

Network-Focused Bicycle Planning

The Importance of Planning for Users and the Level of Traffic Stress Methodology

May 18, 2016



KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

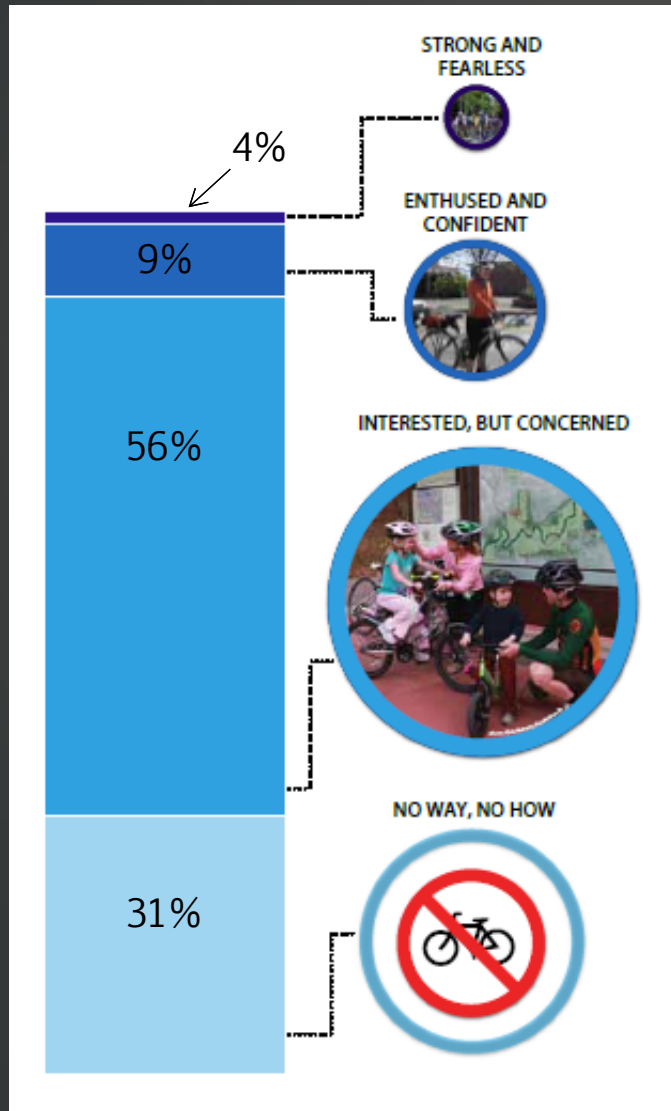
Agenda

- Planning for People on Bikes
 - Who might ride a bike?
 - What's stopping them?
 - Obvious facts about bikes!
- Facility-Focused Planning
 - Shortcomings of choosing facilities for “safety”
- Network-Focused Planning
 - What do you need your bike network to do?
 - What's already there, doing that?
 - Level of Traffic Stress Methodology
 - What's missing?
 - Bethesda Case Study
 - How do you choose the right facility to bridge the gap?
 - What if everyone will fight you about it?



PLANNING FOR PEOPLE ON BIKES

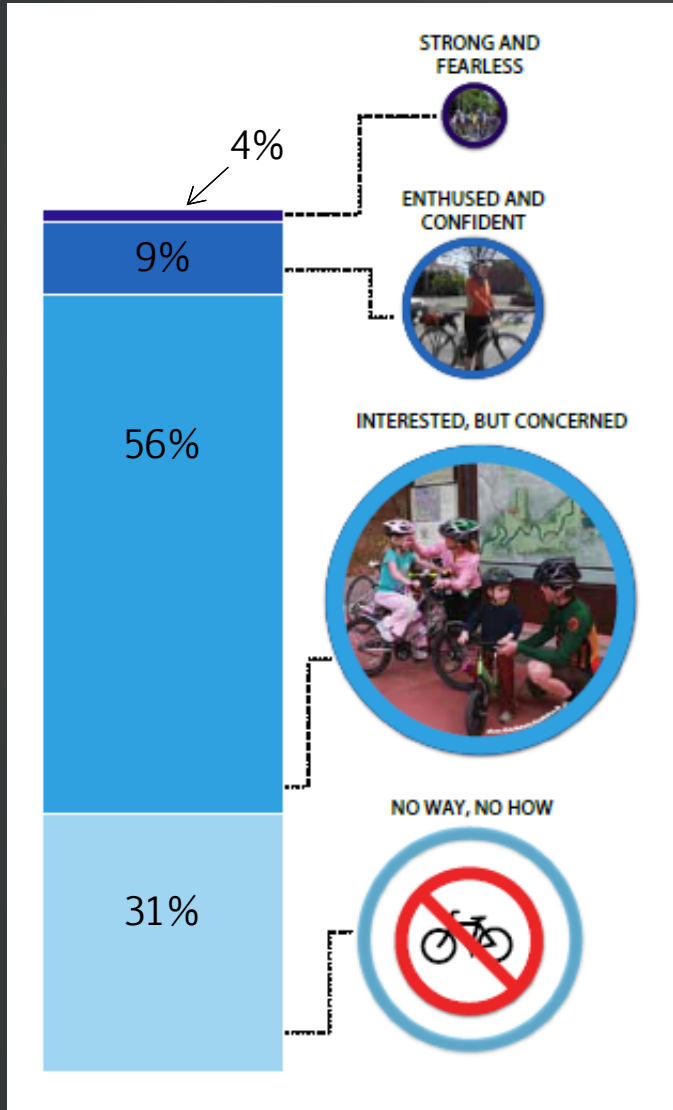
Who Might Ride a Bike?



Almost 70% of people are interested in riding a bike.

Source: Jennifer Dill and Nathan McNeil. "Four Types of Cyclists? Testing a Typology to Better Understand Bicycling Behavior and Potential." Portland State University OTREC. August 2012.

What's Stopping Them?

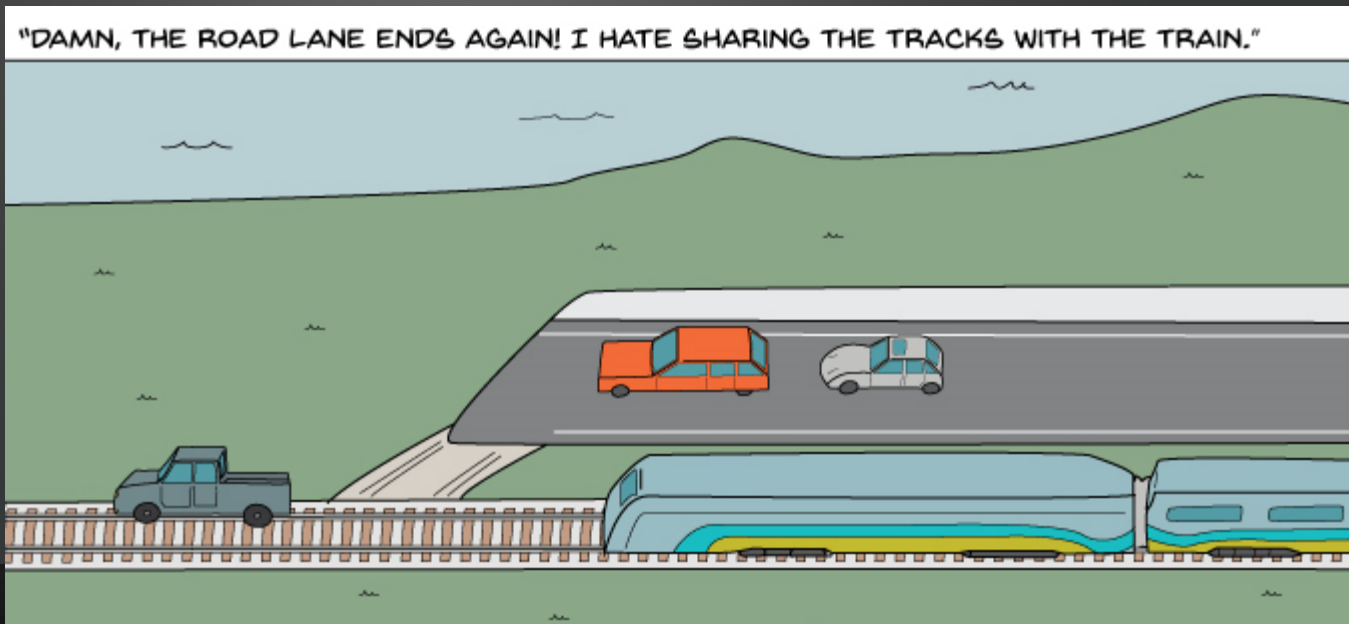


They don't feel safe.

Only 13% of people feel confident and comfortable riding their bikes to get around, under current conditions.

Obvious Facts About Bikes!

- > Bikes are ridden by people
- > People travel to get places
- > People only travel in ways that make them feel safe
- > They have to feel safe for the **WHOLE TRIP**

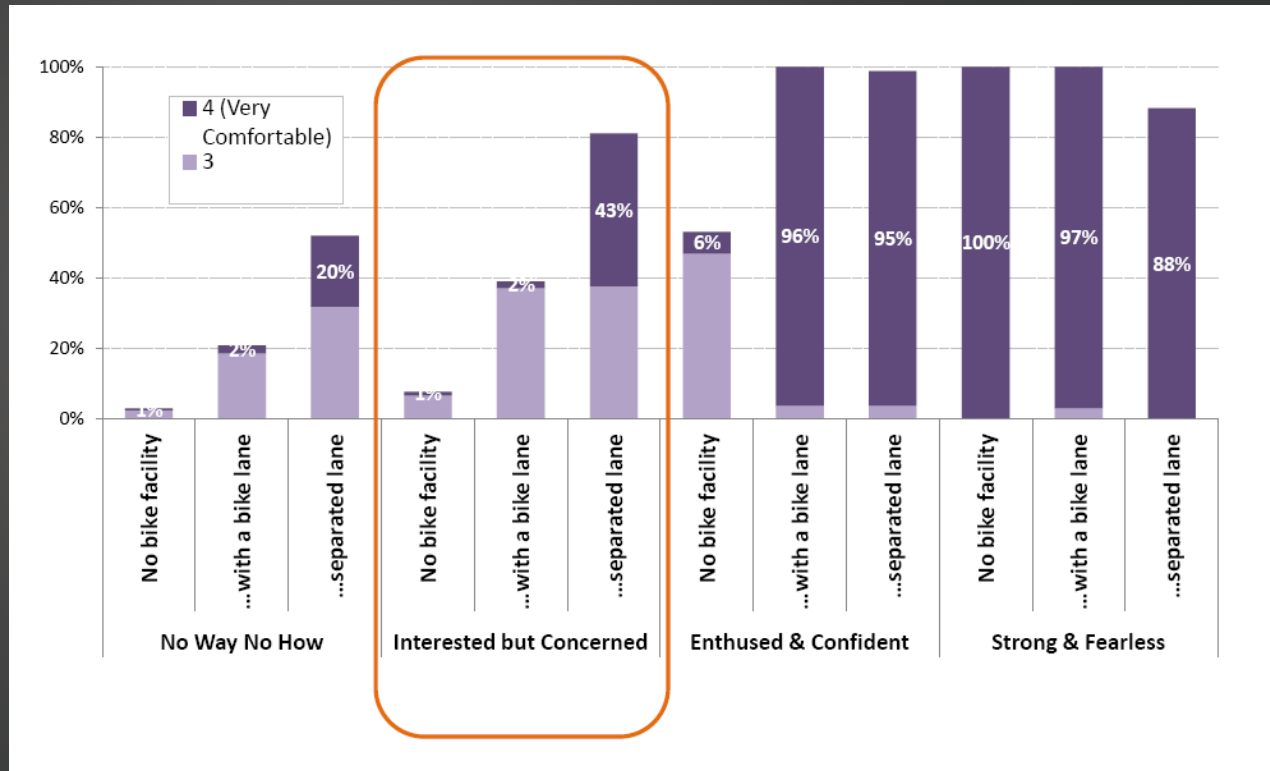


Implications of these Facts

- For someone to consider riding a bike to do something, network of streets and bike facilities that they can ride on has to feel safe the entire way, without interruption.
 - Their whole route has to be “low stress”
 - Picture a setting where you’d feel comfortable with a middle school aged child riding
- This doesn’t mean that a bike lane is necessary on every street.
- It also doesn’t mean that a bike lane on every street would be enough.

Implications of these Facts

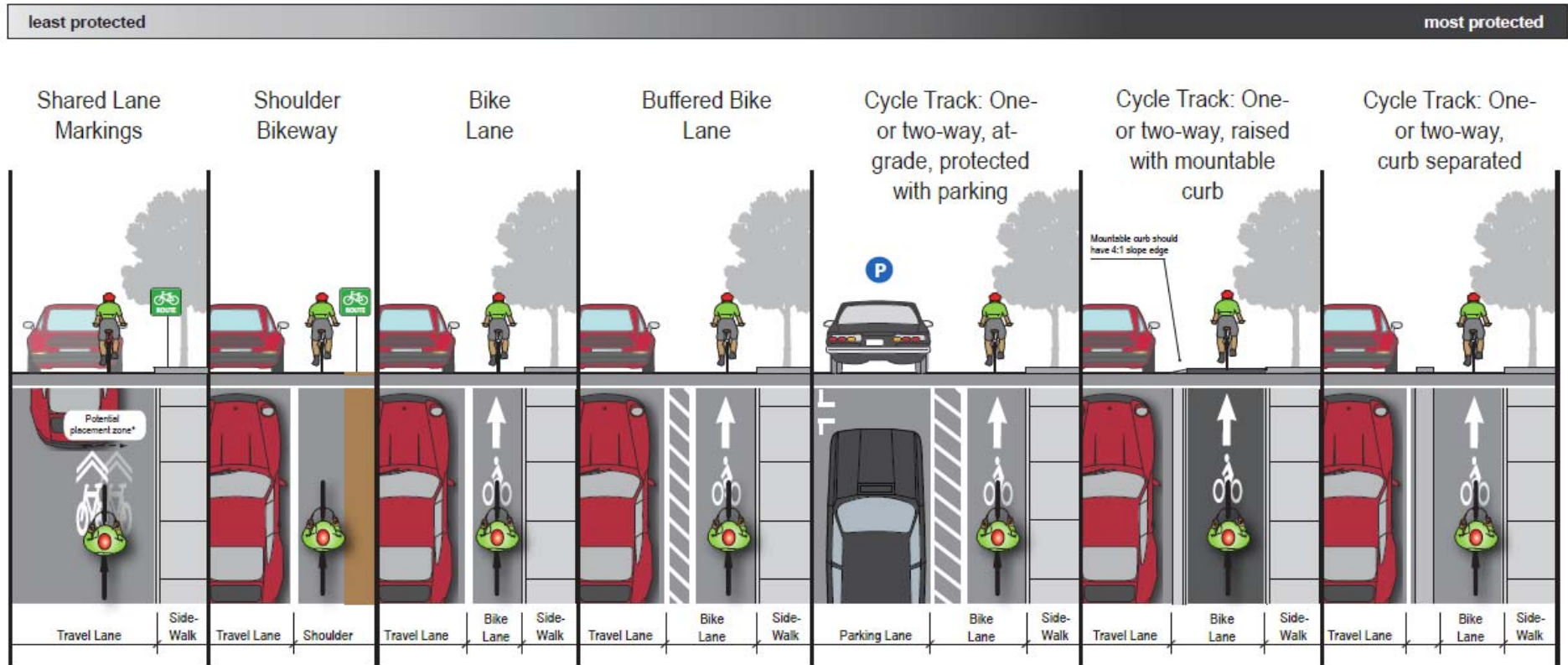
- > The majority of this large group of potential bicyclists are not comfortable in a standard bike lane



- > 80% of “interested but concerned” bicyclists feel comfortable or very comfortable in a separated bike lane or cycletrack

Bicycle Facilities

Each of these facilities or markings is useful in its correct context



Is it Enough to Build a Safe Facility?

> Maryland SHA

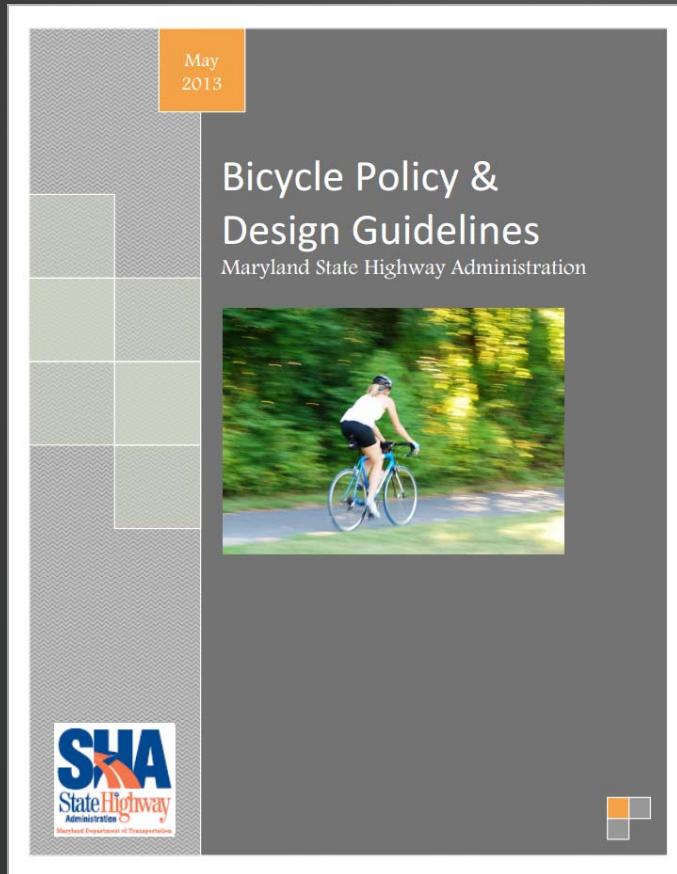


Table 2.1 – Marked Bike Lanes

MINIMUM SHOULDER WIDTHS FOR MARKED BIKE LANES		
POSTED SPEED LIMIT	TRUCK VOLUMES (%ADT)	SHOULDER/LANE WIDTH*
≤ 35 MPH	-----	4 FEET
> 35 MPH and ≤ 45 MPH	≤ 8% trucks	5 FEET
	> 8% trucks	6 FEET
> 45 MPH	-----	6 FEET

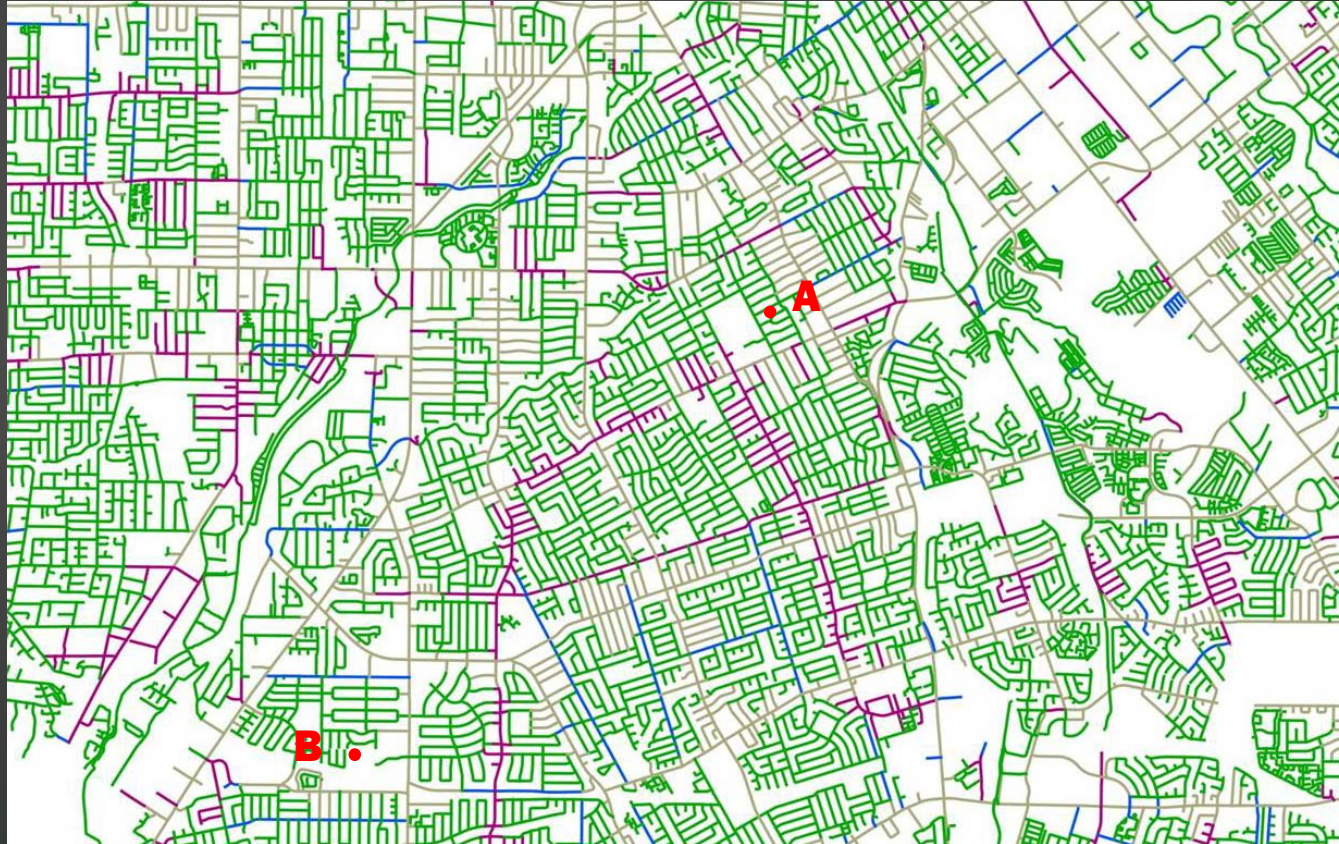


Facility Focused Planning

- Each link is evaluated separately and individually
 - Network connectivity not considered and prioritized
 - Intersections and transitions not considered
- Limited number of bicycle facility types
 - New bicycle facilities and treatments have been developed for different contexts
- Even if facilities are chosen so that they create a low stress street, they're only useful if they connect people to places

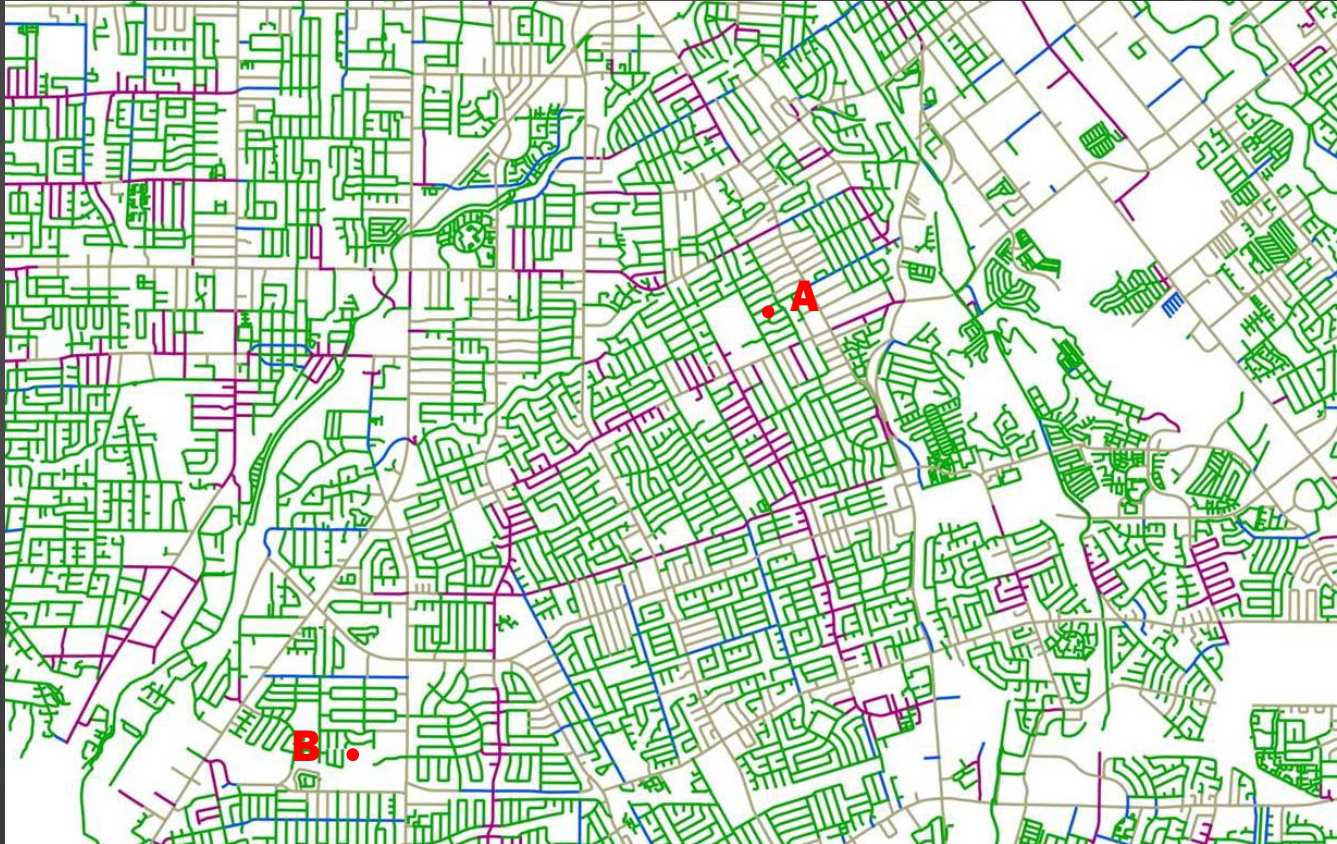
Network Focused Planning

If you're a bicyclist who lives at point A, and wants to get to point B, What do you need your bike network to do?



Network Focused Planning

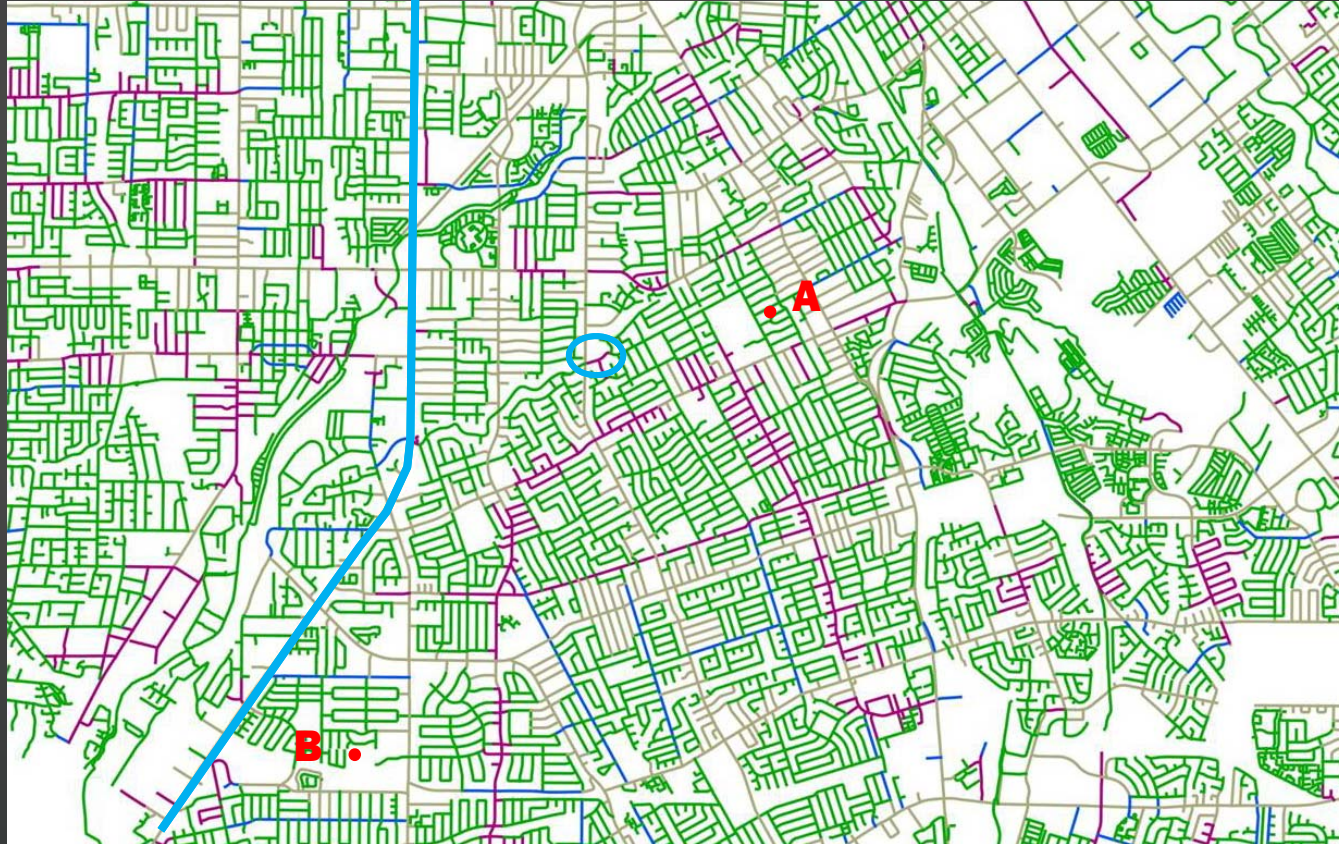
What streets are already doing the necessary work of the bicycle network? Low stress local streets.



If the green and blue lines are these low stress local streets, and all others are too high stress to ride, how would a bicyclist get from point A to point B?

Network Focused Planning

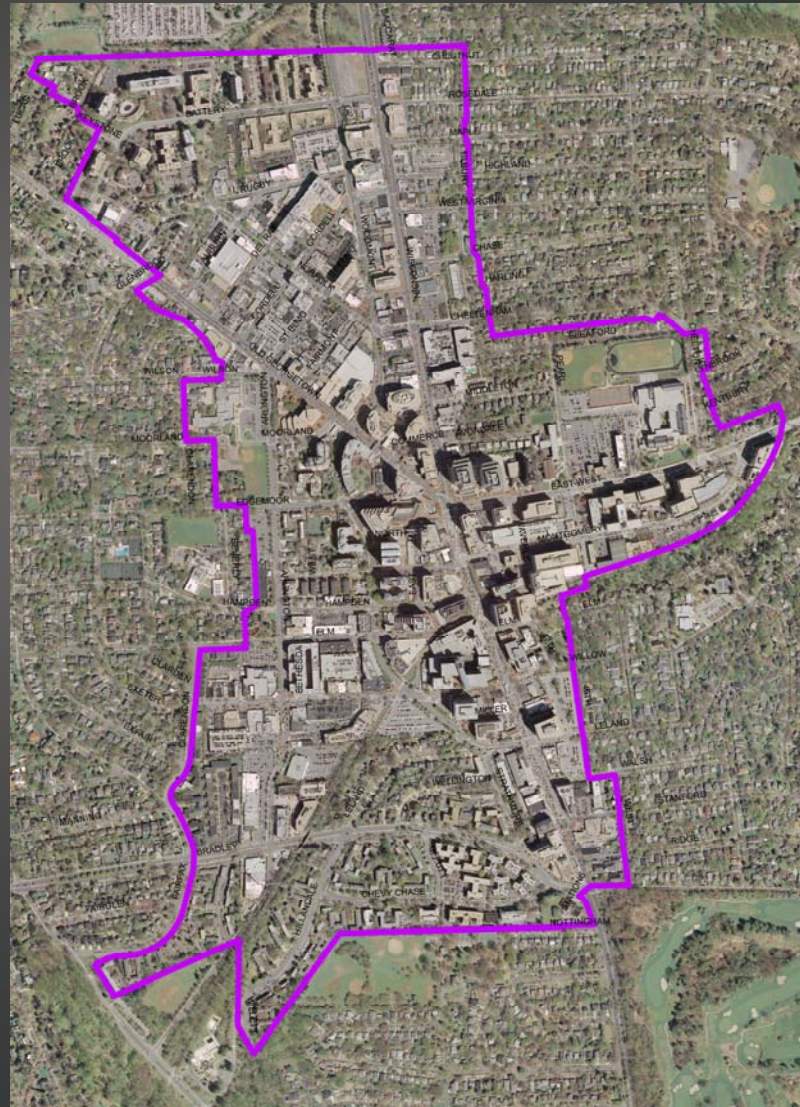
If the green and blue lines are the safe and comfortable roads on which to ride a bike, how would a bicyclist get from point A to point B?





DOWNTOWN BETHESDA CASE STUDY

Downtown Bethesda



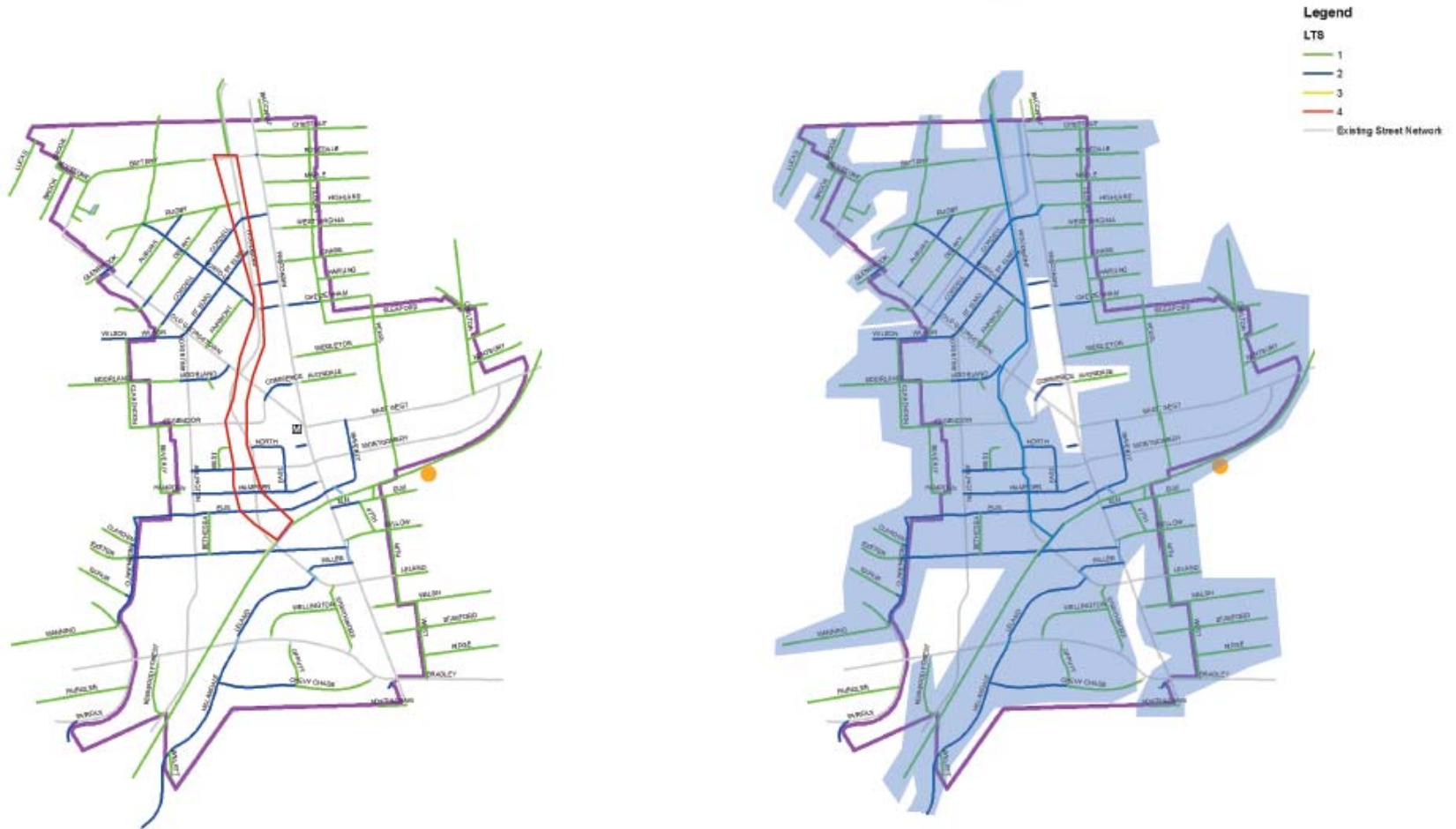
Level of Traffic Stress

- The Level of Traffic Stress methodology identifies four stress levels based on key facility and traffic factors
 - Stress level 1 – Requires little attention, suitable for children
 - Stress level 2 – Low traffic stress, but only suitable for most adults
 - Stress level 3 – Moderate traffic stress for all bicyclists
 - Stress level 4 – High stress, only suitable for experienced bicyclists
- Key factors include
 - Presence and type of facility
 - Width of dedicated bicycle facility
 - Number of vehicle lanes
 - Vehicle speed and volume
 - Density of driveways, intersections, and other conflicts with facility

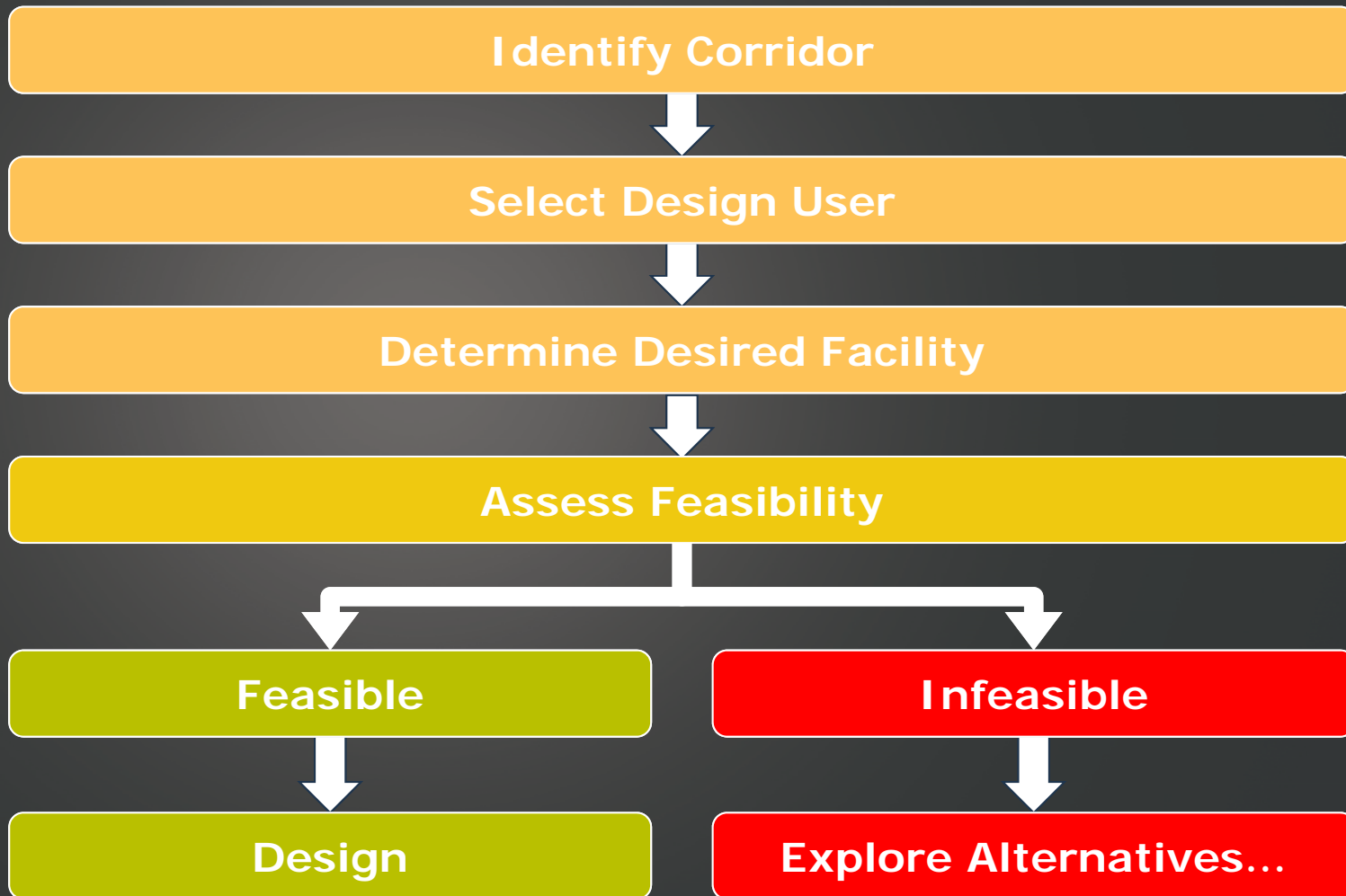
Planning for the Interested but Concerned



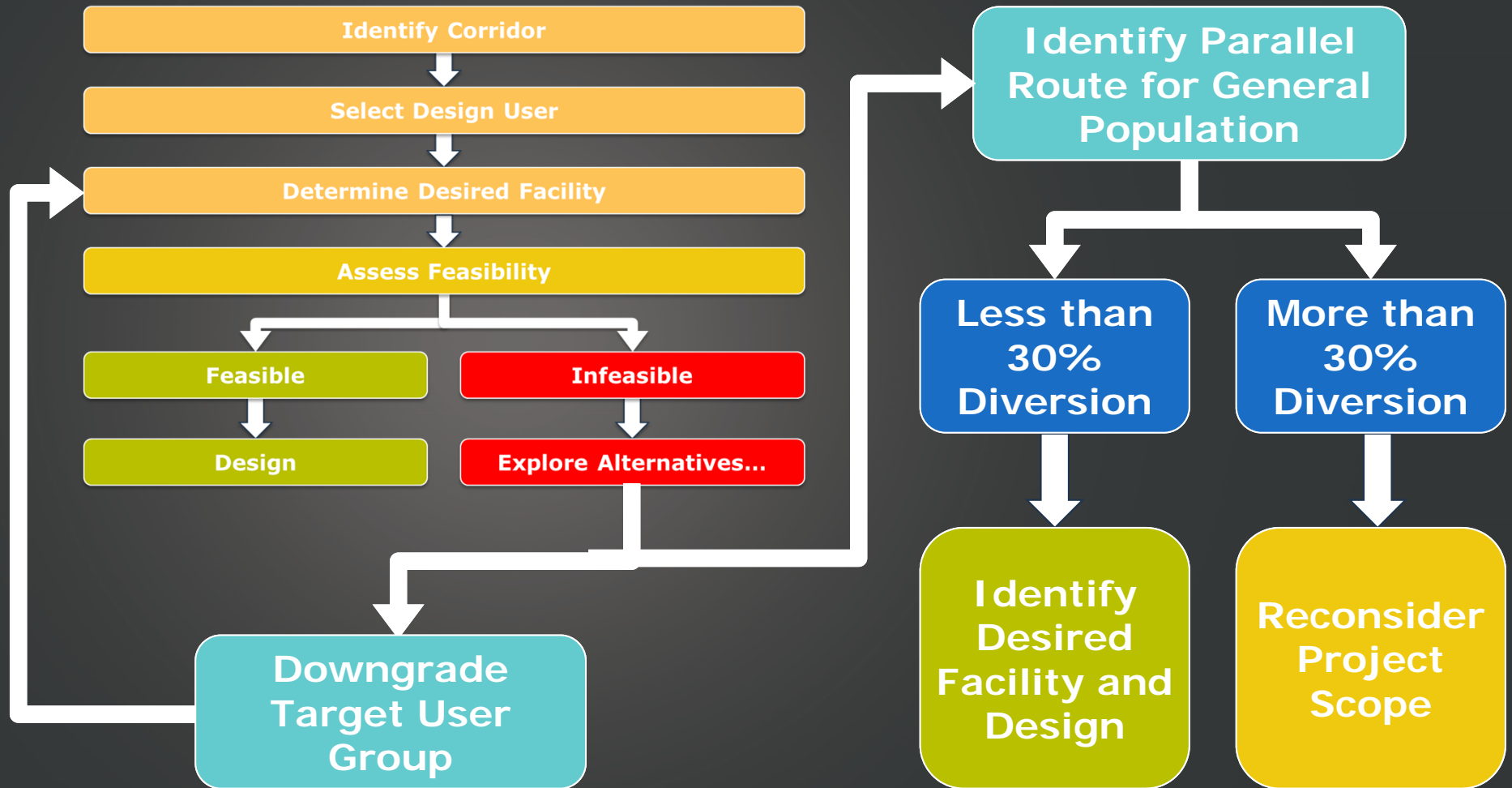
Planning for the Interested but Concerned



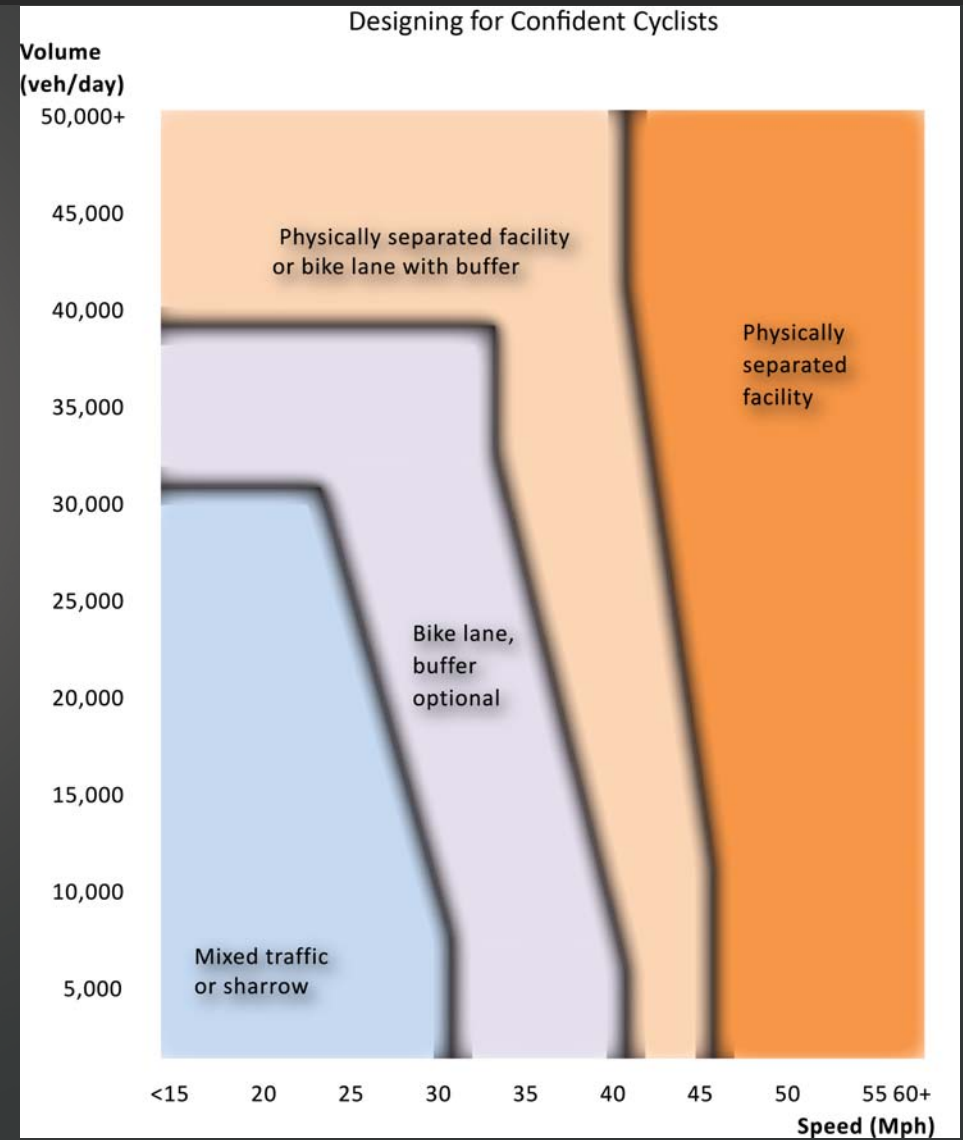
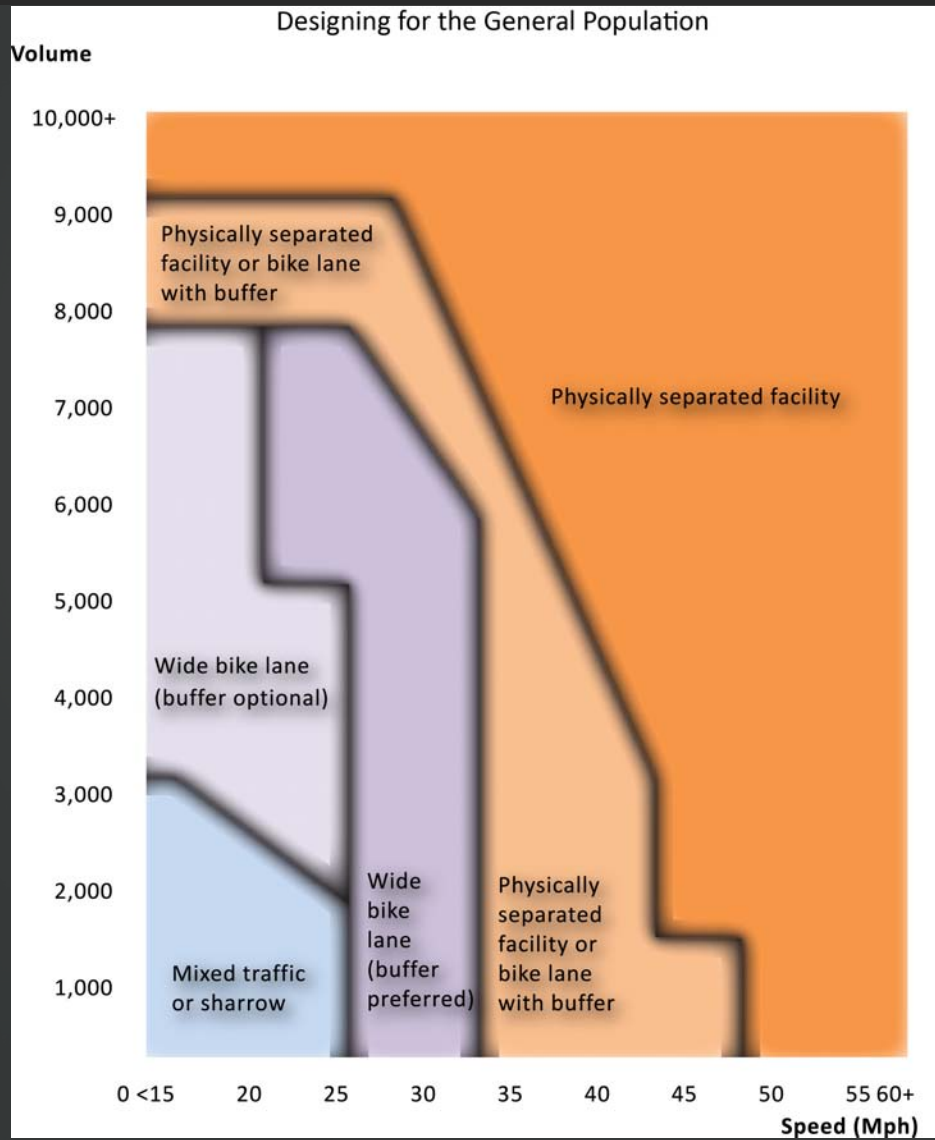
Proposed Montgomery County Approach



Proposed Montgomery County Approach



Facility Selection

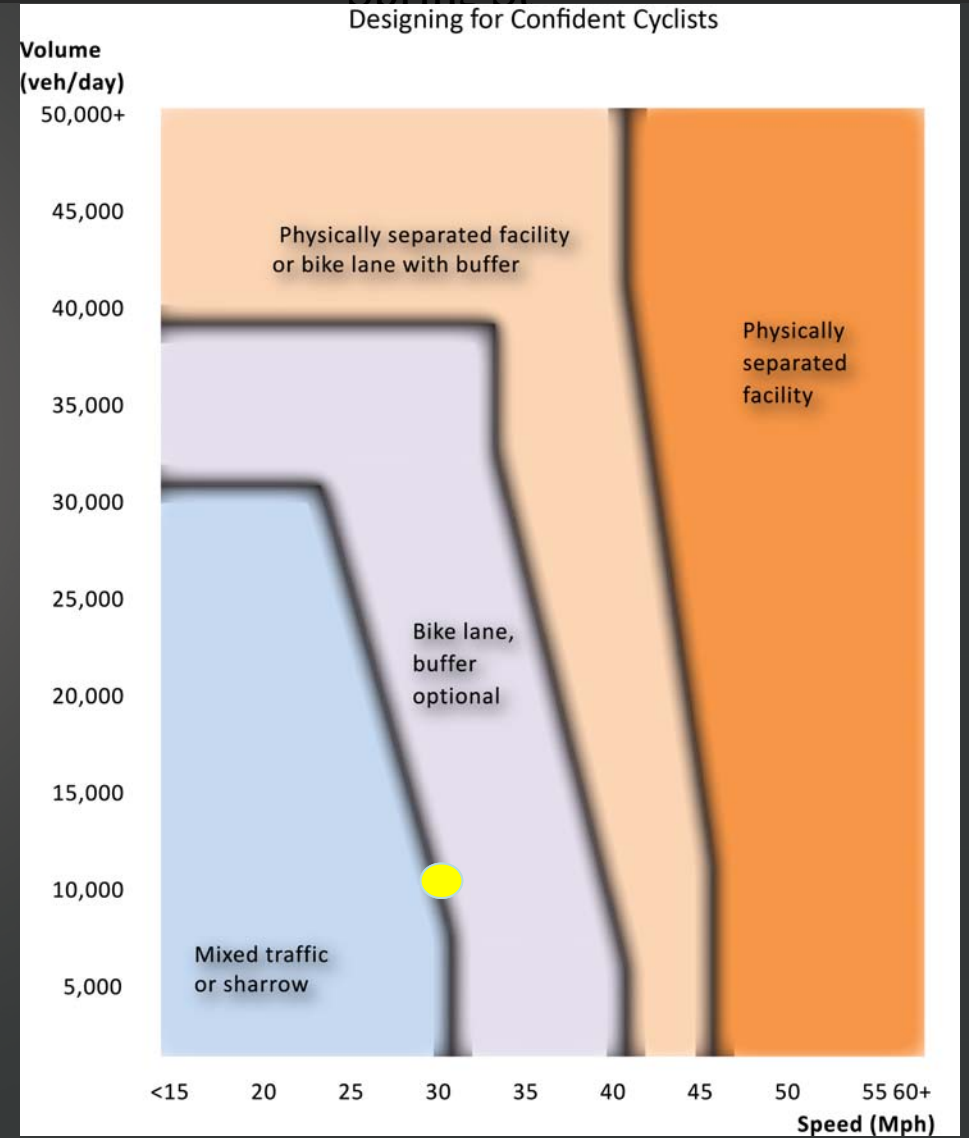
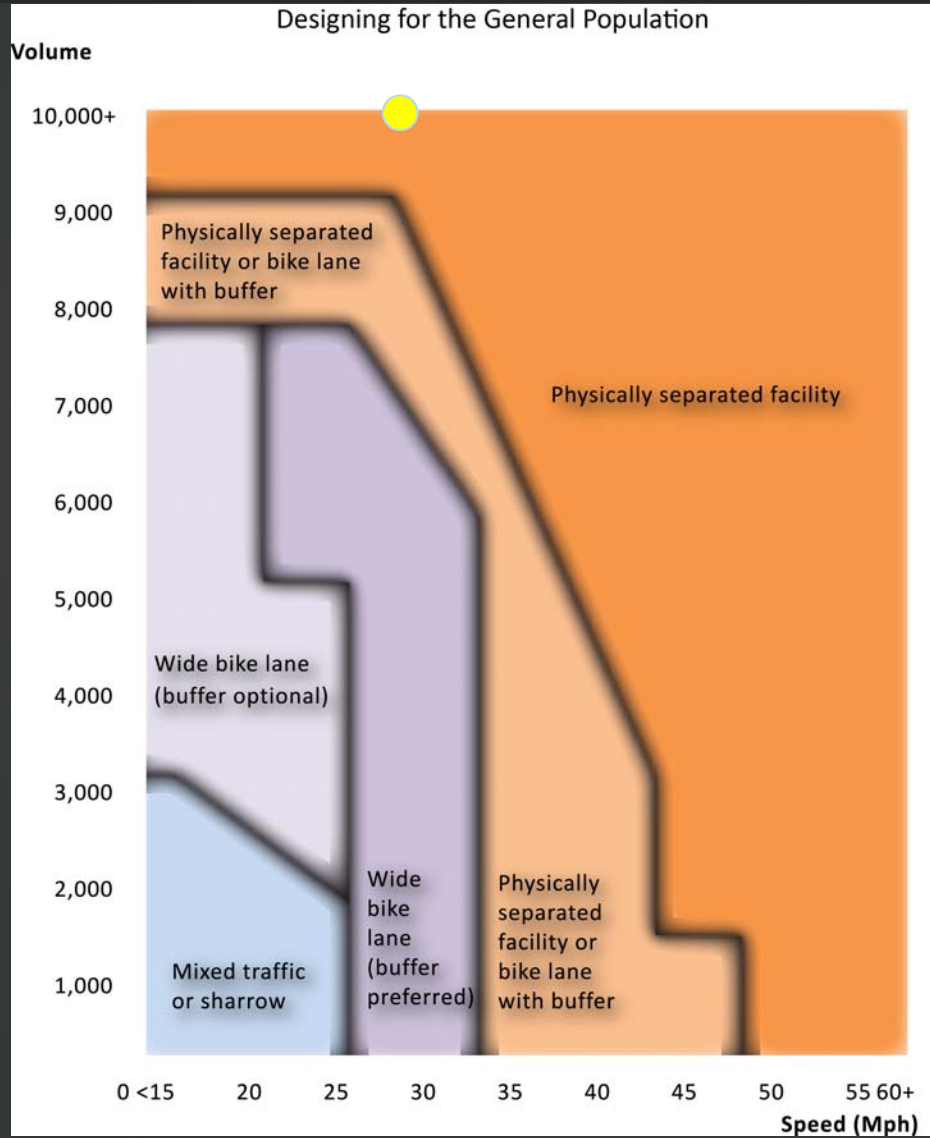


Spring Street, Silver Spring



Spring Street, Silver Spring

Spring St

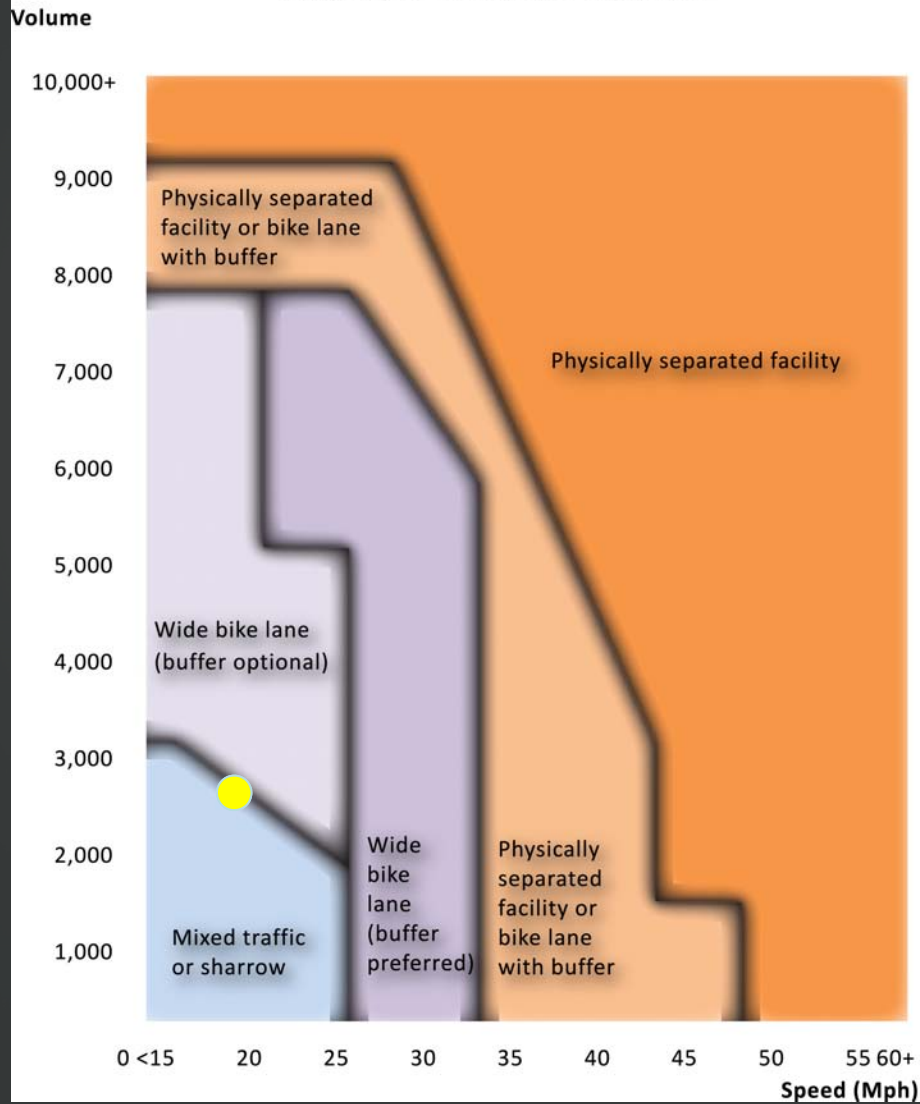


Dorset Avenue, Bethesda



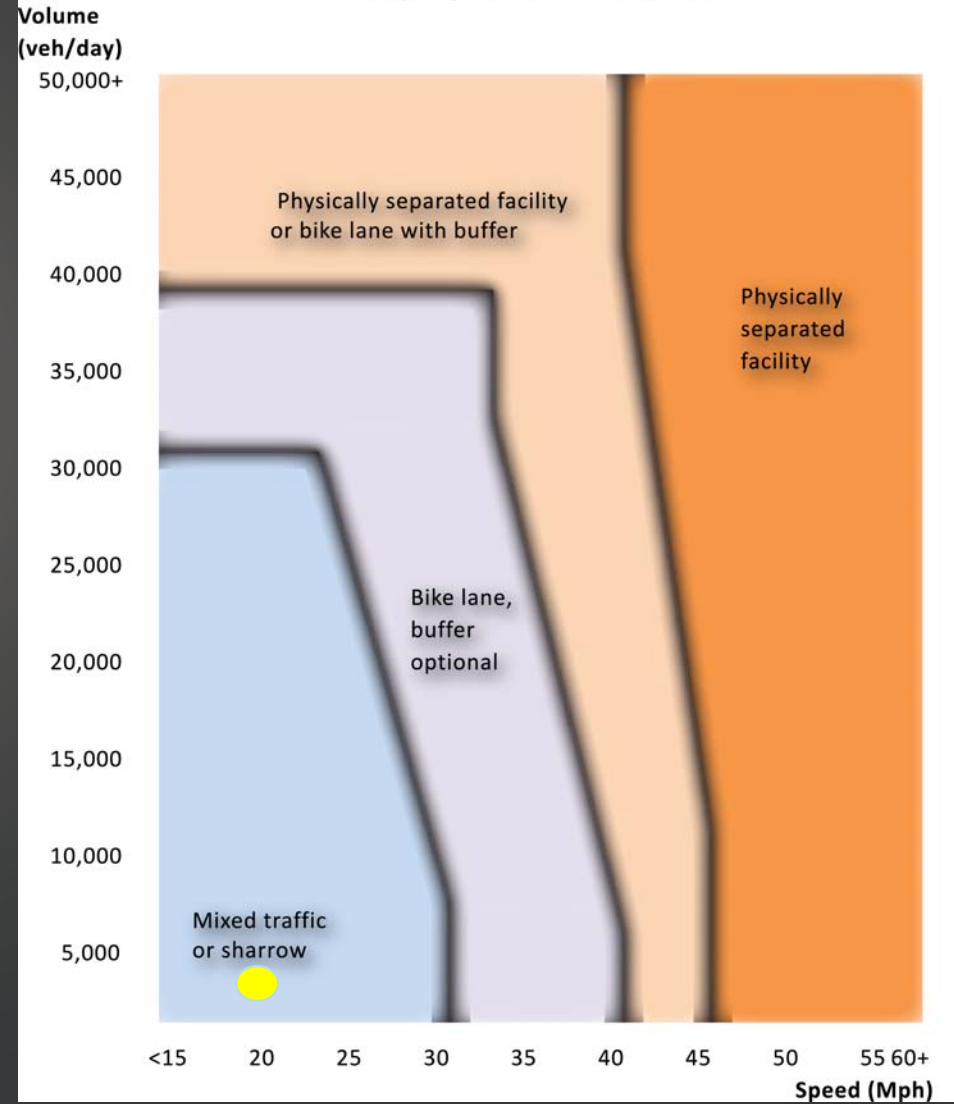
Dorset Avenue, Bethesda

Designing for the General Population



Spring St

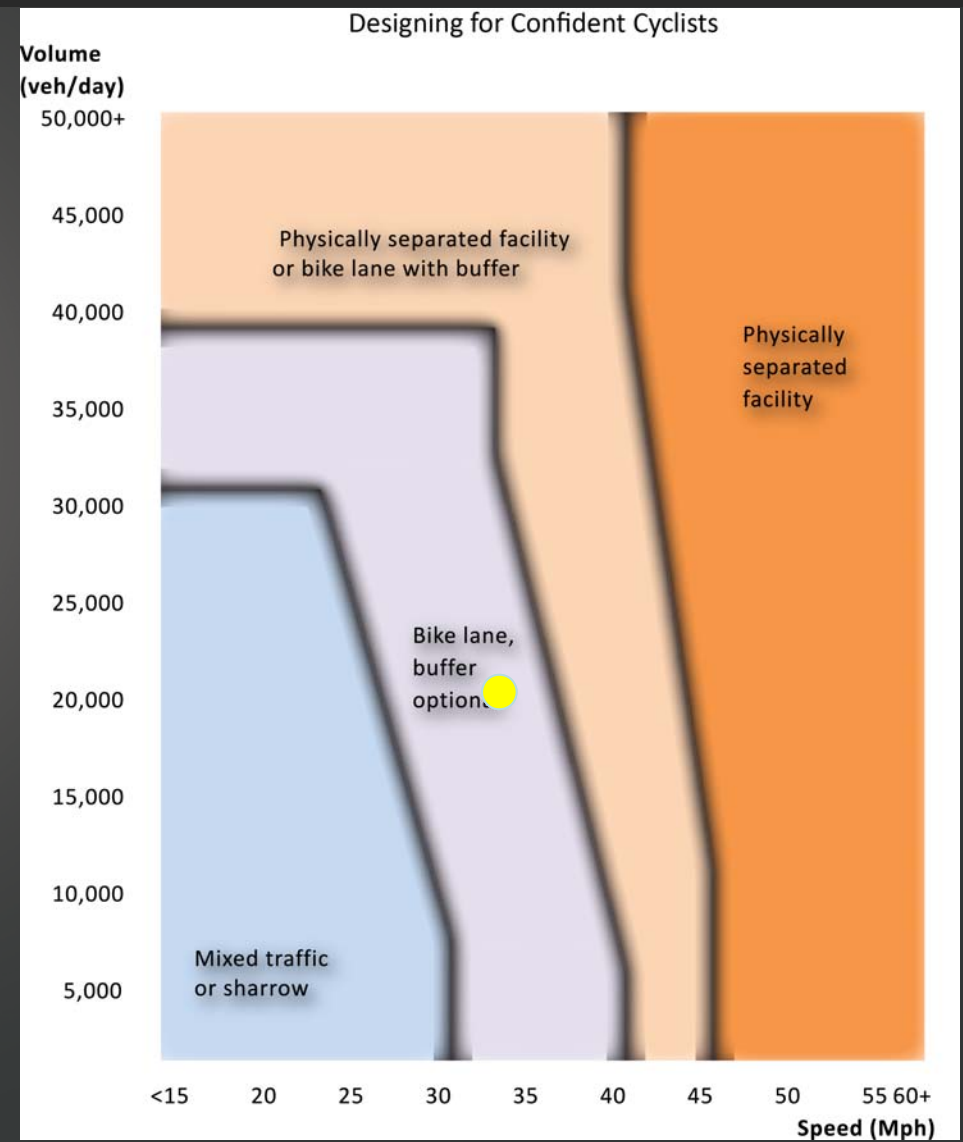
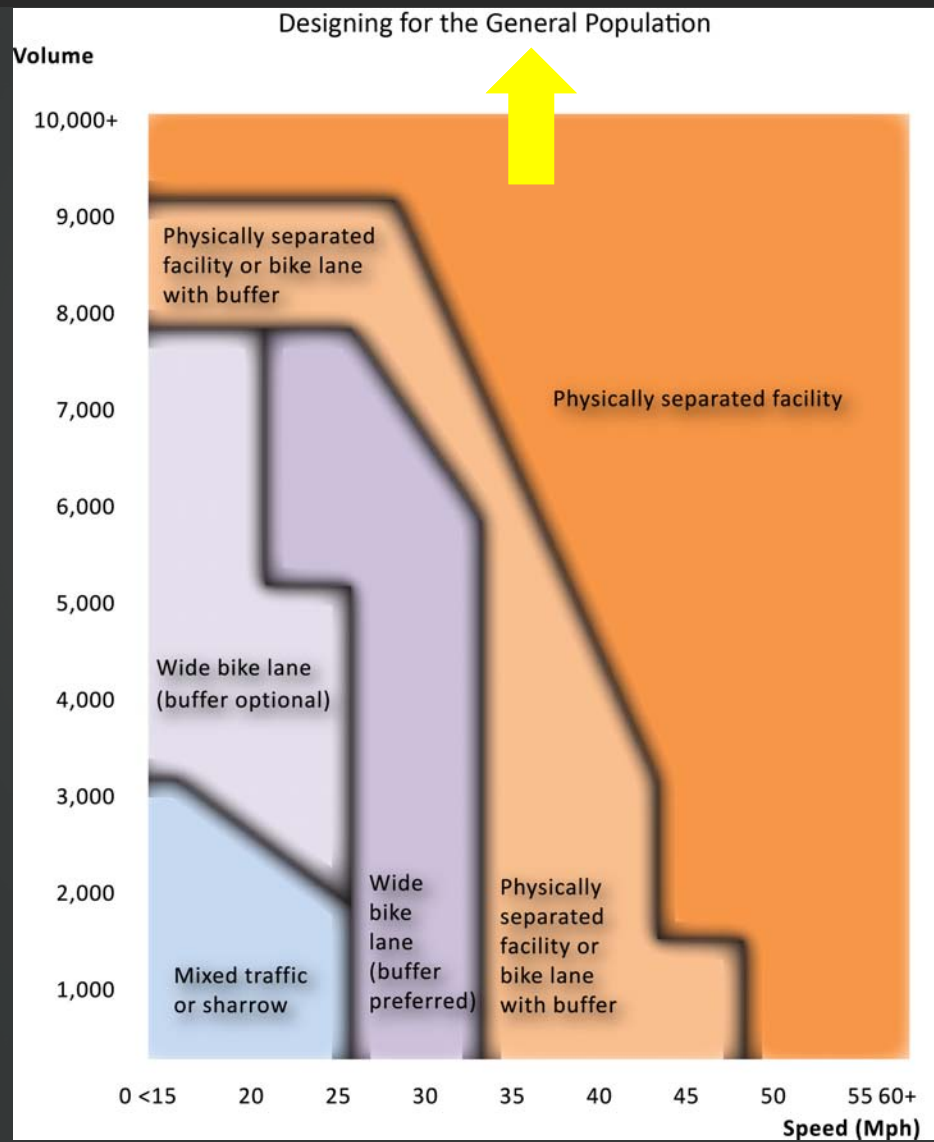
Designing for Confident Cyclists



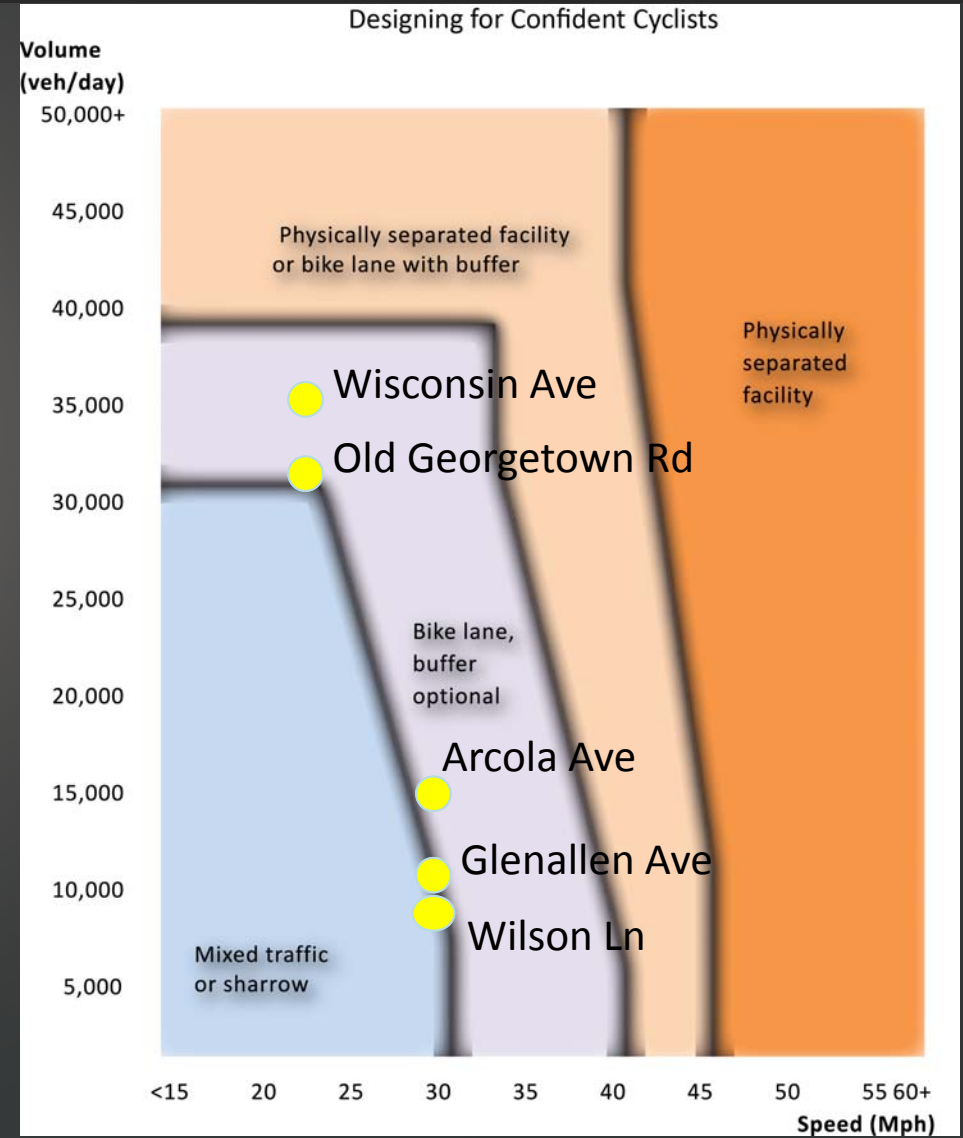
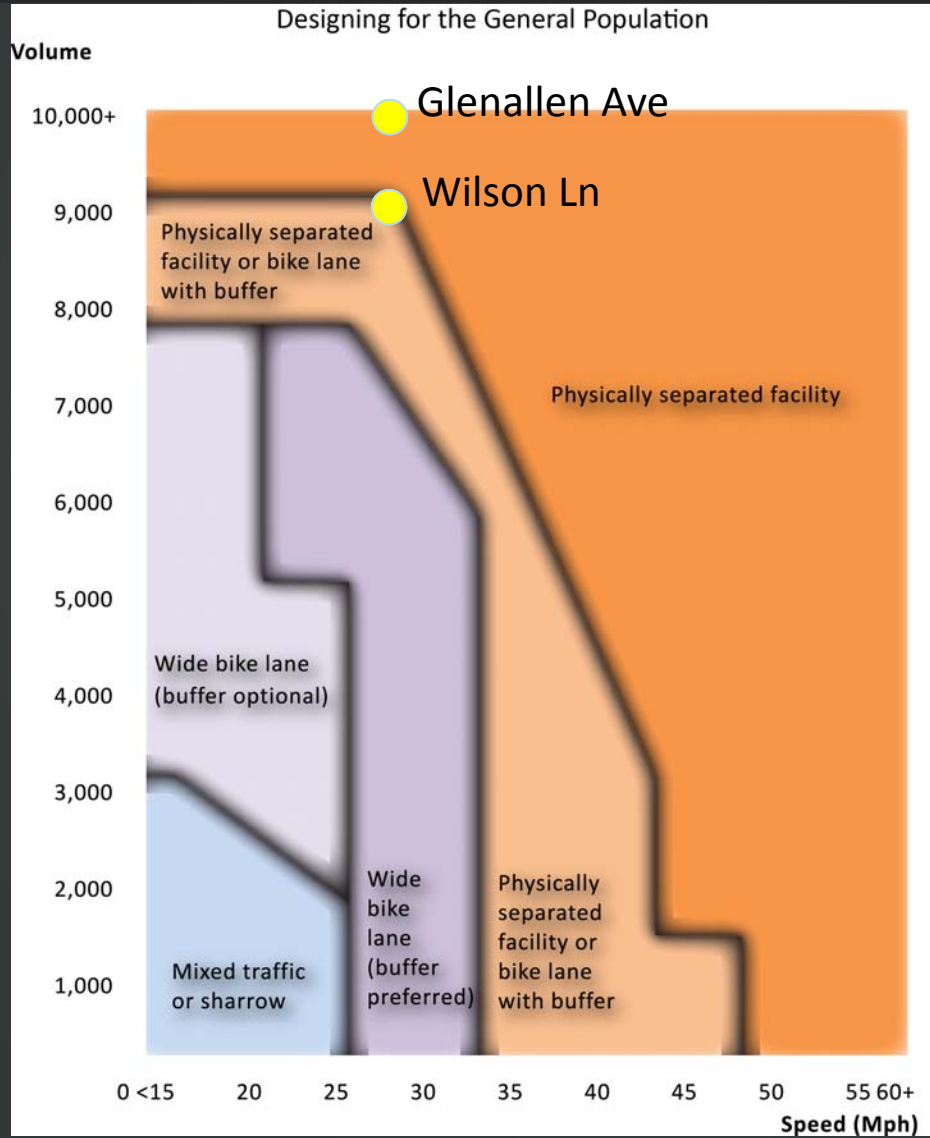
East-West Highway, Silver Spring



East-West Highway, Silver Spring



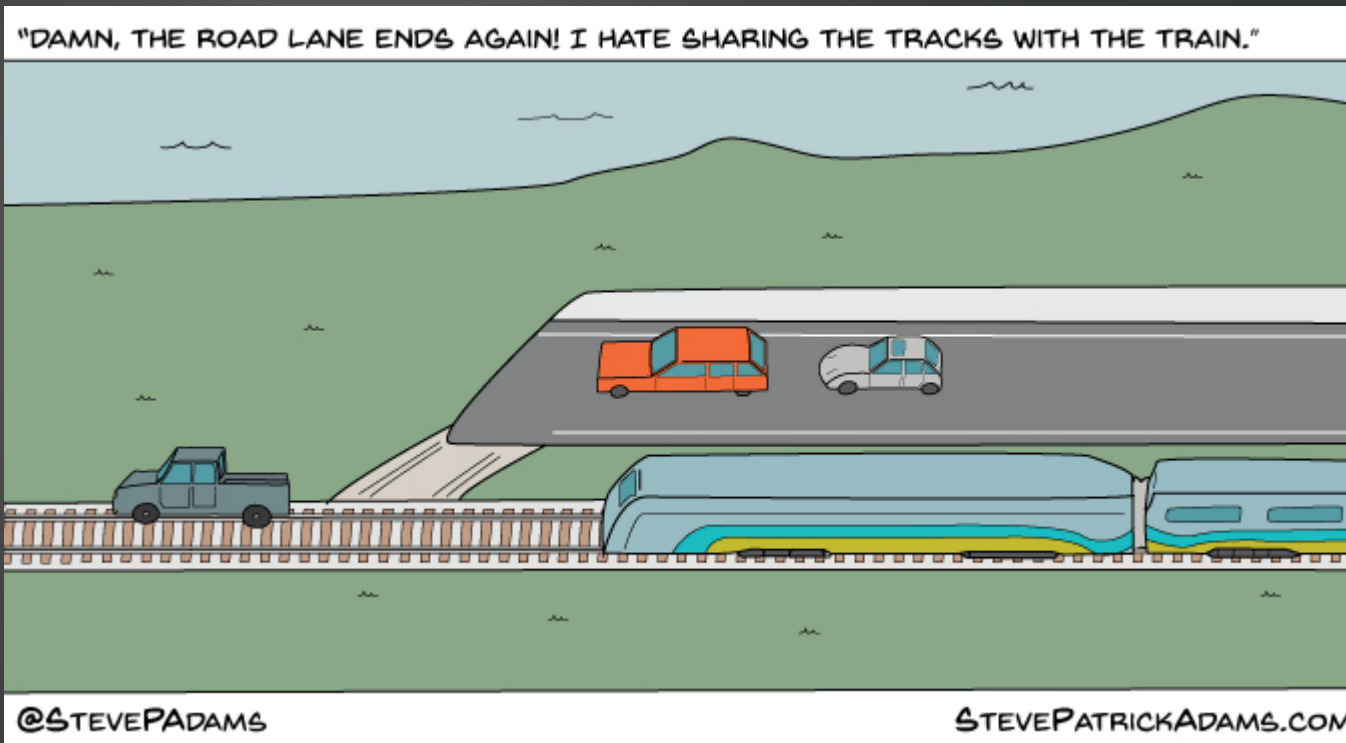
Other Selected Facilities



Some Final Thoughts

- A transportation network that goes nearly everywhere, and respects the human need of travelers to be and feel safe for their whole trip already exists.
 - But only for cars.
- When “bicycle level of service” is assessed and then compared to intersection level of service, we are comparing one street user’s CONVENIENCE to another street user’s SAFETY.
- Since bicycling currently doesn’t feel safe to most people, the people who will currently do it are the least risk averse among us.
 - Remember this when people argue against bicycle infrastructure on the basis of the behavior of people who ride bikes.

Some Final Thoughts





DISCUSSION