

# AMPA-Wide Trail Use Monitoring System Program



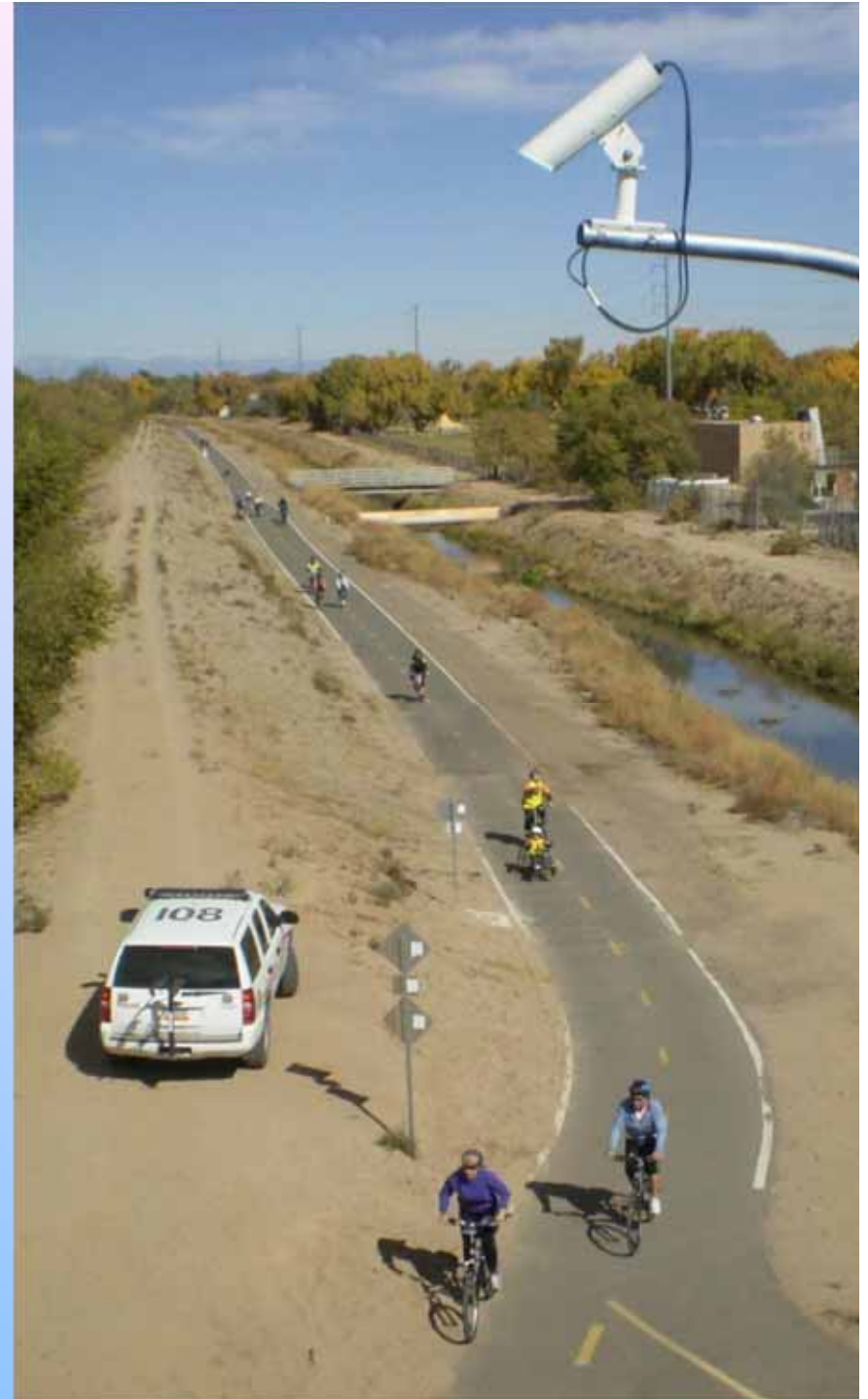
Institute of Transportation Engineers  
Western District Meeting  
Phoenix, Arizona

July 17, 2013

James Barrera, P.E. PTOE  
Eric Webster  
Julie Luna

URS Corporation  
MRCOG  
MRCOG

**URS**



# Outline

**Why Count Bicycles and Other Trail Users?**

**History of MRCOG's Bicycle & Trail Use Data Program**

**Bernalillo County's Regional Trail User Counting Project**

Locations & Phases

Detection Equipment

Data Telemetry

**Regional Bicycle & Trail Use Data Received to Date**

**Future of the Data Program**



# Why Count Bicyclists and Pedestrians?

National Initiative

Safety: Calculating exposure rates

B-VMT is needed for vehicle offsets for CMAQ

Facility Design: Knowing the user proportions

Public Health

Performance Measurement:

*“What gets measured gets funded.”*



*“If you don't count bikes then bikes don't count.”*  
— Dennis Winters, Bicycle Coalition of Greater Philadelphia

# History of MRCOG Bicycle and Pedestrian Data Collection

## From 2002-2008, the primary data source was from Intersection Turning Movement Counts

Classified Bicycles & Pedestrians

Counted 590 intersections (no trails)

9-hour Counts: (6:45-9:45 AM, 11 AM-2 PM, 3-6 PM)

Highlights – Highest pedestrian count Feb '08 at *Central Ave and Cornell Dr* with 5,437 pedestrians

## Other Data Sources:

City of Albuquerque Comprehensive Bicycle Plans

Data includes helmet use, and traffic violations

1997 – 16 locations counted

2010 – 38 locations counted

Participation in ITE's National Bicycle and Pedestrian Documentation Project – Sept 2005

One location on Bosque Trail



# History of MRCOG Bicycle and Pedestrian Data Collection

The secondary data source was a small set of week-long Tube Counts

Road tubes and counters set to maximum sensitivity

Mix of Trail and Bike Lane Locations Tested



MRCOG Count Van at  
Paseo de Las Montañas Trail



Tube Count Box

# History of MRCOG Bicycle and Pedestrian Data Collection

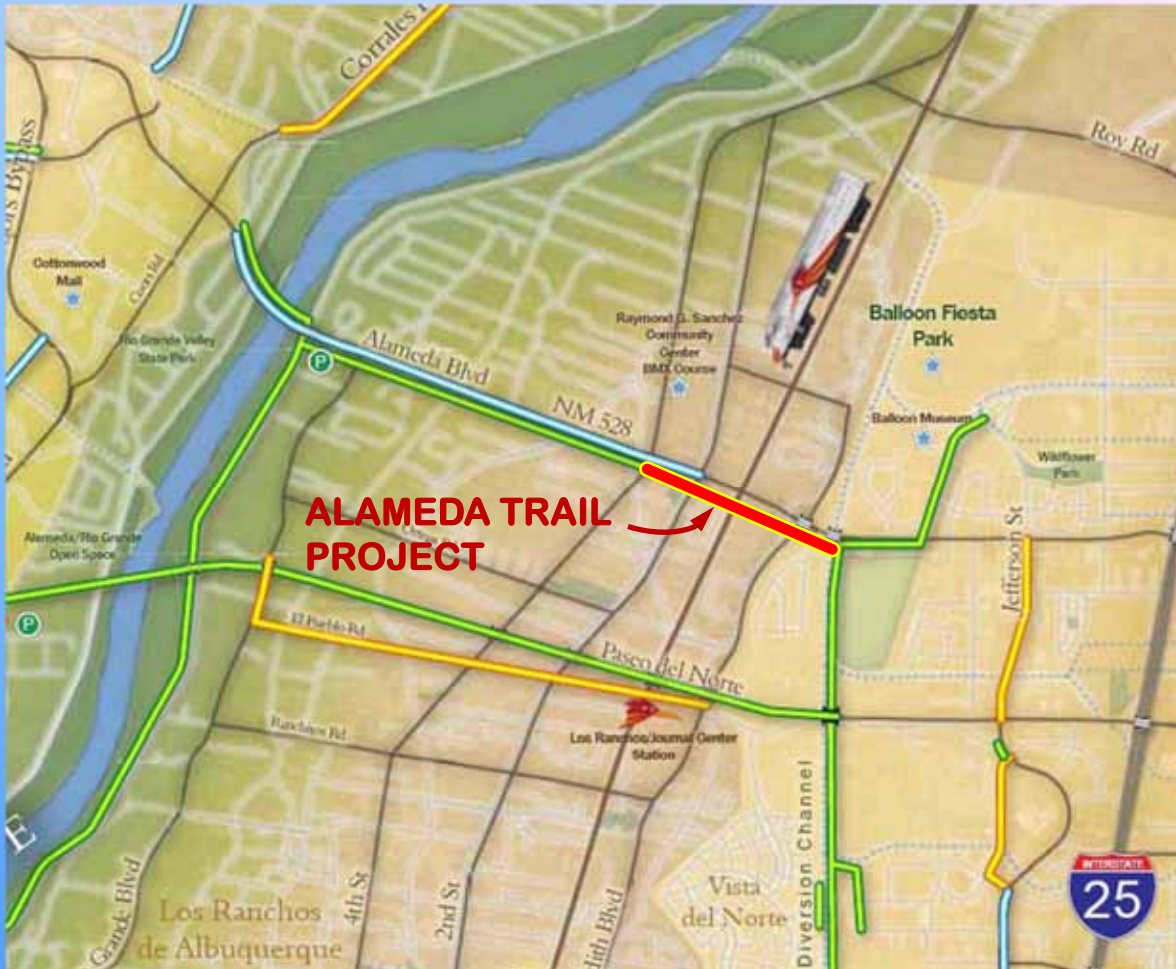
- All sources are sample-based, so they do not reflect seasonal variation.
- Extensive turning movement data does not include trails and does not meet current recommendations of 12 hour counts for pedestrians and bicyclists.
- Tubes count bicyclists only, providing no data about pedestrian usage.
- Tubes are a hazard to inline skaters. Attempts to use tubes to count the newly repaved Bosque Trail were unsuccessful.



*Despite the limitations of these data, it is used extensively for planning purposes.*

# Why Bernalillo County Initiated the Effort

## The Alameda Trail Project



Closing the gap between the Paseo del Bosque Trail and the North Diversion Channel Trail.

Closing the gap between the public involvement process and the public.

# The Alameda Trail Project

## 2007: Alameda Trail Feasibility Study (Sites Southwest/BHI/Taschek)

*“The Alameda Boulevard Trail project will help to achieve regional air emissions reduction goals by encouraging non-motorized travel.”*

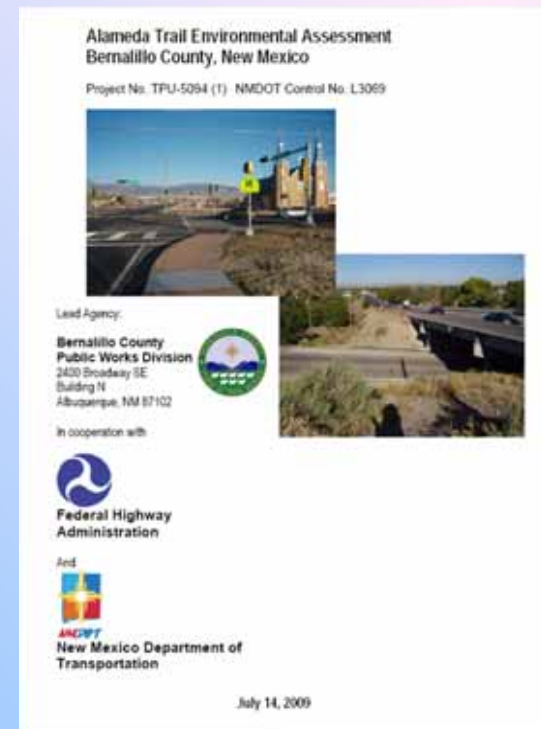
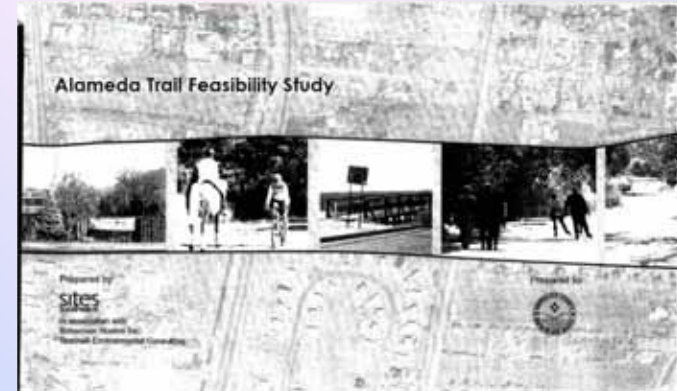
**Funding:** \$306,000 Bernalillo County “5% for Trails” funded Feasibility Study and Environmental Assessment  
\$2.242M Federal TIP – CMAQ for Design & Construction

## 2009: Alameda Trail Environmental Assessment (URS)

*“The construction of the proposed trail will have a reduction in the amount of pollutants emitted to the atmosphere.”*

### Cumulative Impacts

*“Because the Alameda Trail would become part of a larger regional network of trails, it would be expected that there would be a bigger impact on emissions reduction as nonmotorized modes of travel increased.”*





# The Alameda Trail Environmental Assessment

## Environmental Commitment

**Motorized Vehicle Offset Emissions:** “One or more permanent bicycle counters will be installed at critical points on the Alameda Trail to collect data that will aid in the development of a more comprehensive model to determine motorized vehicle offsets.”

## Air Pollution Mitigation Measure

“...one or more permanent bicycle counters are planned to be installed as part of the Alameda Trail project with the plan to develop a **system-wide network of bicycle count stations** in the future. While the savings for one specific project may be small ... the data from the bicycle counters will help **predict bicycle trips and air quality impacts of future facility investments.**”



Balloon Fiesta  
Bicycle Valet

# “AMPA-Wide Regional Bicycle Monitoring System Project”

A regional system with  
15 count sites identified

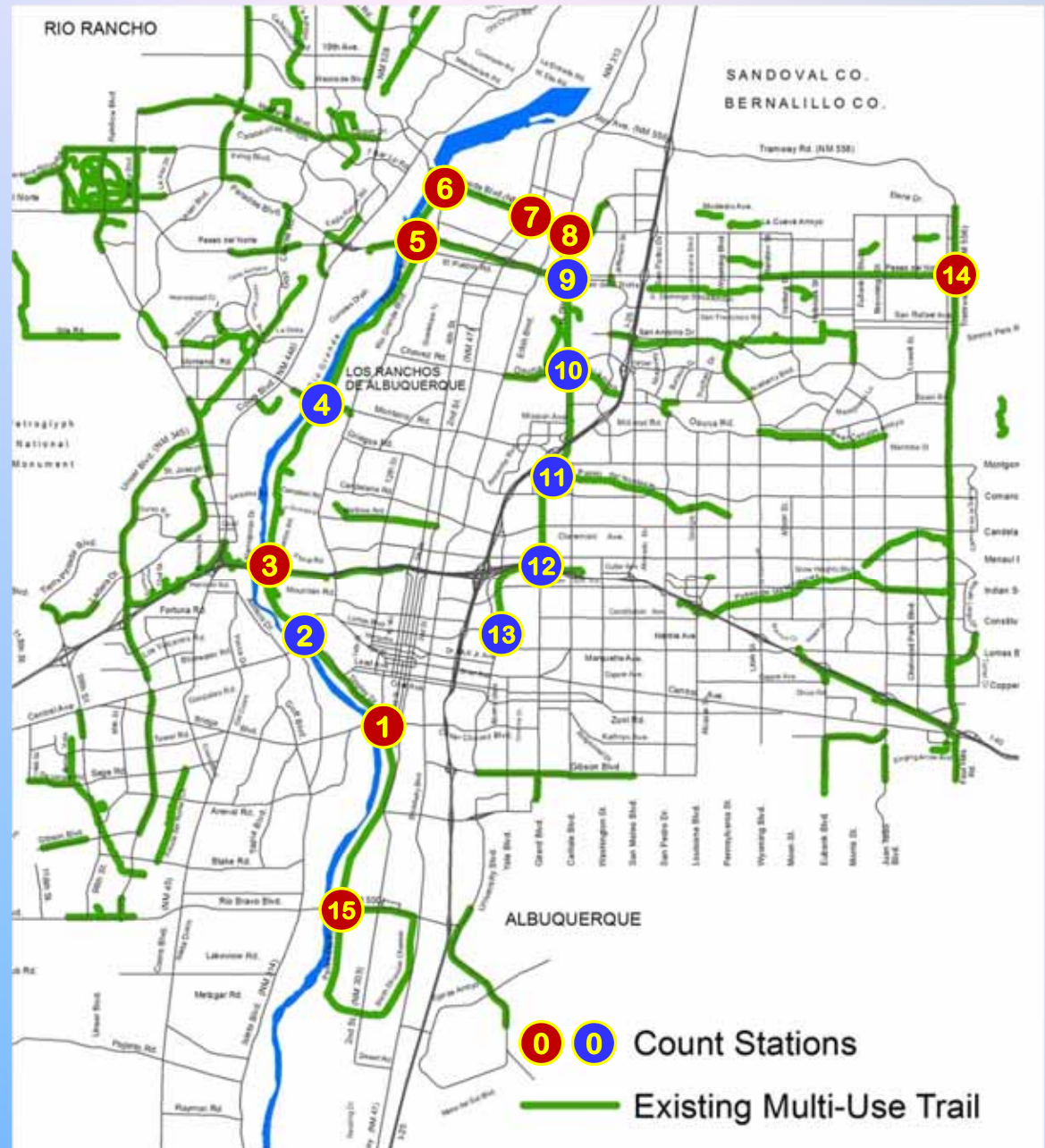
## Funding

Design: \$122,241

Construction: \$320,000

## 8 Sites Designed:

- MS1. Bosque Trail @ Bridge Blvd.
- MS3. Bosque Trail @ I-40 Trail
- MS5. Bosque Trail @ PdN Trail
- MS6. Bosque Trail @ Bachechi Trail
- MS7. Alameda Trail @ 2nd Street
- MS8. Alameda Trail @ NDC Trail
- MS14. PdN Trail @ Tramway Trail
- MS15. Bosque Tr. @ Rio Bravo Blvd.



# How to Count Bicyclists and Pedestrians?

## *Bicycle Counter Concept Plan (URS, 7/14/2009)*

### Detection Technologies Considered:

- Passive Infrared
- Active Infrared
- Video
- Inductive Loops
- Microloops

### Detection Technology Recommended:

- Econolite Autoscope Terra
- GTT Canoga Detectors with Inductive Loops or Microloops
- Inductive Loops “Double Parallelogram”

### Justifications Cited:

- Flexibility
- Proven Technology
- Ability to Classify Trail Users
- + *Familiarity of County Personnel*



Boulder, CO  
Loop Detector

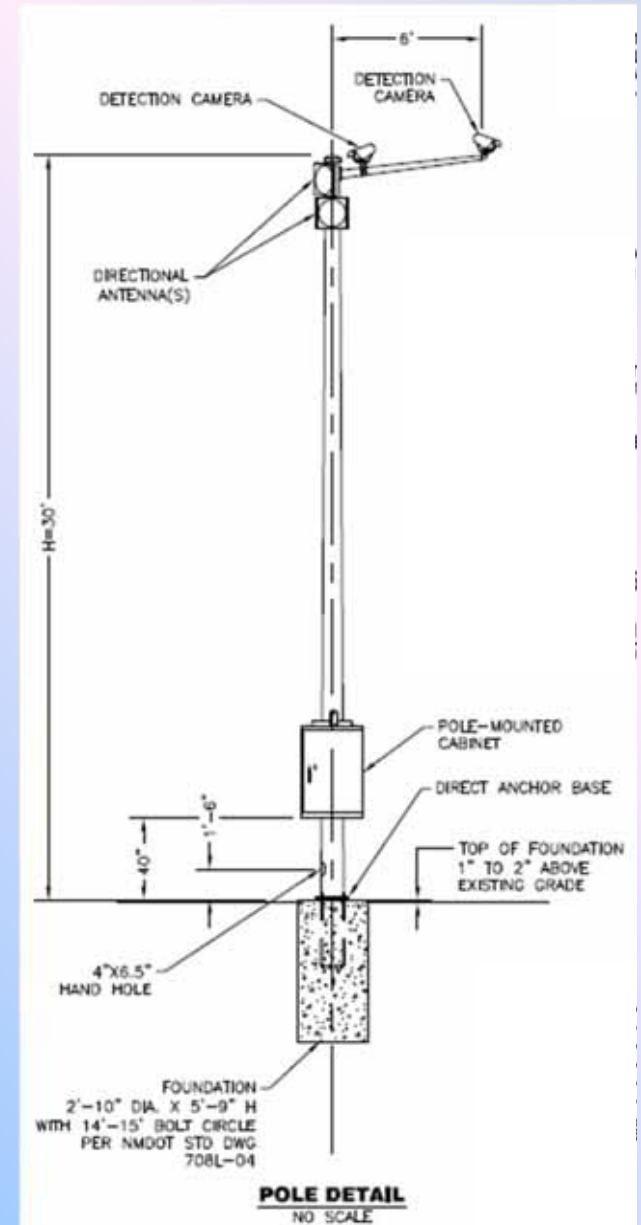
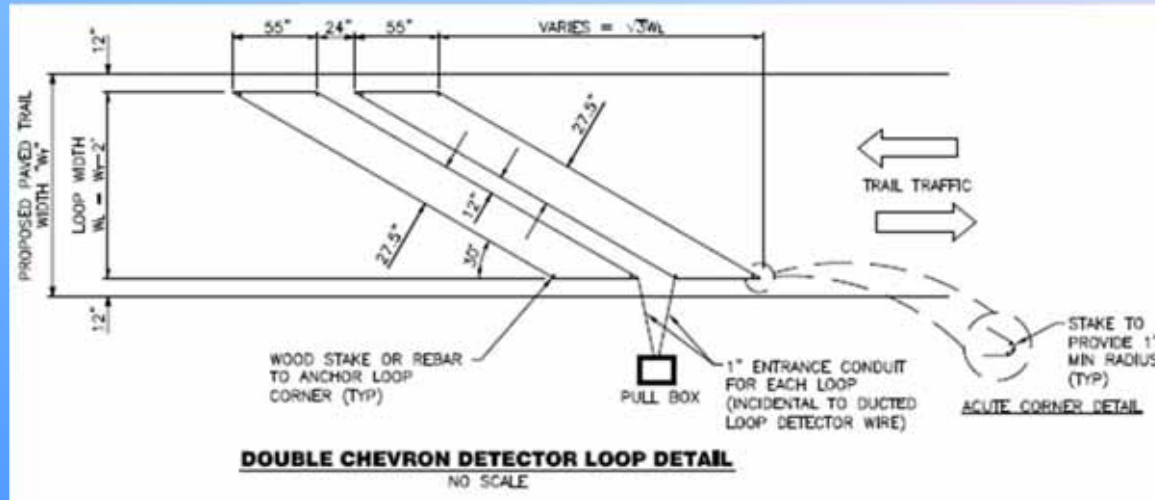
# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Phase I. Bid – 2 sites:

MS8. Alameda Trail @ North Diversion Channel Trail

MS14. Paseo del Norte Trail @ Tramway Trail

- Federal Funding ⇒ Open source technology for video detection per NMDOT Specification 713
- Later phases specified Econolite Autoscope, Iteris Vantage, Peek Video-Trak-IQ, Traficon VIP-T “or approved equal”
- Loop Detectors per NMDOT Specification 713



# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Phase I.

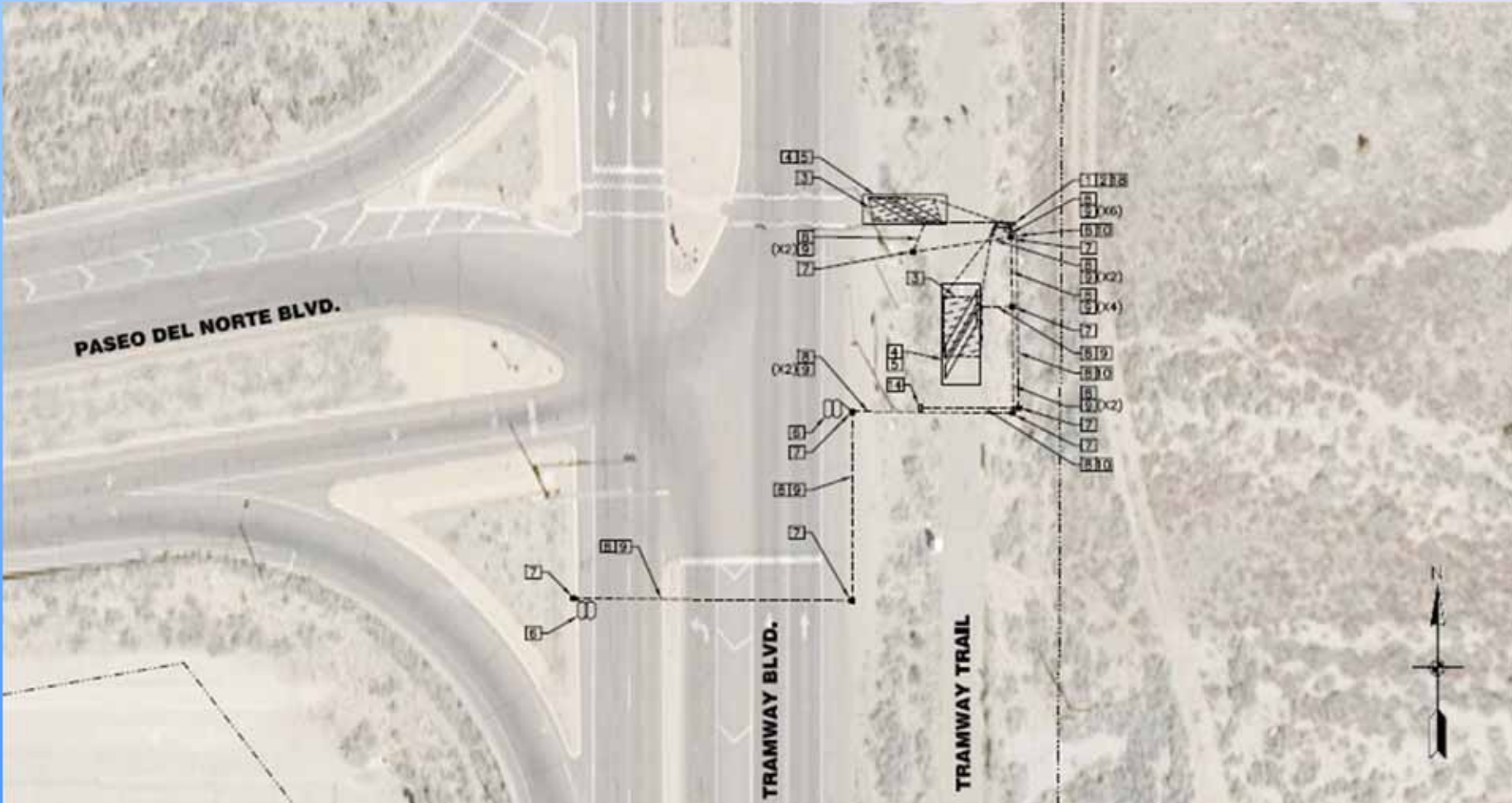
### MS8. Alameda Trail @ North Diversion Channel Trail



# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Phase I.

### MS14. Paseo del Norte Trail @ Tramway Trail



# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Phase I

Testing and Calibration at  
MS14. PdN Trail @ Tramway Trail



Tramway Trail



Tramway Blvd.



Paseo del Norte Trail

# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Phase II Sites (constructed):

- MS3. Bosque Trail @ I-40 Trail
- MS6. Bosque Trail @ Bachechi Trail

## Alameda Trail Project (constructed):

- MS7. Alameda Trail @ 2nd Street

## Bosque Trail Project (pending award):

- MS1. Bosque Trail @ Bridge Blvd.
- MS15. Bosque Trail @ Rio Bravo Blvd.

## Site not yet bid:

- MS5. Bosque Trail @ Paseo del Norte Trail





# “AMPA-Wide Regional Bicycle Monitoring System Project”

## Data Telemetry

- Phase I used all wireless Ethernet links.
- Phase II MS6 and Alameda Trail MS7 used wireless links to join the Phase I network at MS8.
- Phase II MS3 used a DSL connection.
- All data is transmitted to a new server at MRCOG.
- Comm for the final 2 south Bosque Trail sites is to be determined.

MS8



Comm Test: MS6 aligning to MS8



# “AMPA-Wide Regional Bicycle Monitoring System Project”

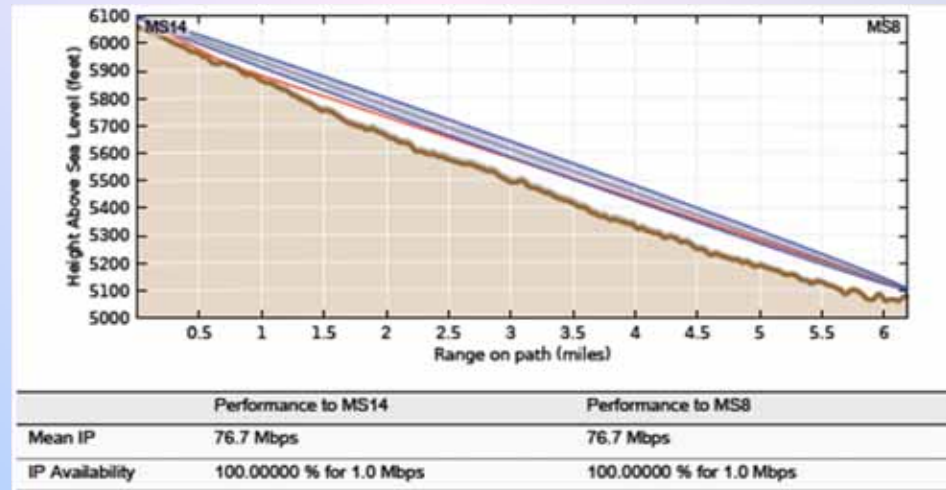
## Telemetry & Network Issues:

### Lessons Learned

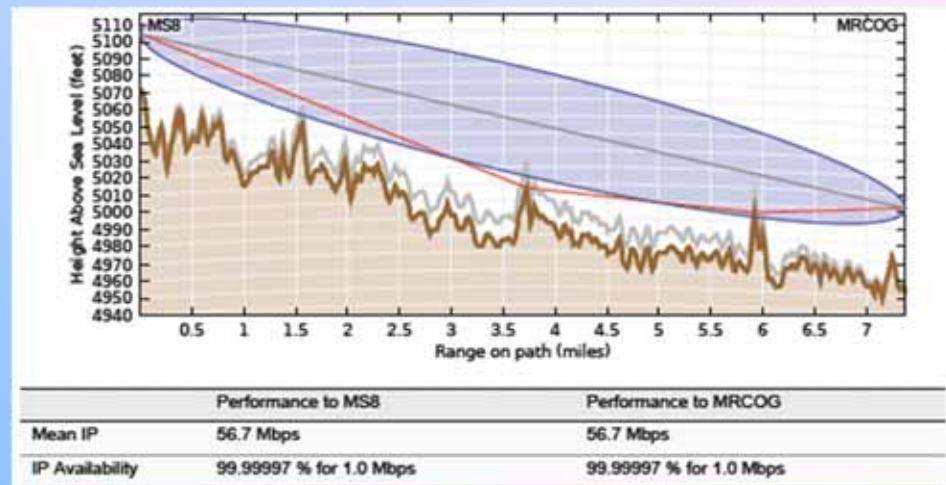
- Phase I comm spec based on performance, not a specific product
- Required > 1 Mbps Sustained data transmission (low bandwidth)
- Later phases of work turned up problems with earlier phases
- Planning for DSL: Couldn't determine CenturyLink costs
- Adding DSL and now possibly Fiber Optic makes network more complex
- Each Phase was responsible for all ancillary equipment (modems, switches, routers) necessary to get the data to the server

*Involve your IT staff early and continuously in the network design.*

MS14 to MS8



MS8 to MRCOG



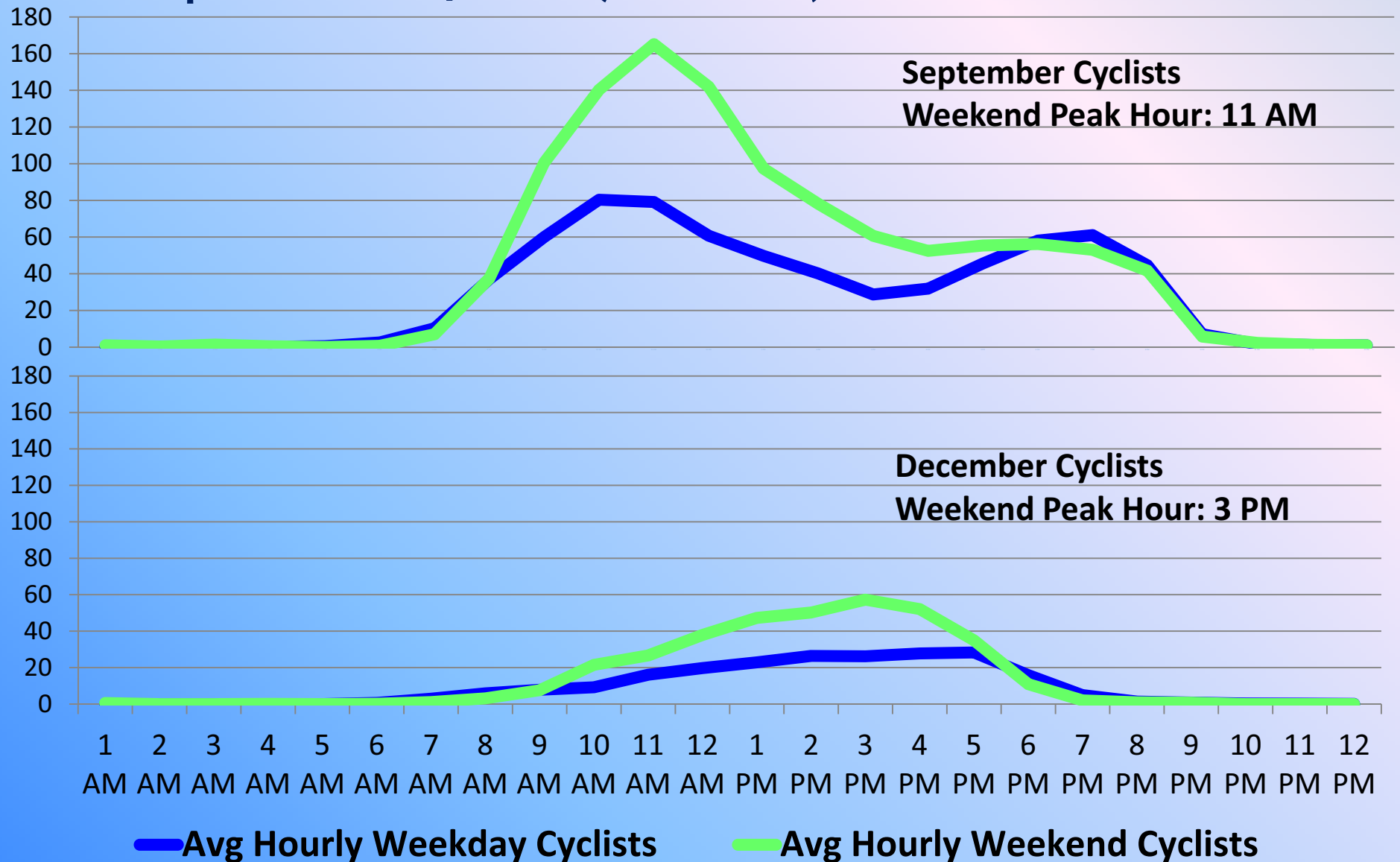
# What to do with Bicycle and Pedestrian Counts?

Counts received to Date:



# What to do with Bicycle and Pedestrian Counts?

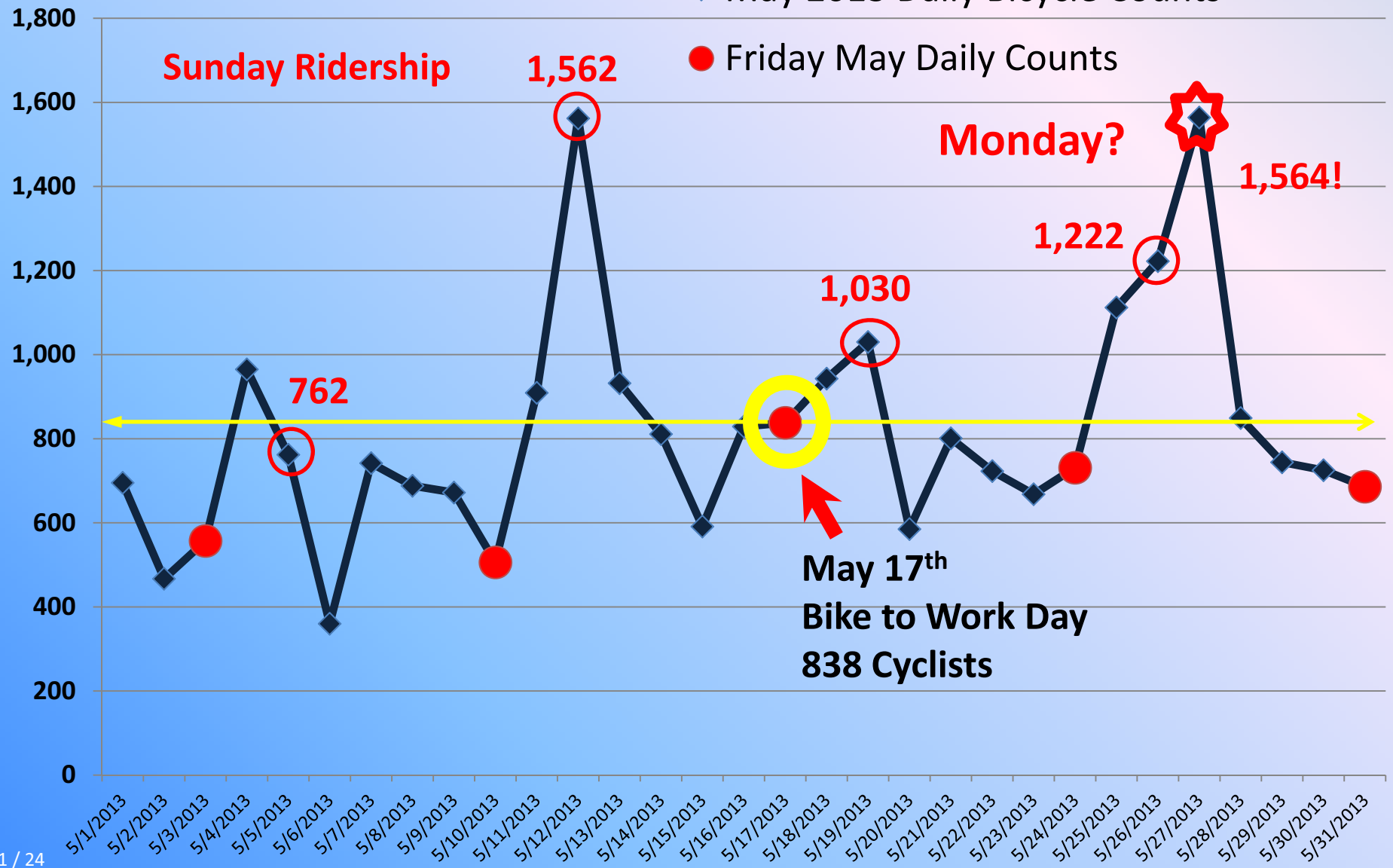
## Bosque Trail at I-40 Trail (north-south)



# Bosque Trail and Gail Ryba Bridge

◆ May 2013 Daily Bicycle Counts

● Friday May Daily Counts



# To-Do List: Short-Term

- Improve classification between bikes and pedestrians
- Test the accuracy of the counters
- Develop and deliver standard reports
- Evaluate and purchase short-term counters



## To-Do List: Medium-Term

- **Develop a scheme for Bicycle Functional Classification**
- **Sketch out where there are gaps in the permanent counter network**
- **Create a list of short-term sites for data collection**



## To-Do List: Longer Term

- Generate monthly adjustment factors based on data from permanent count stations
- Apply factors to short-duration counts
- Gain an understanding of bicycle network flow and pedestrian travel on trails and activity centers in order to better accommodate these modes and measure their impacts.





