Leapfrog to First: BANFF NATIONAL PARK NET ZERO 2035

Utilizing “Best Practices Per Visitor” and Technology to Transform Canada’s Jewel into North America’s First Net Zero Emissions Community

November 2020
Leapfrog to First: “Best Practices Per Visitor” & Technology to Transform Banff National Park to Net Zero by 2035
Zermatt + Zion + Technology = BANFF NATIONAL PARK NET ZERO 2035 - Summary

US National Parks and European Mountain Towns Leaders in Reducing Tourism Emissions
- United Nations World Tourism Organization identifies that 5%+ of GHGs are from tourism
- U.S. National Park Service is global leader in climate friendly parks visitation
  - Pioneered innovative vehicle and visitor management in Zion and Yosemite National Parks
  - Zermatt created Switzerland’s most sustainable community through innovative, multi-modal transit

Banff National Park Visitor Transportation GHGs Largest of Any North American National Park
- Banff 6th most visited National Park in N.A. but has largest visitor transportation emissions footprint
- Banff is similar to Zion National Park in visitation but has 63X the per visitor transportation GHGs

Zion’s and Zermatt’s “Best Practices Per Visitor” transit models and innovative technology can transform Banff so that “Once a visitor arrives in Banff, they do not need a vehicle”
- Challenge 1 – Vehicle congestion growth –“Status Quo” degrading environment and visitor experience
- Challenge 2 – Enhancing wildlife habitat (Example - Cascade Wildlife Corridor)
- Challenge 3 - Banff businesses need to continue to provide high-quality visitor experience
- Solution 1 - Calgary Airport to Banff Passenger Rail – Hydrogen powered
- Solution 2 - Develop “Sustainable Parks Visitation” program – Integrated mass transit
- Solution 3 - New, low carbon energy sources and vehicle and visitor management technology

Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”
- Public: Governments collaborating with advanced research organizations to design and implement projects
- Private: Investments in infrastructure, clean energy, mass transit programs, systems and software design
- Net Zero 2035 – Why Now?: Recent infrastructure investments, government policy changes and technology
- Working Group: Academic/Research Organizations, Community Leaders, 3 Levels of Government
- “Come Aboard” public engagement process to solicit input and ideas
Tourism Major Cause of GHGs

United Nations Identifies Tourism as Major Cause of Climate Change

• December 2019 United Nations World Tourism Organization (UNWTO) estimates tourism 5.6% of manmade GHGs
  • According to Canada’s Ministry of Environment and Climate Change:
    • Transportation accounts for a quarter of Canada’s greenhouse gas emissions, almost half of which comes from cars and light trucks. Electric vehicles offer the potential to significantly reduce greenhouse gas emissions.
  • Put another way, transportation is a quarter of the climate change challenge and tourism is a quarter of transportation

Source: United Nations World Tourism Organization
National Parks and Sustainable Tourism

**National Parks Can Serve as Leading Examples of Sustainable Tourism**

- The United Nations World Tourism Organization defines sustainable tourism as "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" ([United Nations World Tourism 2005](#)).

- National Parks are symbols for environmental management that can include reducing emissions.

- National Parks can serve as sustainable systems laboratories whose innovations can be applied outside of Parks.

Source: United Nations World Tourism Organization
U.S. National Park Service is Global Leader in Addressing GHGs in their Parks

**U.S. National Park Service is Global Leader in Making Parks Models for Reducing GHGs**

- Programs in place since 2003
- Green Parks Plan
- Climate Friendly Parks Program

**Head of National Park Service Driving Change**

- NPS Director’s “Call to Action” 2016: “...we will foster sustainability in our parks and with our partners by reducing greenhouse gas emissions by 20 percent...”
- National Parks must “focus our attention on engaging our partners and visitors to help us reduce our environmental footprint both inside and outside park boundaries” Jonathan B. Jarvis National Park Service Director, 2016

Source: United States National Parks Service
The Climate Friendly Parks (CFP) Program is one of many initiatives supporting the National Park Service (NPS) Green Parks Plan

• “Climate Friendly Parks” Program Developed in 2003
  • “Integrated approach to address climate change through implementing sustainable practices”
  • NPS’s Sustainable Operations and Climate Change branch coordinates all CFP efforts
• The program takes steps to address climate change within park boundaries and within surrounding communities. The goals of the Climate Friendly Park Program include:

1) Measure park-based greenhouse gas (GHG) emissions
   • Complete a GHG Inventory to develop a baseline emissions inventory for park visitors and operations

2) Educate the public about ways to experience Parks while reducing GHGs
   • Conduct staff workshops and public webinars on how to reduce Park GHGs

3) Develop specific actions to address sustainability challenges, reduce GHGs
   • Complete an Action Plan to outline planned sustainability and climate change response actions

Source: United States National Parks Service
A Sustainability Mission

• The Green Parks Plan (GPP): a long-term strategic plan for sustainable management; informing and engaging park staff, visitors, and community partners about climate change and sustainability to broaden opportunities to foster change.

Green Parks Plan
Advancing Our Mission Through Sustainable Operations

- Continuously Improve Environmental Performance
  The NPS will meet and exceed the requirements of all applicable environmental laws and adopt sustainable best practices in all facility operations.

- Be Climate Friendly and Climate Ready
  The NPS will reduce GHG emissions and adapt facilities at risk from climate change.

- Be Energy Smart
  The NPS will improve facility energy performance and increase reliance on renewable energy.

- Be Water Wise
  The NPS will improve facility water use efficiency.

- Green Our Rides
  The NPS will transform our fleet and adopt greener transportation methods.

- Buy Green and Reduce, Reuse, and Recycle
  The NPS will purchase environmentally friendly products and increase waste diversion and recycling.

- Preserve Outdoor Experiences, Promote Healthy Engagement
  The NPS will promote healthy outdoor experiences and minimize the impact of facility operations on the environment.

- Strengthen Sustainability Partnerships
  The NPS will incorporate sustainability initiatives into new and existing partnerships.

- Foster Sustainability Beyond Our Boundaries
  The NPS will engage visitors about sustainability and invite their participation.

- Green Our Grounds
  The NPS will enhance the sustainability of our landscapes.
U.S. National Park Service is Developing Sustainable Transportation Methods

Green Our Rides

**NPS Green Parks Plan — “Green Our Rides” Initiative**

**Vehicle Impact on GHGs**
- “Because visitor vehicles are a large source of GHG and criteria air pollutant emissions in parks, the NPS will help park visitors understand the impacts of their travel choices and guide visitors to use alternative transportation methods while moving within the park.”

**Vehicle Impact on Ecosystem**
- “Vehicle traffic can also degrade the acoustic environment and disrupt the ability of visitors and wildlife to perceive important acoustic information.”

**NPS Transportation Goals**
- “The NPS will adopt greener transportation methods.”
- “The NPS will identify ways that visitors can reduce the impact of air pollutants and GHG emissions from personal vehicles in parks.”

**New Partnerships for Sustainable Transportation**
- “Evaluating current practices and working to increase efficiency through new and existing partnerships to adopt sustainable transportation”

**Zion and Yosemite are particularly analogous to BNP**
- Similar visitation (Zion and Yosemite both 4.5MM/year) Banff 4.2MM/year
- Vast majority of vehicles and visitors concentrated in a central valley’s points of interest

Source: United States National Parks Service
U.S. National Park Service Developed Innovative Vehicle and Visitor Management Systems

**NPS Has Innovated with Vehicle and Visitor Management Systems**

- Enhancing both ecosystem health and visitor experience

**Zion National Park**

- 4.5 million visitors/year
- Vast majority of visitors are in Zion Canyon
  - Up until 1999, Park had vehicle congestion on main highway
- Solution: Shuttle only Service to Points of Interest “SOS to POI”
  - Implemented in 2000, no personal vehicles on main highway
  - Visitors park at intercept lot, ride shuttles to points of interest
- When announced on May 26, 2000, NPS Implemented to:
  - “…congestion, noise, pollution and associated resource damage…”
- Overwhelming Positive Response:
  - “When the shuttle started, it was a lifesaver and nearly universally applauded – a way to protect the park’s resources as well as improve the visitor experience...a quite canyon, no fights over parking spaces, significantly fewer cars up Zion Canyon (only those with accommodation at Zion Lodge)” History of the Zion Shuttle and Why it was Remarkable for National Parks. St. George News, March 11, 2018
Zion National Park experienced traffic congestion before a shuttle only system to points of interest (SOS to POI)

Imagine five thousand cars, motorhomes, and tour buses a day entering a narrow canyon with only 450 parking spaces. That was the situation in Zion Canyon before 1999. The National Park Service established the shuttle system to eliminate traffic jams and parking hassles, to protect vegetation, and to restore the tranquility and power of the early days of Zion Canyon. By taking the shuttle you become an active partner in preserving the canyon’s future.
All visitors to Zion Canyon must park at intercept lot.
  • Then ride shuttle only service to points of interest within canyon
  • Only exceptions are registered guests at Zion Lodge
Parks Canada & Climate Change – Opportunity to Leapfrog NPS

Parks Canada’s Visitor GHG Reduction Initiatives to Date
• Vehicle management system in Banff National Park
  • Small number of coaches with infrequent service, overflow parking lot in Lake Louise
  • Limited number of EV charging stations, close Points of Interest parking lots when full

New Parks Canada Commitment to Reduce Visitor GHGs Huge Policy Pivot
• “The Government of Canada is committed to providing Canadians with practical solutions to reduce emissions when they visit national parks, national historic sites and national marine conservation areas.” August 14, 2020
• No Details Other than Electric Vehicle Charging Stations

Parks Canada Announces Expert Panel to Advise on Sustainable Movement of Visitors
• Parks Canada will “create an expert panel to advise the Agency on the development of a long-term framework for the sustainable movement of visitors in the Bow Valley in Banff National Park.” November 3, 2020

Opportunity to Leapfrog US NPS and Become Global Leader in Reducing National Parks GHGs
• Parks Canada can replicate the actions the NPS has taken to reduce GHGs over the last 17 years
• In addition, Parks Canada can further innovate to be the leader in sustainable vehicle and visitor management

Source: Parks Canada
Banff National Park – Showcase Opportunity for GHG Reductions

**Banff National Park Ideal Venue to Showcase Emissions Reductions**

- Banff Most Visited Canadian National Park
- For Canada, Alberta’s National Parks receive 51% of all 39 National Parks Visitation
  - Remaining 9 provinces each receive 5.4% of the visitation to National Parks.
- Banff is most visited receiving 25% of all National Park Visitation
- Large scale provides applicability to other communities

### Canadian National Parks Attendance, 2019

<table>
<thead>
<tr>
<th>%</th>
<th>BNP</th>
<th>All other Alberta Parks</th>
<th>Rest of Canada</th>
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</thead>
<tbody>
<tr>
<td>49%</td>
<td></td>
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<tr>
<td>29%</td>
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<tr>
<td>23%</td>
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</table>

Source: Parks Canada
Banff 6th Most Visited National Park in North America

Banff National Park is the 6th most visited National Park in North America

**Most Visited National Parks in North America, 2019** (MM)

<table>
<thead>
<tr>
<th>Park</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Smoky Mountains</td>
<td>12.50</td>
</tr>
<tr>
<td>Grand Canyon</td>
<td>5.97</td>
</tr>
<tr>
<td>Rocky Mountain</td>
<td>4.70</td>
</tr>
<tr>
<td>Zion</td>
<td>4.50</td>
</tr>
<tr>
<td>Yosemite</td>
<td>4.50</td>
</tr>
<tr>
<td>Banff National Park</td>
<td>4.20</td>
</tr>
</tbody>
</table>

Source: Parks Canada, U.S. National Park Service
Banff – Traffic Degrading Ecosystem and Visitor Experience

**Banff’s Traffic Degrading Ecosystem and Visitor Experience**

- **Ecosystem** – Wildlife habitat adversely impacted by vehicles
  - Roads with high volume traffic bisecting important wildlife corridors
- **Visitor Experience - Congestion in Banff Townsite and Park Points of Interest**
  - Recent Survey of Banff Visitors by Dr. Joe Pavelka, Professor of Eco-Tourism at Mount Royal University
    - 30% of visitors to Banff cut their trip short due to congestion and crowding and 20% will not return for the same reason.
    - 38% of visitors believe that local authorities should do more to address congestion and crowding.
  - Clearly for Banff’s future visitation growth to be sustainable new approaches need to be employed to address the impact of vehicles in the Park.
Banff National Park GHG Baseline – Study Just Completed

**Parks Canada has No GHG Baseline for Banff National Park**

- 15+ Years after US National Park Service Implemented Climate Friendly Parks
- Traffic congestion has been Banff’s #1 challenge for decades

**Liricon Commissioned Study to Measure Baseline Visitor Transportation Emissions**

- Partnered with University of Calgary’s Canadian Energy Systems Analysis Research (CESAR) Initiative and the Transition Accelerator
- Led by Dr. David Layzell, leading academic authority on new technology emissions reductions (hydrogen, etc.)
- Detailed visitor and resident transportation analysis for within Town of Banff and across Park
  - Identified trips to points of interest including Lake Minnewanka, Johnson’s Canyon, Lake Louise, Moraine Lake, etc.
  - Completed August 2020

Dr. David Layzell
Banff National Park Transportation GHGs

- Dr. Layzell and his team at the Transition Accelerator conducted a very detailed analysis of how visitors and residents traveled the Town of Banff and the Park

Points of Interest (POI) at BNP

<table>
<thead>
<tr>
<th>ID</th>
<th>Neighborhood</th>
<th>Points of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Banff Downtown</td>
<td>Banff Downtown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banff Centre for Arts and Creativity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fairmont Banff Springs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tunnel Mountain</td>
</tr>
<tr>
<td>2</td>
<td>Cave &amp; Basin</td>
<td>Cave and Basin National Historic Site</td>
</tr>
<tr>
<td>3</td>
<td>Norquay</td>
<td>Norquay Chairlift</td>
</tr>
<tr>
<td>4</td>
<td>Sulphur Mt</td>
<td>Sulphur Mountain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sulphur Meadows</td>
</tr>
<tr>
<td></td>
<td>Banff Gondola et al.</td>
<td>Banff Upper Hot Springs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banff Gondola</td>
</tr>
<tr>
<td>5</td>
<td>Minnewanka et al.</td>
<td>Lake Minnewanka</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Two Jack area</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Cascade Ponds</td>
</tr>
<tr>
<td>8</td>
<td>Sunshine</td>
<td>Sunshine Village Ski area</td>
</tr>
<tr>
<td>9</td>
<td>Johnston Canyon et al.</td>
<td>The Bow Valley Parkway</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Johnston Canyon</td>
</tr>
<tr>
<td>10</td>
<td>Lake Louise</td>
<td>Fairmont Chateau Lake Louise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The village of Lake Louise (near Samson Mall)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lake Louise Gondola</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lake Louise Ski Area</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Moraine Lake</td>
</tr>
<tr>
<td>13</td>
<td>Canmore</td>
<td>The Town of Canmore</td>
</tr>
</tbody>
</table>

Source: The Transition Accelerator
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
- The study was very granular including mapping the routes visitors take of points of interest across the park

Possible routes to reach each POI

Source: The Transition Accelerator
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
• Banff National Park including Town of Banff produces about 105 metric tons/year of CO2

Total GHG emissions

<table>
<thead>
<tr>
<th>t CO2e/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>104,892</td>
</tr>
</tbody>
</table>

Source: The Transition Accelerator
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
• Town of Banff has approximately 9,000 residents
• Visitors produce 24X the transportation GHGs of residents
• Visitors produce the equivalent transportation GHGs of a city of about 216,000 people
  • Equivalent to the City of Burlington, Ontario or 2X Red Deer, Alberta

GHG Emissions Summary
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
- Town of Banff very small relative the size of Park
- Majority of Points of interest outside of Townsite

GHG Emissions within & outside the townsite

Source: The Transition Accelerator
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
• Most of Banff’s transportation GHGs are outside of the townsite
• Points of interest are far apart
  • Example – Banff to Moraine Lake is approximately 140 km return trip

GHG Emissions within & outside the townsite

Source: The Transition Accelerator
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs
• Banff has 5X the total gross transportation GHGs of the US National Park with the most GHGs

<table>
<thead>
<tr>
<th>National Park</th>
<th>Gross Transportation GHG Emissions (MTCE)</th>
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<tbody>
<tr>
<td>Banff National Park</td>
<td>104,892</td>
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<tr>
<td>Grand Canyon</td>
<td>21,811</td>
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<tr>
<td>Great Smoky Mountains</td>
<td>19,947</td>
</tr>
<tr>
<td>Yosemite</td>
<td>10,200</td>
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<tr>
<td>Rocky Mountain</td>
<td>2,768</td>
</tr>
<tr>
<td>Zion</td>
<td>1,200</td>
</tr>
</tbody>
</table>

Source: Parks Canada, U.S. National Park Service
Banff National Park GHG Baseline – Study Just Completed

Banff National Park Transportation GHGs

- Banff has 63X the per visitor GHGs of Zion National Park
  - Similar total visitation and concentration of visitors in central valley
  - Zion has Shuttle Only System to Points Of Interest
  - Banff allows visitor personal vehicles across the Park

**Per Capita Transportation GHG Emissions**
(MTCE/Person)

<table>
<thead>
<tr>
<th>Park</th>
<th>MTCE/Person</th>
</tr>
</thead>
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<tr>
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<td>0.0250</td>
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<td>Grand Canyon</td>
<td>0.0049</td>
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<td>Yosemite</td>
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<tr>
<td>Great Smoky Mountains</td>
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<td>Rocky Mountain</td>
<td>0.0010</td>
</tr>
<tr>
<td>Zion</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

Source: Parks Canada, U.S. National Park Service
Banff - First Net Zero Emissions Community in North America

Banff Net Zero Emissions 2035 Goal

• Banff can be flagship model of sustainable Park

Banff ideal community

• Compact size
  • Townsite just 4 square km allows opportunity to pilot many new technologies and systems

• High visitation
  • Visitors can experience new, innovative ways of transit, pedestrianization to bring back to their home communities

• Extensive Regulations
  • Government can determine how visitors experience the Park outside of the townsite

Canada’s Goal is Net Zero by 2050

• Canada needs “net zero community laboratory” to see what works and what doesn’t

• “If Banff can’t get to net zero by 2035, Toronto doesn’t stand a chance by 2050”

• Transformational National Goal: Opportunity for Canada and Alberta to lead the world in net zero
  • Similar to JFK’s challenge in 1961 to put Man on the Moon by 1969
Town of Banff’s Current Climate Change Commitment

Town of Banff Already Committed to Addressing Climate Change

- In January 2019, council adopted a new Environmental Master Plan
  - Includes community-wide goals of achieving 30% emissions reductions by 2030, and 80% by 2050 (relative to 2016 emissions levels)
  - Goal of achieving 100% renewable energy by 2050.
- The Renewable Energy Transition Roadmap is a long-term technical blueprint that provides pathways to achieving these ambitious goals.
  - Includes Focus on further developing Mass Transit
  - Promoting a mode shift to transit among general public, hospitality/tourism industries
  - Seamless integration of transit with car shares, bike shares, active transportation, etc. in order to drive mode-shift

Banff Net Zero 2035 is Acceleration of Banff Environmental Master Plan

- Requires New, Visionary, Practical Model
- Blend of new and proven technologies, protocols
Banff – First Requires Focus on Visitor Transportation

Transportation largest source of GHGs in National Parks

- Represents on average 50% of total US National Park GHGs
- National Parks have the benefit of being able to adjust transportation protocols and systems

U.S. National Parks GHG Emissions Sources (%)

- Transportation: 50%
- Energy: 36%
- Waste: 10%
- Other: 4%

Source: U.S. National Park Service top 5 most visited parks GHG distribution by source
Worst Traffic in Developed World: Toronto

Lessons Learned in Banff National Park can be applied to City Traffic Congestion

- Pioneering new technologies and vehicle management protocols
  - Example – Hydrogen trains, intercept parking, shuttle systems, aerial transit, etc.
- Protype in smaller setting before applying to large cities
  - Example – Toronto has the worst traffic congestion in the developed world creating huge GHG footprint

Toronto is 6th worst city for commuting, study finds

CTVNews.ca Staff
Published Thursday, June 21, 2018 11:57AM EDT

- If you’ve ever had to drive across the city of Toronto or catch a bus in town, you’ll likely agree with a new finding: Toronto truly has one of the worst commutes in the world. A new study ranks Toronto commuting not just the worst in the country, but the sixth worst in the world.
- The study, which comes from a B2B comparison site called Expert Market, looked at 74 cities with population sizes of 300,000 or more.
- The only cities that fared worse overall than Toronto were three cities in Brazil (Rio De Janeiro, ranked dead last, Sao Paulo, and Salvador), as well as Bogota, Colombia, and Istanbul, Turkey.
- The average Toronto worker spends an average of 96 minutes a day commuting -- the second longest time in the list.
Banff Net Zero Emissions 2035 – Actions to Achieve

Actions to Achieve Banff Net Zero – Address Challenges, Develop Solutions, Create Public/Private Partnerships for “Canada’s Green Transit Laboratory”

Challenges: Visitor Management Due to Park Visitation Growing

- **Challenge 1 – Vehicle Congestion Growth**
  - Calgary Airport to downtown, Town of Banff vehicle congestion increasing
  - Points of Interest in the Park (PIPs) (Johnston Canyon, Lake Minnewanka, Lake Louise, Moraine Lake) experiencing worse congestion over time degrading areas’ ecological integrity

- **Challenge 2 – Enhancing wildlife habitat (example - Cascade Wildlife Corridor)**
  - Allow wildlife to move safely between areas of suitable habitat – avoid habitat fragmentation

- **Challenge 3 - Banff businesses need to continue to provide high-quality visitor experience**
  - Vehicle and visitor management solutions that enhance visitor experience

Solutions: Innovative, Integrated to Address Congestion, Ecosystem Health and Climate Change

- **Solution #1 Calgary Airport to Banff Passenger Rail:**
  - Initially Diesel Electric, Potentially Hydrogen Powered Zero Emissions Train

- **Solution #2 Develop “Sustainable Parks Visitation” program - “Once a visitor arrives in Banff, they no longer need a vehicle”**
  - Intercept parking, shuttle only service to points of interest, aerial transit, walking-centric street designs

- **Solution #3 New, low carbon vehicle and visitor management technology**
  - Electric autonomous shuttles, visitor support software providing integrated reservations experience from plane to train to shuttles to points of interest

Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”

- Public: Governments collaborating with advanced research organizations to design and implement projects
- Private: Investments in infrastructure, clean energy, mass transit pilot programs, systems and software design
Challenge #1 – Growing Traffic Congestion

The growth of the Calgary Airport and Banff’s growing popularity is leading to traffic congestion from the Calgary Airport to downtown Calgary and within Banff National Park and the Town of Banff.

• Calgary’s Growth Leading to Traffic Congestion from Calgary Airport to Downtown
  - Calgary Only City of Canada’s Big 4 Without Direct Rail Link From Airport to Downtown
  - Toronto, Vancouver, and Montreal (REM in 2023) will all have mass transit rail from airports

• Banff’s Growing Popularity Creating Visitor Management and Environmental Challenges
  - Banff’s 4.2 million visitors/year increasing vehicle congestion in townsite and points of interest across the Park impairing ecological integrity and visitor experience
  - Like many communities, existing infrastructure beyond design capacity and GHG inefficient

Deerfoot Trail, Calgary
Visitor growth to Banff National Park has been increasing and is expected to continue to grow.

- 4.2 million visitors in 2017-18, expected to be 5 million + within 15 years
- In 2016, Town of Banff retained Stantec to study Banff’s traffic congestion and develop solutions

**BANFF LONG TERM TRANSPORTATION STUDY**

Figure 2.2 Potential future visitation to Banff

**Visitor Growth Projections for Town of Banff**

- Visitors: 3,000,000, 4,000,000, 5,000,000, 6,000,000

1.8% Yearly Visitor Growth
Challenge #1 - Growing Banff Visitation Causing Traffic Congestion

Banff’s increasing number of visitors, almost all of which come by personal vehicle, is leading to environmentally degrading traffic congestion and harming the visitor experience.

- **Banff Experiencing Increasing Vehicle Volumes**
  - The townsite’s road system beyond capacity during peak periods
  - Total annual volume of 6.5 million vehicles in 2020, increase of 8% over 5.9 million in 2015
  - At Bow Bridge, 4.2 million vehicles creating a “choke point” backing up vehicles on Mountain Avenue and Spray Avenue
  - Vehicles crossing Bow Bridge roughly match total visitation – expected to grow to 5.3 million by 2035

- **Goal: move people, not cars**

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**Banff Visitor Origins**

- 45% from Alberta
- 21% from USA
- 21% from Rest of Canada
- 13% from International

- 93% by Personal Vehicle
- 7% by Bus
Challenge #1 - Forecasted Congestion - Annual

Currently the increased visitation causes 4 months/year of congestion as road network reaching its design capacity.

• The number of months of congestion will move from 4 to 5 months by 2025.

### BANFF LONG TERM TRANSPORTATION STUDY

Executive Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Years from 2015</th>
<th>Months of congestion without action</th>
<th>Entrance counter vehicle volume</th>
<th>Bridge counter vehicle volume</th>
<th>Annual visitation</th>
<th>Vehicles required to be removed to resolve congestion (per day at peak)</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>0</td>
<td>2</td>
<td>5,938,349</td>
<td>3,824,117</td>
<td>3,609,637</td>
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<td>2020</td>
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<td>6,455,697</td>
<td>4,151,704</td>
<td>3,946,412</td>
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<td>2025</td>
<td>10</td>
<td>5</td>
<td>7,021,191</td>
<td>4,509,498</td>
<td>4,314,607</td>
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<td>2030</td>
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<td>6,164,486</td>
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</table>
Challenge #1 - Points of Interest Across Park – Increasing Vehicle Congestion

Points of interest across the Park (Johnston Canyon, Moraine Lake, Lake Louise, Lake Minnewanka, etc.) (POIs) are also becoming increasingly congested with vehicles thus affecting the ecological integrity of the areas and degrading the visitor experience.

The Park’s POIs Increasingly Vehicle Congested

• Limited parking at Johnston Canyon, Moraine Lake, Lake Louise, Lake Minnewanka, etc.

Wildlife in the Park’s POIs are Unprotected to Vehicles

• PIPs located outside of TransCanada highway wildlife fencing

Parks Canada Has Started Shuttles to POIs

• Multiple pick-up spots in Banff but visitors parking across entire Banff townsite limiting shuttle use
Wildlife habitat across the park is being impaired by vehicles. For example, the Cascade Wildlife Corridor is an important link for wildlife, particularly large carnivores, moving east and west across the park that Parks Canada has taken several steps to improve its environment but is still being impacted by vehicles.

Cascade Wildlife Corridor Major East-West Wildlife Link
- Allows wildlife to move safely between areas of suitable habitat (avoids habitat fragmentation)
- Especially important for wide range species such as large carnivores including grizzly bears, cougars and wolves
- Since 1993, Parks has taken several steps to reduce impact of man-made impediments
  - Removed cadet camp, bison paddock, horse pasture
  - Restricted use of airstrip
Challenge #2 – Wildlife Habitat Impaired – ie. Cascade Wildlife Corridor

The Norquay Access Road is 1 of 2 remaining major man-made impediments in the Cascade Wildlife Corridor. Over the last several years, Norquay has taken a number of steps to limit the rate of growth of vehicle traffic to Norquay.

- Norquay has taken a number of steps to limit road traffic including providing free bus shuttles to and from Town, encouraging car pooling on select days, etc.
- The access road remains a major impediment given its large size (168 acres relative to Norquay’s 190 skiable acres) and substantial traffic (330,000 2-way traffic/year).
Challenge #3 – Vehicle Management Must Enhance Visitor Experience

Visitors to Banff identify the Town’s traffic congestion as one of their top concerns. Visitors to other mountain towns such as Zermatt Switzerland have adjusted their behaviour through the use of mass transit and intercept parking.

Visitors Frustrated by Banff Traffic Congestion
- Surveys demonstrate traffic congestion among visitors’ top concerns

Intercept Parking On its Own With No Stakeholder Support Can Be Less Convenient for Visitors
- Visitors Won’t Walk Far (generally less than 10 minutes)

Visitors Prepared to Adjust Behaviour When See Benefits of Pedestrianization
- “Zermatt is the most sustainable winter holiday resort in Switzerland” Trek Soft, 2019
- Zermatt Switzerland is model of a “car free” mountain town that has used intercept parking, shuttles, gondolas and passenger rail to pedestrianize and become 1 of the world’s top destinations.
Canada’s Green Transit Laboratory: 
Zermatt + Zion + Technology = BANFF NATIONAL PARK NET ZERO 2035

- **Need Innovative, Integrated Solutions to Address Congestion, Ecosystem Health and Climate Change**
  - Hydrogen powered, zero-emissions passenger train (first in Canada) reducing vehicles into Calgary and Banff
  - Visitor pedestrianization, wildlife habitat enhancements, and mass transit in Banff to encourage train ridership
    - Inspiration from other busy mountain towns (e.g. Zermatt) and National Parks (e.g. Zion)
    - Intercept parking, shuttle only service to points of interest, aerial transit, walking-centric street designs
Solution #1 - Calgary Airport to Banff, Passenger Rail

The potential of Calgary Airport and Banff Rail (CABR) is a game-changer for lowering the per visitor environmental footprint in Banff National Park.

Solution #1 - Commuter Passenger Rail from Calgary Airport to Banff
- Mountain Tourist Towns Typically, and Historically, Accessed by Train
  - Example: Zermatt Switzerland’s train service creates pedestrian friendly and environmentally sound town-centre
- Banff Historically Developed Around Train Travel
  - Up to 7 trains/day arrived in Banff before TransCanada Highway Built
- Calgary Largest City in North America with No Passenger Rail Service
  - VIA discontinued Rail Service from Calgary in 1990; population since has almost doubled
- Large Number of Visitors Could be Accommodated by Passenger Rail
  - Bow Valley Mass Transit Study 2019 estimates train ridership at 220,000 to 620,000 per year

Glacier Express (to Zermatt)

CPR Canadian (from Calgary)
Solution #1 - Calgary Airport to Banff Passenger Rail - Studies

After the completion of a feasibility study on the development of passenger rail from downtown Calgary to Banff in 2019, the Federal and Provincial Governments are doing further analysis of an expanded service to the Calgary Airport.

Solution #1 - Commuter Passenger Rail from Calgary Airport to Banff

• Initial Feasibility Study Completed February, 2019
  • Stakeholders include Calgary, Cochrane, Canmore, Banff, Lake Louise, Liricon, CP
  • Study only covered downtown Calgary to Banff, stops along line include Morley (Indigenous Reserve)
  • Study financed by Province of Alberta, focused on market demand (both visitor and commuter), schedule, capacity, construction and operating costs
  • New dedicated passenger line in CPR corridor ensures on-time performance, frequent departures
Solution #1 - Calgary Airport to Banff Passenger Rail - Studies

After the completion of a feasibility study on the development of passenger rail from downtown Calgary to Banff in 2019, the Federal and Provincial Governments are doing further analysis of an expanded service to the Calgary Airport which is expected to be complete in late September 2020.

Solution #1 - Commuter Passenger Rail from Calgary Airport to Banff

- **Expanded Planning & Pre-Procurement Study April - October, 2020**
  - Stakeholders include Calgary, Cochrane, Canmore, Banff, Lake Louise, Liricon, CP
  - Service extended to include from downtown Calgary to Calgary Airport
  - Study funded by Federal Government through Canada Infrastructure Bank ("CIB")

- **Constructing Line and Operating Train Service to be Public-Private-Partnership**
  - CIB and Province of Alberta through Ministry of Transportation with private infrastructure investor

- **Timing: Potential to Have Service Running 2023**
  - Town of Banff and Parks Canada working together to create long-term transportation solutions as part of Banff National Park’s 2020 management plan
  - Passenger rail is the primary long-term mass transit solution recommendation of the plan
Solution #1 - Calgary Airport to Banff Passenger Rail – Hydrogen Power

Calgary Airport to Banff Rail (CABR) will initially be diesel electric but has the potential to be hydrogen powered when the associated fuel infrastructure is in place at the Calgary Airport.

Solution #1 - Commuter Passenger Rail from Calgary Airport to Banff

- Initially Diesel Electric Powered Train
  - All fuel infrastructure in place

- Hydrogen Powered Zero Emissions Train
  - Alstom Coradia iLint is the world’s first passenger train powered by a hydrogen fuel cell, which produces electrical power for traction. This zero-emission train emits low levels of noise, with exhaust being only steam and condensed water.
  - Innovative elements: clean energy conversion, flexible energy storage in batteries, and smart management of traction power and available energy
Solution #2 – Develop “Sustainable Parks Visitation” Program

Parks Canada can develop “Sustainable Parks Visitation” program

• **1) Baseline – GHG Inventory**
  - In addition to transportation, expand study to include energy, Waste, etc.

• **2) Education – Communication System**
  - How visitors can lower their GHG footprint while visiting Park

• **3) Actions – Investments, Visitor Protocols**
  - Infrastructure to Support Passenger Rail and Intercept Parking
    - Shuttle Only Service to Points of Interest
    - Aerial Transit to Norquay
    - Pedestrianization of Downtown Banff

• **Mass Transit Makes Banff Not Only More Sustainable but More Inclusive**
  - Mass transit increase affordability when don’t have to rely on personal vehicle
Solution #2 – Develop “Sustainable Parks Visitation” program - Banff Pedestrianization: Intercept Parking

The Town of Banff Stantec Study (2016) recommends the development of intercept parking lots as the best method of managing visitor traffic.

- The Study recommended building 1,000 stalls immediately & more than 2,000 stalls within 20 years.
- Intercept Parking was first adopted as official policy by Town Council in 1979 (0 stalls built before Liricon’s Train Station Lot in 2019).

BANFF LONG TERM TRANSPORTATION STUDY

Possible Solutions

Intercept lot stall requirements:

<table>
<thead>
<tr>
<th>Year</th>
<th>Years from 2015</th>
<th>Months of congestion without action</th>
<th>Intercept lot stalls required</th>
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<td>0</td>
<td>2</td>
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<tr>
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</table>
Solution #2 – Develop “Sustainable Parks Visitation” program
Banff Pedestrianization - Visitors 90% Parking Demand

Downtown Banff experiences congestion and parking pressures throughout the summer months with average public parking occupancy of 72% and Peak Occupancy of 94%.

- There are 1,220 stalls in downtown Banff (593 Off Street, 627 On Street)
- Currently residents require less than 200 stalls whereas visitor demand is approximately 1,400 stalls

2.4 Current & Future Parking Surplus/Shortfall using assumptions from Bunt & Associates 2012 Transportation Master Plan

<table>
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<tr>
<th>Parking Zone</th>
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<th>10-Year</th>
<th>20-Year</th>
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<tr>
<td>Visitor Demand</td>
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<td>Expected Demand</td>
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<tr>
<td>Practical Shortfall</td>
<td>-125(^b)</td>
<td>-360</td>
<td>-595</td>
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Bunt & Associates 2012 Transportation Master Plan Estimate Future Parking Deficiency
Solution #2 – Develop “Sustainable Parks Visitation” program

Banff Pedestrianization - Intercept Parking Key to Transformation

For Banff’s Intercept Lots to be successful they need to be easily accessible, supported with shuttles and embraced by the business community.

Intercept Parking Requires Multiple Stakeholder Support to be Successful

• Easily accessible
  • Build pedestrian bridge across tracks
• Shuttle service to Points of Interest across Town and Park
  • Continue to expand mass transit
• Downtown Banff businesses need to cater to pedestrians
  • Outdoor cafes in summer, animate streets in winter – creates “sticky pavement” phenomena
• Resident Only Vehicle Pass to centralize day visitor arrival point

Pedestrianization Enhances Visitor Experience Increasing Downtown Banff Business

• Encourages visitors to linger in pedestrian malls
• Businesses on pedestrian zones perform better than nearby businesses on streets with cars
Solution #2 - Develop “Sustainable Parks Visitation” program Intercept Parking for Town of Banff and Points of Interest Across the Park

Liricon opened the first intercept lot which included 500-stalls in the the summer of 2019 - an immediate success.

Solution #2 – Train Station Intercept parking for 500 vehicles

- Phase 1 Train Station South Lot: 500 Stalls
  - Liricon built in 2019 first intercept lot after 40 years of official town policy
  - Liricon providing free, train station lots now account for approximately 15% of downtown’s stalls
- Banff Townsite Vehicle Congestion Reduced – But Only Incrementally
  - Need for 1,000 stalls immediately and 2,000 stalls longer term
- Points of Interest Across the Park Require Managed Visitation
  - Vehicle congestion impacts ecological integrity, degrades visitor experience
  - Central collection spot for visitors to take shuttles to various points of interest across the Park
Solution #2 – Develop “Sustainable Parks Visitation” program Banff Pedestrianization - POIs Shuttles – Zion Shuttle System

Zion National Park, which has experienced similar vehicle congestion problems as Banff, has developed a vehicle management system which requires visitors to park in an intercept lot and a shuttle only system to Points of Interest (POIs)

Zion has a similar number of visitors to Banff (4.5 million+ visitors/year)
  • Similar layout to Banff National Park – one access road through valley to its POIs

Day visitors must park their vehicles at intercept lot for the duration of their stay
  • Zion provides free shuttle to POIs from central parking location

To Reduce Congestion at POIs, visitors restricted based on shuttle capacity
  • Visitors can “hop on and off” shuttles to POIs to minimize congestion at PIPs
Solution #2 – Develop “Sustainable Parks Visitation” program

Banff Pedestrianization – Closing to Vehicles Banff Avenue

The pedestrianization of Banff took a big leap forward on May 11, 2020 when Town Council voted to investigate the closing to vehicles of Banff’s main commercial thoroughfare.

Rocky Mountain Outlook, May 12, 2020

*Town investigating vehicle closure for 100 and 200 blocks of Banff Avenue*

...Councillor Grant Canning voiced support for the move, noting the Liricon parking lot at the train station, with potential for shuttles running back and forth, makes it more feasible than ever before..
Solution #2 – Develop “Sustainable Parks Visitation” program – Survey Concludes Parking Protocols Can Reduce Traffic 60%

New survey of Banff visitors and residents conclude that should the Town institute paid parking and resident-only parking passes on residential streets then 60% of the cars parking and looking for parking in downtown will instead park at the Train Station lot

- Liricon, the Town of Banff and Banff Lake Louise Tourism partnered on survey August 2020
  - Survey designed by Dr. Joe Pavelka, Professor of Eco-Tourism Mount Royal University
- Canvassed visitors and residents on impact of Banff Pedestrian Zone
- Overwhelming support for continuing closure of 100 and 200 Blocks of Banff Avenue
  - 97% of visitors support Banff Pedestrian Zone, 85% of residents believe it helps Banff businesses
  - 60% of visitors will walk to Banff Pedestrian Zone if Banff has paid parking and resident only parking pass on residential streets
Solution #2 – Develop “Sustainable Parks Visitation” program Aerial Transit – Banff Study Identifies Gondola as Sustainable Transit

Aerial Transit was identified by the Town of Banff’s Stantec study (2016) as a possible solution to the town’s traffic problems.

• Goal: Once visitor arrives in town, they no longer need a vehicle to experience the Park
• Town of Banff proposal (2016) was for Aerial Transit to go through town
• Broad public support for the project – 58% either “it might work” or “liked it a lot” and investigate further

<table>
<thead>
<tr>
<th>BANFF LONG TERM TRANSPORTATION STUDY</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>

### 3.4 AERIAL TRANSIT

Aerial transit systems are designed to alleviate traffic congestion by providing grade-separated travel corridors which are not subject to congestion arising from capacity constraints and user conflicts that commonly occur with at-grade solutions (such as building new roads, street cars or conventional transit).

Experience from other aerial transit systems demonstrates that aerial transit is also a visitor experience in itself that - through fare revenue collection - can generate income to help offset or eliminate net operating costs and tax burden.

Examples of some aerial transit systems currently in operation are summarized below:

*Telluride Gondola from Town to Ski Area Above Access Road*

*Town of Banff Survey on “Consider construction of aerial transit system”*
Solution #2 – Develop “Sustainable Parks Visitation” program
Aerial Transit to Norquay Enhances Cascade Wildlife Corridor

Aerial transit to Norquay would achieve the dual benefit of visitors not requiring a vehicle once they arrive in Banff to access the high alpine and would allow Norquay’s parking to be moved from the alpine to the Train Station and thereby enhance a wildlife corridor.

Solution #2 - Gondola from Station to Norquay’s High Alpine

• Misstakis Institute, a leading environmental research organization, studied Norquay’s gondola proposal and concluded there would be a potential positive gain for wildlife from the project.

• Norquay currently in discussions with Parks Canada regarding a revised Gondola Feasibility Study after first proposal, submitted to Parks Canada May 2018 was rejected in December 2019
Solution #3 – New low carbon vehicle and visitor management technology

- **Solution #3 New, low carbon vehicle and visitor management technology**
  - Electric autonomous shuttles
  - Banff’s small size allows for relatively small number of routes to effectively cover townsites
  - Smaller than conventional mass transit buses with more frequent service enhances visitor experience

- Visitor support software providing integrated reservations experience from plane to train to shuttles to points of interest
- Reservation system ensures that points of interest are not over-crowded which enhances both the environment and visitor experience
Canada’s Green Transit Laboratory – Public/Private Components

To address the growing challenge of vehicle congestion in Banff National Park and pioneer technology to help Canada transition to a zero-emissions economy, the Government of Canada and the Province of Alberta can partner with leading public and private organizations to develop “Canada’s Green Transit Laboratory” including Calgary Airport to Banff Passenger Rail (“CABR”) and cutting edge, environmental friendly, seamless transit solutions for Banff visitors.

- Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”
  - Public: Governments collaborating with advanced research organizations to design and implement projects
    - Federal Government, Province of Alberta, Municipalities providing financial and regulatory support
    - Universities, Research Institutes studying low carbon solutions, systems to enhance ecological integrity
  - Private: Investments in infrastructure, clean energy, mass transit pilot programs, systems and software design
    - Construction and operation of new dedicated passenger rail line within existing CP Rail corridor – transit infrastructure investors
    - Development of hydrogen facility, pipeline and terminal from Edmonton to Calgary Airport - clean energy infrastructure investors
    - Electric autonomous shuttles pilot program throughout Banff’s 4 square kilometre townsite – autonomous vehicle and automotive companies
    - Visitor support software providing seamless reservations experience from plane to train to shuttles to points of interest – integrated telecommunications and AI software companies
Canada’s Green Transit Laboratory – Public/Private Components

- **Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”**
  - Public: Governments collaborating with advanced research organizations to design and implement projects
    - Universities, Research Institutes studying low carbon solutions, systems to enhance ecological integrity
  - Example – Hydrogen economy research

![Building Transition Pathways to a Canadian Hydrogen Economy](image)

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**Merkebe Demissie,** Energy Systems Analyst
**Jessica Lof, MSc.** Hydrogen Lead,
**Cameron Young, PEng, MSc.** Energy Systems Analyst,
**Song Sit, PhD, PEng** Senior Associate
**Mark Stout, BSc. PEng** Energy Systems Analyst,
**Daya Nhuchhen, PhD, PEng** Postdoctoral Fellow
**Kunbi Adetona, MSc** PhD Student
**Geoff Martin, BSc** Senior Associate
Canada’s Green Transit Laboratory – Public/Private Components

- **Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”**
  - Public: Governments collaborating with advanced research organizations to design and implement projects
    - Universities, Research Institutes studying low carbon solutions, systems to enhance ecological integrity
  - Example – Replacing Diesel Electric with Hydrogen Fuel Cell Electric

Replacing Diesel-Electric with Hydrogen Fuel Cell Electric in the Railway Environment

- Comparing fuel use for regional passenger trains
  - 0.27 kg H₂/km rail
  - 1.45 L diesel/km rail
- Resulting energy use:
  - 38.1 MJ H₂/km
  - 56.1 MJ diesel/km
  - The H₂ fuel cell electric drive train is 32% more efficient than a diesel-electric drivetrain.

Most comprehensive, up-to-date assessment
Canada’s Green Transit Laboratory – Public/Private Components

- Public/Private Partnerships Components for “Canada’s Green Transit Laboratory”
  - Public: Governments collaborating with advanced research organizations to design and implement projects
    - Universities, Research Institutes studying low carbon solutions, systems to enhance ecological integrity
  - Example – Hydrogen infrastructure investment

3. Building from infrastructure to meet diesel markets, blue H₂ can decarbonize:
   - Natural gas distribution
   - Industrial processes (incl. steel, fertilizer, chemical ind., etc)
   - Power generation

4. Build ‘green’ H₂ prod’n using infrastructure from ‘blue’
   - Wind & Solar
   - Excess large hydro
   - Excess nuclear

5. Export markets for H₂
   - Other provinces (pipeline)
   - USA (pipeline)
   - Asia (liquid hydrogen, LH₂)
Canada’s Green Transit Laboratory – Public/Private Components

- **Public/Private Partnership Components for “Canada’s Green Transit Laboratory”**
- Public: Governments collaborating with targeted research organizations to design and implement projects
  - Universities, Research Institutes studying low carbon solutions, systems to enhance ecological integrity
- Example – GHG impact of Calgary Airport to Banff Passenger Rail

**Calgary-Bow Valley Passenger Rail Calculation of GHG Emissions Impact**
(Merkebe Demissie and David Layzell)

![Map of the study area](image)

**Commissioned by Liricon Capital**

**Part A:** Calgary Airport ↔ Downtown Calgary,

**Part B:** Calgary (incl. Airport, downtown, west side and Cochrane) ↔ Banff (incl. Canmore).

Figure 2.1 Map of the study area.
For years, there have been some who believed Parks Canada’s 2 official mandates (enhance the environment and enhance the visitor experience) were competing interests and an improvement in one area would only be possible to the detriment of the other. Unfortunately, efforts to keep these mandates in balance led to the degradation of both the visitor experience and the environment.

- Historic Perspective: Keep Mandates in Balance
  - View that Parks Canada’s twin mandates of enhancing the ecosystem and enhancing the visitor experience were competing interests.
  - Theory: If improvements are made to one mandate it may come at the expense of the other.
  - Conclusion: To maintain balance between enhancing the environment and enhancing the visitor experience it was best to maintain the “status quo” in many instances.

- Compromising to keep the mandates in balance proved to be a false paradigm for two reasons:
  - 1) Maintaining the “status quo” while visitation expanded led to increased congestion, degrading both the ecological integrity and the visitor experience.
  - 2) Other destinations have proven that through investments in innovative visitor and vehicle management systems that focus on “best practices per visitor” and public/private partnerships, both the environment and visitor experience can be significantly enhanced.
    - Example: Zion National Park’s 1999 transition to a Shuttle Only Service to Points Of Interest (replacing all personal vehicles) significantly improved the environment and visitor experience. Zion is now widely viewed as “Best in Class” in national park vehicle management.
The building blocks for Net Zero 2035 began in 2012 when Roam Transit significantly expanded its routes. Then, in 2019, momentum for change increased; in January, Banff Town Council adopted a new environmental master plan and in August, Liricon opened Banff’s first intercept parking lot.

- **Mass Transit Expands in Banff 2012**
  - Public mass transit in Banff first established in 1994
  - Not until 2012 that the Bow Valley Regional Transit Services Commission took over the service and Roam Transit, significantly expanded its routes and began service between Banff and Canmore.
  - The Town of Banff has pioneered using Roam Transit as a key solution to address congestion in the townsite.

- **Town Council Adopts New Environmental Policies – January 2019**
  - New Banff Environmental Master Plan which included community-wide goals of achieving 30% emissions reduction by 2030 and 80% by 2050 relative to 2016 levels).
  - Town of Banff Renewable Energy Transition Roadmap, a long term technical blueprint to achieve the Environmental Master Plan. The Roadmap includes focusing on further developing mass transit, promoting a mode shift to transit among the general public and hospitality/tourism industries and a seamless integration of transit with car shares, bike shares, active transportation in order to drive this mode shift.
  - BANFF NATIONAL PARK NET ZERO 2035 is an acceleration of the goals in the Banff Environmental Master Plan.

- **Train Station Intercept Lot - August, 2019**
  - Liricon Capital built the town’s first intercept parking lot at the Train Station.
  - With 500 stalls, the lot was the first intercept lot ever built in Banff despite intercept parking being official Town policy since 1979.
  - Liricon is providing the lot free of charge to the Town of Banff to manage and in 2020 the train station lots accounted for approximately 15% of downtown visitor parking.
In 2020 further key components were put in place that created the possibility of NET ZERO 2035 with the Town of Banff creating the Banff Pedestrian Zone in response to Covid and an MOU was signed between the Provincial and Federal Governments to pursue the feasibility of Calgary Airport to Banff passenger rail.

- **Banff Pedestrian Zone – May 2020**
  - In response the Covid crisis, the Town of Banff created the Banff Pedestrian Zone by closing to vehicle traffic the 100 and 200 blocks of Banff Avenue in order to maintain social distancing.
  - The Pedestrian Zone was enormously popular with visitors with 97% wanting the Pedestrian Zone to return in the summer of 2021 according to an August 2020 survey.
  - The Pedestrian Zone proved that visitors are prepared to change the way they travel through the Park if they can enjoy a walking-friendly environment.
  - 60% of visitors will walk to the Pedestrian Zone from the train station lots if Banff has paid parking and a resident only parking pass on residential streets.

- **Calgary Airport to Banff Passenger Train – June 2020**
  - The Province of Alberta and the Government of Canada announced their interest in the potential of creating a Calgary Airport to Banff Rail (CABR) passenger service.
    - Specifically, the Alberta Ministry of Transportation and the Canada Infrastructure Bank signed a Memorandum of Understanding to build on the work of a previous feasibility study, announced in February 2019, of creating a passenger rail service from downtown Calgary to Banff.
  - The passenger rail line would run on a new, dedicated track (thus ensuring on-time performance and allowing frequent departures) running parallel to the existing freight line within the CP Rail corridor.
  - The service could include stops at the Calgary Airport, Downtown Calgary, Cochrane, Morley, Canmore and Banff.
  - Stakeholders in the study include Calgary, Cochrane, Canmore, Banff, ID9, Liricon and CP Rail.
BANFF NATIONAL PARK NET ZERO 2035 – Why Now?

In August 2020, The Transition Accelerator completed the first ever baseline transportation emissions study for Banff National Park which revealed that the Park has by far the largest visitor transportation GHGs of any national park in North America. In September, a Net Zero 2035 Working Group comprised of representatives of academia, government, and the Banff visitor economy was formed to exchange and advance ideas how to reduce emissions in the Park. In October 2020, the Town of Banff sought public input on the potential of paid parking.

- **Banff National Park Baseline Transportation GHG Study – August 2020**
  - The Transition Accelerator completed, as part of its series of GHG studies for Liricon (including Calgary Airport to Banff and Aerial Transit to Norquay), the first ever baseline GHG study for visitors and residents in Banff National Park
  - Study revealed that Banff, although 6th most visited national park in North America, has 5X the visitor transportation emissions footprint of any national park in North America
  - Banff has similar visitation to Zion National Park but has 63X the per visitor transportation GHGs

- **Net Zero 2035 Initiative and Working Group – September 2020**
  - The BANFF NATIONAL PARK NET ZERO 2035 was created as a grass roots, bottoms-up initiative to utilize “Best Practices Per Visitor” models (as exemplified by global leaders in mountain town and National Park sustainability) and technology to create sustainable vehicle and visitor systems and low-carbon energy and waste solutions to transform Banff National Park into North America’s first net zero emissions community by 2035.
  - The BANFF NATIONAL PARK NET ZERO 2035 Working Group was formed to exchange and advance ideas on the initiative.
  - The Working Group is comprised of key stakeholders and influencers from all 3 levels of government, the visitor economy, and academic institutions needed to drive change to achieve NET ZERO 2035.

- **Potential Change to Town of Banff Parking Policies – October 2020**
  - The Town of Banff conducted a public engagement process to solicit feedback on the potential of paid parking in the downtown core and resident only parking pass on residential streets.
  - Should the Town institute these parking changes, it could reduce the number of vehicles in the downtown core by 60%.
In the fall of 2020 there were several steps made to commercialize low-carbon technology that can help achieve NET ZERO 2035.

- **Commercialization of Low-Carbon Technology – Fall 2020**
  - **Hydrogen Economy**
    - Developing the hydrogen economy became priorities for both the Alberta and Federal Governments.
    - In October the Province of Alberta announced their hydrogen economy strategy. In particular, Alberta’s Natural Gas Vision and Strategy aims for “Large-scale hydrogen production with carbon capture, utilization and storage (CCUS) and deployment in various commercial applications across the provincial economy by 2030.”
    - The federal government of Canada is anticipated to release in the fall of 2020 a comprehensive hydrogen strategy, which signals the federal government’s intention to pursue hydrogen fuel as a key component of Canada’s goal to reach net zero greenhouse gas emissions by 2050.
    - Banff can serve as a prototype community for both a hydrogen powered train and space heating.
  - **Electric Buses**
    - In October 2020 the Canada Infrastructure Bank announced their investment program to finance public agencies to convert their diesel bus fleets to electric buses.
    - Specifically, CIB is planning to invest $1.5 billion to accelerate the adoption of zero-emission buses and charging infrastructure.
    - CIB sees the potential combination both CABR and electric buses for a SOS to POI system in Banff National Park could serve as a flagship, low carbon, integrated mass transit system.
In the second half of 2020, Parks Canada announced for the first time ever that they were committed to reducing visitor emissions and were going to create an expert panel on sustainable movement in Banff National Park.

- **Parks Canada Policy Changes – August & November 2020**
  - **Committing to Reduce Visitor Emissions Huge Policy Pivot**
    - In August 2020, the Minister of the Environment and Climate Change announced:
      - “The Government of Canada is committed to providing Canadians with practical solutions to reduce emissions when they visit national parks, national historic sites and national marine conservation areas.”
      - This was the first time ever there had been an announcement that the Federal Government is seeking solutions to reduce visitor emissions in national parks and represented a major new policy initiative.

- **Expert Panel on Sustainable Movement In Banff National Park**
  - In November 2020, Parks Canada announced it is creating an expert panel to study the “the development of a long-term framework for the sustainable movement of visitors in the Bow Valley in Banff National Park”.
  - The panel will “consider transportation modes and networks, as well as other strategies and tools relating to how people access, move about and use the park”.
  - This was the first time ever that Parks Canada has considered the opportunities that “comprehensive planning and ‘green’ transport can help secure positive visitor experiences and an environmentally and economically sustainable future”.

- **Building Blocks Coming Together for NET ZERO 2035**
  - Standing on the shoulders of the Town of Banff’s initial steps at developing mass transit in 2012, the progress made in 2019 and 2020 in public policy changes and private investments have positioned Banff for transformational change.
BANFF NATIONAL PARK NET ZERO 2035 Working Group, Public Consultation

The BANFF NATIONAL PARK NET ZERO 2035 initiative is a community-led “Call to Action”. BANFF NATIONAL PARK NET ZERO 2035 Working Group includes representatives from 4 academic/research organizations, 5 of Banff’s largest employers and all 3 levels of government. “Come Aboard”, a broad public engagement process to solicit input and ideas from Banffites, Albertans and Canadians, will start in late November 2020.

• **BANFF NATIONAL PARK NET ZERO 2035: a “Call to Action”**
  - Community-led, grass-roots, bottoms-up initiative using a science-based, data-driven approach to enhance both the environment and visitor experience
  - Given investments required and changes in visitor protocols initiative needs to be a public-private partnership
  - Can only succeed with Parks Canada’s support and commitment
  - National Goal – Banff National Park can serve as “Canada’s Green Transit Laboratory”
    - “If Banff National Park can’t be net zero by 2035, Toronto doesn’t stand a chance by 2050.”

• **BANFF NATIONAL PARK NET ZERO 2035 Working Group**
  - Academic/Research Organizations
    - University of Calgary, the Transition Accelerator, Mount Royal University, Banff Centre
  - 3 Levels of Government
    - Municipal - Town of Banff Administration
    - Provincial – Invest Alberta Corporation
    - Federal – Canada Infrastructure Bank
  - Community Leaders
    - Includes 5 of Banff’s largest employers

• **“Come Aboard” Public Engagement Process**
  - Start in late November 2020 to solicit input and ideas
References

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