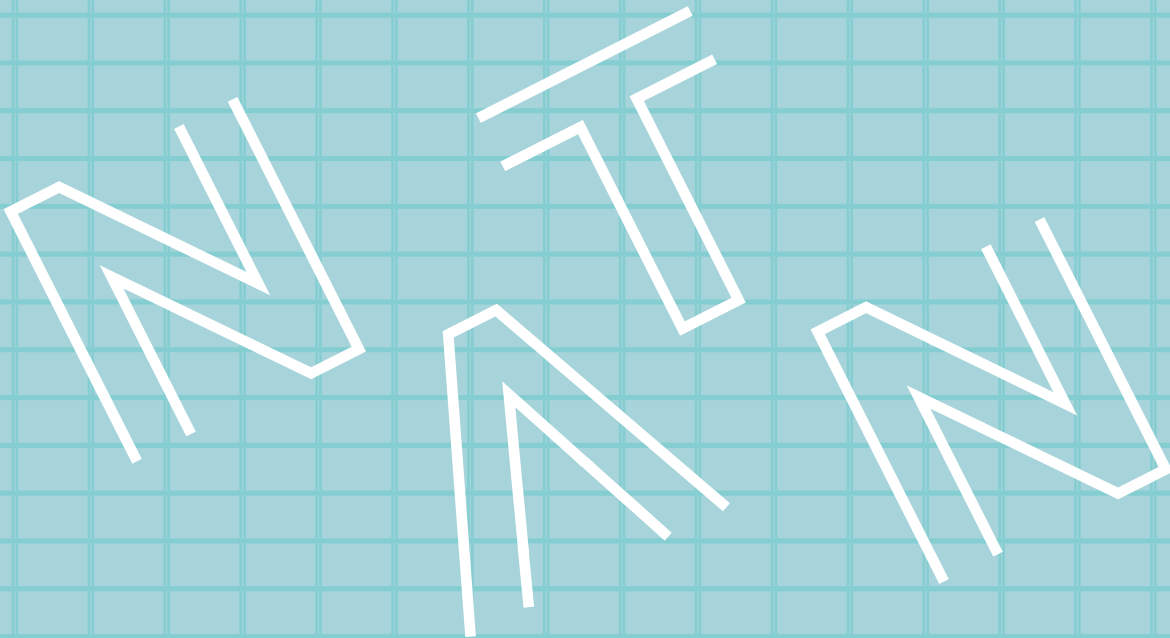




Sustainable  
Calgary

# NEIGHBOURHOOD ACTIVE TRANSPORTATION NETWORK POLICY PROPOSAL

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# Introduction

We need to build a city where walking, biking, and public transit are the norm and the private automobile is a tertiary mode.

Why? To address the climate emergency, to make life better for our fellow citizens who are struggling to make ends meet, to provide Calgarians with the opportunity to pursue more active healthy lifestyles, and to reduce the cost to grow and maintain our city.

## How do we do it?

We need improved transit that is affordable, comfortable, rapid, reliable, frequent and legible.

We need to enhance and expand infrastructure to make walking and biking efficient, safe, and pleasant. This infrastructure needs to connect basic household services (particularly food), transit and green and recreational spaces.

It needs to allow Calgarians to move efficiently between communities and city districts. We need to invest in infrastructure to make active modes the primary mode for getting around our neighbourhoods. The Neighbourhood Active Transportation Network is a proposal to do just that.

The NATN would be a seamless, single-platform active transport network implemented throughout the neighbourhood with priority over automobile infrastructure.

We propose the City of Calgary adopt NATNs as 'core transportation infrastructure' and as the 'primary mobility network' at the community level.

**Chapter 1** outlines global trends and case studies that highlight the significant progress that cities from around the world have made by investing in active transportation infrastructure.

**Chapter 2** provides evidence for the health and wellness benefits from regular physical activity, and that active transportation policy is closely tied to public health policy.

**Chapter 3** focuses on local research and studies that highlight the important links between land use, zoning, active transportation, economic activity and public health.

**Chapter 4** presents case studies of four Calgary neighbourhoods (Marlborough, Manchester, Bridgeland and Acadia) where we have partnered with the community to implement enhancements to the active transportation network.

**Chapter 5** focuses on the community of Marlborough and demonstrates what a Neighbourhood Active Transportation Network would look like once integrated with supportive land use changes.

**Chapter 6** highlights specific policy statements we believe the City of Calgary should adopt if we are to see meaningful change in transitioning Calgary away from the automobile and towards more sustainable active modes.

## The Big Picture

Since 1998 Sustainable Calgary has been tracking Sustainability Indicators and the evidence suggests that critical local issues of resource overconsumption, the climate emergency, and socio-economic inequities in our city have only worsened. Globally, human impact on the planet has grown exponentially, relations within the global village have become more unequal and unfair, and the climate and biodiversity crises threaten us all.

The climate crises have been created by the rapidly accelerating burning of fossil fuels to provide cheap energy and the manufacture of consumer products far beyond the needs of most Calgarians. Our place of privilege in the global village is a direct result of the bounty of fossil fuels beneath us. We have become wealthy through the fossil fuel economy, and our city is more affluent and stable than most places on the planet. For these reasons, we have a moral obligation not only to contribute to the solution to global warming but to be leaders in dealing with the climate crisis.

## A Missing Link for Sustainable, Equitable and Resilient City Building

The past 20 years have seen an impressive array of city-building policies adopted by City Council. Many of these policies have been formulated with substantial citizen engagement, and most of them aspire to move Calgary toward a sustainable future.

## imagineCalgary: The 100 Year Vision

Beginning with the imagineCalgary 100-Year Vision and Goals accepted by City Council in 2005, the City of Calgary has adopted several policy goals that promote active transportation as a critical factor for improving public health, environmental sustainability, and economic prosperity.<sup>1</sup> Of the 114 targets outlined in the imagineCalgary report Target 29 is particularly relevant to this proposal: By 2036, the number of on-street bikeways increases by 200 percent, and the number of pathways by 100 percent. While this target gave the City something to aim toward in 2005, it has been superseded and adoption of more aggressive targets is needed for several significant reasons; the rapid emergence of the global climate emergency, the COVID pandemic exposing Calgary's need for active transportation infrastructure, and the impressive global standard for active transport set by cities around the world.

## Climate Resilience Strategy

The City's Climate Resilience Strategy commits to climate resiliency as an ongoing strategic priority specifically outlining several actions relevant to Action 5 - Low or zero-emission transportation modes: to be achieved by enhancing the safety and accessibility of walking and cycling for all citizens through the continued implementation of Step Forward, the Cycling Strategy and Complete Streets; Action 6 - Land-use and transportation planning: committed policies regarding climate risk and greenhouse gas reductions that may impact land use development and transportation infrastructure or services into the update of the MDP and CTP; and Action 7 - Consumption and waste reduction: through improved access to local food by reviewing the CalgaryEATS! Food Action Plan and by developing a Food Resilience Plan, which would promote urban and regional food production as a critical policy action.<sup>2</sup>



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**We need to build a city where walking, biking, and public transit are the norm and the private automobile is a tertiary mode.**

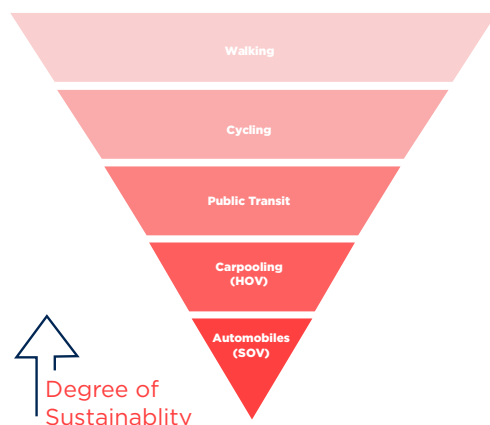
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## The Municipal Development Plan and Calgary Transportation Plan

The Municipal Development Plan (MDP) outlines a city-wide strategy to meet land use and mobility goals and objectives. The MDP outlines high level policy goals such as: creating a prosperous economy, shaping a more compact urban form, creating great communities, enhancing the public realm, and connecting the city.<sup>3</sup>

The Calgary Transportation Plan (CTP) is tied to the MDP as it is recognized that land use and transportation planning must work together to achieve desired city-building outcomes. The CTP specifically references the need to promote walking and cycling as attractive and convenient forms of mobility.<sup>4</sup> This means creating convenient connections to important destinations that are universally accessible, well maintained, and clear of snow. These active transportation routes must also feel safe, secure, and should be separated from traffic along main roads. The MDP and CTP include the City's Transportation Sustainability Pyramid which clearly defines walking and cycling as the most sustainable forms of transportation, with private automobiles being the least sustainable.

**Our call to action and commitment to shift the frequency of trips and length of distances travelled from private automobiles toward active modes of transportation must be prioritized by the City to reach future sustainability goals!**



## Guidebook for Great Communities

The guidebook provides a framework for land use planning and development guidelines at the local area scale.<sup>5</sup> Specific policies directed at pedestrian and cycling infrastructure support the MDP and CTP; highlighting the need for adequate lighting, bidirectional movement with a continuous path of travel, secure facilities at endpoints such as bike lockers, and periodic rest points with repair facilities.

## Step Forward, The Cycling Strategy and the 5A Network

Step Forward: A strategic plan for improving walking in Calgary highlights the need to get more Calgarians walking, including children walking to school. This strategy includes the launching of a Vision Zero campaign where public confidence in the city's pedestrian network is improved by reducing pedestrian incidents and deaths.<sup>6</sup> Sustainable Calgary supports the City's Vision Zero campaign as an ethical necessity (as marginalized groups are more often victims of traffic related injury) and has been proven to work exceptionally well in Oslo, Norway which achieved zero cyclist and pedestrian fatalities in 2019 after launching their own Vision Zero campaign.<sup>7</sup>

Specific challenges with Calgary's engineered walkways (or "catwalks") are highlighted in the Step Forward policy document; including their low priority on maintenance and replacement by the City, unclear bylaws around responsibility for snow clearing, and lack of perceived safety due to inadequate lighting and narrow fenced-in spaces.

The City's Cycling Strategy outlines an implementation strategy to build and operate cycling infrastructure across the city. A significant outcome of this policy document is the 2010 survey of Calgarians and their cycling habits.



## The survey results show that Calgarians want to cycle more, but generally do not feel safe riding alongside traffic on main roads

They are discouraged by the lack of showers and lockers at endpoints. They perceive the risk of rapid changes in weather over the course of a day as a deterrent to cycling. The document highlights notable case studies in Copenhagen, Denmark and Montreal, Quebec where these concerns have been overcome through infrastructure upgrades, bike sharing programs, and education.<sup>8</sup>

The 5A Network Guiding Principles is an important document. It shifts the focus from Calgary's skeletal cycling network which services commuters and recreational riders, to prioritizing community connections meant to serve a wide range of users to access local amenities such as schools, shops, recreation centers, and workplaces. Community members want accessible pathways that are well lit, easy to navigate and have few barriers.

## Calgary in the New Economy

Calgary in the New Economy outlines an economic strategy built around four pillars; Talent: Canada's destination for talent, Innovation: Canada's leading business- to-business innovation community, Place: Canada's most livable city, and Business Environment: Canada's most business-friendly city.<sup>9</sup>

## Calgary's Active City Playbook 2030

Calgary's Active CITY Collective has recognized the active economy as a critical driver of success toward these four focus areas of the broader economy. The active economy includes sectors such as sport, active recreation, health and wellness, technology and tourism. Through an extensive public consultation process, the ActiveCITY Collective intends to publish the ActiveCITY Playbook 2030 to provide an integrated vision and framework to improve Calgary's active economy and ecosystem, promoting Calgary to become Canada's most livable city and the best place to grow a business.<sup>10</sup>



## How are we doing? The MDP Monitoring Progress Report.

The City's own report card on the MDP was released in 2018. The report states that the City is falling short on 9 of 13 performance targets. The problem is not the policy. The problem has been backing up policy intention with budgets and work plans that allocate resources to make it happen. Adoption of the Neighbourhood Active Transportation Network will help correct that problem.

Too many people still drive, and too much of our housing stock is still being built and planned on green fields at the edge of the city, bursting beyond the soon to be completed ring road. We know this edge of the city land use, segregated, car-dependent form of development will never pay for itself, yet we continue to build it.

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## Chapter 1

# Global Trends in Active Transportation

# COVID-19 and the Pedestrianization of Roadways - Can This be the 'New Normal' In City Planning?



All across the world, the need to physically distance has forced cities to re-evaluate who we prioritize on our streets. We have seen the rapid adaptation of temporary measures – some, with permanent objectives – to rearrange street space for people.

Toronto, San Francisco and numerous others have implemented “slow-streets” either limiting or fully closing streets to vehicles in order to promote active mobility at the neighbourhood scale. In accommodating streets now busier with bikes, pop-up cycleways have appeared worldwide, with bicycle demand increases resulting in a bike-boom.

Shortly after lifting lock down restrictions, Beijing experienced a 150% increase in bike-share use, while Philadelphia saw a 151% increase in cycling traffic on trails<sup>11</sup> with similar



Amsterdam, GB Cycle Embassy

trend upticks occurring worldwide. Many European capitals like Barcelona and Paris are keenly exploring the progression towards a post-automobile future.

Amongst all cities, Paris has experienced the most notable transformation geared towards the permanence of active mobility. It pledged to make every street cycle-friendly by 2024, remove 72% of on-street parking spaces<sup>12</sup> and accelerate the construction of Plan Velo (Cycle Superhighway Network) infrastructure. The French government announced a €20 million plan to fund bike repair installation of bike parking and bicycle training<sup>13</sup> to ensure this modality is anything but temporary post-COVID.



Paris, The Guardian

As part of COVID economic recovery plans, restaurants and main street businesses have expanded into street spaces creating pedestrianized roadways. In Paris, cafes poured onto the roadway, while in Amsterdam, a local street has been reimagined into a play corridor. Post-pandemic, the question remains: will we give these spaces back to cars, or reclaim them permanently?

## “Corona Cycleways”: A Rapidly Growing Transportation Solution Catalysed by COVID-19

### Could Temporary Solutions Lead to Permanent Changes?

City	Distance (km)	Status
Rome, Italy	150	Both Temporary and Permanent
Lisbon, Portugal	80	Both Temporary and Permanent
Bogotá, Colombia	76	Both Temporary and Permanent
Paris, France	50	Permanent
Brussels, Belgium	40	Permanent
London, UK	30	Both Temporary and Permanent
Sydney, Australia	35	Temporary
Milan, Italy	35	Permanent
Seattle, USA	32	Permanent
Berlin, Germany	24	Temporary
Budapest, Hungary	19	Temporary

“The pandemic challenges us, but it also offers a once-in-a-lifetime chance to change course and repair the damage from a century of car-focused streets.”

Janette Sadik-Khan,  
Former Transportation Commissioner of New York City



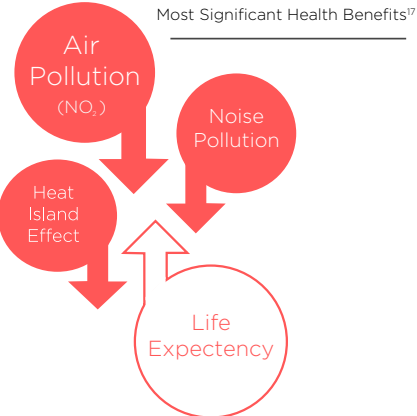
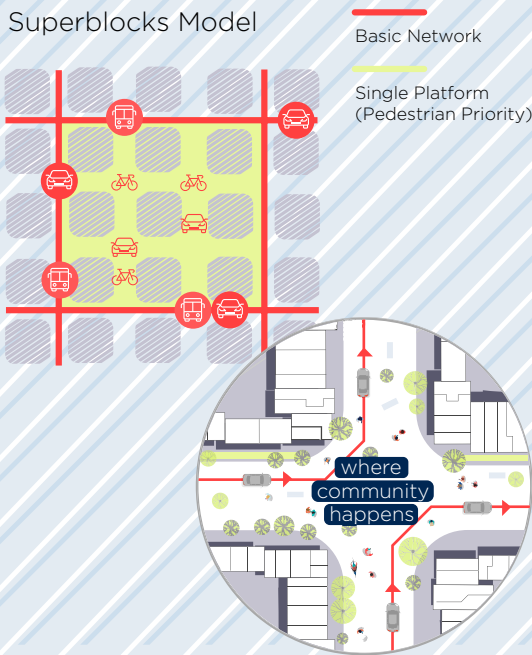
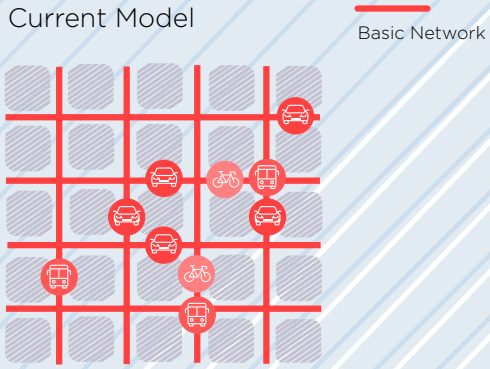


# Barcelona's Superblocks

A public health strategy for cleaner, greener, more physically active neighbourhoods.

The Barcelona Superblock model is an innovative urban and transport planning strategy that aims to reclaim roughly 60% of streets for people<sup>14</sup>. The goal is to reduce private vehicle use in order to address high air and noise pollution levels, reduce the human effects of anthropogenic heat (heat island effect) and thus consequently improve the quality and longevity of life for residents. In recent years, Barcelona has persistently exceeded World Health Organization (WHO) air quality limits, with studies attributing 3,500 annual premature deaths in the region to air pollution<sup>15</sup>. Changes to the built environment can play a significant role in mitigating harmful environmental exposures (i.e. air, noise pollution and heat) while simultaneously reducing the prevalence of sedentary lifestyles and increasing life expectancy. Reducing these exposures through the implementation of Superblocks has been estimated to result in 1,800 fewer cardio-respiratory hospitalizations, 31,100 fewer cases of acute bronchitis and 54,000 fewer asthma attacks among children and adults<sup>16</sup>.

The Superblock model first outlined in the Sustainable Urban Mobility Plan of Barcelona, utilizes a tactical urbanism approach to make the city more conducive to walking, cycling and public transit. Each of the Superblocks consists of 9 existing blocks permitting only local traffic. All other traffic is relegated to the Superblock perimeter. Calming measures including speed bumps, chicanes, traffic circles and raised crossings slow local vehicular movement to 10km/hr within the internal streets. This restructuring has transformed streets into vibrant public spaces hosting outdoor markets, play areas, community zones and access to much needed green spaces, which not only enhance the quality of the space, but the quality of life for residents.



- A** Neighbourhood services and amenities
- B** Reduced vehicle space
- C** Malleable open space that can be adapted to need
- D** Increased vegetation and growth spaces
- E** Informal play areas
- F** Movable street furniture
- G** Communal recreation and civic engagement
- H** Active mobility skill-building for youth





## Merwede: Utrecht's first car-free neighbourhood

Pivoting from car-centred community design and towards people-centred approaches

Utrecht, along with most of the Netherlands, is known for being bicycle friendly – 98% of households in the city own at least one bicycle; half own three or more<sup>15</sup>. With a pedestrianized city centre and state of the art infrastructure prioritizing cyclists; people – not cars, have the upper hand. Policies reorienting the built environment towards active mobility have been in place since the 1970's as a transformation initiated in response to rising (child) traffic related deaths. Utrecht's soon to be developed

car-free community – Merwede, is a natural progression aligned with current planning policies discouraging auto dependency. Currently an industrial park, the 60 acre development is envisioned to comprise 17 mixed-use blocks housing 12,000 residents within walking distance to supermarkets, schools, green spaces, medical services and other amenities. Merwede grants residents the freedom to move safely and independently within their neighbourhoods through an internal active neighbourhood transportation network which feeds into a regional active and public transport network for mobility outside of Merwede. Projected to be completed by 2024, Merwede will be the city's first largely car-free suburb, establishing a new standard for suburban neighbourhood developments that are healthy, active and connected.

The removal of the motorway is perfectly in line with new **Utrecht policies determineing that the main road users in the city are people cycling and walking - not people using private automobiles.**

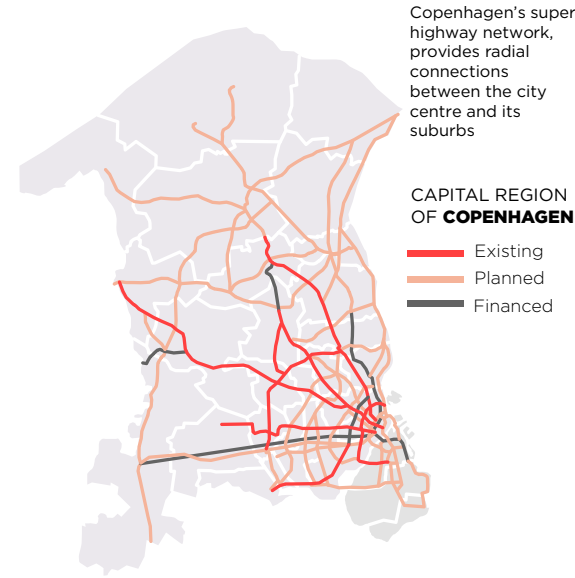


# Connecting NATNs to Cycle Superhighways

A Cycle Super Highway consists of a high quality, most often, mode separated bicycle routes where the users' needs have been given the highest priority, offering fast, comfortable and safe service. The highway networks connect employment, education, housing and transportation infrastructure as a means to facilitate "last mile" mobility to best service people and encourage mass use.<sup>18</sup>

Cycle Super Highways have been built in New Zealand, Denmark, the Netherlands, Belgium, Germany, China, France and the United Kingdom, with new networks being planned in Australia and Norway. With the construction of cycle highways, cities hope to attract users who would otherwise travel via private vehicle. In London, use increased by 77% with the introduction of the network's first four cycle superhighways, with 30% of those users switching from private vehicles<sup>19</sup>. Preliminary data from Denmark's eight new cycle superhighways reveal an 80% satisfaction rate emphasizing quality, safety and comfort as a priority<sup>20</sup>. This high-quality infrastructure has an equitable gendered distribution, with 52% of users being women<sup>21</sup>.

The noted countries recognize cycle highways as infrastructure which can facilitate mass long-distance mobility between regional destinations that create city and neighbourhood active transportation network connections without private auto dependencies creating healthier and more sustainable cities.



## The Last Mile

The last mile refers to the short geographical distance planned to provide services and infrastructure to facilitate the mobility of people from a transportation hub to and from a starting or ending location.

**Cycling routes should not be a stand-alone transport mode, but rather networks linking collector and local routes connecting inner cities with their suburbs and neighbourhoods.**

# The Four Quality Measures of Cycle Superhighways



## Connected

Cycle superhighways should connect residential, educational and business areas as well as public transportation hubs and stations to improve the conditions for commuters who combine their bike commute with other means of transportation. They should be cohesive, well connected and easy for commuters to identify.



## Comfortable

Cycle superhighways should make the bike commute to and from work or study a comfortable experience. The routes should have a smooth surface, a high level of maintenance, offer additional services and all in all ensure a good biking experience.



## Safe

Cycle superhighways should feel and be safe, securing physical safety by upgrading infrastructure to reduce the risk of accidents. Lighting, maintenance, signage, lane width and mode separation all contribute to increased safety and a wider range of users.



## Direct

Cycle superhighways should provide commuters with the fastest possible route between home and work. They should be as direct as possible, with as few stops as possible and space for bike commuters to maintain their own pace among the other commuters.

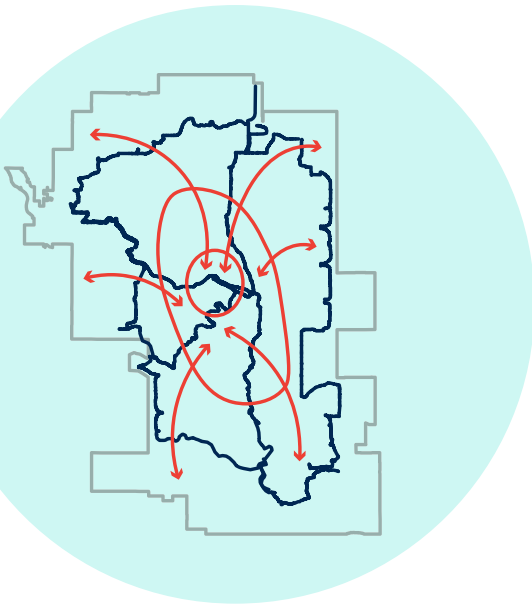


# Cycle Superhighways for Calgary

The City of Calgary has planned, constructed, and maintained the most extensive urban pathway and bikeway network in North America with approximately 1,000 km of regional pathways, 96 km of trails, and 290 km of on-street bikeways and cycle tracks. This existing regional infrastructure forms the skeleton of what could (and should) be North America's most comprehensive and integrated active transportation network.

Unfortunately, this regional network lacks high-quality connections to most of Calgary's residential communities, with the longest continuous pathways meandering along Calgary's main waterways and around the periphery of the city's ring-road. These pathways are important recreational resources and appropriate for commuters living immediately adjacent to them, but generally fail to connect neighbourhood-scale active transportation infrastructure to the wider network.

It is imperative that the City of Calgary prioritize the buildout of Neighbourhood Active Transportation Networks with high-quality infrastructure that connects to the existing regional network. If Calgary is to be a leader in sustainability, public health, and accessibility, the City must invest heavily in direct commuter routes that connect residents to local and regional amenities and jobs.



This map illustrates the existing mode separated regional cycle network within the City of Calgary. While the existing infrastructure creates a starting foundation for larger, long distance mobility, the map highlights areas of opportunity where more local connections can be made.

Source:  
City of Calgary  
Open Data

## MAP Existing Regional Cycle Network [mode separated]

- The Great Trail
- The Greenway
- Cycle Track (CBD Only)
- Major Roads
- Major Parks & Open Areas



**From unused highway infrastructure to functional art,** Auckland's Pink Path is both a playful interactive sculpture as it is a cycle path transforming the city's active network.



Wuppertal - Nordbahntrasse

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The Nordbahntrasse and the Lightpath are prime examples showcasing how cities can repurpose disused infrastructure to create public assets that add character and build identity.

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## NEW ZEALAND

### Auckland: Converting Car Infrastructure for Active Use

Reimagined with its vivid hot pink pathway, this former highway off-ramp contrasts the dull gray asphalt of the surrounding motorway junction. Plexiglass panels buffer traffic noise and wind, while brightly lit LEDs are programmed to interact as users walk or roll along to create an immersive lightshow. In its first year, Lightpath saw over 200,000 trips with a 30% increase on feeder routes – the uptick in use, clearly a testament to the value safe and attractive infrastructure provides. This project signals a commitment by the city to continue to expand the city's active network with safe, human-centric spaces.

# Repurposing the Built Environment

## GERMANY

### Wuppertal's 23 km Inner-City Rail Trail

Once used as a railway line to transport goods and raw materials through the heart of Wuppertal, the now decommissioned 23 km Nordbahntrasse (northern railway line) now serves as the world's longest inner-city rail trail transporting people by foot and bicycle. Completed in 2014, the converted route is almost entirely free of traffic crossings, as much of the trail runs separate to and elevated from motorized vehicles. This feature coupled with the requirements of rail infrastructure to be built with minimal inclines, makes rail trails a safer, faster and more attractive mobility choice for a broader range of users.

The wide asphalted trail runs through dense built-up residential neighbourhoods, suburban areas, industrial parks and scenic green spaces, creating connections that are ideal for both leisure and daily commuting. Destination points have emerged due to the trail's popularity, with numerous restaurants and cafes appearing along the local corridor. While the Nordbahntrasse is a prime example of how cities can repurpose disused inner-city railways and turn them into public assets that add character and build identity, the emergence of regional and even cross-border rail trails has been a booming movement in Europe which continues to expand as we explore healthier and more sustainable methods of moving.



## Franklin Spur Line

# Envisioning a Rail Trail in Calgary

This node along the Spur Line proposes a mixed-use typology of residential, commercial and urban agriculture that creates a self-sustaining hub with accessible food sources. The goal is to create inter-generational housing (from young professionals to retirees) that is medium-density, and mixed-use. For more details on the Franklin Spurline Concept see the full Report at [sustainablecalgary.org](http://sustainablecalgary.org)



Alfred Gomez.

Current conditions



## Chapter 2

# Global Research: Urban Design & Public Health

### Part 1

Active  
Mobility and the  
Built Environment:  
Improving Physical  
Activity, Equality and  
Public Health.

The health of our society is influenced by the neighbourhood built form and its impact on the daily transportation choices made available to people. Choices generally include walking, cycling, public transit or the private automobile. There is a significant amount of evidence of the benefits to individuals and the public when a concerted effort is made to increase the number of people choosing to walk and cycle over other modes. Active modes are proven to benefit individual fitness and overall health, reduce costs to the public health system, increase retail activity and raise property values, reduce emissions and pollution of the environment, and create a safer, more equitable and accessible community for vulnerable populations.

# Physical Activity, Fitness Levels and Overall Health

There are many health benefits associated with regular physical activity and improving one's physical fitness. We know that higher physical fitness levels improve general health and wellbeing and help to prevent the development of many chronic disease.<sup>22 23</sup> McCormack et al.<sup>24</sup> state that improved physical fitness is associated with reduced risk of all cause mortality<sup>25 26</sup>, adverse cardiovascular related outcomes<sup>27 28</sup>, metabolic syndrome<sup>29 30</sup>, type 2 diabetes<sup>31</sup>, weight gain<sup>32</sup>, injury<sup>33</sup>, depression<sup>34</sup>, better self-reported health<sup>35</sup>, and quality of life.<sup>36</sup>



## Design Elements to Promote Active Transportation<sup>37</sup>

In Canada, higher adoption of active transportation can be linked to having:

- a public transit stop nearby
- a choice of destinations within a reasonable distance
- well-maintained sidewalks
- dedicated areas for cycling
- affordable recreation facilities
- safe traffic flow
- clearly defined and identifiable network

## Walking to Promote Public Health

Walking is the most popular type of physical activity for adults because it is accessible, convenient and free regardless of your age, gender, education, or income level.<sup>38 39</sup> Walking can be separated into leisure, occupational, and active transport, all of which are beneficial to health<sup>40</sup>. The Centre for Active Living found that several factors were positively associated with overall walking<sup>41</sup>: those in the workforce engaged in more overall walking,<sup>42</sup> those residing in owned accommodation report more frequent walking<sup>43</sup>, those who report better self-rated health engage in more walking, those with stronger social networks engaged in more walking<sup>44</sup>, and perceived neighbourhood aesthetics, perceived walkability, and perceived individual safety is associated with more walking.<sup>45</sup>

When examining the factors positively associated with walking for active transport specifically, the Centre for Active Living found that factors of objective walkability, such as quality infrastructure, density of destinations, and street connectivity<sup>46 47 48</sup>, along with perceived walkability and perceived individual safety were most relevant.<sup>49 50 51</sup> Understanding these factors is important because active transportation is an effective way to increase individuals' physical activity, particularly when they have difficulty finding dedicated time for exercise and active leisure.

The clear link between regular physical activity and a person's overall long-term health has created a strong push to clearly define how the physical characteristics of our cities and neighbourhood built environments can either promote or impede regular physical activity.<sup>52 53</sup>

## Walkable Neighbourhood Design Elements

The built features that support physical activity and generally contribute to walkable neighbourhoods include high street connectivity, diversity of land uses and destinations, high residential density, pedestrian infrastructure, traffic and crime safety, and appealing aesthetics.<sup>54 55</sup> While many of these neighbourhood characteristics can be objectively measured (i.e. intersection density), it is important to recognize that simply improving perceptions of the built environment (i.e. aesthetics) has the potential to increase participation in different types of physical activities.<sup>56</sup>

## Cycling as a form of Active Transportation

Cycling as a form of active transportation has been repeatedly shown to be associated with increased life expectancy in studies that weigh its benefits (i.e., lower incidence and/or mortality from heart disease, stroke, diabetes, dementia, depression, certain cancers) against the traffic injury risks.<sup>57 58 59</sup>

In countries with very low adopted levels of cycling (like Canada), surveys indicate that the major deterrent to cycling is perceived route safety, and the major motivator is infrastructure designated for cycling.<sup>60 61</sup> The existence of a dedicated bicycle network in large Canadian cities can garner between a 2-6% city-wide mode share for cycling (up to 34% in some census tracts), while smaller cities with little cycling infrastructure see mode shares near zero.<sup>62 63</sup>

Survey data show clear preferences for bikeway types; 1) Off-street bike paths; 2) Cycle tracks; 3) Residential street bikeways, especially for those that are most concerned about women and parents traveling with children.

Another important factor to consider when attempting to increase the active transportation mode share of commuters in Canada, is the distance traveled from home to office and vice versa.

<b>&lt;20 min.</b>	More choose to walk.
<b>20-29 min.</b>	More choose to cycle.
<b>&gt;30 min</b>	Active modes decline in favor of transit and driving. <sup>64</sup>



## Walking to Promote Public Health



Evidence suggests that not everybody has equal access to recreation or active transportation choices. This disparity is often related to income.

**In Alberta, “households with an annual income between \$125,000 and \$149,000 were 3.5 times more likely to be physically active than households with an income of less than \$20,000”<sup>65</sup>**

One reason for this is that communities with lower household income levels are more likely to have poor infrastructure: less green space, fewer sidewalks and pathways, and less connections to community amenities and destinations.

Studies also show that lower income communities disproportionately suffer from pedestrian and vehicle incidents, increasing the risk of injury or death to residents when leaving their home<sup>66</sup>. This disparity in neighbourhood infrastructure discourages active modes of transportation which results in negative public health impacts.<sup>67</sup>



Cyclist struggles over traffic median and 4 lane road to access the catwalk network in Marlborough.

## Gender Differences and Active Transportation



According to the Centre for Active Living, the only factor that was positively associated with all types of walking (overall, leisure, and transport) was that of perceived safety.<sup>68 69</sup> <sup>70</sup>Safety concerns are particularly important for women, with perceived danger being more likely to deter women from walking.<sup>71</sup>

Another study has shown that women are more sensitive to all factors associated with overall walkability, resulting in desirable walkability factors being more strongly associated with minutes of transportation walking and leisure walking in women over men.<sup>72 73</sup> We must be building our neighbourhoods to meet the needs of women and other vulnerable populations such as children and the elderly if we are to see widespread public health benefits derived from regular walking.

A study in Montreal and Vancouver that explored gender differences in cycling mode share for active transportation found that in census tracts with low cycling mode share, only one third of commuters are female, but when mode share increases to 7% or higher, the rate of female to male bikers nearly reaches parity.<sup>74</sup> Cycle tracks and bikeways that form a connected network are associated with higher neighbourhood cycling commute mode shares, with these features appearing to be even more important for women than men.

**When our roads and built environments aren't safe, women are the first to be left behind.**

## Vulnerable Age Groups

In children, research shows that sufficient physical activity results in better academic achievement, concentration, handling of stress, and self-concept. In addition to active transportation options like walking to school, a key factor in promoting physical activity in children may be the availability of undeveloped areas that make space for unstructured play and learning.<sup>75</sup> Establishing healthy habits around exercise, diet, and socialization within children is important in setting the course for a healthy lifestyle and avoiding chronic diseases later in life. Many mental health “factors such as chronic stress are also known to increase the risk for early death and poor physical and mental health.”<sup>76 77 78</sup>

Older adults who struggle with independent mobility are at high risk to suffer from social isolation and loneliness. Some of the most significant barriers to activity suffered by older adults are access to services and public transit, safety of the sidewalks, adverse weather, challenging street crossings due to wide streets, lighting, and proximity to destinations - characteristics that are common in suburban neighbourhoods.<sup>79 80 81</sup>

**“Social isolation and loneliness can increase the risk for premature death and poor health in the form of increased risk for depression, poor sleep, difficulties paying attention, impaired decision making, problem solving and memory, cognitive decline, poor cardiovascular function, poor immune function and stress”<sup>82</sup>**

83 84

If **WALKING**  
Costs You

**\$1**

Society Pays

**\$0.01**



If **BIKING**  
Costs You

**\$1**

Society Pays

**\$0.08**



If **BUSSING**  
Costs You

**\$1**

Society Pays

**\$1.50**

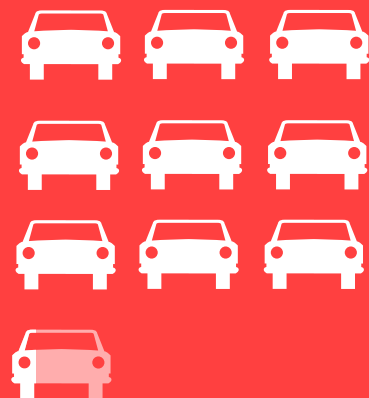


If **DRIVING**  
Costs You

**\$1**

Society Pays

**\$9.20**



## Economic Impacts of Active Transportation

### Impacts on Business and Real Estate

One of the most direct and quantifiable economic impacts of greater pedestrian traffic is that on retail, with direct positive trends in retail activity in areas where a concentrated effort to improve safety and comfort for pedestrians has been completed.<sup>85</sup> There is also a measurable impact on property values for homes and businesses located nearby bike lanes, recreational trails, and other active transportation infrastructure.<sup>86</sup>

### Impacts on Personal Finances

Active modes of transportation are often much less expensive compared to automobile use. It is estimated that it costs \$0.58/km<sup>87</sup> to operate a car compared to \$0.06/km<sup>88</sup> to cycle. By providing better cycling infrastructure in Calgary, more people can enjoy the savings afforded by active modes of transportation.<sup>89</sup>

### Health and Productivity Costs Associated with Driving

It is estimated that \$2.3-\$3.7 billion was lost due to congestion in Canada's nine largest municipalities in 2006.<sup>90</sup> If more commuters had the option to cycle or ride transit this number could come down. The costs to society don't stop there; it is estimated that inactivity due to sedentary lifestyle costs the Canadian medical system \$5.3 billion annually, and we are seeing a correlated upward trend of hours spent driving and sedentary behavior in Canada.<sup>91</sup>

### Impacts on Personal Finances

By expanding the mode share of cycling, walking, and public transit, municipalities can benefit from the diminished demand for future roadway expansion and parking, creating significant public savings.<sup>92</sup> When the full-cost accounting method of determining the cost to society by an individual's transportation choices is accounted for, we see that some modes benefit society while others place a significant financial burden on public funds.<sup>93</sup>

	Vehicle	Bike
Annual Ownership Costs	\$7,450 Insurance, Licensing Financing, Depreciation	\$500 - 1,000 Cash Purchase + Accessories
Total Annual Costs	\$10,452 Ownership Cost + Fuel, Maintenance, Tires	\$100 - 300 Purchase Cost Over 10 Years + Maintenance



## Access to Healthy Food & Cultural Services Through Community Gardening

“From a human health perspective, community gardens have been shown to encourage the consumption of and access to fresh, healthy food;<sup>94 95</sup> they promote psychological wellbeing and provide the opportunity for physical exercise.<sup>96</sup> From a community perspective, they have been shown to be sites for building community and promoting social capital.”<sup>97 98 99</sup>

“Studies on the community gardening experiences of culturally mixed communities have also illustrated community gardens as sites where people can interact and communicate across racial<sup>100</sup> and cultural differences.<sup>101</sup> Community gardens have also been shown to support people’s sense of belonging to a new community.”<sup>102 103</sup>

It is important that basic services like food be readily available via active transport modes.<sup>104</sup>



The Alex in Forest Lawn is a Community Food Centre allowing Calgarians to come together - growing, cooking and sharing healthy locally produced food.

## Community Belonging and Mental Health

Researchers have found that biking is the happiest mode of transportation, contributing to community belonging and mental well-being. Neighbourhoods that are linked to higher levels of neighborliness, social capital, and a sense of community are those that have green-spaces and gathering places, are pedestrian friendly with walkable destinations, provide accessible public transportation, are clean, and are places where people walk for leisure. People regularly encounter each other on an informal basis which contributes to feelings of safety and belonging.<sup>105 106 107</sup> This is important because “people who have a strong sense of community belonging are more likely to report having excellent or very good physical and mental health.”<sup>108</sup>



Sunnyside Community Garden in full bloom.



# Local Research: Urban Design for Sustainability

Part 1

Livable Laneways

Part 2

Affordable Living:  
Housing and  
Transportation

Part 3

State of Our City  
Report 2020

Part 4

Healthy Places:  
Collisions and  
Neighbourhood  
Income in Calgary

‘In this chapter we share insights from a selection of local research projects carried out by Sustainable Calgary over the past 10 years. The research demonstrates that the global trends discussed in Chapter 2 are consistent with what we find in our city and that bold implementation of active transportation infrastructure will result in a healthier, more equitable and ecologically and fiscally sustainable city.

# Livable Laneways

Livable Laneways was a co-design process hosted by Sustainable Calgary to explore how we can better use laneways to build on community assets and reduce our eco-footprint. The goal of the exercise was to generate multiple visions of Livable Laneways through a participatory engagement process involving residents, designers, and planning professionals. Several of the co-design process outcomes directly support policies for creating livable laneways as a vital component of our proposed Neighbourhood Active Transportation Networks (NATNs).

Affordable housing, businesses  
and the 15-minute city

**Policy Outcomes:**

- Community Gardens in laneways.
- Allow the operation of small business in laneways through a “local business license”.
- Ensure laneway housing guidelines support the human scale.
- Remove minimum parking requirements in residential areas.
- Allow for adjusted property line setback for infill developments.





# Creating Laneway Communities: Laneway Housing and Accessory Commercial Units (ACUs)

During a Sustainable Calgary workshop centered around livable laneways, residents from numerous Calgary communities shared how improved laneways could help address issues related to affordable housing choice, community services and active mobility.

The removal of parking minimums in residential areas and designation of laneway housing as an allowable usage in close proximity to the LRT and active transportation networks were proposed as measures to encourage soft density, livability, small business and active mobility. As many communities lack amenities and services within neighbourhoods, the desire to incorporate local, independent

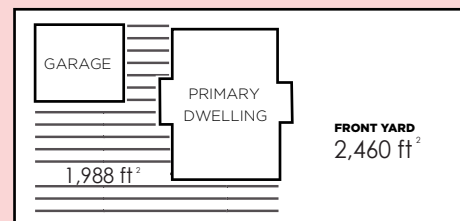


businesses arose as a way to encourage small business ventures without the high cost of rent in traditional spaces.

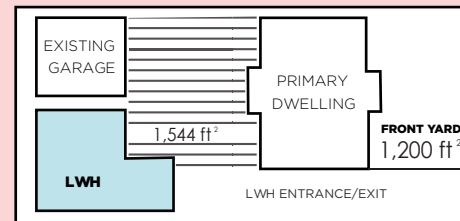
The future of accessible commercial units (ACUs) and the 15-minute city looks promising as the new normal post-pandemic. Mobility restrictions, working from home and the closure of many small businesses has encouraged many to seek out more walkable, healthy and more economically viable living and working arrangements. Retrofitting our built environment to accommodate affordable laneway housing and ACUs could be our new normal?

“small discrete laneway home designs that respect the human scale and fit in with their surroundings”

Existing Lot Arrangement



Adjusted Property Line Setback\*



\* diagram illustrates one of many possible combinations of lot shape, setback, laneway home size and use of garage and or accessory commercial unit.

### How much of our front yard do we really need?

Residents shared that front are underutilized and high maintenance. Their suggestion included readjusting dwelling setbacks to allow infill developemnts the opportunity to build homes closer to the road in order to gain space for LWH and or ACUs.

Policies that support walkable services & amenities promote the ideal of a 15-minute city

### What is a 15-minute city?

The idea that all residents should be able to walk or bike to take care of their daily needs within 15-minutes of their home without the need to drive.



### Accessory Commercial Units as a tool for:

- Laneway animation
- Affordable business entrepreneurship
- Localized services & products
- Increased public space and
- Added retail density while
- Reserving the neighbourhood character

Local places to meet, play, shop, create and interact within our neighbourhoods.



# Affordable Living: Housing and Transportation

Research indicates housing choice and affordability, particularly for marginalized groups, can be significantly enhanced by the right municipal transportation policy choices.

This research tested the hypothesis that housing choice and affordability, in large Canadian cities, particularly for marginalized groups, can be significantly enhanced by the right municipal transportation policy choices. Transportation is one of the central policy levers available to municipal governments and is typically the largest spending item in city budgets. It is also typically second only to housing as a percentage of private household spending. The research concluded that by far the most expensive component of a city's transportation infrastructure system is the private automobile and in order to make effective policy decisions, municipal government transportation strategies, planning and budgeting should include an assessment of private transportation spending (i.e. the rolling stock (private automobiles) required to make road infrastructure functional).

The research maps changing spatial patterns of affordable living across Calgary using car-owner and car-free scenarios asking the question: What difference, with respect to housing choice and affordability, would it make if the cost of owning, operating and maintaining an automobile could go toward mortgage or rent?

The affordable house purchase mapping showed that if a household was able to avoid the purchase of an automobile, the number of census tracts in which it could afford the purchase of the average house increases up to 1700%, with the greatest numeric increase in choice (93 of 202 tracts), occurring for household incomes at \$80,000.

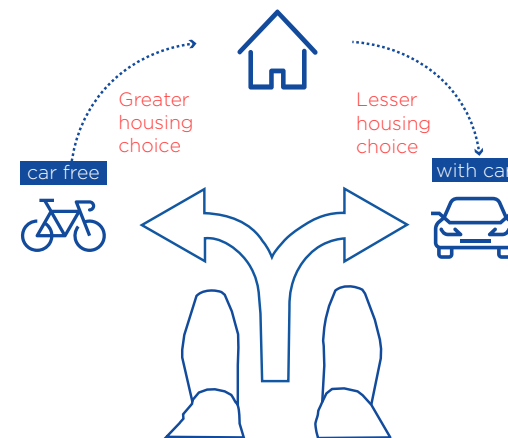
Based on MLS data between 22% and 1100% more 'homes sold' would have been available to a home-buyer based on 2006 sales data. The greatest percentage increase in choice occurs for the 60,000 income bracket (1100%); followed by the 50,000 income bracket (327%) and the 80,000 income bracket (207%). The greatest numeric increase in affordability of sold homes occurs at \$80,000 income (6069 homes) and at \$100,000 income (6171 homes).

If a household was able to avoid the purchase of an automobile, the number of census tracts in which it could afford the purchase of the average house increases up to 1700%

Based on MLS data, depending on income level, between 26% and 1800% more 'homes for sale' would have been available to a home-buyer based on June 2011 data. The greatest increase in choice occurs at 60,000 income (1800% or 1677 homes), followed by the \$50,000 income bracket (1570% or 848 homes) and the \$80,000 income bracket (125% or 2228 homes).

In Calgary, the four city quadrants (NE, NW, SE, SW) are significant descriptors of where you live. The 2011 Calgary Real Estate Board data (Table 6) shows that in the car ownership scenario, for an 80,000 dollar income household, in only one of those quadrants would the average home price be affordable. In the car free scenario, that same home-buyer has a choice of several communities in every quadrant of the city.

The affordable rental mapping exercise showed that if a household was able to avoid the purchase of an automobile, the number of available rental units within an affordable range increased up to 1300% with the largest increases occurring at a household income of \$20,000 (423 units). At \$20,000 income the percentage of all rentals available increases from 1.7% in the car ownership scenario to 23.4% in the car free scenario. At 30,000 income the percent of all rental offerings available increases from 11.4% to 44.7%.

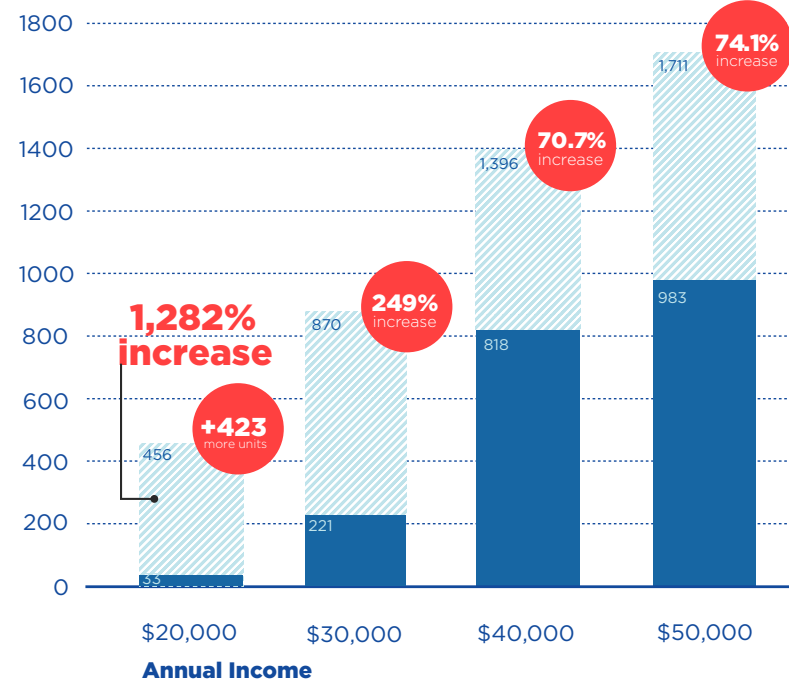


## Affordable Neighbourhoods (Census Tracts) with and without the Car

Vehicle Scenario	Annual Income	# of Affordable Census Tracts	Percent of Total Tracts	Increase in Affordable Tracts	Percent Change
<b>With Car</b>	\$50,000	1	0.5%	17	<b>1700%</b>
<b>Car Free</b>		18	8.9%		
<b>With Car</b>	\$60,000	5	2.4%	43	<b>860%</b>
<b>Car Free</b>		48	23.8%		
<b>With Car</b>	\$80,000	54	26.7%	93	<b>172%</b>
<b>Car Free</b>		147	72.8%		
<b>With Car</b>	\$100,000	112	55.4%	72	<b>64%</b>
<b>Car Free</b>		184	91.1%		

## Affordable Rental Availability

Number of Total Units

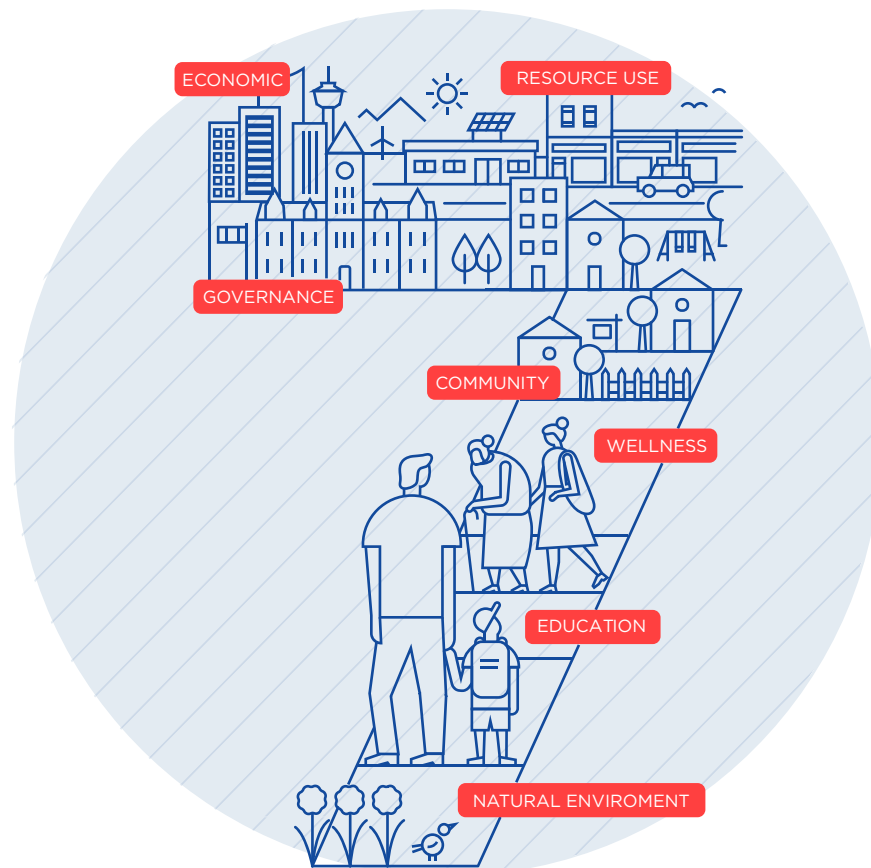


The most significant changes in housing choice and affordability occur at the lowest annual income levels.

“The window of opportunity for a gradual transition to a sustainable future has closed. We must now embark on a rapid transition or face the real prospect of significantly compromised quality of life and livelihoods and a precarious future for our children and their city.”

Over 2000 Calgarians participated in the creation of 5 State of Our City reports published by Sustainable Calgary between 1998 and 2020. In a tremendous volunteer effort, citizens led the way in choosing indicators, researching the data for each indicator.

The 40 indicators documented in this report sub-categorized under 7 overarching domains, help us understand where we are, which way we are going, and how far we are from where we want to be.



### TREND LEGEND

-  Trend is sustainable or moving toward sustainability.
-  There is no discernible trend.
-  Trend is far from sustainable or moving further away from sustainability.

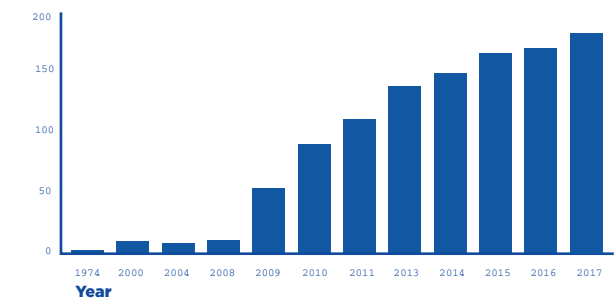
### NATURAL ENVIROMENT

 **Food Grown Locally**

With 200 community gardens in 2017 - the highest number yet - Calgary is certainly moving towards more sustainable food production systems. Since food is the third-highest household expenditure after housing and transportation, access to affordable, healthy choices plays a key role in addressing food security issues.

While it is important to continue this upward trend, we must equally ensure their distribution among communities is equitable.

Number of Community Gardens



Policies that connect localized food production with public transit and neighbourhood active transportation networks ensure equitable access and participation in more sustainable food production systems.

### WELLNESS

 **Child and Youth Wellness**

26% of Alberta youth aged 12 to 17 years are overweight or obese - auto oriented design plays a role in their lack of active mobility.

“The City of Calgary’s State of the Environment report notes that the personal vehicle is the largest source of air pollution in the city. Environment Canada estimates that CO2 and NOx emissions for passenger vehicles are three times those of buses and 5 to 10 times those of LRT per passenger kilometer. While the per kilometer emissions of various pollutants have improved between 25 to 50% over the past 20 years, average kilometers driven have increased significantly – 51% for SUVs, light trucks and mini-vans.

Leaving our cars at home and using alternative modes of transport reduces air pollution and contributes to improved health, an enhanced sense of community, and crime deterrence. In turn, as air quality improves, more people may be persuaded of the benefits of walking and cycling to work and other destinations.

A study of Calgary neighbourhoods found that average personal vehicle travel per household ranged from 16,200 km to 45,600 km annually, resulting in expenditures for gas alone of between \$2,060 to \$6,169 per year (2007\$) and GHG emissions of between 5.0 and 15.1 t of CO2e.

Living in a car-dependent city is expensive. In 2017 Alberta

households spent \$14,120 on private transportation, almost 25% more than the average Canadian household. The International Energy Organization reported in 2020 that Canada has the least fuel efficient, highest GHG emitting light truck fleet in the world. Light trucks and SUVs are the largest and fastest growing market share and their fuel efficiency has actually been decreasing over time. In Alberta 75% of purchased vehicles between 2016-2018 were light trucks compared to 54% in Canada. Alberta has 11.6 percent of Canada’s population and purchased 13.7% of all light trucks. According to a Pembina Report the emissions per km per person are over 400 CO2 eq for SUVs and less than 50 for light rail. A pick-up truck emits 5 times the GHGs of a compact car. The Ford F150 4X4 and Chevrolet suburbans produce more GHGs than any other vehicle and the road.

By comparison, Calgary’s LRT runs on wind energy – one of the cleanest sources of energy and abundant in southern Alberta.

Biking and Walking emits no GHGs!

The amount of money Calgarians spend on private vehicles in just one year, could fund two Green Lines. It could also fund the construction of over 200 km of a street car network or 12,000 km of separated bike tracks. IT makes a lot of dollars and sense to move rapidly to a transit and active transport oriented city where everybody has a choice whether or not to own a private vehicle.”

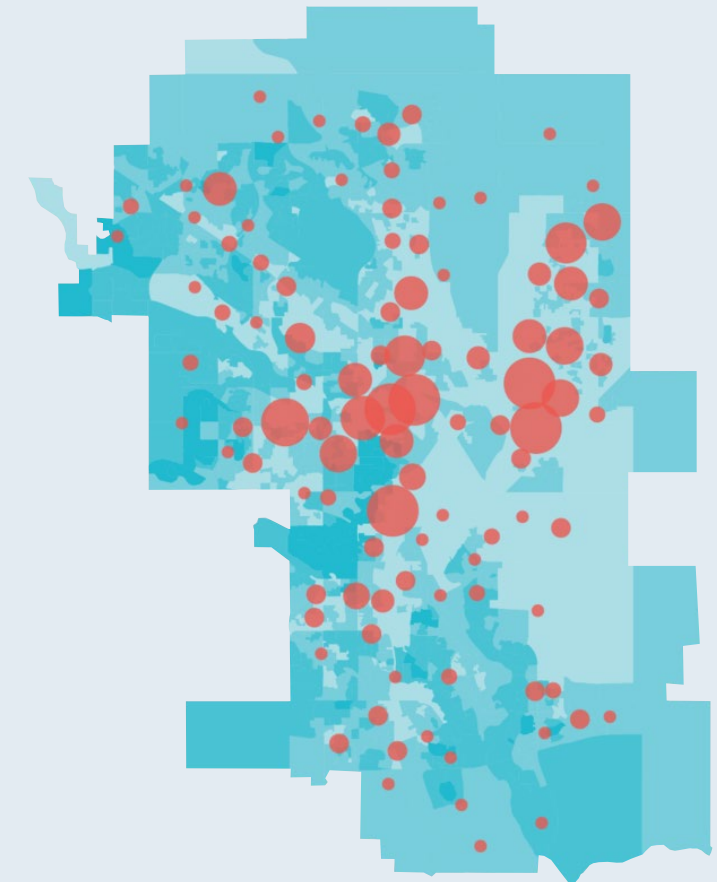
# Healthy Places: Collisions and Neighbourhood Income in Calgary

Sustainable Calgary in collaboration with Active Neighbourhoods Canada mapped vehicle/pedestrian collisions in relation to the average income of each census tract, and clearly demonstrated a correlation between collision frequency and lower income communities. Outside of the downtown core, most vehicle/pedestrian collisions occur in Calgary’s north-east, which are not only some of Calgary’s lowest income communities, but also have a higher proportion of new Canadians.

These findings point to the fact that collisions are an issue of equity, and show that there is an urgent need to prioritize creating walkable neighbourhoods, especially in low-income or otherwise marginalized areas.

**Making targeted infrastructure improvements to elements of the Neighbourhood Active Transportation Network such as crosswalks, bike lanes, laneways, and catwalks is imperative if public health and access to safe active transportation is to be achieved in Calgary’s marginalized communities.**

**Health Inequality**  
Pedestrian collisions tied to neighbourhoods experiencing low incomes

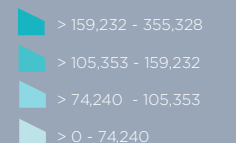


MAP  
**City of Calgary: Pedestrian Collisions 2016**

Pedestrian Collisions



Median After-tax Household Income (\$)



# Case Studies

Part 1

YYC Catwalks

Part 2

Acadia

Part 3

Manchester

Part 4

Bridgeland

Sustainable Calgary is an active participant and supporter of community led projects that strive to find creative solutions to Calgary's active transportation challenges. These challenges are the result of dated infrastructure and planning policy that prioritized the private car over other modes of transportation. However, we recognize that community-based volunteer organizations do not have the capacity or the funds to implement change at the scale that is required to make Calgary a world leader in active transportation infrastructure.

**We are calling on the City of Calgary to support Calgarians and invest in building world class active transportation infrastructure supported by an updated land use bylaw that creates walkable densities and mixed uses.**

## Marlborough: Reimagine Catwalks

In the summer of 2018, the Reimagine Catwalks Project was launched with the mission of providing a collection of tools, tips and resources to encourage community members - specifically kids, to "reimagine" catwalks (engineered walkways) as spaces that promote greater walkability, connectivity and activity.

Common concerns from the community about the current condition of catwalks in Marlborough centered around accessibility, safety, and maintenance:

- Poor pathway maintenance (cracks, tree roots)
- Lack of snow removal
- Poor grass maintenance and litter upkeep
- Lack of lighting
- Presence of maze gates

Our approach to the project was one of direct community participation; Sustainable Calgary engaged local school children in a co-design workshop to act as the design and implementation team. The program followed the "Dream, Scheme, Activate" design process outlined in the Reimagine Catwalks Playbook and has served as a template for other Community Associations to start their own projects.<sup>109</sup>

In Marlborough, the catwalk enhancements envisioned included a community garden, solar lighting, youth artwork, and colourful and bright decorations, all which contributed to an engaging and aesthetically pleasing catwalk that generated traffic, feelings of safety and communal investment through the collective ownership and reclamation of neglected micro-spaces.



## Policy Insights

- Catwalks create critical pedestrian connections in the Neighbourhood Active Transportation Networks across Calgary communities.
- Catwalks are often neglected, lack lighting, have cracked paving and are left uncleared during the winter months creating significant accessibility issues, particularly for vulnerable populations that could benefit the most from increased physical activity.
- Catwalks should be thought of as destinations not just connections. Bringing vibrant uses such as micro-businesses and Accessory Commercial Units into the Catwalks would transform communities across Calgary.



Using their ideas as inspiration, Sustainable Calgary spent time gathering materials and building vertical garden pallets to use during the activation phase. We were motivated by their brainstorming session to create themed corridors. One, centered around a productive landscape - the other focusing on placemaking and creativity.



“More people are coming to this catwalk as a destination now! I’ve seen bikers actually turn around and bike through to see what’s happening in here - overall a lot of positive attention for once”

- Gloria

“We’ve seen more people walking through the space. The other night one of the neighbours came over with his wife and picked enough kale, tomatoes, and onions for their salad and brought a watering can in hand!”

- Danielle & Americo



# ActivateYYC 2.0

Building on the success of the Reimagine Catwalks project in Marlborough and the publication of Sustainable Calgary's "Reimagine Catwalks Play-<sup>110</sup> book" Sustainable Calgary teamed up with the Federation of Calgary Communities, City of Calgary and The Calgary Foundation to scale up the Marlborough Catwalks success.

ActivateYYC 2.0 Shortcuts, Catwalks, Mazes, and Mews was a city-wide project with the goal of "engaging neighbours in a makeover of a shortcuts that are quick, low cost, and transformative important elements of a Neighbourhood Active Transportation Network."<sup>111</sup>





ActivateYYC 2.0 resulted in three successfully completed activation projects across Calgary including an outdoor art gallery, community wayfinding signage, and installation of solar lighting.

## Policy Insights

- Small-scale community led initiatives can be successful in neighbourhoods with volunteer capacity, however, funding and sponsorship by the City is required for the large policy and infrastructure improvements needed to create a functional Neighbourhood Active Transportation Network
- The City should streamline the application process for Community Associations to run tactical urbanism projects in the future - similar to the City's Paint the Pavement Program<sup>112</sup>

## MAP Pineridge Emotional Mapping

### Legend

-  Positive
-  Neutral
-  Negative
-  Catwalk #



Reimagine Catwalks Playbook



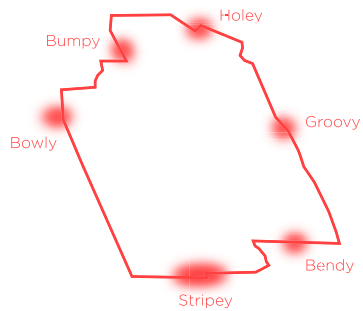
## Community Catwalk Audits and Emotional Mapping

In partnership with Masters students from the School of Architecture, Planning, and Landscape, Sustainable Calgary conducted catwalk mapping and auditing services for the communities of Pineridge and Saddle Ridge at the request of the Community Association. We found a stark difference in quality and maintenance of the catwalks in each community, with Saddle Ridge generally having well-constructed and maintained pathways while Pineridge showed some major accessibility and safety issues.

## Policy Insights

- All elements of Neighbourhood Active Transportation Networks, including catwalks, should be elevated to the design and maintenance requirements of the City's 5A Network policy to ensure consistent service levels across the city.
- Recognition that all neighbourhoods have a right to accessible and safe active transportation infrastructure must be a critical policy goal of the City.





“Loopy and the Six Parks” (Spectacle, n.d.) is one such design intervention that creates active transport connections between each of the six communities. The idea is simple; connect a series of unique pocket parks by a “looping” bicycle path network.<sup>113</sup>

Spectacle Bureau

## Acadia: Loopy and the Six Parks

Acadia represents a typical Calgary community that is segregated on all sides from its neighbours by large arterial roads that act as barriers to active modes of transportation. This phenomenon has been coined the “Island Effect” and results in poor access between communities and forces inter-community travel to be completely dependent on the private automobile. While many of Calgary’s master planned communities are well organized internally, the lack of connectivity to external services and each other must be addressed if we are to improve regional active transportation.<sup>114</sup>

Sustainable Calgary, in partnership with Spectacle Bureau for Architecture and Urbanism, set out to assist the Acadia Community Association (ACA) and the Anderson to Heritage Coalition (AH Coalition) through several initiatives to determine pedestrian desire lines (where people want to get to and from), map friction points that prevent access to local and regional destinations, and the design and proposal of active transport-centred design interventions.

### Policy Insights

- Neighbourhood Active Transportation Networks that are internal to a neighbourhood or community should provide connections to external services and communities to support regional mobility. Pedestrian desire lines should be used to evaluate where these connection points are most important.
- Neighbourhood Active Transportation Networks should aim to connect parks and open spaces that can be programmed to host community events, pop-up markets, micro-businesses and transportation services such as bike repair stations.
- The “Island Effect” is an issue of equality and accessibility and is important to address at the City level.



Spectacle Bureau

## Manchester Innovation District

The Manchester District is in close proximity to downtown Calgary and has a unique mix of industrial, commercial, retail, and residential uses. The building stock is nearing end of life and the historic development pattern has been low-density sprawl with poor local pedestrian and cycling connections. At the same time, the area holds enormous potential due to its proximity to city centre, existing LRT service and a considerable amount of underutilized space.

One such space is a wide utility corridor that runs along the Red LRT line. The potential exists to transform this corridor into a main street condition that prioritizes active modes of transportation and connects regional transit service and serve as a catalyst for concentrated development and a reorientation of community living. A walkable and connected pedestrian corridor would support shifting land use and zoning to allow for micro-businesses, light-industrial, and residential uses to front onto the corridor. Such a corridor makeover could inspire the transformation of the entire fabric of the Manchester to a sustainable community.<sup>115</sup>

### Policy Insights

- Underutilized spaces including utility corridors and greenways should be evaluated for appropriate uses such as micro-businesses and laneway housing to accompany active transportation infrastructure to create integrated Neighbourhood Active Transportation Networks
- New development should front onto the Neighbourhood Active Transportation Networks instead of arterial roads to deprioritize the private car and elevate the accessibility via active modes of transportation.

These projects demonstrate the need for a concentrated effort and significant public investment in neighbourhood active transportation infrastructure across the city. We hope that sharing these stories will inspire the City to take a strong leadership role and prioritize public investment in projects that improve the efficacy of Neighbourhood Active Transportation Networks in Calgary and ultimately create a city where all citizens have the viable option to live and move around the city without a car.



## **Bridgeland: Integrated Healthcare Facility**

When news of a new local healthcare facility was announced in the East Riverside Area of Bridgeland, the community wanted to ensure the building was integrated into the community and acted as a catalyst to improve public health, social wellbeing, and accessibility in the area. To support the community of Bridgeland, Sustainable Calgary conducted a precedent review titled “Healthy Places: Precedent Review of Integrated Healthcare Facilities” and presented the findings at a community workshop. The findings of this document state:

“The case is clear: we can build cities that improve public health, while also benefiting the environment, the economy, and our communities. The significant level of capital spending on health facilities should not only follow best practices in urban design, it has the potential to be a catalyst for innovation in the design of healthy communities and cities.”

With this knowledge in hand, the community’s East Riverside Master Plan was able to directly inform the community’s response to the new development; they pushed for multi-generational housing and the prioritization of a walkable, amenity rich area tailored to the needs of senior citizens.

## Chapter 5

# Visualizing The Neighbourhood Active Transportation Network

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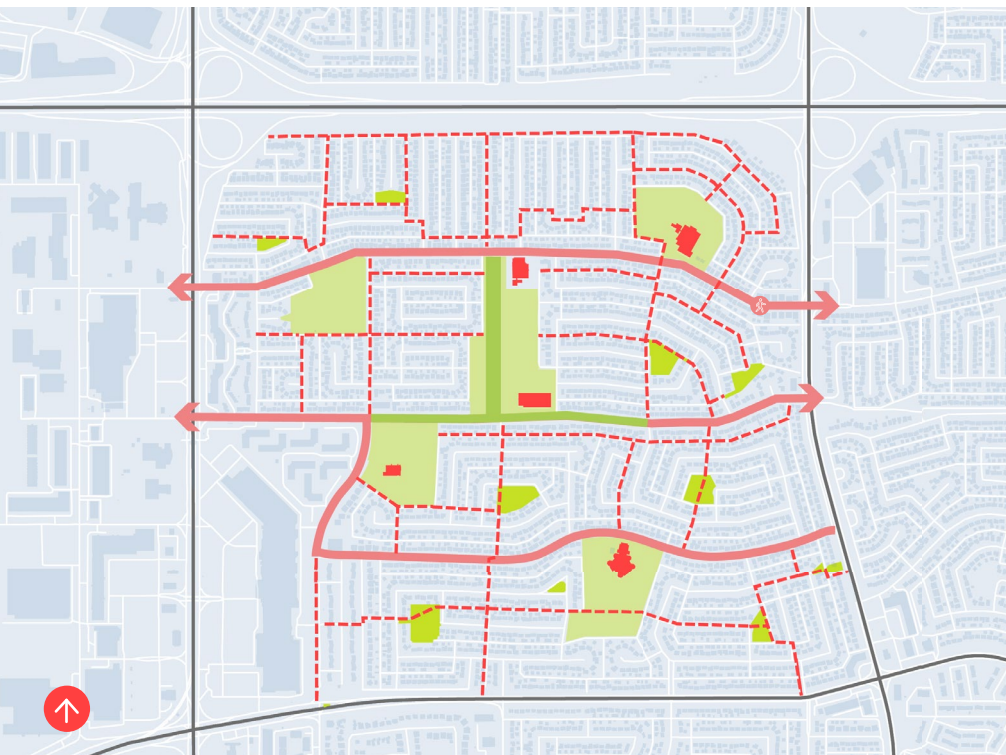
### **Policy Insights**

- Neighbourhood Active Transportation Networks should connect important community and regional destinations such as healthcare facilities, schools, healthy food vendors and community recreation facilities.
  - Specific design consideration addressing how a facility integrates with the Neighbourhood Active Transportation Network is critical to creating healthy, walkable communities.
-

# Elevating the Importance of Pedestrians Through Neighbourhood Active Transportation Networks



Pedestrian collisions are preventable, yet human safety continues to be threatened in favour of efficiency. Transportation planning in Calgary has long shaped a built environment where the private vehicle is prioritized. Reimagining the way road safety is approached relies on inverting the current method to instead elevate the importance of pedestrians by creating residential networks that are connected to destinations.



MAP  
**Proposed NATN safely linking community assets**

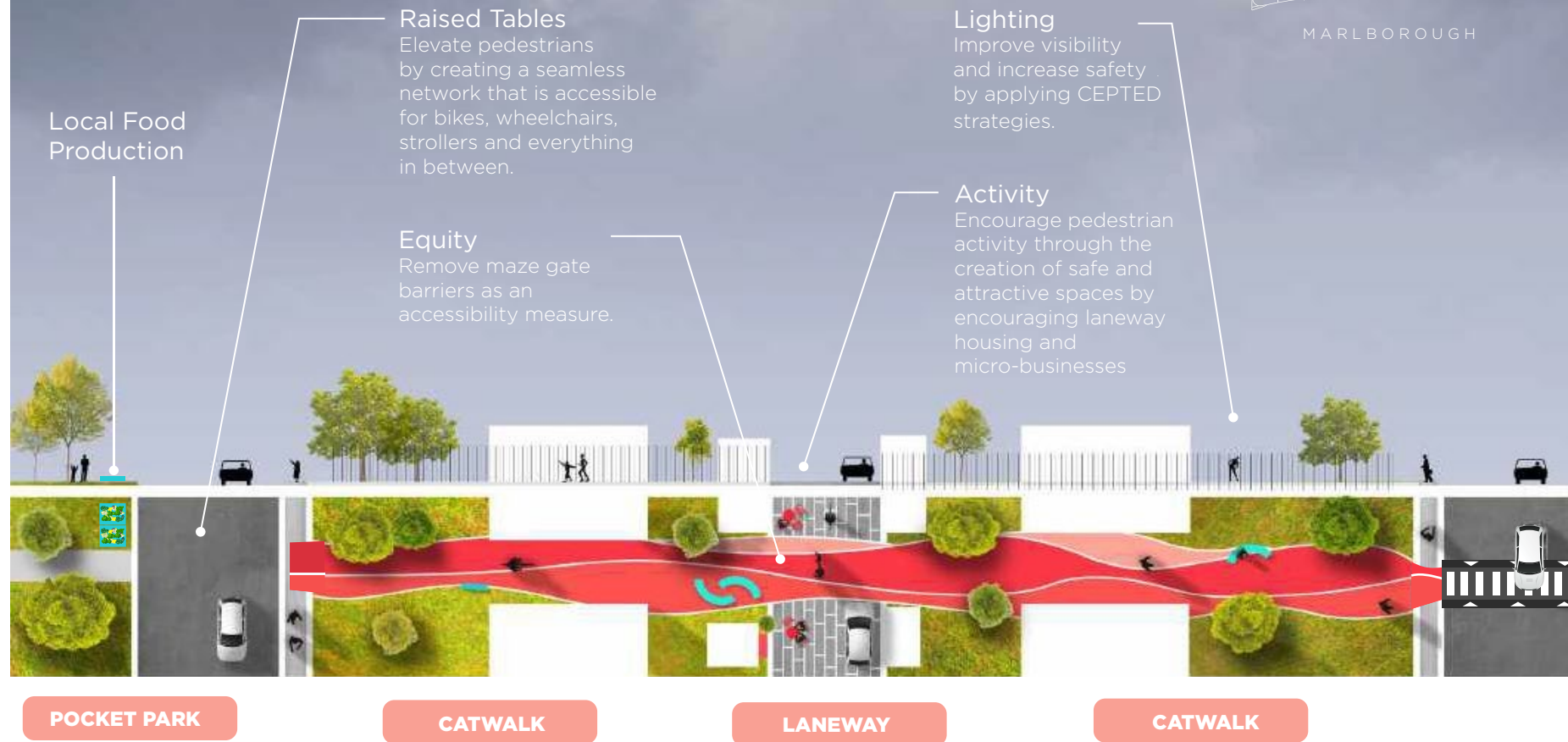
- Schools
- Pocket Parks
- Greenway - Pedestrian Only
- NATN
- Shared Street/Woonerf

## NATN as a Safe Routes to School Intervention

- School
- Catwalk
- Laneway
- Road



MARLBOROUGH



Sustainable Calgary works closely with Brada University in the Netherlands to help bring the Dutch approach to Calgary. The proposed NATN, adapted by Sustainable Calgary, was inspired by a Brada Planning student as part of their project assessing connectivity in Marlborough.

Vision Zero: A strategy to eliminate all traffic fatalities and severe injuries.

How can we design our neighbourhoods for health, equity and vision zero success?





Tripty Kaur.

**Filling in the gaps:**  
 Optimizing access to services, amenities and local food production through integration of accessible commercial Units (ACUs) with active neighbourhood transportation networks (NATNs)

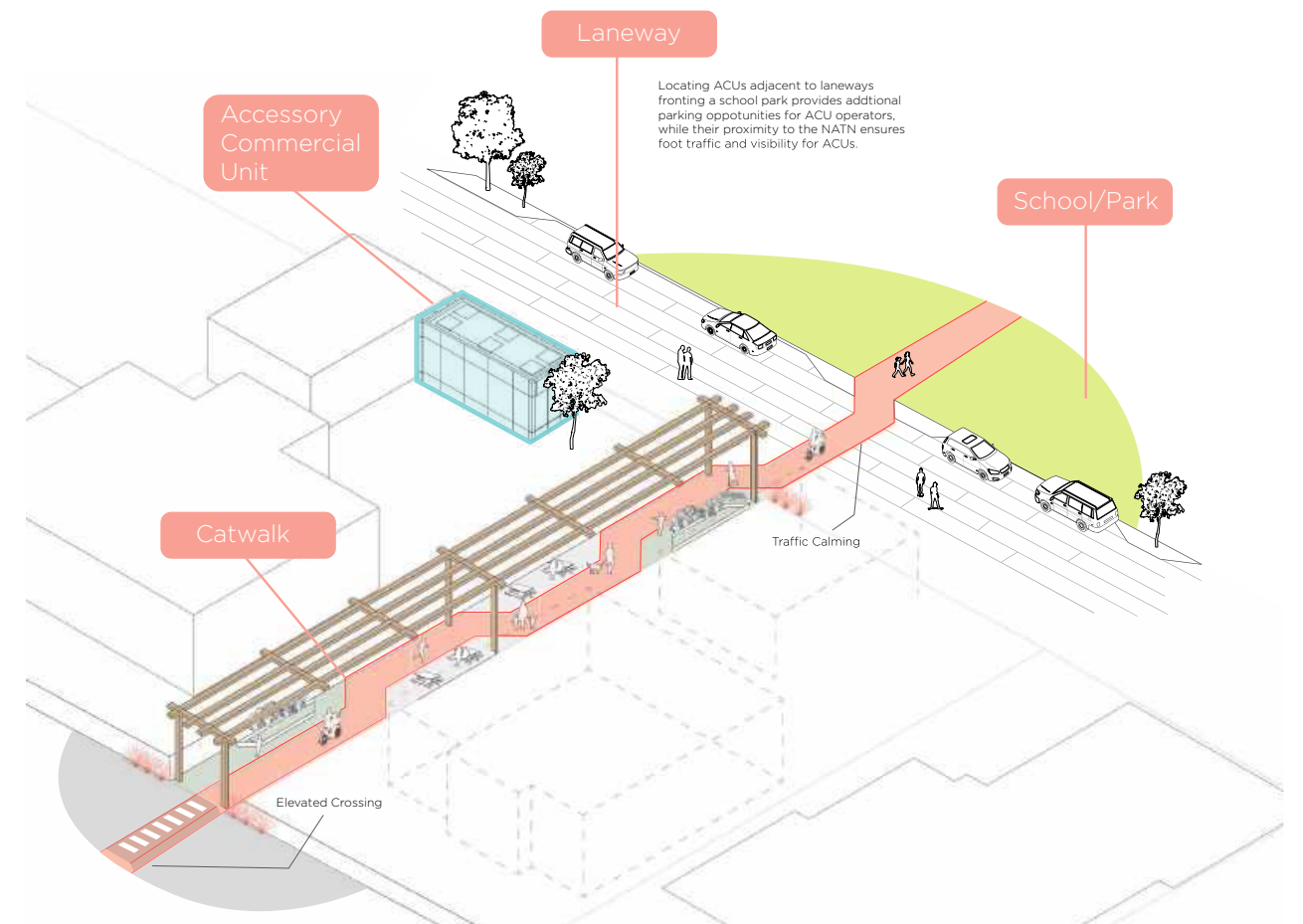


**How can we design neighbourhood pathways that encourage use at all times?**

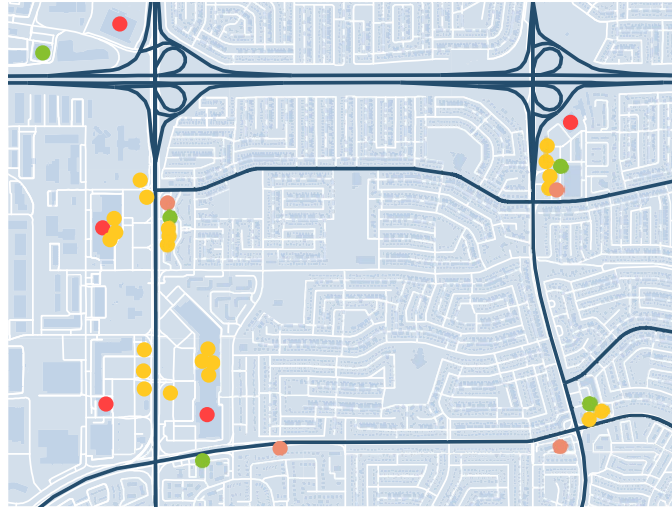


**Addressing gender differences in active transportation:**

Universal safety is a fundamental requirement for cities to become sustainable and inclusive while ensuring health equity within the built environment. Efficient lighting, openness and visibility all play a role in encouraging healthy active mobility - especially for women, children and vulnerable groups.







MAP  
**Food Amenities**

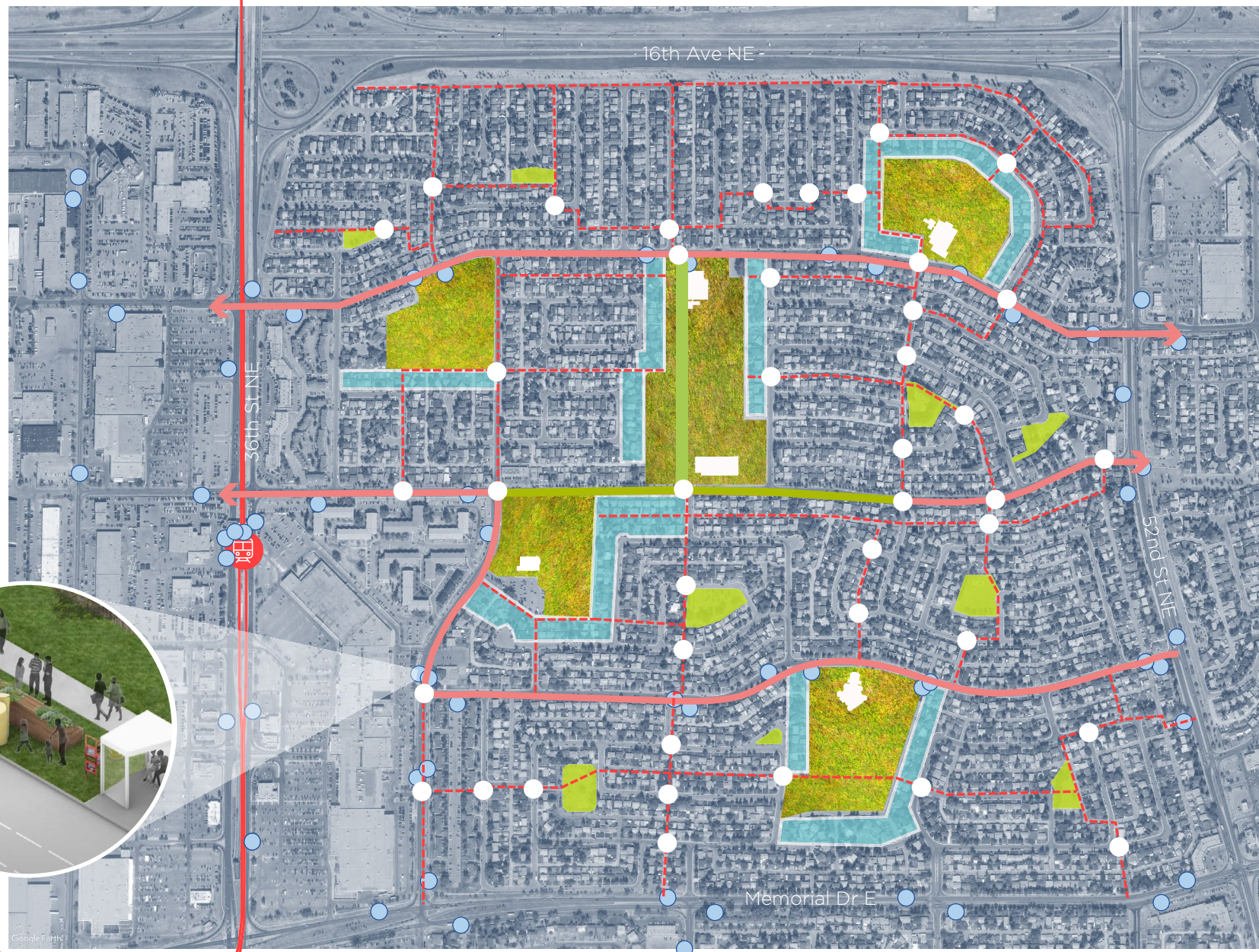
- Independent Cultural Store
- Fast Food
- Convenience Store
- Big Box Grocery Stores
- Major Roads

**Existing Conditions:**

In an assessment of food services in Marlborough, it becomes easy to see a spatial distribution of food outlets concentrated and oriented towards major roads. With this, planning has relegated the most important need - food access, to become auto-dependent.



Marlborough Public Space and Transit Node (installed October 2020)



**Elements of the Neighbourhood Active Transportation Network**

- Ⓜ LRT Line
- Bus Stops
- Elevated Crossing
- Pedestrian Only
- Shared Street
- - - NATN Connectors
- Proposed ACUs

We placed schools at the centre of our communities, left everything else out and boxed our neighbourhoods in with main roads.  
Now what?



# The Policy Proposal

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## Our Vision:

The citizens of Calgary have reaped the benefits of the enormous wealth generated by the exploitation of fossil fuels. This reality bestows the moral obligation on the City of Calgary and its citizens, to pursue a vision and development strategy to be a world leader on the global climate crisis and to be an example to the world of what a just and equitable society can be. Swift and uncompromising action is required by the City if we are to shift our current trends of increasing inequality, over-consumption of goods, and environmental degradation.

Fundamentally, the built form of our city must be rethought and rebuilt to reflect our reality. We cannot continue the status-quo. Our auto-dependent city comes with social, economic and ecological costs. This report reviews some of the most important research spelling out those costs. Actions must be taken now to change the way we build Calgary to address climate change, inequitable access to the city, the need to build resilience, to protect public health and reduce the cost of provision and maintenance of vital infrastructure.

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## City of Calgary:

We are calling on the City of Calgary to lead a concentrated effort to rethink our land use patterns and development strategy. We are calling on the City of Calgary to take action and invest heavily in the build-out of active transportation infrastructure that provides convenient and equitable access to amenity for all citizens. And we are calling on the City of Calgary to integrate this new order of land use and infrastructure so as to deprioritize the automobile and to reap the societal benefits of complete communities serviced by high quality Neighbourhood Active Transportation Networks. The consequences of such an effort are not trivial, but literally form the infrastructural “backbone” of our city’s future as a sustainable, just, and prosperous place to call home.

## Policy Goals:

- 1 To provide all Calgarians equal access to high-quality active transportation infrastructure that provides safe, convenient and efficient alternatives to the private car.
- 2 To reorient commercial and residential land uses to front onto the Neighbourhood Active Transportation Networks creating vibrant destinations connected by multi-modal infrastructure.
- 3 To connect all neighbourhood-scale active transportation networks with a secondary, city-scale network.
- 4 Each individual element of transportation infrastructure forms an integral part to a planned and integrated Neighbourhood Active Transportation Network.



# 5A Network Policy Recommendations



The existing 5A Network Guiding Principles (listed below) provide an excellent framework for the City's active transportation build-out, and we applaud the specific focus on creating accessible, mode-separated community connections. Sustainable Calgary recommends several additions to the 5A Network Principles to enhance the implementation and user adoption of this historic infrastructure investment.

## 1 Separate People By Their Speed

+ Where vehicles travel fast and there are many of them: provide physical separation between people driving, wheeling and walking.

+ Where vehicles travel slower and there are fewer of them: continue to support traffic calming and diversion elements and signalized or signed intersections to increase comfort for Calgarians.

+ Where many people are walking and wheeling: twin pathways if possible when constructed or life cycled.

+ Create "mode-transition" zones with rest-stop infrastructure so that drivers, wheelers and walkers can safely change transportation modes.

## 2 Improve Visibility

+ To improve visibility, use lighting: at decision and conflict points like intersections, driveways and alleys, along routes that feel isolated, and in busy areas like schools, recreation and shopping centres.

+ Enhance navigation, hazard identification, transition areas and walking and wheeling facilities by providing signage and pavement markings.

+ Main Streets and other destination facilities may benefit from pedestrian scale lighting to encourage social activity.

+ When lighting is needed in natural areas, ensure minimal impact on the ecology and visibility of the night sky in the area.

+ When detours are in place select routes with adequate lighting for people travelling along them.

+ Launch a Vision Zero campaign and improve physical infrastructure at all points of conflict between vehicle traffic and the 5A Network.

## 3 Make It Reliable

+ Throughout the year, clean up debris and repair any damage due to seasonal changes.

+ As part of the Seven-Day Snow Plan, prioritize clearing snow on the 5A Network to keep people walking and wheeling year-round.

+ Focus on clearing snow from the most important sections, identified through network analysis, of the 5A Network with available funding.

+ Continue monitoring the condition of sidewalks, pathways and roadways to forecast lifecycle maintenance needs for the 5A Network.

+ Provide safe, accessible and connected detours where needed when repairing segments of the network.

+ Prioritize the build-out of "last mile" transit connections to LRT stations.

+ Provide secure bike parking at LRT stations and other high-traffic connections along the 5A Network.

## 4 Be Accessible For Everyone

+ Ensure off-set gates and posts do not block entrances or exits to pathways to allow accessibility for more people, where appropriate.

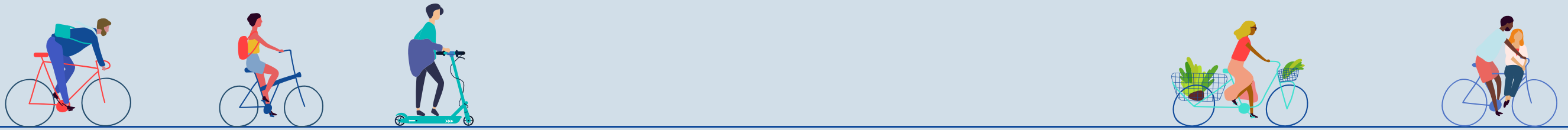
+ Provide ramps to accommodate safe transitions for people walking and wheeling.

+ Maintain a smooth surface clear of potholes, depressions or bumps to reduce hazards.

+ Ensure pathways and bikeways are not too steep for people to travel on. Where hills are present, grades should not exceed 3% for distances longer than 200 metres.

+ Reroute where grades exceed 8%, on-street and off-street.

+ Introduce a 5A Network bike share program with options for those who require subsidized rental.



## 5 Make It Easy To Use

+ Use visual identifiers like route markers, signs and pavement markings.

+ Use wayfinding (signage, maps, pavement markings) to support key network nodes and show people how to transition between pathways, bike-ways and roadways.

+ Use destination signage to help people plan their trip and connect to popular places.

+ Develop a digital navigation app for the 5A Network with mode-specific route information, i.e. “Blue” network for walking and “Green” network for cycling.

With City Council expected to accept the 5A Network Guiding Principles as part of the 2020 amendments to the City’s Municipal Development Plan, Sustainable Calgary believes a once in a generation opportunity to reorganize land use around the 5A Network is upon us. We have the unique opportunity to leverage heavy investment in active transportation infrastructure to shape where people choose to live, how they choose to get around and how businesses can capitalize on this new city form.

To unlock the full potential of the 5A Network and to capitalize fully on this investment, integrating a reformed Land Use Bylaw organized around the 5A Network as primary transportation infrastructure is imperative. Sustainable Calgary recommends the following Land Use amendments required to achieve the vision set forth in this document

### Municipal Development Plan Land Use:

#### Frontage

- Allow and encourage new development adjacent to the Network to address building frontage and orientation onto the Network.

#### Business Licensing

- Permit micro-business licenses to operate and front onto the Network, including Engineered Walkways, Greenways, and Laneways.
- Redesignate pocket parks and community open spaces to allow for commercial food production, local services, temporary market spaces, and community social spaces

#### Density & Intensity

- Increase density and intensity for parcels adjacent to the Neighbourhood Active Transportation Network to allow for Accessory Housing Units and Accessory Commercial Units
- Eliminate parking minimums for new development near public transit and the Neighbourhood Active Transportation Network
- Reduce minimum setback for properties adjacent to the Neighbourhood Active Transportation Network to facilitate pedestrian friendly frontage

### Calgary Transportation Plan (CTP) Policy Recommendations:

- Designate the 5A Network and Neighbourhood Active Transportation Networks as Core Transportation Infrastructure
- Designate the Neighbourhood Active Transportation Networks as the Primary local transportation infrastructure.



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