

Future of Transportation: COVID Recovery Scenarios Summary Report

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Executive Summary

Shortly after the onset of the COVID-19 pandemic, the Transportation department initiated a study to determine the potential short-to-long term implications of the pandemic on the department’s strategic plans & operations. This study was led by Transportation as part of the **Future of Transportation Portfolio**, and conducted in collaboration with Planning & Development, Resilience & Infrastructure Calgary, and several other business units across The City of Calgary.

Given the inherent uncertainties around the duration and severity of the pandemic, and associated economic changes, a strategic foresight process was used to examine several plausible futures and their potential implications for the transportation system and key land uses.

Strategic foresight is a scenario planning process that enables organizations to examine a range of futures and identify actions to take in response. By evaluating multiple scenarios, rather than planning for a single assumed future, strategic foresight helps reduce the risk that organizations will be caught by surprise.

Highlights from the Future of Transportation COVID Recovery Scenarios are shown below in Figure 1.

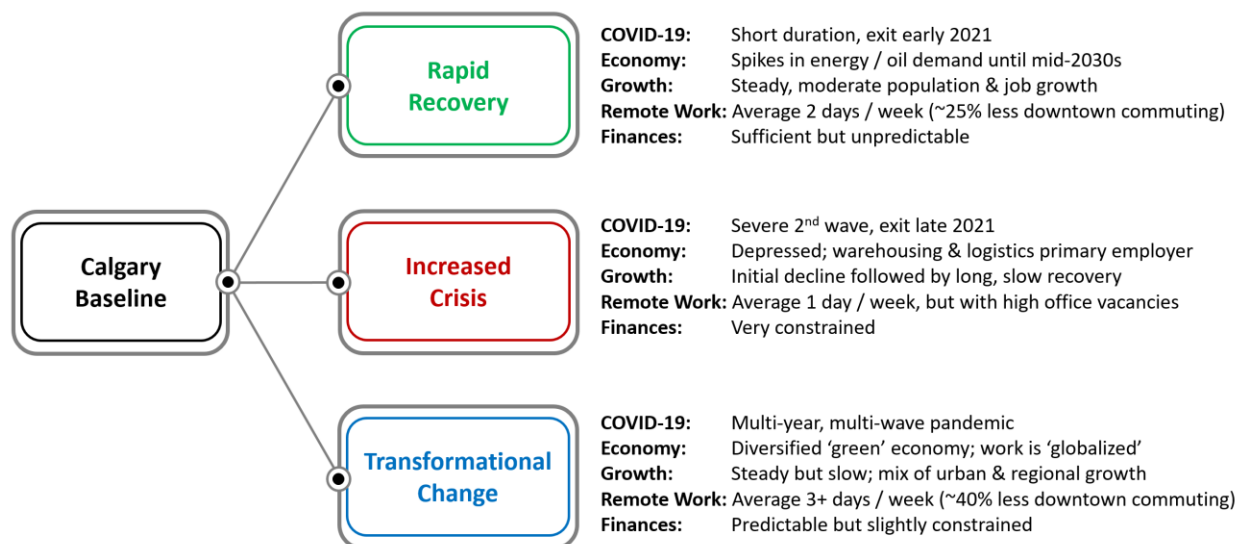


Figure 1: Future of Transportation COVID Recovery Scenarios

In order to address the implications of the scenarios, and to ensure continued progress towards The City’s strategic goals, 15 actions have been recommended. The first eight actions are common across all three of the scenarios, and therefore represent “low risk, high benefit” actions that should improve the resilience of The City regardless of how the future evolves. These will be incorporated into 2021 work plans. The remaining actions will be implemented if/when they are triggered by changing conditions.

To keep the scenarios and recommended actions in this report relevant and timely, this report will be maintained as a ‘living document’ and updated periodically. The next planned update will be after the 2020/2021 peak flu season.

The Future of Transportation and COVID-19

The Future of Transportation Portfolio has been designed to identify and prepare for new technologies, societal trends and major disruptions that may have lasting impacts on Calgary's transportation system. The COVID-19 pandemic is one such disruption, and appears to have influenced several pre-existing trends that could impact long-term travel and land use patterns.

Even before the pandemic, the transportation sector was evolving rapidly due to a range of new technologies and societal expectations. The additional uncertainty introduced by the pandemic makes it even more challenging to chart a clear course to the future. Past trends are no longer an accurate predictor of how Calgary or its transportation system will evolve over the next 20 years.

Given the inherent uncertainties around the duration and severity of the pandemic, and associated economic changes, a strategic foresight process has been used to examine several plausible futures and their potential implications for the transportation system and key land uses.

Strategic Foresight Scenarios

Strategic foresight is a scenario planning process that enables organizations to examine a range of futures and identify actions to take in response. It is regularly used by European governments and is becoming more common in North America. Strategic foresight is also used by private sector companies such as Ford, Intel, and most notably Shell, who has become a world leader in applying strategic foresight since it used the technique to successfully navigate the oil crisis in the 1970s.

By evaluating multiple scenarios, rather than planning for a single assumed future, strategic foresight helps reduce the risk that organizations will be caught by surprise.

The Future of Transportation COVID Recovery Scenarios are described in detail on pages 4 to 9.

The scenarios are not projections or forecasts. Instead they reflect a range of plausible futures. Real-world conditions will include a mix of factors from one or more scenarios. It is important to constantly monitor key indicators (summarized on page 14) to verify which actions are most appropriate, and when.

The scenarios do not create a new strategy for The City. Instead, they are a tool to evaluate existing strategies such as the Municipal Development Plan (MDP), Calgary Transportation Plan (CTP) and RouteAhead. Analysis of risks and opportunities from each scenario can identify potential gaps between current circumstances and the targets and goals specified in The City's plans. This gap analysis will enable Transportation to adjust more quickly and keep moving towards The City's strategic goals.

Transportation has also been actively involved in a parallel strategic foresight process led by Resilience & Infrastructure Calgary, known as Future Focused Calgary (as outlined in the *2019 Resilient Calgary Strategy*). Along with the scenarios, a toolkit will be developed to enable service owners to apply the Future Focused Calgary scenarios to their own projects. The scenarios and toolkit will be available to the corporation to evaluate planning strategies and inform the 2023-2026 budget cycle.

Findings from the Future of Transportation COVID Recovery Scenarios are being incorporated into the Future Focused Calgary scenarios, and Transportation is working closely with Resilience & Infrastructure Calgary to ensure ongoing information-sharing and alignment between the two processes.

Scenario 1: Rapid Recovery

Looking back from 2040, in this scenario Calgary effectively exited the pandemic by early 2021. This was thanks to effective social distancing measures and improved medical treatments that reduced the severity of COVID-19 infections for much of the population. The elderly and those with compromised immune systems continued to be at risk until a vaccine became available in the early 2020s.

Extensive stimulus funding from Canadian and international governments sparked a 'V-shaped' economic recovery. Few conditions were placed on stimulus funding, leading to a rapid increase in demand for oil and gas to fuel new economic activity. Oil prices spiked as high as \$100 per barrel in 2021 as global production struggled to restart quickly enough.

Calgary's rate of population and employment growth was slightly slower than in past economic booms, however. This was due primarily to the improved efficiency that the oil and gas sector achieved in the late 2010s, requiring fewer staff to achieve the same level of performance.

Seeking to stimulate other sectors of the local economy quickly, most of the new development activity in Calgary continued to occur in new suburban communities. Several successful urban redevelopment projects were also completed between 2020 and 2040, largely within the Greater Downtown.

The City's financial situation fluctuated through several boom-bust cycles, but finances were generally favourable through the 2020s and early 2030s. By the mid-2030s, global energy efficiency and electrification initiatives saw oil demand peak while the value per barrel of oil began to decline. This began to constrain economic growth and municipal finances through the later part of the 2030s due to limited economic diversification efforts in Calgary.

Although lasting less than a year, the pandemic clearly demonstrated the ability for office-based employees to work productively from home. For those who struggled to balance work and childcare demands during the pandemic, the reopening of schools and daycares provided significant relief. Between the increased

Scenario Quick Stats

Pandemic: Short duration, exit in early 2021

Economy: International stimulus causes spike in energy / oil demand through 2020s; little diversification

Growth: Steady, moderate population & job growth (due to increased 'job efficiency' in oil & gas sector)

Urban Form: Focus on suburban growth to quickly stimulate economy; some urban intensification

City Finances: Sufficient but unpredictable due to boom-bust cycles

Remote Work: Avg. 2 days/week for office employees (25% reduction in peak commuting to downtown)

Retail & Delivery Services: Short-term losses of traditional retail followed by rapid recovery; steady growth in online shopping & use of delivery / curbside pickup services

flexibility and reduced time & costs to commute, employees in many companies actively campaigned for the ability to continue working from home at least part-time.

A few companies embraced the ability to reduce leasing costs for office space, offering their employees the ability to work from home full-time. A handful of companies preferred to maximize in-office interactions and limited the ability for employees to work from home. As best practices emerged in the early 2020s, most companies began to enable part-time remote work options for their employees.

By the mid-2020s, office-based employees were working from home an average of 2 days per week. To maintain team cohesion, many companies implemented the concept of ‘core workdays’, with Wednesdays seeing travel activity peak at or beyond pre-COVID levels. Commuting levels continued to be significantly lower on Mondays and Fridays, however. Averaged over the week, automobile commuting to the downtown declined by 15-20% from pre-COVID levels, while transit peak-hour commuting declined by 30%.

What Rapid Recovery Means for Transportation & Urban Form

- A continued emphasis on suburban development to help spur economic recovery may slow progress on the MDP/CTP urban intensification and mode split targets
- Both municipal operating and capital grant funding would continue to be unpredictable as Calgary and the Alberta economy fluctuate with boom-bust cycles tied to the oil and gas sector
- Traffic and transit demand, particularly to the Greater Downtown, would be less consistent on the weekdays compared to pre-COVID patterns
 - This could increase the complexity of managing congestion, while potentially increasing competition between different travel modes for use of inconsistently busy roadway space
- Increased remote work may lead to fewer ‘chained’ trips to retail destinations as part of people’s daily commute, and more unique retail trips between residential and retail areas
- There would be a gradual increase in competition for street space between traditional roadway users and growing delivery services

Given the financial stresses of the pandemic, there were initially quite a few retail closures across Calgary in late 2020 and early 2021. However, the rapid economic recovery enabled new retail businesses to emerge and fill the gaps, leaving Calgary’s retail landscape like it was prior to the pandemic.

Out of necessity, both the surviving and new retail stores learned to embrace an ‘online first’ approach that incorporated seamless home delivery and curbside pickup options. Calgary continued to have a robust brick-and-mortar retail sector, combined with an ever-increasing volume of home delivery activity occurring on commercial and residential streets. As a result, The City gradually adapted its policies and infrastructure to address the increasing competition for street space between commuters, recreational travelers, and delivery services.

Scenario 2: Increased Crisis

Looking back from 2040, the COVID-19 pandemic proved to be a decisive point in Calgary's history. Difficulties maintaining effective social distancing measures, extremely limited availability of experimental treatments, and complications from the winter flu season all caused a severe second wave to spread across the globe. Calgary, like many other cities, entered a full lock-down from late 2020 until early 2021, with severe economic consequences. It was not until a vaccine became widely available in the second half of 2021 that the world began to slowly recover.

The scale of the disruption caused by the second wave pushed the global economy into an extended economic depression. Having already invested hundreds of billions of dollars to support their economies during the first wave, governments around the world scrambled to provide what little stimulus they could, while facing pressures to reign in budgets and deficit spending. Growth collapsed, and with it global energy demand, driving prices for oil & gas to record lows.

Unemployment levels skyrocketed for both knowledge workers and service-oriented employees. Office vacancies in downtown Calgary briefly reached record levels. The dual impact of the lock-down and the drastic drop in oil & gas demand hit Calgary harder than other cities in Canada. As a result, Calgary experienced a noticeable population decline the first year after the pandemic as people moved to other cities that had been less heavily impacted by the depression. It was only by the late 2020s, and with limited financial support from other orders of government, that Calgary's economy and population base slowly began to grow again.

With the rapid fall in oil & gas prices, several international energy companies pulled their offices out of Calgary entirely. Increasingly, with Calgary's unique geographic positioning in western Canada, the warehousing and logistics sector became the most significant employer in Calgary. The City placed increasing emphasis on investments such as critical roadway infrastructure to support the sector.

Scenario Quick Stats

Pandemic: Severe second wave, exit late 2021

Economy: Depressed local & global economy; logistics & warehousing becomes leading employer; high unemployment

Growth: Shrinking population & jobs in short-term, followed by slow growth

Urban Form: Shrinking community populations, particularly suburban communities with limited local amenities

City Finances: Very constrained

Remote Work: Avg. 1 day/week for office employees (up to 40% reduction in peak commuting to downtown, when combined with reduced number of jobs downtown)

Retail & Delivery Services: Loss of traditional retail; tension between buy local programs and low-cost online shopping

The extended depression and resulting high unemployment rate sparked increased social unrest in Calgary. People began to avoid some areas of the city, including the partially vacant downtown core, due to concerns about social disorder. However, the residential areas surrounding the downtown core proved surprisingly resilient, with a number of local businesses continuing to provide much desired amenities. Many suburban communities also experienced strengthening social ties as residents chose increasingly to stay within the 'safe bubble' of their neighbourhood.

Between the depressed economy, loss of retail and desire to stay within local communities, travel activity city-wide declined. Throughout the 2020s and into the early 2030s, long trips were limited to either work or to visit friends and family. A few companies embraced remote work to reduce leasing costs, but most employees preferred to be in the office – limited jobs encouraged many employees to want to be 'seen' hard at work. The increased preference to stay within one's community resulted in a

significant increase in recreational or short-distance shopping trips by walking and cycling where possible.

Retail businesses were hit particularly hard in the early years after the second wave, with numerous bankruptcies. This left some communities with limited or no retail services, despite the increased demand for local services. Some areas of Calgary became 'food deserts', with no grocery stores available within 2 km.

The City and local businesses had reasonable success promoting buy local programs to support local retailers. However, many residents living with restricted incomes (or unemployment) gravitated to low-cost online shopping platforms out of necessity. Combined with the loss of many local retailers, and the prominence of the logistics sector in Calgary, online delivery services continued to grow their market share slowly but surely.

What Increased Crisis Means for Transportation and Urban Form

- An extended economic depression and (temporarily) declining population base will severely constrain municipal finances
 - Acceptable service levels will need to be reconsidered (e.g. transit frequency, pavement quality), along with what lines of service The City should continue to offer
 - Reductions to services would need to be balanced against increasing demands for services from citizens struggling to cope with constrained incomes or job losses
- Risks of social disorder on public transportation or at civic facilities will need to be managed pro-actively, building on experience gained during the first wave of the pandemic
 - There may be an increased preference for private automobile use if safety and social disorder concerns are not effectively managed
- The City may be able to partner with local community organizations on community-building / civic-pride programs to enhance local community services and infrastructure

Scenario 3: Transformational Change

Looking back from 2040, Calgary and the world experienced multiple waves of the COVID-19 pandemic before a mix of effective treatment programs became available in the mid-2020s. The ongoing disruption permanently altered the business landscape in Calgary, and entrenched many new routines into people's daily lives.

Following global investment pressures, and the election of Democratic leaders in the United States in late 2020, Canadian government stimulus programs focused on economic recovery through a transition to a 'green' economy. As it became clear that global economic shifts caused by the COVID-19 pandemic had rapidly accelerated peak oil global peak oil demand, significant funds were directed towards transitioning the Alberta and Calgary economies towards a wider range of energy industries.

By 2040, Calgary was the hub for energy companies with expertise in wind & solar, low-carbon hydrogen production, extraction of lithium from oil wells, and local manufacturing of batteries for electric vehicles and grid storage. Calgary, like other cities, also became host to more local manufacturing for critical supply chain items such as medical equipment and pharmaceuticals.

Overall, Calgary's economy continued to grow throughout the late 2020s and 2030s. The transition to a lower-carbon energy sector, along with more people moving or immigrating to the region, resulted in slower growth than during the oil & gas booms of previous decades. The scale of economic diversification helped avoid the boom-bust cycles of the past. This dramatically improved the predictability of municipal finances, even if they proved to be slightly more constrained than in the past.

The lengthy pandemic made working from home an accepted norm, though some people continued to struggle with social isolation. With little need to go to the office, and a growing desire for easy access to nature, many office-based employees began to move to smaller communities in southern Alberta or beyond. This drastically reduced daily commuting into the downtown and left many older office buildings permanently vacant. Some office towers were successfully converted into

Scenario Quick Stats

Pandemic: Multi-year, multi-wave pandemic

Economy: Diversified 'green' economy with some local manufacturing (e.g. critical supply chain items, batteries); 'globalized talent' living locally but working globally

Growth: Steady but slower population & job growth

Urban Form: Greater share of growth in the region (remote work disconnects housing choice from work location)

City Finances: Predictable but slightly constrained compared to past oil & gas booms

Remote Work: Avg. 3+ days/week for office employees (40% reduction in peak commuting to downtown)

Retail & Delivery Services: Primarily online / AI-based shopping; fewer retail stores with a focus on providing 'experience centres'

residential buildings, while others were demolished and turned into multi-purpose parking & community facilities.

The rate of suburban growth in Calgary also slowed gradually as more people began to relocate to regional communities. Efforts to increase the community feel and culture offerings in the Greater Downtown and several main streets proved wildly successful however, attracting residents seeking an 'urban' lifestyle.

By 2040, an increasing number of knowledge workers had begun to work independently or for global consulting firms. These workers might live in Calgary or Canmore, but work on projects in Toronto, Vancouver, San Francisco or Mexico City. For many, the link between where they lived and where they worked was permanently severed. Employees in service and local retail sectors did not enjoy the same flexibility, however.

What Transformational Change Means for Transportation and Urban Form

- Increased remote work would significantly reduce the demand for transit into the downtown core, impacting transit revenues and potentially the ability to provide other cross-town and community-based services
 - Demand for cross-town or regional transit may grow
 - Alternate revenue or government funding sources would be required to offset this impact
- A shift in population growth to communities in the region would mean a shift from the urban form targets in the MDP, and would require increased regional coordination
- Between the rapid growth in demand for delivery services, and the adoption of new delivery technologies, there will be significant competition for limited street and sidewalk space in both commercial and residential areas
- The rapid adoption of new technologies, mixed with reduced peak-hour travel due to remote work, may trend towards achieving The City's GHG reduction targets for both transportation and new building stock

The extended pandemic also radically altered the retail landscape in Calgary and cities across North America. Investments in online shopping services, combined with the popularity of artificial intelligence (AI) personal assistants resulted in the vast majority of retail transactions being handled remotely. As a result, the use of delivery services surged in the mid-2020s, drastically increasing the number of commercial vehicle trips from regional distribution centres into local communities.

The dominance of delivery services was further accelerated by the rapid adoption, and regulatory approval, of new technologies. These included ground-based and aerial drones, autonomous delivery trucks, and mobile retail 'stores' that would drive from community to community, giving residents the opportunity to examine sample products in-person before completing their order online.

Recommended Actions

Workshops and interviews with service owners and subject matter experts identified over 80 individual actions in response to the Transportation COVID-19 recovery scenarios. The following sections summarize the majority of these ‘sub-actions’ into 15 main actions.

The first eight actions are common across all three of the scenarios, and therefore represent “**low risk, high benefit**” actions that should add value regardless of how the future evolves. The remaining seven actions are applicable to one or two of the scenarios, so proactive planning should be undertaken to enable implementation of these actions if/when they are triggered by changing conditions.

Given the integrated nature of transportation and land use, several of the actions will require close coordination with, and leadership by, Planning & Development.

Each action summary also indicates the ideal timeframe for implementation, as follows:

- **Act Now:** the action should begin implementation immediately
- **Inform Strategy:** the action should be incorporated over the coming months into updates of existing strategy documents, or the development of new strategies
- **Monitor:** there is still a high level of uncertainty around this action, so the underlying conditions that would trigger the need for the action should be actively monitored

Actions Common to All Scenarios (Low-Risk, High-Benefit)

1: ‘Stress Test’ Strategic Plans Against the Transportation COVID Recovery Scenarios

Applicable Scenarios: ALL

Timeframe: Act Now

Description: Use the three scenarios to ‘stress test’ supporting Transportation strategic documents and plans. This will involve a mix of qualitative assessments (workshopped) and quantitative analysis (data analytics, regional transportation model outputs). Design assumptions for major infrastructure projects could also be reviewed.

2: Improve Data Collection and Analytics to Guide Real-Time Decisions

Applicable Scenarios: ALL

Timeframe: Act Now

Description: Transportation already collects highly detailed information about travel patterns in Calgary. However, the pace of change during and after the pandemic requires new data sources and analytical techniques to track real-world conditions relative to Transportation’s COVID scenarios and recommended response actions. Robust and timely data is critical to support Transportation leadership and project managers on the nature and scale of post-COVID changes, and if/when certain response actions should be initiated.

3: Develop a Curbside Management Strategy

Applicable Scenarios: ALL (Transformational Change especially) **Timeframe:** Act Now

Description: The pandemic has dramatically increased the use of delivery services and curbside pickup. This is expected to continue in all scenarios, but particularly for Transformational Change. A curbside management strategy should be developed that addresses the needs of all potential street uses (commuters, goods movement, shoppers, shared mobility, ground based-drones, street cafes, etc.)

4: Actively Facilitate the Evolution of the Greater Downtown

Applicable Scenarios: ALL **Timeframe:** Act Now / Inform Strategy

Description: Given the potential changes from increased remote work and changing retail shopping patterns, the development of the Greater Downtown could be significantly impacted in the aftermath of the COVID-19 pandemic. Prioritizing the right types of investments will be required for the Greater Downtown to continue serving as the focal point for Calgary, as well as the primary hub of the overall transportation system.

5: Plan for More Variable Revenue, and Potentially Lower Overall Funding

Applicable Scenarios: ALL **Timeframe:** Act Now

Description: To varying degrees, each of the scenarios indicates that revenue streams will become more variable. The anticipated increase in remote work may require more flexible rate structures for transit fares and parking fees (with correspondingly less predictability from monthly pass/contract sales). Changes in population growth and potential decline in provincial grants could put further downward pressure on municipal finances.

6: Ensure Transportation's Plans & Processes are Designed to Respond to Changing Conditions

Applicable Scenarios: ALL **Timeframe:** Act Now

Description: The acceleration of changes caused by the pandemic, coupled with the increasing pace of change in transportation technologies and traveler preferences, will require the transportation system to adapt more quickly over the coming years. New business processes will be required to ensure the department can respond quickly and effectively to such changes.

7: Offer New Services to Generate Revenue

Applicable Scenarios: ALL (Transformational Change especially) **Timeframe:** Act Now

Description: The increased prevalence of remote work in all three scenarios, along with the emergence of new travel modes / technologies, has direct impacts on revenue generation potential for both Calgary Transit and the Calgary Parking Authority. Scenario 2: Transformational Change may have the most significant impact on revenue generation, but also presents

the greatest opportunities to explore new revenue-generating opportunities. New revenue generating services would benefit both the Public Transit and Parking service lines in all three scenarios, so it would be appropriate to implement this action immediately.

8: Address Mobility Inequities that May Emerge as a Result of the COVID Pandemic

Applicable Scenarios: ALL (Increased Crisis especially)

Timeframe: Act Now

Description: There is a risk that socio-economic inequities will increase during and after the COVID-19 pandemic in all three scenarios, and particularly in Scenario 3: Increased Crisis given the high levels of unemployment and service impacts associated with an extended depression. Less obvious forms of inequity may also emerge in all three scenarios, where changes in new types of employment, or persistently higher levels of unemployment in some subsectors, may result in more people being dependent on services such as Calgary Transit even while budgets are constrained.

Actions Applicable to One or Two Scenarios

The following actions are applicable to one or two scenarios and may be required as conditions evolve.

9: Prepare for More Inconsistent Weekday Travel Activity

Applicable Scenarios: Rapid Recovery

Timeframe: Monitor

Description: Scenario 1: Rapid Recovery includes the potential for less consistent weekday peak hour travel to the Greater Downtown due to new remote work norms. It is possible that many companies would introduce 'core work days', with some days (e.g. Wednesday) seeing pre-COVID levels of peak demand, but other days (e.g. Mondays and Fridays) seeing much lower levels of demand. This may create competing public demands around the use of street space, and complicate multi-modal traffic management efforts.

10: Evaluate and Respond to Greenfield Development Demand

Applicable Scenarios: Rapid Recovery & Increased Crisis

Timeframe: Inform Strategy

Description: Scenario 1: Rapid Recovery includes the most robust greenfield growth, which will require cross-corporate management to ensure that service delivery can meet resident/customer expectations while minimizing travel and congestion impacts on the transportation system. Pre-COVID economic constraints have also led to discussions with the development industry on ways to reduce transportation and other infrastructure standards for new communities minimize land and development costs. To the extent that revised standards continue to achieve MDP/CTP goals, reduced requirements for new suburban infrastructure could reduce long-term asset management costs (of particular importance in Scenario 3: Increased Crisis).

11: Increase the Flexibility of Transit Service Delivery Options

Applicable Scenarios: Transform. Change & Increased Crisis **Timeframe:** Inform Strategy

Description: The potential changes to transit demand to the Greater Downtown and other destinations (e.g. post-secondary institutions) will require changes to transit service provision in all the scenarios. The overall scale of change, along with an increased range of travel options and regional travel patterns, makes this issue most prevalent in Scenario 2: Transformational Change. The risk of population and employment declines in Scenario 3: Increased Crisis would also require transit service rationalization.

12: Proactively Plan for More Regional Development and Travel

Applicable Scenarios: Transformational Change **Timeframe:** Monitor / Inform Strategy

Description: Accelerated adoption of remote work in Scenario 2: Transformational Change enables an increasing number of people to 'work globally' in cities across North America (or the world). Along with increased acceptance by businesses, an increasing disconnect between where people live and where they work emerges, resulting in more distributed population growth across the Calgary region. This would inherently change travel patterns in Calgary, but may also create new opportunities for economic growth.

13: Focus Transportation Capital on Local, Community-Scale Projects

Applicable Scenarios: Transform. Change & Increased Crisis **Timeframe:** Monitor / Inform Strategy

Description: For different underlying reasons, an increasing proportion of travel in Scenarios 2 and 3 would be within communities or to nearby communities and recreational areas. Should this pattern emerge, infrastructure funding should be reallocated to meet these needs.

14: Increase City & Private Sector Capacity to Redevelop Existing Buildings

Applicable Scenarios: Transform. Change & Increased Crisis **Timeframe:** Inform Strategy

Description: Scenario 2: Transformational Change results in more vacant office towers due to high levels of remote work, while Scenario 3: Increased Crisis results in a similar level of vacancies due to job losses during an extended depression. Enabling adaptive reuse of existing buildings will be critical to the ongoing vibrancy of the Greater Downtown.

15: Be Prepared for Increased Social Isolation and/or Disorder

Applicable Scenarios: Increased Crisis **Timeframe:** Monitor

Description: The extended economic depression described in Scenario 3: Increased Crisis would have a negative impact on many Calgarians. High levels of unemployment could lead to increasing crime and a desire to avoid areas of the city, or services, perceived as unsafe. Proactive measures to support disadvantaged residents and manage both physical and mental health safety concerns would be crucial if this scenario emerges.

Monitoring and Reporting

A real-time monitoring approach will be implemented to identify changing conditions and provide input to decision-makers on whether the recommended recovery actions should be ‘dialed up’ or ‘dialed down’. Figure 2 shows indicators that will be used to track how real-world conditions are emerging compared to the three scenarios.

Transportation Signals of Change	Indicators	Information Sources
DRIVER: COVID-19 Duration & Severity	Rate of Change in Hospitalization and ICU Admissions	COVID-19 Alberta Statistics site
	Availability of Vaccines or New Treatments	CBC Vaccine Tracker NY Times Vaccine Tracker
DRIVER: Global & Local Energy Sector Shifts	Benchmark Oil & Gas Prices / Projections	Monitor Commodity Prices and Review Sector Analyses
	Local Economic Diversity	Calgary Employment & GDP by Industry (Conference Board of Canada via CED)
Remote / Flexible Work	Corporate Plans for Remote Work, by Business Sector	Quarterly Surveys (City Business Perspectives Panel)
Delivery Services & E-Commerce	Occupancy and Use of Loading Zones	Loading Zone Occupancy Data
	Number of Home Deliveries per Day	Continuous Household Activity Survey

Figure 2: Indicators to Monitor Transportation COVID Recovery Scenarios

Figure 3 shows trigger indicators that will be used to determine if/when it may be appropriate to implement actions that are relevant to only one or two of the scenarios.

#	ACTION	Trigger Indicators
9	Prepare for More Inconsistent Weekday Travel Activity	AM & PM Peak Commuter Volumes to Downtown, by day-of-week
		AM & PM Peak Mode Split to Downtown, by day-of-week
10	Monitor & Respond to Greenfield Development Demand	Housing Starts in New and Developing Communities
		Number of New Communities Under Construction
11	Increase the Flexibility of Transit Service Delivery Options	Ridership per Vehicle vs Passengers per Revenue Operating Hour
		Cost per Transit Trip
12	Proactively Plan for More Regional Development and Travel	Housing Starts in Calgary vs Region
		Development Approvals in Calgary vs Region
13	Focus Transportation Capital on Local, Community-Scale Projects	Proportion of Trips Within 2 km of Local Communities
		Amount of Travel on Neighbourhood vs Arterial Streets
14	Increase City & Private Sector Capacity to Redevelop Existing Buildings	Greater Downtown Office Vacancy Rate
		Percent of Employees Remote Working, by Quadrant
15	Be Prepared for Increased Social Isolation and/or Disorder	Social Disorder Incidents (per 1,000 transit trips)

Figure 3: Trigger Indicators

Next Steps

The eight actions that are common across all three of the scenarios will be incorporated into Transportation's 2021 work plans. These are "**low risk, high benefit**" actions that will improve The City's ability to respond to changing conditions no matter the future state. Transportation will collaborate with other departments, such as Planning & Development, as required to ensure an integrated response.

Monitoring and preliminary planning should also be conducted for the remaining seven actions to maximize The City's ability to quickly respond to changing conditions.

To keep the scenarios and recommended actions in this report relevant and timely, this report will be maintained as a 'living document' and updated periodically. Several key trigger points to update the report include:

- After the peak of the 2020/2021 flu season (given potential magnification of COVID-19 impacts)
- Upon announcement of a vaccine for wide distribution in Canada
- One year after availability a vaccine for the Canadian public

Additional update points may be added as new milestones become apparent. Transportation will also actively coordinate with the Future Focused Calgary strategic foresight process managed by the Resilience Program to ensure ongoing information-sharing and alignment between the two processes.