

# Bellevue's Crosswalk Practices



## Bellevue Transportation Commission

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City of Bellevue

# Tonight's Presentation

## Crosswalk System Management

- Background on crosswalk system – what's out there
- Overview of the needs and how they're managed
- Process for priority setting
- Available funding sources
- Crosswalk treatments
- Look Ahead – Opportunities through the Ped/Bike Implementation Initiative (PBII)

# Background on Crosswalks

**The current system –**

**How do people cross the road?**

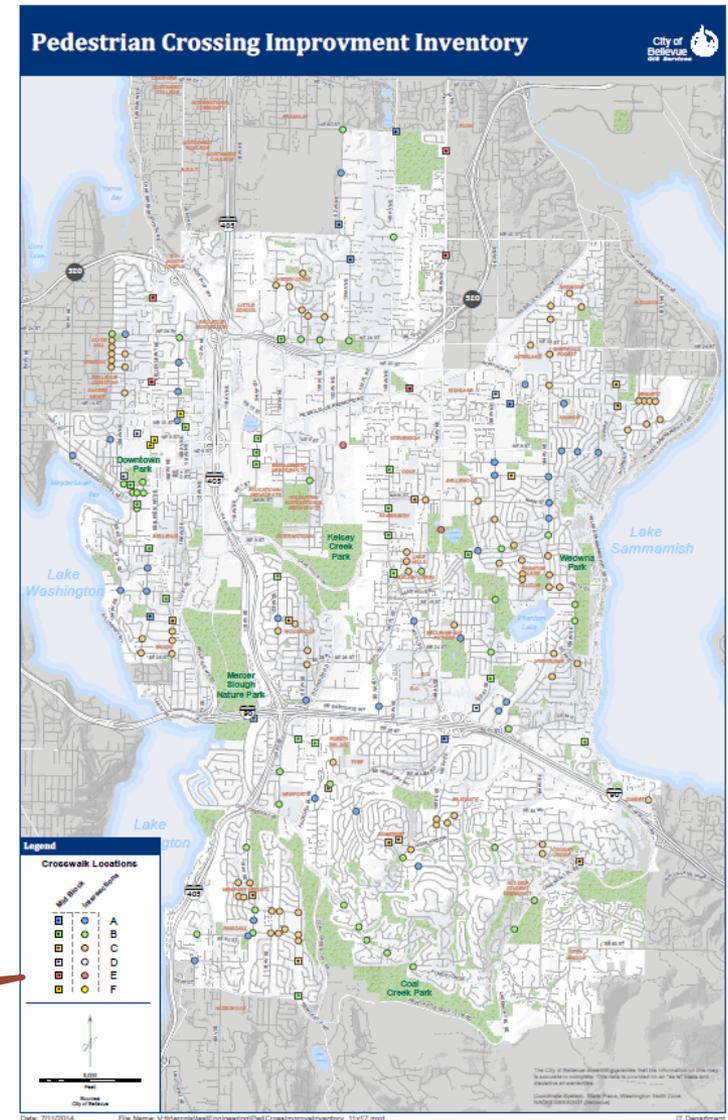
- Bellevue's Transportation Department currently manages around 190 crosswalk sites (+ almost 200 "full" traffic signals)
- Of the 190, there are:
  - 17 flashing crosswalk systems (RRFB, Std. Beacons, In-Pavement Flashing Systems)
  - Almost 100 School Designated Crosswalks
  - 8 Pedestrian Only Signals
- There are also 5 pedestrian bridges and 4 pedestrian only under-crossings (not counting WSDOT facilities)

# Background on Crosswalks

## Mapping the system

- Digitized interface – in progress
- Categorize the type of pedestrian treatment
- Helps manage maintenance of the system
- Assure consistency with national and local standards, dept. practices
- Future public interface to help inform the public of facilities

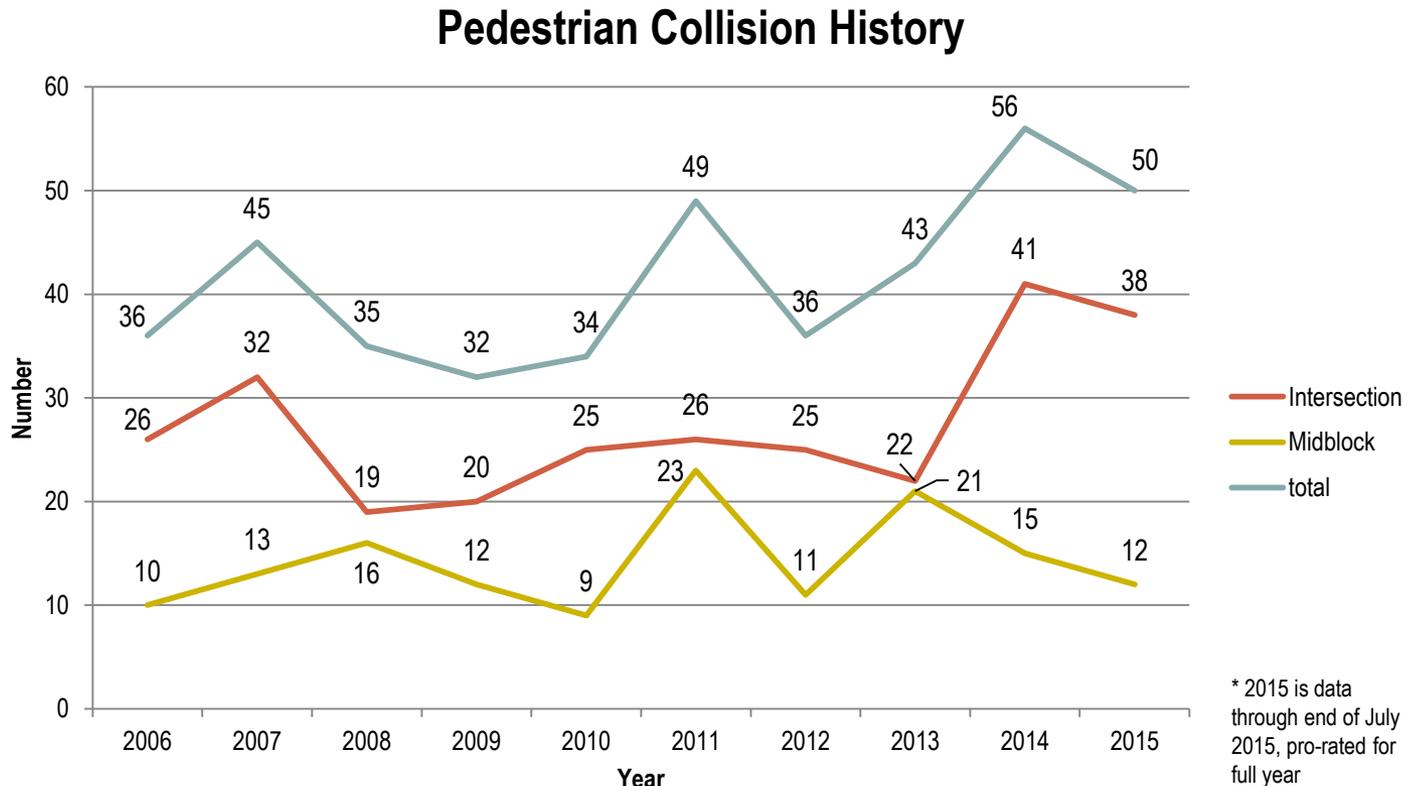
Crossing Categories –  
classified by treatment level



# Background on Crosswalks

## Collision Experience – How Many?

- Typically, between 30 and 50 Pedestrian collisions occur each year.



# Background on Crosswalks

## Where do pedestrian collisions occur?

- About half of all pedestrian collisions (48%) occur at a full traffic signal
- Most occur on an arterial street ; over 95%. With over 75% occurring on arterials classified as “Major”.
- Over half occur in a marked crosswalk (61%)
- Over past 10 years there have been 1 fatal pedestrian collisions on average about every other year (5 total).
  - 3 of the 5 occurred at a full traffic signal. One occurred at a bus stop and another between signals.

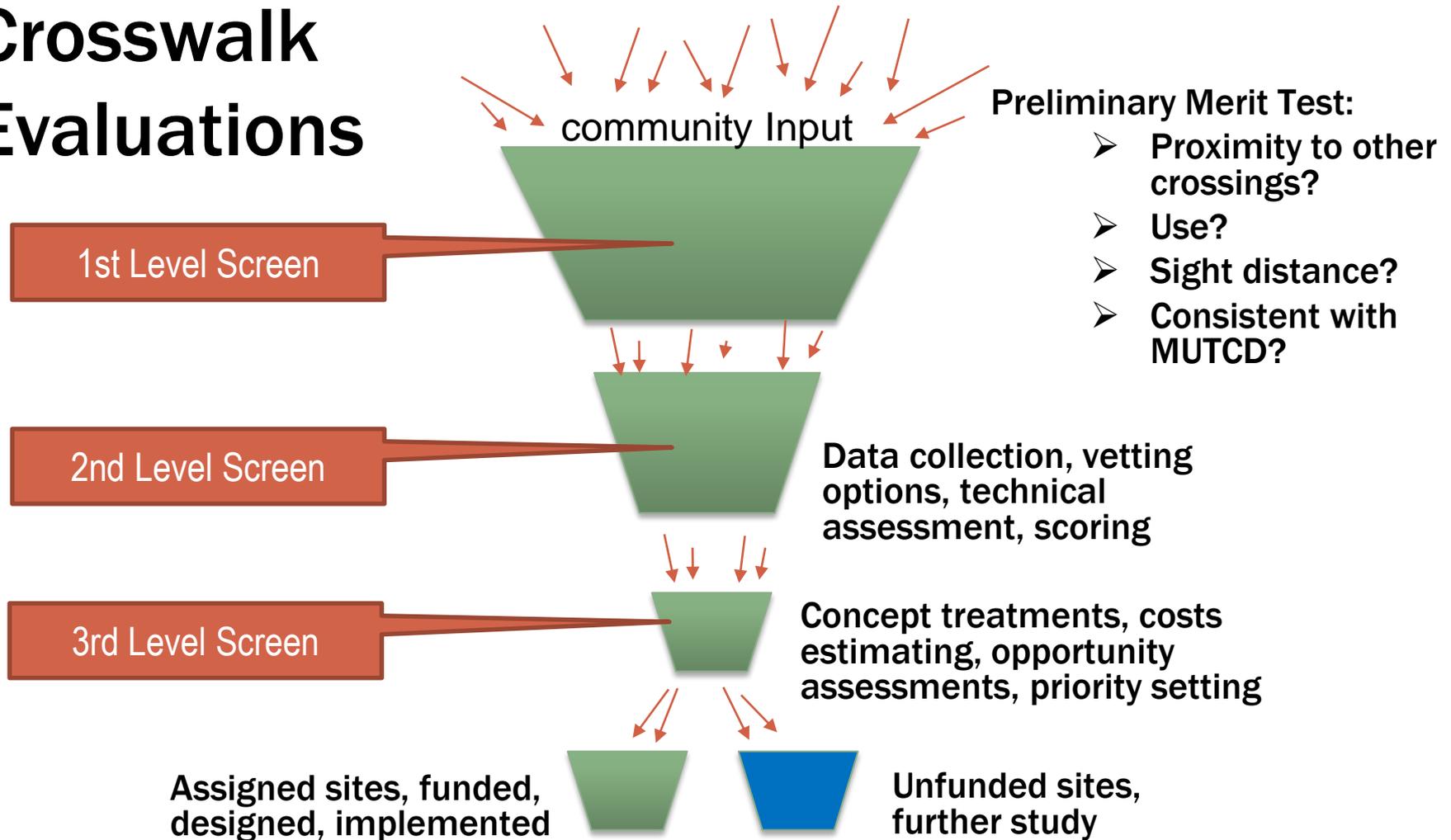
# Overview of Needs

## Crosswalk Evaluations

- Requests for installing new crosswalks or improving existing ones come from a variety of sources:
  - Residents
  - Businesses, new development
  - Comprehensive plan/policy documents/staff
- Track requests and screen initial viability (qualitative)
- If passes initial tests, then logged as a candidate site
- Once a candidate, enters more in-depth vetting process (both qualitative and quantitative)
- While evaluating feasibility, site enters priority process

# Overview of Needs

## Crosswalk Evaluations

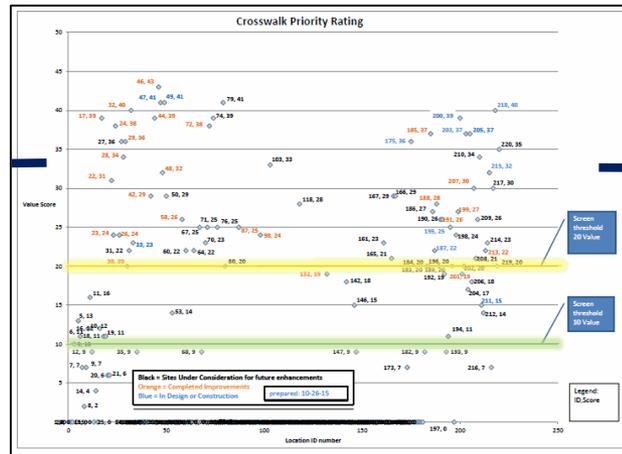


# Priority Setting

How do we set priorities with so many needs and limited resources?

Begins with relative scoring of feasible candidates

High, med., low



Charted

Minimum thresholds set with consideration of resources



Implementation

Vetting

Grouped, opportunities explored, and assigned

# Priority Setting

## Scoring Candidates

- Key criteria include:
  - Proximity to schools
  - Number of travel lanes/exposure distance
  - Speed limit, traffic volume, arterial classification
  - Accident history
  - Options for crossing, i.e. nearby signal...
  - Can site be coordinated with CIP, developer project, Overlay Program
  - Ped Volume
  - Unique site conditions or implementation complexity (low hanging fruit)

**SCORING CRITERIA**

A. Elementary School 5, Middle School 4, High School 3 (max score 5); \_\_\_\_\_ Score.

B. Travel lanes – 2 score for each through travel lane, 1 score for center turn lanes or median areas, 2 score where bike lanes and/or parking exist (max score value 10); \_\_\_\_\_ Score.

C. Posted Speed Limit – 5 score for 35 mph or higher, 4 for 30 mph, 3 for 25 mph, 2 for 20 mph established school zone. The 85<sup>th</sup> percentile speed data may be used in lieu of posted speed at discretion of the engineer; \_\_\_\_\_ Score.

D. ADT – Average Weekday Daily traffic below 10,000 vehicles is 0, 10,000 to 15,000 is 3 and above 15,000 is 5; \_\_\_\_\_ Score.

E. Accident History (pedestrian/bike) – one non-motorized accident within crossing location in past 3 years = 5. More than one pedestrian/bike accident within past 3 years or a single fatality is score of 10 if determined to be clearly located within the crossing limits as determined by the engineer; \_\_\_\_\_ Score.

F. Accident History (vehicle) – 2 score for 5 or more rear end collision (or other reliable collision not included in E. above) in past 3 years associated with activity from the crossing as determined by the engineer; \_\_\_\_\_ Score.

G. Traffic Signal or existing marked crosswalk located within 500 feet of subject review location – deduct 5 score. Where traffic signals are within 300 feet of the crossing outside of the downtown district, flashing crosswalk systems will not be considered. Within the downtown district, this criteria may be overridden at the engineer's discretion; \_\_\_\_\_ Score.

H. Crossing is located on a designated arterial – Major is 5, Minor is 3, Collector is 2; Local Street is 0; \_\_\_\_\_ Score.

I. Coordination. Project can be coordinated with another Capital Improvement Project, Grant Opportunity, Development, or Overlay project for efficiency in design and construction and reduced resource demand is 5; \_\_\_\_\_ Score.

J. Pedestrian volume of 20 peds or higher in peak one hour period is 5 score. Where 20 peds is not achieved for a crossing assign 0 score; \_\_\_\_\_ Score.

K. Site Conditions. This category allows the professional to assign up to 10 points for site conditions which are unusual, such as a side trail connection, or roadway gradient, or other aspect that in the opinion of the professional elevate the subject crossing beyond typical consideration; \_\_\_\_\_ Score.

L. Implementation Complexity. If the site meets criteria for installation or enhancement, satisfies certain community goals, and can be implemented relatively simply with minimal costs, staff time, or other resources as determined by the Department, assign a 5 score; \_\_\_\_\_ Score.

The City retains the right to remove or modify any enhanced treatment or marked crosswalk within the public right-of-way at its sole discretion and may from time to time develop pilot projects to evaluate new technologies and advances in crosswalk safety. The above criteria is developed by the Transportation Department staff and any interpretation of criteria or conditions rests with the Department Director or their designee.

SUBJECT LOCATION: \_\_\_\_\_  
TOTAL SCORING: \_\_\_\_\_

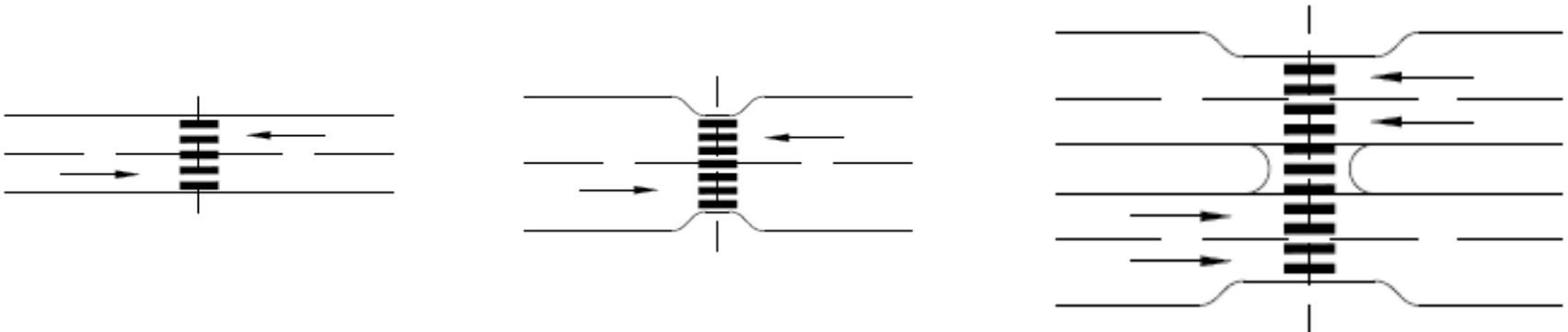
Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

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# Priority Setting

## What influences higher priority candidates?

Higher vehicle volume >>> higher ped volume >>> wider streets



Also, special conditions – e.g. side trails,  
collision experience and ability for collaboration  
on other projects

# Funding Sources



## CITY OF BELLEVUE

2015-2016 BUDGET  
2015-2021 CAPITAL INVESTMENT  
PROGRAM PLAN



April 2015

2015-2021 Adopted CIP: Improved Mobility			
Funded CIP Projects			
CIP Plan Number	Project Name	\$ in 000s	
		2015-2021 Project Cost	Total Estimated Cost
	<b>2015 - 2021</b>		
PW-I-92	Lakemont Blvd and Cougar Mnt Way Improvements	626	1,421
PW-M-1	Overlay Program	42,334	138,028
PW-M-2	Minor Capital - Traffic Operations	1,184	9,916
PW-M-7	Neighborhood Traffic Safety Program	2,368	9,870
PW-M-20	Minor Capital - Signals and Lighting	2,423	3,423
PW-R-146	Northup Way Corridor Improvements	8,484	11,726
PW-R-155	Traffic Computer System Upgrade	550	5,693
PW-R-156	ITS Master Plan Implementation Program	2,550	2,975
PW-R-159	East Link Analysis and Development	5,107	14,015
PW-R-160	NE 4th Street Extension - 116th to 120th Ave NE	4,911	36,210
PW-R-162	NE 6th Street Extension	50	1,000
PW-R-164	120th Ave NE Stage 2 - NE 8th St to NE 12th St	16,982	36,450
PW-R-166	124th Ave NE - NE Spring Boulevard to NE 18th St	7,179	10,601
PW-R-168	120th Ave NE (Stage 3) NE 12th St to NE 16th St	9,850	14,538
PW-R-169	124th Ave NE - NE 12th to NE Spring Boulevard	366	1,419
PW-R-171	134th Ave NE - NE Spring Boulevard to NE 20th St	267	267
PW-R-172	NE Spring Blvd (Zone 1) - 116th to 120th Avenues NE	30,005	31,605
PW-R-173	NE Spring Boulevard (Zone2) - 120th to 124th Aves N	2,057	3,401
PW-R-174	NE Spring Boulevard - 130th to 132nd Ave NE	3,000	3,397
PW-R-175	NE Spring Blvd & 136th Pl NE-132nd Ave to NE 20th S	165	165
PW-R-176	Downtown Transportation Plan Implementation	400	800
PW-R-177	Eastgate Subarea Plan Implementation	500	500
PW-R-181	East Link MOU Commitments	17,950	54,355
PW-R-182	NE 6th Street Light Rail Station - Enhanced Access	5,000	5,000
PW-R-46	Accident Reduction Program	839	3,931
PW-W/B-56	Pedestrian and Bicycle Access Improvements	3,157	10,557
PW-W/B-76	Neighborhood Sidewalks	8,437	11,579
PW-W/B-78	Mountains to Sound Greenway Trail	1,646	2,546
PW-W/B-81	108th/112th Aves NE - N. City Limit to NE 12th St	200	200
PW-R-183	West Lake Sammamish Parkway, Phase 2	8,000	8,000
PW-R-184	Bellevue Way SE HOV Lane - 112th Ave SE 'Y' to I-90	4,400	4,400
PW-R-185	Newport Way Improvements - Somerset Blvd to 150th Ave	8,100	8,100
TOTAL IMPROVED MOBILITY		\$ 199,088	\$ 446,089

# Funding Sources

## Budgets

FY 2016  
\$159,135

- Funding for crosswalks comes from a variety of sources:
  - Large CIP road projects as part of their design
  - Minor Capital, Neighborhood Safety Program, Ped/Bike Improvements
  - Federal and State Grants

FY 2015-2021 Capital Investment Program						
PW-M-2 Minor Capital - Traffic Operations						
Category:	Improved Mobility		Status:	Ongoing		
Department:	Transportation		Location:	Citywide		
Program Expenditures						
Program Expenditures	Appropriated To Date	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget
9,916,291	8,732,441	154,500	159,135	3,909	168,826	173,891
						179,108
						184,481
Description and Scope						
This program funds minor capital transportation improvements to the city to address traffic operation issues and concerns. Typical projects include new crosswalk installations, sign upgrades, channelization improvements, guardrail, roadway safety and access management improvements, new bike lanes, and bicycle route signing. This program also implements pilot projects using new, innovative traffic control devices and evaluates their effectiveness. This program often provides matching funds to grant funded projects to improve pedestrian, bike and ADA facilities.						
Rationale						
This program provides funds for traffic operation improvement projects that are too large in scope or the operating budget but too small for individual CIP projects. The program allows the City to respond on an ongoing and timely basis to citizen project and safety related requests, unfunded mandates, changes to standards, partnership opportunities with other capital or private development projects, and other emergent needs.						
Environmental Impacts						
This program funds projects that are primarily safety oriented and implemented on a location-by-location basis. Safety improved rights of way, so environmental issues are minimal and are addressed as appropriate on a location-by-location basis.						
Operating Budget						
Operating costs for new improvements will be determined on an as needed basis.						
Project Map						
Schedule of Activities						
Activity	From	To	Amount			
	Ongoing		9,916,291			
<b>Budgetary Cost Estimate:</b>			9,916,291			
Means of Financing						
Source	Amount					
Funds	2,390					
	10,290					
	47,821					
	1,136,990					
	1,612,653					
	73,279					
	3,721,790					
	2,240,221					
	20,746					
	1,050,111					
<b>Total Funding:</b>	9,916,291					
<b>Comments:</b>						

Description: Typical projects include new crosswalks, channelization and signing improvements, guardrail, roadway safety and access management, new bike lanes...

# The “Toolbox” of options

**Pedestrian Crossing Improvements can span a broad range of treatments (...and costs)**

- **Treatments include:**
  - **Full traffic signals, bridges and under-crossings**
  - **Flashing crosswalk systems such as RRFBs**
  - **Raised crosswalks, curb bulbs, overhead internally illuminated signing, median islands**
  - **Plastic pavement markings, post mounted signing, lighting, legends in advance on pavement, e.g. “TRAIL XING”**

# The “Toolbox” of options

## One City – Realizing Opportunities

- Consider all options:
  - Role is not just crosswalks – But, what is the full spectrum of options for pedestrians crossing safely?
- Case in Point – Coal Creek Pkwy Trailhead Crossing – Utilities Dept. lead project:
  - Looking for opportunities; departments joining forces to achieve multiple benefits
  - New culvert/bridge to support and keep road safe, provide ped crossing and trail connectivity, stream restoration, utilities upgrades, enhanced landscaping/aesthetic,



# The “Toolbox” of options



Center Medians  
(145<sup>th</sup> PI SE at 144<sup>th</sup> Ave SE)



Overhead Signing and Narrowed Crossing  
(Lake Hills Blvd at Lake Hills Trail)

School Designated  
Raised Crosswalk  
(Phantom Lake  
Elementary School)



# The “Toolbox” of options

## Rectangular Rapid Flashing Beacon (RRFB)



156<sup>th</sup> Ave SE north of  
SE Eastgate Way



RRFB in action video

# The “Toolbox” of options

## Pedestrian Only Signal



Started off as in-pavement flashing lights, then std. yellow round flashing beacons, then signal

**156<sup>th</sup> Ave NE at 1600 block (Crossroads)**

# Look Ahead

## Continued development of the strategies and practices to manage crosswalks

- **Pedestrian and Bicycle Implementation Initiative (PBII)**
  - **Where planning converges upon operations - Major effort looking at implementing both pedestrian and bicycle related improvements**
  - **Identifying projects and how to fast track**
- **Hone the practices that help prioritize needs**
- **Improved documentation of the process, projects and implementation**
- **Develop dynamic interfaces, such as mapping systems of inventory, to aid in the management practices**

# Look Ahead



***Questions?***