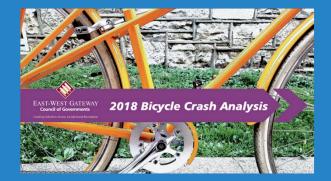
# **BICYCLE SAFETY PLANNING**

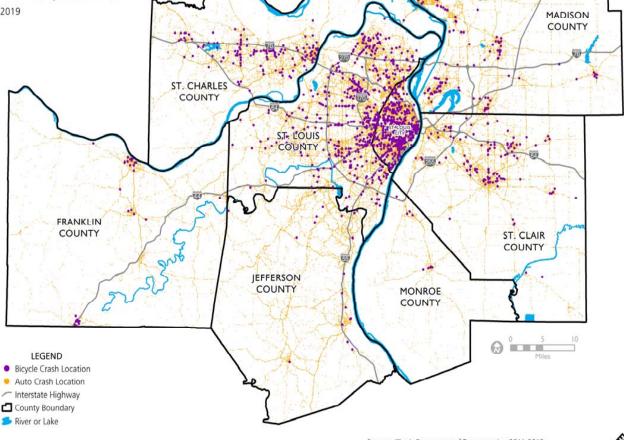
Board of Directors May 29, 2019

### BICYCLE SAFETY

- Average of 312 bicycle crashes per year from 2011-2015
  - ~10% serious injury
  - $\sim 1\%$  fatality
- The top 2 known causes of bicycle crashes:
  - Failure to yield
  - Distracted or inattentive driving
- 83% of crashes were on local roads
- 100% of bike fatalities were males
- 15-19 year old age group had the highest number of fatalities







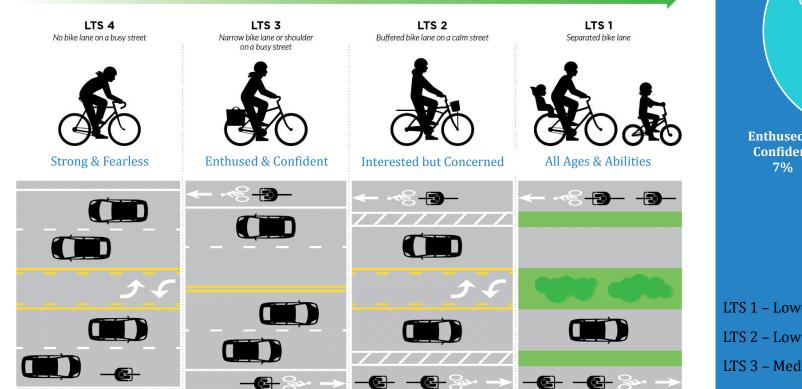
Sources: Illinois Department of Transportation 2011-2015; Missouri Department of Transportation 2011-2015; East-West Gateway Council of Governments





### LEVEL OF TRAFFIC STRESS

INCREASING LEVEL OF COMFORT, SAFETY, AND INTEREST IN BICYCLING FOR TRANSPORTATION



### **TYPES OF BICYCLISTS**



LTS 1 – Lowest Stress

LTS 2 – Low Stress

- LTS 3 Medium Stress
- LTS 4 High Stress

### GATEWAY BIKE PLAN

- Developed in 2011; endorsed by EWG Board of Directors January 2012
- Identifies over 1,000 miles of bicycle facilities (St. Louis City, St. Louis County, St. Charles County)
- Also includes strategies for education, encouragement, and enforcement
- Implementation
  - Strategic performance measures
  - EWG BPAC Gateway Bike Plan Working Group
  - Annual Report Card
- New metrics and goals
  - Address shifting national planning and design standards and adopt new bikeway design guidance
  - Network changes Incorporate network recommendations from new plans and studies

IMPLEMENTAT	ION	ENCOURAGEN
OF BIKEWAYS		Encouragement activities foster
The Galaway Bile Plan recommendation almost bileways to provide a s	nds over 1,000 miles of 🛛 😽	celebrates bicycling. Local gove organizations, bike shops, and o
	favoris for people bicycling	region host events and activities encourage more people to get o
in the St. Louis region. In 2012, Ca community partners added 12 mil	nat Rivers Greenway and Ins of new Gataway Illes	TARGET
Plan bikeways to greamways when ride a bike. In addition, local agen	re people can walk, run, or	and the second se
of on-street bikeways in 2017, Sin miles of new bikeways have been	ce the plan's adoption, 155	15 Strycing promotion
Bile Plan Natwork, bringing the t bileways to 200	otal mileage of the existing	
TARGET	ACHIEVEMENT	
1010001		Bicycle Friendly Community
200	5 an-street likewayt	L per per
200 sheet of new an all all the	an off and belowings	MAJOR ACCOMPLISHMENT
	100 mention angelies	St. Londo Bicycle Works and Food Outwach held the 13th annual Cranks
ANNUAL MILES OF NEW BI		31. Londs the pairs where a net Final Outwards hand the table annual Cheeker Hag, "Is fauld other un time where?" Art year's wardt, mark? 2000 people table facal grocery stores and collected an estimated \$70,000 to 1000 Outwards, 361, Janis area experiateline providing martitians warport for man, women, and children hining with hi1/V or valences.
- A A	alls at alls	estimated 10,000 to 12,000 her Ford
00 00		providing natrition support for man,
1111		
1111		
1111		
APPLICATION		SUPPORTING
APPLICATION STANDARDS		SUPPORTING
STANDARDS	OF DESIGN CRACK	SUPPORTING Policies are the foundation on w organizations base their ducinio blocking, lake Complete Streets
STANDARDS	OF DESIGN	SUPPORTING Policies are the foundation on w reparticism base they decisio bopcing, site Complete Streets ordinances, can have a perifician
STANDARDS	OF DESIGN	SUPPORTING Policies are the foundation on w reparticism base they decisio bopcing, site Complete Streets ordinances, can have a perifician
STANDARDS	OF DESIGN	SUPPORTING Policies are the foundations on a regardizations base their decision regarding, dec Compares There or references, can have a profound references, can have a profound references and build car strengt solu- tions of the second solutions of the second TARGET
STANDARDS Web designed them to support to transport takes to be a support and the single accesses them to be active transport takes with the of them convertient travel choice. TARGET	OF DESIGN A travel for all modes of the part travels to the model to the state the state, example and A CHEVEMENT	SUPPORTING Prices are the function or the repercision base their decision begins the Compile Street, ordinance, can have a periodic devian and build our streets and
STANDARDS Well-descend theats accord to transportation, how exitor wellot and weldena Accord descend to the transportation make topol many conversel travel choice. TARGET	OF DESIGN	SUPPORTING Antes are the fundations or the sector of the complete Stream of the sector of the sector of the Stream of the sector of the sector of the sector of the Stream of the sector of the sector of the sector of the Stream of the sector of the sector of the sector of the sector of the Stream of the sector of th
STANDARDS Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew TABGET Compare 3 Stream Andrew Andrew Market Andrew Andrew Andrew Market Andrew A	OF DESIGN CLASS The part for all memory and the part for all memory and the part for all memory and the part for all memory and ACHECHEMIC The part for all memory and ACHECHEMIC ACHECHEMIC The part for all memory and ACHECHEMIC ACH	SUPPORTING Notice of the formation of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction o
STANDARDS Web designed them to support to transport takes to be a support and the single accesses them to be active transport takes with the of them convertient travel choice. TARGET	OF DESIGN A brake for a nuclei and the brake for a nucle	SUPPORTING Notice of the formation of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction o
STANDARDS Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew TABGET Compare 3 Stream Andrew Andrew Market Andrew Andrew Andrew Market Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew An	OF DESIGN CLASS The pack for a model of the pack fore	SUPPORTING Notice of the formation of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction o
STANDARDS Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew TABGET Compare 3 Stream Andrew Andrew Market Andrew Andrew Andrew Market Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew An	OF DESIGN A brake for a nuclei and the brake for a nucle	SUPPORTING Notice of the formation of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction o
STANDARDS Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew TABGET Compare 3 Stream Andrew Andrew Market Andrew Andrew Andrew Market Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew An	OF DESIGN A brake for a nuclei and the brake for a nucle	SUPPORTING Policies are the foundation on we experimentations lake there decides the second second second second second second second second second second second second s
STANDARDS Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew TABGET Compare 3 Stream Andrew Andrew Market Andrew Andrew Andrew Market Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew Andrew An	A CARACTERISTIC STATES	SUPPORTING Notice of the formation of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction of the contraction of the contraction of the support of the contraction o





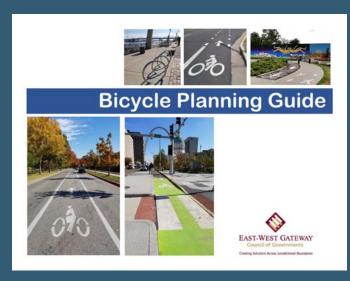
15 ==

ENFORCEMENT

в

14

А



### eparated Bike Lanes

Separated bike lanes (also known as protected bike lanes or cycle tracks) are Separate date tames and shown as protected and accessed a any road where space allows, but is strongly recommended for use on higher-speed, higher-volume roads, or roads with multiple lanes of travel.

eals to a wide variety of bicyclist skill levels due to the high level of ration, which reduces level of stress. tally also separated from pedestrian traffic, minimizing congestion vicetrian heave locations

sical separation or protection often ends at intersections, which may uire additional treatments to ensure safe, comfortable crossings and ning movements for people bicycling.

- If available, on-street parking can be considered as a physical buffer. allable, on-street parking can be considered as a physical buffer, arated bike lanes can be one-way or two-way. For two-way cycle cs, consider surrounding land use and connecting facilities to miner which side of the street is most appropriate for placement use pavement markings to indicate the direction of travel on bot cycle track
- ections on major roads through and

Level of Separation: High

Brook Ramore Code (11)

### EAST-WEST GATEWAY **BICYCLE PLANNING GUIDE**

- Released June 2018
- Developed to help assist Local Public Agencies as they develop projects for TIP funding consideration.
- The Guide enables LPAs to:
  - Understand how various user groups respond to different types of bicycle facilities.
  - Determine the recommended type of bicycle facility to be developed based on the vehicle speed and traffic volume.
- Defines level of stress, types of bicyclists, and network connectivity
- Outlines different types of bicycle facilities
- Bicycle facility selection guide
- Design resource index: FHWA, FTA, NACTO, AASHTO, ITE

### NACTO BICYCLE PLANNING WORKSHOP

- May 15 at the MODOT Traffic Management Center
- 50 attendees from across the region
- Certified NACTO trainers lead local training on national bikeway design best practices
- Educational workshops to be hosted annually





### USDOT POLICY STATEMENT ON BICYCLE AND PEDESTRIAN ACCOMMODATION

 "The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide – including health, safety, environmental, transportation, and quality of life – transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes." (March 2010)





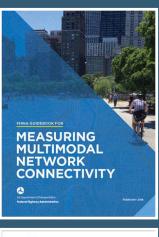




### USDOT MEMO: BICYCLE AND PEDESTRIAN DESIGN FLEXIBILITY

- "This memorandum expresses the FHWA support for taking a flexible approach to bicycle and pedestrian facility design." *(August 2013)*
- FHWA supports the use of the following resources to further develop nonmotorized transportation networks, particularly in urban areas:
  - AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
  - AASHTO Guide for the Development of Bicycle Facilities
  - NACTO Urban Bikeway Design Guide
  - ITE Designing Urban Walkable Thoroughfares





۵



# FHWA RESOURCES

- Separated Bike Lane Planning and Design Guide (May 2015)
- Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks (Dec 2015)
- Incorporating On-Road Bicycle Networks into Resurfacing Projects (Dec 2015)
- Guidebook for Developing Pedestrian and Bicycle Performance Measures (Mar 2016)
- Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts (Aug 2016)
- Small Town and Rural Multimodal Networks (Dec 2016)
- Guidebook for Measuring Multimodal Network Connectivity (Feb 2018)
- Strategies for Accelerating Multimodal Project Delivery (Oct 2018)
- Bikeway Selection Guide (Feb 2019)

Note: not an exhaustive list.



# MELISSA THEISS BICYCLE, PEDESTRIAN & ACCESSIBILITY PLANNER MELISSA.THEISS@EWGATEWAY.ORG