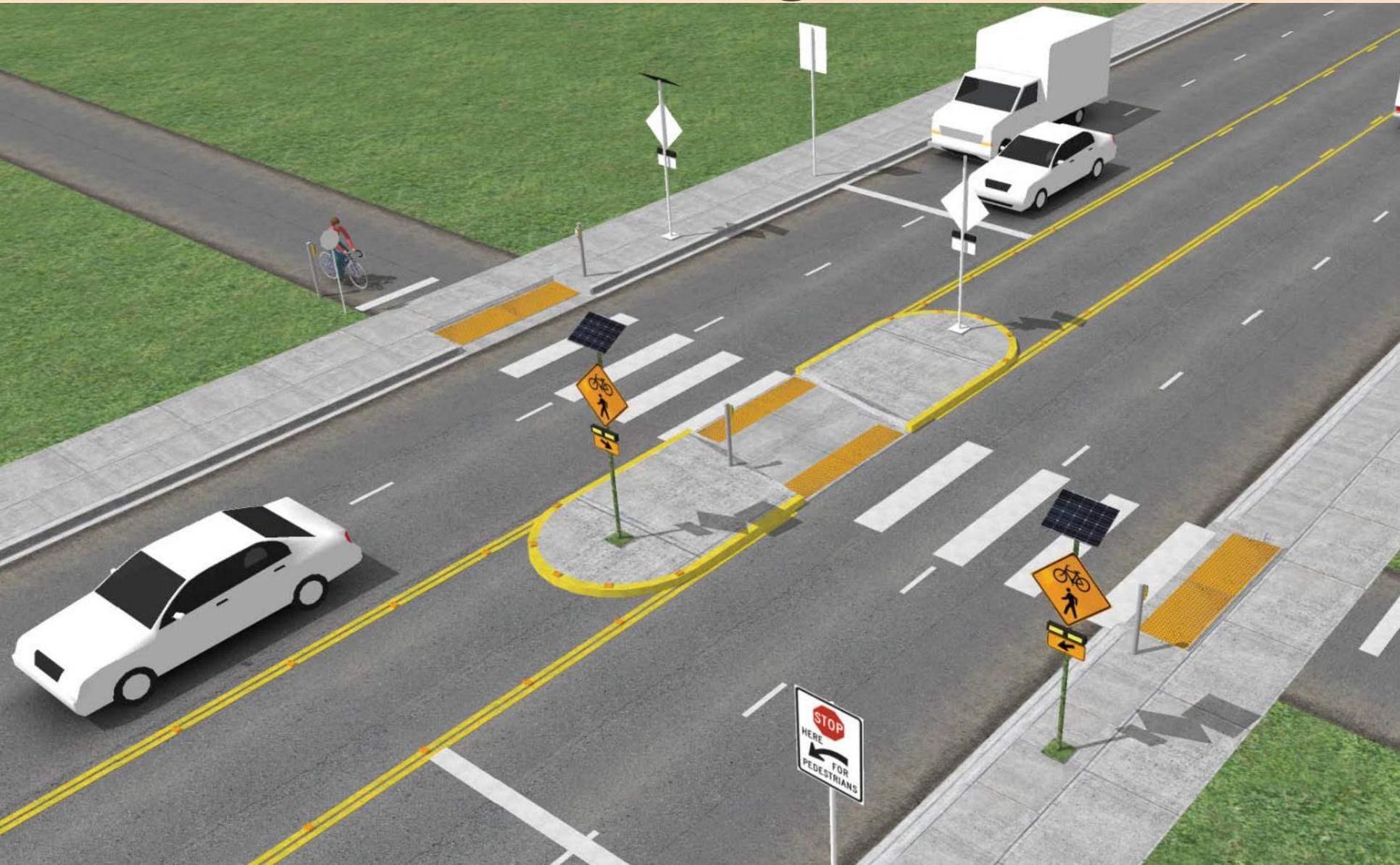


Traffic Diversion



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Active Warning Beacons





Active Warning Beacons

- Lower cost alternative to traffic signals
- Increases driver yielding behavior
- Used at high-volume crossings and priority route crossings.





Bicycle Signal Heads

- Provides priority to bicyclists at intersections
- Protects bicyclists in the intersection
- Used where a shared use path crosses a street
- Use at complex intersections that may otherwise be difficult for bicyclists to navigate





Signal Detection and Actuation

- Improves efficiency and reduces delay for bicycle travel
- Discourages red light running by bicyclists
- Designate where bicyclists should wait





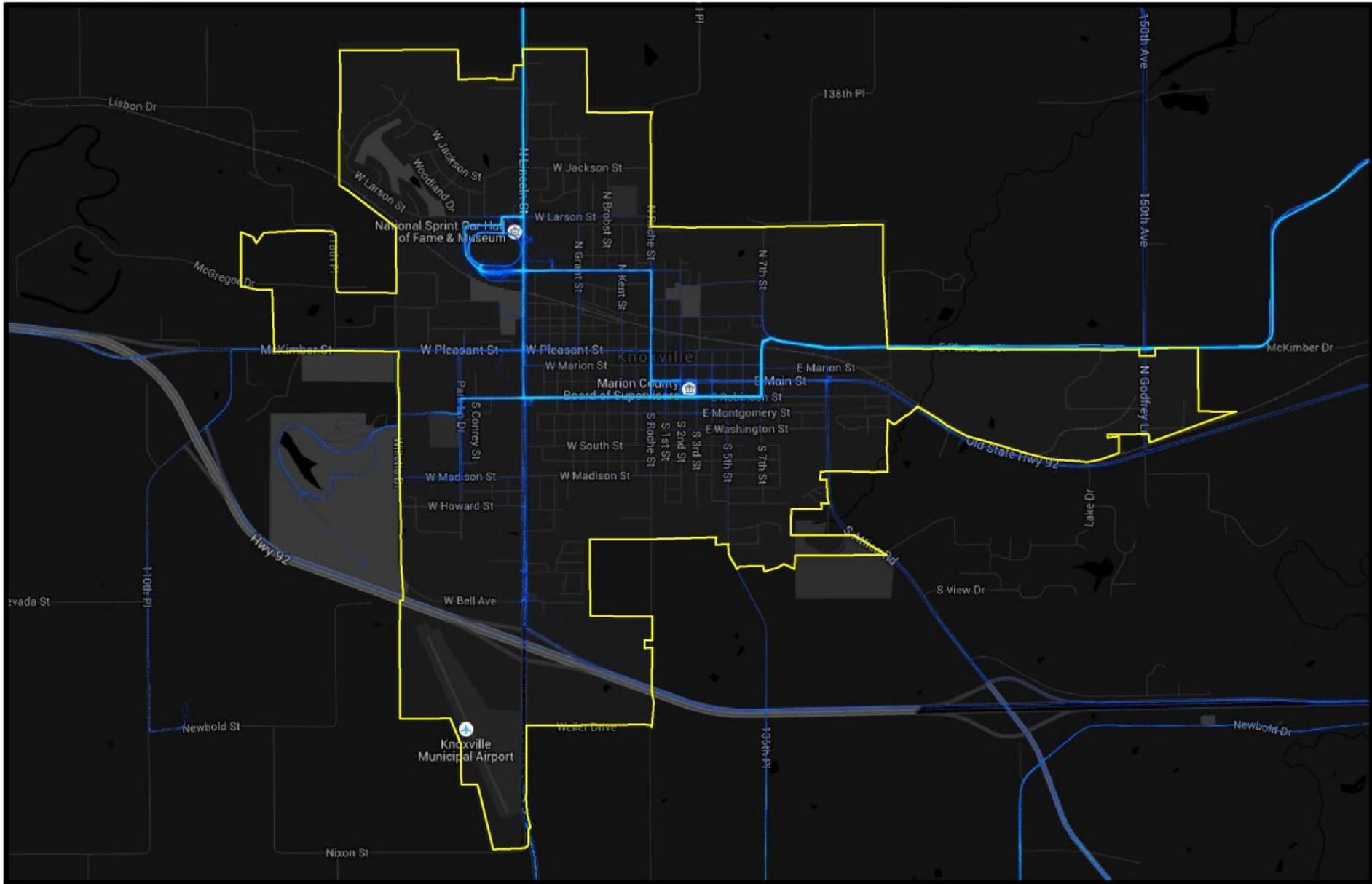
Bicycle Parking

- Provide safe areas for bicycles
- Long- and short-term needed
- Location and style is key to success

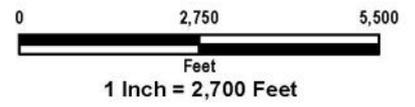


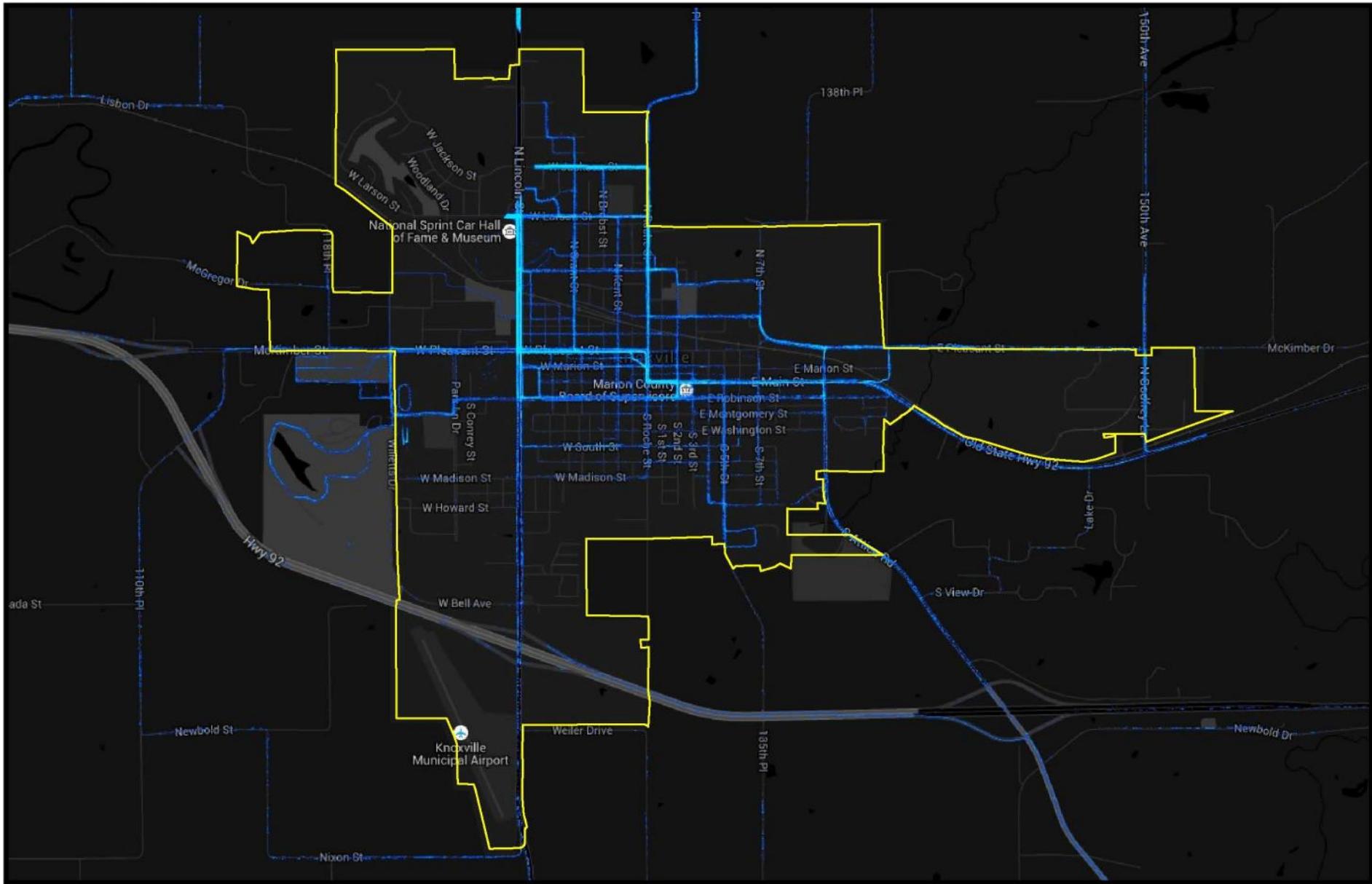


WHERE

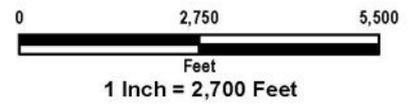


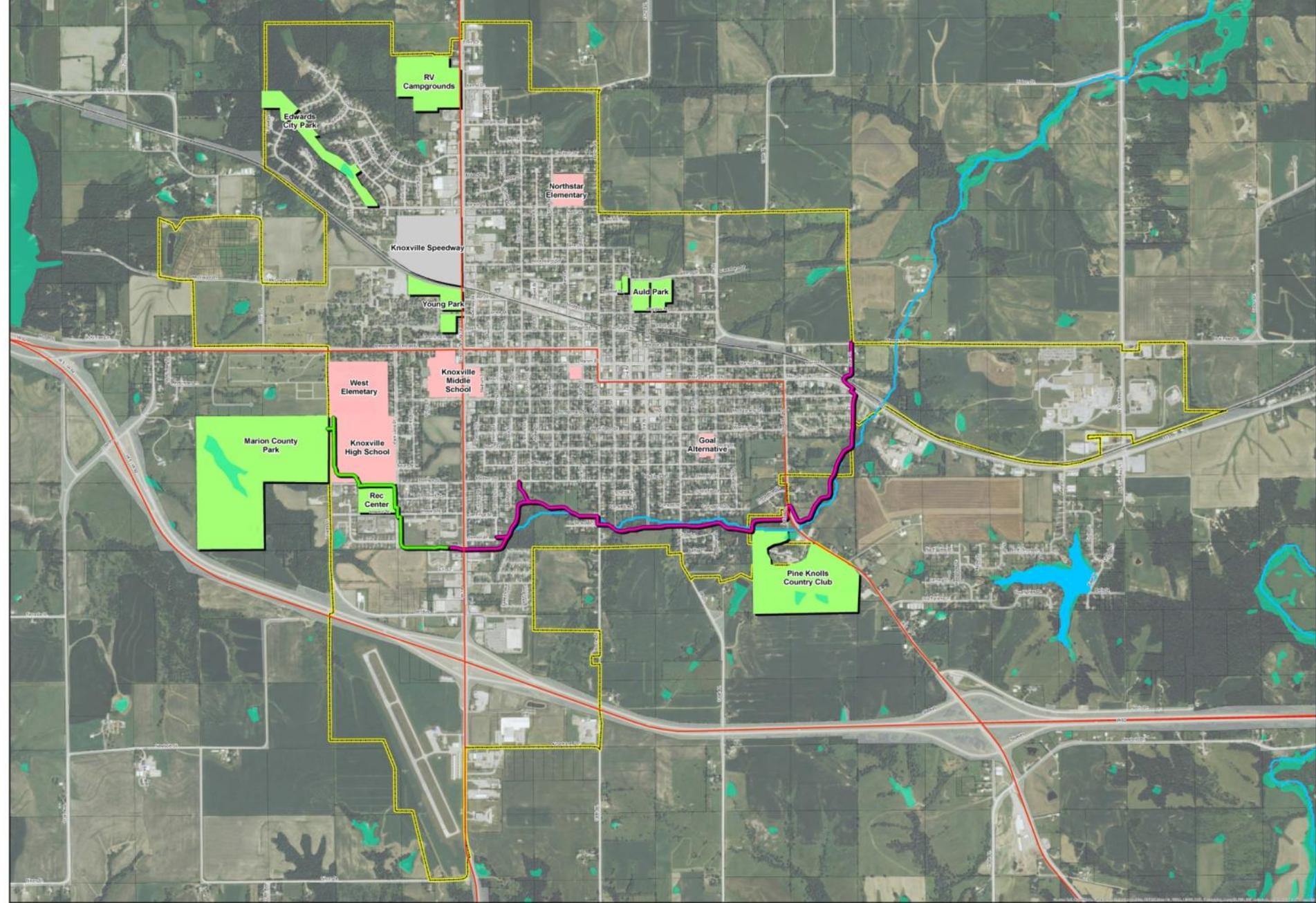
STRAVA LABS: KNOXVILLE BIKE ACTIVITY HEAT MAP



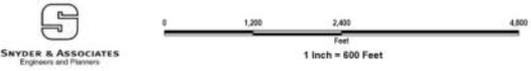


STRAVA LABS: KNOXVILLE RUNNING ACTIVITY HEAT MAP





KNOXVILLE BIKE AND TRAIL MASTER PLAN



- Legend**
- Highway
 - Planned Trails
 - Railroad
 - Existing Paved Trail
 - Water
 - School
 - Knoxville Raceway
 - National Wetland Inventory
 - Parks and Recreation
 - Corporate Limits
 - Parcels

WHEN





Public Input



- Stakeholder Meetings
- Public Meetings (2)
- Survey
- Online
- Email list



What's Next?

May

- Finalize and Distribute Survey

June

- Stakeholder Meetings

July

- 2nd IRT and BAC meeting

August

- 1st Public Meeting

September

- 3rd IRT and BAC meeting

October

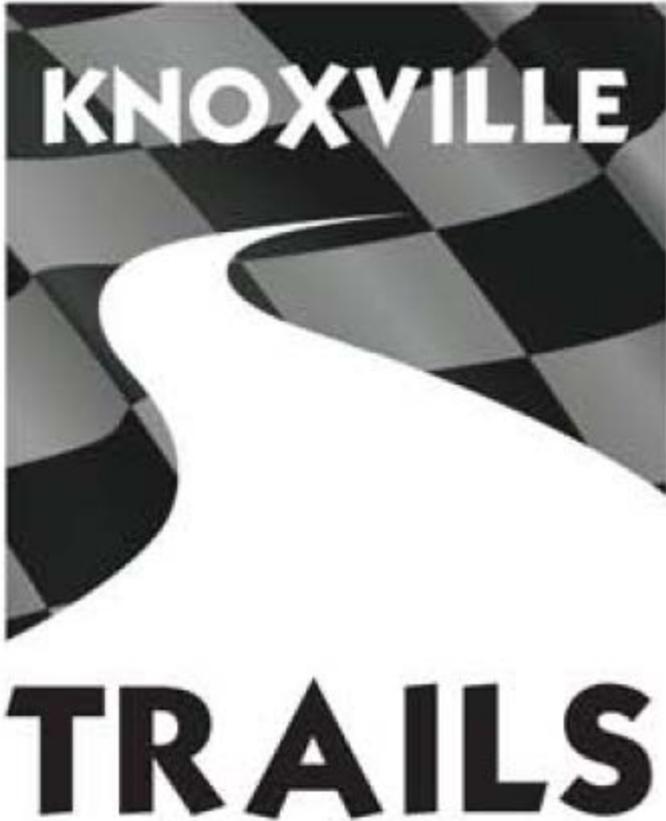
- 2nd Public Meeting (P&Z Commission)

November

- Adoption



Knoxville's To Do List:



1. Vote on logo/branding

2. Identify stakeholders for interviews (if any)

3. Review and approve survey questions (post/distribute ASAP)

4. Set date for 2nd IRT and BAC meeting (July)

5. Set date, time, location for 1st public meeting (August)

6. Advertise for 1st public meeting



Snyder & Associate's To Do List:

1. Refine logo/branding

2. Map potential routes and facility types

3. Draft goals and strategies

4. Draft potential programs and policies

5. Manage survey responses





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