CITY OF KELOWNA

MEMORANDUM

Date: April 15, 2010

File No.: 1405-06

To: Mayor Shepherd, Council & City Manager

From: Director, Regional Services

Subject: Council Workshop – OCP/Public Transit

Attached is the agenda package for Council's workshop on Public Transit and the Official Community Plan (OCP) that is scheduled for Tuesday, April 20th, 2010 between 1 & 4pm.

Included in this package are:

1. Staff's presentation titled 'Creating a New Transit Vision for Kelowna and Region'
2. BC Transit's presentation titled 'Kelowna Transit Master Plan – Work Outline'
3. Staff's paper titled 'Proposed Capital Improvements: Queensway & Rutland Transit Exchanges – Discussion Paper'

This material will provide the focus for your workshop. The agenda for the workshop is provided on the second page of staff's presentation (#1 above).

This workshop is one of a series related to the OCP development. A second workshop with you on other transportation planning for the OCP is scheduled for May 20th.

We look forward to presenting this material to you and receive your feedback and direction.

_____
Ron Westlake, P.Eng.
Director, Regional Services

RWW

Attachment:

cc. GM, Community Sustainability
Director, Policy & Planning
Director, Infrastructure Planning
Director, Financial Services
Regional Programs Manager

CREATING A NEW TRANSIT VISION FOR KELOWNA AND REGION

City of Kelowna

Presentation to Kelowna City Council
2010 April 20

WORKSHOP AGENDA

- Introductions
- Presentation – City of Kelowna (1:00 – 2:00 p.m.)
  - Role of public transit and keys to success
  - Regional transit vision – Central Okanagan Smart Transit Plan
  - Kelowna OCP: land use and transit directions
  - Questions and discussion
- Presentation – BC Transit (2:00 –3:00 p.m.)
  - 25 Year Transit Master Plan
  - Kelowna Rapidbus Project update
  - Funding the Transit Plan
  - Questions and discussion
- Transit Exchanges and TOD – City of Kelowna (3:00 – 4:00 p.m.)
- Adjournment (4:00 p.m.)

ROLE OF TRANSIT

Why do we need and want Public Transit?

PUBLIC TRANSIT BENEFITS

Social

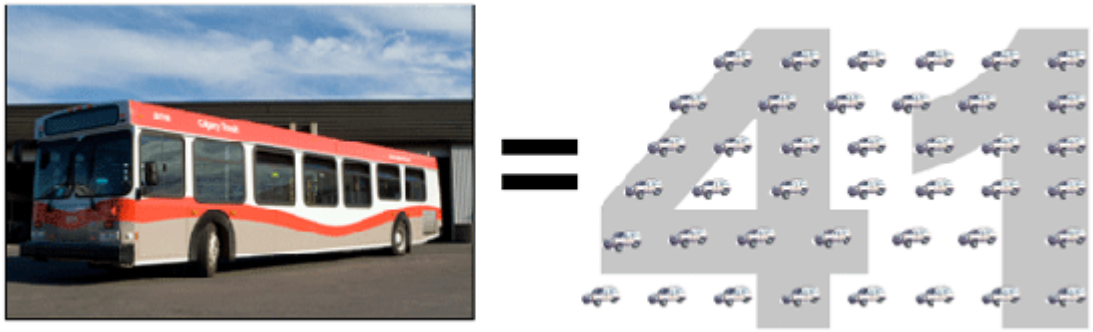
- Provide transportation for those without other options.
  - Age
  - Disability
  - Limited Income

- Provide new travel options – attract choice riders.
- Support healthy, socially inclusive communities

PUBLIC TRANSIT BENEFITS

Environmental

- Reduce environmental impact of urban travel
  - Preserve valuable land resources – support compact development
  - Reduce energy demands & greenhouse gases
  - Maintain good air quality



PUBLIC TRANSIT BENEFITS

Economic

- Reduce transportation infrastructure costs.
  - Road and employer parking expansion
- Savings for transportation users.
- Support economic development
  - Labour mobility
  - Healthy, competitive downtowns & urban centres
  - Educational Institutions – future labour force

PUBLIC TRANSIT BENEFITS

Staying competitive in a global market

"To the extent that western Canadians get this right (density supported by public Transit), we will be ahead of our international competitors; to the extent that we get it wrong, we will fall behind in the race to sustain economic prosperity and the quality of life to which it contributes."

Canada West Foundation, March 10, 2009

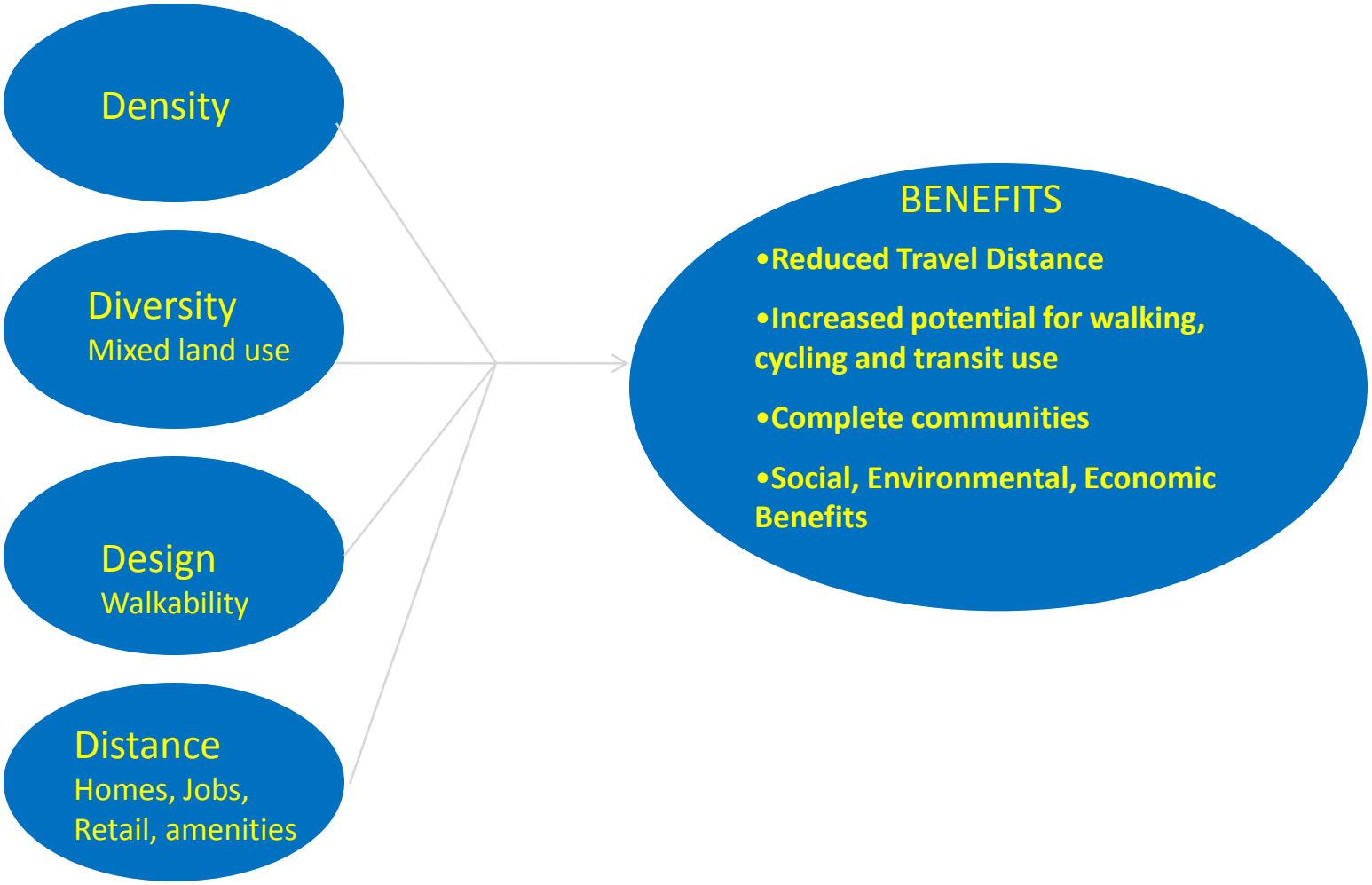
TRANSIT IS ABOUT LAND USE

The four 'D's

Research has identified four land use factors as being essential to reduce auto dependence.

- **Density:** # of people or jobs in an area.
- **Diversity:** land use mix and compatibility at a local scale.
- **Design:** attractive, walkable, connected, accessible.
- **Distance:** proximity of residences to jobs, shopping and amenities to transit.

THE FOUR D'S


Density
Diversity
Mixed land use
Design
Walkability
Distance
Homes, Jobs,
Retail, amenities
BENEFITS
•Reduced Travel Distance
•Increased potential for walking, cycling and transit use
•Complete communities
•Social, Environmental, Economic Benefits

DENSITY

Basic Transit Threshold

A minimum density of 17 dwelling units per ha. is required to support basic transit service – a bus every 30 minutes.

Source: Transportation Research Board (2004)

'Transit Oriented Development in the US: Experiences, Challenges and Prospects; TCRP Report 102

DENSITY

Frequent Transit Threshold

- A Minimum density of 37 dwelling units per ha. is required to support frequent bus service - every 10 minutes.

- These threshold densities can only be effectively achieved through intensified nodes and corridors.

Source: Transportation Research Board (2004)

'Transit Oriented Development in the US: Experiences, Challenges and Prospects; TCRP Report 102

DIVERSITY

Key Findings

- Mixing land use and amenities within proximity of one another is as critical as density to reducing auto dependence.
- Occurs at different scales:
  - Within buildings (e.g., housing & retail)
  - Within 'complete communities' (housing, retail, office, schools, parks).

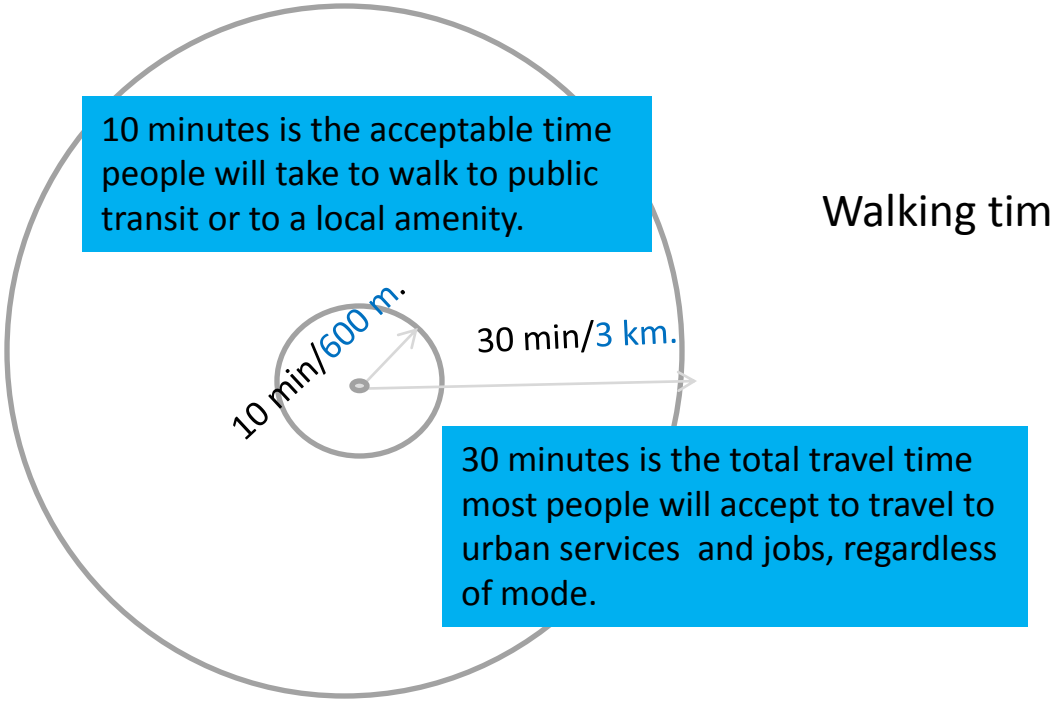
DESIGN

Key Elements

1. Create pedestrian oriented design.
2. Make each station a place.
3. Manage parking and vehicular traffic.
4. Plan in context with local communities.

DISTANCE

Understanding the design of nodes and corridors can help reduce auto dependency.



Walking time/distance

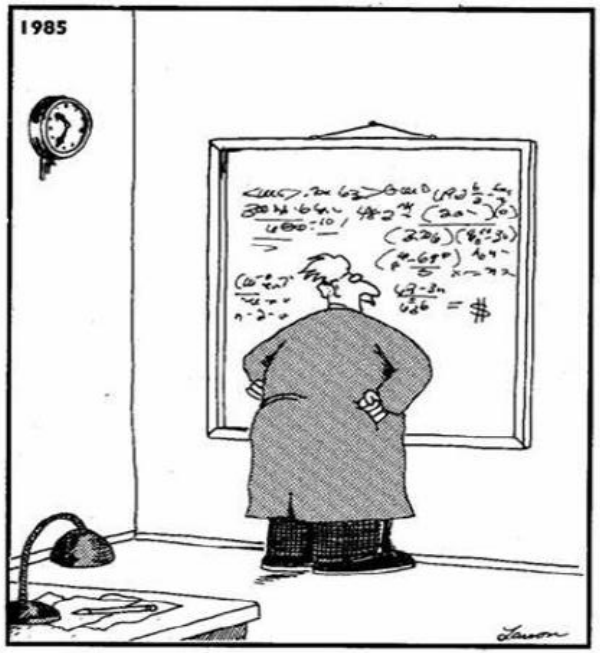
LOCAL CASE STUDIES

Kelowna has some excellent examples of compact, mixed-use, walkable development patterns which support quality transit service.

Insert local photos and captions here

TRANSIT SERVICE DESIGN

How do we create a transit service that people will want to use?



THE FOUR STEPS TO GREAT TRANSIT

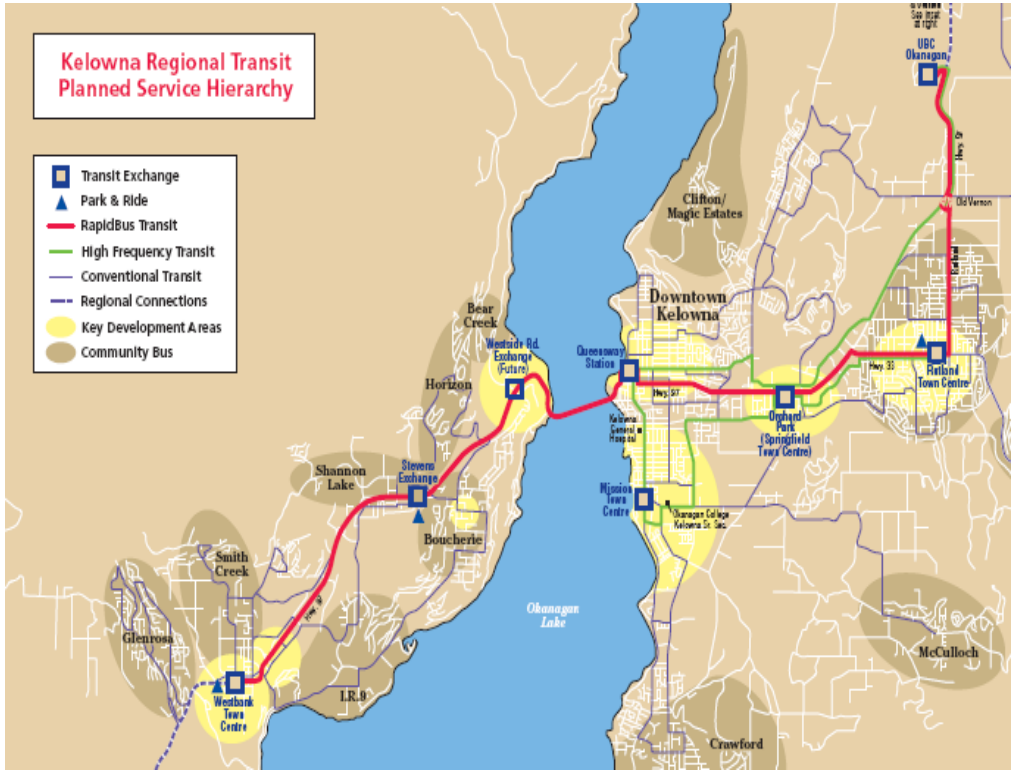
Network Structure (Connectivity)	System Performance (Time)		Customer Experience
1	2	3	4
Connect more places more directly.	Make those connections faster	Make those connections more frequent	Integrate transit with civic life (TOD)
ASAP	Than Driving	Show up & go	Centrality & Customer Experience

Adapted from The Mission Group – San Diego: 'Improving Public Transportation', 2006

REGIONAL TRANSIT VISION

Central Okanagan Smart Transit Plan (2005)

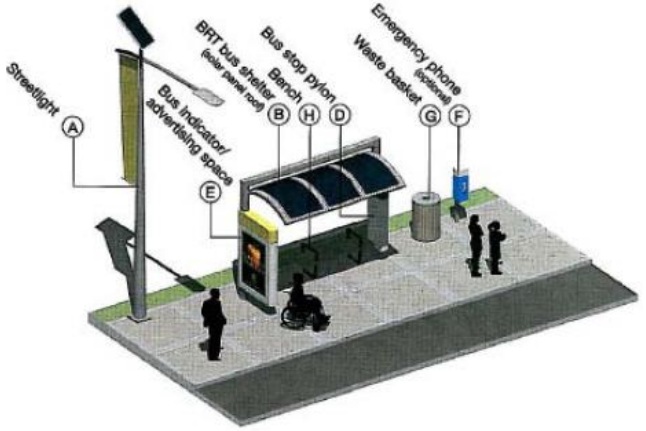
- Presents a long term transit vision and phasing plan for Kelowna region.
- Key feature: create a high frequency transit network linking key destinations & town centres.
- Complemented by an underlying base transit network.



KELOWNA REGIONAL RAPIDBUS

Key Features

- Excellent frequency
  - Every 10 minutes at peak
  - Every 15 minutes all other times
- Shorter travel times & improved reliability
  - HOV lane
  - Transit signal priority
  - Direct routing
  - Reduced stops
- Enhanced customer experience
  - Expanded station amenities (e.g., transit shelters, real time schedule information, bike lockers)
  - Distinctive station design



THE KELOWNA OCP

The draft OCP provides strong policy direction to create a more sustainable city:

- Compact urban form: focus growth in compact, connected and mixed use urban centres.
  - Maximize use of existing infrastructure.
  - Support greater use of walking, cycling and transit.
- Environmental Protection: natural areas, air quality, greenhouse gas emissions.
- 'Complete Communities': Support a mix of land uses at densities appropriate to their context.
- Increase mobility choices: New active transportation and transit infrastructure, focusing on urban centres.

THE KELOWNA OCP

Transit Supportive Policy Directions

- TDM measures to reduce SOV trips, particularly in urban centres.
- Context-sensitive roadway planning to support sustainability goals.
- Parking Management Strategies (supply and pricing) to reduce auto use and increase use of walking, cycling and public transit.
- Frequent and convenient transit service to connect urban centres and employment areas.

THE KELOWNA OCP

Public Transit Strategy

- Develop a Frequent Transit Network of Rapidbus and regular bus routes.
- Frequent Transit Network:
  - Excellent frequency: Every 10 minutes over an extended operating period.
  - Fast: Direct routing.
  - Reliable: Transit priority measures (reserved lanes, signal priority);
  - Connected: Seamless transit transfers, well integrated with development.
  - Customer Experience: Transit vehicles, stations and amenities are designed to create positive public image.
- The Frequent Transit Network would be supported by a lower frequency Base Transit Network to provide good community coverage.

TRANSIT EXCHANGES & TRANSIT ORIENTED DEVELOPMENT

City of Kelowna

Presentation to Kelowna City Council
2010 April 20

TOD OBJECTIVES

Support well designed housing and mixed-use developments:

1. Within walking distance of transit stations/exchanges.
2. Produce fewer vehicle trip and vehicle miles traveled.
3. Reduce Greenhouse gases from housing & transportation.
4. Increase current and future transit ridership.
5. Incorporate parking management strategies, including car-sharing.
6. Minimize the environmental footprint.
7. Provide affordable accommodation and respond to changing demographics.
8. Enjoy local support due to a prior collaborative and inclusive planning process.

TRANSIT STATIONS & EXCHANGES

Key Role and Functions:

- An important point of contact between the transit system and the customer.
- Have huge impact on public perceptions of transit.
- Need to integrate the perspective of the transit customer into the project design:
  - Create a sense of place – a destination.
  - Customer amenities designed into the project – not after thoughts.
  - Easily accessed by multiple modes.
- Well designed transit exchanges optimize the development/private investment potential from infrastructure investment.

TRANSIT EXCHANGE DESIGN

Goal: **Create an environment where transit riders feel welcome and valued.**

- Pedestrian-friendly internal movement plan.
- Transit priority roadways
- Stations that are: clean, attractive, safe and accessible & enable good interaction with adjacent land uses.
- Commercial/retail space that generates pedestrian activity and enhances personal security.
- Pedestrian oriented lighting.

TRANSIT EXCHANGE DESIGN

Key Design Elements (cont'd)

- Public washrooms and telephones
- Secure bicycle storage
- Public art/Kiosks
- Way finding signage
- Real time schedule information
- Fare purchase equipment
- Green infrastructure - storm water management

PARK AND RIDE

The Role of Park and Ride

- Some parking desirable, but needs careful management
- To much parking:
  - Impacts local transit services;
  - Consumes useful land
  - Expensive to construct and maintain
- Consider shared parking with compatible land uses
- Locate and size appropriately
- Consider pay for parking to cover operating and maintenance costs.

Transit-oriented Design

Auto-oriented Design

TRANSIT-ORIENTED DEVELOPMENT

Key Steps to Make it Happen

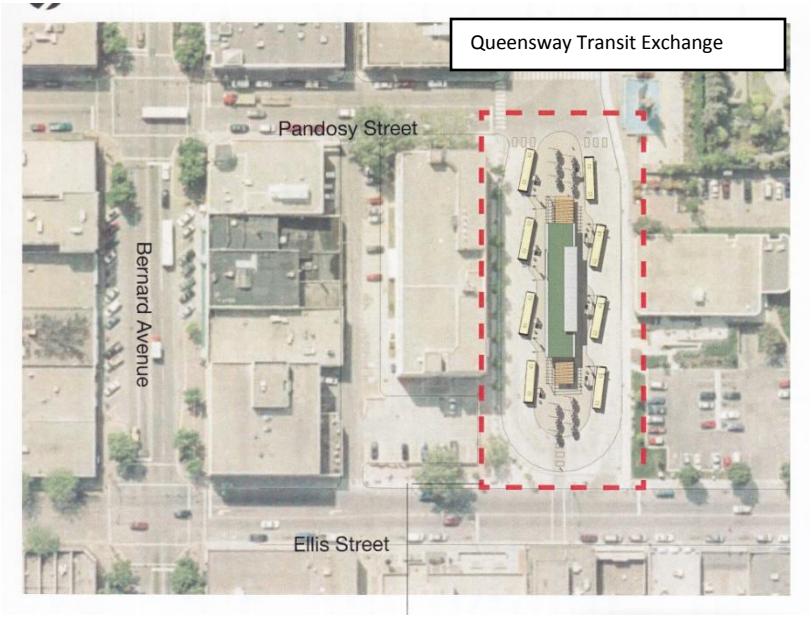
- Pedestrian friendly streetscapes & grid road network,
- Resolve tensions between transit exchange and land use
  - Public plazas/parks
  - Building setbacks
  - Building design and orientation
- Interdisciplinary Planning & Collaboration
- Phasing: interim developments support long term vision.
- Civic leadership & Presence
- Development Incentives:
  - Appropriate zoning
  - Infrastructure investment (e.g., transit exchange, streetscaping)
  - Facilitate project approvals
  - Preferred Development Cost Charges

QUEENSWAY TRANSIT EXCHANGE

- Function: Central access point to Downtown Kelowna & key transfer location.
- Enables seamless transfers, efficient transit operations.

However,

- Poor interface with adjacent land use – sterile environment.
- Transit route loading overspills into adjacent 'City Hall Block'



QUEENSWAY TRANSIT EXCHANGE

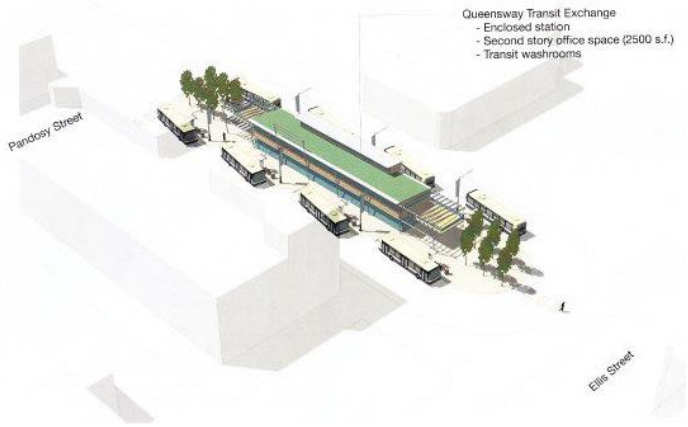
Goal: Create an attractive place for transit riders as well as downtown workers and visitors.

Strategy:

- Develop two storey mixed-use transit terminal building and enhanced pedestrian connections/streetscapes (Central Okanagan Smart Transit Plan)
- Rationalize transit route structure and schedules to eliminate overspill loading in adjacent block.

QUEENSWAY TRANSIT EXCHANGE

Design Components	Cost
❑ Queensway Building & Block Enhancements	$2.0 million
❑ Enhanced Pedestrian Connections/ Streetscaping ➢ Ellis St. from Abbot St to Bernard ➢ Pandosy St, from Queensway to Bernard Av ➢ Water St., from Queensway to Bernard Av ➢ Queensway, from Pandosy St to Waterfront	$3.5 million
❑ Design/construction management	$0.7 million
❑ Mobilization & contingencies	$0.2 million
TOTAL	**$6.4 million**



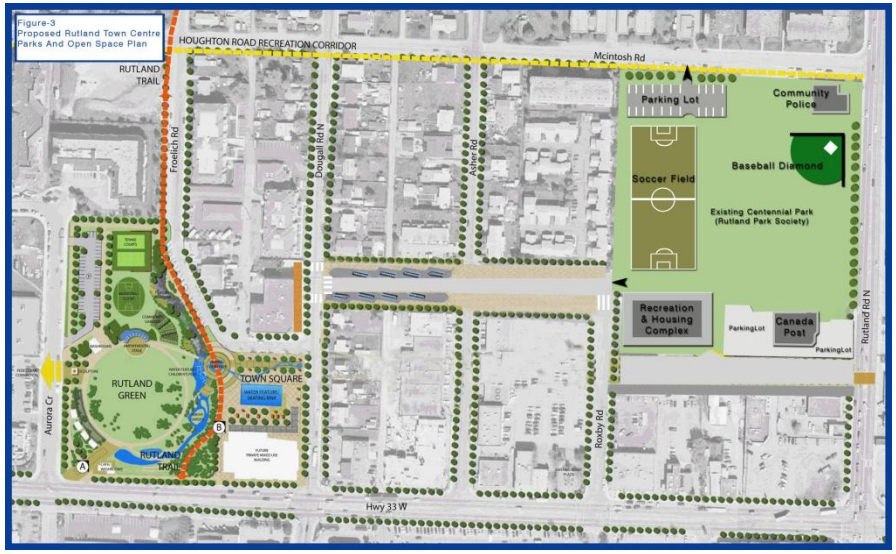
RUTLAND TOWN CENTRE

- A key urban centre in the OCP.
- Process underway to develop a TOD strategy and implementation plan.

RUTLAND TOWN CENTRE

Current initiatives:

- Design of transit exchange plus related streetscape & urban design plans.
- Parks/open space planning & design.
- Retail/commercial strategy
- Leverage city-owned parking lot for development.



RUTLAND TRANSIT EXCHANGE

Design Components	Cost
❑ On-street Transit Exchange) (approved Federal Gas Tax Funding)	$1.4 million
❑ Pedestrianization Initiatives/ Streetscaping ❑ Dougall Rd ❑ Shepherd Rd	$4.7 million
❑ Civic or Community TOD	$2.0 million
❑ Design/construction management	$0.4 million
❑ Mobilization & contingencies	$0.2 million
Total	**$8.7 million**

FINANCING TOD

Program Options:

1. Invest in capital improvements adjacent to transit stations and TOD's (e.g., transit exchanges, pedestrian improvements, streetscaping)
2. Transportation Management Strategies (e.g, flexible parking requirements, car sharing, discounted transit passes).
3. Direct financing of TOD and infill (e.g., joint ventures with the development industry).

FINANCING TOD

Program Options (continued):

4. Land Acquisition and Site Assembly (e.g., support land assembly for large scale projects, fast track approvals of development projects that meet TOD goals)
5. Affordability and accessibility investments (e.g., provide funding to support the creation of affordable and/or accessible housing units).

Kelowna Transit Master Plan
Work Outline

Agenda

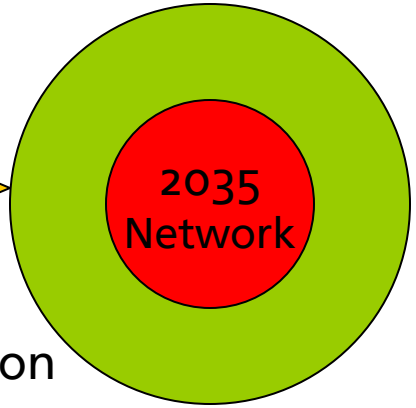
- Process Overview
- Planning Context
- Current Transit Data Review
- Transit and Land Use
- Fleet and Facilities
- Creating a Vision
- Creating a 25 Year Network
- Costing
- Master Plan Current Status

Master Plan Process

Where we are today

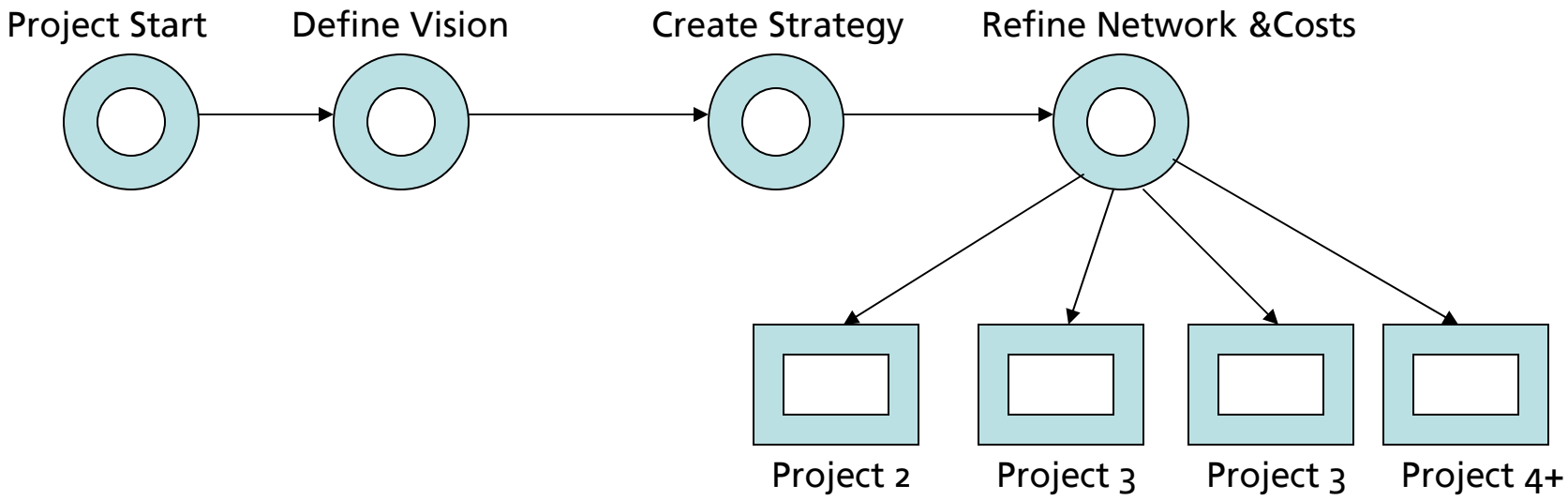
2010 Network

Where we want to be

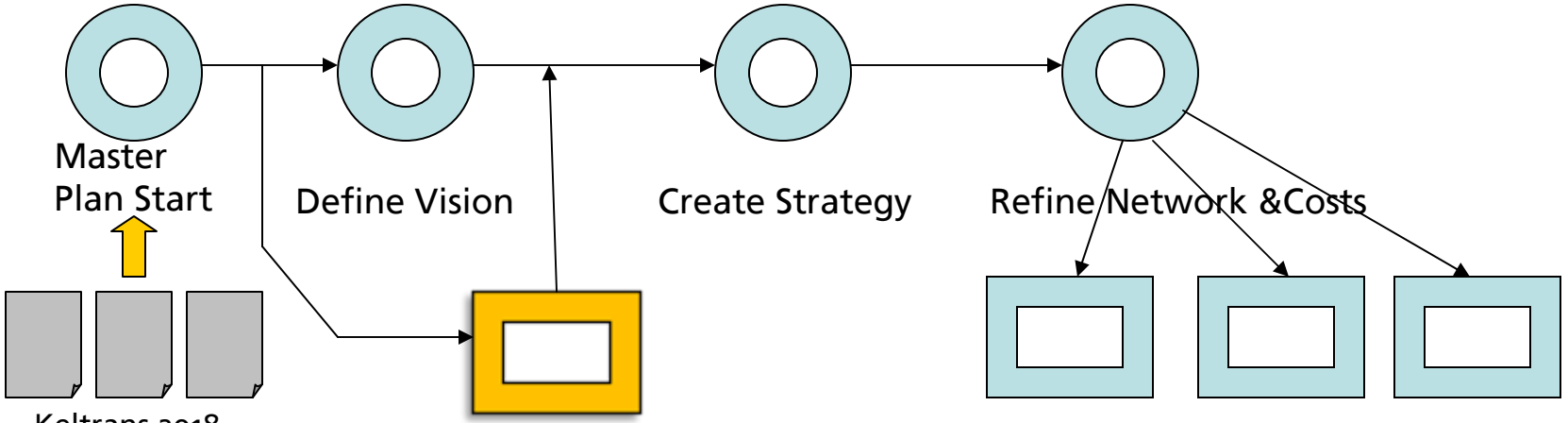


Context	Vision	Network Creation	Costing	Implementation Steps
•Current land use *•Future Land use* *•Travel demand* *•Transit system use*	*•Role of transit* *•Shaping? Or Following?* *•Public desires*	*•What does a 25 year network look like?* *•Layers of service*	*•Facilities* *•On-street* *•Passenger Wayfinding* *•Vehicles* *•Annual cost* *•City Infrastructure* *•Land use investment*	*•Facilities* *•On-street* *•Passenger Wayfinding* *•Vehicles* *•Total and Annual cost* *•priority plan for change*

Typical Major Steps



Major Steps for Kelowna

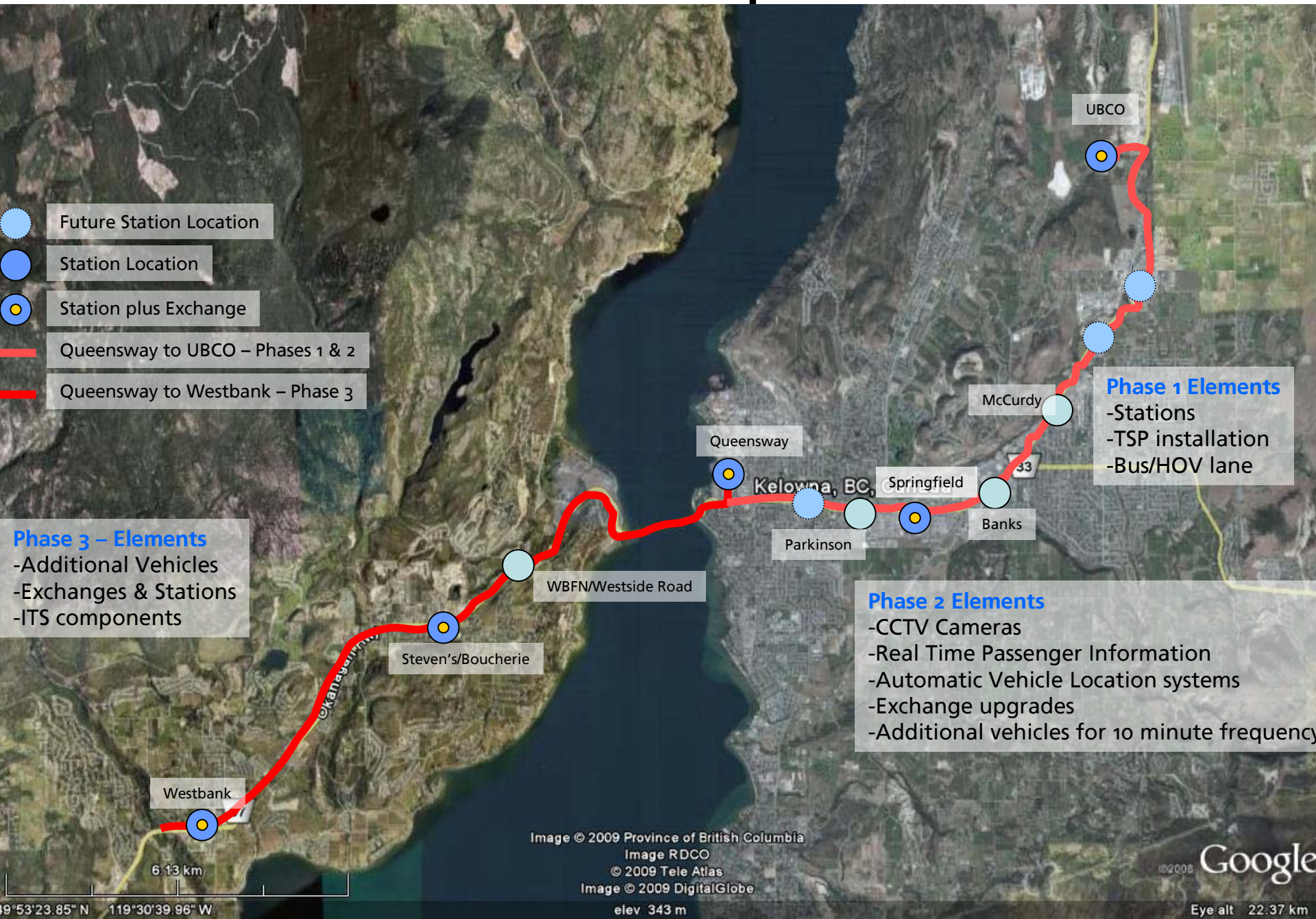


Transit Master Plan

25 Year Plan

Rapid Bus

Kelowna RapidBus



Phase 1

- Transit portion
  - TSP on 13 buses – Final testing underway
  - TSP at 6 intersections - Complete with testing in May
  - Land acquisition at several stations - Complete
  - New bus pullouts at 7 stations (one removed at McCurdy due to land ownership challenges - Complete
  - Station platforms and shelters (September)
  - Duct placement for future IT
  - New route along Highway 97
- Other portions
  - HOV/Bus lanes
  - Pedestrian Bridge at Parkinson

Changes to Phase 1

- Removal of IT Studies
  - TSP on system
  - AVL/GPS
  - CCTV at Stations
- TSP on buses reduced from full fleet to 13
- Station architecture costs reduced

Costing

- Original Cost - $6.5 Million (including buses already purchased)
- Revised Cost - $4.3 Million
- Provincial Transit Plan Funding - $2.3Million

Phase 2 – Completion of UBCO to Downtown

- 10 minute headway
- UBCO, Springfield, and Downtown Exchanges
- IT Studies
- Real Time Passenger Info
- On-Board Annunciation

Phase 2 - Kelowna to UBCO	
Vehicle Costs 10 minute service (5)	$5,000,000
Major Exchanges (3)	$13,500,000
Minor Exchanges (0)	0
TSP (0)	0
TSP Buses (10)	$140,000
Transit Centre (0)	0
Stations (0)	0
ITS Studies	$500,000
Stations - Passenger Info (7)	$280,000
Buses - Annunciation (23)	$460,000
IT software and hardware	$1,000,000
Buses - AVL	$225,000
HST, Project and other costs (30%)	$5,964,000
contingency (10%)	$2,706,900
	$27,069,000

Phase 3 – West Kelowna

Phase 3 - Kelowna to West Kelowna	
Vehicle Costs (10)	$5,000,000
Major Exchanges (1)	$4,500,000
Minor Exchanges (2)	$3,000,000
TSP (10)	$800,000
TSP Buses (15)	$210,000
Transit Centre (0)	0
Stations (6)	$900,000
Stations - Passenger Info	$240,000
Buses - Annunciation	$200,000
HST, Project and other costs (15%)	$2,227,500
contingency (10%)	$1,507,500
Buses - AVL	$225,000
	$18,585,000

- 10 minute headway
- Westbank Exchange
- Minor Exchanges at Westside and Boucherie
- 3 pairs of Stations
- Passenger info & annunciation
- TSP

Transit Master Plan

25 Year Plan

The Context

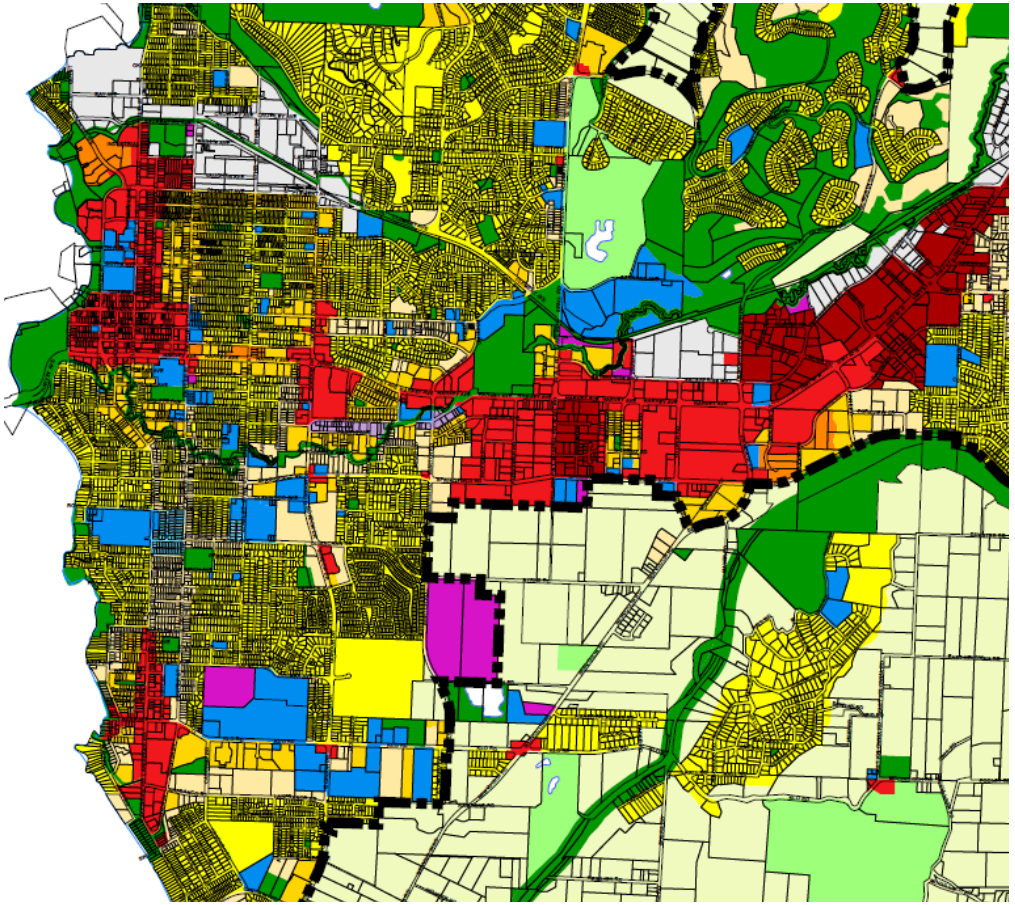
The Context

How did we get here and where are we going?

- Land use for the future
- Current and future transportation movements
- How does the system operate today?
- Other Transportation Plans
- Where do people live today?
- Where do they work?
- How does this change for the future?

Land Use - Kelowna

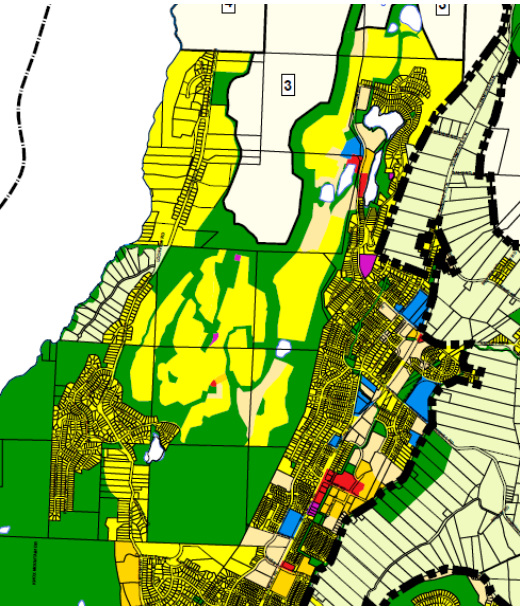
- The OCP is in the process of being updated
- The north downtown and south Mission areas show significant growth
- Rutland has future growth potential



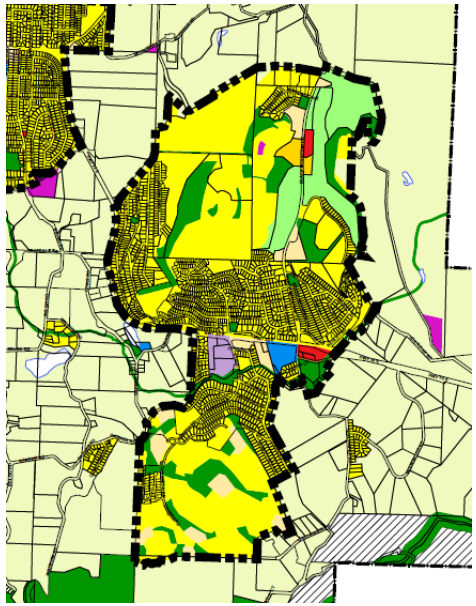
Kelowna – Cont.

- There are significant opportunities for development on existing zoned land before densification may be an option in Rutland.

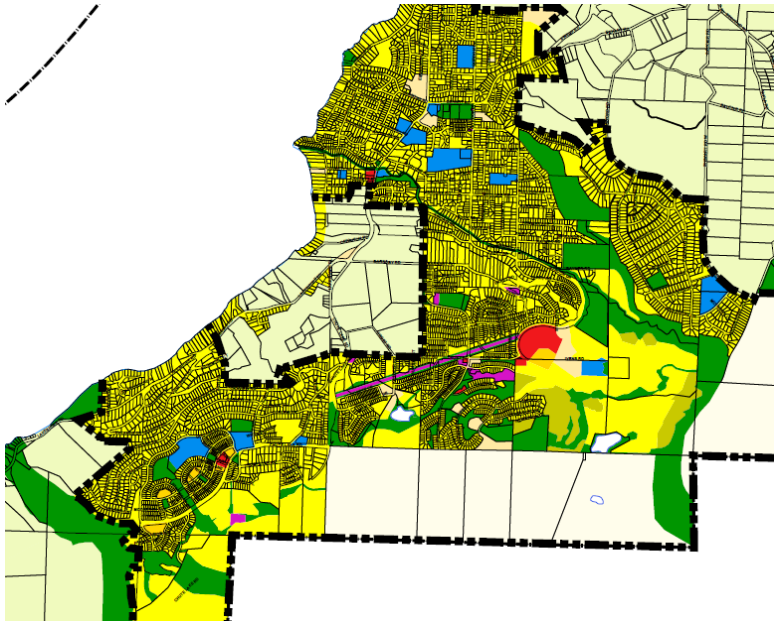
Glenmore



Black Mtn



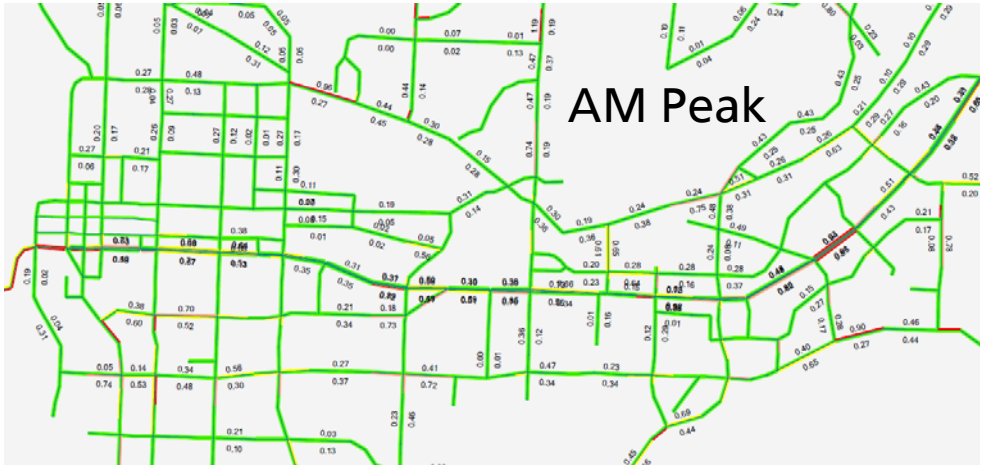
Mission

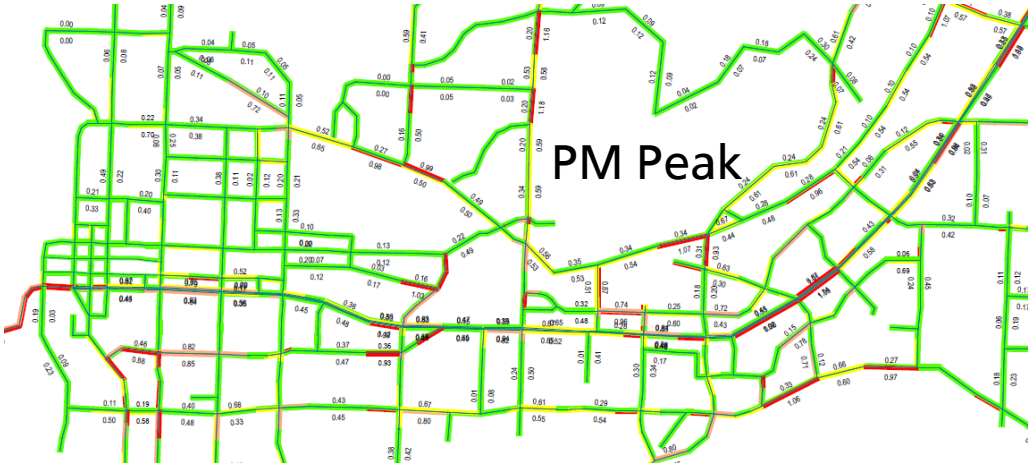


Road Capacity - Kelowna

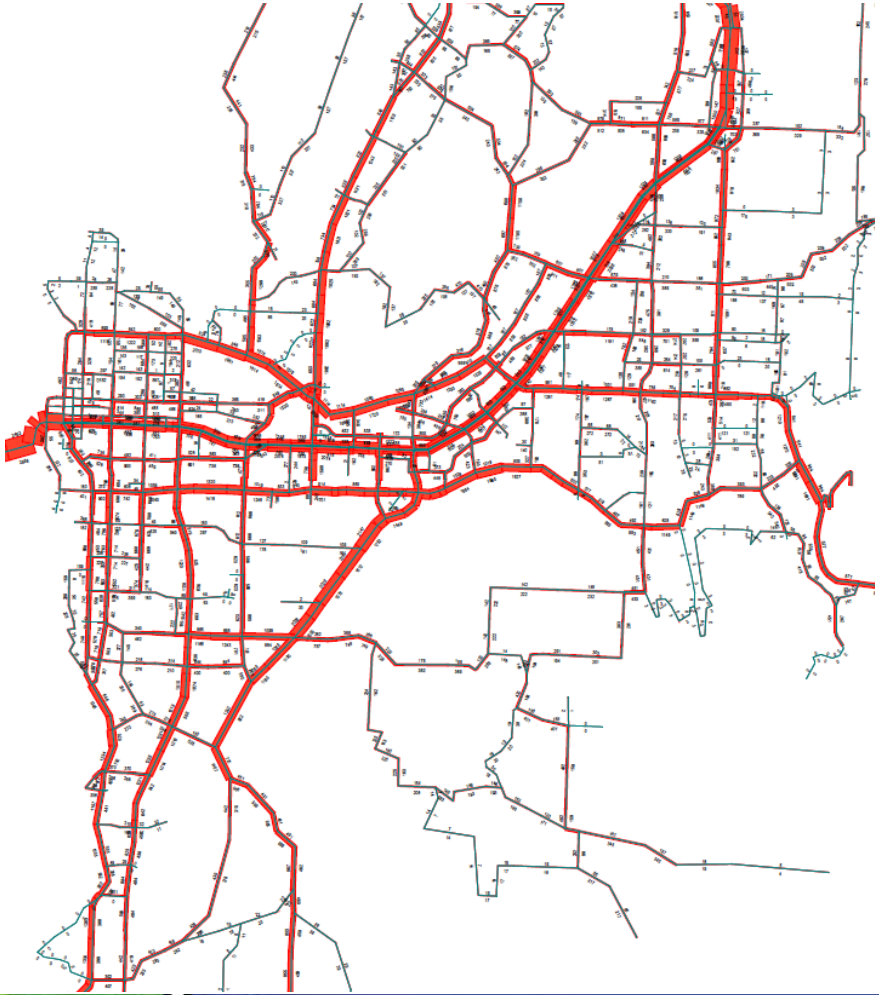
- The transportation network has significant capacity in the AM Peak and number of challenging intersections in the PM

- The lack of congestion makes it more challenging for transit to offer an alternative





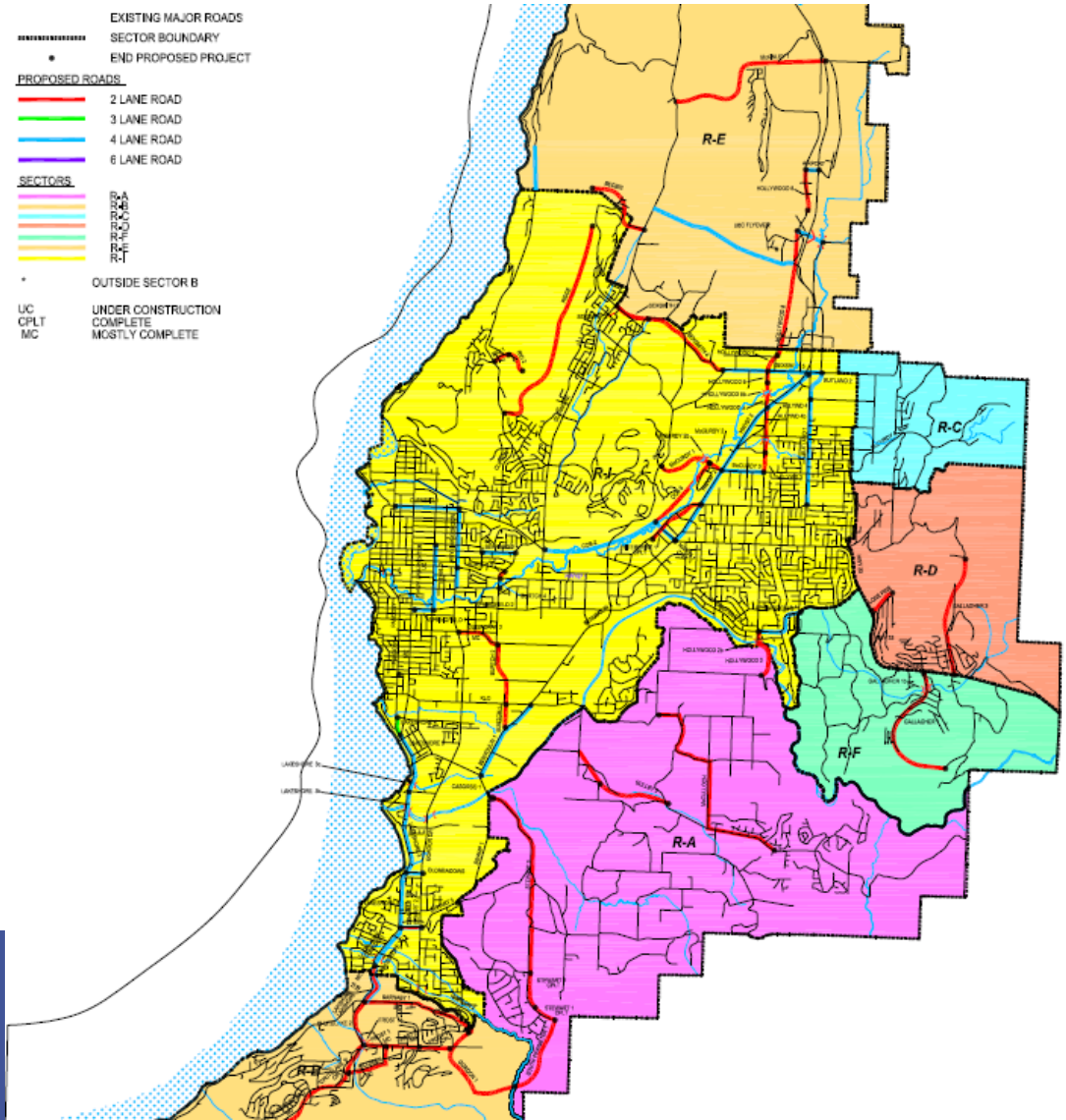
Forecast Road Volumes



- This model provides a sense of what the network flows are that make the most sense and what volumes are expected.
- Transit that mimics these movements has a potential to capture mode share.

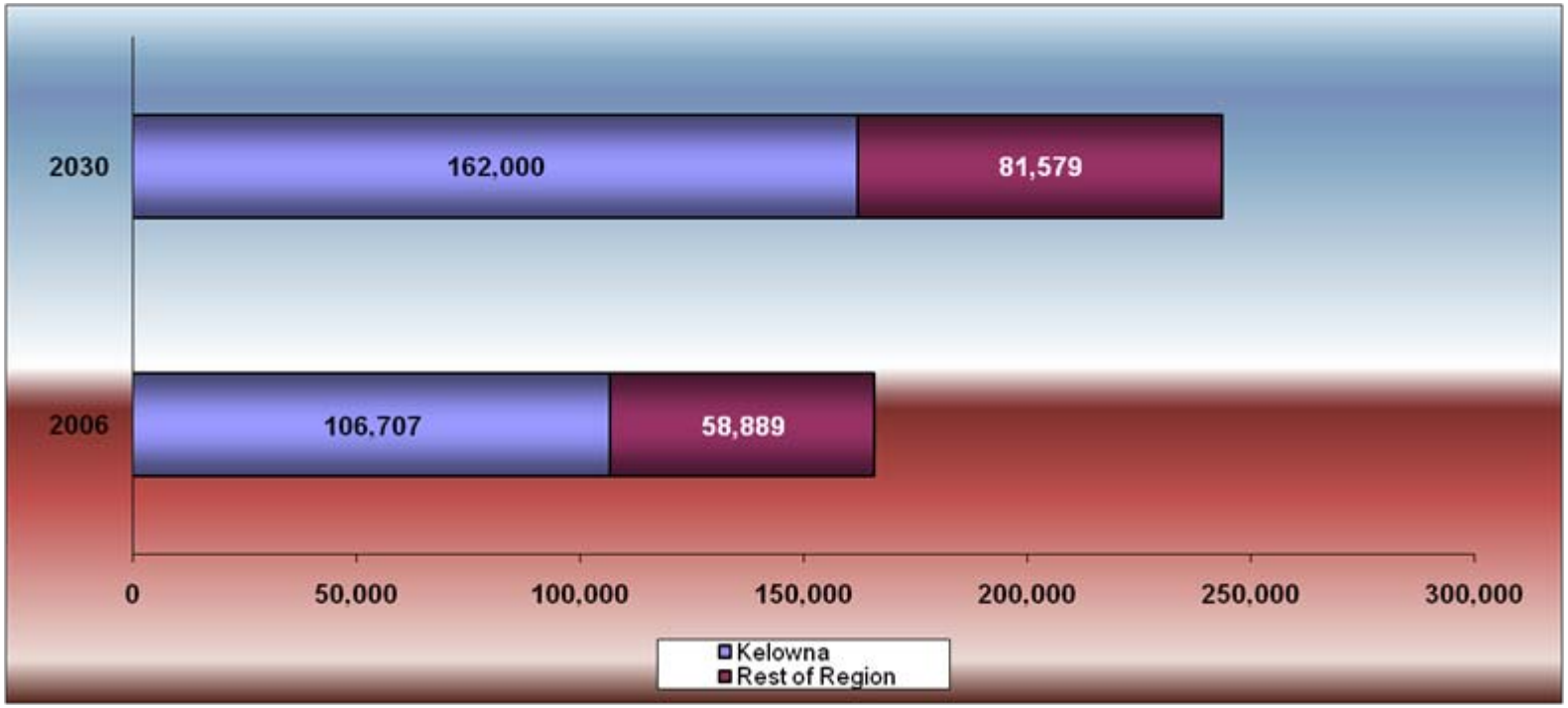
Transportation network

- New linkages and upgraded roads can create new opportunities for routes



Kelowna Masterplan

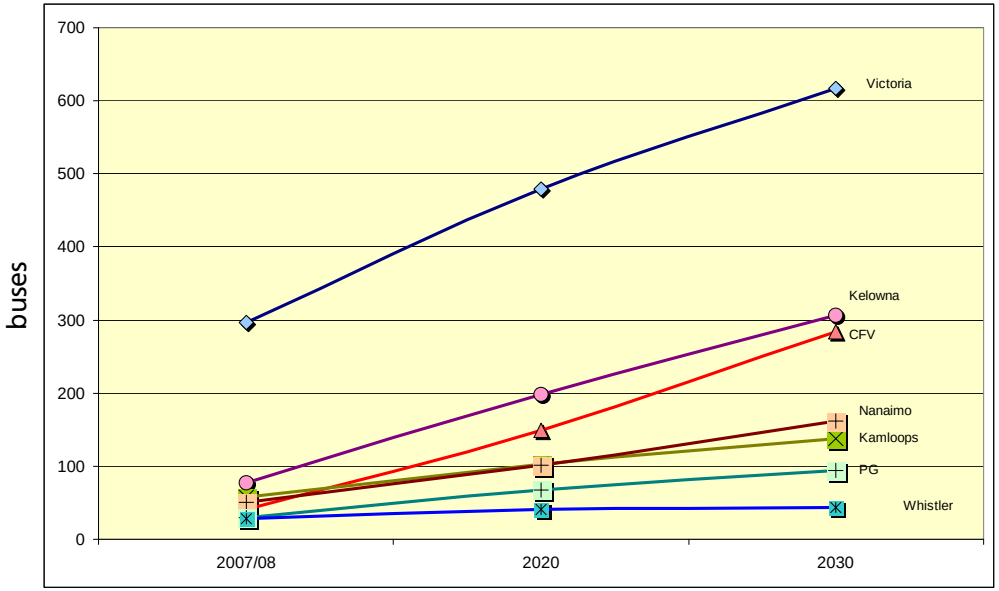
Population Growth



67% of the region will live in the City of Kelowna

Ridership Potential

- Kelowna is expected to absorb a significant portion of the PTP increases



Kelowna 2020	proposed	moderate crowding	heavy crowding
hours per bus	**3,000**	**3,000**	**3,000**
passengers per hour	26	30	40
passenger per bus per year	55,547	63,930	85,240
Total Buses	**198**	**173**	**130**
total passengers	10,998,384	11,059,890	11,081,200
total hours	594,000	519,000	390,000

Kelowna 2030	proposed	moderate crowding	heavy crowding
hours per bus	**3,000**	**3,000**	**3,000**
passengers per hour	26	30	40
passenger per bus per year	58,649	67,500	90,000
Total Buses	**307**	**267**	**200**
total passengers	18,005,332	18,000,000	18,000,000
total hours	921,000	800,000	600,000

Note the current Hours per Bus is 2100

Transit Master Plan

25 Year Plan

CURRENT TRANSIT DATA REVIEW

Gathering Data and Analysis

- Activate Automatic Passenger Counters (APC's) on buses
- Review GFI Farebox data
- Set up work for GIS mapping and APC counting (bus stop mapping, network interpretation so that on's and off's can be read by location, route, and time) is complete
- Clean data has been collected for a minimum 3 months
- Data analysis will take several months

Data Review

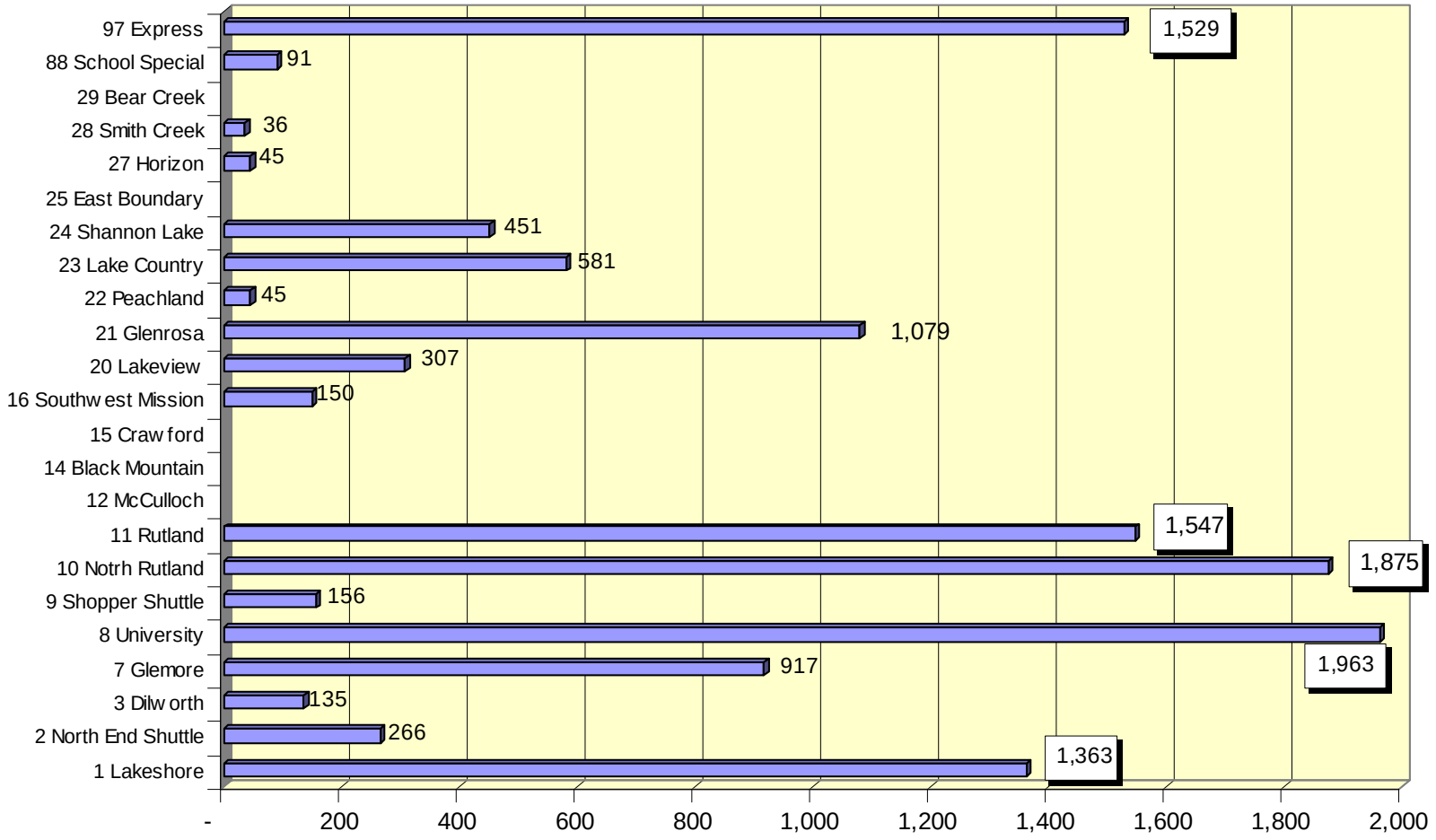
- What are the top performing routes?
- Where are the current clusters of activity around stops? Where are people using the system at high rates?
- What are the passenger volumes by time of day and direction - by route and by corridor?
- What are the current transit speeds?
- How does each route function? How do customers use the system?
- What areas are over served?

Data Collection

- Automatic Passenger Counters (APC's) can provide detailed stop by stop information on ridership
- Out of 673 stops, the top 25 account for 50% of the activity
- Where do we concentrate upgrades to amenities?
- What stops should be deleted?
- Running times and maximum passenger loads can also be monitored

r Day	Dir	Q-Stop No.	Q-Stop Name	Activity - Avg. Per	Based on Total	% to Total Activity	Cumulative %
1	1	103072	NB 1890 BLOCK COOPER	769	1	3.9%	3.9%
1	4	102854	EB QUEENSWAY FS PANDOSY - EC	758	2	3.9%	7.8%
1	0	103077	NB 1890 BLOCK COOPER	719	3	3.7%	11.5%
1	4	103453	SB PENTICTON FS UNIVERSIT	715	4	3.6%	15.1%
1	6	102858	EB QUEENSWAY FS PANDOSY - EC	697	5	3.6%	18.7%
1	4	102859	EB QUEENSWAY FS PANDOSY - EC	534	6	2.7%	21.4%
1	8	102853	EB QUEENSWAY NS PANDOSY - EC	522	7	2.7%	24.1%
1	2	102860	EB QUEENSWAY FS PANDOSY	457	8	2.3%	26.4%
1	2	102862	EB QUEENSWAY FS PANDOSY	450	9	2.3%	28.7%
1	7	103079	NB 1910 BLOCK COOPER	420	10	2.1%	30.8%
1	7	103028	WB 1050 BLOCK KLO	387	11	2.0%	32.8%
1	0	103030	WB 1030 BLOCK KLO	369	12	1.9%	34.7%
1	7	103455	SB PENTICTON FS UNIVERSIT	361	13	1.8%	36.5%
1	2	103075	NB 1880 BLOCK COOPER	322	14	1.6%	38.2%
1	3	103069	NB 1870 BLOCK COOPER	290	15	1.5%	39.6%
1	2	103070	NB 1870 BLOCK COOPER	287	16	1.5%	41.1%
1	6	103605	EB DOBBIN FS ELLIOTT - EOL	281	17	1.4%	42.5%
1	3	103065	NB 1870 BLOCK COOPER	273	18	1.4%	43.9%
1	8	103016	NB 3180 BLOCK LAKESHORE	210	19	1.1%	45.0%
1	2	103296	EB HWY 33 W FS HOLLYWOOD	189	20	1.0%	46.0%
1	8	103200	SB INDUSTRIAL FS STEVENS - EOL	180	21	0.9%	46.9%
1	3	103365	SB RUTLAND FS MCINTOSH	174	22	0.9%	47.8%
1	5	103601	WB MAIN FS BROWN	162	23	0.8%	48.6%
1	4	103641	SB CANARY FS BLUE JAY	156	24	0.8%	49.4%
1	2	103371	NB RUTLAND FS HWY 33 W	154	25	0.8%	50.2%

Daily Passenger Boardings



Transit Master Plan

25 Year Plan

TRANSIT AND LAND USE – THE CONNECTION

Land Use and Transportation – Is there a link?

- ‘Streetcar Suburbs’ were the result of land developers creating streetcar lines in order to bring people to their developments.

Rosedale in Toronto

Yonge & Bloor in Toronto

- Rapid Transit has the ability to influence land use but only if development is promoted.

Kitsilano in Vancouver

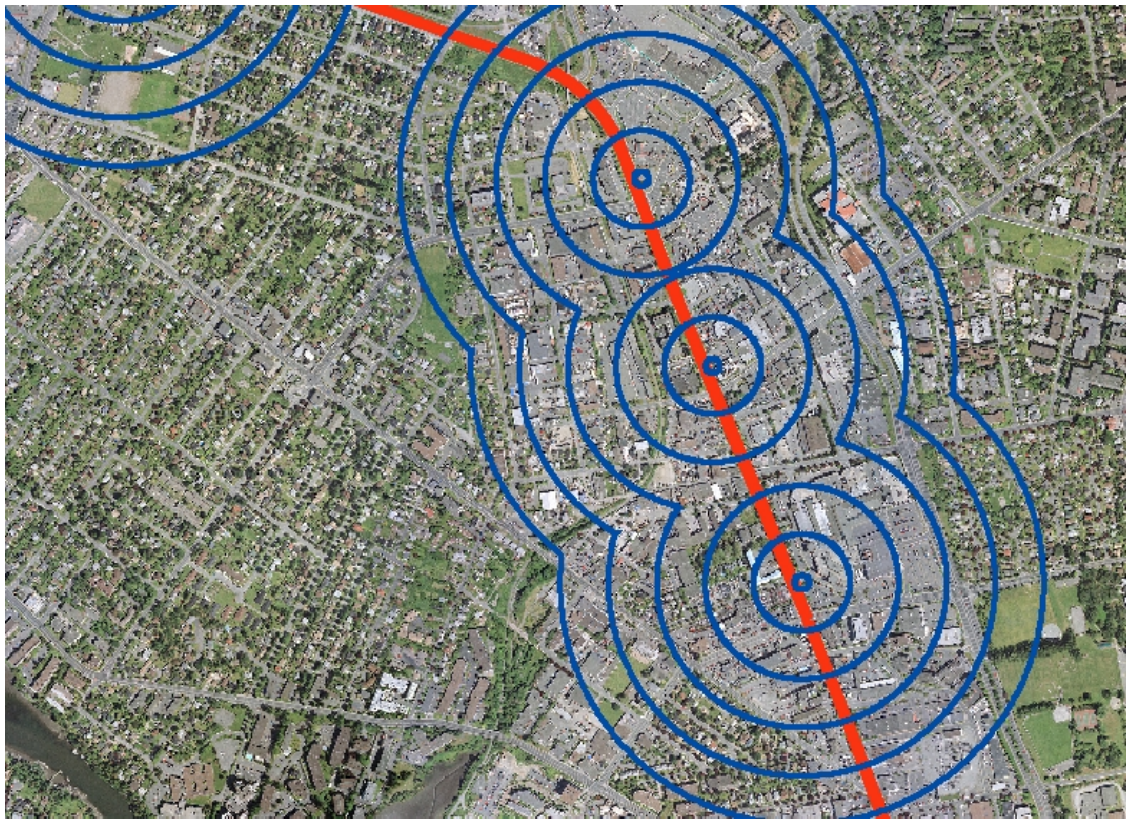
Transit Oriented Communities

- *Destination* Accessibility – can the system deliver customers to key centres around town
- *Distance* to Transit – can a majority of people access transit within a 5-10 minute walk (400-800 metres)
- *Density* in proximity to higher order transit lines
- *Diversity* of housing types and uses within walking distance of each other
- *Design* that is lively, vibrant, bike and pedestrian friendly, well connected and minimizes the impact of motor traffic on other modes

Efficient transit needs high-density corridors, not just high-density developments

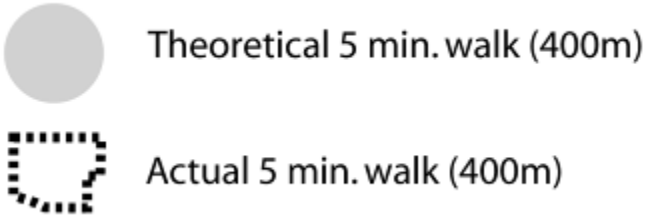
Stops/stations are determined by:

- Density: *how many residents, jobs, and activities are within **5** minute walking distance (400m) of a stop for buses and **10** minutes (1000m) for rapid transit*
- Pedestrian access: *how convenient are the pedestrian connections to activities within a 400m radius*



The Land Use-Transit Relationship

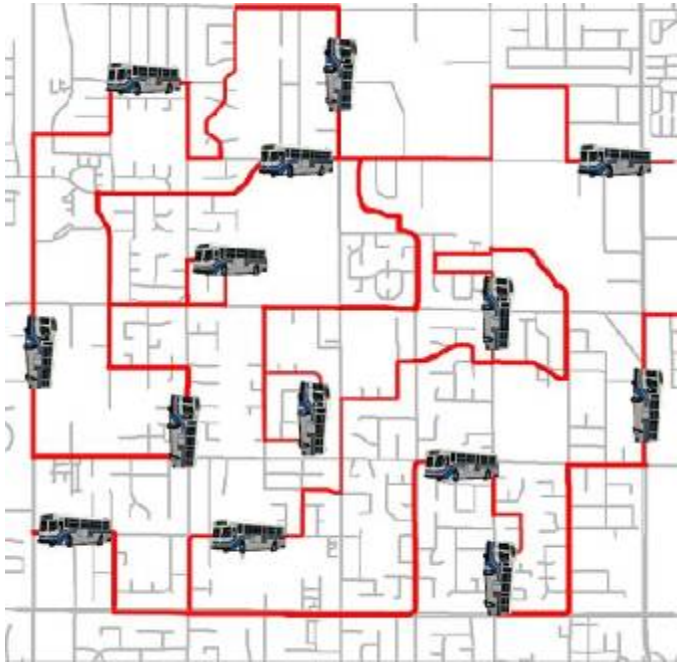
- The ideal pedestrian environment maximizes the street network within a 400m radius



- A disconnected street pattern means that there are areas that are not accessible to pedestrians

Coverage vs. Ridership

Same # of buses



- Ridership model
  - The high-density areas of the community get frequent service, while the low-density areas get no service
- Coverage model
  - Everyone has transit service but at a lower frequency (usually every half hour or hour, with limited evening service)

Transit Master Plan

25 Year Plan

FLEET AND FACILITIES

Fleet and Facilities

What is needed to support the proposed system?

- Exchanges
- Right's-of-way dedication/peak lanes
- Passenger facilities on-street
- Maintenance facilities
- Wayfinding
- Transit Priority

Exchanges and Terminals

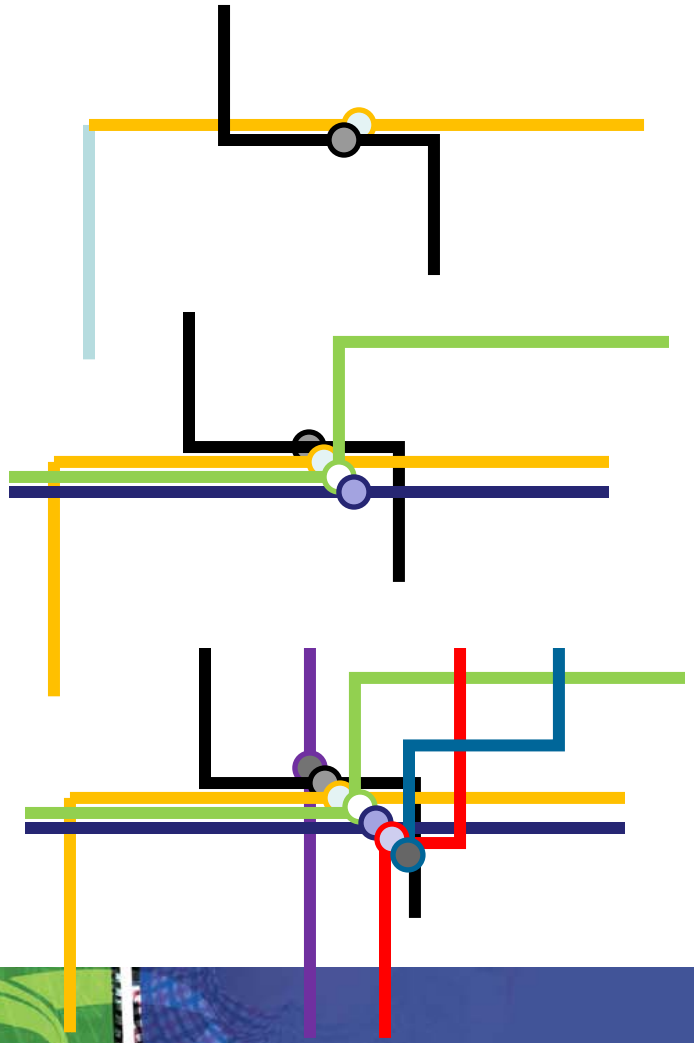
- Terminals have significant bus layover as well as passenger movements
- Terminals are generally at major trip generators
- Exchanges can be on or off-street
- Off street should have high level of passenger amenities (shelter, real time information, landscaping, retail etc) to avoid sterile feeling

Los Angeles, CA

Functions of an Exchange

- Buses/trains/streetcars bring in passengers
- Vehicles proceed to a layover point
- Vehicles picks up passengers
- Passengers have the opportunity to transfer between services

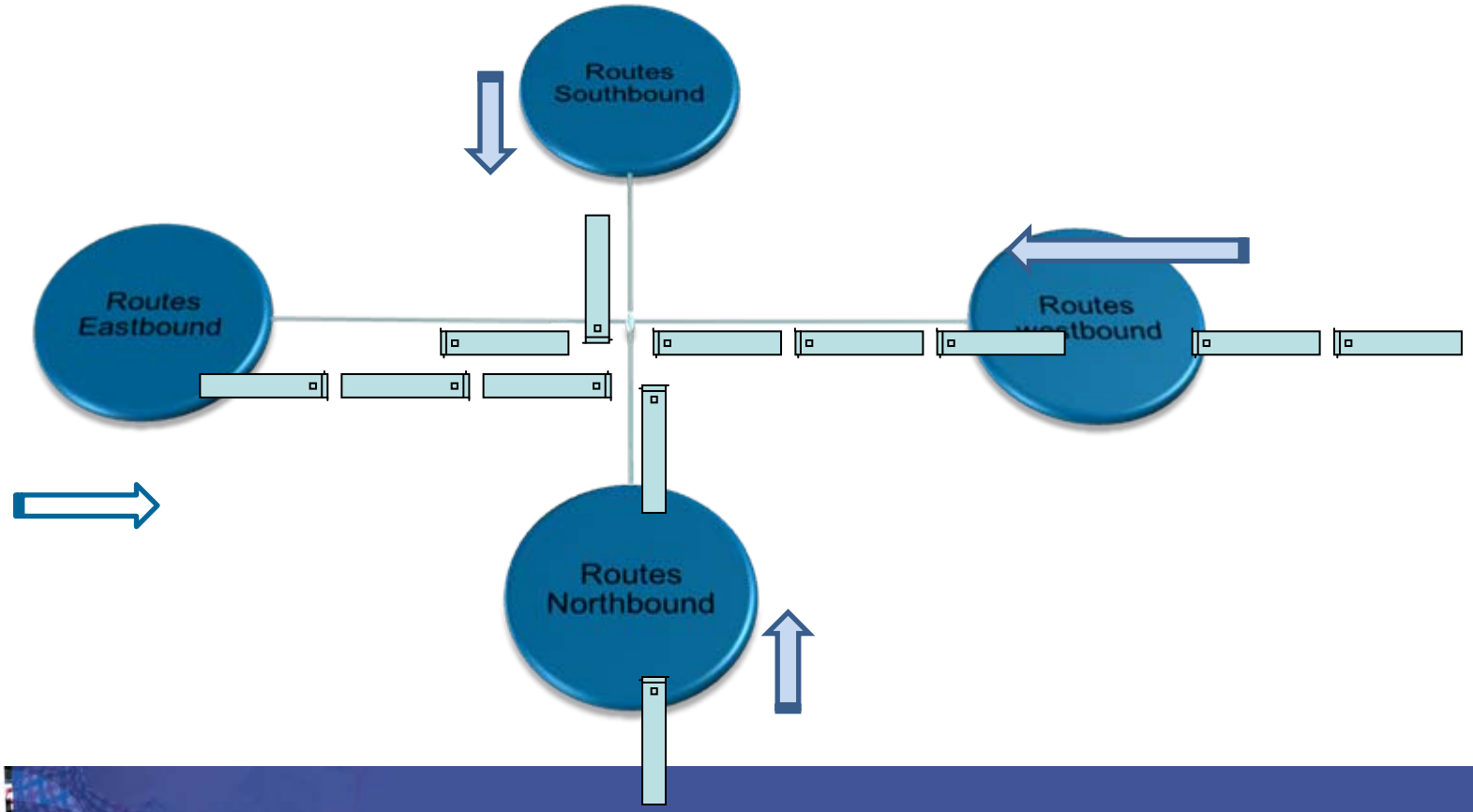
Size of an Exchange



- Small: 2-3 routes
- Medium: 4-6 routes
- Large: 7 or more routes

On-Street

•Multiple routes can use streets for an exchange.
•When the number of routes means that the distance for customers between stops becomes too large, an off street facility is needed.



Off-street

Seattle, Wa

Port Angeles, Wa

Eugene, WA

UVic, Victoria, BC

Transit Master Plan

25 Year Plan

CREATING A VISION

System Vision for 2035

What are the goals of the service in the future?

- Connect Regional and local Town Centres with a higher order service
- Create a hierarchy of services that match the needs of the customers **and land use**
- Develop the All-day, Every-day network (Frequent Bus Network)
- A modified Grid System
- Ensure high quality Customer Wayfinding
- Create a formal link between higher order transit investment and land use

Transit Master Plan

25 Year Plan

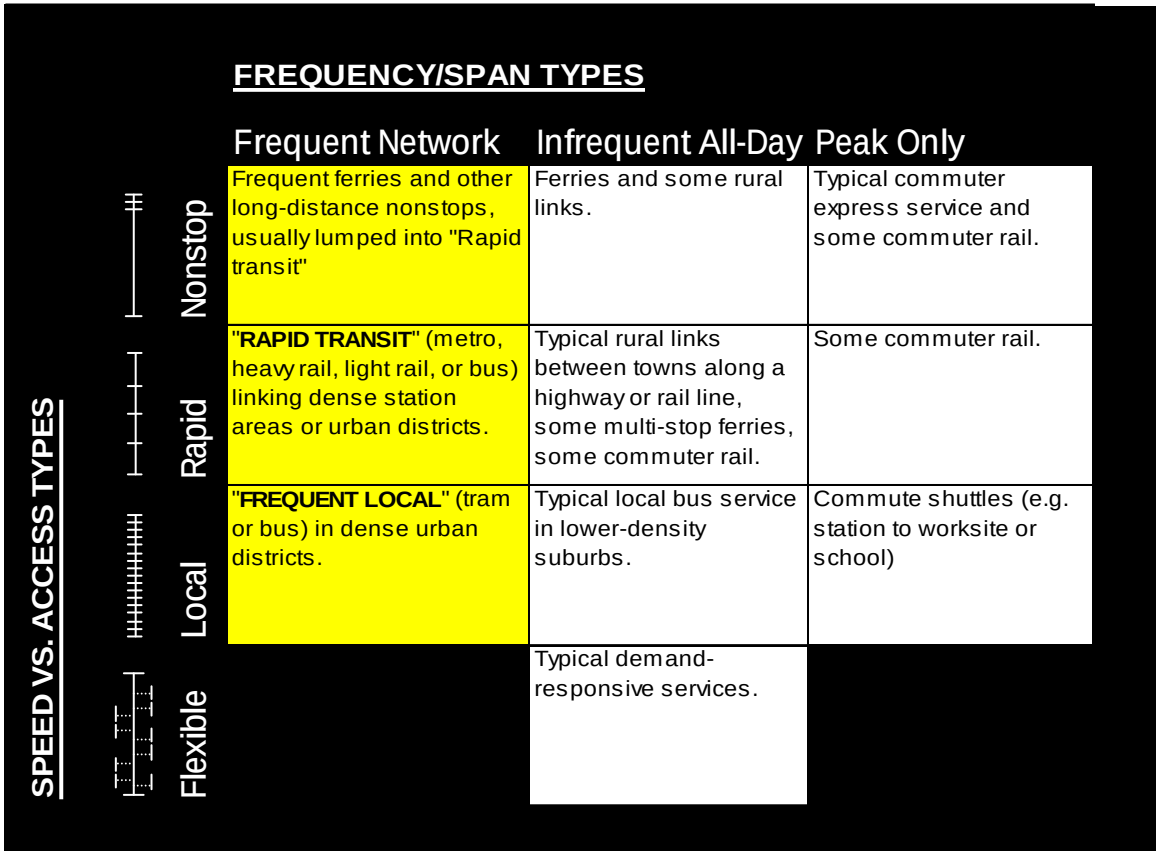
CREATING A 25 YEAR NETWORK

The Future Network

What are the challenges the system faces?

- Growing Upass Ridership
- Growth outside the urban core
- Changing Travel Patterns
- Changing Travel purpose
- Reliance on "no transfers“
- Provincial Transit Plan

Layers of Service



Provided by Jarret Walker, McCormick Rankin & TransLink

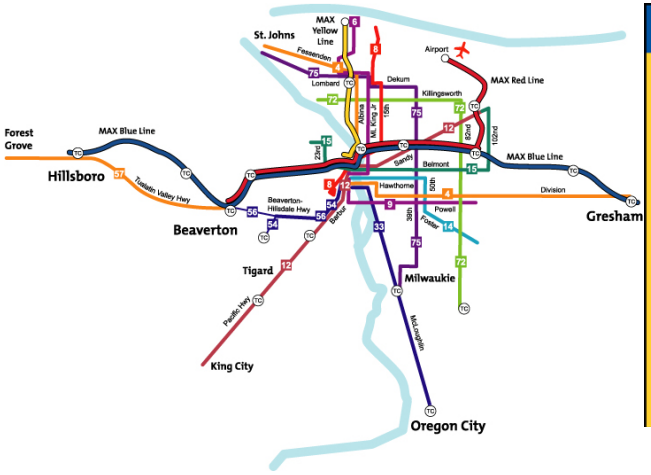
Service has a hierarchy:
- Rapid
- Frequent
- Local & Community
- Special or Dedicated services

Each layer has a different purpose and different service levels.

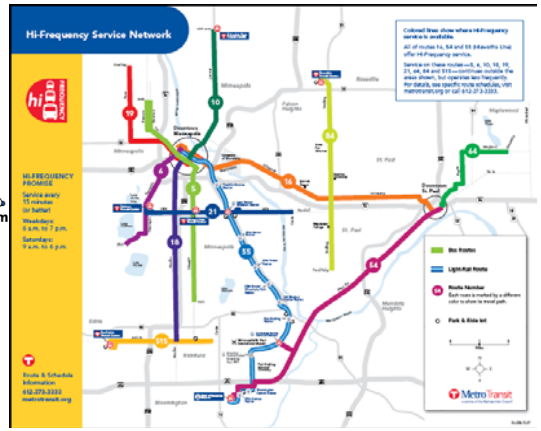
FTN is up to 15 hours per day, 7 days a week, with a MINIMUM headway of 15 minutes.

Create LOS for each type of service.

Frequent Transit Network

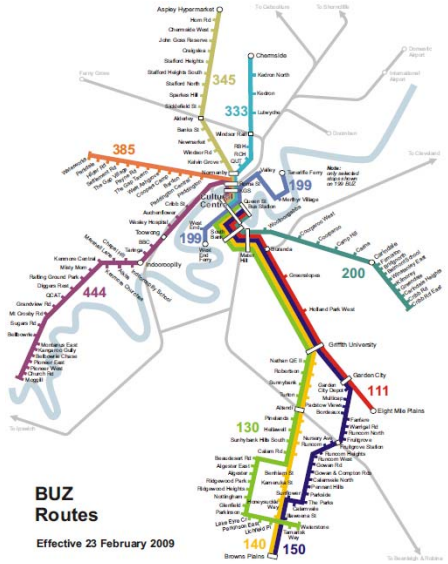


Portland



Minneapolis – St.Paul

Hi-Frequency Service



Brisbane, Australia

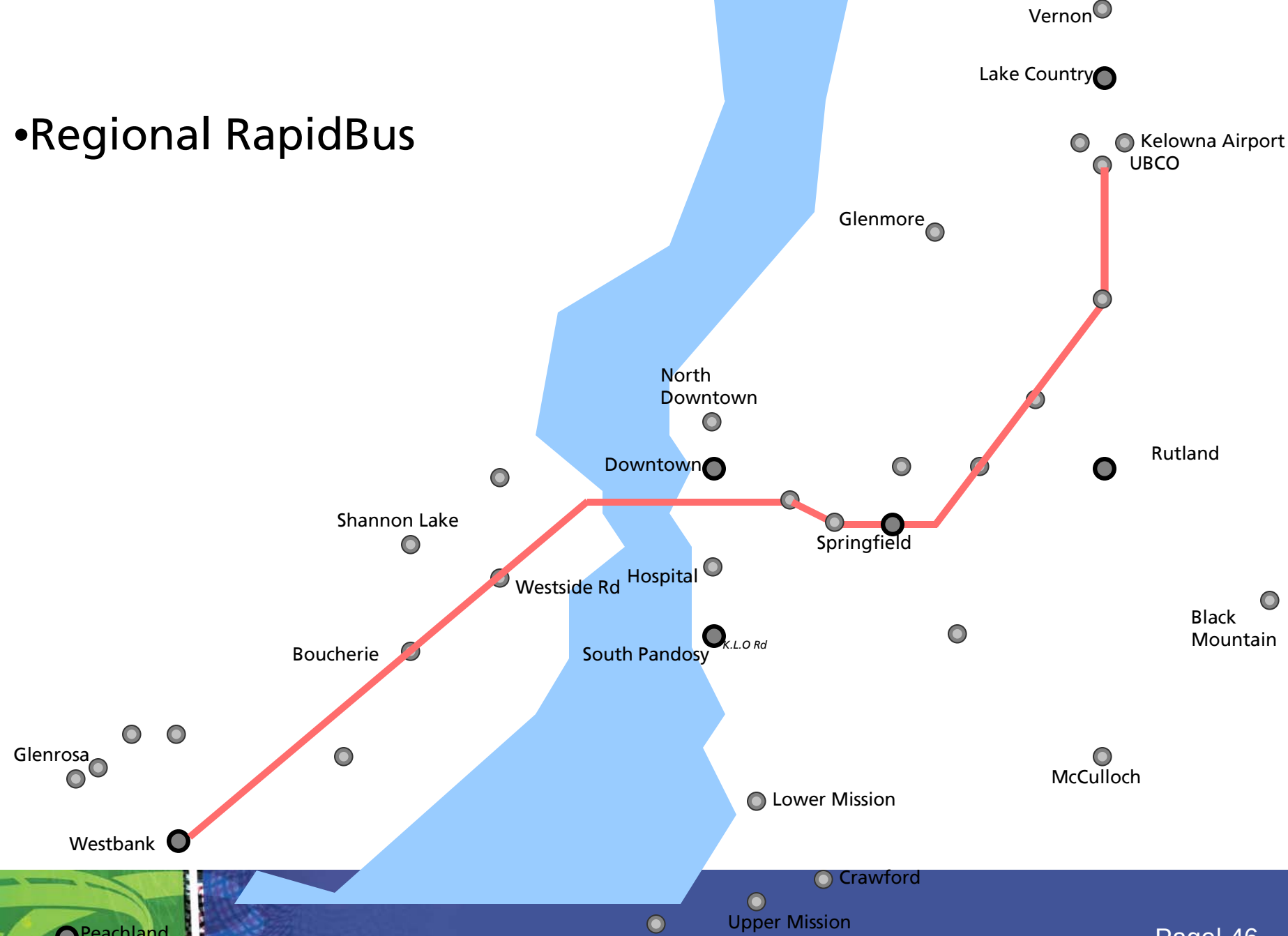
Bus Upgrade Zones

Los Angeles, *12 minute network*

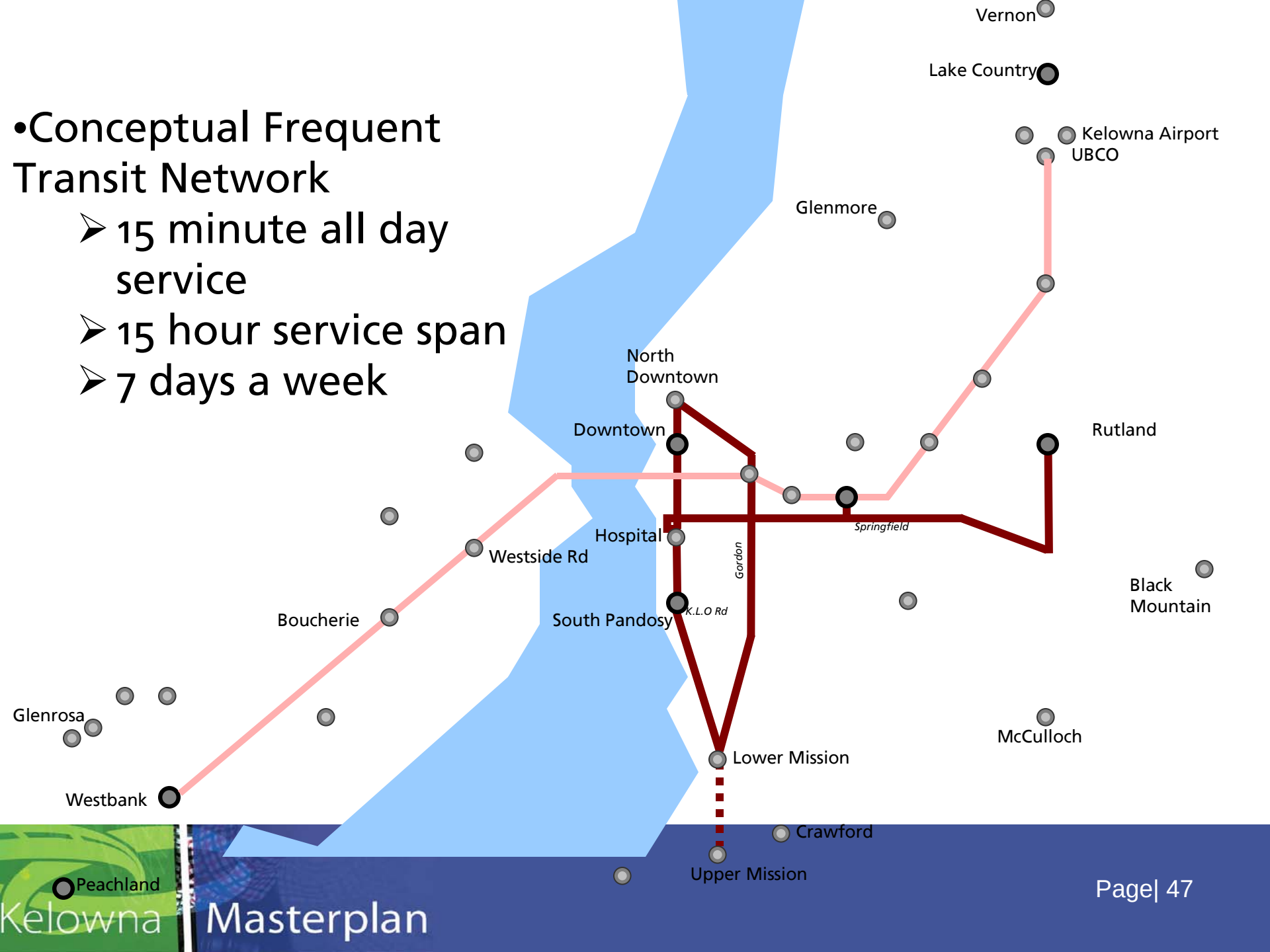
Adelaide, Australia

Go-Zones

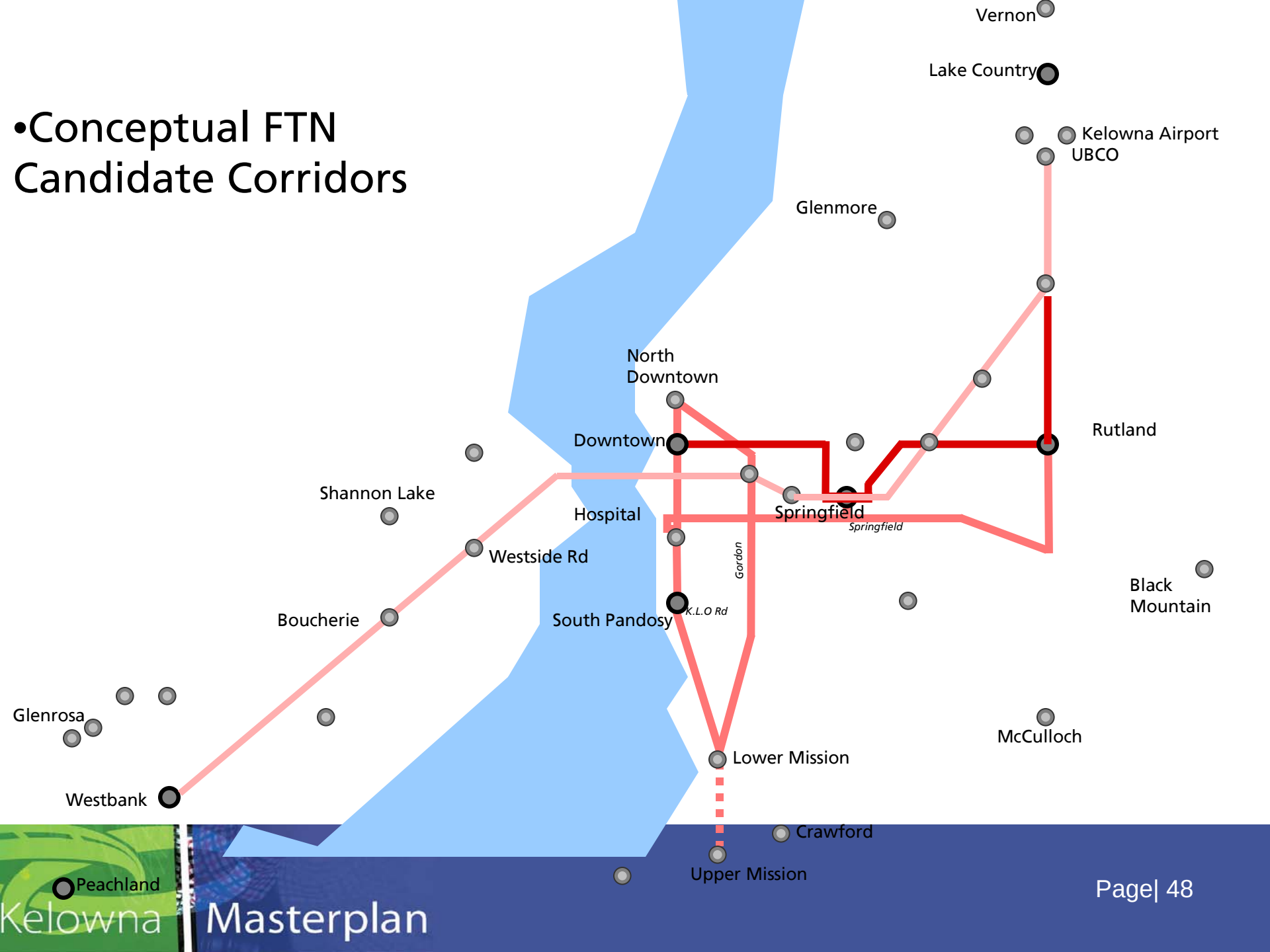
•Regional RapidBus



- Conceptual Frequent Transit Network
  - 15 minute all day service
  - 15 hour service span
  - 7 days a week

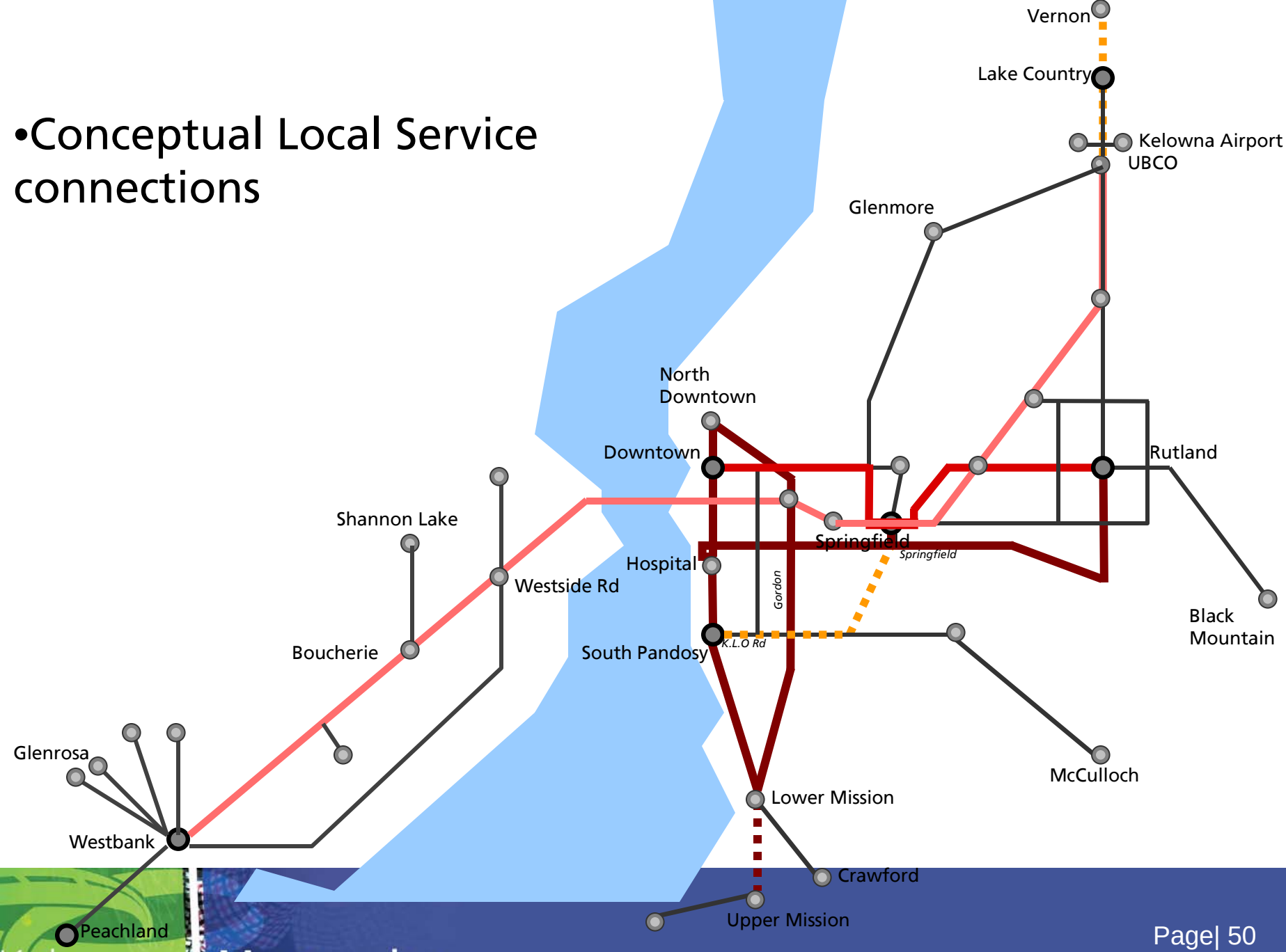


•Conceptual FTN Candidate Corridors



•Conceptual Limited Stop Service

•Conceptual Local Service connections



25 YEAR NETWORK COSTING & IMPLEMENTATION

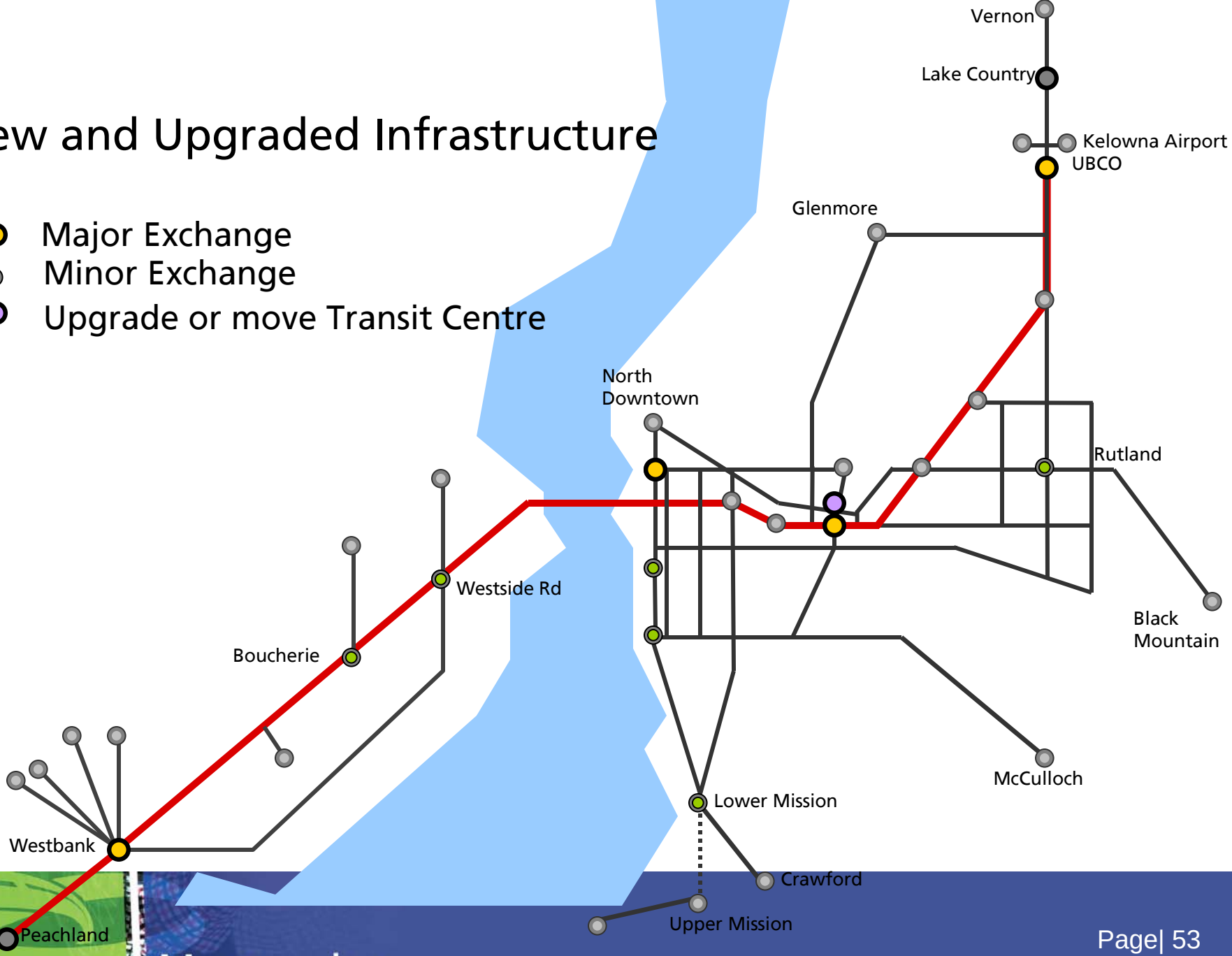
25 Year Plan and Costing

How does the Vision translate to actual routes?

- Routes
- Headways
- Vehicles required
- Supporting Infrastructure (new depots, exchanges, terminals, etc)
- Order of Magnitude Costing

New and Upgraded Infrastructure

- Major Exchange
- Minor Exchange
- Upgrade or move Transit Centre



High Level Estimate of Annual Costs

- 2008/09 Actual Costs for 88 Buses was $17.8 M or a local net share of $4.7 M
- Capital Costs of $200 - $225 M
- Annual Net Municipal Share of $28-32M

Annual Costs		
Service Hour Costs	$100,000,000	$115,000,000
Vehicle Costs*	$9,000,000	$10,000,000
Major Exchanges (4)+	$900,000	$900,000
Minor Exchanges (6)+	$500,000	$500,000
TSP 100 Intersections#	$800,000	$800,000
TSP Buses*	$400,000	$500,000
Transit Centre+	$1,500,000	$1,500,000
Stations (48)#	$700,000	$700,000
Stations - Passenger Info #	$200,000	$200,000
Station Construction #	$700,000	$700,000
Buses - Annunciation#	$600,000	$700,000
Buses - AVL	$500,000	$500,000
IT software and hardware	$100,000	$100,000
	$115,900,000	$132,100,000
Municipal Share (53.31%)	$61,786,290	$70,422,510
Estimated Revenue (30%)	$34,770,000	$39,630,000
Net Municipal Share	**$27,016,290**	**$30,792,510**

**Does not include HST, Financing Costs or Project Management, cabling, or related costs such as storage of data, annual maintenance etc.

Priority Plan

What are the priorities to start the system changes?

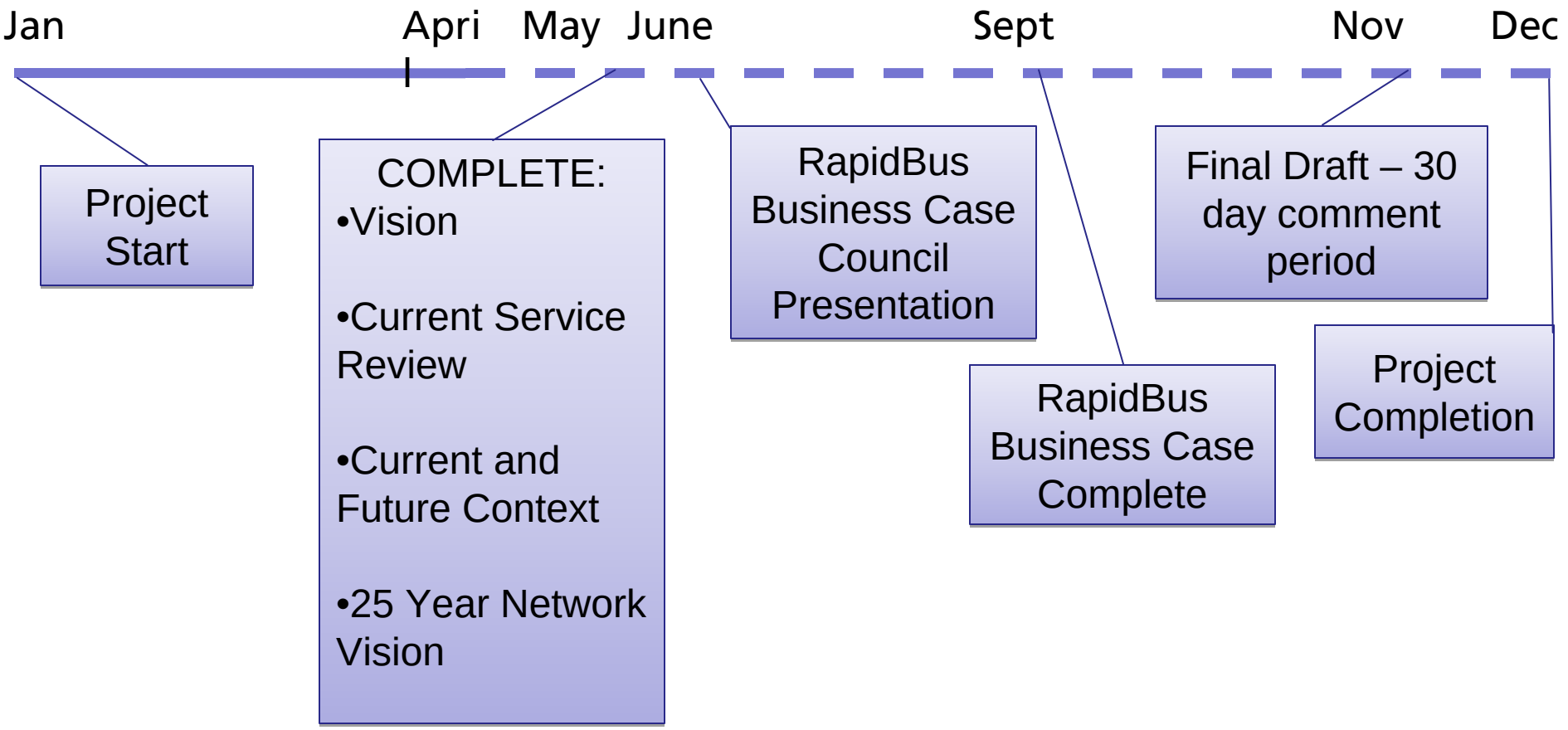
- Create a 5+ year list of improvements and investments that will allow the current system to move towards the future vision

Transit Master Plan

25 Year Plan

PROJECT STATUS

Project Timeline



Public Consultation

- Phase I – Listening. Complete
  - Feedback received to gain understanding of the current system
- Phase IB – Visioning
  - Meetings with Stakeholders end of April
- On-going throughout entire process

Current System Review

- APC data collection complete. Analysis underway.
- Complete route profiles and system-wide analysis
- Basis for transitions in short term

Planning Context

- Historical, current and future demographic information
- Land Use – density, growth nodes & corridors
- OCP coordination
- Travel Patterns
- Road network

Questions?

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Proposed Capital Improvements: Queensway and Rutland Transit Exchanges

Discussion Paper

April 2010

City of Kelowna
Regional Services

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Introduction

The interaction between land use and transportation in urban areas is critically important. Healthy, sustainable cities require a well connected, multimodal transportation system (i.e., roads, transit, walking and cycling infrastructure) to sustain economic activity and provide mobility choices for residents. Frequent, high quality transit service can be provided cost-effectively only where there are nodes or concentrations of development which can be efficiently linked by transit.

The interaction between land use and the transportation system is particularly important around major transit stations. These locations are focal points for terminating transit lines or key exchange points between regional and local transit services. Major transit exchanges are also the key point of contact between the traveler and the transit system, so they have a significant impact on customer service and the overall travel experience. A well designed transit station can help travelers feel relaxed, informed and appreciated. A poorly designed station can cause frustration and deter people from using transit.

Central Okanagan Regional Transit Vision

The *Central Okanagan Smart Transit Service Plan,* which was undertaken between 2004 and 2006, established a vision for a higher order Rapidbus service, connecting major urban centres in the Region and the UBC Okanagan Campus (UBCO). Major transit exchanges were identified within downtown Kelowna (Queensway Avenue), Orchard Park Shopping Centre, Rutland Towne Centre and the UBCO Campus (see Figure 1). These locations will function as important connection points between local transit services and the regional Rapidbus service.

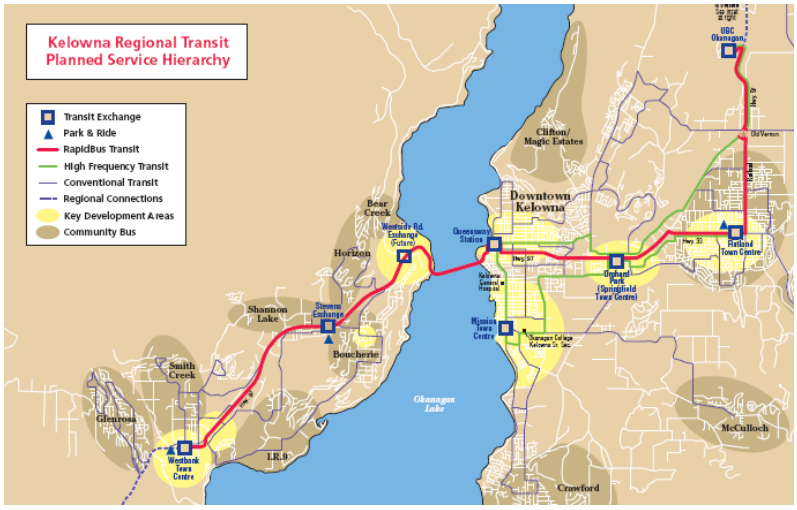

Figure 1: Regional Transit Vision

It was also recognized that these transit exchanges have important strategic value as locations for transit-oriented developments (TOD). Transit oriented development encourages the development of compact, mixed-use and pedestrian friendly developments – containing housing, workplaces, shops, schools, parks and entertainment and civic facilities – centred around transit stations. Focusing growth and development around major transit stations allows more people to live close to transit service and makes more destinations accessible by transit, which in turn, significantly enhances the utility and attractiveness of transit as a travel option.

This discussion paper focuses on the future role and functions of the Queensway and Rutland Transit Exchanges and presents an overview of the enhancements that will be necessary at these locations to achieve the transit vision in the *Central Okanagan Smart Transit Service Plan*.

Transit Exchanges – Key Requirements and Design Principles

Figure 2: Concept Plan for On-street Transit Exchange

Source: Burnaby Mountain Transit Hub Planning Study

The *Central Okanagan Smart Transit Plan* envisions transit exchanges as a place of connectivity where different modes of transportation (i.e., walking, cycling, local and regional transit) come together seamlessly and where there is an attractive, intensive and diverse concentration of land uses integrated around a transit station. In order to create a transit service that people will want to use, new transit stations and exchanges must incorporate the needs and perspectives of transit customers and be located 'in the right place' to optimize access to important land uses. Sufficient space must be also available to provide a safe, clean and comfortable environment where transit riders feel welcome and valued and provide a good interface with land uses to contribute to place-making. Ease of maintenance (to ensure that facilities are kept in prime condition) and adaptability to accommodate new circumstances and service options are also important factors to consider in the initial design. Figure 2 presents a conceptual illustration of how these requirements could be achieved within an urban street environment.

The first priority in designing transit exchanges should be to accommodate the requirements for efficient transit access, comfortable passenger waiting areas, and safe, direct, unobstructed routes for pedestrians and cyclists. Giving priority to walking, cycling and transit helps to foster greater mobility choices and create an attractive pedestrian-oriented environment that will support higher intensity, mixed-use developments.

The following types of facilities are necessary at transit exchanges to fulfill their intended transportation function and contribute to successful city building.

- Bus layover spaces;
- Transit priority roadways that minimize operating delays for transit vehicles;
- Stations that accommodate 'seamless transfers' between connecting transit routes; are comfortable, clean, attractive, safe and accessible; and provide good interaction with adjacent land uses;
- Shaded areas to mitigate hot weather conditions and heated areas to provide a comfortable environment during cold weather conditions;
- Well designed, amply sized pedestrian walkways and customer waiting areas;
- Commercial/commercial retail space (e.g., information kiosks, cafes and restaurants, dry cleaners, daycares, grocery stores and post offices) that will generate pedestrian activity within the transit station area and enhance personal security;
- Public washrooms and telephones;
- Secure storage facilities for bicycles;

- Pedestrian oriented lighting;
- Attractive public art;
- Way-finding signage to direct people to their destinations;
- Real time schedule information;
- Fare purchase equipment;
- Green infrastructure to increase infiltration and perviousness and manage storm-water run-off; and
- Park and ride, if provided, sized and located appropriately to enhance the potential for transit oriented development.

Queensway Avenue Transit Exchange

The *Central Okanagan Smart Transit Service Plan* identified that Queensway is *'a good example of a well designed and attractive transit exchange.'*

Located in the downtown core of Kelowna, this exchange accommodates nine of the Region's transit routes and cost approximately $1 million to build in 1998. This expenditure was funded 80 % by The City of Kelowna, and 20 % by the Province through Annual Transit Operating Agreement grants. The replacement cost of this facility would be significantly higher than the original investment.

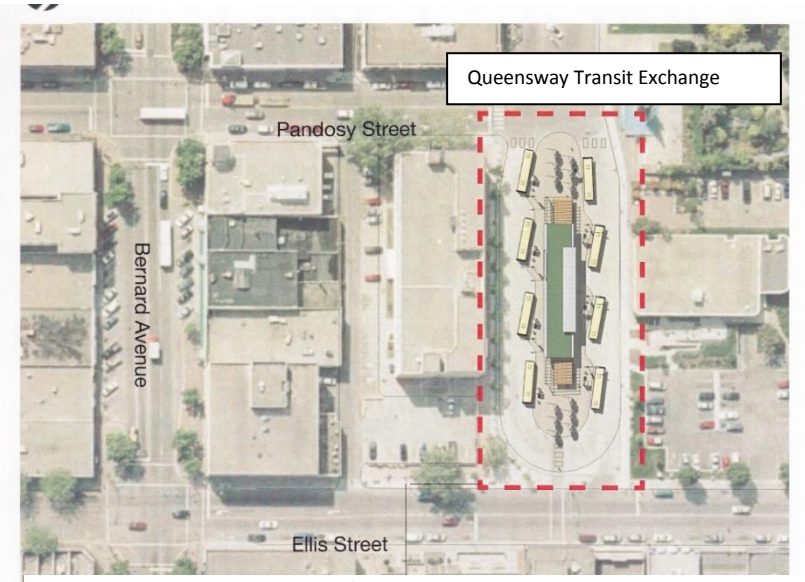

Figure 3: Queensway Transit Exchange

The Queensway Transit Exchange is strategically located near the centroid of development in downtown Kelowna, which is the pre-eminent urban centre within the Kelowna Region. Virtually all of the Downtown Commercial Core and the Cultural District is within a 600 meter walking distance (i.e., a 5 to 10 minute walk) of the transit exchange, and it is positioned within two blocks from the future CD 21 comprehensive development proposal, encompassing high density residential and commercial development, at the foot of Bernard Street and Water Street.

The Queensway exchange will continue to serve as an important gateway for transit service to downtown Kelowna as well as a major transfer location between regional and local transit services. Its role as a regional transit hub will be strengthened in the future when Rapidbus service is extended to West Kelowna and with continued urban intensification within downtown Kelowna.

The Queensway Transit Exchange is currently configured to provide eight bus bays and transit shelters, with a large central passenger island designed to accommodate a future mixed-use terminal building. The centre island configuration offers the following benefits in this situation:

- **Enhanced safety**: All bus boarding and alighting movements are consolidated on the central transit island. This enables transit riders to transfer between transit routes without having to cross the path of approaching and departing buses in the transit exchange. This is an important safety feature in managing the interaction between the high volume of pedestrian and bus movements which occur in this block.
- **Seamless transfers:** The current design of the transit exchange enhances the utility and convenience of the transit exchange for transit riders by facilitating virtually seamless transfers between transit routes;
- **Land use integration:** The island platform provides a spatial buffer between the intense bus and pedestrian movements and adjacent land uses, thus avoiding potential land use interface issues (e.g., congestion at doorways, increased exposure to bus noise and emissions).
- **Adaptability to accommodate new circumstances and service options:** The central island platform has been designed to accommodate future construction of a mixed-use terminal building encompassing a new transit security centre, office and retail space, public washrooms and an enhanced passenger shelter. These new elements will foster increased public activity and provide enhanced security and amenities for transit customers.

It is recognized that 'island transit platforms' are not necessarily the best design solution in all situations. They work well in highly urbanized environments where there are high volumes of transit transfers and transit vehicles and there is a need to carefully manage the interaction of these activities. In less urbanized environments, where transit operations and pedestrian activity is less intense, separate transit zones can be incorporated as part of the public sidewalk network so that transit customers are included rather than isolated from street activities. This creates opportunities to integrate transit infrastructure (e.g. shelters, benches, passenger information) with local shops and services to create community activity nodes.

Current Issues and Concerns

Although the Queensway Exchange functions reasonably well, there are currently two areas of concern that should be addressed in conjunction with any future upgrading program.

(i) Safety and Security

The urban environment in which the transit exchange is located has contributed to concerns about safety and security. The transit exchange and adjacent office/commercial developments generate a high level of pedestrian activity during work hours on weekdays, which helps to deter undesirable activities. However, during evenings and weekends, there are fewer people using transit and there is no resident population in the immediate area to provide natural oversight of activities on the block when commercial/office developments are closed. This situation has contributed to a perception that the

area is unsafe, when, in fact, the incidence of vandalism and crime is no worse than other areas of downtown Kelowna.

To address perceived safety and security concerns, The City has installed a pole-mounted CCTV camera to provide visual surveillance of the transit exchange and has hired full time security staff to monitor activities in the bus loading area and adjacent blocks. These actions have been beneficial in reducing incidence of vandalism and other negative behaviours.

Security staff have suggested that the transit exchange area would benefit from improved lighting. However, as identified in the *Central Okanagan Smart Transit Plan,* the most effective strategy for addressing negative public images of the area would be to develop a new mixed-use terminal building on the central island platform and enhance pedestrian connections and streetscaping to create a more pleasant and secure environment for transit customers as well as downtown workers and visitors.

Over the long term, it would also be desirable to promote higher density, mixed-use residential development in the adjacent blocks to increase 'eyes on the street' and enhance personal security in the area.

(ii) Transit Congestion

The Queensway Transit Exchange currently accommodates nine regional transit routes – six which service the City of Kelowna and three which originate from West Kelowna (20 - Lakeview, 21- Glenrosa and 24 - Shannon Lake). To accommodate transit operations, two transit routes have been located in the block immediately west of the transit exchange, adjacent to Kelowna City Hall (i.e., Route 2 – North End Shuttle and Route 7 – Glenmore).

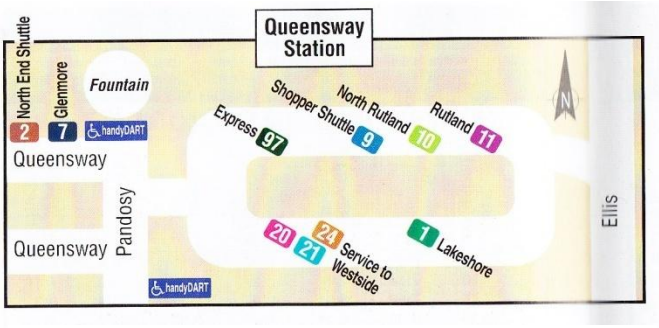

Figure 4: Queensway Transit Terminal Route Assignments

BC Transit is currently undertaking a collaborative planning process to develop a 25 year transit master plan for the Central Okanagan Region. The future role and function of the Queensway Transit Exchange will be assessed as part of this process; however, it is envisioned that the demands on this exchange could be reduced with the future extension of Rapidbus service to West Kelowna and the realignment of transit services in West Kelowna to access the transit exchanges which are planned in Westbank, Stevens and Westside. There may also be opportunities to consolidate transit routes and coordinate arrival and departure times of buses within the City of Kelowna (e.g., interlining Route 2 with other Kelowna routes) to contain transit operations within the existing transit exchange.

It would also be desirable to modify the access to Ellis Street to provide ability for buses to make left turns into and from the transit exchange. These modifications would provide an additional access route for buses to enter and leave the exchange and provide greater flexibility to make better use of the existing transit capacity.

Proposed Queensway Transit Exchange Improvements

The principal component of the recommended Queensway Transit Exchange improvements is to develop a 2-storey structure, mixed-use transit terminal building on the centre island that would accommodate important municipal functions (e.g. transit security office, heated transit waiting area, transit information kiosk) as well as private commercial enterprises.

Figure 5: Queensway Exchange Building Concept

It is envisioned that the building would provide approximately 2,500 square feet of space on each level. Administrative offices (2,500 sq. ft.) or privately operated commercial uses (e.g. restaurant, fitness centre, daycare centre) could be developed on the second floor for a public or private tenant. The first level of the building should incorporate space for a heated transit waiting area, transit ticketing and sales, public and operator washrooms, a transit security office, and confectionary sales (e.g., coffee, magazines, snacks, postage sales etc.) The building could be designed and built with 'green' construction considerations, including a green roof.

The overarching goal of Queensway Transit exchange improvements increase pedestrian activity in the block by creating new commercial/retail opportunities and to improve the local streetscape to provide a more appealing pedestrian environment for transit riders as well as downtown workers and visitors. Further consultation with the development industry will be required to determine what types of office/retail space would be viable at this location and to secure an appropriate mix of tenants for the building. The potential for using a portion of the space for civic uses such as community policing will also be investigated.

The new transit exchange building will be enhanced by the following streetscape enhancements on the central transit island and the adjacent block faces to create a more attractive urban space:

- New transit benches, waste receptacles, and information sign frames;
- New landscape features (trees, flower pots etc.) on the transit loading island and flanking public sidewalks;
- Public art elements and street enhancements (e.g., banners)
- Enhanced lighting within the transit exchange;
- Additional CCTV cameras

- Real time schedule information;
- Access modifications at Ellis Street to enable left turn movements by transit vehicles.

As well, it is recommended that streetscape improvements be implemented to improve the quality of the pedestrian environment between the transit exchange and Bernard Street, the waterfront area and the residential precinct west of Abbot Street. Intersections within the following street segments would be modified to include corner bulbs to enable sidewalk widening and provision of trees and new street furniture.

- Ellis Street, from Abbot Street to Bernard Avenue
- Pandosy Street, from Queensway to Bernard Avenue
- Water Street, from Queensway to Bernard Avenue
- Queensway, from Pandosy St to the waterfront

Some existing angle street parking would be replaced with parallel parking; however, additional off-street parking stalls will be provided to offset any loss of on-street parking capacity.

The costs associated with the major components of the proposed investment plan are summarized below:

QUEENSWAY TRANSIT EXCHANGE - PROPOSED INVESTMENT PLAN	
Design Component	**Cost**
Queensway Building and Block Enhancements	$2.0 million
Enhanced Pedestrian Connections/Streetscaping • Ellis Street, from Abbot Street to Bernard Avenue • Pandosy Street, from Queensway to Bernard Avenue • Water Street, from Queensway to Bernard Avenue • Queensway from Pandosy Street to the Waterfront	$3.5 million
Mobilization and Contingencies	$0.7 million
Design and Construction Management	$0.2 million
TOTAL	$6.4 million

It is noted that the implementation of a building on the island of the Queensway exchange will be undertaken through a voluntary development permit application process. The design of the terminal building and associated infrastructure enhancements would be presented to the Advisory Planning Commission and City Council for approval.

Rutland Transit Exchange

Background and Context

The Rutland urban centre is one of four major urban nodes identified in Kelowna by the *Central Okanagan Smart Transit Plan* and will be a major focal point for local transit services. The proximity of the planned transit exchange to UBCO provides an opportunity to develop a frequent bus service linking this node with other urban centres (e.g., Orchard Park) and with local feeder routes serving Rutland,

Black Mountain and the Big White Ski Resort and to develop new mixed-use residential/commercial developments in Uptown Rutland to cater to the student population.

The Rutland urban centre is envisioned to accommodate an attractive and diverse mix of housing and neighbourhood retail services, integrated with transit within a pedestrian oriented streetscape. Achievement of this goal will require redevelopment or renewal of existing single family housing stock and commercial properties.

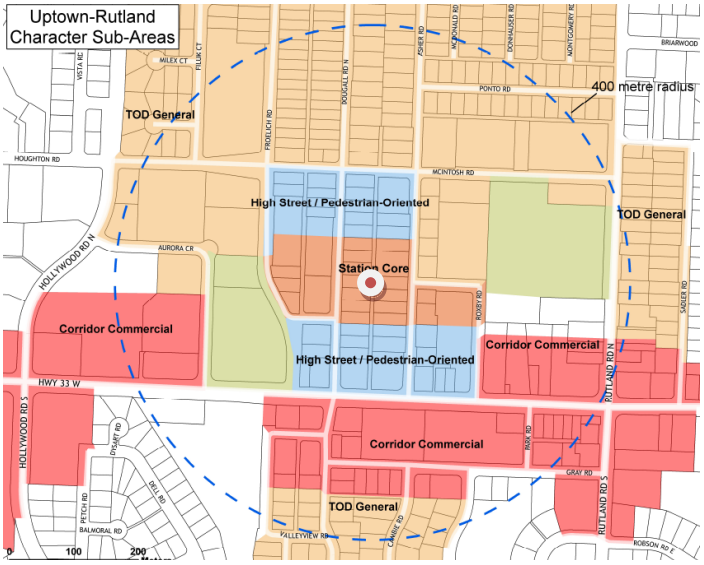

Figure 6: Rutland Towne Centre Context Map

Although new transit infrastructure will often increase real estate values and promote new transit oriented development, some situations require a more comprehensive program of property, infrastructure and public realm investments to attract new private investment. This level of commitment will be required in Rutland to create the essential elements that will support an attractive urban centre.

The City of Kelowna currently has important, strategically located land holdings in the area which are allocated for surface parking and future road right-of-way. These assets present an opportunity for the City to take a leadership role by leveraging some or all of its land for new transit oriented developments and investing in new transit infrastructure and public realm improvements (e.g. streetscaping and new parks). The City, in partnership with the private sector and/or other levels of government, should also consider 'kick-starting' redevelopment by co-locating civic operations (i.e., community police) cultural facilities (black box theatre), a public market or affordable housing adjacent to the future transit exchange. This would create a strong nucleus of development that would support the transit exchange and provide a catalyst for other new developments in the area.

Figure 7: Rutland Urban Centre Concept Plan

Rutland Centre Concept Plan

One of the foundations of the Rutland Centre Concept Plan is to route transit through the center of the urban centre, along Dougall Road and the approved Shepherd Road extension, and to build a user-friendly transit exchange that is integrated with adjacent development.

In 2010 January, Kelowna City Council confirmed that an on-street transit exchange would be constructed on Shepherd Road, between Asher Road and Dougall Road. The transit terminal will incorporate an **on-street transit exchange** and related customer amenities (e.g., transit shelters, benches, information kiosks) on Shepard Road, which would be fully integrated within an adjacent pedestrian promenade and new street oriented retail developments. Other active transportation improvements along Houghton/McIntosh Roads as well as Froelich Road (Rutland Bluff), will create a continuous network of multi-modal streets that are conducive walking, cycling, and transit.

Figure 8: Proposed On-street Transit Exchange

Funding in the amount of $1.4 million from Federal Gas Tax revenues has been approved for implementation of the transit exchange. This project must be completed by end of 2012 to access this funding. Other infrastructure upgrades in Rutland Centre such as road enhancements and streetscaping are currently not funded. The estimated cost of completing the streetscape improvements along the proposed transit corridor (i.e., Shepherd Road, between Dougall Road and Roxby Road and on Dougall Road, between Highway 33 and Shepherd Road) is approximately $4.7 million, not including underground wiring or road surface upgrading. Should senior governments agree to cost share these improvements to support the development of a new transit exchange, the local share would be approximately $1.6 million.

The Uptown Rutland Market Assessment Study also identified the importance of achieving appropriate transit-oriented development adjacent to the new transit exchange to create a strong sense of place. Provision of civic and community facilities such as a public library, 'Black Box Theatre', community centre, public market or community police station were identified as appropriate land uses that could foster commercial and residential revitalization of Uptown Rutland by creating anchoring uses that draw visitors from Rutland and beyond. To advance this proposal, it is proposed that $2 million be allocated as seed money to develop an appropriate civic or community transit oriented development adjacent to the proposed transit exchange. Potential partnerships and locations will be explored further as part of the upcoming urban design charrette, in consultation with business and community stakeholders.

The cost of the components of the investment plan for Rutland Centre is presented below.

RUTLAND TOWNE CENTRE – PROPOSED INVESTMENT PLAN	
Design Components	**Cost**
On-street transit exchange (approved Federal Gas Tax Funding)	$1.4 million
Pedestrianization Initiatives/Streetscaping (landscaping, sidewalks, lighting, street furniture) • Dougall Rd. • Shepherd Rd.	$4.7 million
Civic or Community Transit Oriented Development	$2.0 million
Mobilization and Contingencies	$0.4 million
Design and Construction Management	$0.2 million
TOTAL	$8.7 million

Further dialogue with community and business stakeholders is planned through an urban design charrette to advance the planning for transit oriented development and supporting transportation investments. In this regard, the following initiatives are expected to be guided by the outcomes of the urban design charrette:

- Strategic Urban Design Plan
- Updated Streetscaping design and phasing plan
- Construction Design Plan for Transit exchange within the Shepard Road extension
- Capital plan updates
- Partnerships considered for the development of City properties

Advancing the Planning Process

The Rutland urban centre has been the focus of several key planning initiatives in recent years, encompassing land use, parks, transportation and streetscape as well as an assessment of the market for redevelopment. Each of these initiatives has been undertaken in consultation with many key stakeholders and the community at large. While each contributes to community development, the process of transforming the area into an attractive urban centre will require a major financial commitment and new partnerships between local governments and the development industry. **No single action will be sufficient to create a vibrant, attractive place where people will want to live, work and shop.** A multi-faceted investment program is required to create a new transit exchange, pedestrian oriented streets, public realm improvements (enhanced streetscapes), and a signature development to anchor the transit exchange and act as a catalyst for further renewal of the area.

In planning for future transit oriented development, it is important to pay careful attention to the transit station site to ensure that transit and land use support one another. The station is a major connection point between transit routes through which passengers will want to move quickly and efficiently. At the same time, it should also support and fit well with adjacent land uses. These sometimes conflicting

objectives must be resolved by thoughtful planning which considers the interaction between activities which are generated by the transit stations and adjacent developments.

From a land use perspective, street-oriented development which generates pedestrian activity throughout the day would be appropriate as an anchor for the transit station. Examples include a mix of retail/commercial development, multi-family residential, public markets, cultural facilities (e.g., community theatre) and civic land uses (administration offices). As illustrated in Figure 10, it is often possible to integrate the transit station and bus exchange areas by creating public plazas consisting of hard and soft landscaping to provide open space and passenger loading area within the transit exchange.

Figure 9: Transit Exchange Integrated within a Transit Oriented Development

Source: Downtown Hayward; BART, San Francisco

Guidance in accommodating transit exchange requirements within a walkable street environment is also provided in a recent report, '*Designing Walkable Throughfares – A context Sensitive Approach',* co-authored by the Institute of Transportation Engineers and the Congress for the New Urbanism. The report addresses the design of sidewalks and the buffers between sidewalks, moving traffic, parking and/or other traveled-way elements. The streetside consists of the following four distinct functional zones:

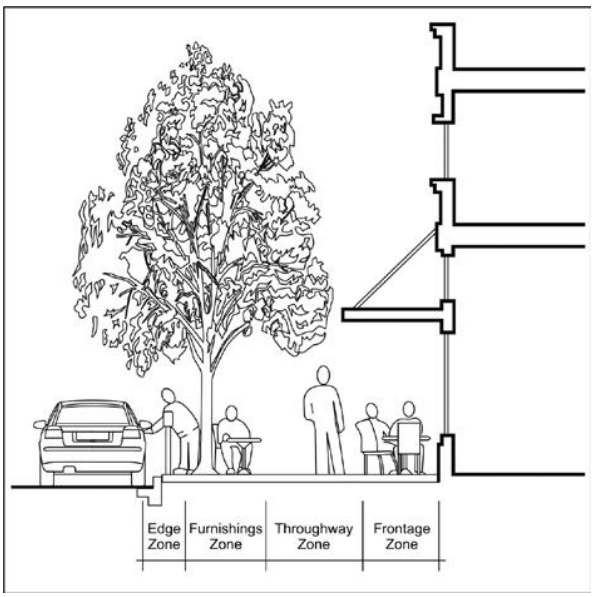

Figure 10: Streetside Zones

1. **Edge zone**—the area between the face of curb and the furnishing zone that provides the minimum necessary separation between objects and activities in the streetside and vehicles in the traveled way;

2. **Furnishings zone**—the area of the streetside that provides a buffer between pedestrians and vehicles, which contains landscaping, public street, furniture, **transit stops**, public signage, utilities and so forth;

3. **Throughway zone**—the walking zone that must remain clear, both horizontally and vertically, for the movement of pedestrians;

4. **Frontage zone**—the distance between the throughway and the building front or private

property line that is used to buffer pedestrians from window shoppers, appurtenances and doorways. It contains private street furniture, private signage, merchandise displays and so forth and can also be used for street cafes. This zone is sometimes referred to as the “shy” zone.

The example below shows a bus shelter and other street furniture properly located in the furnishings zone. At transit stops with shelters, it is recommended that the edge zone should be widened to a minimum of 1.2 metres to provide wheelchair access to and in front of the shelter. A curb extension that stretches the length of the transit stop can also be an effective way to increase the width of the edge zone. Curb extension bus stops have additional advantages for transit operations, including faster passenger loading and unloading, more space for waiting passengers and less time for buses to re-enter the flow of traffic.

The 40 meter width of the Shepherd Road corridor within Rutland provides ample space to incorporate these elements in relation to integration of the proposed on-street transit terminal with adjacent development.

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