Welcome!


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Active Transportation Resource Center
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ATRC Flash Training:

ACTIVE TRANSPORTATION PROGRAM (ATP)

INTERIM COUNT METHODOLOGY GUIDANCE

Caltrans

About ATRC Flash Trainings

- Caltrans has developed Flash Trainings as a resource for Active Transportation Program (ATP) applicants and awardees.
- Flash Trainings consist of recorded informational webinars lasting twenty minutes or less.
- Flash Trainings are available for users to access online at their convenience.

Learning Objectives

- How to develop the ATP user counts for the project evaluation metric
- How to apply a consistent methodology across all project types
- Deriving Daily Volume data that is repeatable
- Distilling the “Daily Pedestrian Volume” and “Daily Bicycle Volume” from multiple improvement locations

The Interim Count Guidance

- The Guidance document is located at:

https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/ob/2019/ob19-02-attachment.pdf

- The sample calculations presented today are shown in Appendix A and B

The 5 Steps of the Methodology

1. Determining the **Type of Count** Data Collection Needed
2. Determining the **Number of Count Locations** Needed
3. Selecting **Count Locations**
4. Conducting Pedestrian and Bicycle **Counts**
5. Estimating the **Total Volume** within the Project Limits

Step 1- Type of Count (Table 1)

- **Infrastructure (I)**
  - – Automated 24 Hour Count (1 week)
  - – Alternative: Manual Count (three consecutive days at am/pm peak, plus weekend mid-day)
    - Utilizing 24-hour vehicular or non-motorized count data at a nearby location to approximate the non-motorized volumes

- **SRTS Non-Infrastructure (NI) Programs**
  - – Classroom Travel Tallies (at each school on 2 separate days within the same week)
  - – Alternative: Automated or Manual counts *(same as Infrastructure)*

Step 1- Type of Count- *continued*

- **Community-Wide NI Programs**
  - Surveys or Modeling
  - Alternative: Automated or Manual counts *(same as Infrastructure)*
- **Combination I/NI** - Use combination of above
- **Plans** – Counts are not required for Plan projects

Table 1

Count Data Collection Methods (Table 1)

ATP Project Types	Recommended Count Type & Method	Duration	Alternative Count Type & Method	Duration
Infrastructure (Including SRTS Infrastructure projects)	Automated 24 Hour Manual Count from Video 24 Hour	One Week	Manual In-field Counts Peak Period	4-total Hours on 3 Weekdays (T, W, TH) at 7 – 9 AM and 4 – 6 PM and 1 Weekend day 11 AM - 1 PM*
Safe Routes to School Non-Infrastructure	Classroom Student Travel Tallies (at each school in project) **	Two Days for Tallies-averaged	Automated or Manual Volume Counts (Per Infrastructure Recommendations)	
Community Wide/ Jurisdiction Wide Non-Infrastructure	Surveys***/ Modeling	Variable	Automated or Manual Volume Counts (Per Infrastructure Recommendations)	

*For manual counts, it is preferable that counts be taken on three consecutive days during the AM and PM 2-hour PEAK plus one weekend day's 2-hour peak. This interim guidance will allow an agency to opt to conduct one weekday am/pm 2-hour peak + one weekend day 2-hour peak count. If the location's 2-hour peak is different from these, that 2-hour period should be used.

** See Appendix A for details on the Student Travel Tallies.

***FHWA's Non-Motorized Transportation Pilot Program – Community Wide Evaluation Study and the Mineta Institute's Pedestrian and Bicycle Survey are two available examples. Additional ideas for collecting data to inform community-wide non-infrastructure evaluation can be also found in Alta Planning +Design's Measure for Success: New Tools for Shaping Transportation Behavior. Your MPO may also have suggested tools and methods. See References for related links.

Step 2- Determining the Number of Count Locations

- Table 2 provides minimum/maximum number of Infrastructure Count locations:

Data Collection Requirements for Infrastructure Projects (Table 2)

ATP Infrastructure Project Types*	Minimum Required # of count locations (# maximum)	Alternative Minimum Required # of count locations
Small Infrastructure Projects (Total Project Cost less than $1.5M)	1	N/A
Medium Infrastructure Projects Multiple Corridors/Intersections and Networks (Total Project Cost between $1.5M and $7M)	1 per two Corridors or Intersections (3 maximum)	0.05 * Total Centerline or Center lane Miles of Project[4]
Large Infrastructure Projects Multiple Corridors/Intersections and Networks (Total Project Cost greater than $7M)	1 per Corridor or Intersection (7 maximum)	0.10 * Total Centerline or Center lane Miles of Project[5]

*Includes SRTS Infrastructure Projects

[4,5]Washington State DOT, A Guidebook for When and Where to Count

- Additional guidance and alternatives provided in Section 2

Step 2- Determining the Number of Count Locations (Table 3)

- Table 3 provides minimum/maximum number of count Non-Infrastructure locations:

Data Collection Methodology for Non-Infrastructure (NI) Projects (Table 3)

ATP Non-infrastructure Project Types	Minimum Required #	Alternative Minimum Required #
Safe Routes to School Projects	1 Set of Tallies*/School	N/A
Community/Jurisdiction Wide	Survey***	Modeling

*See Appendix A for details on the Student Travel Tallies.

- **Additional guidance and alternatives provided in Section 2**

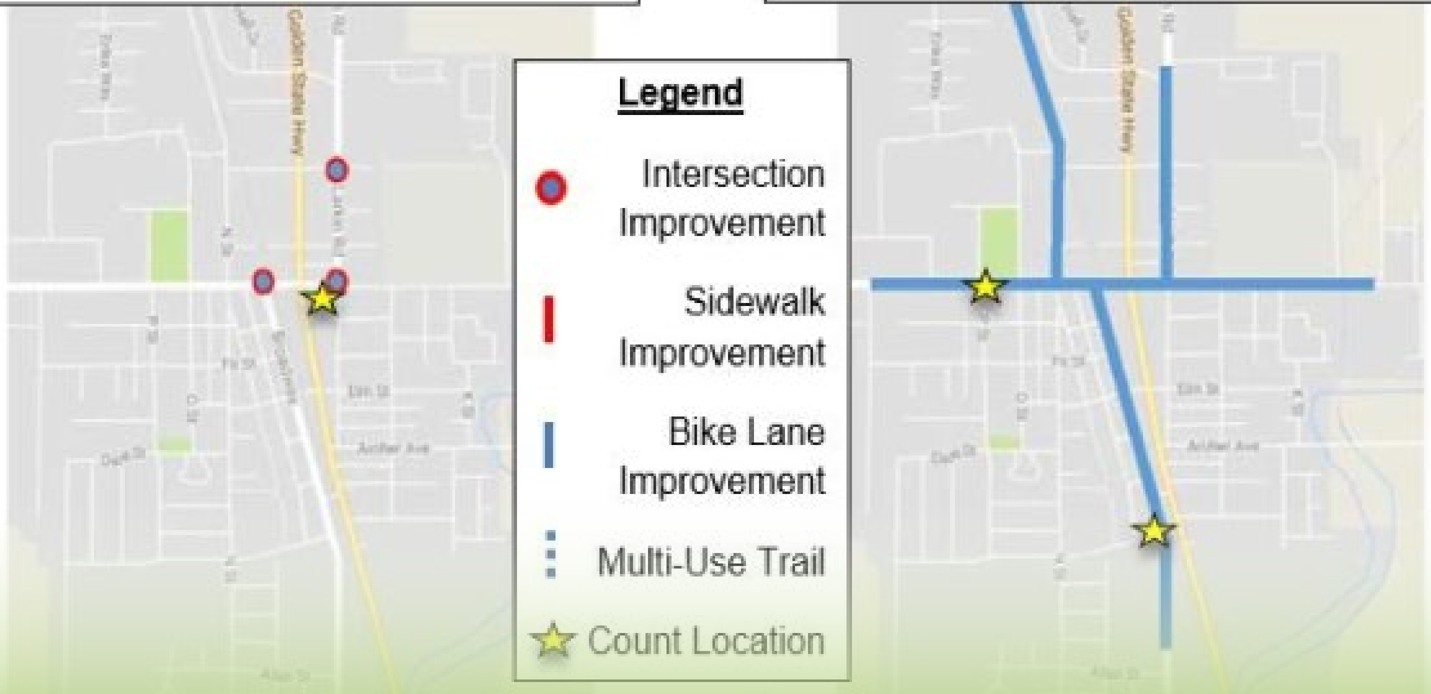
Step 2-Count Location Examples

Example 1: $1M total project cost (Small)
Intersection Improvement only project-

- Only 1 count is required
- Conduct count at intersection with highest number of expected users.

Example 2: $2M total project cost (Medium)
Bike lane only project-

- 4 corridors = 2 counts are required
- Conduct counts at locations with highest number of expected users.



Step 2-Count Location Examples- continued

Example 3: $1.4M total project cost (Small)
Sidewalk gap closure only project-

- Only 1 count is required
- Conduct count at a location with highest number of expected users.

Example 4: $10M total project cost (Large)
With all improvement types

- 5 bike corridors, 7 intersections, 9 sidewalks = 7 counts are required
- Ideally counts would be taken at locations where both bike and pedestrian data can be gathered.

Step 3- Selecting Count Locations

- It's recommended to choose:
  - Locations where pedestrian and bicycle activity is high
  - Representative locations in urban, suburban, and rural areas
  - Key corridors that can be used to gauge the impacts of future improvements
  - Locations where counts have been conducted historically
  - *Potential improvement areas (gaps, operationally difficult areas)*

- **Additional guidance criteria and references are provided in Section 3.**

Step 3- continued

- It’s recommended to choose:
  - For corridors with single count, locate centrally
  - For networks, separate throughout network in varying land uses, on varying roadway types, and in locations where future improvements are expected
  - For networks, separate throughout network in varying land uses, on varying roadway types, and in locations where future improvements are expected

- **Additional guidance criteria and references are provided in Section 3.**

Step 4- Conducting Pedestrian & Bicycle Counts

- Consistency in before/after counts:
  - Same location
  - Same time of the day
  - Same day of week
  - Same time of year (to reduce variability due to season)
    - If inclement weather or other constraint, reschedule as close as possible.

- **Additional guidance and references are provided in Section 4.**

Step 4- continued

- Consistency in recording data:
  - Consistent with 2016 TMG format (Inf.)
    - Direction (ex. N/S or E/W) and mode (ex. bike/walk) for each facility (ex. bikeway/sidewalk/trail)
    - Timestamp (automated) or aggregate into 15-min increments (manual).

- **Additional guidance and references are provided in Section 4.**

Step 5- Estimating Volume within the ATP Project Limits

- For ATP, the units for a project's total number of users are to be in:
  - *Daily Pedestrian Volume* and *Daily Bicycle Volume*

- This section contains 2 steps to establish these numbers:

  1) Convert the count data collected in each location into **Daily Volume**

  2) Sum the daily trip numbers to determine **Total Project Volume** for Bicyclist and Pedestrians

- **Additional guidance and references are provided in Section 5.**

Flexibility

- We recognize the vast range of evaluation and data collection techniques that individual agencies may utilize.
- Agencies can secure approval from Caltrans if they feel they need to use a mythology that does not conform to the standards set.
  - Contact your HQ ATP Program Manager for approval.
- The most important point is that it’s a consistent and repeatable approach that follows similar principles to what is established in these guidelines.

ATP Guidelines- Count Requirements

- Pre-construction counts must be taken no more than 6 months before implementation (CON)
  - New facilities are not required to conduct pre-counts
  - The pre-count volume is considered to be zero

- Post counts shall be taken at least 6 months after construction is complete.

- If there is a reason that the post counts can't comply with above
  - the agency needs to request approval from their ATP manager for an alternative date

ATP Reporting Requirements

- Two Reports are due at end of project:
  - **Project Completion Report** is due within six months of construction acceptance or the project becoming open to the public, or all NI activities are complete.
    - Requires a Projected Count
  - **Final Report is** due within 180 days of the conclusion of all remaining project activities beyond the acceptance of the construction contract.
    - Requires an Actual count

Examples

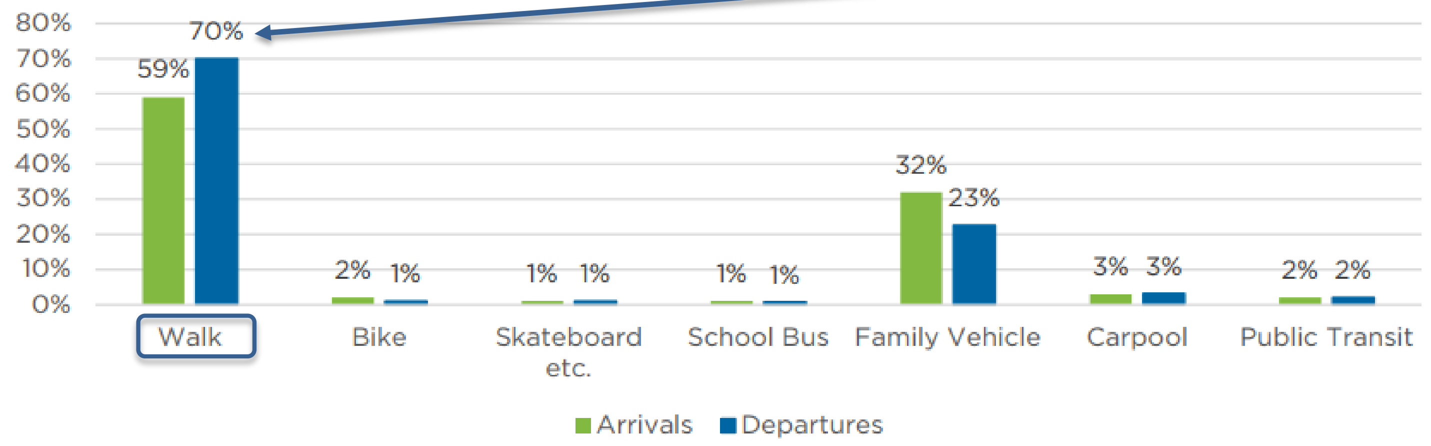
Count Example 1- Student Tallies Appendix A, page 20

The Travel Tally Project is a TWO (2) DAY in-classroom data collection exercise to capture how students travel to and from school. Analysis of students' travel behavior assists Safe Routes to School (SRTS) in developing plans to reduce speed and promote responsible travel by adults and children on our city streets.

Dates of Data Collection: Sept 13th and 14th, 2017
Weather: Sunny

Students:
- Enrollment 715
- Survey Participation 71%

Student Mode Share by School Arrival vs Departure



<u>Daily Pedestrian Volume</u>, Day 1

Take the Enrollment- 715

Multiply by the sum of the walk percentages- (0.59 + 0.70)

(0.59 + 0.70) x 715 = 922.4/2= **<u>461</u>**= Daily Ped. Volume, Day 1

Student Tally example- continued

The Travel Tally Project is a TWO (2) DAY in-classroom data collection exercise to capture how students travel to and from school. Analysis of students' travel behavior assists Safe Routes to School (SRTS) in developing plans to reduce speed and promote responsible travel by adults and children on our city streets.

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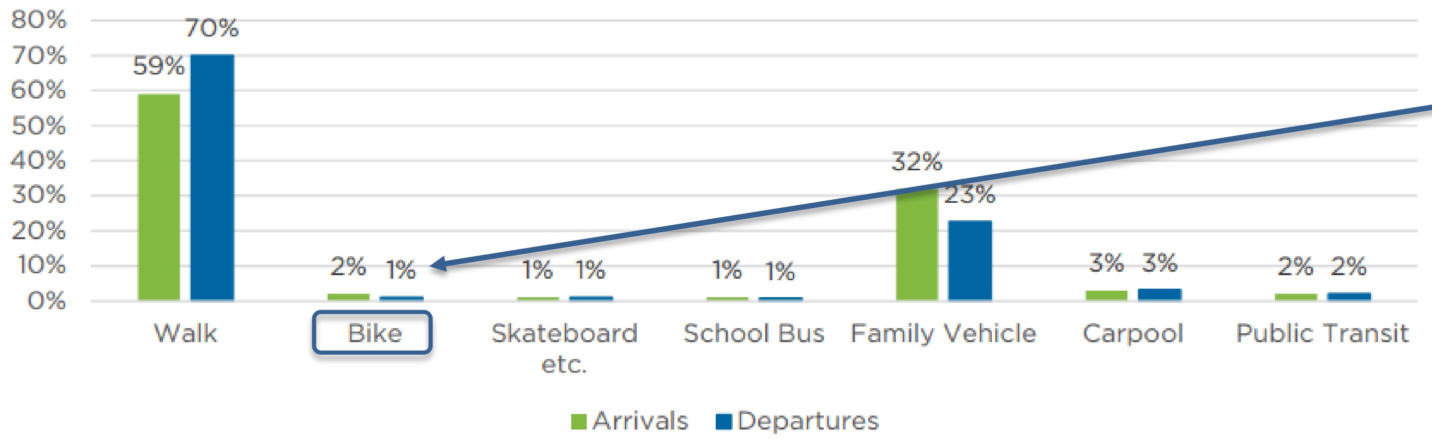


<u>Daily Bike Volume, Day 1-</u>

Take the Enrollment- 715

<u>Daily Bicycle Volume-</u>
(0.02 + 0.01) x 715=

21.4/2= **<u>11</u>**= Daily Bike Volume, Day 1

Count Example 1- Automated count data Appendix B page 24

From Table 1 of the Interim Count Guidance this is a small project- therefore only one count is required. This count should be conducted at the intersection that will have the highest number of users after the ATP improvements are completed.

An agency can opt to use one of the following count methods:

1. A week (7 days) of automated 24-hour non-motorized counts
2. An automated 24-hour non-motorized count, , or
3. Convert 24-hour vehicular count data to non-motorized in conjunction with three 2-hour peak non-motorized counts (see the following example)

Count Example 1- continued

The first example for this project assumes that the other two intersections will have similar numbers of users.

For this situation the bicycle and pedestrian count data from the one location will be multiplied by 3 to get the Average Daily volume.

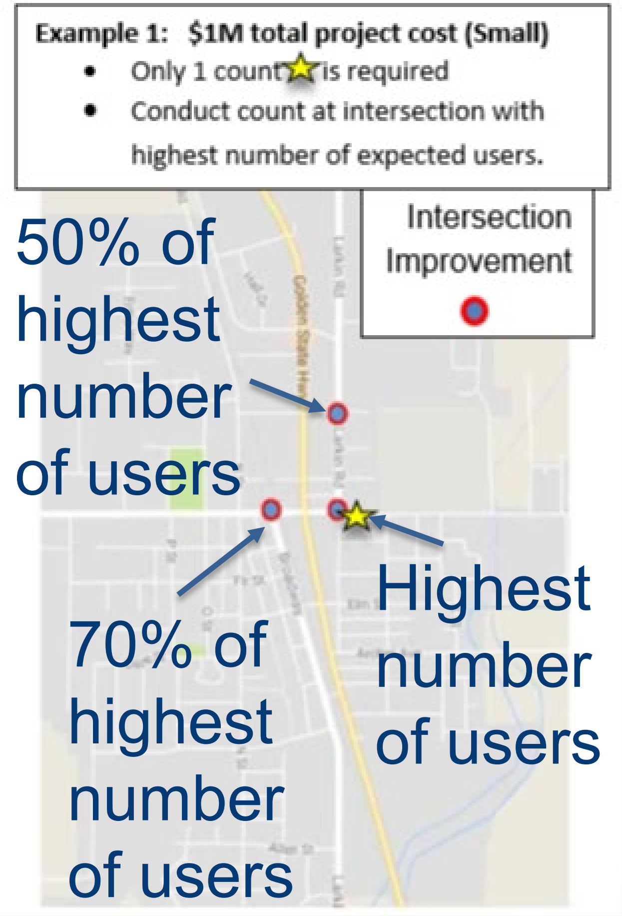
If the bicycle 24-hour count total is 66 then the Daily Bicycle Volume will be 66 x 3 = 198

Count Example 1A- Appendix B page 24 & 25

For Example 1A we are assuming that the users will be less than the count intersection for the other two intersections.

The count process is the same as Example 1- meaning that the one count shall be conducted at the intersection that will have the highest number of users after the ATP improvements are completed.

Count Example 1A- continued

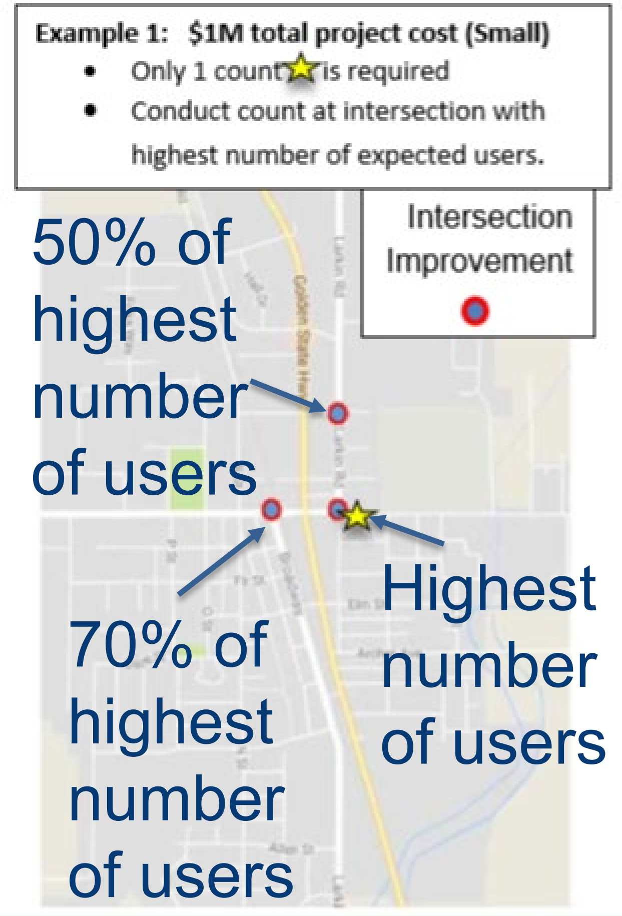


Once the volume has been calculated from the intersection with the highest number of users, a reduction factor can be applied to the original volume to arrive at the volumes for the other two improvement locations. The reduction factor will be determined by the agency, based on assumptions or data indicating how much less usage the other two locations will be expected to experience.

For this example one location will see 70% of the users as the highest location and the other intersection will see 50% of the users as the highest location.

The Daily Bicycle Volume calculation will be 66 + (66 x .70) + (66 x .50) = 145.2

Count Example 1B- Appendix B page 25



For Example 1B we are using the same assumptions as 1A, and that 15% of the users at the 70% intersection were also counted at the highest intersection.

The Daily Bicycle Volume calculation will be 66 + (66 x (.70- (.70 x .15)) + (66 x .50) = 138.3

Converting Vehicular Counts to Non-Motorized Example Pedestrian- Appendix B page 23

AM PEAK 2 hours

PM PEAK 2 hours

	Weekday	Weekend	Weekday Peak 2-hour		Weekend 2- hour peak	
Time Period	Vehicle Counts	Vehicle Counts	Bike Counts	Ped. Counts	Bike Counts	Ped. Counts
Midnight	2	3				
1:00 AM	0	2				
2:00 AM	1	0				
3:00 AM	3	3				
4:00 AM	4	3				
5:00 AM	12	6				
	15	8				
	26	11	3	8		
	33	10	6	12		
9:00 AM	20	13				
10:00 AM	21	14				
11:00 AM	22	15			3	6
Noon	35	18			4	8
1:00 PM	22	17				
2:00 PM	23	17				
	26	18				
	36	21	4	9		
	44	24	8	10		
6:00 PM	30	23				
7:00 PM	29	14				
8:00 PM	25	10				
9:00 PM	15	12				
10:00 PM	8	5				
11:00 PM	6	6				
Total	458	273				

Converting Vehicular Count data to Daily Pedestrian Volumes-

Step 1- Weekday= (26+33+36+44)/458 = 0.303= $rv_{weekday}$

Step 1- Weekend= (15+18)/273 = 0.121= $rv_{weekend}$

Pedestrian

$tdt_{weekday}$= (8+12+9+10)/0.303 =128.7

$tdt_{weekend}$= (6+8)/0.121 =115.7

Legend rv = ratio of volumes,
tdt = total daily volume per location

Converting Vehicular Counts to Non-Motorized Example- Ped volumes continued

AM PEAK 2 hours

PM PEAK 2 hours

	Weekday	Weekend		Weekday Peak 2-hour		Weekend 2- hour peak	
Time Period	Vehicle Counts	Vehicle Counts		Bike Counts	Ped. Counts	Bike Counts	Ped. Counts
Midnight	2	3					
1:00 AM	0	2					
2:00 AM	1	0					
3:00 AM	3	3					
4:00 AM	4	3					
5:00 AM	12	6					
	15	8					
	26	11		3	8		
	33	10		6	12		
9:00 AM	20	13					
10:00 AM	21	14					
11:00 AM	22	15				3	6
Noon	35	18				4	8
1:00 PM	22	17					
2:00 PM	23	17					
	26	18					
	36	21		4	9		
	44	24		8	10		
6:00 PM	30	23					
7:00 PM	29	14					
8:00 PM	25	10					
9:00 PM	15	12					
10:00 PM	8	5					
11:00 PM	6	6					
Total	458	273					

Converting Vehicular Count data to Daily Pedestrian Volumes-

$(5_{\text{weekdays}} * 128.7 + 2_{\text{weekend}} * 115.7) / 7_{\text{days}} =$

124.9= 125 Daily pedestrians

Converting Vehicular Counts Bicycle volumes

	Weekday	Weekend	Weekday Peak 2-hour		Weekend 2- hour peak	
Time Period	Vehicle Counts	Vehicle Counts	Bike Counts	Ped. Counts	Bike Counts	Ped. Counts
Midnight	2	3				
1:00 AM	0	2				
2:00 AM	1	0				
3:00 AM	3	3				
4:00 AM	4	3				
5:00 AM	12	6				
	15	8				
	26	11	3	8		
	33	10	6	12		
	20	13				
10:00 AM	21	14				
11:00 AM	22	15			3	6
Noon	35	18			4	8
1:00 PM	22	17				
2:00 PM	23	17				
	26	18				
	36	21	4	9		
	44	24	8	10		
	30	23				
7:00 PM	29	14				
8:00 PM	25	10				
9:00 PM	15	12				
10:00 PM	8	5				
11:00 PM	6	6				
Total	458	273				

AM PEAK
2 hours

PM PEAK
2 hours

Converting Vehicular Count data to Daily Bicycle Volumes

Step 1- Weekday= (26+33+36+44)/458 = 0.303= $rv_{weekday}$

Step 1- Weekend= (15+18)/273 = 0.121= $rv_{weekend}$

Bicycles

$tdt_{weekday}$= (3+6+4+8)/0.303 =69.3

$tdt_{weekend}$= (3+4)/0.121 =57.8

Legend-rv = ratio of volumes,
tdt = total daily volume per location

Converting Vehicular Counts bicycle-continued

	Weekday	Weekend	Weekday Peak 2-hour		Weekend 2- hour peak	
Time Period	Vehicle Counts	Vehicle Counts	Bike Counts	Ped. Counts	Bike Counts	Ped. Counts
Midnight	2	3				
1:00 AM	0	2				
2:00 AM	1	0				
3:00 AM	3	3				
4:00 AM	4	3				
5:00 AM	12	6				
	15	8				
	26	11	3	8		
	33	10	6	12		
	20	13				
10:00 AM	21	14				
11:00 AM	22	15			3	6
Noon	35	18			4	8
1:00 PM	22	17				
2:00 PM	23	17				
	26	18				
	36	21	4	9		
	44	24	8	10		
	30	23				
7:00 PM	29	14				
8:00 PM	25	10				
9:00 PM	15	12				
10:00 PM	8	5				
11:00 PM	6	6				
Total	458	273				

AM PEAK
2 hours

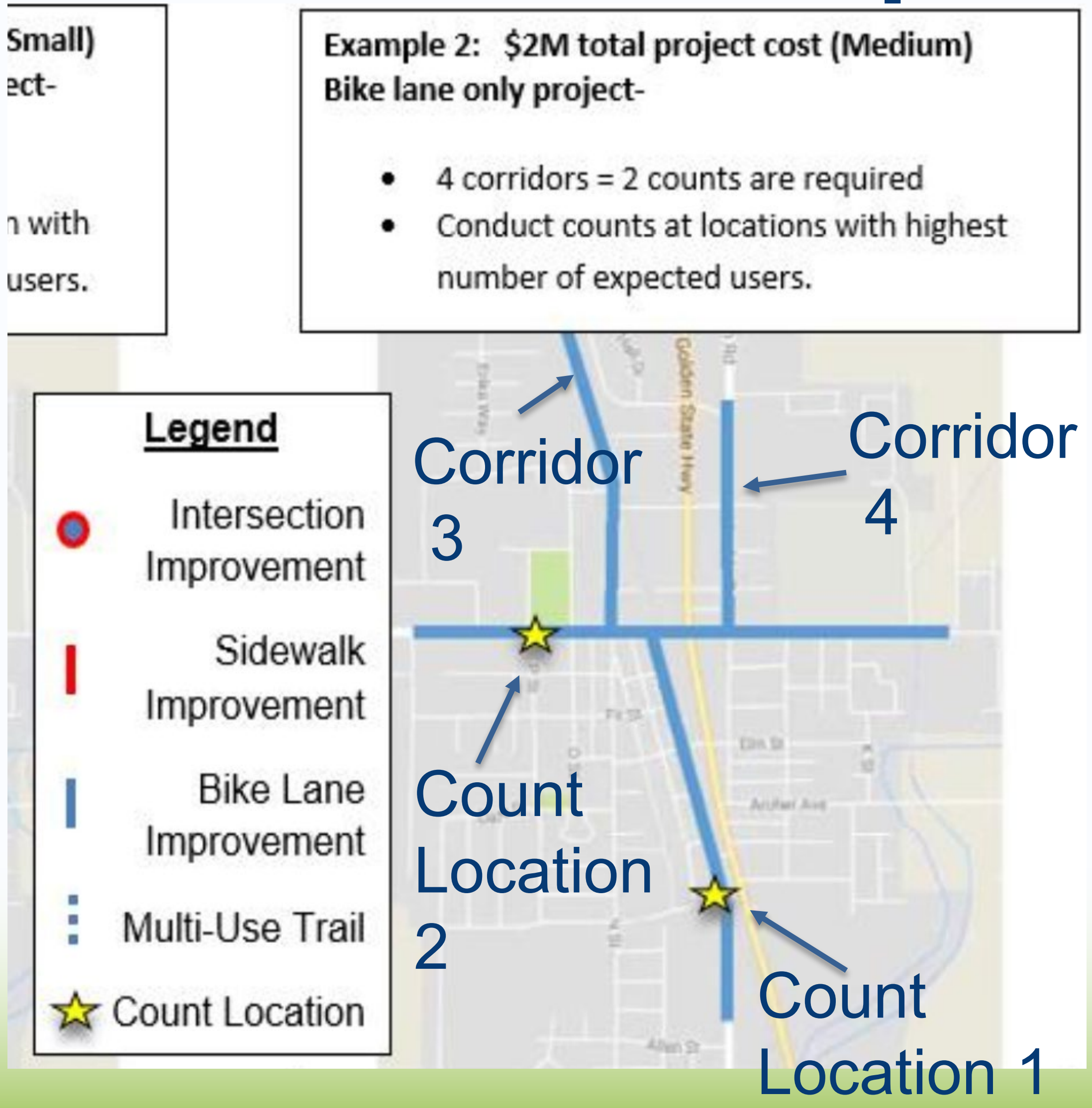
PM PEAK
2 hours

Converting Vehicular Count data to Daily Bicycle Volumes

$(5_{\text{weekdays}} * 69.3 + 2_{\text{weekend}} * 57.8) / 7_{\text{days}}$

= 66 Daily bicyclist

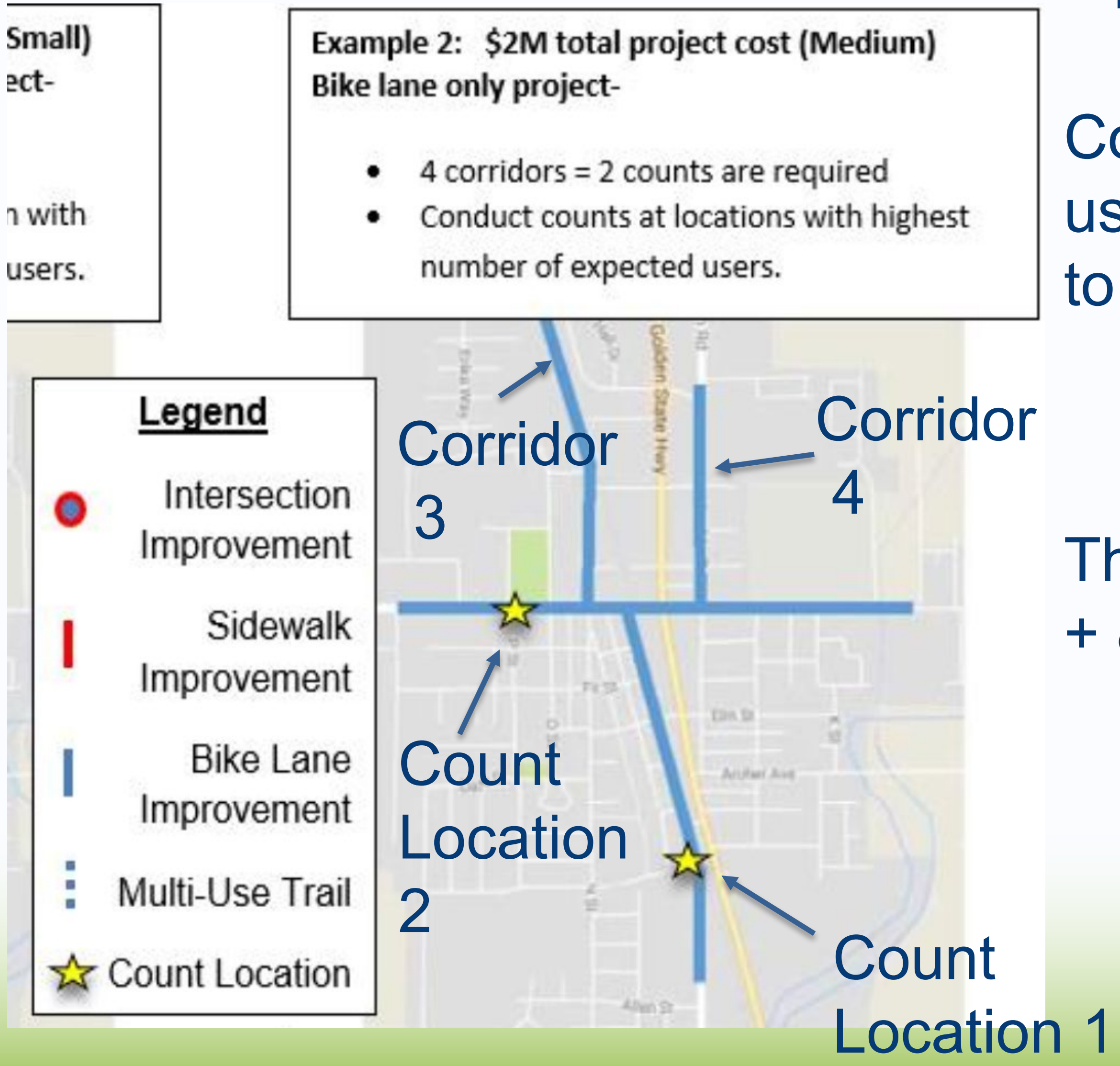
Count Example 2- Appendix B page 26



For Example 2- The project is Medium and is proposing bike lanes on 4 corridors. From Table 1, two counts are required, and the other locations will have reduction factors applied to the appropriate count data.

The bicycle count at Location 1 was 66 and 82 at Location 2.

Count Example 2- continued



Corridor 3 is anticipated to have 80% of the users of Location 1 and Corridor 4 is anticipated to have 90% of the users of Location 2.

The Daily Bicycle Volume calculation will be 66 + 82 + 66 x .80 + 82 x .90 = 274.6

Count Example 3- Appendix B page 26

Example 3: $1.4M total project cost (Small) Sidewalk gap closure only project-

- Only 1 count is required
- Conduct count at a location with highest number of expected users.

For Example 3- The project is Small and is proposing nine sidewalk gap closures. From Table 1, one count is required, and the other locations may have a reduction factors applied to the count data.

The pedestrian count at the highest user location was 125.

The <u>Daily Pedestrian Volume</u> calculation will be 125 + 125 x 0.53 + 125 x 0.75 + 125 x 0.99 + 125 x 0.90 + 125 x 0.95 +125 * 0.8 + 125 x 0.85 + 125 x 0.83 =949/9= <u>105</u>

Count Example 4- Is a combination of the previous examples

Example 4: $10M total project cost (Large)
With all improvement types

- 5 bike corridors, 7 intersections, 9 sidewalks = 7 counts are required
- Ideally counts would be taken at locations where both bike and pedestrian data can be gathered.

Interim Count Guidance Wrap-up

Pre-construction counts must be taken no more than 6 months before implementation (CON)

-New facilities are not required to conduct pre-counts

-The pre-count volume is considered to be zero

Post counts shall be taken at least 6 months after construction is complete.

Interim Count Guidance Wrap-up- continued

Consistency in before/after counts:

Same location

Same time of the day

Same day of week

Same time of year (to reduce variability due to season)

- If inclement weather or other constraint, reschedule as close as possible.

For ATP, the units for a project's total number of users are to be in:

Daily Pedestrian Volume and *Daily Bicycle Volume*

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