

APPENDIX 4AA

**FULL TRANSPORTATION
REPORT**

FINAL 2.0
CBEC Venue Transport Assessment

29 APRIL 2017

Venue Transport Assessment of Spaces & Areas

1. Objective

The purpose of the venue synopses is to offer a high-level venue transport assessment to aid the Calgary Bid Exploratory Committee (CBEC) as they assess the feasibility of an international Olympic bid. It is worth noting that the assessment is not intended to deliver a venue-by-venue transport plan, but rather determine if the venue spaces, areas and roads are sufficient for an Olympic and Paralympic venue transport operations.

The below provides a brief snapshot of estimated venue transport spaces such as; Stakeholder load zones (LZ), bus/vehicle staging, and parking areas that will be required for a successful Olympic and Paralympic Games venue transport operations. Recommendations are also provided for each venue relating to transport spatial constraints, operational issues and/or challenges.

The evaluation does not evaluate public transport systems, service levels, resources or infrastructure that will be required for a successful Games spectator and workforce transport, as this should be completed by each relevant transit agency or transport experts in Calgary, Canmore, Banff and Lake Louise.

However certain venues will require an Olympic Committee for the Olympic Games (OCOG) dedicated spectator and workforce transport operations for the Games (e.g. Lake Louise, Canmore and Nakiska) and this will be briefly mentioned for future consideration.

Due to the technical nature of some elements of this document, evolution is inevitable, therefore this assessment should be subject to review and refinement if CBEC goes forward with an international bid.

The assessment is divided into three sections:

1. **Mountain Venues**
(Nakiska Ski Resort, Canmore Nordic Centre, Lake Louise Ski Resort, Mountain Olympic Village and the Mountain Broadcast Centre)
2. **City Venues**
(Calgary Olympic Park, Oval, City Olympic Village)
3. **Stampede Olympic Park**
(IBC/MPC, Figure Skating/Short Track, Curling, Hockey 1, Hockey 2, Ceremonies)

2. MOUNTAIN VENUES

2.1 Nakiska Ski Resort Venue Transport Overview

Nakiska was the site of the Alpine Skiing events during the 1988 Olympic Winter Games and therefore has transport legacy elements remaining from the '88 Games – improvements to the Trans-Canada Highway, 1,400 parking stalls and 15 bus staging areas on the venue itself.

There is only one road leading to the venue (Highway 40) so all Games vehicles would be required to use the same road.

It is assumed that '88 OCOG workforce were permitted to self-drive to Nakiska while Spectators were provided access to bus services to/from the Nakiska resort (\$15 round trip).

Transport Summary

Overview

The Nakiska Ski Resort will be used for Alpine Skiing competitions (Giant Slalom, Slalom, Team Event), Freestyle Skiing (Ski Cross) and Snowboard (Parallel Giant Slalom and Snowboard Cross) and the estimated capacity is 7,500 spectators.

The venue will have 11 days of competition during the Games with one session per day and operational hours vary based upon the competition schedule.

Highway 40 is approximately 24.8 kilometres in length with two lanes (one lane north and one lane south), is relatively flat, in good condition and does not have any tight curves and/or difficult inclination so motor coaches, transit buses, semi tractor-trailers and light duty vehicles should not have any difficulty accessing the venue.

The road also has numerous 'pull-offs' that can accommodate bus breakdowns, tow-trucks and emergency response vehicles.

An upgraded road connecting the mid-mountain finish area to the base finish area will be required for an internal shuttle operations including an accessible shuttle.

A ski lift will connect the base finish area to the mid-mountain finish area for spectator ingress/egress.

Public Transit

Canmore began its local public transit service (Roam Transit) on November 1, 2016. Roam Transit currently has five transit lines operating in the Bow Valley with three lines in Banff, a regional bus between Banff and Canmore and one line within Canmore.

Future expansion plans of Roam Transit are not currently known and at minimum, the transit service should be expanded to connect the Olympic venues in 2026 (e.g. Athletes' Village, Lake Louise, Mountain Broadcast Centre and OCOG Park and Ride locations).

Increased ridership on Roam Transit in 2026 will require additional rolling stock to support the Games. Procurement and/or de-fleeting strategies should be aligned with Games planning to ensure that adequate rolling stock is available to provide service.

In 2010, Whistler Transit increased its rolling stock by roughly 100 buses and thus had the ability to meet the increased Olympic demand. A legacy of the Games was that a new transit operations and maintenance facility was built to accommodate the increased Whistler Transit fleet

Mountain Spectator and Workforce Transport

Roam Transit will be challenged to provide a robust spectator and workforce transport system to/from the Olympic Venues. Therefore, the OCOG will be required to plan and operate a bespoke spectator and workforce system that connects these Olympic Venues with a Mountain Bus Hub and Park & Ride facility to/from these venues for the Olympic Games.

Essentially the 2026 spectator and workforce transport plan for the Mountain Venues will mimic the 1988 Olympic Games Strategy for Nakiska (as found within XV Olympic Winter Games – Public Transport Operating Strategy document). The 1988 mountain spectator and workforce transport plan should be updated to ensure that it is aligned with 2026 Olympic Games planning/operation evolution (e.g. size and scope).

A Mountain Bus Hub and Park & Ride facility is best situated near the Stoney Nakoda Resort & Casino located at Highway 1 and 40. Using the same site from 1988 could provide some infrastructure benefits but an engineering assessment of the area should be completed to determine the best location of the Mountain Bus Hub and Park & Ride facility.

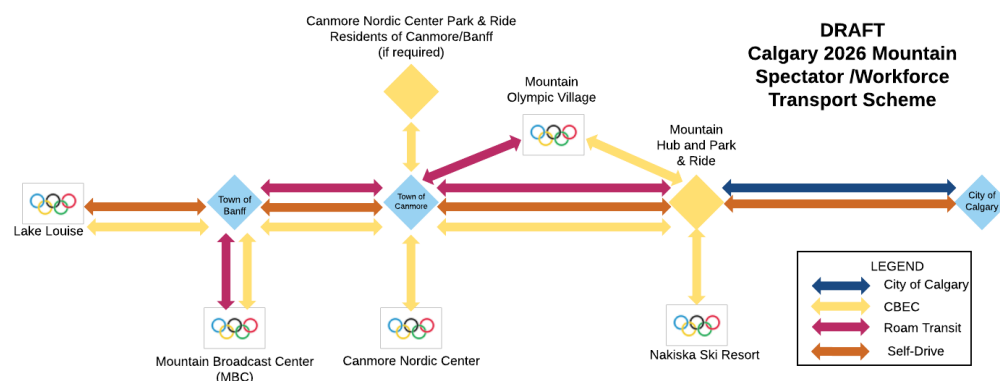


Current planning indicates that most of the Nakiska spectators/workforce will come from Calgary and will self-drive to the Mountain Bus Hub and Park & Ride. Once at the Park & Ride, the spectators/workforce will board waiting buses and be transported directly to the competition venue.

Spectators/workforce coming from Canmore and Banff can also choose to self-drive or use Roam Transit to/from the Mountain Bus Hub and Park & Ride.

If a viable passenger rail system is created serving Canmore, Banff and Lake Louise by 2026 it should be investigated as a transport enhancement for the Games.

The diagram below represents a high-level estimation on how the spectator/workforce transport could be designed for 2026 operations for the mountain venues.



Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Current overlay and space planning indicates that all Stakeholder Load Zones can be accommodated on the venue are outlined in the table below. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

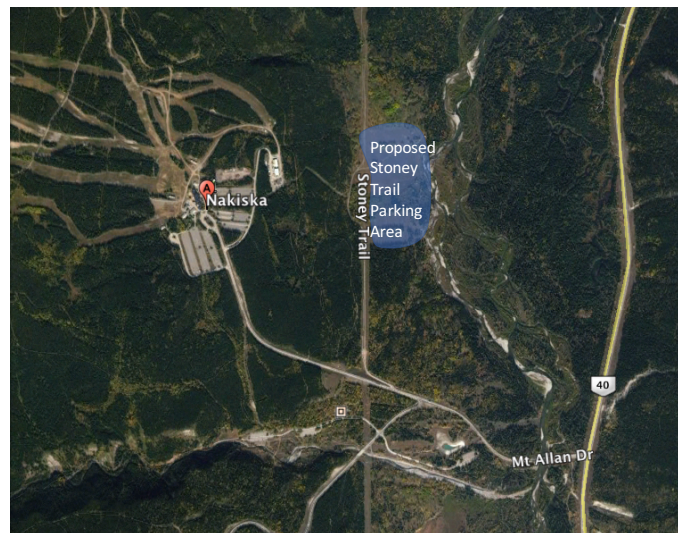
All Stakeholder vehicles will use Hwy. 40 to access the venue as it is the only suitable road leading to/from the venue.

Stakeholder Parking

Venue parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated Nakiska Stakeholder parking requirements is 365 spaces and are outlined in the table below. The Mid-mountain finish area will require additional parking for Athletes, International federations and Olympic Family.

The Stoney Trail parking area could be a suitable location for additional Stakeholder parking, Marketing Partner (MP) bus operations and accessible parking for spectators and workforce.



If used as Stakeholder and accessible parking, a shuttle will be required from this location to BOH entrances. MPs could walk to the base finish area from the Stoney Trail Parking Area.

Offer Ski Race Suppliers (SRS) on-venue parking for an estimated 50-75 vehicles within the Stoney Trail area.

There is sufficient Stakeholder parking located at Nakiska.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the Nakiska Ski Resort are also outlined in the tables below.

Space is present to accommodate bus staging close to the Nakiska venue and suitable locations could be within the Stoney Trail area, on Mount Allan Drive and/or Hwy. 40 - were space permits.

T3 staging (Olympic Family taxi system) could also be co-located within the Stoney Trail area or along the road, as space permits.

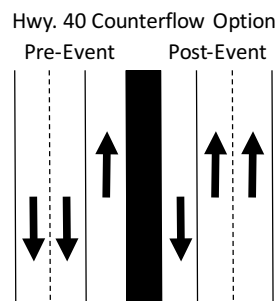
Summary and Key Recommendations

The Nakiska Ski Resort is a good location for an Olympic venue as it has adequate space to accommodate venue transport operations. Once a competition schedule is established and the final design is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Development of the Stoney Nakoda traditional territory at Hwy. 1 & 40 and the Stoney Trail to facilitate Games Transport operations are necessary for the success of the mountain venue transport plan.

Other key recommendations include:

- Creation of a Mountain Bus Hub and Park & Ride facility located at Highway 1 and Highway 40 to accommodate spectators/workforce originating from Calgary for the Nakiska venue.
 - Preliminary spatial requirements could be roughly 72-92 acres of prepared flat (slightly rolling is okay) land to accommodate a Mountain bus depot, fleet compound, bus hub and a park and ride. Proper overlay will also be required to support the above operations.
 - The parcel is relatively flat with slightly rolling ground and is a good candidate for transport operations and associated development/remediation costing should be determined.
- No spectator parking on the venue should be permitted due to only one road leading to/from the venue (Hwy. 40) as traffic queues and/or a vehicle incident (e.g. crash, mechanical) involving a spectator vehicle could lead to impacts on the Stakeholder systems.
- Highway 40 and Mount Allan Drive will be heavily trafficked by Stakeholder buses and vehicles and therefore it is recommended that a study be undertaken to better understand if the road (and bridge leading to/from venue) can physically handle the amount of traffic.
- Due to the amount of vehicular traffic, special consideration should be made to investigating the feasibility of using the existing road width of Hwy. 40 to create three lanes which would allow the possibility of counter flowing the road for the ingress and egress of the venue. This strategy has been implemented in past Games (e.g. Vancouver, Sochi).
 - Ingress: two lanes up and one down
 - Egress: two lanes down and one up



- Snow should be pushed past the road edge to allow the above-mentioned counter flow solution.
- Appropriate spectator/workforce bus staging (est. 2,400 - 3,600 sq. m) will be required close to the venue to facilitate venue egress.
- Determine appropriate mode split of spectators/workforce to/from venue that could be via: ski-lift, walking and accessible shuttle.
- Contingency transport planning required in case of high wind causing the ski lift to be closed.
- FIS could be provided dedicated vehicles to lessen International Federation (IF) transport requirements.
- A minimum of three hours will be required between two ticketed sessions to allow for adequate spectator egress and ingress.
- Accessible shuttle to/from mid-mountain will be required for spectators/workforce.

Nakiska Venue Transport Challenges

- Estimated spectator egress (including workforce) in one hour will require an estimated 140 buses moving in waves of 12 buses at a 5' minute headway. This is a very challenging operation as any headway can become a constant stream of buses and therefore further detailed planning is required.
- The capacity of the ski lift (e.g. 600 passengers per hour) could not be aligned with the number of spectators that need to use the lift (e.g. 1000 passengers per hour), therefore another transport system is required to provide transport service to the clients.

- Planners should be cautious as transport (and more than likely venue operations) will require ample time to egress the venue and then ingress the next session (minimum of three hours between events).
- If hotels close to the ski resort are open to public, a permit system would be required.
- An Olympic Route Network (ORN) and Olympic Lanes would be required to provide Games Stakeholders with reliable travel times.
- Competition delay or postponements could have a large impact on venue and transport operations.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Nakiska Venue Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
TA LZ Nakiska	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
Below are estimated bus services for Alpine Skiing.							
TF ITO LZ	OCOG Vehicle	On demand	On demand	N/A	N	Parking Only	Assumed that FIS will be provided vehicles to self-drive to venue
TM – IBC LZ	Coach	15'	15'	1	N	30 linear metres	BOH Dirty 75m from media entrance
TM – MBC LZ	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
DDS LZ	Bus	As required	As required	1	N	30-60 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	5'	5'	12	N	180 linear metres or 1,200 square metres	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	30 linear metres	FOH Dirty
Internal Shuttle	Mini-Bus	TBD	TBD	TBD	Y	15 linear metres	TBD

*based upon past Games and using Calgary specifics.

Estimated Nakiska Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
MP Staging	Coach	N/A	Y	30 buses roughly 3,000 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	24-36	Y	roughly 2,400 - 3,600 sq. m – very high level assessment	FOH Dirty Close to venue
MTN BUS HUB	Bus or Transit	TBD	Y	TBD	TBD

Estimated Nakiska Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2
P3	70	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	140	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	40	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	15	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	365		ESTIMATED PARKING SPACES

*based upon past Games

2.2 Canmore Nordic Centre Venue Transport Overview

Canmore Nordic Centre was the site of the Cross Country and Biathlon events during the 1988 Olympic Winter Games and has some transport legacy elements remaining from the '88 Games. In addition, the venue has hosted World Cup competitions in the past so it has a strong sports legacy.

One major change from the 1988 Olympic Winter Games is the proposed addition of a Ski Jump within the Canmore Nordic Centre footprint. The proposed venue site is 1.5 kilometres from the main centre and would require a road to be built for large vehicle traffic (e.g. buses, Semi-trailer truck, OB vans, light duty vehicles) to access the venue.

The main venue can be accessed in different ways through the town of Canmore, however closer to the venue traffic would be combined onto one road (Spray Lakes Road/Three Sisters Parkway/Olympic Way).

The 1988 Calgary Olympic Games Final report, a spectator parking was provided along the main access road and a shuttle was provided to get spectators to/from the venue.

Estimated ticketed spectator capacity is 7,500.

Transport Summary

Overview

The Canmore Nordic Centre will be used for Cross Country, Biathlon, Ski Jumping and Nordic Combined competitions and the estimated capacity is 7,500 spectators. Based upon current overlay requirements, much of the existing parking areas will be required for venue operational space.

The venue will have 15 days of competition during the Games and operational hours vary based upon the competition schedule. An estimated seven days will have two sessions (morning/afternoon or two morning sessions), whilst two days will have three sessions (two morning sessions and an afternoon session).

There are multiple ways to reach the venue through the town of Canmore that could help separate Stakeholder traffic from the spectator/workforce shuttles. The roads leading to the venue are relatively flat, in a good condition and does not have any tight curves and/or difficult inclination so motor coaches, transit buses, semi tractor-trailers and light duty vehicles should not have any difficulty accessing the venue.

The road (Spray Lakes and Three Sisters Parkway) leading to the venue also has numerous locations that could be used as 'pull-offs' to accommodate bus breakdowns, tow-trucks and emergency response vehicles.

Public Transit

Canmore began its local public transit service (Roam Transit) on November 1, 2016. Roam Transit currently has five transit lines operating in the Bow Valley with three lines in Banff, a regional bus between Banff and Canmore and one line within Canmore.

Future expansion plans of Roam Transit are not currently known and at minimum, the transit service should be expanded to connect the Olympic venues in 2026 (e.g. Athletes' Village, Lake Louise, Mountain Broadcast Centre and OCOG Park and Ride locations).

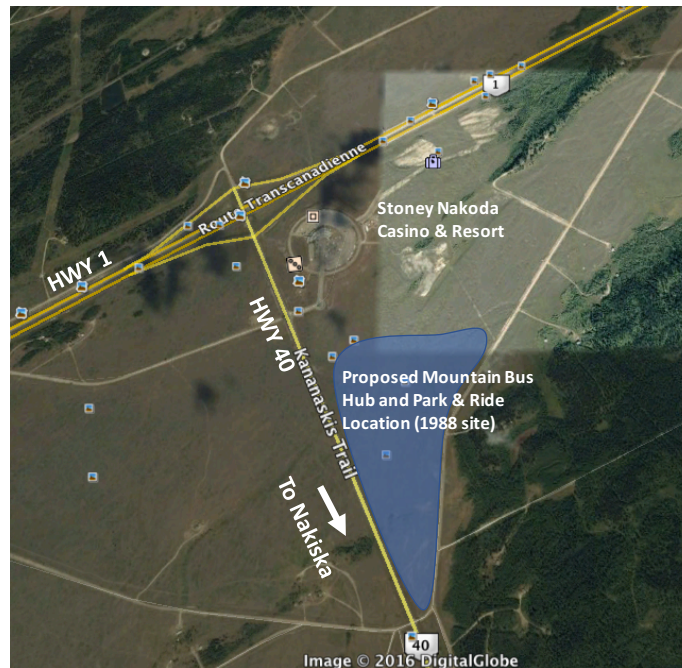
Increased ridership on Roam Transit in 2026 will require additional rolling stock to support the Games. Procurement and/or de-fleeting strategies should be aligned with Games planning to ensure that adequate rolling stock is available to provide service.

In 2010, Whistler Transit increased its rolling stock by roughly 100 buses and thus had the ability to meet the increased Olympic demand. A legacy of the Games was that a new transit operations and maintenance facility was built to accommodate the increased Whistler Transit fleet

Mountain Spectator and Workforce Transport

Roam Transit will be challenged to provide a robust spectator and workforce transport system to/from the Olympic Venues. Therefore, the OCOG will be required to plan and operate a bespoke spectator and workforce system that connects these Olympic Venues with a Mountain Bus Hub and Park & Ride facility to/from these venues for the Olympic Games.

A Mountain Bus Hub and Park & Ride facility is best situated near the Stoney Nakoda Resort & Casino located at Highway 1 and 40. Using the same site from 1988 could provide some infrastructure benefits but an engineering assessment of the area should be completed to determine the best location of the Mountain Bus Hub and Park & Ride facility.



Current planning indicates that most of the Canmore spectators/workforce will come from Calgary and will self-drive to the Mountain Bus Hub and Park & Ride. Once at the Park & Ride, the spectators/workforce will board waiting buses and be transported directly to the competition venue.

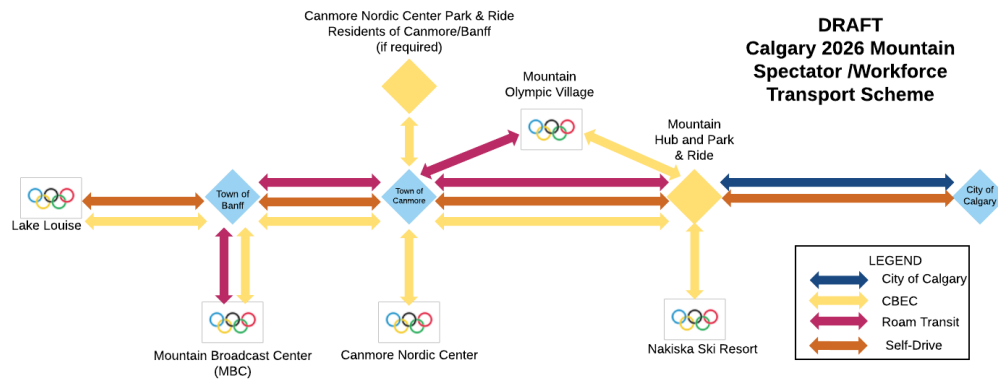
Two variants currently exist for spectators/workforce coming from Canmore and Banff:

1. Spectators/workforce drive or use Roam Transit to arrive at the **Mountain Bus Hub and Park & Ride** facility and are transported to the venue via OCOG buses.
2. Spectators/workforce drive or use Roam Transit to arrive to a **Canmore Nordic Centre Park & Ride** facility and are transported to the venue via OCOG buses.

While operating two park and ride facilities will be costlier it provides a better level of service to the spectators/workforce whilst reducing unnecessary traffic going to and departing from the Mountain Bus Hub and Park & Ride facility.

If a viable passenger rail system is created serving Canmore, Banff and Lake Louise by 2026 it should be investigated as a transport solution for the Games.

The diagram below represents a high-level estimation on how the spectator/workforce transport could be designed for 2026 operations for the mountain venues.



Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Current overlay and space planning indicates that Stakeholder Load Zones can be accommodated on the venue are outlined in the table below. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

Stakeholder Parking

Venue parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated Canmore Nordic Centre parking requirements is 361 spaces for Cross Country/Biathlon and 325 for Ski Jumping/Nordic Combined and are outlined in the tables below.

Consideration should be made to provide, at a minimum, parking for Athletes, International Federation and Olympic Family close to the Ski Jumping venue.

If more parking is required for venue operations, an open field to the southwest of the venue could be developed for use during the Games.

Another key strategy that should be considered is to offer 75-100 parking space to the Ski Race Suppliers (SRS) on the venue.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the Canmore Nordic Centre are also outlined in the tables below.

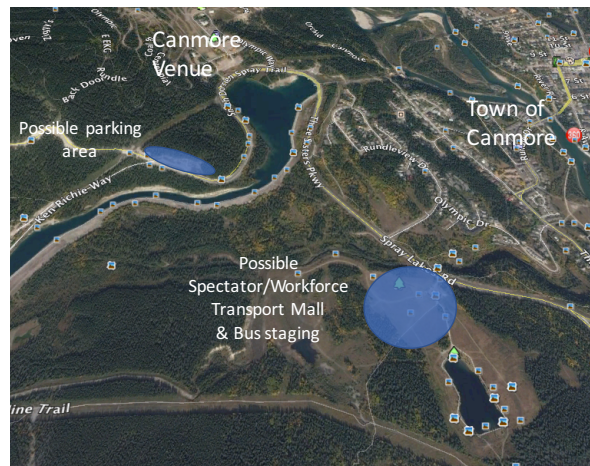
Space is present to accommodate bus staging close to the Canmore venue and suitable locations could be within the existing dog park south of the venue (as seen in figure below) or on Spray Lakes Road - were space permits.

Due to the complexity of the operations, T3 staging (Olympic Family taxi system) should be in a separate area (within the parking area outlined above) and/or along the road (Three Sisters Parkway/Spray Lakes Road), as space permits.

Summary and Key Recommendations

The Canmore Nordic Centre is a good location for an Olympic venue as it has adequate space to accommodate most of the Stakeholder venue transport operations. Once a competition schedule is established and the final design is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Development of two parcels of land are recommended to support the Canmore Nordic Centre (in figure below) Spectator/Workforce and Marketing Partner (MP) bus operations and venue parking at due to lack of 'on-venue' space.



The largest parcel is roughly 1.7 kilometres south of the venue (in existing dog park) is necessary for Spectator/Workforce Transport and Marketing Partner (MP) bus operations (and possibly spectator plaza [security check] if space permits). The parcel is relatively flat with slightly rolling ground and is a good candidate for transport operations

The second parcel is roughly 1 kilometre from the venue is also relatively flat and estimated to accommodate roughly 150-225 vehicles. Due to proximity to the venue and flat feature, this location is a good choice for transport operations and if used as a parking lot, a shuttle will be required.

Associated development/remediation costing should be determined for each parcel.

Due to all the Games bus and vehicle movements through the Town of Canmore, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep the Canmore operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be need to be developed in the next phase of planning.

Development of the Stoney Nakoda traditional territory at Hwy. 1 & 40 and the Stoney Trail to facilitate Games Transport operations are necessary for the success of the mountain venue transport plan.

Other key recommendations include:

- Due to the number of buses required to move spectators/workforce to/from the Canmore Nordic Centre, special consideration must be made to ensure that ticketed sessions are not beginning/ending at the same time or overlapping.
- Sufficient time is required to load-out the venue prior to loading-in the next session (minimum of three hours between events).
- It is ideal that a 'business as usual' scenario exists during the Games in Canmore. This will take many discussions with city officials to ensure the Games have a limited impact. Early engagement with city officials is suggested.
- Spectators and workforce should be allowed to self-drive to a Mountain Bus Hub and Park & Ride facility that could be located near the Trans-Canada Highway and the junction of Highway 40.
 - Preliminary spatial requirements could be roughly 72-92 acres of prepared flat (slightly rolling is okay) land to accommodate a Mountain bus depot, fleet compound, bus hub and a park and ride. Proper overlay will also be required to support the above operations.
 - The parcel is relatively flat with slightly rolling ground and is a good candidate for transport operations and associated development/remediation costing should be determined.
- No spectator parking should be provided on-venue.
- An additional smaller Park & Ride facility might be required within the Town of Canmore (or close to the town) to satisfy spectators/workforce driving from Banff and Lake Louise.
- Proper structural engineering tests are required to ensure that the road (and bridge) leading to/from venue can physically handle the amount of Stakeholder buses and vehicles using the road during the Games.
- Investigate the possibility of building a bridge from the dog park/green area to the venue, over the small lake to avoid spectators walking on the road to the venue.
- Appropriate bus staging will be required close to the venue to facilitate venue egress, this staging could be within the dog park/green area.
- Marketing Partner bus parking (roughly 42 buses) can be co-located with public transport operations within the existing dog park that is located 1.7 kilometres south of the venue.

Canmore Nordic Centre Venue Transport Challenges

- For one venue, estimated spectator egress (including workforce) in one hour will require an estimated 188 buses moving in waves of 16 buses at a 5' minute headway. This is a very challenging operation as any headway can become a constant stream of buses and therefore further detailed planning is required.

- Olympic Lanes may be required through the Town of Canmore and therefore discussion with Town officials is required.
- Competition delay or postponements could have a large impact on the venue and transport operations.
- Additional parking and bus operational space must be secured and developed.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Canmore Venue Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
Below are estimated bus services for the Canmore Nordic Centre.							
TA LZ (CC/BIA)	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ (SJ/NC)	Coach	20'	10'	1	N	20 linear metres	BOH Clean 50m from athlete entrance
TF ITO LZ	OCOG Vehicle	On demand	On demand	N/A	N	Parking Only	Assumed that FIS will be provided vehicles to self-drive to venue
TM – IBC LZ CC/BIA	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – MBC LZ CC/BIA	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – IBC LZ SJ/NC	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – MBC LZ SJ/NC	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance
DDS LZ CC/BIA	Bus	As required	As required	1	N	30-60 linear metres	BOH Dirty 75m from media entrance
DDS LZ SJ/NC	Bus	As required	As required	1	N	30-45 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	5'	5'	12	N	180 linear metres or 1,200 square metres	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	30 linear metres	FOH Dirty
Internal Shuttle	Mini-Bus	TBD	TBD	TBD	Y	15 linear metres	TBD

*based upon past Games and using Calgary specifics.

Estimated Canmore Staging Area Requirements

Estimated Canmore Stakeholder Parking Requirements*

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
MP Staging	Coach	N/A	Y	42 buses roughly 4,200 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	24-36	Y	roughly 2,400 - 3,600 sq. m – very high level assessment	FOH Dirty Close to venue
MTN BUS HUB	Bus or Transit	TBD	Y	TBD	TBD

Biathlon/Cross Country			
CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2
P3	90	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	26	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	85	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	40	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	20	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	40	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	361		ESTIMATED PARKING SPACES

Ski Jumping			
CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2
P3	80	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	25	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	100	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	30	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	325		ESTIMATED PARKING SPACES

*based upon past Games

2.3 Lake Louise Ski Resort Venue Transport Overview (Alpine Skiing)

The Lake Louise Ski Resort is a ski resort located 57 kilometres west of Banff in the Banff National Park near the village of Lake Louise.

The Lake Louise Ski Resort has been used as a stop on the FIS Alpine Ski World Cup for many years.

There are four existing large parking area located at Lake Louise.

A ski lift will connect the base finish area to the mid-mountain finish area for spectator ingress/egress.

Transport Summary

Overview

The Lake Louise Ski Resort will be used for Alpine Skiing competitions (Downhill, Super G and Alpine Combined) and the estimated capacity is 7,500 spectators.

The venue will have six days of competition during the Games and operational hours vary based upon the competition schedule.

Public Transit

There is currently no public transport servicing Lake Louise.

Mountain Spectator and Workforce Transport

The OCOG will be required to plan and operate a spectator and workforce system that connects the Mountain Bus Hub and Park & Ride facility with the Lake Louise venue.

A Mountain Bus Hub and Park & Ride facility is best situated near the Stoney Nakoda Resort & Casino located at Highway 1 and 40. Using the same site from 1988 could provide some infrastructure benefits but an engineering assessment of the area should be completed to determine the best location of the Mountain Bus Hub and Park & Ride facility.

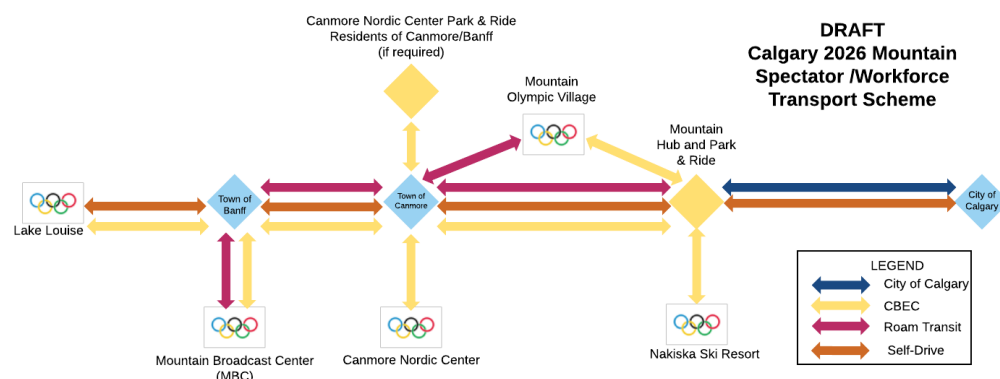


Current planning indicates that most of the Lake Louise spectators/workforce will come from Calgary and will self-drive to the Mountain Bus Hub and Park & Ride. Once at the Park & Ride, the spectators/workforce will board waiting buses and be transported directly to the competition venue.

Spectators/workforce coming from Canmore and Banff can also choose to self-drive or use Roam Transit to/from the Mountain Bus Hub and Park & Ride.

If a viable passenger rail system is created serving Canmore, Banff and Lake Louise by 2026 it should be investigated as a transport solution for the Games.

The diagram below represents a high-level estimation on how the spectator/workforce transport could be designed for 2026 operations for the mountain venues.



However due to the large parking areas, it is worth considering allowing limited spectators the option to self-drive directly to the venue if the vehicular traffic does not impede Olympic Games transport operations. User pay parking permits for Lake Louise could be aligned with ticket sales and capped at a comfortable number that allows Games transport to operate effectively.

It is recommended that all self-drive vehicles should be parked 160'-120' prior to competition.

Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Current overlay and space planning indicates that all Stakeholder Load Zones can be accommodated on the venue are outlined in the table below. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

Vehicles will use Hwy. 1 to Whitehorn Road to access the venue.

Stakeholder Parking

Venue parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated Lake Louise Stakeholder parking requirements is 365 spaces and are outlined in the table below.

It is recommended offering Ski Race Suppliers (SRS) on-venue parking for an estimated 50-75 vehicles.

There is sufficient Stakeholder parking located at Lake Louise.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the Lake Louise Ski Resort are also outlined in the tables below.

Space is present to accommodate spectator and stakeholder bus staging at the Lake Louise Ski Resort.

Summary and Key Recommendations

The Lake Louise Resort is a good location for an Olympic venue as it has adequate space to accommodate venue transport operations. Once a competition schedule is established and the final design is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Due to all the Games bus and vehicle movements through the Village of Lake Louise, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep Lake Louise operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be need to be developed in the next phase of planning.

Development of the Stoney Nakoda traditional territory at Hwy. 1 & 40 and the Stoney Trail to facilitate Games Transport operations are necessary for the success of the mountain venue transport plan.

Other key recommendations include:

- Creation of a Mountain Bus Hub and Park & Ride facility located at Highway 1 and Highway 40 to accommodate spectators/workforce originating from Calgary for the Lake Louise venue.

- Preliminary spatial requirements could be roughly 72-92 acres of prepared flat (slightly rolling is okay) land to accommodate a Mountain bus depot, fleet compound, bus hub and a park and ride. Proper overlay will also be required to support the above operations.
- The parcel is relatively flat with slightly rolling ground and is a good candidate for transport operations and associated development/remediation costing should be determined.
- Limited spectator parking should be allowed on-site if quantity does not impact transport operations and all cars should be parked 160'-120' prior to competition and parking permits can be aligned with ticket sales.
- Highway 1 and Whitehorn Drive will be heavily trafficked by Stakeholder buses and vehicles and therefore it is recommended to understand if the road can physically handle the amount of traffic.
- Appropriate spectator/workforce bus staging will be required close to the venue to facilitate venue egress.
- Contingency transport planning required in case of high wind causing the ski lift to be closed.
- Accessible shuttle to/from mid-mountain will be required for spectators/workforce.

Lake Louise Venue Transport Challenges

- Competition delay or postponements could have a large impact on venue and transport operations.
- The capacity of the ski lift (e.g. 600 passengers per hour) could not be aligned with the number of spectators that need to use the lift (e.g. 1000 passengers per hour), therefore another transport system is required to provide transport service to the clients.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Lake Louise Venue Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
TA LZ Lake Louise	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
Below are estimated bus services for Alpine Skiing.							
TF ITO LZ	OCOG Vehicle	On demand	On demand	N/A	N	Parking Only	Assumed that FIS will be provided vehicles to self-drive to venue
TM – IBC LZ	Coach	15'	15'	1	N	30 linear metres	BOH Dirty 75m from media entrance

TM – MBC LZ	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
DDS LZ	Bus	As required	As required	1	N	30-60 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	5'	5'	12	N	180 linear metres or 1,200 square metres	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	30 linear metres	FOH Dirty
Internal Shuttle	Mini-Bus	TBD	TBD	TBD	Y	15 linear metres	TBD

*based upon past Games and using Calgary specifics.

Estimated Lake Louise Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
MP Staging	Coach	N/A	Y	TBD	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	24-36	Y	roughly 2,400 - 3,600 sq. m – very high level assessment	FOH Dirty Close to venue
MTN BUS HUB	Bus or Transit	TBD	Y	TBD	TBD

Estimated Lake Louise Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2
P3	70	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	140	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	40	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	15	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	365		ESTIMATED PARKING SPACES

*based upon past Games

2.4 Mountain Olympic Athletes' Village (MOLV) Venue Transport Overview

The Mountain Olympic Athletes' Village (MOLV) is currently being proposed to be built on a parcel near the town of Canmore in a flatland area.

The village can be accessed off the Trans-Canada Highway and Bow Valley Trail and is estimated to be the home of 2,700 Athletes and Team Officials.

It is worth mentioning that no matter the final location of the Mountain Olympic Athletes' Village in Canmore, the recommendations, challenges and space estimates outlined below will remain the same.

Transport Summary

Overview

Since the MOLV will be built especially for the Games, transport spaces and areas will be designed into the village build. There should be no issue with transport space requirements for the Games, however the spaces outlined below should be considered during the design phase.

The village is the base for all Athlete transport operations for the mountain venues and will require a well sized transport mall and parking for National Olympic Committee vehicles.

Public Transit

Canmore began its local public transit service (Roam Transit) on November 1, 2016. Roam Transit currently has five transit lines operating in the Bow Valley with three lines in Banff, a regional bus between Banff and Canmore and one line within Canmore.

Future expansion plans of Roam Transit are not currently known and at minimum, the transit service should be expanded to connect the Olympic venues in 2026 (e.g. Athletes' Village, Lake Louise, Mountain Broadcast Centre and OCOG Park and Ride locations).

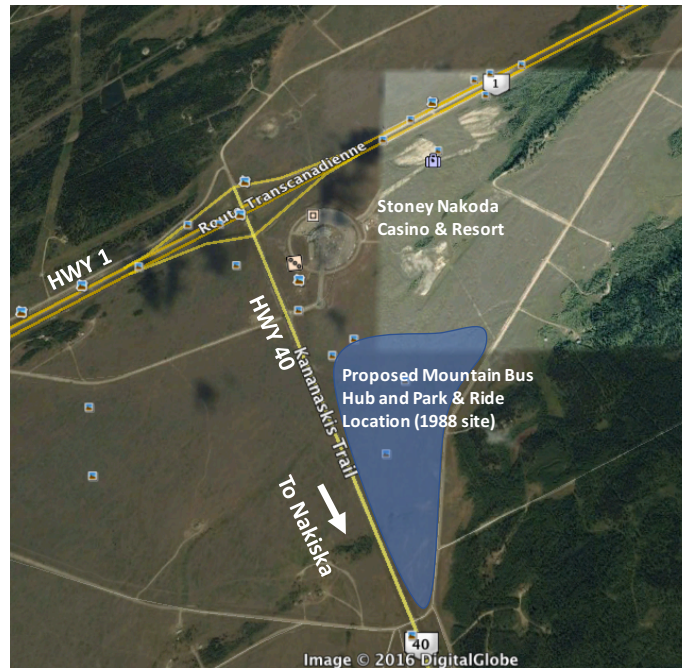
Increased ridership on Roam Transit in 2026 will require additional rolling stock to support the Games. Procurement and/or de-fleeting strategies should be aligned with Games planning to ensure that adequate rolling stock is available to provide service.

In 2010, Whistler Transit increased its rolling stock by roughly 100 buses and thus had the ability to meet the increased Olympic demand. A legacy of the Games was that a new transit operations and maintenance facility was built to accommodate the increased Whistler Transit fleet

Mountain Workforce Transport

The OCOG will be required to plan and operate a workforce system that connects the Mountain Bus Hub and Park & Ride facility with the Mountain Olympic Village.

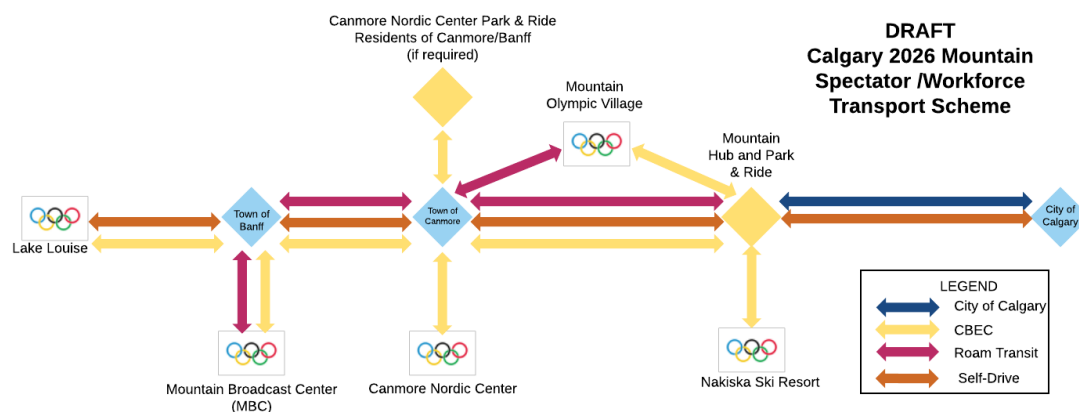
A Mountain Bus Hub and Park & Ride facility is best situated near the Stoney Nakoda Resort & Casino located at Highway 1 and 40. Using the same site from 1988 could provide some infrastructure benefits but an engineering assessment of the area should be completed to determine the best location of the Mountain Bus Hub and Park & Ride facility.



Current planning indicates that most of the Mountain Olympic Village workforce will come from Calgary and will self-drive to the Mountain Bus Hub and Park & Ride. Once at the Park & Ride, the spectators/workforce will board waiting buses and be transported directly to the competition venue.

Workforce coming from Canmore and Banff can use Roam Transit to/from the village. If a viable passenger rail system is created serving Canmore, Banff and Lake Louise by 2026 it should be investigated as a transport solution for the Games.

The diagram below represents a high-level estimation on how the spectator/workforce transport could be designed for 2026 operations for the mountain venues.



Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders.

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Since the village is a new build, Stakeholder Load Zones outlined in the table below should be factored into the design and construction of the village. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

Stakeholder Parking

Village parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated village Stakeholder parking requirements is 293 spaces and are outlined in the table below.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the village are also outlined in the tables below.

Summary and Key Recommendations

The two proposed sites under consideration for the Mountain Olympic Athletes' Village are good locations as each site is being purpose built for the Games and will have adequate space to accommodate venue transport operations.

Due to all the Games bus and vehicle movements through the Town of Canmore, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep Canmore operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be needed to be developed in the next phase of planning.

Development of the Stoney Nakoda traditional territory at Hwy. 1 & 40 and the Stoney Trail to facilitate Games Transport operations are necessary for the success of the mountain venue transport plan.

Other key recommendations include:

- Creation of a Mountain Bus Hub and Park & Ride facility located at Highway 1 and Highway 40 to accommodate workforce originating from Calgary.

- Welcome Centre bus mall should have the ability to accommodate at least 10 buses at one time, plus parking for roughly 20-30 vehicles dropping off athletes.
- There might be a requirement for an internal shuttle depending on the walking distance between the Athlete dorms, dining hall and the bus mall
- An estimated 200 parking spots will be required near the village in the NOC Car park.
- International zone will require load zones for T1, T2, T3 and TM.
- Roam transit should connect with the MOLV for workforce, athletes and team officials.
- Connectivity is required with the Mountain Bus Hub to provide Calgary based workforce transport to/from the MOLV.

MOLV Venue Transport Challenges

- An Olympic Route Network (ORN) and Olympic Lanes would be required to provide Games Stakeholders with reliable travel times. (Potential full street closure around the village for the duration of the Games, along with additional road closures may be required to support Opening and Closing Ceremonies).
- Olympic Lanes may be required through the town of Canmore and therefore a discussion with city officials is required.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated MOLV Venue Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
Below are estimated bus services for the Mountain Olympic Athletes' Village.							
TA LZ (CC/BIA)	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ (SJ/NC)	Coach	20'	10'	1	N	20 linear metres	BOH Clean 50m from athlete entrance
TA LZ Nakiska	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ Lake Louise	Coach	20'	10'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ MOLV<->COLV	Coach	60'	30'	1	N	15 linear metres	BOH Clean 50m from athlete

							entrance
TA LZ Spectating	Coach	TBD	TBD	Mult.	N	TBD	BOH Dirty 50m from athlete entrance
TM – IBC LZ	Coach	60'	60'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – MBC LZ	Coach	60'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
TP/WRK	Bus or Transit	60'	30'	TBD	N	TBD	FOH Dirty 750-1000m from entry
Internal Shuttle	Mini-Bus	TBD	TBD	TBD	Y	15 linear metres	TBD

Estimated MOLV Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
TA Staging	Mix of buses	TBD	TBD		BOH Clean

MOLV Estimated Stakeholder Parking Requirements

CODE	QTY.	Loc.	STAKEHOLDER
P1	5	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	20	BOH secure	Olympic Family T1/T2
P3	200	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	5	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	3	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	30	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	0	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	30	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	293		ESTIMATED PARKING SPACES

2.5 Mountain Broadcast Centre (MBC) Venue Transport Overview

The Banff Centre is currently being proposed as the MBC and has ample parking and space for transport operations.

The MBC can be accessed off the Trans-Canada Highway to Lynx Street to Buffalo Street.

Transport Summary

Overview

The MBC is an existing conference centre in Banff with ample parking and space for transport operations for the Games. There should be no issue with transport space requirements for the Games, however the spaces outlined below should be considered.

The MBC is the base of operations for media and the Mountain Media Transport (TMM) system. The MBC will require a well sized transport mall and parking for media vehicles and required space its outlined below.

Public Transit

The Bow Valley began its local public transit service (Roam Transit) on November 1, 2016. Roam Transit currently has five transit lines operating in the Bow Valley with three lines in Banff, a regional bus between Banff and Canmore and three lines within Banff.

Future expansion plans of Roam Transit are not currently known and at minimum, the transit service should be expanded to connect the Olympic venues in 2026 (e.g. Athletes' Village, Lake Louise, Mountain Broadcast Centre and OCOG Park and Ride locations).

Currently Roam Transit does not connect the Banff Centre as the nearest bus stop is located is roughly two kilometres from the venue.

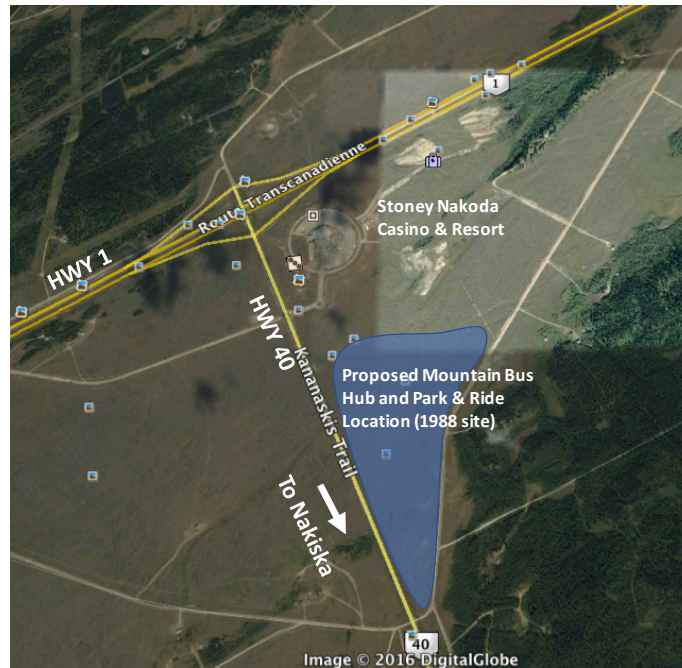
Increased ridership on Roam Transit in 2026 will require additional rolling stock to support the Games. Procurement and/or de-fleeting strategies should be aligned with Games planning to ensure that adequate rolling stock is available to provide service.

In 2010, Whistler Transit increased its rolling stock by roughly 100 buses and thus had the ability to meet the increased Olympic demand. A legacy of the Games was that a new transit operations and maintenance facility was built to accommodate the increased Whistler Transit fleet

Mountain Workforce Transport

The OCOG will be required to plan and operate a workforce system that connects the Mountain Bus Hub and Park & Ride facility with either a Banff bus stop or with the Banff Centre itself.

A Mountain Bus Hub and Park & Ride facility is best situated near the Stoney Nakoda Resort & Casino located at Highway 1 and 40. Using the same site from 1988 could provide some infrastructure benefits but an engineering assessment of the area should be completed to determine the best location of the Mountain Bus Hub and Park & Ride facility.

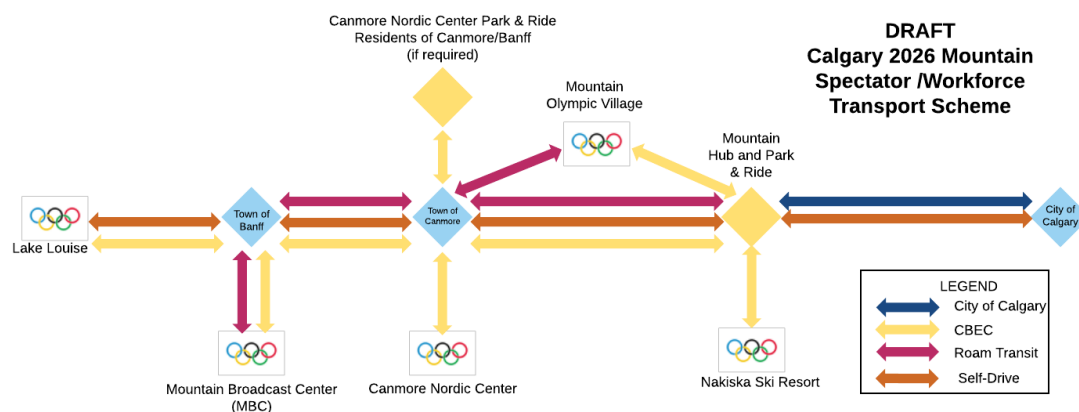


Current planning indicates that most of the MBC workforce will come from Calgary and will self-drive to the Mountain Bus Hub and Park & Ride. Once at the Park & Ride, the spectators/workforce will board waiting buses and be transported directly to the venue.

Workforce coming from Canmore and Banff can use Roam Transit to/from the MBC.

If a viable passenger rail system is created serving Canmore, Banff and Lake Louise by 2026 it should be investigated as a transport solution for the Games.

The diagram below represents a high-level estimation on how the spectator/workforce transport could be designed for 2026 operations for the mountain venues.



Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders.

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Since the MBC will be within an existing conference Centre, there should be plenty of space for Stakeholder Load Zones outlined in the table below. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

Stakeholder Parking

Venue parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated village Stakeholder parking requirements is 230 spaces and are outlined in the table below.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the MBC are also outlined in the tables below.

Summary and Key Recommendations

Placing the MBC in an existing facility within Banff is a good choice as it will provide plenty of space for transport operations.

Due to all the Games bus and vehicle movements through the Banff, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep the city operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be need to be developed in the next phase of planning.

Development of the Stoney Nakoda traditional territory at Hwy. 1 & 40 and the Stoney Trail to facilitate Games Transport operations are necessary for the success of the mountain venue transport plan.

Other key recommendations include:

- Vehicular access should be investigated to separate bus traffic from vehicle traffic, and eliminate pedestrian/vehicle conflicts and/or crossings.
- Opening and Closing Ceremonies will require additional buses to transport media to Calgary, an adequate space will be required to stage these buses.
- Roam Transit should connect with the MBC for workforce and media.
- Work with city officials to obtain surface streets that can be used for the MBC transport mall.

MBC Transport Challenges

- Past Games planning reflects that Olympic Lanes are needed for OCOG buses to access the MBC. It is recommended that further discussions with City officials and IOC are undertaken to find a mutually beneficial 'go forward' strategy that benefits each stakeholder.
- Number of media accommodation routes unknown at present and these LZ will need to be factored into the MBC Bus Mall once known.
- Number of bus departures per hour and day could have a disruptive impact on the area around the Banff Centre and roads leading to/from the centre.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated MBC Venue Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	10 linear metres (up to 1 vehicle)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	10 linear metres (up to 2 vehicles)	BOH Dirty 50m from OF entrance
<p>Below are estimated bus services for the Mountain Broadcast Centre. First line reflects Media System (TM) and origin (Mountain Broadcast Centre) Second line is the route number Media Mountain (TMM) and number (e.g. TMM-10) Third line is the destination.</p>							
TM – MBC LZ TMM-10 NAKISKA	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM – MBC LZ TMM-11 LAKE LOUISE	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM – MBC LZ TMM-12 (CC/BIA)	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM – MBC LZ TMM-13 (SJ/NC)	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM – MBC LZ TMM-14 (MBC><MOLV)	Coach	60'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM-MBC LZ TMM-15	Coach	60'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance

(IBC><MBC)							TM Bus Mall
TM-MBC LZ TMM-1 (MBC><COP)	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM-MBC LZ TMM-OC/CC (MBC><MCS)	Coach	TBD	TBD	TBD	N	TBD	BOH Dirty 75m from media entrance TM Bus Mall
TM-MBC LZ TMM-2 (MBC><CURL)	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TM-MBC LZ TMM-3 (MBC><OVAL/ COLV)	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance TM Bus Mall
TP/WRK	Bus or Transit	60'	30'	TBD	N	TBD	FOH Dirty 750-1000m from entry

MBC Estimated Stakeholder Parking Requirements

CODE	QTY.	Loc.	STAKEHOLDER
P1	0	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	5	BOH secure	Olympic Family T1/T2
P3	5	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	150	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	30	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	0	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	230		ESTIMATED PARKING SPACES

3. CITY VENUES

3.1 Calgary Olympic Park Venue Transport Overview

Canada Olympic Park (COP) was the site of the Ski Jumping, Nordic Combined, Bobsleigh, Luge and freestyle skiing events during the 1988 Olympic Winter Games and has some transport legacy elements remaining from the '88 Games. In addition, the venue has hosted World Cup competitions in the past so it has a strong sports legacy.

The area around the Canada Olympic Park venue has changed greatly since the 1988 Games. The rolling fields have been developed as residential areas and the venue itself has multiple businesses on the grounds, including the Canadian Winter Sport Institute (WinSport).

In 1988 25,000 spectators used the service vehicle road on both sides of the track to access spectator viewing areas connected with many underpass locations along the track.

Ski Jumping at the 1988 Olympics made daily highlight reels due to Eddie “the Eagle” and at one point held an estimated 80,000 spectators around the bowl of the ski jumps.

Freestyle skiing, which was located on the recreational ski hill held 15,000 spectators during the Games.

The City of Calgary was responsible for planning and providing spectator transportation services to all competition venues in 1988. Further they accepted OIAC (Olympic Accreditation and Identity Cards) and competition tickets to access public transport during the Games.

The public transportation system was based on using city transit services (Bus and Light Rail Transit). To support public transport, the city provided an additional 200 buses during the Games for weekday operations and 400 buses for weekend operations.

Transport Summary

Overview

Canada Olympic Park will play a significant part of another Olympic Games as it is currently estimated that three major competition venues will be located on the site for the 2026 Games.

The competition venues within the site and estimated spectators is outlined below:

- 7,500 Freestyle Skiing, Slopestyle and Big Air
- 7,500 Snowboard
- 7,500 Bobsleigh, Luge and Skeleton
-

COP will have 17 days of competition during the Games and operational hours vary based upon the competition schedule. Multiple competitions will take place daily at COP during the Games and session times need to be aligned with Public Transport.

The diagram below shows the COP venue and its surroundings and was taken in February 2017.



Public Transit

Public transit to/from the Canada Olympic Park is a crucial element for the Olympic Games. Calgary Transit will need to work closely with OCOG planners to ensure that the design of the public transport service is aligned with the competition schedule and thus meets the spectator/workforce demands during the Games.

There is currently insufficient public transport serving COP and therefore Calgary Transit will need to design a public transport system that will efficiently and effectively transport spectators and workforce to and from the venue.

The primary public transport plan for COP will more than likely be shuttle buses providing service from a downtown hub and possibly a strategically placed Park & Ride lot in the area that serves the venue.

Further Calgary Transit will need to investigate the installation of a spectator hub at COP that is within walking distance of venue. This hub could would connect the abovementioned downtown hub and the Park & Ride lots.

The only remaining flat area near COP that could be suitable for a spectator hub and queuing area is the gravel parking lot to the west of the venue. This lot is also currently the location of COP Stakeholder parking.

An added layer of complexity for planners is that COP will hold multiple sessions per day and this can cause not only transport issues, but venue operations issues as well.

Venue Transport Operations

The Canada Olympic Park Transport Plan will be a very complex due to the future development of the area. Future development consists of housing being built to the east of the venue and a two new roads and interchanges being constructed on both the west and east sides of venue.

Most of the Canada Olympic Park transport plan will more than likely be confined to the venue surface roads and existing parking areas.

In addition to the venue transport plan, an overall Canada Olympic Park operating plan will be developed and incorporate impacts on the surrounding roadways, residential areas and business located on-site.

Olympic venue transport operations require three areas at each venue to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone))
2. on-venue stakeholder parking (outlined in following tables)
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

Transport load zones (LZ) are important and will need to be carefully planned and strategically situated as there is limited road space within COP. The LZ requirements for each venue are outlined in the tables below and when not stated in linear metres, the number of bus load zones are stipulated.

Due to the compact size of the venues, LZ's at COP could possibly be shared between venues providing a better level of service for Games Stakeholders. Please note that stakeholders still should be provided dedicated load zones, they could just be combined between venues. For example, one load zone for athletes could be planned that serves freestyle skiing, big air, slopestyle and snowboard.

Stakeholder Parking

Venue parking is required for Olympic stakeholders to undertake their work during the Games and each venue should have its own dedicated parking area. The parking requirements for each venue are outlined in the tables below.

The estimated parking requirements for COP venues is 657 spaces and is in one large parking area. Ski Race Suppliers will require parking at the venue and is a good strategy to provide roughly 50 parking spaces for this group.

A high-level calculation has determined that the gravel parking area west of COP could roughly accommodate this number of parking spaces however there will be a need to provide parking for certain stakeholders (e.g. Dignitaries, IOC members, International Federations) within the 'clean' part of the venue. This lot is a key in a successful venue transport operation and any decrease in size could mean that additional parking will be required in another location.

The amount of clean parking can only be determined later when the close to final design of the venue is known.

Future development of the area will greatly restrict the possibility of securing additional parking near the venue. If additional parking is required and secured away from the venue, a parking shuttle will be required to facilitate movement between the two areas for Stakeholders.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity/delivery and the requirements are also outlined in the tables below.

Staging areas can be located within any flat area within or adjacent to COP or on closed roads in the area if suitable staging is not available.

Marketing Partner (MP) bus operations will be quite extensive and will require adequate bus staging within near COP (within 1000 metres). The quantity presented in the table below is a high-level estimation and would be refined as more definitive information is known during the organizing phase.

A proposed location for MP bus staging/parking is in the parking area west of the venue.

T3 staging (Olympic Family taxi system) could be co-located within the lot west of the venue or on closed roads. T3 operations and staging is recommended to be close to the competition venues.

Summary and Key Recommendations

Calgary Olympic Park is suitable selection for Olympic venues due to the existing competition venues.

Once a competition schedule is established and the final design of the venue is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Public transport operations will need to be created especially for the Canada Olympic Park as current service is insufficient to meet forecasted Olympic demand.

Public transport service should be aligned to meet the peak Olympic demand to ensure safety and service delivery, particularly during egress from venues when demand on the public transit system will be at maximum capacity. The City of Calgary Transport team are preparing an overview on spectator and workforce transport strategies and capacity and will be addressing these challenges in their overview.

Due to all the Games bus and vehicle movements outside of the venue as well as anticipated pedestrian flows, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep the residential area operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

This will be particularly important given the likely increase in residential density in the area surrounding COP over the next nine years.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be need to be developed in the next phase of planning that addresses the concentration of venues in the downtown core.

Other road closures/restrictions will be required to support COP operations and be fully realized once a comprehensive venue management operations plan has been developed. CBEC security planners have provided the City of Calgary with a preliminary road closure plan to support operations and security requirements.

Other key recommendations include:

- Robust public transport plan is required for COP as current service is inadequate to meet the expected Olympic demand.
- Venue capacities and competition schedule must be aligned with Public Transport delivery and capacity.
- A spectator/workforce hub is required within walking distance of the venue.
- Allow sufficient time to load-out the venue prior to loading-in the next session. It is estimated that a minimum of three hours is required between events.
- The local area traffic transport plan (LATTP) should be carefully planned and integrated with all relevant parties to limit residential and business disruption during the Games.
- Study if there might be synergies between Calgary Transit and the OCOG creating a spectator bus mall that supports COP and provides shuttles to the Mountain Bus Hub and Park & Ride.
- No spectator parking should be provided on-venue.
- Establish a Park & Ride for spectators originating from Canmore and the Banff area or the use of the Mountain Hub and shuttle them into the area.
- Appropriate bus staging for spectators and stakeholders will be required close to the venue to facilitate venue egress.

Canada Olympic Park Venue Transport Challenges

- Future residential development along with major roadwork could consume vital venue operational space, including venue transport and public transport areas.
- Due to the estimated number of spectators and workforce at COP, the egress of the venue could be challenging as most spectators depart within 60' of competition ending and most staff within 90'.
- Competition delay or postponements could have a large impact on venue and transport operations as this was seen in 1988.
- Multiple competitions will take place at night and therefore adequate lighting in transport spaces will be required.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Canada Olympic Park Venue Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ BOB/LUGE	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty 50m from media entrance
PHP/ENG LZ FREE/SNWB RD	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty 50m from media entrance
Below are estimated bus services for Canada Olympic Park. First line reflects system LZ, second line is the destination and the third line is the route number (if req.)							
TA LZ (FREE & SNOWBRD) TAC 1 Stop 1	Coach	15'	15'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ (BOB/LUGE) TAC 1 Stop 2	Coach	15'	15'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TM – MBC LZ FR/SNWB RD/ BOB TMM 1	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – IBC LZ FR/SNWB RD/ BOB TMC 1	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance
DDS LZ FREE	Bus	As required	As required	1	N	15-30 linear metres	BOH Dirty 75m from media entrance
DDS LZ SNWB RD	Bus	As required	As required	1	N	30-45 linear metres	BOH Dirty 75m from media entrance
DDS LZ BOB/LUGE	Bus	As required	As required	1	N	30-45 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	5'	5'	12	N	180 linear metres or 1,200 square metres	FOH Dirty 1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	30 linear metres	FOH Dirty
Internal Shuttle	Mini-Bus	TBD	TBD	TBD	Y	15 linear metres	BOB/LUGE road to distribute media, staff, T3

Estimated Canada Olympic Park Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 50 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue

MP Staging	Coach	N/A	Y	42-62 buses roughly 4,200 – 6,200 sq. metres flat, prepared surface with adequate ingress/egress points.	FOH Dirty Within 1000 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	Y	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

Estimated Calgary Olympic Park Stakeholder Parking Requirements

CODE	QTY.	Loc.	STAKEHOLDER
P1	20	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	100	BOH secure	Olympic Family T1/T2
P3	175	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	50	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	175	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	65	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	20	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	52	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	657		ESTIMATED PARKING SPACES

3.2 Olympic Oval Venue Transport Overview

The Olympic Oval was the site of the Speed Skating events during the 1988 Olympic Winter Games and is located on in the heart of the University of Calgary campus and is surrounded by university buildings and accommodations.

The transport legacy for the city from the '88 Games was the addition of the Calgary LRT which was built to service the Oval (Red Line University stop) for the '88 Games (Olympic Oval and McMahon Stadium [Olympic Stadium]). It is estimated that the Calgary LTR moves around 325,000 per day and at peak periods the trains are near capacity.

Further the venue has hosted World Cup competitions as recently as 2016 so it has a strong sports legacy.

Transport Summary

Overview

It is estimated that the University of Calgary will be closed for Games Operations (roughly 17 days or more) and the university is one of the proposed locations for the Athletes' Village. It is also assumed that many of the roads and spaces around the Olympic Oval can be available for Games operations.

Olympic Oval venue transport operations can successfully use the surface streets and parking areas around the venue for the 2026 Games. The straightening of West Campus Way will provide space for Stakeholder bus system load zones (e.g. TM, DDS).

Unlike other competition venues, there is parking within a short distance of the venue that could possibly be used for spectator/workforce parking.

Estimated ticketed spectator capacity is 4,000.

Public Transit

Public transit to/from the Olympic Oval is a crucial element for the Olympic Games. Calgary Transit will need to work closely with OCOG planners to ensure that the design of the public transport service is aligned with the competition schedule and thus meets the spectator/workforce demands during the Games.

Spectator/workforce can use the Calgary LRT Red Line to access the venue or other bus lines that connect the venue with public transport. (e.g. lines 19, 20, 72/73).

Spectator/workforce parking could be planned within the university parking areas north of the venue to help reduce the demand on public transport. Vehicle ingress/egress should be carefully planned as not to conflict with Games vehicle routes.

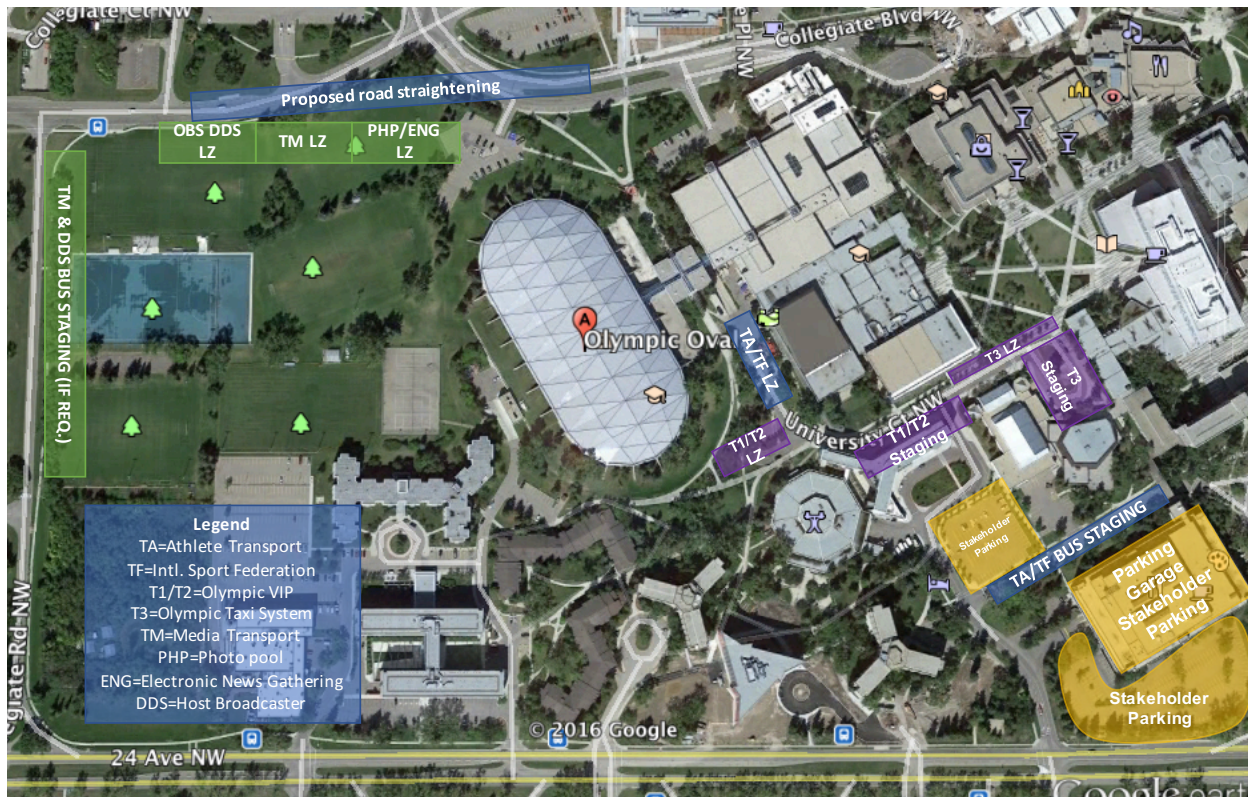
Venue Transport Operations

Olympic venue transport operations require three areas at each venue to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone))
2. on-venue stakeholder parking (outlined in following table)
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following table).

The diagram below reflects a sample venue transport plan for the Olympic Oval that reflects some load zones, parking and staging areas.



Stakeholder load-zones

Transport load zones (LZ) are important and will need to be carefully planned and strategically situated at the Olympic Oval.

There is plenty of space for Stakeholder LZs at the Olympic Oval and the requirements for are outlined in the table below (estimated locations reflected above).

When a LZ not stated in linear metres, the number of bus load zones are stipulated.

Stakeholder Parking

Venue parking is required for Olympic stakeholders to undertake their work during the Games and each venue should have its own dedicated parking area. The parking requirements for each venue are outlined in the table below.

The estimated parking requirements for the Olympic Oval venues is 325 spaces. The Stakeholder parking can be situated on the lots and parkade located behind the venue (as reflected on the diagram above).

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity/delivery and the requirements are also outlined in the tables below.

Staging areas can be located within any flat area within or adjacent to the Olympic Oval or on roads in the area if suitable staging is not available.

Marketing Partner (MP) bus operations will be quite extensive and will require adequate bus staging within near the Oval (within 1000 metres). The quantity presented in the table below is a high-level estimation and would be refined as more definitive information is known during the organizing phase.

MP bus staging can be located within the parking lots located to the north of the venue.

T3 staging (Olympic Family taxi system) could be situated behind the venue.

Summary and Key Recommendations

The Olympic Oval is a good choice for an Olympic venue.

Once a competition schedule is established and the final design of the venue is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Public transport service should be aligned to meet the peak Olympic demand to ensure safety and service delivery, particularly during egress from venues when demand on the public transit system will be at maximum capacity. The City of Calgary Transport team are preparing an overview on spectator and workforce transport strategies and capacity and will be addressing these challenges in their overview.

Due to all the Games bus and vehicle movements around the venue as well as anticipated pedestrian flows, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the university/residents/businesses in the area and most importantly keep the area operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be needed to be developed in the next phase of planning that addresses the concentration of venues in the downtown core.

Other road closures/restrictions will be required to support Olympic Oval operations and be fully realized once a comprehensive venue management operations plan has been developed. CBEC security planners have provided the City of Calgary with a preliminary road closure plan to support operations and security requirements.

Other key recommendations include:

- Secure the transport spaces outlined in the diagram above to help the overall transport planning at the Olympic Oval is suggested.
- Mode split to venue could be a mix of transit, self-drive and active. The transport strategy should be created in such a way not to oversaturate transit or parking
- Access to university buildings in the area will need to be considered and if appropriate, permits provided to vehicles that require access or parking.
- Spectator parking might be able to be provided but the impact on the area should be studied.
- Existing parking in the area to be used for MP bus staging and operations.
- University should be closed for the duration of the Games Operations.

Olympic Oval Venue Transport Challenges

➤ None.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Olympic Oval Venue Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty 50m from media entrance
Below are estimated bus services for Olympic Oval.							
TA LZ (TAC-2)	Transit	20'	15'	1	N	15 linear metres	BOH Clean 50m from athlete entrance
TF LZ	Mini Bus	30'	30'	1	Y	15 linear metres	BOH Clean 50m from athlete entrance
TM – MBC LZ TMM 3	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – IBC LZ TMC 3 OVAL	Coach	15'	15'	1	N	15 linear metres	BOH Dirty 75m from media entrance
DDS LZ	Bus	As required	As required	1	N	15-30 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	TBD	TBD	TBD	N	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	15 linear metres	FOH Dirty

Estimated Olympic Oval Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 50 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
MP Staging	Coach	N/A	Y	17 buses roughly 1,700 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance

TP/WRK Staging	Bus or Transit	TBD	Y	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty
-------------------	-------------------	-----	---	--------------------------------------	-----------

Estimated Olympic Oval Stakeholder Parking Requirements

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2
P3	65	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	110	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	40	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	325		ESTIMATED PARKING SPACES

3.3 Calgary Olympic Athletes' Village (COLV) Venue Transport Overview

The Calgary Olympic Athletes' Village is currently being proposed to be built adjacent to the Stampede Park in a location that is currently occupied by Calgary Transit.

The village is currently serviced by Calgary LRT system (Red Line) and would be served by the proposed Green line if constructed.

By 2026, a revitalization plan spearheaded by Calgary Municipal Land Corporation (CMLC) will have changed the landscape of the area. Residential towers have been and will continue to be built adjacent to the village site by 2026 thus increasing the density of resident in the vicinity.

Transport Summary

Overview

Since the COLV will be built especially for the Games, transport spaces and areas will be designed into the village build. There should be no issue with transport space requirements for the Games, however the spaces outlined below should be considered during the design phase.

The village is accessed by a variety of roads including the Trans-Canada Highway, and is estimated to be the home of 3,300 Athletes and Team Officials.

Public Transit

The village is currently linked with public transport via the Red Line and possibly the Green Line by 2026.

Athletes and team officials can walk to either light rail station to access public transport.

Venue Transport Operations

Olympic venue transport operations require three areas to successfully operate and provide transport service to the Olympic Stakeholders.

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

1. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone);
2. on-venue stakeholder parking (outlined in following tables); and
3. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As referenced above, load zones (LZ) are an important aspect in venue transport operations.

Since the village is a new build, Stakeholder Load Zones outlined in the table below should be factored into the design and construction of the village. Please note that when space is not stated in linear metres, the number of buses required in the LZ are stipulated.

Stakeholder Parking

Venue parking is required for stakeholders to undertake their work during the Games and parking should be located close to Stakeholder venue entry locations.

The estimated village Stakeholder parking requirements is 550 spaces and are outlined in the table below.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements for the village are also outlined in the tables below.

Summary and Key Recommendations

The proposed village location is a good location as it is conveniently located adjacent to the Stampede Park that will host many competitions, good connectivity with Highway 1 and near to the nightlife/attractions of the Calgary downtown.

Due to all the Games bus and vehicle movements through the Victoria Park area, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep Canmore operating as close to normal as possible.

An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be needed to be developed in the next phase of planning.

Other key recommendations include:

- Welcome Centre bus mall should have the ability to accommodate at least 10 buses at one time, plus parking for roughly 20-30 vehicles dropping off athletes.
- There might be a requirement for an internal shuttle depending on the walking distance between the Athlete dorms, dining hall and the bus mall.
- An estimated 400 parking spots near the village in the NOC Car park.
- International zone will require load zones for T1, T2, T3 and TM.
- Taxi/Uber load zone near the International zone entry.

COLV Venue Transport Challenges

- An Olympic Route Network (ORN) and Olympic Lanes would be required to provide Games Stakeholders with reliable travel times. (Potential full street closure around the village for the duration of the Games, along with additional road closures may be required to support Opening and Closing Ceremonies).
- If at bus barns, road network could be stressed with the amount of vehicle traffic.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated COLV Venue Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	10 linear metres	BOH Dirty 50m from media entrance
Below are estimated bus services for City Olympic Village							
TA LZ TAC 1 COLV>COP	Coach	15'	15'	1	N	30 linear metres	BOH Clean 50m from athlete entrance
TA LZ CURLING	15-pax van	On demand	On demand	1	N	30 linear metres	BOH Clean 50m from athlete entrance PARKING
TA LZ TAC-2 OVAL	Transit	20'	15'	1	N	15 linear metres	BOH Clean 50m from athlete entrance
TA LZ TAC-3 COLV><SDME	Coach	20'	15'	1	N	15-30 linear metres	BOH Clean Combined Shuttle for Stampede Park
TA LZ TAC-4 HOC. TM. BUS	Coach	On demand	On demand	1	N	60 linear metres (4 buses at once)	BOH Clean Buses to remain with team at venue.

TA LZ TAC-5 HOC. TM. BUS	Coach	On demand	On demand	1	N	60 linear metres (4 buses at once)	BOH Clean Buses to remain with team at venue.
TA LZ MOLV<>COLV	Coach	60'	30'	1	N	15 linear metres	BOH Clean 50m from athlete entrance
TA LZ Spectating	Coach	TBD	TBD	Mult.	N	TBD	BOH Dirty 50m from athlete entrance
TA LZ A&D	Coach	TBD	TBD	Mult.	N	TBD	BOH Dirty 50m from athlete entrance
TP/WRK	Bus or Transit	60'	30'	TBD	N	TBD	FOH Dirty 750-1000m from entry
Internal Shuttle	Mini- Bus	TBD	TBD	TBD	Y	15 linear metres	TBD

Estimated COLV Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
TA Staging	Mix of buses	TBD	TBD		BOH Clean

COLV Estimated Stakeholder Parking Requirements

CODE	QTY.	Loc.	STAKEHOLDER
P1	5	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	40	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	400	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	10	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	35	BOH dirty	OCOG Venue Operations
P7	0	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	40	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	550		ESTIMATED PARKING SPACES

4. Stampede Park Venues

4.1 Stampede Park

Stampede Park is located southeast of downtown Calgary and is the home of the annual 'Calgary Stampede'. The park is currently serviced by Calgary LRT system (Red Line) and would be served by the proposed Green line if constructed. Permanent structures on the site include the Saddledome and Corral, Big Four Building, BMO Centre, Stampede Grandstand and various other buildings to support the park operation during the Calgary Stampede

By 2026, a revitalization plan spearheaded by Calgary Municipal Land Corporation (CMLC) will have changed the landscape of the park and surrounding area. Residential towers have been and will continue

to be built adjacent to the park by 2026 thus increasing the density of resident adjacent to the Park. Additionally, the site may be host to the new 18,000 seat Calgary events centre and an ancillary 5,000 seat arena.

Transit to/from the park is a crucial element for the Olympic Games and as mentioned above, the Park is already serviced by the Calgary LRT that operates every five to eight minutes with a headway of 800 people per train.

An estimated 45% of workers in downtown Calgary take the Calgary LRT to work and this can lead to overcrowded trains especially during peak hours. Demand management strategies will need to be employed to reduce demand during peak Olympic load in and load out times.

In 2015 the Calgary LRT began operating four-car LRT trains, which has helped to alleviate overcrowding and increased the overall capacity of the Calgary LRT system to 800 passengers from the 600 in the old configuration.

The peak capacity of the proposed green line light rail train servicing the park is currently not known and will need confirmation.

The original LRT platforms had to be lengthened to accommodate the new four-car trains.

Transport Summary

Overview

Stampede Park will be the centre of the 2026 Olympic Games as it is currently estimated that four major competition venues, one training venue and three to four major non-competition venues will be located within the borders of the park, including the potential that Opening and Closing Ceremonies could also be held within the park.

The competition and non-competition venues within the park and estimated spectators is outlined below:

Competition-venues	Estimated Spectators
• Figure Skating & Short Track	20,000
• Hockey 1	18,000
• Hockey 2	5,000
• Curling	6,000
Training Venue	Estimated Spectators
• Figure Skating	0
Non-competition venues	Estimated Spectators
• Medals Plaza	17,000
• Opening & Closing Ceremonies	40,000
• IBC/MPC	12,500 – Media
• Stampede Park Common Domain	TBD
• Sponsor Activation Areas	TBD

Competition venues will only be 'live' during the 16 days of the Games and operational hours vary based upon the competition schedule.

The IBC/MPC is the main work area for media based in the City and will be in operation 24/7 for roughly six weeks.

The total capacity of the park is unknown but based upon a preliminary Competition Schedule and examining past Games session times, as many as 75,000 spectators could be attending Olympic Competitions and events at roughly the same time.

Public Transit

Public transit to/from the park is a crucial element for the Olympic Games and competition schedule alignment is required to ensure that the Olympic spectator and workforce demand can be safely accommodated.

Capacity analysis of the red and green lines (along with other bus lines servicing the park) is underway by the City to determine if there is adequate space to accommodate the Olympic demand and to determine how public transport can be aligned to meet the said demand.

It is likely that a mix of public transport systems will be required to support Games operations including a combination of the existing light rail service, bus systems and a shuttle system from strategic locations around the city.

It is recommended that the installation of a spectator hub near the park be considered (if not within the park itself) as this will help relieve pressure upon the two Calgary LRT servicing the Park. This hub could connect park and rides implemented for the Games to bring spectators in from the said strategic locations around the city.

Further examination of the light rail station operation will also be required to ensure safety and platform space is adequate for the Games. A robust queuing system will be required to help with peak egress periods during the Games (e.g. Opening and Closing Ceremonies).

Venue Transport Operations

Competition venue transport operations in an “Olympic Park” are normally planned separately as each venue works independent of the other venues. Each venue within the park is presented separately to provide a wholesome view of the operational space and parking required to support venue transport operations. Once more detailed planning is available venue transport operations will be integrated for better operational efficiency and effectiveness. For example, if Hockey 1 & 2 are adjacent to one another, venue load zones and parking could be combined.

In addition to each individual venue transport plan, an overall Stampede Park operating plan will be developed and incorporate impacts on the surrounding roadways and communities

Olympic venue transport operations require three areas at each venue to successfully operate and provide transport service to the Olympic Stakeholders (e.g. Athletes, International Sport Federations, Media, Olympic Family, Olympic Broadcasting Services).

These areas should be near the venue as per guidelines provided by the IOC and outlined in tables below:

4. on-venue stakeholder bus and vehicle load zones (e.g. Athlete Load Zone))
5. on-venue stakeholder parking (outlined in following tables)

6. bus/vehicle staging - depending on space bus staging can be either on-venue or off-venue (outlined in following tables).

Stakeholder load-zones

As mentioned above, load zones (LZ) are an important aspect in venue transport operations. This will need to be carefully planned in the park as there is limited space to accommodate all the required LZs. The LZ requirements for each venue are outlined in the tables below and when not stated in linear metres, the number of bus load zones are stipulated.

Current overlay drawings indicate that main entry for Olympic stakeholder vehicles bound for Figure Skating/Short Track, Hockey 1 and hockey 2 is via 5th Street SE and this road is four lanes wide ending in a vehicle turnaround. Olympic stakeholder vehicles accessing Curling would use Olympic Way to arrive at their LZ.

Even with the proximity of the Park to the proposed village location across the street, a combined athlete shuttle (TA) should be planned. This shuttle could be for competing and spectating athletes.

In 2014, the Athletes' Village was close to the venues and many athletes walked to/from the park in good weather so there is no doubt some will do the same in Calgary – if the village is across the street.

As per the IOC requirements, team sports should be provided with their own transport (buses for Hockey teams and large 15-passenger vans for Curling teams) and therefore load zones in the Back of House (BOH) area should be planned.

Please note that the village location (e.g. Victoria Park or other) will not impact the number of TA (transport athlete) load zones required in the park. However, if another location is selected for the village in Calgary (e.g. not across the street), bus numbers will increase due to the additional drive time.

Since the park venues are near the IBC/MPC, there could be a very good chance that most of the media can walk to the venues or if they are carrying equipment (e.g. photographers or electronic news gather crews), a golf cart shuttle can be operated rather than bus services.

Stakeholder Parking

Venue parking is required for Olympic stakeholders to undertake their work during the Games and each venue should have its own dedicated parking area. The parking requirements for each venue are outlined in the tables below.

The estimated parking requirements for venues in the park is 2,365 spaces, including the addition of curling.

It is evident that additional parking should be secured based upon to the current overlay drawings as most of the existing parking will be required for front of house (FOH) and back of house (BOH) operations.

It is suggested that P1 (Dignitary parking), P2 (IOC VIP parking), limited P3 (International Federation) and P4 Photo Pool parking be provided near each venue. All other parking areas can be sourced within the park or outside the park.

Parking within the park is preferred but parking adjacent to the park is also a good strategy to fulfill the stakeholder parking requirements. The area adjacent to Stampede Park known as Enmax Park should be reserved for overflow parking and other support services.

If stakeholder parking is more than 5-7' away from the venue (500 – 750m), a parking shuttle will be required for the impacted Olympic stakeholders.

Future planning may afford the OCOG an opportunity to reduce the stakeholder parking requirements if efficiencies can be gained by the proximity of venues.

Stakeholder bus/vehicle staging

Bus and vehicle staging is required to ensure service continuity and delivery. The staging area requirements are also outlined in the tables below.

Staging areas can be located within any flat area within or adjacent to the Park or on closed roads around the park.

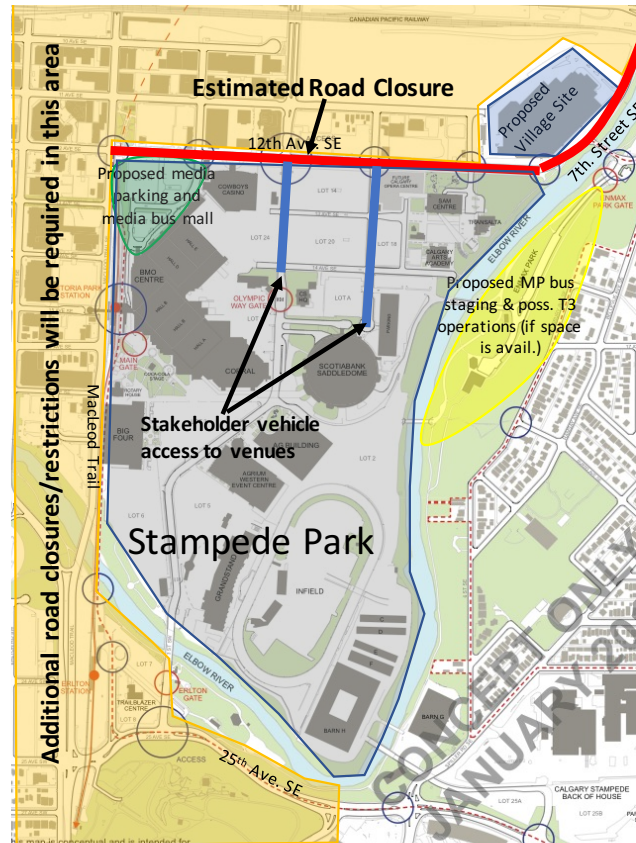
Media bus staging could be potentially located along MacLeod trail and then pulled into the Media Transport Mall when required.

Marketing Partner (MP) bus operations will be quite extensive and will require adequate bus staging within 1000 metres. The quantity presented in the table below is a high-level estimation and would be refined as more definitive information is known during the organizing phase.

A proposed location for MP bus staging/parking is across from the park in Enmax Park, highlighted in yellow in the map below. If Opening/Closing Ceremonies are at the park the number of buses would increase dramatically.

T3 staging (Olympic Family taxi system) could be co-located within space secured for bus operations or on closed roads. T3 operations and staging is recommended to be close to the competition venues. If space cannot be secured and the walk is convenient (5'), T3 operations and staging could also be located within the marketing partner bus staging area across the Elbow River at Enmax Park.

The map below provides a high-level overview of the Stampede Park and its surroundings.



Stampede Park is bordered by three roads along the Elbow and Bow Rivers to the East

- 25th Avenue Southeast – two lanes East and two lanes West
- MacLeod Trail (one way North) – 4 lanes with parking in left lane
- 12th Avenue Southeast (one way East to Olympic Way) – three lanes with parking in left lane
- 12th Avenue Southeast (two way from Olympic Way) – two lanes East and two lanes West
- 7th Street Southeast (two way) – one lane East and one lane West

An estimation is that 12th Avenue Southeast (represented as red line) will be closed for the duration of the Games to support Media bus operations (TM), athlete bus operations (TA), international federation operations (TF) and Olympic Family operations (T1, T2, T3) and vehicles with Olympic Parking Permits (VAPPS) entering the park and the athletes' village.

Other road closures/restrictions will be required to support park operations (orange shaded area) and be fully realized once a comprehensive venue management park operations plan has been developed. CBEC security planners have provided the City of Calgary with a preliminary road closure plan to support operations and security requirements.

Summary and Key Recommendations

Stampede Park is a good location for Olympic venues but planners will need to secure adequate stakeholder parking and bus/vehicle staging areas. Once a competition schedule is established and the final design of a new Calgary Flames and smaller hockey arena is known, further refinements can be made to the overall transport concept, including stakeholder vehicle access, parking, load zones and staging areas.

Public transport and light rail station operations will need to be aligned to meet the peak Olympic demand to ensure safety and service delivery, particularly during egress from venues when demand on the public transit system will peak. Demand management strategies will need to be employed to reduce existing demand on the public transit systems during peak demand. The City of Calgary Transport team are preparing an overview on spectator and workforce transport strategies and capacity and will be addressing these challenges in their overview.

Due to all the Games bus and vehicle movements outside of the park as well as anticipated pedestrian flows, a robust Local Area Transport and Traffic Plan (LATTP) is required to ensure that these operations run smoothly while having minimal impact on the residents/businesses in the area and most importantly keep the Calgary operating as close to normal as possible. This will be particularly important given the likely increase in residential density in the area surrounding Stampede Park over the next nine years and the siting of the Athletes Village adjacent to the Park. An LATTP is essentially a transport and traffic plan outside the venue secure perimeter that is jointly created by city planners based upon input from OCOG venue managers and transport managers and then managed by the City and local police.

In addition to the Local Area Transport and Traffic Plan, an overall Games Route Network (including Olympic and Paralympic lanes) will be need to be developed in the next phase of planning that addresses the concentration of venues in the downtown core.

The Enmax Park site should be reserved to support Olympic Transport operations and has the potential to provide a significant amount of the parking requirements for Olympic Stakeholders that will otherwise be difficult to find on the existing site.

Other key recommendations include:

- Align venue capacities, competition schedule and possible Non-event tickets (NETs) to public transport capacity.
- Create a spectator hub near to the Stampede Park to reduce demand on the Calgary LRT.
- Build a temporary footbridge over 12th Ave. SE that connects the Athletes' Village with Stampede Park to provide a safe and efficient walking path as well as reducing bus requirements.
- Utilize closed roads adjacent to the Park for Stakeholder load zones and/or bus staging/parking to relieve congestion within the Park.
- Do not allow spectator parking in the area.
- Secure existing parking lots or vacant lands within the vicinity of the park to provide Games vehicle parking and bus staging.

Detailed transport analysis of venues within Stampede Park

4.1.1 IBC/MPC

The IBC/MPC is the primary working area for broadcasters and press (media) and will operate on a 24/7 basis during the Games. The IBC/MPC will require a dedicated media transport system (TM) for the Games Operations that operates from a Media bus mall located in front of or near the IBC/MPC.

The Media bus mall has an estimated 600 bus movements per day.

The media transport system (TM) must include the following services with frequencies ranging from 15 to 60 minutes:

- ✓ Accommodation – Main Press Centre (MPC)/ International Broadcast Centre (IBC) services
- ✓ Competition venue services
- ✓ Training venue services (if applicable)

- ✓ MPC/ IBC – Olympic Villages services
- ✓ MPC/ IBC – Executive Board and IOC Session
- ✓ Arrivals and departures services
- ✓ Opening and Closing Ceremonies services
- ✓ MPC/IBC to Mountain Media Centre services

As per IOC requirements, some services are to commence as early as 14-days prior to the Opening Ceremony and cease three days after the Closing ceremony.

The IBC/MPC will also require 600 parking stalls for broadcast, 300 stalls for press and an additional 80 parking stalls for the OBS motor pool. The 980 parking stalls can be split between “inside the fence” (clean) and “outside the fence” (dirty) parking based upon the needs of OBS and Press.

IBC/MPC Venue Transport Challenges

- Lack of media parking located at BMO Centre.
- Ingress/egress of media buses (TM) might require road modifications, lane closures and/or lane reversal.
- Location of Media Pedestrian Screening Areas (PSAs) could impact Media bus mall and/or parking design and operations. It is suggested that the PSAs are not located in an area that impacts media parking or bus mall operations.
- Potential challenges for media bus staging if the space within media bus mall or along MacLeod Trail cannot accommodate all the required buses
- Number of media accommodation clusters will impact size of media bus mall and are unknown now.
- Secure perimeter (fence line) of the park could impact transport operations and limit access to parking and staging areas.

Recommendations:

- If the Bid proceeds, secure the necessary WHAT? within 500m maximum distance.
- Provide a parking shuttle for media to/from the IBC and MPC to offsite parking locations.
- Closed roads adjacent to the IBC/MPC could be used for media load zones and/or bus staging/parking
- Creation of distinct vehicle corridors through the Local Area Transport and Traffic Plan would lessen any vehicle conflicts and help transport operations.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated IBC/MPC Venue Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T1-T2 LZ	Car	On demand	On demand	1	N	18 linear metres (up to 3 vehicles)	BOH Clean 50m from entrance

T3 LZ	Car	On demand	On demand	1	N	30 linear metres (up to 5 vehicles)	FOH Dirty 75m from entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	60 linear metres (enough for 10 vehicles)	FOH Dirty 50m from media entrance
TP/WRK	Bus or Transit	60'	30'	TBD	N	TBD	FOH Dirty 750-1000m from entry
Below are estimated Media (TM) bus services from and back to the IBC/MPC. The first line is the origination, the second is Bus route number and the third is the venue.							
TM – IBC LZ TMC 10 ALPINE	Coach	15'	15'	1	N	30 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TMC 11 CC/BIA	Coach	20'	20'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TMC 12 SJ/NC	Coach	20'	20'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TMC 13 IBC<>MOLV	Coach	60'	60'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM-MBC LZ TMM-14 (IBC<>MBC)	Coach	60'	30'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TMC 1 FR/SNWBRD/B OB	Coach	20'	20'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TMC 3 OVAL	Coach	15'	15'	1	N	15 linear metres	FOH Dirty 75m from media entrance Media Bus Mall
TM – IBC LZ TM OC/CC	Coach	15'	15'	1	N	120 linear metres	FOH Dirty 75m from media entrance Media Bus Mall (if at McMahon Stadium)
TM-IBC CTY ACC	Coach	TBD	TBD	TBD	TBD	TBD	# of LZs is based upon hotel clusters

*based upon past Games and using Calgary specifics.

Estimated IBC/MPC Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 20 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	FOH Dirty On venue
TM Staging	Coach or Transit	1	N	20-30 buses	FOH Dirty MacLeod Trail

Estimated IBC/MPC Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	5	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	5	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	0	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	300	BOH secure or dirty	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	600	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	100	BOH dirty	OCOG Venue Operations
P7	0	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	TBD	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	1010		ESTIMATED PARKING SPACES

*based upon past Games.

4.1.2 Figure Skating/ Short Track

Figure Skating/Short Track is proposed to take place within the Saddledome and can be considered a 'high-demand' competition venue due to the popularity with broadcasters, press, marketing partners, IOC and spectators.

Based upon past Games, the venue will normally see one competition per day with Figure Skating and Short Track alternating days throughout the 17 days of the Games. Three days will see a Figure skating and Short Track Competition on the same day.

The overall design of the Park is still a work in progress and therefore it is difficult to estimate how Stakeholder vehicles will access this venue, and the location of load zones and parking however vehicular access to the venue will need to be maintained (likely for the back of the venue and some dedicated parking for key Olympic Stakeholder groups will be required at the venue.

Estimated ticketed spectator capacity:

Saddledome – 20,000

Saddledome Venue Transport Challenges

- Lack of Stakeholder parking at Saddledome.
- Space is limited for back of house (BOH) transport operations as the road is used for Hockey 1 & 2 as well.
- Spectator paths to front of house (FOH) could conflict with transport operations.

Recommendations:

- A large Park T3 load zone should be located very close to the park (no more than 300 m walk) to alleviate pressure at individual venues.
- Some Stakeholder parking could be outside the secure perimeter, reducing the demand in the Park and lessening the impact on security screening services.
- Closed roads adjacent to the park could be used for Stakeholder load zones and/or vehicle parking.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and	T3 = Olympic Family Taxi System

	Dedicated Bus System	
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Saddledome Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location**
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty or Clean depending on Security
PHP/ENG LZ	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty or Clean depending on Security 50m from media entrance
Below are bus services to/from Figure Skating and Short Track.							
TA LZ (Athlete) TAC-3 (Route) COLV><SDME	Coach	20'	15'	1	N	15-30 linear metres	BOH Clean
TF ITO LZ	Coach	15'	15'	1	N	15-30 linear metres	BOH Clean Could be from multiple locations
TM PARK SHUTTLE	Coach	TBD or WALK	TBD or WALK	TBD	TBD	TBD	BOH Dirty or Clean depending on Security (if required)
DDS LZ	Coach	On demand	On demand	1	N	15-30 linear metres	BOH Dirty or Clean depending on Security
TP/WRK	Coach or Transit	TBD	TBD	TBD	N	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	15 linear metres	FOH Dirty

*based upon past Games and using Calgary specifics.

**Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Saddledome Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 50 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty or Clean depending on Security
MP Staging	Coach	N/A	Y	43 buses roughly 4,300 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	Y	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Saddledome Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	100	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	70	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	90	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	55	BOH dirty	OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	375		ESTIMATED PARKING SPACES

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues and estimates are based upon past Games.

4.1.3 Hockey 1

Hockey 1 is estimated to take place within a newly built venue and can be considered a 'high-demand' competition venue due to the popularity with the IOC, broadcasters, press, marketing partners and spectators.

Based upon past Games, the venue will hold three competitions per day with Men's and Women's Hockey alternating days, throughout the 17 days. Women's Gold Medal Hockey played in the venue and the Men's Gold Medal Hockey match is on day 17, the same days as the Closing Ceremony.

The overall design of the Park is still very much in flux and therefore it is difficult to estimate how Stakeholder vehicles will access this venue, and the location of load zones and parking. A whole park strategy could be implemented for services to/from the Park.

Estimated gross ticketed spectator capacity:

Hockey 1 – 18,000

Hockey 1 Venue Transport Challenges

- Lack of Stakeholder parking.
- Space is limited for BOH transport operations as road is shared with Figure Skating/Short Track and Hockey 2.
- Spectator path from FOH could conflict with transport operations.
- Pedestrian and vehicular conflicts could be present due to spectator access to/from the venue.
- No detailed venue information has been presented thus all transport planning is hypothetical until site plans are provided.

Recommendations:

- A large Park T3 load zone should be located very close to the park (no more than 300 m walk).
- Some Stakeholder parking could be outside the secure perimeter, reducing the demand in the Park and lessening the impact on security screening services. Closed roads adjacent to the park could be used for Stakeholder load zones and/or vehicle parking.
- Creation of distinct vehicle corridors lessening any conflicts will help the transport operation.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Hockey 1 Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location**
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty or Clean depending on Security
PHP/ENG LZ	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty or Clean depending on Security 50m from media entrance
Below are bus services to/from Hockey 1.							
TA LZ TAC-4 HOC. TM. BUS	Coach	On demand	On demand	1	N	60 linear metres (4 buses at once)	BOH Clean Buses to remain with team at venue.
TF ITO LZ	Coach	15'	15'	1	N	15-30 linear metres	BOH Clean Could be from multiple locations
TM PARK SHUTTLE	Coach	TBD or WALK	TBD or WALK	TBD	TBD	TBD	BOH Dirty or Clean depending on Security
DDS LZ	Coach	As required	As required	1	N	15-30 linear metres	BOH Dirty or Clean depending on Security
TP/WRK	Coach or Transit	TBD	TBD	TBD	N	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	15 linear metres	FOH Dirty

*based upon past Games and using Calgary specifics.

**Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Hockey 1 Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location*
T3 Staging	Car	1	N	Up to 50 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty or Clean depending on Security

MP Staging	Coach	N/A	Y	46 buses roughly 4,600 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	Y	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Hockey 1 Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	100	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	70	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	120	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	55	BOH dirty	OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	405		ESTIMATED PARKING SPACES

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues and estimates are based upon past Games.

4.1.4 Hockey 2

Hockey 2 is estimated to take place within a newly built venue and is not considered a 'high-demand' competition venue as the 'better' team games will happen in Hockey 1.

Based upon past Games, the venue will hold two to three competitions per day with Men's and Women's Hockey alternating days throughout the 17 days.

The overall design of the Park is still a work in progress and therefore it is difficult to estimate how Stakeholder vehicles will access this venue, and the location of load zones and parking however vehicular access to the venue will need to be maintained (likely for the back of the venue and some dedicated parking for key Olympic Stakeholder groups will be required at the venue.

Estimated ticketed spectator capacity:

Hockey 2 – 5,000

Hockey 2 Venue Transport Challenges

- Lack of Stakeholder parking.
- Space is limited for BOH transport operations as road is shared with Hockey 1 and Figure Skating/Short Track.
- Spectator path from FOH could conflict with transport operations.
- No detailed venue information has been presented thus all transport planning is hypothetical until concrete site plans are provided.

Recommendations:

- Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.
- A large Park T3 load zone should be located very close to the park (no more than 300 m walk).
- Some Stakeholder parking could be outside the secure perimeter, reducing the demand in the Park and lessening the impact on security screening services. Closed roads adjacent to the park could be used for Stakeholder load zones and/or vehicle parking.
- Creation of distinct vehicle corridors lessening any conflicts will help the transport operation.
- Possibility of having additional BOH clean bus staging for hockey is recommended since teams will want to watch other teams play.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Hockey 2 Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location**
T1-T2 LZ	Car	On demand	On demand	1	N	30 linear metres (up to 5 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	30 linear metres (up to 5 vehicles)	BOH Dirty or Clean depending on Security
PHP/ENG LZ	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty or Clean depending on Security 50m from media entrance
Below are bus services to/from Hockey 2.							
TA LZ TAC-5 HOC. TM. BUS	Coach	On demand	On demand	1	N	60 linear metres (4 buses at once)	BOH Clean Buses to remain with team at venue.
TF ITO LZ	Coach	15'	15'	1	N	15-30 linear metres	BOH Clean Could be from multiple locations
TM PARK SHUTTLE	Coach	TBD or WALK	TBD or WALK	TBD	TBD	TBD	BOH Dirty or Clean depending on Security
DDS LZ	Coach	As required	As required	1	N	15-30 linear metres	BOH Dirty or Clean depending on Security
TP/WRK	Coach or Transit	TBD	TBD	TBD	N	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	15 linear metres	FOH Dirty

*based upon past Games and using Calgary specifics.

**Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Hockey 2 Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location*
T3 Staging	Car	1	N	Up to 50 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty or Clean depending on Security
MP Staging	Coach	N/A	Y	20 buses roughly 2,000 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	Y	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Hockey 2 Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	5	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	50	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	50	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	90	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	35	BOH dirty	OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	280		ESTIMATED PARKING SPACES

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues and estimates are based upon past Games.

4.1.5 Curling

Curling is assumed to be an existing venue within the Park close to the other venues and the IBC/MPC.

Estimated ticketed spectator capacity is 6,000.

Venue Transport Assessment

Since Curling is within the park there are some efficiencies to be gained as it will be close to the IBC/MPC and the Athletes' Village.

Two major concerns are currently estimated for this venue, the impact of the Ceremonies on the venue operation, as there could be competition days prior to and on the same day as the Opening Ceremony and the limited operational parking.

Curling Venue Transport Challenges

- Impact of Ceremonies on the Curling Venue on competition days on Day -1, 0 and 1 (if competition is required as seen in past Games).

- Space is limited for BOH transport operations as road is shared with IBC/MPC deliveries and other vehicles.
- Lack of Stakeholder parking.
- Spectator path from FOH could conflict with transport operations.

Recommendations:

- Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.
- Some Stakeholder parking could be outside the secure perimeter, reducing the demand in the Park and lessening the impact on security screening services. Stakeholder parking can be a mix of dirty and clean as per parking table below.
- Closed roads adjacent to the park could be used for Stakeholder load zones and/or vehicle parking.
- Creation of distinct vehicle corridors lessening any conflicts will help the transport operation.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Curling Venue Transportation Load Zones*

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location**
T1-T2 LZ	Car	On demand	On demand	1	N	90 linear metres (up to 15 vehicles)	Back of House (BOH) Clean 50m from OF entrance
T3 LZ	Car	On demand	On demand	1	N	60 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance
PHP/ENG LZ	Car	On demand	On demand	1	N	30 linear metres (enough for 5 cars)	BOH Dirty 50m from media entrance
Below are bus services to/from Curling.							
TA LZ CURLING	15-pax van	On demand	On demand	1	N	30 linear metres	BOH Clean 50m from athlete entrance PARKING
TM – MBC LZ TMM 2 CURLING	Coach	30'	30'	1	N	15 linear metres	BOH Dirty 75m from media entrance
TM – IBC LZ TMC 2 CURLING	Coach	20'	20'	1	N	15 linear metres	BOH Dirty 75m from media entrance

DDS LZ CURLING	Bus	As required	As required	1	N	30-45 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	TBD	TBD	TBD	TBD	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	TBD	FOH Dirty

*based upon past Games and using Calgary specifics.

**Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues.

Estimated Curling Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
T3 Staging	Car	1	N	Up to 40 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue
MP Staging	Coach	N/A	Y	11 buses roughly 1,100 sq. metres flat, prepared surface with adequate ingress/egress points	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	TBD	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

Estimated Curling Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	10	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	40	BOH secure	Olympic Family T1/T2
P3	40	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	20	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	90	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	40	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	10	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	20	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	270		ESTIMATED PARKING SPACES

*Adoption of an overall park operations strategy could reduce the space requirements at all park competition venues and estimates are based upon past Games.

4.1.6 Opening and Closing Ceremonies

Opening and Closing Ceremonies are the two premier events during the Olympic Games and are the most complex in operations for transport to plan and execute. This is due to the number of people that require transport to/from the venue and the amount of buses, cars and staff required to successfully execute the Opening and Closing Ceremony transport plans.

Estimated ticketed spectator capacity is 40,000.

Venue Transport Assessment

Bus staging/parking will be required to support the Games operations on the Ceremony nights. Currently there is a lack of bus staging that has been confirmed/estimated in the area.

Estimated bus parking/staging requirements 'snapshot' for Ceremonies is as follows:

Athletes and Team Officials (TA)

- City Olympic Village (COLV) - walk to athlete gathering location within the Stampede Park
- Mountain Olympic Village (MOLV) – 60 motor coaches (parking at COLV in and around TA transport mall)
- Back of House (BOH) clean

Olympic Family (OF)

- OF will depart from multiple locations with the most departing from the OFH.
- Three locations are currently being estimated: OFH, Reception 1 and Head of State reception (IOC Executive board only)
- BOH clean LZ
- 64 motor coaches

Media (TM)

- Media in the mountains will be transported to the IBC via normal connection
- Media will walk to/from the ceremonies.

International Federations (TF)

- IFs are split between the mountains and city venues
- Estimated 400-600 will have tickets to the ceremonies
- FOH dirty staging – park and walk (Enmax park)
- 8 motor coaches

Marketing Partners (MP)

- Estimated 12,000 MP tickets will be provided
- Range of 50-80 buses could require staging/parking at the Enmax Park.
- FOH dirty staging – park and walk, can be in multiple locations

Performers

- Mix of public transit and bus could be used for the ceremonies
- 3,000-5,000 performers "snowflakes"
- 41-53 buses
- FOH dirty

Olympic Stadium Venue Transport Challenges

- Crossover of Stakeholder vehicle flows with one another. (e.g. using same roads to ingress and egress the venue).
- "Clean" bus staging/parking will be required to be properly sized for OF and TA vehicles.
- Back of House (BOH) space could be insufficient for the operation to be successfully executed.

Recommendations:

- BOH clean parking will be required for International Protected Persons (IPP), currently high-level estimate is that 20-25 IPPs would need parking but planners should be prepared for more.
- Closed roads adjacent to the stadium could be used for Stakeholder load zones and/or bus staging/parking.
- Olympic Lanes will be required in Calgary and therefore discussion with city officials is required.
- Creation of distinct vehicle corridors lessening any conflicts will help the transport operation on ceremonies nights. For example, OF and TA buses use a specific route and Spectators/Workforce use another route.

- Secure existing paved lots on ceremonies nights within the vicinity of the Park to provide bus parking/staging.

Legend for the tables below		
TA = Athlete Bus Systems	TF = International Sport Federation	T1 & T2 = Olympic VIP car operations
TM = Media Bus Systems	DDS = Host Broadcaster Direct and Dedicated Bus System	T3 = Olympic Family Taxi System
TP/WRK = Public Transport for spectators and workforce	PHP = Press Photo Pool vehicles	ENG = Broadcast Electronic News Gathering vehicles
LZ = Load zone	BOH = Back of house (operational area)	FOH = front of house (spectator area)

Estimated Olympic Stadium Transportation Spaces

Venue Transport Spaces	Vehicle Type	Frequency		Area(s)			
		Non-Peak	Peak	Qty.	Shared (Y/N)	Size	Location
T3 LZ	Car	On demand	On demand	1	N	10 linear metres (up to 10 vehicles)	BOH Dirty 50m from OF entrance LIMITED SPACE COULD BE REQUIRED
Below are bus services to/from Opening & Closing Ceremonies.							
TA LZ MOLV-COLV	Coach	As required	As required	1	N	60 buses 6,000-7,000 sq. metres	COLV BUS MALL Clean to Clean
OF LZ	Coach	N/A	N/A	1	N	300 linear metres (15 buses per wave)	BOH Clean Outside of the OF Entrance
DDS LZ OC/CC	Bus	As required	As required	1	N	60 linear metres	BOH Dirty 75m from media entrance
TP/WRK	Bus or Transit	TBD	TBD	TBD	TBD	TBD	FOH Dirty 750-1000m from entry
Accessible	Access. Bus	TBD	TBD	TBD	N	TBD	FOH Dirty

Estimated McMahon Stadium Staging Area Requirements

Venue Transport Staging	Vehicle Type	Area(s)			
		Qty.	Shared (Y/N)	Size	Location
TA Staging	Coach	60	N	6,000 sq. metres	COLV BOH Clean TA BUS MALL at COLV
OF Staging	Coach	64	N	6,400 sq. metres	BOH Clean OF Parking area on venue
TF Staging	Coach	7	Y	700 sq. metres	FOH Dirty Area within 500m walk to the venue
T3 Staging	Car	1	N	Up to 10 vehicles, flat or slightly rolling land with prepared surface and adequate ingress/egress points	BOH Dirty On venue

MP Staging	Coach	N/A	Y	50-80 buses flat, prepared surface with adequate ingress/egress points in multiple locations around venue	FOH Dirty Within 750 metres with relatively flat/safe walking path with adequate lighting to spectator entrance
TP/WRK Staging	Bus or Transit	TBD	TBD	TBD BASED UPON ESTIMATED SPEC/WRK	FOH Dirty

Estimated McMahon Stadium Stakeholder Parking Requirements*

CODE	QTY.	Loc.	STAKEHOLDER
P1	20	BOH secure	Dignitaries, International Protected Persons and other nominated stakeholders
P2	5	BOH secure	Olympic Family T1/T2 (very limited for OC/CC)
P3	0	BOH secure or dirty	NOC Allocated Vehicles IF allocated & TD vehicles
P4	0	BOH secure	Photopool (PHP - if inside secure perimeter) & Key Operational Vehicles
P5	0	BOH secure or dirty	Broadcast Parking (OBS, RHB & ENG)
P6	0	BOH dirty	PHP (if outside secure perimeter), NOC Rate Card, Press Rate Card, Other Rate Card (if offered) & OCOG Venue Operations
P7	0	FOH dirty	Marketing Partners Operational Vehicles (front of house)
PX	TBD	BOH secure or dirty	Security and emergency service vehicles (Police, Fire and Ambulance)
	25		ESTIMATED PARKING SPACES

*Majority of Stakeholders will use bus services to get to/from the Opening & Closing Ceremonies therefore limited parking is required.