LARC 444/ 553 Green Network Planning

GREEN NETWORKS + ACTIVE TRANSPORTATION

ACTIVE TRANSPORTATION

What is active transportation (AT)?

Why do we need AT?

What is the relationship between green networks and active transportation?

Are there potential synergies and multiple benefits?

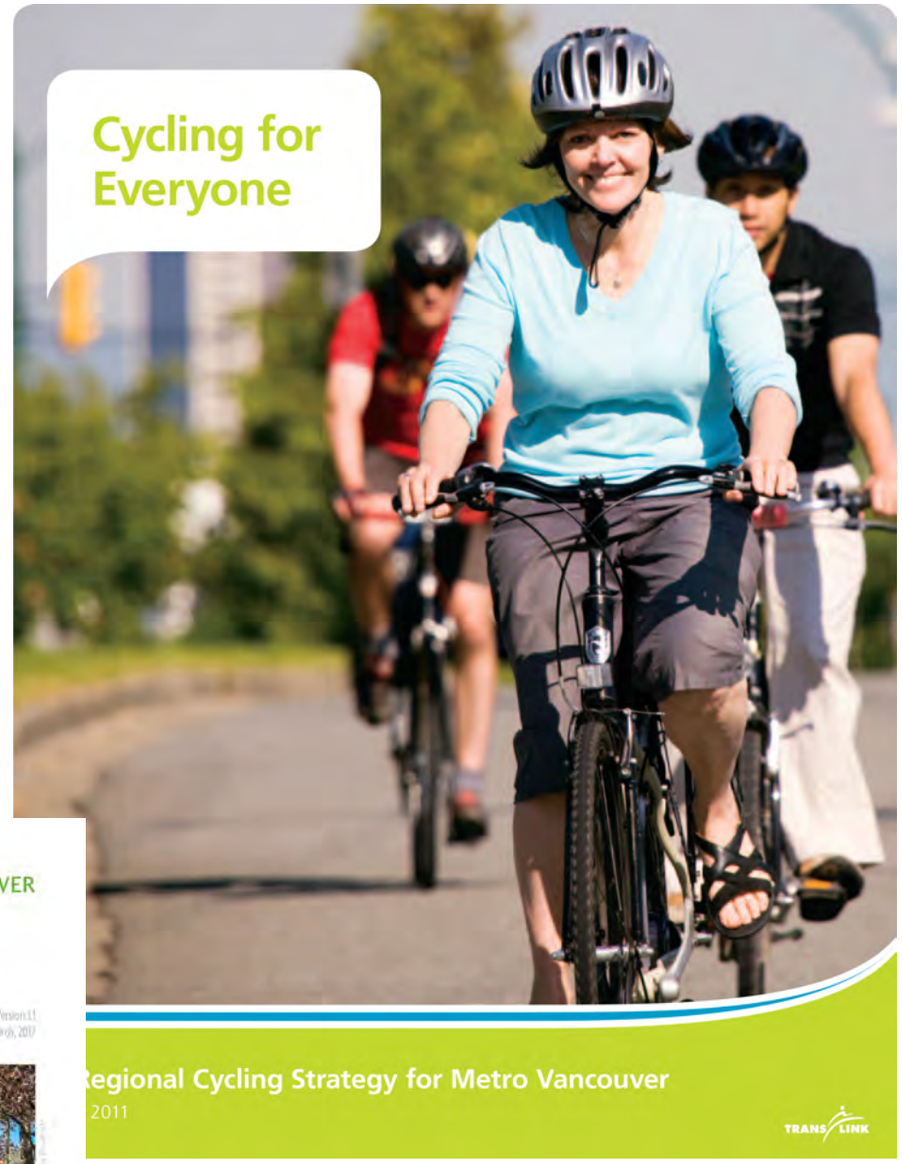
Basic parameters of active transportation infrastructure.

Separated bike lane & streetcar stop in Amsterdam

REFERENCES


Transport Canada
Transports Canada
ACTIVE TRANSPORTATION IN CANADA
a resource and planning guide


Transportation Design Guidelines:
All Ages and Abilities Cycling Routes
CITY OF VANCOUVER
Version 1.1
March, 2017
Overview:
The City of Vancouver has a vision to make cycling safe, convenient, comfortable and fun for all ages and abilities (AAA), including families with children, seniors, and new riders. An inviting and connected network of low stress "AAA" routes will provide a wide spectrum of the population the option to cycle for most short trips.
This guideline provides 10 "general rules" to consider when designing or designating a route "AAA". It is intended as a living document that will be updated and supplemented periodically as we learn from local projects, research, and other leading cities.
Rule #1:
Build the types of cycling facilities that feel comfortable for all
Less
Level of Comfort
More
Many types of traditional bike facilities only appeal to people who are comfortable riding in traffic. However, bikeways on quiet streets, protected bike lanes, and off-street pathways appeal to people who are interested in cycling but concerned for their safety.2
The general approaches to creating AAA cycling routes on city streets are:
• Ensuring low motor vehicle speeds and volumes on local streets, or
• Providing physical separation on busy streets
Unsuitable for AAA facility
Suitable for AAA facility
Rule #2:
Target motor vehicle volume below 500/day (below 50/peak hour)
Reducing the number of interactions between motor vehicles and people cycling can improve safety and comfort. At a volume below 500 vehicles per day, most people cycling will encounter less than one motor vehicle per block in the peak hour.
Considerations:
• On routes with more than 500 vehicles/day (more than 50/hr), consider additional traffic calming or diversion to bring volumes down to the target value.
• Routes with up to 1,000 vehicles/day (100/hr) may be considered AAA after carefully considering speed, parking turnover, and passing opportunities.
• On routes where low motor vehicle volumes are not possible to achieve, separation of bikes from vehicles is needed.


Cycling for Everyone
egional Cycling Strategy for Metro Vancouver
2011
TRANSLINK

WHAT IS ACTIVE TRANSPORTATION?

Transport Canada:

All human powered forms of transportation

walking
cycling
skateboarding
rollerblading
wheelchairs
walking + strollers
walking with walkers
skiing
skating

(Most paths also allow scooters & motorized wheelchairs)

2011, Transport Canada

ACTIVE TRANSPORTATION

WHY do we need it?

public health!

lower GHG emissions!

no water pollution

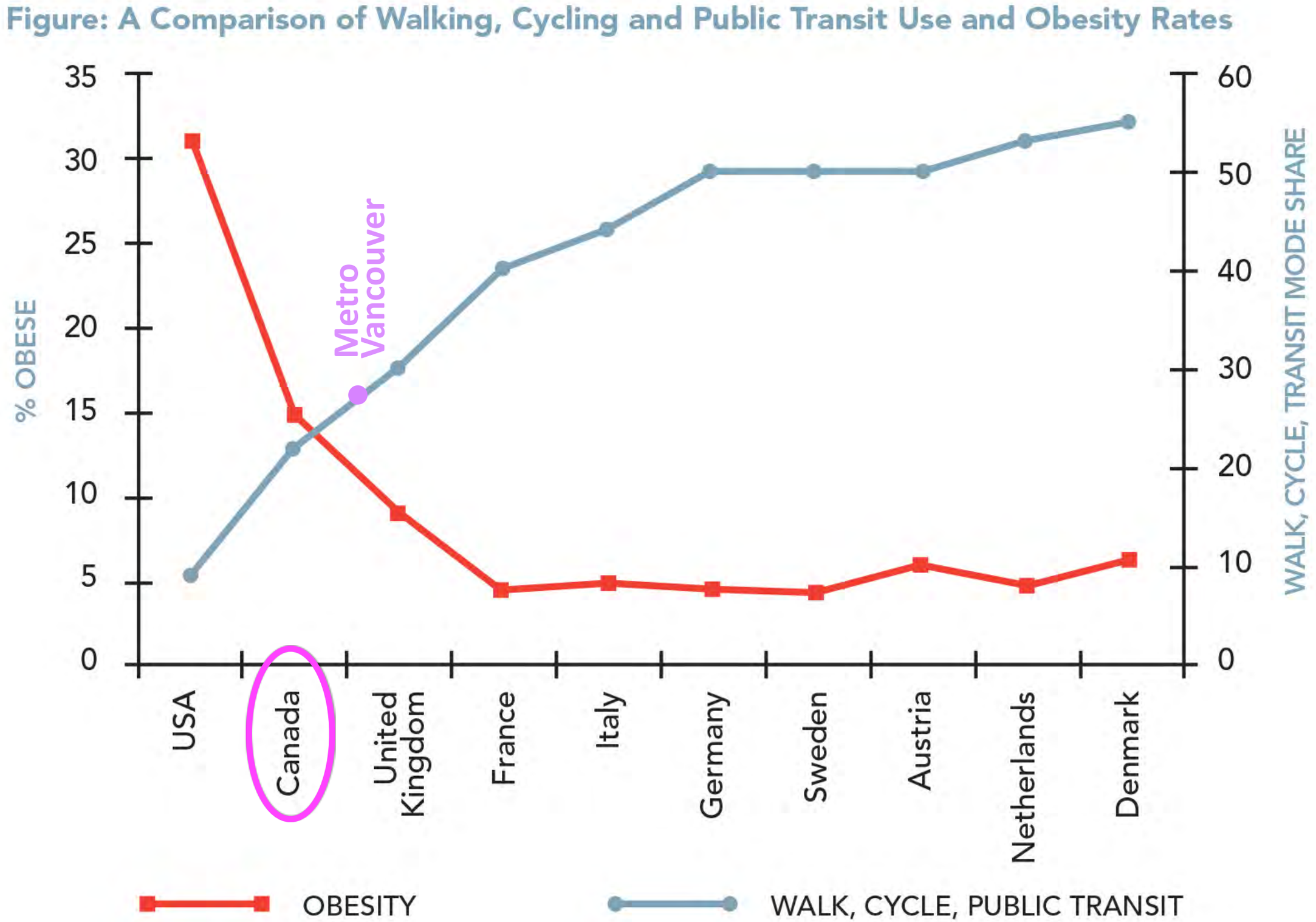
builds community

cost effective

transportation choices

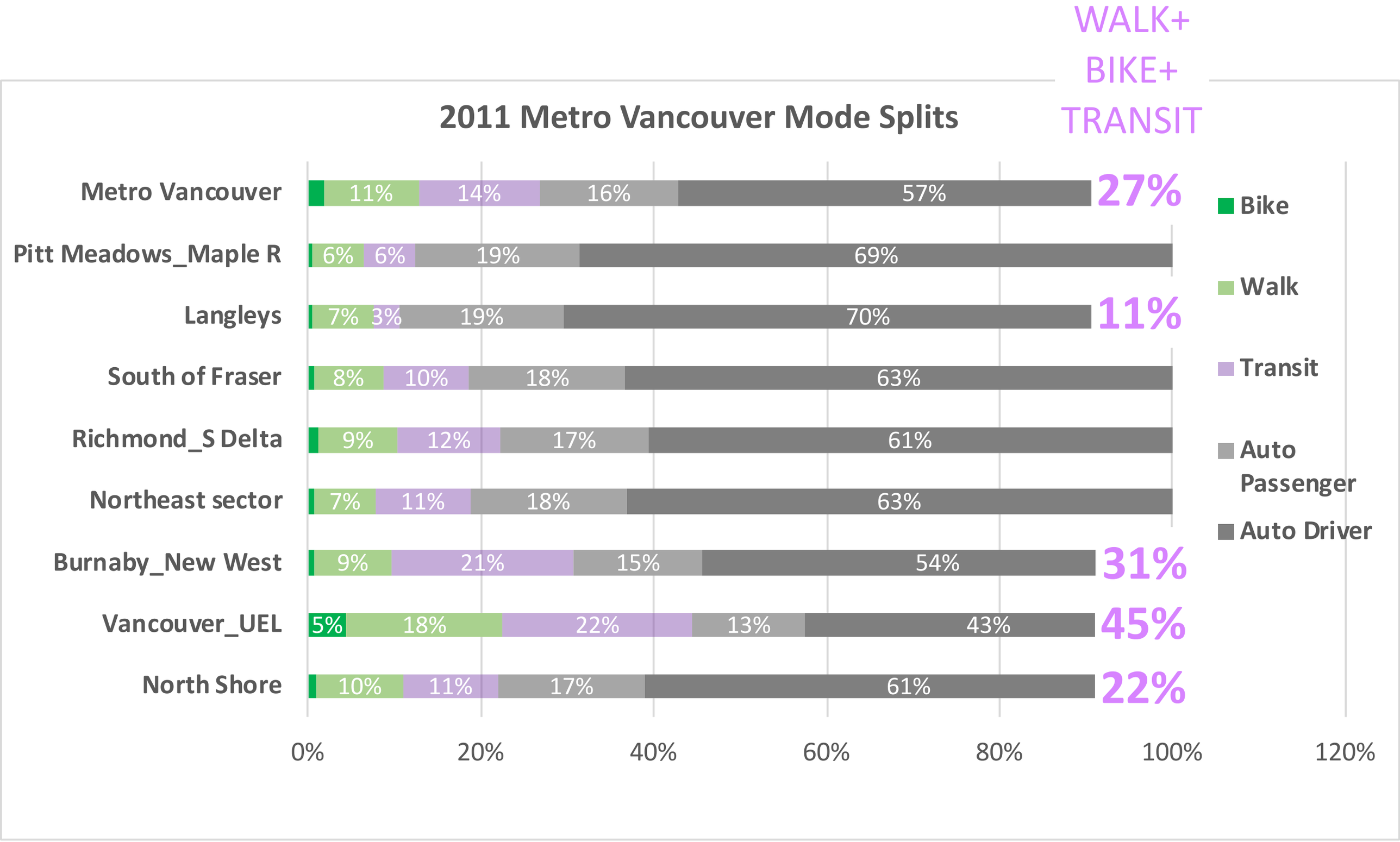
A street in The Netherlands

CANADA VS USA & EUROPE



Active Transportation in Canada, 2011, Transport Canada

2011 METRO VANCOUVER TRAVEL TO WORK/SCHOOL



2011 Metro Vancouver Regional Trip Diary

2013 - 2016 VANCOUVER

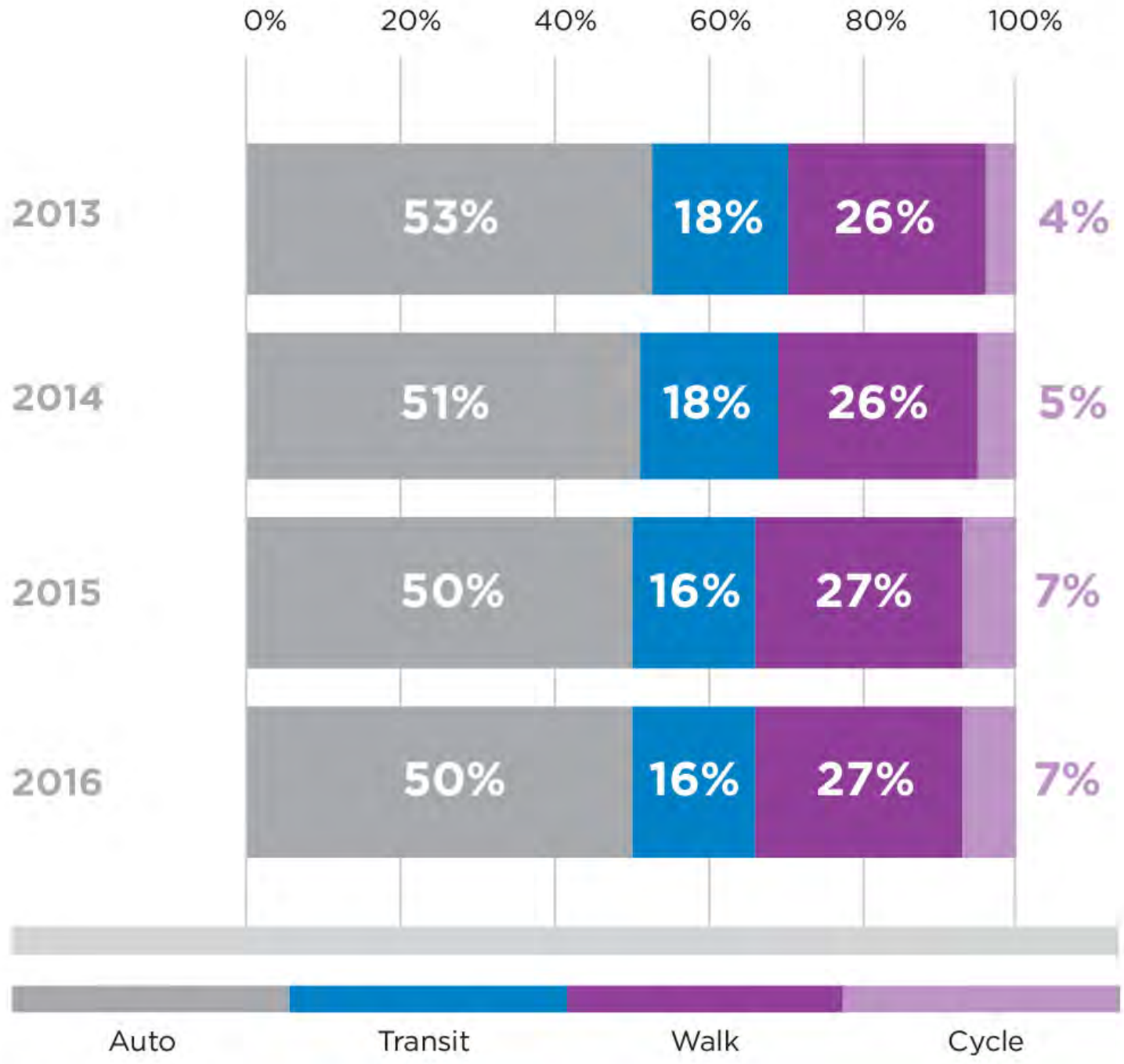
2016 VANCOUVER

50% Walk, Cycle, Transit

2013 > 2016

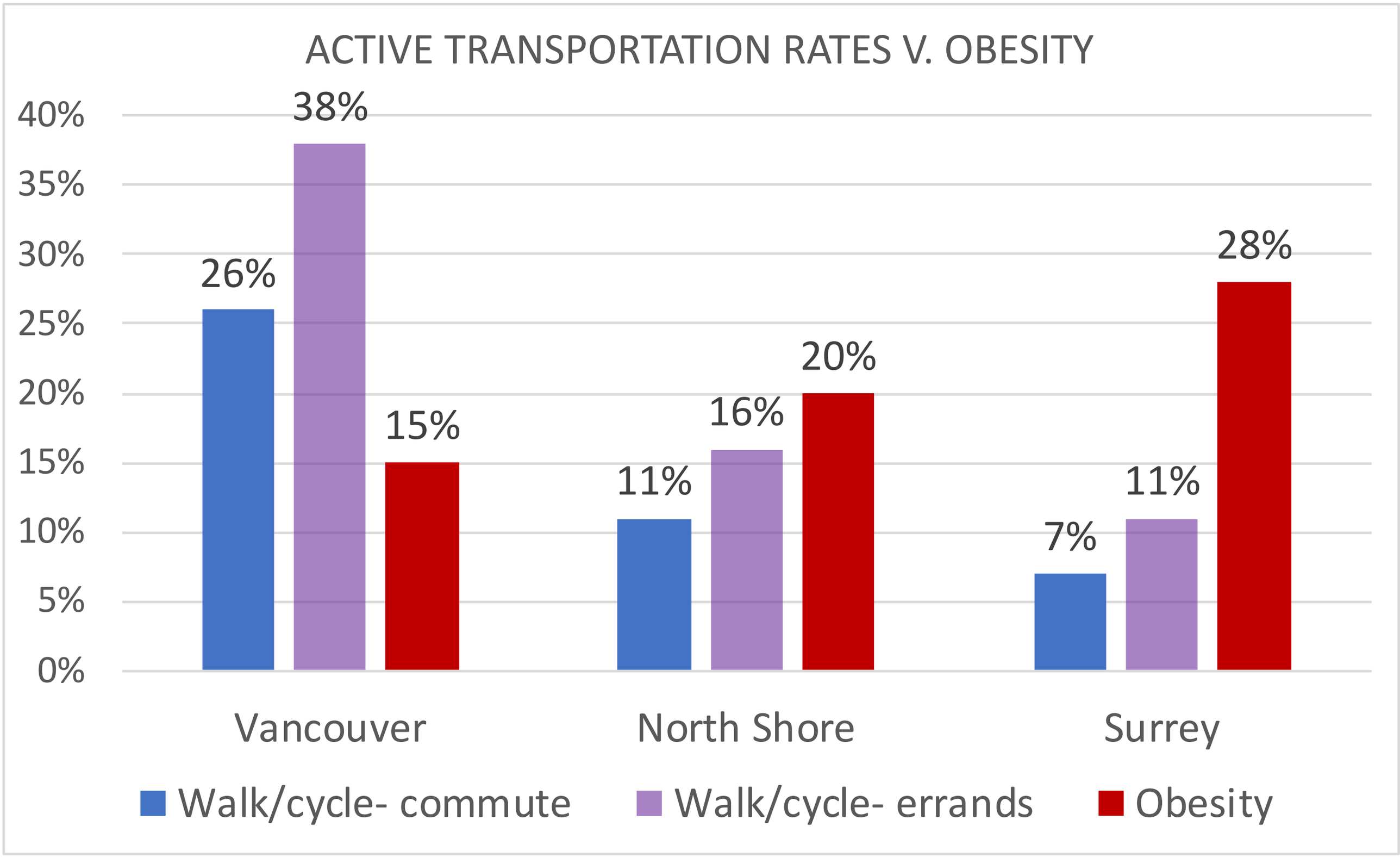
Walk + bike

30% > 34%



2016 Walking and Cycling in Vancouver

ACTIVE TRANSPORTATION + HEALTH



My Community My Health data https://www.myhealthmycommunity.org/Results/CommunityProfiles.aspx

ACTIVE TRANSPORTATION + HEALTH

Centres for Disease Control 2010: moderate physical activity

150 minutes/ week 22 minutes/day

(additional health benefits if the exercise is more rigorous and longer duration)

RISK OF OBESITY:

+1 hour in car = +6%

+1 K walked = -4.8%

Frank, Andresen, Schmidt (2004) Obesity relationships with community design: Physical activity and time spent in cars.

Carter Street Promenade, Mumbai

ACTIVE TRANSPORTATION + HEALTH

DO YOU ENJOY YOUR COMMUTE?

drivers 37%

pedestrians 46%

cyclists 59%

WOULD YOU LIKE TO WALK OR CYCLE MORE?

84% yes walk more

64% yes cycle more

.

Statistics Canada “Like commuting? Workers’ perceptions of their daily commute,” 2008 www.statcan.gc.ca/pub/11-008-x/2006004/9516-eng.htm;
York University, Institute for Social Research, National Survey on Active Transportation, 2004

EQUITY

20 - 40% cannot or should not drive:

20% no car

10% disability

10% low income-can't afford a car

16% of Canadians are children

4.7% are seniors over 80

Litman, Todd, "Quantifying the Benefits of Non-motorized Transportation for Achieving Mobility Management Objectives" Victoria Transport Policy Institute, 2010 and Statistics Canada 2016

CYCLING INFRASTRUCTURE RETURNS GHG REDUCTIONS + HEALTH BENEFITS

transit + residential density + street connectivity

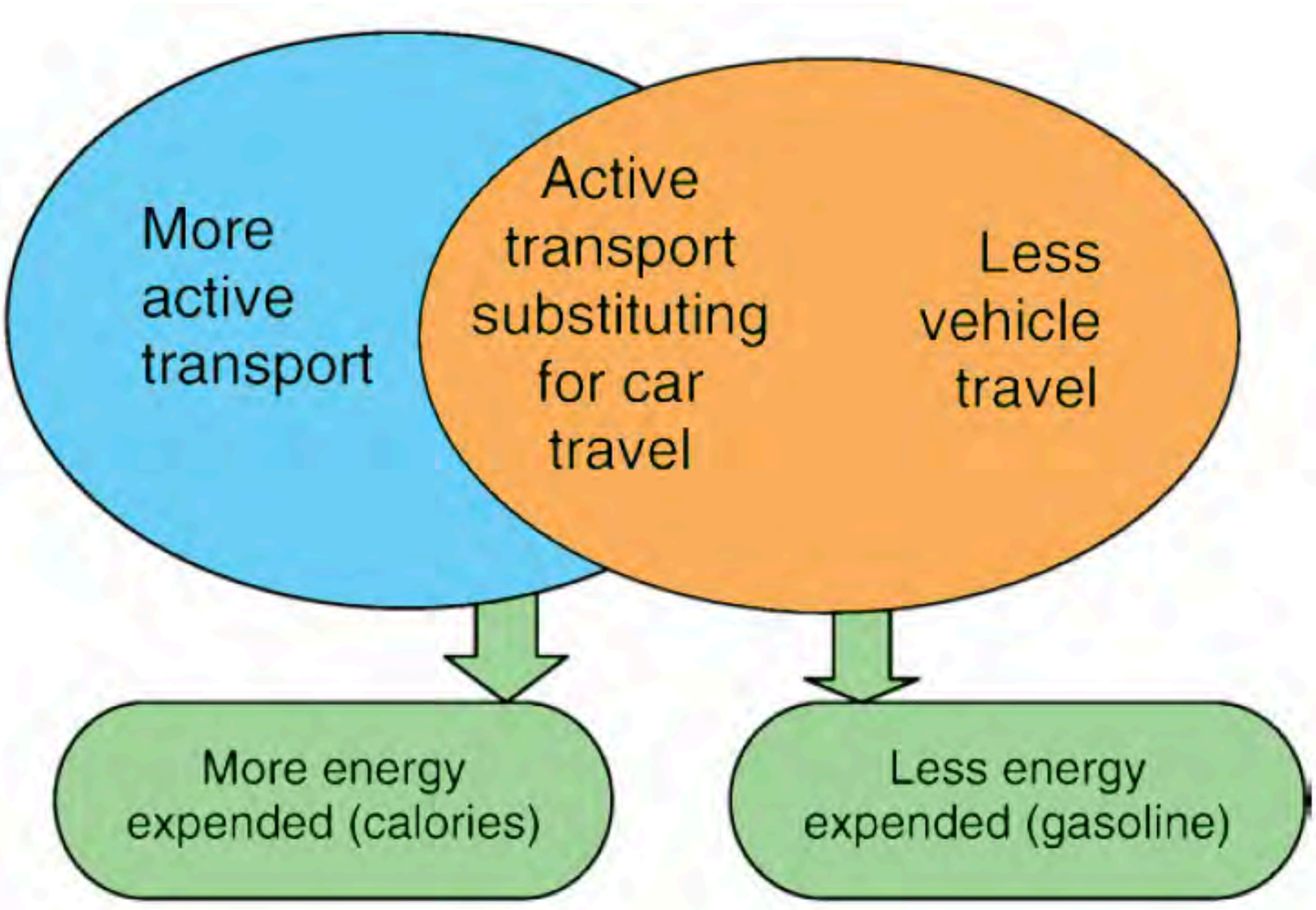


Fig. 1. Conceptual transport energy model.

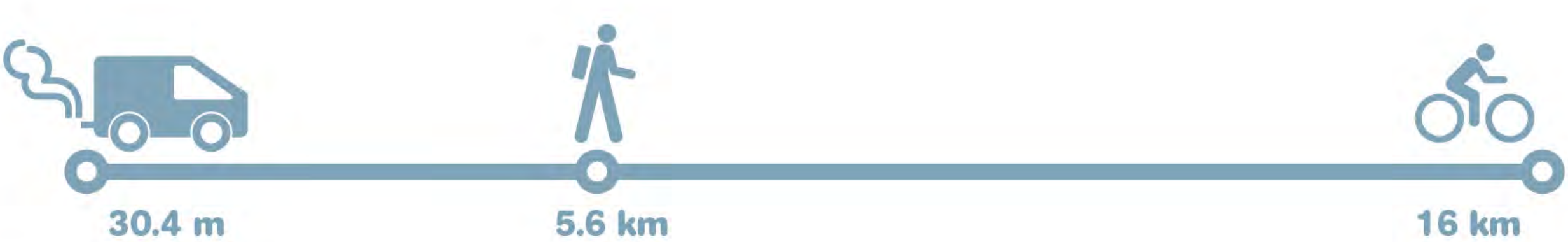
Image: Frank et al (2010) Carbonless footprints: Promoting health and climate stabilization through active transportation, *Preventative Medicine* 50

ACTIVE TRANSPORTATION + ENERGY

526 x's further

car: 30.4 metres **pedestrian: 5.6 km.** **cyclist: 16 km.**

350 calories



On 350 calories a cyclist can travel 16 kilometres, a pedestrian 5.6 kilometres, and an automobile 30.4 metres.
Source: Transportation Alternatives - Bicycle Blueprint, 1998

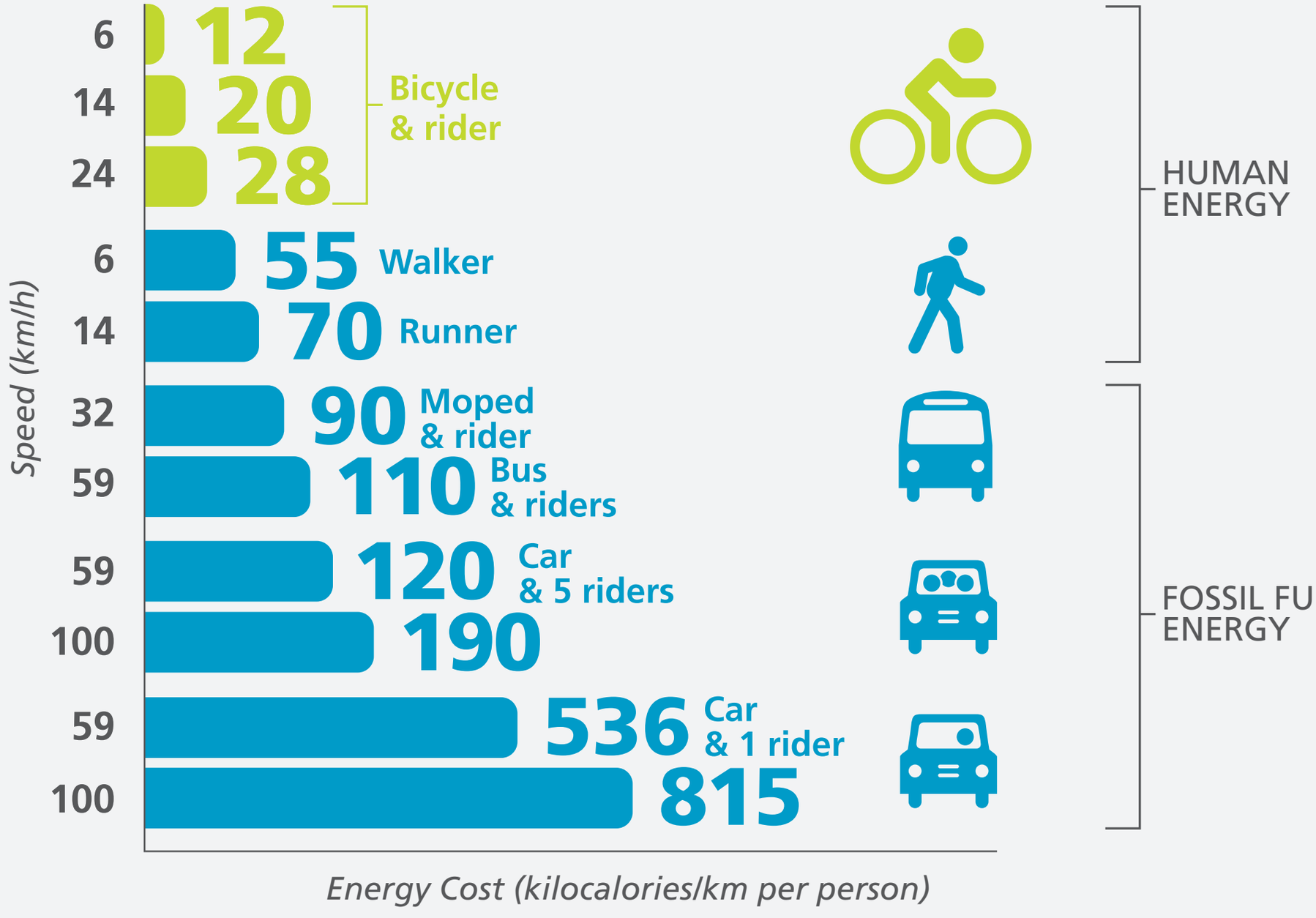
Active Transportation in Canada, 2011, Transport Canada

ACTIVE TRANSPORTATION + ENERGY

Figure 3

Energy consumption by mode

Source: Wilson, David Gordon. 2004. Bicycling Science. London: The MIT Press. 166.



WHY DON’T MORE PEOPLE CYCLE?

CHALLENGES/
DETERRENTS
Funding
Motor Vehicle Traffic
Travel Time
Physical Ability
Topography
Bicycle Security
Weather
Personal Security

Electric assist- the Copenhagen wheel

ACTIVE TRANSPORTATION INFRASTRUCTURE

Infrastructure to support active transportation:

sidewalks
bike paths
greenways
street crossings
amenities like seating
storage and locking
support services

Hudson River Greenway, NYC

ACTIVE TRANSPORTATION INFRASTRUCTURE

Burrard Bridge improvements, Vancouver

TYPES OF CYCLING INFRASTRUCTURE

Less — Level of Comfort — More

Major Street Shared Use Lane

Painted Bicycle Lane

Paint Buffered Bike Lane

Local Street Bikeway

Protected Bike Lane

Off-Street Pathway

Unsuitable for AAA facility

Suitable for AAA facility

Metro & City of Vancouver: Build All Ages and Abilities (AAA) facilities!

LOCAL STREET/ ON-STREET

Too narrow for comfortable passing

Allows for comfortable passing

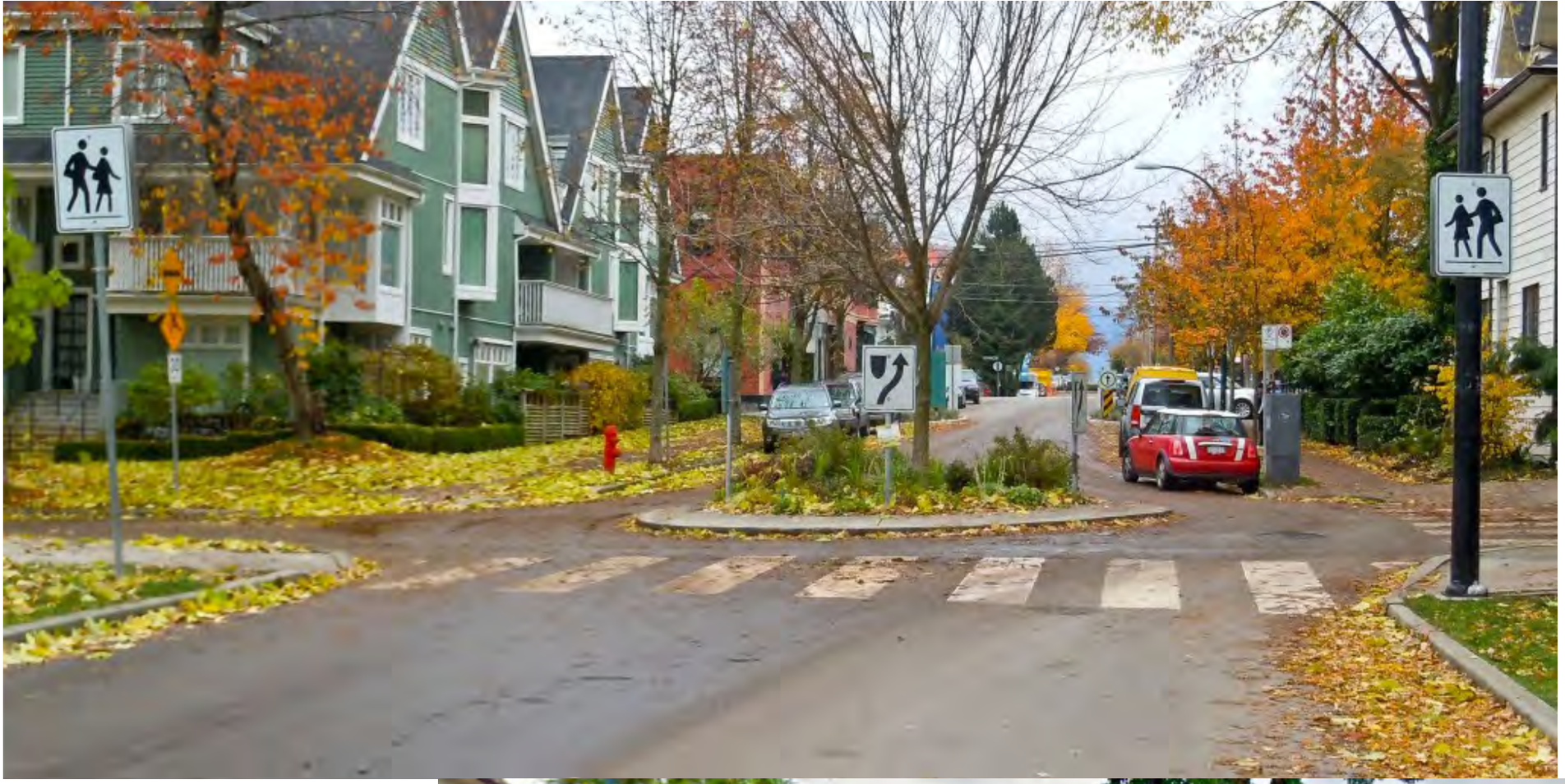
8 m (26 ft) street:
bikes + parking 1 side

Low traffic volumes
below 500/day & 50/peak hour

10 m (33 ft) street:
cycling + parking 2 sides

Low speeds
Speed limit below 30k/hour

Reality: 3rd Avenue Bike Street

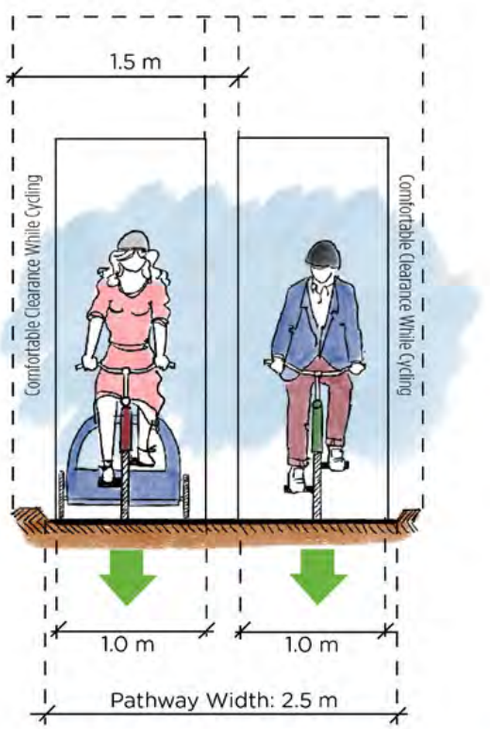


Roundabouts

Bulb-outs

SEPARATED- ONE WAY

Protected lane for cyclists- safer
Reduces “dooring”
Prevents parking in bike lane
BUT
Right turning cars may be dangerous

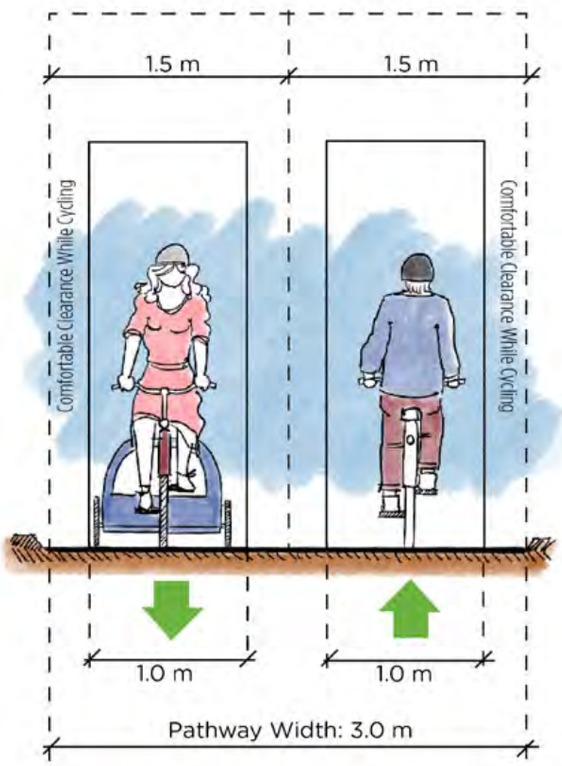


Preferred minimum
2.5m unidirectional path
Provides some clearance for passing and conversational cycling

From: National Assn. of City Transportation Officials NACTO.org

SEPARATED- TWO WAY

Used if inadequate road space for two one-way
Similar benefits as one-way
More challenging for drivers

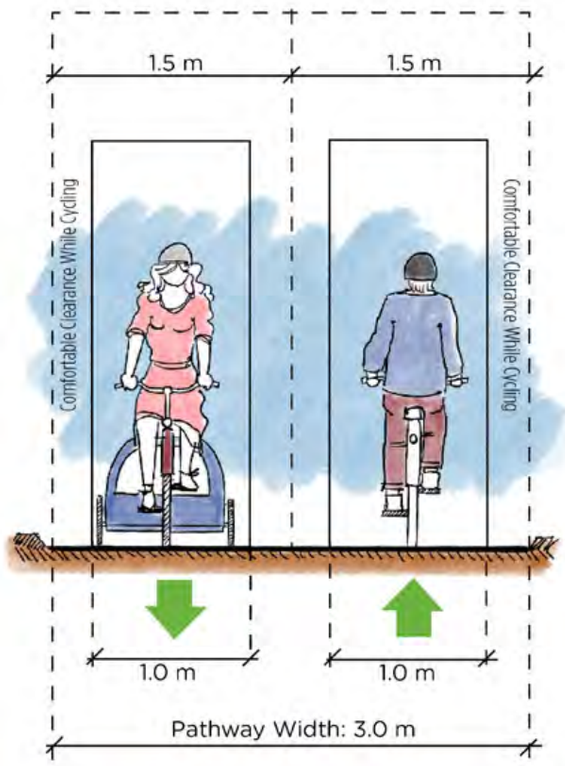


Preferred minimum
3.0m bidirectional path
Provides comfortable clearance for passing oncoming cyclist

DUNSMUIR STREET, VANCOUVER

AAA- OFF-STREET PATHWAY

NOT on a street
Often called a greenway



Preferred minimum
3.0m bidirectional path
Provides comfortable clearance for passing oncoming cyclist

The short- to medium-term transportation design for this area includes:

- A 3.5 metre pedestrian path
- Physical separation between pedestrians and cyclists
- A 3.5 metre bike path

Proposal for Arbutus Greenway_Character Zone 1

Character zone names refer to the general theme for each area.

Zone 1: Harvest Table

Zone 2: Electric Alley

Zone 3: The Ridge

Zone 4: Woodland Bend

Zone 5: Kerrydale Pass

Zone 6: Garden Path

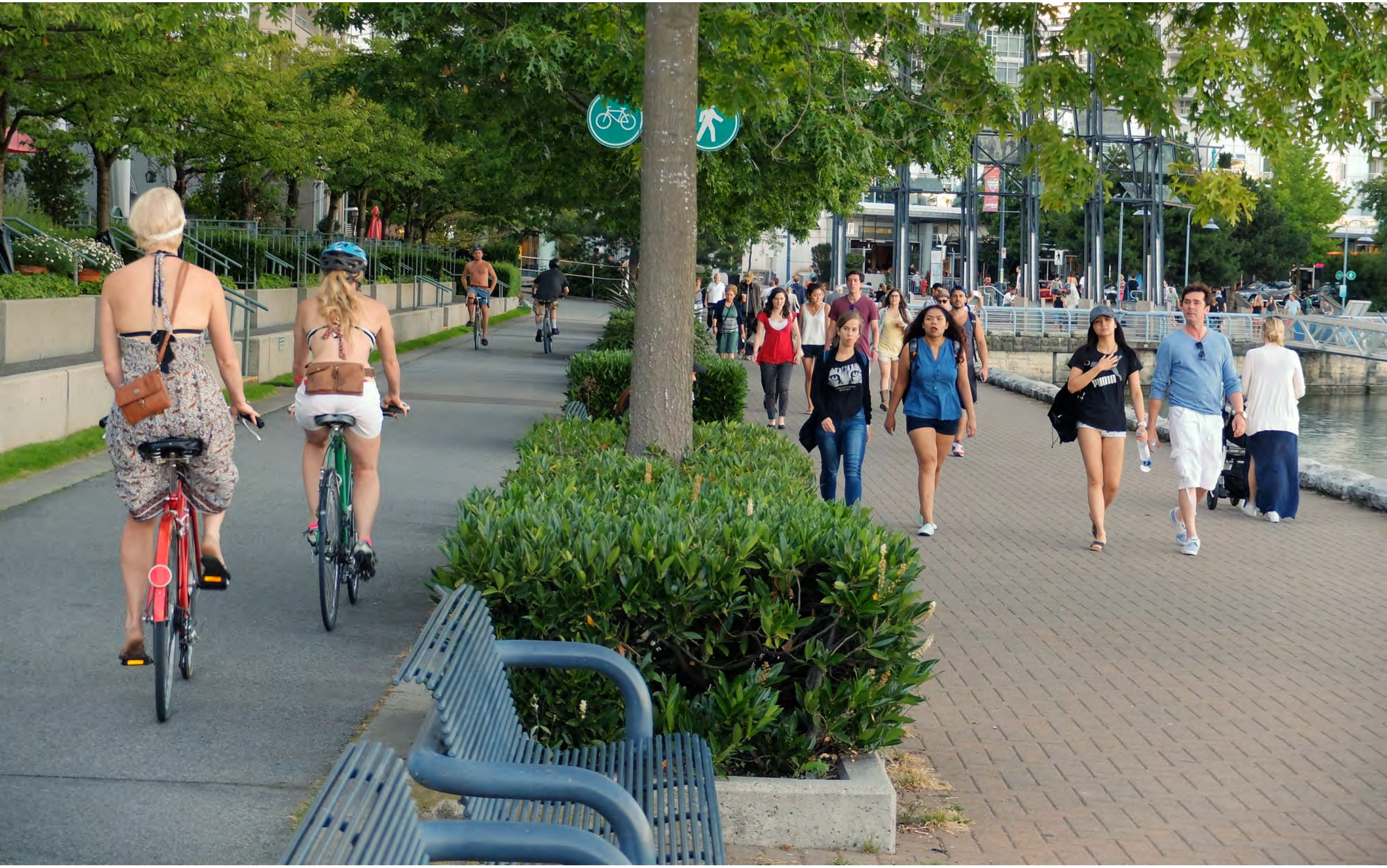
Zone 7: Marpole Meander

Zone 8: The Lookout

ARBUTUS GREENWAY- NOW

Image from Vancouver Courier

SEASIDE GREENWAY IN YALETOWN



SEASIDE GREENWAY IN OLYMPIC VILLAGE

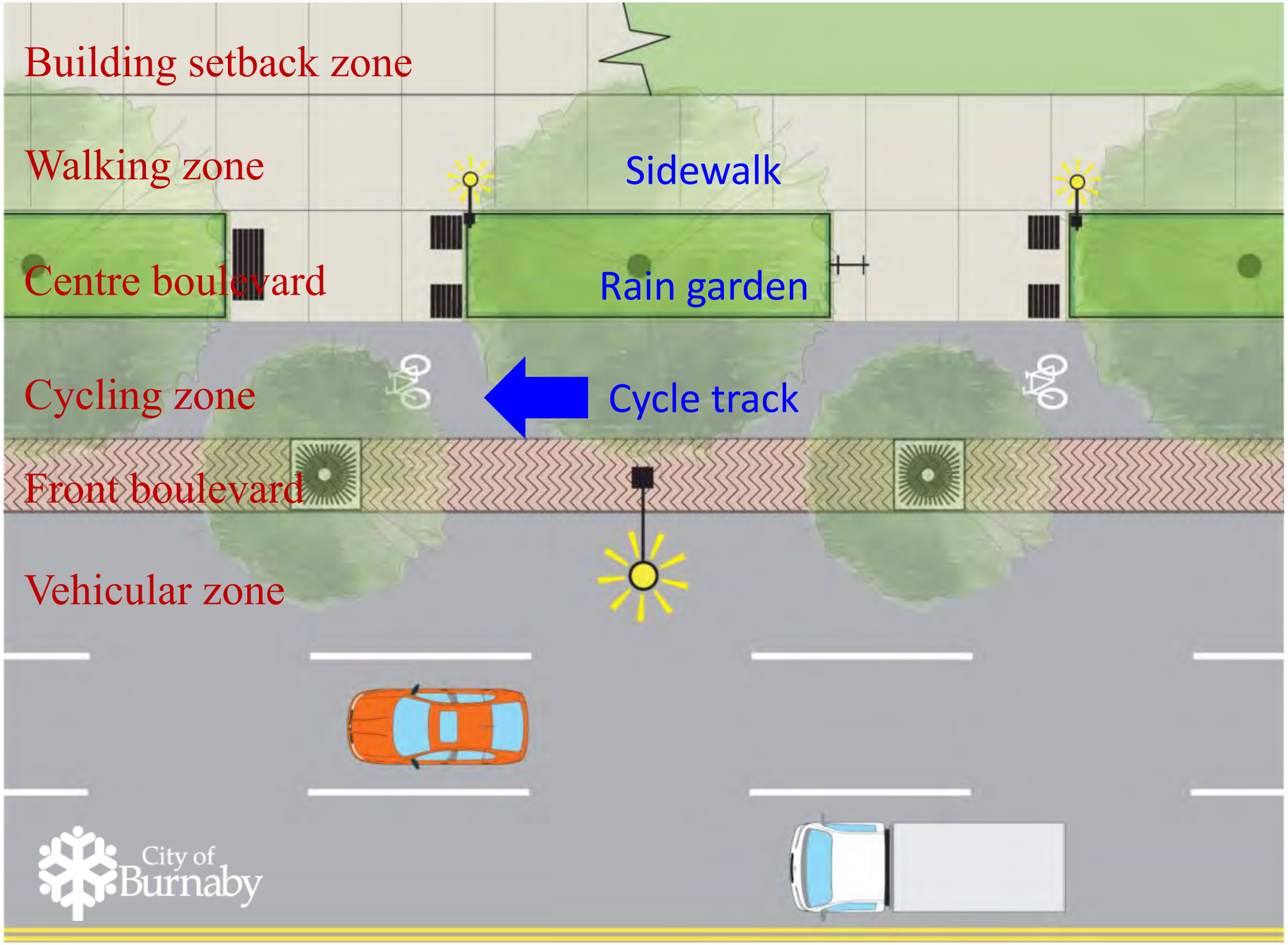
SEASIDE GREENWAY SOUTH FALSE CREEK

yesterday

today

Slide by Douglas Scott, City of Vancouver

ACTIVE TRANSPORTATION + GREEN INFRASTRUCTURE

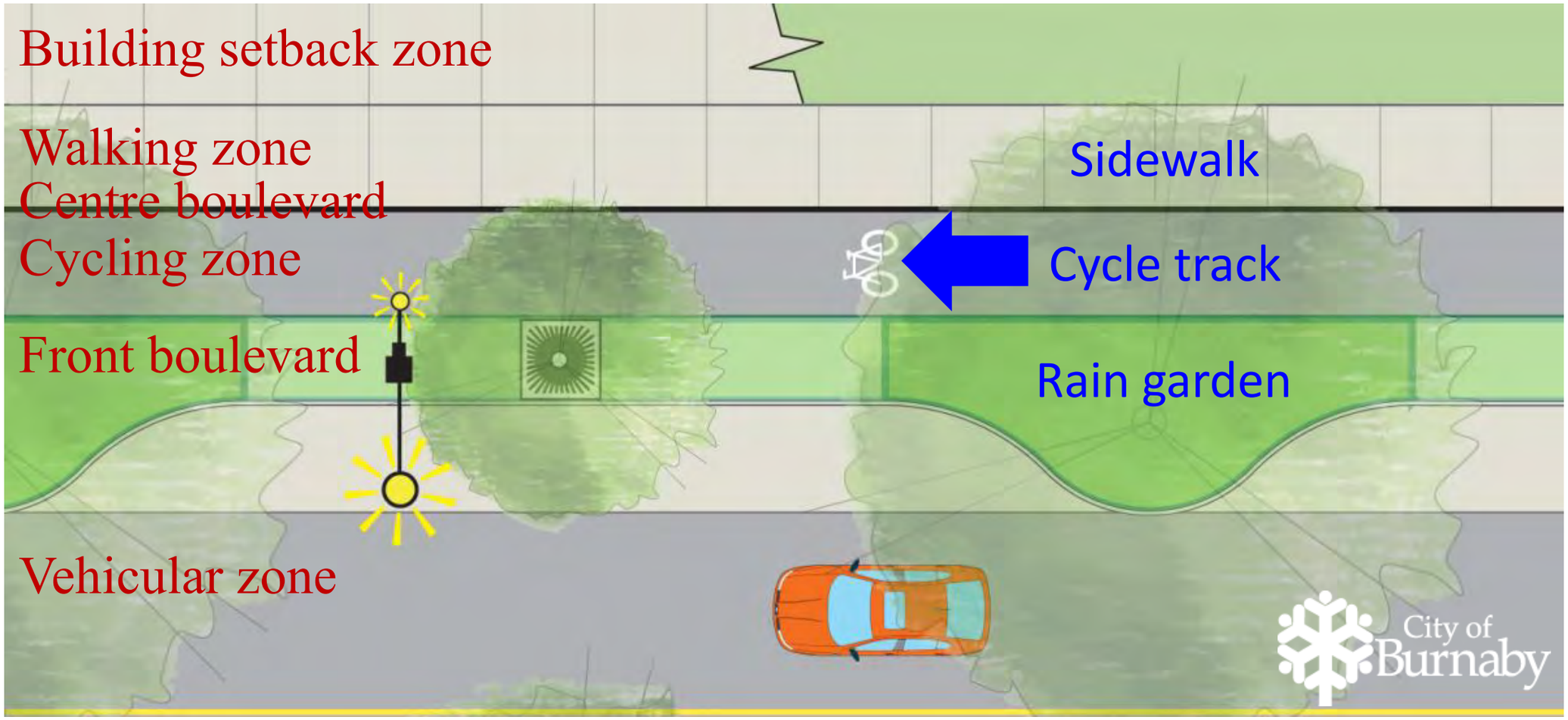


City of Burnaby: Active transportation + Green infrastructure


City of
Burnaby


City of
Burnaby

ACTIVE TRANSPORTATION + GREEN INFRASTRUCTURE



City of Burnaby: Active transportation + Green infrastructure
Two-way and Local streets

COMPLETE STREETS

STREETS designed and managed for—

ALL AGES + ABILITIES
children, youth, adults, elderly, people with disabilities

MULTIPLE MODES OF TRAVEL
walking, wheelchair[ing], boarding, biking, strollers, transit, and vehicles

SAFE AND COMFORTABLE
seating, bike racks, trash cans, street crossings, street food….








Complete Streets Principles

Transportation

- Mobility
- Deliveries & Emergency
- Safety
- Curbside Management
- Accessibility
- All Users & Modes

Adaptable

- Flexible
- Smart
- Reliability

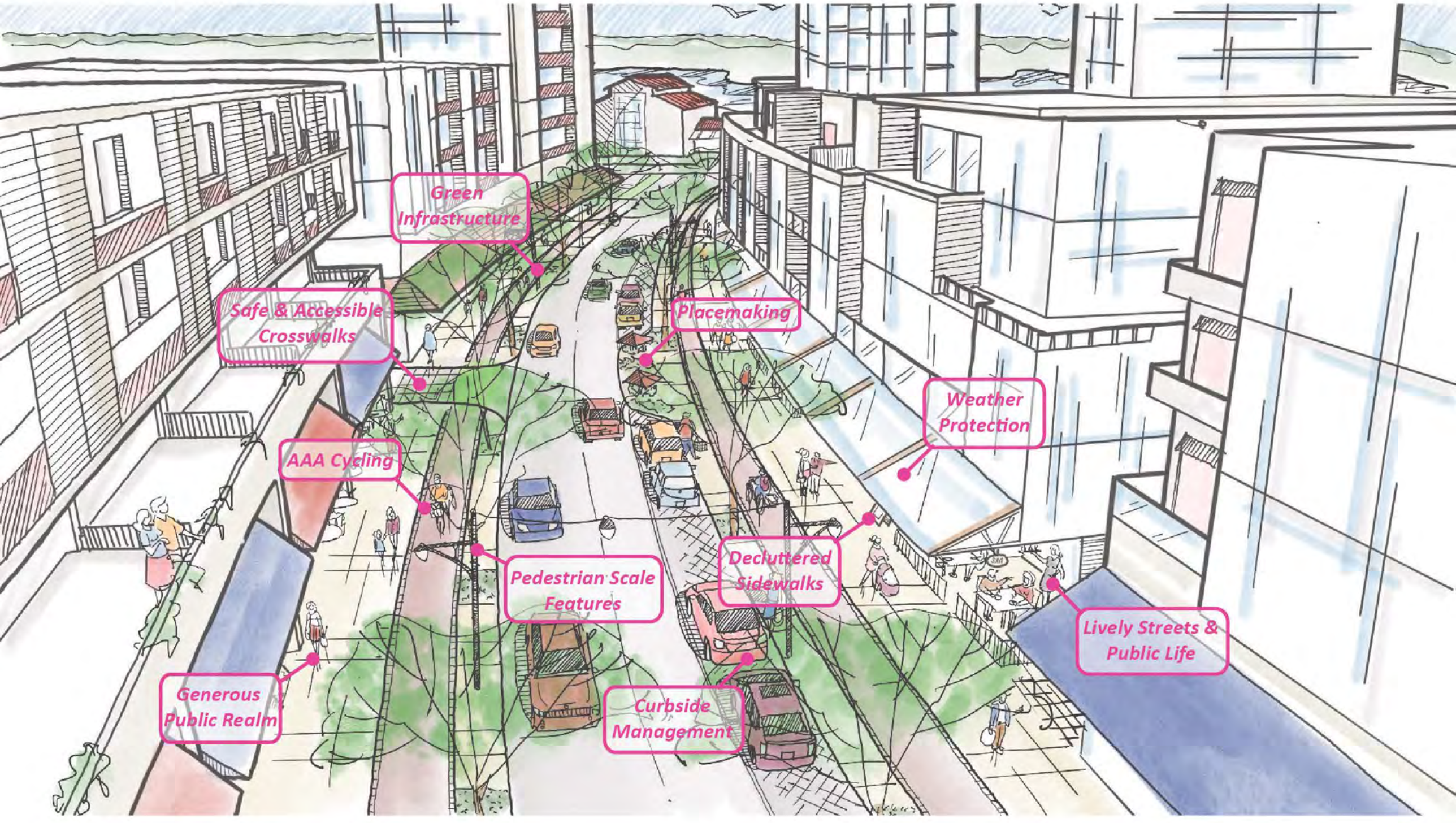
Placemaking

- Land Use
- Vibrant
- Delightful
- Weather Protection
- Sociable
- Contextual

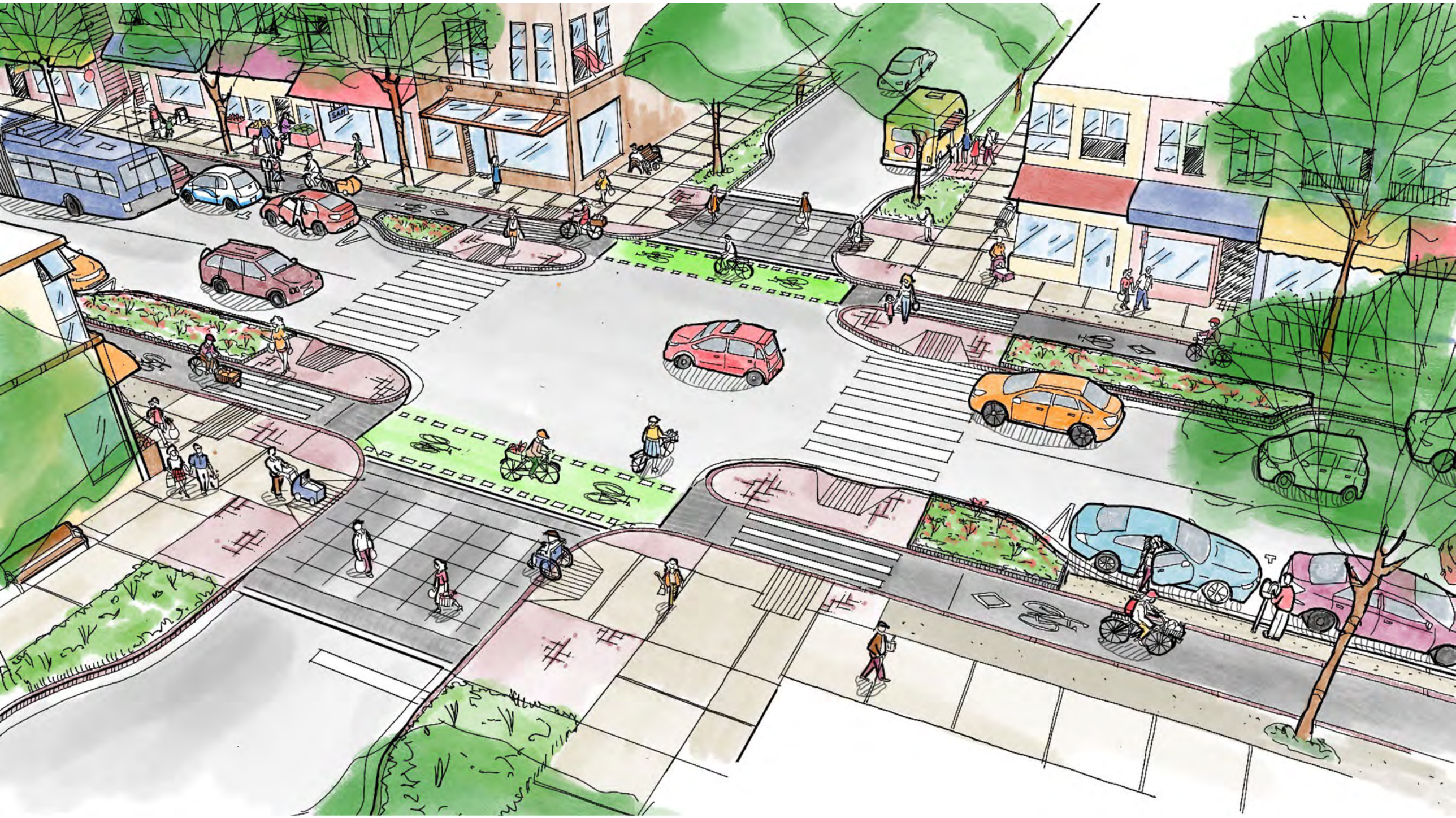
Green Infrastructure

- Storm-water Management
- Street Trees
- Habitat

Example of a Complete Street



COMPLETE STREETS



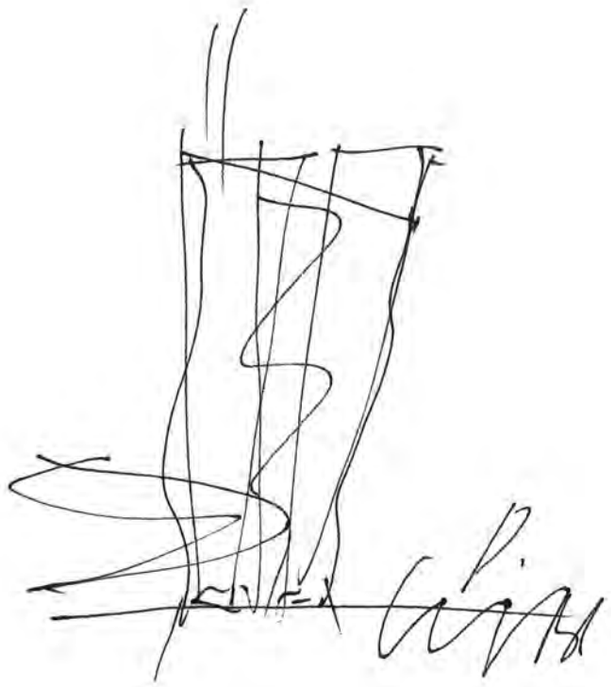
City of Vancouver Complete Streets presentation 2017

DISCUSSION: Green Networks + Active Transportation

How can bike streets and greenways in your study areas enable active transportation + perform multiple ecosystem functions?

- safer and more attractive for pedestrians and cyclists?
- with biophilic characteristics?
- adding tree canopy?
- adding habitat values?
- improving water quality and infiltrating water?

…while still accommodating necessary vehicles?



Drawing by Wolf Prix, architect

Guidelines & examples:
https://nacto.org/publications/design-guides/


6188 Ontario St
Vancouver, British Columbia
Google, Inc.
Street View - May 2016
Ontario St
E 45th Ave
W 47th Ave
Google

END