



GIANTS RIDGE
MOUNTAIN OPERATIONS
ASSESSMENT
October 2024

Giants Ridge Mountain Operations Assessment

Prepared For:
Giants Ridge
Biwabik, Minnesota



Prepared By:
SE Group



Table of Contents

1. Introduction.....	5
1.1. Regional Context	5
1.2. Giants Ridge and IRRR.....	5
1.3. Past Planning.....	6
1.4. This Plan.....	6
2. Ski Area Design Criteria	7
2.1. Lift Design	7
2.2. Run Network.....	7
2.3. Capacity Analysis and Design.....	7
2.4. Balance of Facilities and Limiting Factors	8
3. Existing Ski Area Conditions	9
3.1. Lifts	11
3.2. Terrain.....	13
3.3. Terrain Park	17
3.4. Skier/Rider Distribution	18
3.5. SAOT and PAOT	20
3.6. Density Analysis	22
3.7. Lighting	23
3.8. Snowmaking.....	23
3.9. Nordic Skiing	24
3.10. Other Winter Activities	25
3.11. Guest Services.....	26
3.12. Food and Beverage Service	29
3.13. Parking and Access.....	30
3.14. Ski Area Balance and Limiting Factors	32
4. Proposed Concepts	33
4.1. Lifts	36
4.2. Terrain.....	38
4.3. Skier/Rider Distribution	39
4.4. SAOT and PAOT	41
4.5. Density Analysis	43
4.6. Snowmaking and Lighting.....	45
4.7. Nordic Skiing	45
4.8. Base Area Improvements	46
4.9. Guest Services.....	52
4.10. Food and Beverage Service	54
4.11. Parking and Access.....	56
4.12. Ski Area Balance and Limiting Factors	58
5. Conclusion	60

Tables

Table 1 – Lift Specifications – Existing Conditions	12
Table 2 – Run Network Specifications – Existing Conditions	14
Table 3 – Skier/Rider Distribution Relative to Market – Existing Conditions	19
Table 4 – Capacity of Skiers At One Time – Existing Conditions	20
Table 5 – Capacity of People at One Time – Existing Conditions	21
Table 6 – Terrain Density Analysis – Existing Conditions	22
Table 7 – Space Use by Facility – Existing Conditions	26
Table 8 – Space Use Total Recommendations – Existing Conditions	28
Table 9 – Recommended Restaurant Seats – Existing Conditions	30
Table 10 – Recommended Parking – Existing Conditions	31
Table 11 – Lift Specifications – Upgrade Plan	36
Table 12 – Lift Specifications – Vision Plan	37
Table 13 – South Pod Run Network Specifications – Vision Plan	39
Table 14 – Skier/Rider Distribution Relative to Market – Vision Plan	40
Table 15 – Skiers at One Time – Upgrade Plan	41
Table 16 – Skiers at One Time – Vision Plan	42
Table 17 – Terrain Density Analysis – Upgrade Plan	43
Table 18 – Terrain Density Analysis – Vision Plan	44
Table 19 – Space Use Recommendations – Upgrade Plan	52
Table 20 – Space Use Recommendations – Vision Plan	53
Table 21 – Recommended Restaurant Seats – Upgrade Plan	54
Table 22 – Recommended Restaurant Seats – Vision Plan	55
Table 23 – Recommended Parking – Upgrade Plan	56
Table 24 – Recommended Parking – Vision Plan	57

Illustrations

Illustration 1 – Skier/Rider Distribution Relative to Market – Existing Conditions	19
Illustration 2 – Resort Balance – Existing Conditions	32
Illustration 3 – Skier/Rider Distribution Relative to Market – Vision Plan	40
Illustration 4 – Resort Balance – Upgrade Plan	58
Illustration 5 – Resort Balance – Vision Plan	59

Figures

Mountain Operations: Existing Conditions	10
Mountain Operations: Upgrade Plan	34
Mountain Operations: Vision Plan	35
Base Area: North Hub – Winter	48
Base Area: North Hub – Summer	49
Base Area: South Hub – Winter	50
Base Area: South Hub – Summer	51

1. Introduction

Giants Ridge, established in 1959 as a small local ski hill, has grown into a significant four-season destination in northern Minnesota. It has transformed from a venue serving day visitors within a 50-mile radius to a regional attraction drawing around 100,000 visitors annually from across Minnesota, the U.S., and Canada. Over the decades, Giants Ridge has become an essential economic driver for the Iron Range region, contributing to its economic and recreational development.

In 1984, the Iron Range Resources & Rehabilitation Board (IRRR) took ownership of the recreational facility after it faced bankruptcy. The IRRR aimed to expand and enhance Giants Ridge with four primary goals in mind:

1. Spur **economic development** in the region,
2. Enhance the **quality of life** for residents of the Iron Range by providing recreational amenities,
3. Attract **private sector** development, and
4. Create a **year-round destination**.

1.1. Regional Context

Giants Ridge is situated within the Iron Range region of northern Minnesota, an area historically known for its taconite mining industry. As the mining sector began to decline, the region sought ways to diversify its economy. Recreational tourism became a key focus, leveraging the area's natural beauty and seasonal variations to offer year-round activities. The local climate, with cold winters and mild summers, supports diverse recreational pursuits, including skiing, snowboarding, golfing, hiking, and biking.

The National Ski Areas Association classifies Giants Ridge as a mid-sized ski area, attracting visitors from nearby urban centers like Duluth and the Twin Cities, as well as from Canada. The physical attributes of Giants Ridge, including its elevation and terrain, support both winter and summer activities, while its proximity to other regional attractions enhances its appeal to a broad customer base.

1.2. Giants Ridge and IRRR

Giants Ridge stands apart from other similar recreational facilities because it operates under the direction of the IRRR, which enables the resort to serve as both a public recreation amenity and an economic driver for the region. The IRRR's mission and vision for Giants Ridge continue to focus on economic development, community enrichment, and long-term sustainability.

SE Group, a strategic planning consultant, has worked closely with the IRRR to align its plans for Giants Ridge with these goals. The partnership has helped advance the vision of Giants Ridge as a year-round destination, fostering regional growth and tourism while supporting private sector investment and job creation.

1.3. Past Planning

SE Group has a long-standing history of collaborating with Giants Ridge and the IRRR. Recent plans for Giants Ridge completed by SE Group include:

- **2023 Master Plan Update:** Consolidated ongoing projects and recommended key base area improvements, such as outdoor event venues and site enhancements, to activate the base area year-round.
- **2017 Core Area Master Plan:** Aimed to boost winter and summer business while identifying opportunities for future development. The plan focused on the core area and explored incremental real estate and accommodation developments.
- **2014 Multi-Season Recreation Plan:** Explored new recreational offerings, including activities such as a climbing wall, gravity bike trails, and a children's play area.

1.4. This Plan

This Mountain Operations Assessment for Giants Ridge evaluates current conditions, identifies capacity constraints, and proposes improvements that align with the resort's long-term vision. Building on Giants Ridge's role as a key economic and recreational driver in the region, it optimizes infrastructure and guest services while maintaining balance between skier capacity and supporting facilities.

This plan includes a detailed review of existing lift infrastructure, terrain, guest service facilities, and parking areas, identifying key areas for enhancement. It also reviews terrain parks, snowmaking, lighting, and other relevant planning considerations. In recognition of Giants Ridge's unique regional role, this plan discusses Nordic skiing and other activities occurring at the resort. It considers each of these topics in their Existing Condition, a short-term Upgrade Plan for improvements that may occur within the next three to five years, and a long-term Vision Plan identifying projects that may occur over the next ten or more years.

SE Group completed a Base Area Concept Plan concurrently with this Mountain Operations Assessment. The proposed changes to mountain infrastructure and services in this plan are designed to integrate seamlessly with the planned base area improvements, and vice versa. This alignment creates a unified, four-season experience that enhances both operational efficiency and visitor enjoyment.

2. Ski Area Design Criteria

The upgrading and expansion of a ski area is influenced by a variety of facility design criteria that contribute to a quality ski/ride experience.

2.1. Lift Design

Lifts should be carefully located to serve the available terrain in the most efficient manner, while also considering factors such as wind conditions, round-trip skiing/riding, access needs, connectivity between other lifts and runs, and circulatory space at the lower and upper lift terminals.

2.2. Run Network

Each run must have a relatively consistent grade corresponding with the identified ability level to provide an interesting and challenging ski and ride experience. Optimum run widths vary depending upon the specific topography and the identified ability level of the run. The run network must minimize cross-traffic and provide ski and ride terrain for every ability level consistent with market demand. Runs must be designed and constructed to minimize non-fall-line alignments, bottlenecks and convergence zones, which can produce skier/rider congestion. The cluster of runs around each lift is referred to as the lift's "pod."

2.3. Capacity Analysis and Design

Skiers at One Time (SAOT) is defined as the optimal level of utilization for a ski area that guarantees a pleasant recreational experience and at the same time preserves the quality of the environment. In other words, SAOT is the number of daily visitors that can be accommodated at a ski area based on lift infrastructure and terrain. The accurate estimation of a mountain's SAOT is a complex calculation and is the single most important planning criterion for any ski area. SAOT is calculated by balancing the uphill hourly capacity of the lift system with the downhill capacity of the run network. It considers the typical amount of vertical terrain desired by skiers and riders of varying ability levels.

Giants Ridge is unique in that it attracts a significant number of non-Alpine skiing guests for other activities such as Nordic skiing, tubing, fat biking, snowshoeing, and snowmobiling. This document uses People at One Time (PAOT) to account for SAOT plus these non-downhill-skiing guests. It is important to distinguish between PAOT and SAOT because non-downhill-skiing guests require some, but not all, of the same support facilities as downhill skiers. An accurate estimation of the mountain's SAOT/PAOT can be used to plan all other ski area facilities, including base lodge seating, mountain restaurant requirements, sanitary facilities, parking, and other services.

2.4. Balance of Facilities and Limiting Factors

The mountain operations assessment process emphasizes the importance of balancing the quantity of skier/rider services with the mountain's SAOT/PAOT. The limiting factor for a ski area's plan can be lift capacity, run network capacity, support facility capacity, or parking capacity. The true capacity of the overall ski area is determined by the most restrictive of these limiting factors.

The future development of a ski area should be designed and coordinated to maintain a balance between skier/rider demand, lift and run network capacity, and supporting equipment and facilities (i.e., grooming machines, base lodge services and facilities, utility infrastructure, access, and parking).

3. Existing Conditions

The overall balance of the existing ski area is evaluated by calculating the capacities of the existing facilities and infrastructure at Giants Ridge, then comparing them to its SAOT/PAOT. This examination helps to identify the ski area's surpluses and deficiencies. The next step is to identify improvements that would bring Giants Ridge into better equilibrium and help it meet the ever-changing needs of the marketplace.

The following figure depicts Existing Conditions at Giants Ridge.

MOUNTAIN
OPERATIONS
ASSESSMENT

EXISTING CONDITIONS

LEGEND

- Lift
- Ski Run by Ability Level
- Ski Patrol
- Parking
- Night Lighting
- Nordic Ski Trails
- Nordic Ski Start Area



3.1. Lifts

The existing terrain at Giants Ridge is served by one detachable chairlift, four fixed-grip chairlifts, two conveyors, and one rope-tow. A separate rope-tow serves the tube park. These lifts range from relatively new, with the Sarajevo and Helsinki chairs having been replaced in 2017, to relatively old, with the Chamonix and Calgary chairs having been installed in the 1980's. These two chairs, along with the Rocky Top chair (installed in the 1990's), were manufactured by Riblet—a company which no longer exists in its former form. Lifts over a certain age are no longer serviced by lift manufacturers, which often makes their maintenance difficult and the replacement of their parts prohibitively expensive—particularly if/when the company that produced that lift is no longer around.

The Sarajevo detachable quad is located in the “North Hub” of Giants Ridge’s base area and serves as the main out-of-base lift. It primarily serves novice and intermediate terrain. The Calgary fixed grip triple has a similar alignment, just south of Sarajevo, and primarily serves intermediate terrain. All of the runs that can be accessed from Calgary can also be accessed from Sarajevo; however, this Calgary provides important redundancy in the event that the Sarajevo chair is inoperable during critical business hours.

The base area terrain between the Sarajevo and Calgary chairs contains two conveyors: St. Moritz and Greely’s Way. Notably, the St. Moritz conveyor is covered, making it the preferred choice during cold and inclement weather. These conveyors service Giants Ridge’s primary learning terrain, which is located between the South and Main chalets. While this location provides good viewing opportunities from the Main and South chalets, it interrupts the flow of skiers returning to the Sarajevo lift from the popular Cortina run.

In the “South Hub” of Giants Ridge’s base area, the Helsinki fixed grip quad services intermediate and advanced terrain. This chair is popular, particularly with racers, since Giants Ridge’s alpine race terrain is located on the “Helsinki Race” and “Innsbruck Race” runs. The Chamonix fixed grip double sits just south of the Helsinki lift, serving similar but slightly more intermediate terrain. Notably, most of the terrain that can be accessed from the Helsinki chair can also be accessed from the Chamonix chair.

The Rocky Top fixed grip double serves terrain for skiers and riders of multiple ability levels (novice, intermediate, and advanced) on the northern side of Giants Ridge. Skiers and riders may access this lift via the Sarajevo chair. From Rocky Top’s upper terminal, they can ski back down to the North Hub of the base area.

Table 1 – Lift Specifications – Existing Conditions

Lift Name	Top Elevation	Bottom Elevation	Vertical Rise	Slope Length	Avg. Grade	Hourly Capacity	Rope Speed	Carrier Spacing	Lift Maker / Manufacture Year
	(ft)	(ft)	(ft)	(ft)	(%)	(pph)	(ft/min)	(ft)	
Chamonix/C2	1,826	1,429	398	2,090	20%	1,200	450	45	Riblet / 1987
Helsinki/C4	1,835	1,425	411	1,894	22%	2,400	400	40	SkyTrac / 2017
Calgary/C3	1,831	1,414	417	2,063	21%	1,800	450	45	Riblet / 1984
St Moritz Conveyor	1,448	1,418	30	209	14%	600	160	16	Sunkid / 2021
Greely's Way Conveyor	1,431	1,419	12	139	8%	600	160	16	Magic Carpet / 2004
Sarajevo/DC4	1,842	1,423	419	2,278	19%	2,400	1,000	100	LPOA / 2017
Rocky Top/C2	1,683	1,569	114	796	14%	1,200	450	45	Riblet / 1997
Terrain Park Rope Tow	1,820	1,501	319	1,865	17%	720	1,200	10	New for 2024/25
Tubing Handle Tow	1,475	1,413	62	516	12%	720	330	28	Multi Ski Lift / 2010

Top Elevation – The elevation of the lift’s top terminal.

Bottom Elevation – The elevation of the lift’s bottom terminal.

Vertical Rise – The difference in elevation between the top and bottom terminals.

Slope Length – The length of the lift, from top terminal to bottom, as measured on the ground (i.e., a three-dimensional measurement).

Average Grade – The average slope gradient (in percent) of the terrain under the lift, from top terminal to bottom terminal.

Hourly Capacity – The number of guest trips per hour accommodated by a lift (one ride for one guest = one guest trip).

Rope Speed – The speed that a lift can transport guests, as expressed in feet per minute.

Carrier Spacing – The distance in feet between each guest carrier (chair, gondola cabin).

3.2. Terrain

The ski terrain at Giants Ridge primarily faces east and northeast to maximize snow retention. Like many midwestern ski areas, all of Giants Ridge’s terrain is below tree line, and it skews toward learning skiers and riders. For this reason, Giants Ridge is known for its family friendly slopes, as well as its two terrain parks.

First timers and beginners at Giants Ridge learn on one of its two conveyors. From there, they typically progress to the Sarajevo chairlift. This detachable lift is easier for newer skiers and riders to load/unload than any of Giants Ridge’s fixed grip lifts, since detachable lifts are designed to run at faster speeds but have a slower load/unload process than fixed grip lifts, which maintain a constant speed between and at terminals. However, the Sarajevo lift is also Giants Ridge’s most popular, so it is more likely to experience congestion/have lift lines than Giants Ridge’s other lifts (with the exception being the Helsinki lift on race days). This crowded lift loading experience adds to turmoil for newer skiers and riders, and the presence of learning skiers and riders who may not be ready to jump from a conveyor to a chairlift has the potential to frustrate Giants Ridge’s more experienced guests. Guests who are confident skiing/riding the Sarajevo chair’s terrain can then venture elsewhere on the mountain, eventually choosing to ski the advanced “black diamond” runs if and when they feel prepared to do so.

As noted, the Helsinki lift can experience congestion on race days, as it services Giants Ridge’s primary downhill racing terrain. Generally, separating beginner skiers and riders from advanced ones—and racers!—is prudent.

In total, Giants Ridge’s designated run network comprises approximately 79 acres.

Table 2 – Run Network Specifications – Existing Conditions

Map Ref	Run	Top Elev.	Bottom Elev.	Vertical Drop	Slope Length	Avg. Width	Slope Area	Avg. Grade	Max. Grade	Ability Level
		(ft)	(ft)	(ft)	(ft)	(ft)	(ac)	(%)	(%)	
1	2002	1,820.0	1,627.5	192.5	690.8	45	0.7	29%	46%	Advanced
2	Alta	1,803.8	1,701.6	102.1	280.3	55	0.4	40%	50%	Advanced
3	Chamonix	1,791.1	1,428.2	362.9	1,726.6	90	3.6	22%	39%	Intermediate
4	Cortina	1,635.8	1,424.2	211.6	979.6	96	2.2	22%	38%	Intermediate
5	Deer Valley	1,677.7	1,558.7	119.0	634.7	43	0.6	19%	29%	Low Intermediate
6	Easy Way	1,836.1	1,422.0	414.1	3,021.8	90	6.3	14%	25%	Novice
7	Garmisch Terrain Park	1,824.4	1,438.1	386.3	2,352.9	69	3.7	17%	27%	Low Intermediate
8	Greely's Way	1,430.9	1,419.4	11.5	163.2	65	0.2	7%	7%	Beginner
9	Grenoble	1,649.5	1,421.0	228.5	1,032.2	160	3.8	23%	37%	Intermediate
10	Helsinki	1,790.3	1,555.9	234.3	893.6	98	2.0	28%	47%	Advanced
11	Helsinki Race	1,552.0	1,423.3	128.8	607.0	135	1.9	22%	29%	Advanced
12	Innsbruck	1,795.7	1,423.8	371.9	1,758.1	94	3.8	22%	40%	Intermediate
13	Innsbruck Race	1,490.5	1,420.1	70.5	336.7	114	0.9	22%	26%	Low Intermediate
14	Kitzbuhel	1,822.8	1,428.9	393.9	2,160.3	73	3.6	19%	33%	Low Intermediate
15	Lower Calgary	1,678.5	1,415.3	263.2	1,260.8	80	2.3	22%	39%	Intermediate
16	Lower Cat Track	1,508.3	1,435.1	73.1	1,254.0	42	1.2	6%	12%	Novice
17	Lower Olympic Valley	1,753.8	1,418.3	335.5	1,664.5	134	5.1	21%	32%	Low Intermediate
18	Lower Sarajevo	1,565.4	1,424.3	141.1	694.7	102	1.6	21%	33%	Low Intermediate
19	Melbourne	1,837.6	1,439.6	398.1	2,651.9	83	5.1	15%	23%	Novice
20	Nagano	1,792.7	1,682.7	110.0	466.8	78	0.8	25%	47%	Advanced
21	Park City	1,527.9	1,503.1	24.7	304.6	53	0.4	8%	11%	Novice
22	Placid	1,836.8	1,690.4	146.4	935.3	110	2.4	16%	24%	Novice
23	Placid Terrain Park	1,689.5	1,493.0	196.5	1,149.3	152	4.0	17%	28%	Low Intermediate
24	Rocky Top	1,819.7	1,508.1	311.7	1,721.2	104	4.1	19%	31%	Low Intermediate
25	Sapporo	1,671.5	1,419.1	252.3	1,349.4	83	2.6	19%	31%	Low Intermediate
26	Sarajevo Pass	1,621.4	1,465.2	156.1	640.6	65	1.0	25%	35%	Low Intermediate
27	Snowbasin	1,771.9	1,592.8	179.1	616.1	53	0.7	31%	46%	Advanced
28	Snowbird	1,689.4	1,470.2	219.2	1,491.3	69	2.4	15%	17%	Novice
29	Sochi	1,780	1,687	93	315	60	0.4	31%	33%	Low Intermediate

30	Solitude	1,689	1,543	146	653	45	0.7	23%	29%	Low Intermediate
31	St. Moritz	1,441	1,417	23	202	136	0.6	12%	14%	Novice
32	Sunshine	1,696	1,501	195	1,229	47	1.3	16%	19%	Novice
33	Upper Calgary	1,836	1,722	114	596	71	1.0	20%	30%	Low Intermediate
34	Upper Cat Track	1,625	1,507	118	1,331	54	1.7	9%	14%	Advanced
35	Upper Olympic Valley	1,837	1,780	57	492	98	1.1	12%	22%	Novice
36	Upper Sarajevo	1,838	1,632	206	1,157	96	2.5	18%	31%	Low Intermediate
37	Valdisere	1,678	1,570	108	815	68	1.3	13%	16%	Novice
38	Whistler	1,817	1,757	60	245	38	0.2	25%	30%	Low Intermediate
39	Whiteface	1,785	1,626	159	484	68	0.8	35%	46%	Advanced
	TOTAL				40,357		78.9			

Top Elevation – The elevation at the beginning (top) of the run.

Bottom Elevation – The elevation at the end (bottom) of the run.

Vertical Drop – The difference in elevation between the beginning and end of the run.

Slope Length – The three-dimensional length of the run centerline, from beginning of the run to the end, as measured on the ground or by use of 3D mapping technology.

Average Width – The average width of the entire run, from top to bottom. This may be determined by field measurements or calculating the given run acreage and slope length.

Slope Area – The total number of acres of terrain occurring within a run boundary. This may be determined by GIS measurement, or by a calculation utilizing the slope length and average width.

Average Grade – The average slope gradient (in percent) of the run's centerline, from the beginning of the run to the end.

Maximum Grade – The maximum gradient (in percent) occurring anywhere on the run.

Ability Level – These gradients were used to determine the skier/rider level of each run:

Skier/Rider Ability Level	Slope Gradient
Beginner	8 to 12%
Novice	to 25% (short pitches to 30%)
Low Intermediate	to 35% (short pitches to 40%)
Intermediate	to 45% (short pitches to 50%)
Advanced Intermediate	to 55% (short pitches to 60%)
Expert	over 55% (maximum of 80%)

Source: SE Group

Exceptions to these specifications occur when access to a run is limited to a higher ability level. For example, if a novice run can only be accessed by an advanced run, then it is designated advanced because it is not readily accessible to the novice skier/rider. Such is the case with *Upper Cat Track*, which SE Group has designated advanced since it can only be accessed via the advanced runs in the Rocky Top pod, though its gentle gradients would suggest it is appropriate for novice skiers and riders. Alternatively, if an otherwise intermediate run contains a substantial pitch of 55 percent terrain, then the run is designated expert because only expert skiers and riders can easily navigate the entire run.

3.3. Terrain Park

Terrain parks add important variation in terrain to ski areas. This variation helps ski areas retain guests, both for longer durations of visit and for repeat business. Ski area operators should aim to provide a progression in terrain parks so that novices may practice and experts may improve their skills. Providing this low-pressure environment for novices is important for their growth and progression. If features for skiers/riders of different ability levels are located within the same terrain park, they should be separated into distinct lines so that novices and experts don't need to cross paths. Signage should clearly and simply delineate the difficulty of the various parks and features. Cross traffic should be minimized with good visibility provided in merge zones. Park features should flow easily from one to another and avoid creating bottle necks and traffic jams.

Giants Ridge presently has two terrain parks: Placid and Garmisch. The Placid terrain park serves as the beginner area, designed to facilitate freestyle riding progression across all skill levels. At present, skiers/riders access the Placid terrain park via the Sarajevo chairlift. These terrain park skiers and riders contribute to congestion around the lower terminal of the Sarajevo lift, mixing with the newer skiers/riders who are transitioning from the nearby conveyors to their first chairlift, as well as the novice/intermediate skiers and riders who are riding the Sarajevo lift to ski and access Giants Ridge's other terrain.

In the spring/summer of 2024, a high-speed rope tow was installed for the Placid terrain park to allow for quicker lap times, and to reduce the volume of terrain park skiers and riders in the Sarajevo chairlift queue. This change helps alleviate congestion when present, and it contributes to the separation of skiers and riders of different ability levels—a desirable condition. The terrain parks provide important variety and attract unique user groups, and the addition of the rope tow will confine park riders to this area, keeping them off adjacent novice trails.

The Garmisch terrain park, the larger of the two, features a full-length run with a variety of elements, including 10 to 15 rails and boxes, followed by three larger jumps for more air and bigger tricks. While it includes some features for novice skiers and snowboarders, it mainly caters to intermediate and expert-level riders. This terrain park is primarily accessed via the Chamonix lift, which serves some of Giants Ridge's other advanced/expert terrain and doesn't experience heavy congestion.

3.4. Skier/Rider Distribution

In ski area planning, the distribution of available terrain is evaluated based on the percentage of skiers and riders on terrain of each ability level. The acres of available terrain for each ability level, and the acceptable skier/rider density—or the “target density”—for runs of each ability level, are used to determine capacity. Generally, higher ability level terrain supports a lower density of skiers and riders. Skier/rider distribution is determined as follows:

- Each run has a designated ability level, and each ability level has a target density range for the ideal number of skiers/riders occupying each acre of terrain at one time. The widely accepted target density criteria for ski areas are listed below:

Skier/Rider Ability	Target Density
Beginner	25 to 35 skiers/acre
Novice	12 to 25 skiers/acre
Low Intermediate	8 to 20 skiers/acre
Intermediate	6 to 15 skiers/acre
Advanced Intermediate	4 to 10 skiers/acre
Expert	2 to 5 skiers/acre

Source: SE Group

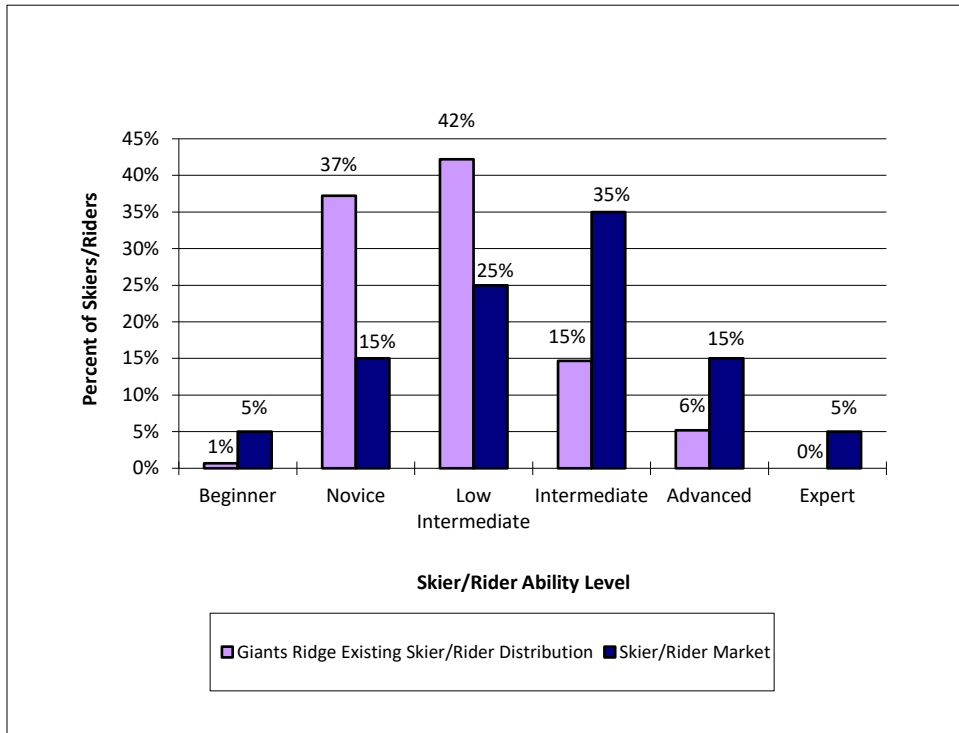
- The number of acres of terrain designated to each ability level is multiplied by target density for that ability level.
- The total for each ability level is expressed as a percentage of the total skiers/riders.
- This percentage (skier/rider distribution) is compared with the market demand for terrain of each ability level.

Table 3 and Illustration 1 compare Giants Ridge’s skier/rider distribution (expressed as percent of skiers/riders) with market demand for each ability level. The “Skier/Rider Market” percentages below approximate the North American market. Ideally, Giants Ridge’s available terrain would be capable of accommodating the full range of ability levels, consistent with market demand.

Table 3 – Skier/Rider Distribution Relative to Market – Existing Conditions

Skier/Rider Ability Level	Giants Ridge’s Run Area	Giants Ridge’s Downhill Ski Capacity	Giants Ridge’s Skier/Rider Distribution	North American Skier/Rider Market
	(acres)	(guests)	(%)	(%)
Beginner	0.2	7.3	1%	5%
Novice	22.0	396.0	37%	15%
Low Intermediate	32.1	449.1	42%	25%
Intermediate	15.6	156.2	15%	35%
Adv. Intermediate	9.0	62.8	6%	15%
Expert	0.0	0.0	0%	5%
Total	78.9	1,071	100%	100%

Illustration 1 – Skier/Rider Distribution Relative to Market – Existing Conditions



As shown, Giants Ridge’s terrain currently skews toward learning skiers and riders—specifically those in the novice and low intermediate user groups. Giants Ridge lacks true beginner terrain that has a slope gradient of 8 to 12%. Much of the terrain that Giants Ridge considers to be “beginner” terrain has slope gradients appropriate for “novice” skiers and riders. These are between 12 and 25%, with short pitches up to 30%. Both beginner and novice runs would typically be marked with a “green circle” on downhill ski trail maps.

Giants Ridge also lacks intermediate, advanced, and expert terrain, relative to the North American ski market. This is typical for ski areas in the Midwest. Terrain parks provide additional variety to entertain riders and skiers who have mastered the other offerings at Giants Ridge.

3.5. SAOT and PAOT

SAOT and PAOT, which are defined in the Capacity Analysis and Design section, are the most important planning criteria at a ski area. SAOT is dependent on lift infrastructure and skiable terrain, while PAOT is the sum of SAOT and guests participating in all other activities at a given time. Many ski areas do not have significant other user groups; these ski areas can use SAOT as their main planning criterion. Because Giants Ridge also serves a sizable number of Nordic skiers and other outdoor recreationists, Giants Ridge must aim to balance its shared facilities to its PAOT metric.

The SAOT of Giants Ridge’s existing lift and run network is calculated at 1,710 guests, as shown in Table 4. This capacity metric includes the new Terrain Park Rope Tow, which was installed during the summer of 2024. The SAOT metric does not include the Tubing Handle Tow, since this lift does not serve downhill skiers/riders.

Table 4 details SAOT calculations and Table 5 details PAOT at Giants Ridge.

Table 4 – Capacity of Skiers At One Time – Existing Conditions

Lift Name	Slope Length	Vert. Rise	Actual Capacity	Oper. Hours	Up-Mountain Access	Misload/Stoppages	Adj. Hourly Cap.	VTF/ Hour	Vertical Demand	SAOT
	(ft)	(ft)	(pph)	(hrs.)	(%)	(%)	(pph)	(000)	(ft/hour)	(guests)
Chamonix/C2	2,090	398	1,200	7.50	0	10	1,080	430	1,927	220
Helsinki/C4	1,894	411	2,400	9.00	0	10	2,160	887	2,167	410
Calgary/C3	2,063	417	1,800	9.00	0	10	1,620	676	2,224	300
St Moritz	209	30	600	9.00	0	5	570	17	391	40
Greely's Way	139	12	600	7.00	0	5	570	7	204	30
Sarajevo/DC4	2,278	419	2,400	9.00	5	5	2,160	906	1,872	480
Rocky Top/C2	1,865	319	1,200	7.50	0	10	1,080	344	1,999	170
Terrain Park	796	114	720	7.00	0	5	684	78	1,291	60
Tubing Handle Tow	516	62	720	7.00	0	0	720	45	-	-
TOTAL			11,640							1,710

Oper. Hours (hrs.) – The number of hours per day that the lift operates during the ski area’s busiest season.

Load Eff. (%) – The percentage of time within a given operating hour that a lift is stopped due to factors such as misloading.

Adj. Hourly Cap (pph) – The actual capacity of a lift adjusted for loading efficiency.

Vertical Transport Feet (VTF) per Hour (000) – The number of persons a lift can transport in one hour. VTF/hour is derived by multiplying a lift’s uphill capacity (measured in persons per hour) by the lift’s vertical rise (measured in feet).

Vertical Demand (ft/hour) – The aggregate number of runs per hour demanded on the ski area’s lifts multiplied by the vertical rise associated with those runs.

SAOT (guests) – An optimal level of at-one-time utilization for the ski area which guarantees a pleasant recreational experience without overburdening the ski area’s infrastructure.

Giants Ridge’s PAOT metric was calculated using SAOT and actual visitation data from other user groups. Typically, SE Group considers the capacity of a resort to be close to its visitation on its 5th to 10th busiest day. Precise visitation data was not available for many of these user groups, so SE Group worked closely with Giants Ridge to compile estimated visitation and turnover data.

Table 5 – Capacity of People at One Time – Existing Conditions

	Alpine Skiers	Nordic Skiers	Tubers	Snowshoers	Fat Bikers	Snowmobilers	PAOT
Estimated Visitation – Average of 5th and 10th Busiest Days	-	161	102	9	4	25	-
Estimated Turnover	-	3	4	3	2	1	-
At-One-Time Guests	1,710	54	25	3	2	25	1,820

These SAOT and PAOT calculations are used to plan all other ski area facilities, including base lodge seating, mountain restaurant requirements, sanitary facilities, parking, and other services.

3.6. Density Analysis

Giants Ridge's existing terrain density is analyzed in the table below.

Table 6 – Terrain Density Analysis – Existing Conditions

Lift Name	SAOT	Guest Dispersal				Density Analysis				
		Support Fac./ Milling	Lift Lines	On Lift	On Runs	Run Network Area	Run Network Density	Target Run Network Density	Diff.	Density Index
		(guests)	(guests)	(guests)	(guests)	(acres)	(guest/ac)	(guest/ac)	(+/-)	(%)
Chamonix/C2	220	55	36	84	45	12.7	4	8	-4	50%
Helsinki/C4	410	103	72	170	65	22.1	3	7	-4	43%
Calgary/C3	300	75	27	124	74	8.1	9	7	2	129%
St Moritz	40	16	10	12	2	0.6	3	7	-4	43%
Greely's Way	30	8	10	8	4	0.2	16	15	1	107%
Sarajevo/DC4	480	120	144	82	134	16.9	8	8	0	100%
Rocky Top/C2	170	26	36	75	33	13.6	2	10	-8	20%
Terrain Park	60	15	23	9	13	4.7	3	5	-2	60%
Total:	1,710	418	358	564	370	79	6	8	-2	73%

SAOT (guests) – An optimal level of utilization at a given time for the ski area which guarantees a pleasant recreational experience without overburdening the ski area's infrastructure.

Support Fac./Milling (guests) – The number of skiers and riders using facilities and milling areas.

Lift Lines (guests) – The number of skiers and riders actively waiting in lift lines.

On Lift (guests) – The number of skiers and riders actively riding a lift.

On Runs (guests) – The number of skiers and riders actively skiing and riding.

Run Network Area (acres) – Acres of the total run network servicing the referred lift. These acres comprise the lift's "pod" of runs.

Run Network Density (guest/ac) – The density of each lift's pod, calculated by dividing the number of skiers/riders on the runs by the amount of run area available within each pod.

Target Run Network Density (guest/ac) – The product of the target density, as explained in the Skier/Rider Distribution section, and the lift’s trail distribution by ability level.

Diff. (+/-) – Calculated run network density comparing actual run network density to target run network density. A negative number indicates an actual run network density lower than target run network density; a positive number indicates an actual run network density higher than target run network density.

Density Index (%) – The density comparison stated as a percentage. A 100 percent index represents a balance between actual run network density and target run network density: optimal utilization. A percentage less than 100 indicates an actual run network density lower than target run network density (i.e., uncrowded), and a percentage higher than 100 indicates an actual run network density higher than target run network density (i.e., more crowded).

These criteria calculate the number of skiers and riders in lift lines, riding the lifts, or utilizing support services. The remainder are on the runs themselves. The previous table indicates that most lifts are below the target density with the exception of Calgary, Greely’s Way Conveyor, and Sarajevo. On busy days, terrain served by these lifts may be more crowded than desired. On the other hand, several lifts have densities below 50%. While skiers and riders may enjoy uncrowded slopes, maintaining more terrain than necessary decreases operational efficiency.

The overall density index score shows that, overall, Giants Ridge’s runs are at 73% of target density. This indicates that even on a day when Giants Ridge’s visitation reaches its SAOT metric, Giants Ridge’s runs will not feel crowded to downhill skiers and riders.

3.7. Lighting

Much of Giants Ridge currently has night lighting to extend its hours of operation, as shown on the Existing Conditions figure. This is particularly beneficial for the ski area given its location: northern Minnesota experiences shorter winter days than ski areas further south. This also enables Giants Ridge to host after-school ski and race programs, reinforcing its position as a community asset.

3.8. Snowmaking

Giants Ridge benefits from significant advantages in snowmaking relative to many other ski areas. With no water supply restrictions and secured water rights, Giants Ridge can produce snow efficiently and consistently. This capability is crucial for maintaining operations in a region that has experienced inconsistent winter temperatures in recent years.

During the summer of 2024, Giants Ridge completed major upgrades to its snowmaking system, including installing new automatic snow guns and piping across many of its ski trails, the base area, and the Nordic stadium. These upgrades allow Giants Ridge to produce snow faster, cover terrain more quickly, and reduce labor and energy costs. Notably, these improvements now include snowmaking on the tubing park, which requires a significant amount of snow due to its uneven grading.

Before the upgrades, the snowmaking system covered 95 acres, operating for an average of 700 hours per season at a flow rate of 1,430 gallons per minute (GPM). Post-upgrade, the system can now cover the same 95 acres in just 385 hours at an average flow rate of 2,600 GPM. These changes are expected to reduce snowmaking operating hours by 45% and increase flow rate by 80%.

While Giants Ridge can make snow in the Nordic stadium, the lack of snowmaking on the Nordic trails has become a challenge, especially as climate change leads to more unpredictable weather patterns. During the 2023-24 season, the Nordic area was open for less than 15 days, forcing Giants Ridge to harvest and move snow to host races—a process that diverts resources from alpine operations and risks impacting guest experience and revenue. Snowmaking on Nordic trails is increasingly common in the Midwest and could help mitigate these challenges in the future.

3.9. Nordic Skiing

Nordic skiing is popular at Giants Ridge; the ski area boasts 63 kilometers of world-class Nordic ski trails and once served as a training center for U.S. Ski Team athletes. Today, it is popular with Nordic skiers in the community and serves as a race destination within the broader region.

On busy days, Giants Ridge's leadership estimates that several hundred Nordic skiers may be present throughout the course of a day. These Nordic skiers and those accompanying them increase demands on certain guest services at Giant Ridge, and they occupy a certain amount of indoor space. Combined with the other clientele at Giants Ridge, this can place pressure on available parking or restaurant seats for both groups. On days when visitation is limited by parking, generally race competition days, people park at the Quarry golf course parking lot (Quarry Lot) and shuttle up to the resort.

The Nordic stadium, as well as the Nordic timing and waxing building, are located in the North Hub of Giants Ridge's base area, between the lodge and the downhill ski trails. Tower fan snowmaking guns were installed in the Nordic stadium during the summer of 2024; none of the Nordic ski trails presently have snowmaking. The Nordic stadium and some of the Nordic ski trails presently have night lighting.

3.10. Other Winter Activities

Snow tubing is an accessible activity that enables visitors of many ages and ability levels to enjoy the outdoors in the winter. Giants Ridge's current snow tubing is located between the Calgary and Helsinki chairs and served by a handle tow. Busy tubing days at Giants Ridge can garner over 100 visitors, spread across two-hour sessions. Like Nordic skiers, tubers place additional demands on certain guest services, overall indoor space, and parking.

There are opportunities to enhance both operational efficiency and the guest experience at Giants Ridge's snow tubing park. Currently, the park uses a handle tow, which can be less intuitive than a conveyor lift for non-skiing guests. Additionally, because the tubing park is not fully graded, it requires a substantial amount of snow for smooth operation. The handle tow system itself further increases the need for snow, making the park more susceptible to deteriorating conditions late in the season or during mid-season warm periods.

Snowmobiling is a popular activity at Giants Ridge, even though the resort does not formally offer it. A snowmobiling trailhead at the north end of the base area attracts many visitors, and designated parking spaces are available for snowmobile trailers to minimize affects to regular visitor parking. In addition to snowmobiling, the hiking and biking trails around the resort are used by snowshoers, while fat bikers are permitted to ride on the Nordic trails. Giants Ridge supports these activities by offering gear rentals for both snowshoeing and fat biking. These additional guests place additional demands on certain guest services, overall indoor space, and parking.

3.11. Guest Services

Giants Ridge has four buildings offering services to skiers, riders, and other guests: the Main Lodge, South Chalet, Snowsports Pavilion, and Lodge. The Lodge is independently owned and operated, but it must be included in this analysis since a portion of guests use services in the Lodge, thus reducing the overall demand on Giants Ridge’s other facilities.

The first table below sums the existing guest service space in each facility, showing the total amount of guest service space at Giants Ridge, categorically. The second table compares this resort-wide sum to the recommended range of space for each service function for ski areas of similar size and complexion to Giants Ridge.

Table 7 – Space Use by Facility – Existing Conditions

Service Function	Main Lodge	South Chalet	Snowsports Pavilion	Total Resort
	Existing Total (sf)	Existing Total (sf)	Existing Total (sf)	Existing Total (sf)
Ticket Sales/Guest Services	686	-	-	686
Public Lockers	450	-	-	450
Seasonal Lockers	-	896	1,035	1,931
Rentals/Repair	3,611	-	-	3,611
Retail Sales	853	-	-	853
Snowsports School	344	-	-	344
F&B Seating	6,290	868	345	7,503
Kitchen/Servery/BOH	4,195	-	-	4,195
Restrooms	1,591	407	112	2,110
Ski Patrol/First Aid	-	1,110	-	1,110
Administration	2,707	1,170	-	3,877
Employee Lockers/Equipment	701	-	-	701
Storage	1,789	1,762	98	3,649
Circulation/Mechanical/Walls	10,641	2,001	660	13,302
Total	33,858	8,214	2,250	44,322

In the table above, the “Administration” category includes space for overall ski area admin, including IT, accounting, HR, operations, marketing/sales, skier services, and similar functions. The “Storage” category includes space for overall ski area indoor storage, including the adaptive program. It does not include storage space related to the categories specified in the table. For example, administrative space for food and beverage operations

is included in “Kitchen/Scramble.” Storage space for the youth ski programs/race team is included in that category itself. The “Employee Locker/Equipment” category includes space for ski area employees who are not included in another category, such as “Administration.” Examples of employees who may be allocated space in the “Employee Locker/Equipment” include ski instructors, ski patrollers, and front-line employees.

The Main Lodge contains the majority of guest service space at Giants Ridge—just over 75% of the resort’s total. The South Chalet and Snowsports Pavilion contain additional functions. The South Chalet adds supplementary space to the Main Lodge, as these two are co-located in the North Hub of the base area, near the popular lifts and Giants Ridge’s primary beginner/intermediate terrain. The Snowsports Pavilion is the only existing guest service facility in the South Hub and primarily serves intermediate/advanced skiers who come to ride the Helsinki and Chamonix lifts. It functions as an indoor hub for downhill racers and their parents, who utilize the lifts and terrain in this area.

Since the Lodge is independently owned and operated, the amount of space it offers (categorically, and in total) is not known. However, it does contain a restaurant—Neighbors BBQ—indicating space for F&B seating, kitchen/servery/BOH, and restrooms is present. An unknown quantity of guests stay at the Lodge on a typical winter weekend, and some of them likely eat lunch, use the restroom, warm up, etc. in their rooms throughout the day. Conversations with Giants Ridge’s leadership suggest that 20% of guests is an appropriate estimation for a typical mid-winter Saturday. The presence of these Lodge facilities alleviates pressure on Giants Ridge’s other guest service facilities.

In the table below, the recommended square footage range for each guest service function was determined using the ski area’s capacity (SAOT/PAOT) and standard industry multipliers. Discussions with Giants Ridge’s leadership informed SE Group’s understanding of the unique circumstances and needs of the ski area, including conversations on site, notes in the “Space Use Data Request” form, and email follow up questions. This specificity was used to adjust the standard industry multipliers to reflect the realities and needs of Giants Ridge.

In addition to the guests included in the PAOT metric, a small number of other users (such as non-skiing parents who bring their children to ski training sessions) and employees increase the demand for certain guest services, including retail sales, F&B seating, kitchen/servery/BOH space, restrooms, and first aid. Indirectly, these other users also marginally increase the amount of storage and circulation/mechanical space a ski area demands. Given this, Giants Ridge’s PAOT metric plus an industry standard +5% was used to estimate spatial demands for certain guest services. For guest service space specific to the lift-served operation, such as ski school and rentals, SAOT was used since space to accommodate PAOT guests and these other users is not needed.

Table 8 – Space Use Total Recommendations – Existing Conditions

Service Function	Existing Total (sf)	Recommended Range	
		Low (sf)	High (sf)
Ticket Sales/Guest Services	686	540	660
Public Lockers	450	540	660
Seasonal Lockers	1,931	2,100	3,150
Rentals/Repair	3,611	2,800	3,600
Retail Sales	853	1,070	1,310
Snowsports School	344	800	980
F&B Seating	7,503	8,690	10,420
Kitchen/Servery/BOH	4,195	4,350	7,300
Restrooms	2,110	2,680	3,280
Ski Patrol/First Aid	1,110	1,070	1,310
Administration	3,877	2,940	3,590
Employee Lockers/Equipment	701	1,470	1,800
Storage	3,649	2,150	2,620
Circulation/Mechanical/Walls	13,302	8,580	10,490
Total	44,322	39,780	51,170

As shown above, the total amount of guest service space at Giants Ridge is appropriate for the ski area’s present SAOT, PAOT, and other user groups. However, this guest service space could be distributed more efficiently to meet the resort’s needs.

At present, the Main Lodge serves Giants Ridge well, providing all of the resort’s space for ticketing/guest services, public lockers, rentals/repair, retail sales, snowsports school, and employee lockers/equipment.

Discussions indicate that existing snowsports school space includes locker rooms (full), office space, and general meeting space. At present, Giants Ridge does not offer full day lessons; additional space would be necessary for Giants Ridge to offer full day lessons and/or younger childcare. This additional lesson space would allow kids to eat lunch inside and have a place to warm up on particularly inclement days. Additional seasonal lockers would benefit the resort as well.

F&B seating in the Main Lodge/Events Center consists of two venues: the Burnt Onion Kitchen and Brews (BOKB), which is popular and would benefit from additional space/seating, and the food court, which is sufficiently sized.

Notes from Giants Ridge indicate that administration, employee lockers/equipment, and storage space are all undersized. Notes indicate that additional storage space is needed for the adaptive program. With the exception of the unique needs of the adaptive program, calculations suggest that administration and storage space at Giants Ridge is actually greater than that seen elsewhere in the industry. Employee space, however, has a notable deficit relative to that seen at other resorts.

The “Space Use Data Request” form indicates that the South Chalet contains space for seasonal lockers, F&B seating, restrooms, ski patrol/first aid, and administration functions. Notes indicate that additional meeting/breakout room space would be helpful, as well as additional storage space, specifically for the adaptive program.

Similarly to the South Chalet, the Snowsports building has relatively limited functions. These include seasonal lockers/day chalet seating, restrooms, and storage space—all of which are undersized relative to the guest service demands in the South Hub of the resort.

3.12. Food and Beverage Service

Giants Ridge presently has four seating areas, plus the Neighbors BBQ restaurant in the Lodge. Of these, two sell food: BOKB, which offers sit down dining, and the food court, which is a cafeteria. Both of these venues are in the Main Lodge. The other two seating areas are “brown bag” style, meaning that they consist of tables and basic amenities for guests who bring food to Giants Ridge, need to rest/warm up, wait for friends, etc. These brown bag spaces are present in the South Chalet and the Snowsports Pavilion; Giants Ridge does not sell food in either building.

The following table compares the existing number of restaurant seats at the ski area with the recommended number of seats, given Giants Ridge’s SAOT/PAOT, and other users.

Table 9 – Recommended Restaurant Seats – Existing Conditions

	Main Lodge	South Chalet	Snowsport Pavilion	Lodge	Total Resort
% of Lunchtime Total	60%	10%	10%	20%	100%
Lunchtime Capacity (PAOT + 5%)	1,147	191	191	382	1,911
Average Seat Turnover	3	1.5	1.5	2.5	-
Existing Seats	386	90	40	124	640
Required Seats	382	127	127	153	790
Difference	4	-37	-87	-29	-150
Existing Seating Capacity (Guests)	1,158	135	60	310	1,663

Giants Ridge has a shortage of seating relative to the demands of its full PAOT and other user groups. This can cause congestion within buildings or long wait times on peak days, negatively impacting the guest experience. Notes indicate that seating is particularly scant at the popular BOKB on busy days and in the Snowsports Pavilion on race days.

Outdoor seating can alleviate shortages of indoor seating. There is outdoor seating at Giants Ridge; however, it is not reliably available in northern Minnesota’s cold climate, and thus was excluded from this analysis.

3.13. Parking and Access

Most guests access Giants Ridge from the south, where the nearby town of Biwabik lies, and much further south, the Twin Cities. From this direction, they drive along scenic Route 135, then turn onto Giants Ridge Road. No public transportation serves Giants Ridge.

Upon arriving to the ski area, guests may park in one of four “core area” lots: A, B, and C in the North Hub; and D in the South Hub. “Core area” Lots A-B are most desirable, as they offer immediate access to the slopes in proximity to the beginner/intermediate terrain and the Main Lodge. Lot C is adjacent to Lots A and B, and is therefore also desirable. Lot D is near the alpine racing terrain but further from most guest services at Giants Ridge. Lot E was located on the other side of Giants Ridge Road and offered modest overflow parking of approximately 60 spaces. Construction for the Aquatic Center began in late summer of 2024, making this former lot unusable for overflow parking by skiers/riders in future years. For this reason, it is not included in parking capacity calculations.

The following table compares Giants Ridge’s existing number of parking spaces to its recommended number, given the demands of its full PAOT, and employees. The “2.8” multiplier for “Recommended car parking spaces” reflects Giants Ridge’s assumed Average Vehicle Occupancy (AVO) of 2.8 guests per car based on data from the resort. The “35” multiplier for “Recommended bus parking spaces” reflects the average charter bus capacity of 35 guests per bus.

Table 10 – Recommended Parking – Existing Conditions

	Multiplier	Total
PAOT + 5%	-	1,911
# of guests arriving by bus (2 buses)	-	70
# of guests arriving by car with a snowmobile trailer	-	4
# of guests arriving by car	-	1,837
Recommended bus parking spaces	35.0	2
Recommended snowmobile trailer parking spaces	1.0	4
Recommended car parking spaces	2.8	649
Equivalent car spaces for buses (1 bus = 4.5 cars)	4.5	9.0
Equivalent car spaces for snowmobiles (1 snowmobile = 2 cars)	2.0	8.0
Recommended employee car parking spaces	1.0	118
Total recommended spaces	-	784
Existing parking spaces	-	688
Surplus/deficit	-	-96
Existing parking capacity (people)	-	1,613

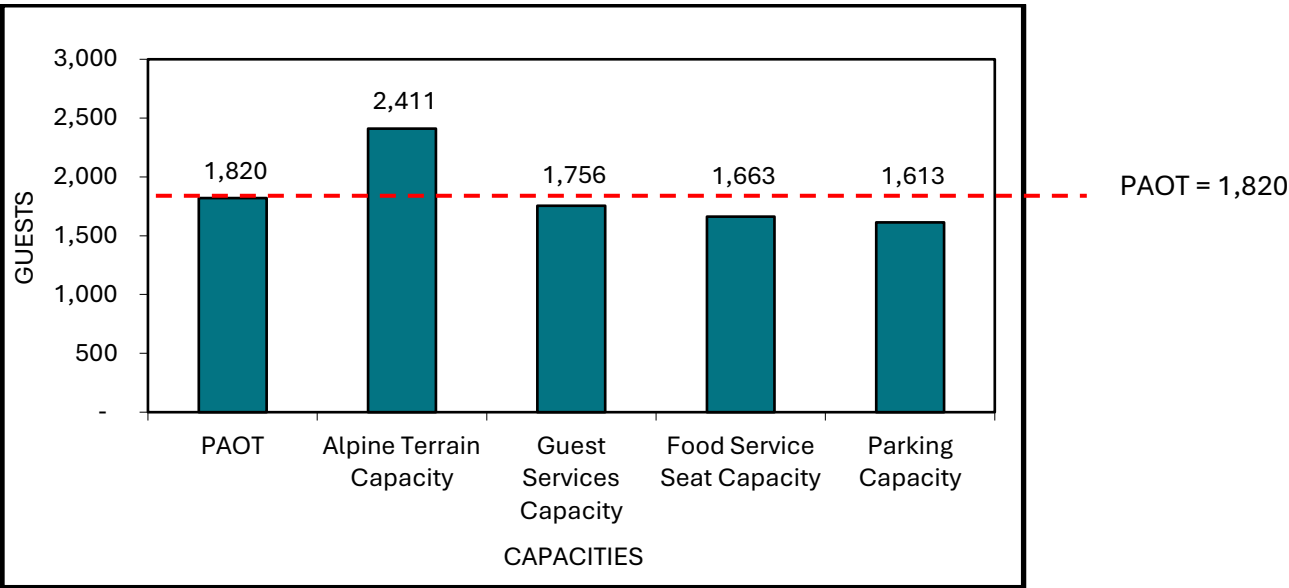
Under these circumstances, there is a deficit of 96 spaces on a peak day. In general, these lots are insufficient to meet Giants Ridge’s winter parking demands. However, this deficit typically is only felt on race days with high visitation levels.

On particularly large event days, such as the day of the Mesabi East Nordic Invite, overflow parking is needed. Historically, this has included Lot E, as well as additional overflow parking in Quarry Lot. Even when including the available spaces in the Quarry Lot, Giants Ridge’s available parking would be insufficient to meet the demands of its full PAOT, other user groups, and employees on these days. Again, this shortage is not regularly experienced. If visitation increases, additional parking, alternative access strategies (such as public transportation), and/or incentives to increase Giants Ridge’s AVO may be necessary.

3.14. Ski Area Balance and Limiting Factors

The overall balance at Giants Ridge is evaluated by comparing the capacities of its facilities to its PAOT which comprises of 1,710 skiing guests (SAOT) and 110 non-skiing guests, or 1,820 guests total (PAOT). These additional 110 guests are included in demand calculations for food service seating, parking, and certain guest services. They are not included in demand calculations for alpine terrain capacity.

Illustration 2 – Resort Balance – Existing Conditions



As shown, Giants Ridge is relatively balanced at present. The terrain capacity can easily accommodate the SAOT of 1,710 guests. Overall guest service space, food service seating, and parking are slightly below what is recommended for Giants Ridge’s PAOT demands. As previously discussed, these deficits are not felt uniformly across the resort; certain functions and locations have acute shortages on busy days and race days, whereas other areas of the resort can meet peak day demands without offering a lower quality guest experience.

4. Proposed Concepts

In this exercise, two futures for Giants Ridge were explored: one in an “Upgrade Plan,” and the other in a “Vision Plan.” The Upgrade Plan captures the mountain improvements that Giants Ridge is *more* likely to implement within the next three to five years. The Vision Plan documents projects that Giants Ridge may wish to explore beyond this short-term window. Both sets of proposed concepts—those in the Upgrade Plan and those in the Vision Plan—build upon resort’s existing offerings to further enrich the guest experience.

The following figures depict the Upgrade and Vision Plans (respectively) for Giants Ridge.

MOUNTAIN
OPERATIONS
ASSESSMENT

UPGRADE PLAN

LEGEND

Existing

- Lift
- Ski Run by Ability Level
- Ski Patrol
- Parking
- Night Lighting
- Nordic Ski Trails
- Nordic Ski Start Area
- Facilities/Features
- Planned
- Lift
- Removed/Relocated Lift
- Ski Run by Ability Level
- Ski Terrain
- Nordic Trails with Lighting and Snowmaking (2-3 km loop)
- Facilities/Features



MOUNTAIN OPERATIONS ASSESSMENT

VISION PLAN

LEGEND

Existing

-  Lift
-  Ski Run by Ability Level
-  Ski Patrol
-  Parking
-  Night Lighting
-  Nordic Ski Trails
-  Facilities/Features

Planned

-  Lift
-  Removed/Relocated Lift
-  Ski Run by Ability Level
-  Ski Terrain
-  Nordic Trails with Lighting and Snowmaking (2-3 km loop)
-  Facilities/Features



Contour Interval: 10'
SCALE (ft)



4.1. Lifts

Upgrade Plan

The Upgrade Plan includes two “replacement” lifts. It does not include any “new” lifts that would serve a different purpose than Giants Ridge’s existing lift fleet.

Helsinki and Chamonix together will be replaced with a detachable quad—the new “Innsbruck” lift. Its top terminal will be in the same location as that of the existing Helsinki lift, and its bottom terminal will be between the existing Chamonix and Helsinki terminals. This new Innsbruck lift will serve the terrain that is currently serviced by both the Chamonix and Helsinki lifts, increasing the efficiency of Giants Ridge’s lift fleet. Planning collaboration with the Giants Ridge team was undertaken to ensure that this new Innsbruck lift will effectively serve the downhill racing terrain that is a priority for this area.

With the new Innsbruck lift in place, the old Chamonix lift will be removed. The existing Helsinki quad will be moved to replace the Calgary triple, the oldest lift on the mountain. Because Helsinki was constructed in 2017, it has many more operating years and will be easier to maintain than the older Calgary lift. It will also modestly increase lift capacity in this area, reducing wait times during periods of congestion. In this plan, the relocated Helsinki quad is referred to as the “Calgary Replacement” lift.

A new tubing conveyor is also included in the Upgrade Plan. It is not included in capacity calculations, since downhill skiers/riders will not use this lift.

Table 11 details the proposed lift network in the Upgrade Plan.

Table 11 – Lift Specifications – Upgrade Plan

Lift Name	Top Elevation	Bottom Elevation	Vertical Rise	Slope Length	Avg. Grade	Hourly Capacity	Rope Speed	Carrier Spacing	Lift Maker / Manufacture Year
	(ft)	(ft)	(ft)	(ft)	(%)	(pph)	(ft/min)	(ft)	
Innsbruck/DC4	1,835	1,420	415	1,951	22%	2,400	1,000	100	Planned
Calgary Replacement/C4	1,831	1,414	417	2,063	21%	2,400	400	40	Relocated Helsinki
Sarajevo/DC4	1,842	1,423	419	2,278	19%	2,400	1,000	100	LPOA / 2017
Rocky Top/C2	1,820	1,501	319	1,865	17%	1,200	450	45	Riblet / 1997
Terrain Park Rope Tow	1,683	1,569	114	796	14%	720	1,000	83	New for 2024/25
St Moritz Conveyor	1,448	1,418	30	209	14%	600	160	16	Sunkid / 2021
Greely's Way Conveyor	1,431	1,419	12	139	8%	600	160	16	Magic Carpet / 2004
Tubing Conveyor	1,475	1,413	62	516	12%	720	160	13	Multi Ski Lift / 2010

Vision Plan

The Vision Plan includes both “replacement” lifts in the Upgrade Plan—the new Innsbruck lift and the Calgary Replacement lift—and two “new” lifts, which will serve different terrain and offer a different skier/rider experience than that currently offered at Giants Ridge. These strategic changes are intended to improve skier/rider circulation, enhance terrain access, and add downhill capacity.

The St. Moritz and Greely’s Way conveyors will be relocated to improve skier flow to the base of Sarajevo Express. In the Vision Plan tables, they are referred to as “New Conveyor 1” and “New Conveyor 2.” A new Beginner lift will add an important progression step between the conveyors and other lifts. Currently, Sarajevo is the next step for guests who have graduated from the conveyors. For skiers and riders riding a chairlift for the first time, Sarajevo and its terrain may seem long and intimidating. This new Beginner lift will be a gentler next step, creating a more comfortable and inviting learning experience.

At the south end of the ski area, the new “South Pod” fixed grip quad lift will expand Giants Ridge’s network of novice and intermediate runs. It will be approximately 1,650 feet long. Due to the cost and capacity implications of this project, it is the lowest priority project in the Vision Plan. Giants Ridge will continue to monitor demand for this additional terrain.

Table 12 details the proposed lift network in the Vision Plan.

Table 12 – Lift Specifications – Vision Plan

Lift Name	Top Elevation (ft)	Bottom Elevation (ft)	Vertical Rise (ft)	Slope Length (ft)	Avg. Grade (%)	Hourly Capacity (pph)	Rope Speed (ft/sec)	Carrier Spacing (ft)	Lift Maker / Manufacture Year
Innsbruck/DC4	1,835	1,420	415	1,951	22%	2,400	1,000	100	Planned
Calgary Replacement/C4	1,831	1,414	417	2,063	21%	2,400	400	40	Relocated Helsinki
Sarajevo/DC4	1,842	1,423	419	2,278	19%	2,400	1,000	100	LPOA / 2017
Rocky Top/C2	1,820	1,501	319	1,865	17%	1,200	450	45	Riblet / 1997
Terrain Park Rope Tow	1,683	1,569	114	796	14%	720	1,000	83	New for 2024/25
Tubing Conveyor	1,475	1,413	62	516	12%	720	160	13	Multi Ski Lift / 2010
New Beginner/C3	1,579	1,424	155	1,050	15%	1,200	300	45	Planned
New Conveyor 1	1,444	1,424	20	209	10%	600	160	16	Relocated St Moritz
New Conveyor 2	1,435	1,424	11	139	8%	600	160	16	Relocated Greely's
New South Lift/C4	1,750	1,458	292	1,653	18%	1,800	400	53	Planned

4.2. Terrain

Upgrade Plan

Upgrade Plan terrain changes are minimal, given that it contains “replacement” lifts serving existing terrain rather than “new” lifts serving new terrain. Required terrain alterations include minor tree clearing to facilitate the new Innsbruck lift and Calgary lifts, as well as minor reconfiguration of the bottoms of runs that will feed into each lift terminal. Because the Upgrade Plan terrain modifications are minimal, a table is not included.

Vision Plan

Beyond the South Pod expansion, changes to terrain in the Vision Plan are minor but strategic. They build upon the skier/rider circulation changes required in the Upgrade Plan and focus on enhancing the learning experience.

Relocating the St. Moritz and Greely’s Way conveyors will allow the *Cortina* run to extend directly to the bottom of the Sarajevo Express, improving the experience for intermediate and advanced skiers/riders by eliminating crossover with beginners and reducing the need for skate-skiing to reach the base. The new beginner area will be positioned in a slightly flatter, less congested zone, offering a better learning environment for first-time skiers and riders. Adjacent to the new Beginner lift, this area will facilitate a smooth transition from conveyors to chairlifts, without interference from more advanced skiers. Moving the beginner area here will require the existing Nordic starting area to be moved slightly north, which will in turn require the relocation of the Nordic timing and golf cart storage buildings. These tradeoffs have been discussed extensively with the Giants Ridge team.

For the new Beginner lift, a small area between *Snowbird* and *Melbourne* runs is planned to be cleared for the top terminal, allowing guests to unload out of the way of the main run. A small area to the south of its lower terminal will need to be activated for skier/rider circulation and lift loading. This lift could be installed without impacting the existing Nordic timing building and stadium area, since its lower terminal is over 100' from the Nordic timing building and approximately 65' from the edge of starting area.

The proposed South Pod area includes approximately 12 acres of new novice and low intermediate terrain. While this will not alleviate shortages of higher-level terrain, the new pod will help increase the ski area’s capacity and create another area for skiers to explore. The following table details the specifications of the planned runs in the South Pod.

Table 13 – South Pod Run Network Specifications – Vision Plan

Run	Top Elev. (ft)	Bottom Elev. (ft)	Vertical Drop (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
South Pod 1	1,818	1,757	61	771	52	0.9	8%	12%	Novice
South Pod 2	1,753	1,450	303	3,188	52	3.8	10%	18%	Novice
South Pod 3	1,755	1,711	44	591	93	1.3	8%	11%	Novice
South Pod 4	1,747	1,739	8	121	46	0.1	7%	7%	Low Intermediate
South Pod 5	1,745	1,462	283	1,591	109	4.0	18%	26%	Low Intermediate
South Pod 6	1,543	1,460	83	368	71	0.6	23%	25%	Low Intermediate
South Pod 7	1,497	1,452	45	214	100	0.5	22%	24%	Low Intermediate
South Pod 8	1,451	1,430	21	379	70	0.6	6%	8%	Novice
TOTAL				7,224		11.8			

The total terrain in the Vision Plan, which includes existing terrain, modified terrain, and new terrain, will comprise approximately 90.7 acres.

4.3. Skier/Rider Distribution

Upgrade Plan

Because the Upgrade Plan terrain modifications are minimal, skier/rider distribution does not change meaningfully from the Existing Condition.

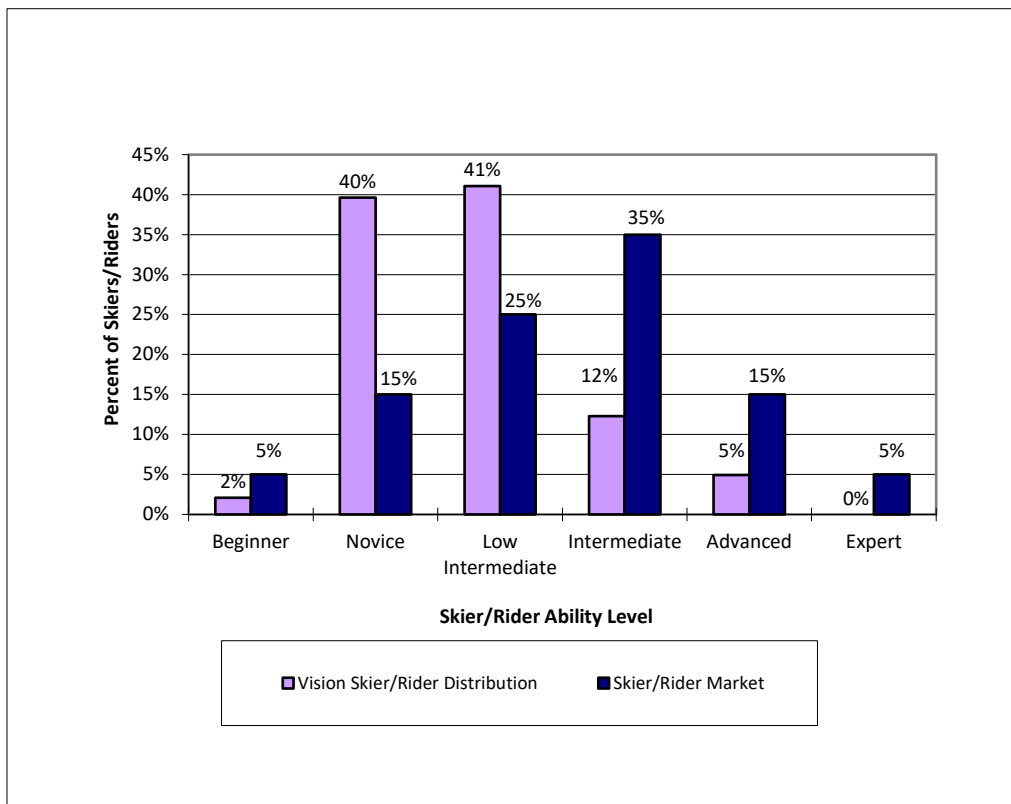
Vision Plan

Skier/rider distribution changes substantively in the Vision Plan due to the addition of the South Pod lift and associated terrain. As Table 14 and Illustration 3 depict, the expanded run network will primarily supplement novice and low intermediate terrain.

Table 14 – Skier/Rider Distribution Relative to Market – Vision Plan

Skier/Rider Ability Level	Giants Ridge Run Area	Giants Ridge Capacity	Giants Ridge Skier/Rider Distribution	North American Skier/Rider Market
	(ac)	(guests)	(%)	(%)
Beginner	0.9	26.3	2%	5%
Novice	28.0	503.3	40%	15%
Low Intermediate	37.3	521.9	41%	25%
Intermediate	15.6	156.2	12%	35%
Adv. Intermediate	9.0	62.8	5%	15%
Expert	0.0	0.0	0%	5%
Total	90.7	1,270	100%	100%

Illustration 3 – Skier/Rider Distribution Relative to Market – Vision Plan



4.4. SAOT and PAOT

Upgrade Plan

Giants Ridge's current SAOT is 1,710. Efficiencies in the Upgrade Plan lift network reduce SAOT to 1,620. Assuming current visitation levels continue, this decrease in SAOT capacity is not anticipated to negatively impact the skier/rider experience, since the lifts that are being eliminated were not frequently used.

Table 15 – Skiers at One Time – Upgrade Plan

Lift Name	Slope Length	Vert. Rise	Actual Capacity	Oper. Hours	Up-Mountain Access Role	Load Eff.	Adj. Hourly Cap.	VTF/Day	Vertical Demand	SAOT
	(ft)	(ft)	(pph)	(hrs.)	(%)	(%)	(pph)	(000)	(ft/day)	(guests)
Innsbruck/DC4	1,951	415	2,400	9.00	0	5	2,280	946	2,323	410
Calgary Replacement/C4	2,063	417	2,400	9.00	0	10	2,160	901	2,116	430
Sarajevo/DC4	2,278	419	2,400	9.00	5	5	2,160	906	1,872	480
Rocky Top/C2	1,865	319	1,200	7.50	0	10	1,080	344	1,999	170
Terrain Park Rope Tow	796	114	720	7.00	0	5	684	78	1,291	60
St Moritz Conveyor	209	20	600	7.00	0	5	570	11	261	40
Greely's Way Conveyor	139	11	600	7.00	0	5	570	6	194	30
Tubing Conveyor	516	62	720	7.00	0	0	720	45	-	-
TOTAL			11,040							1,620

The number of visitors in other user groups (Nordic skiers, tubers, snowshoers, fat bikers, and snowmobilers) is not anticipated to change in the Upgrade Plan. As in Existing Conditions, these other user groups add 110 guests to Giants Ridge's Upgrade Plan SAOT of 1,620 guests for a total PAOT of 1,730 guests.

Vision Plan

The Vision Plan lift and terrain upgrades will increase Giants Ridge's SAOT to 2,140, as depicted in the table below.

Table 16 – Skiers at One Time – Vision Plan

Lift Name	Slope Length	Vert. Rise	Actual Capacity	Oper. Hours	Up-Mountain Access Role	Load Eff.	Adj. Hourly Cap.	VTF/Day	Vertical Demand	SAOT
	(ft)	(ft)	(pph)	(hrs.)	(%)	(%)	(pph)	(000)	(ft/day)	(guests)
Innsbruck/DC4	1,951	415	2,400	9.00	0	5	2,280	946	2,323	410
Calgary Replacement/C4	2,063	417	2,400	9.00	0	10	2,160	901	2,116	430
Sarajevo/DC4	2,278	419	2,400	9.00	5	5	2,160	906	1,872	480
Rocky Top/C2	1,865	319	1,200	7.50	0	10	1,080	344	1,999	170
Terrain Park Rope	796	114	720	7.00	0	5	684	78	1,291	60
Tubing Conveyor	516	62	720	7.00	0	0	720	45	-	-
New Beginner/C3	1,050	155	1,200	7.00	0	10	1,080	167	898	190
New Conveyor 1	209	20	600	7.00	0	5	570	11	261	40
New Conveyor 2	139	11	600	7.00	0	5	570	6	194	30
New South	1,653	292	1,800	7.00	0	10	1,620	474	1,424	330
TOTAL			14,040							2,140

As in Existing Conditions and the Upgrade Plan, other user groups add 110 guests to Giants Ridge's Vision Plan SAOT of 2,140 guests, for a total PAOT of 2,250 guests.

4.5. Density Analysis

Upgrade Plan

Because of the minimal terrain changes between Existing Conditions and the Upgrade Plan, the Giants Ridge's density index remains at 78%.

Table 17 – Terrain Density Analysis – Upgrade Plan

Lift Name	SAOT	Guest Dispersal				Density Analysis				
		Support Fac./ Milling	Lift Lines	On Lift	On Runs	Terrain Area	Terrain Density	Desired Density	Diff.	Density Index
		(guests)	(guests)	(guest)	(guest)	(ac)	(guest/ha)	(guest/ac)	(+/-)	(%)
Innsbruck/DC4	410	103	152	74	81	31.1	3	7	-4	43%
Calgary Replacement/C4	430	108	36	186	100	14.5	7	8	-1	88%
Sarajevo/DC4	480	120	144	82	134	17.0	8	9	-1	89%
Rocky Top/C2	170	26	36	75	33	11.5	3	9	-6	33%
Terrain Park Rope Tow	60	15	23	9	13	3.9	3	13	-10	23%
St Moritz Conveyor	40	10	10	12	8	0.6	13	15	-2	87%
Greely's Way Conveyor	30	8	10	8	4	0.2	16	15	1	107%
Total	1,620	390	411	446	373	79	6	8	-2	72%

Vision Plan

The density index decreases in the Vision Plan. While Calgary, Sarajevo, and one of the conveyors maintain high densities, the overall density index decreases from 78% to 48%. This decrease indicates that terrain will feel less crowded in the Vision Plan, even relative to its higher SAOT.

Table 18 – Terrain Density Analysis – Vision Plan

Lift Name	SAOT	Guest Dispersal				Density Analysis				
		Support Fac./ Milling	Lift Lines	On Lift	On Runs	Terrain Area	Terrain Density	Desired Density	Diff.	Density Index
		(guests)	(guests)	(guest)	(guest)	(ac)	(guest/ha)	(guest/ac)	(+/-)	(%)
Innsbruck/DC4	410	103	152	74	81	30.9	3	7	-4	43%
Calgary Replacement/C4	430	108	36	186	100	12.2	8	7	1	114%
Sarajevo/DC4	480	120	144	82	134	16.6	8	8	0	100%
Rocky Top/C2	170	26	36	75	33	11.5	3	9	-6	33%
Terrain Park Rope Tow	60	15	23	9	13	3.9	3	12	-9	25%
New Beginner/C3	190	48	54	63	25	2.7	9	10	-1	90%
New Conveyor 1	40	10	10	12	8	0.6	13	15	-2	87%
New Conveyor 2	30	8	10	8	4	0.2	16	15	1	107%
New South Lift/C4	330	83	81	112	54	12.0	4	10	-6	40%
Total	2,140	521	546	621	452	91	6	13	-6	49%

4.6. Snowmaking and Lighting

As noted in the discussion of Existing Conditions, Giants Ridge completed major upgrades to its snowmaking system in the summer of 2024. Given this, no significant changes to snowmaking or lighting are included in the Upgrade Plan. In the Vision Plan, snowmaking is recommended for the new South Pod terrain to enhance its resiliency to fluctuating precipitation and season length.

The nearer-term priority for improvements to snowmaking and lighting is on Giants Ridge's Nordic terrain.

4.7. Nordic Skiing

Snowmaking and lighting are recommended for Giants Ridge's Nordic terrain, beginning with a 2 to 3-kilometer loop which has both. The snow surface on the Nordic trails can be insufficient early or late in the season, as well as during drier periods with less precipitation, especially when use is heavy. A loop with snowmaking would increase the likelihood that Nordic skiing is available during these times, both for racers and recreational users. Because water and power lines for snowmaking are typically trenched together, lighting could easily be to this loop at the same time. These upgrades should be synchronized with planned upgrades to the Legend golf course, to the extent possible.

Relatedly, any new snowmaking in the Nordic area will have to minimize impacts to the Legend golf course. One option to minimize disturbance involves adding snowmaking to the *Northern Lights* trail, which borders the golf course and is popular with recreational users. This trail, which is already lit, could easily integrate snowmaking with minimal layout changes. Another option for a Nordic snowmaking loop would be to include portions of the *Cedar* and *Gold* trails, creating a new trail in between to complete the loop. This route would be closer to the downhill ski area and preferable for racers. Giants Ridge will continue to evaluate options.

As part of the Vision Plan, relocating the Nordic stadium and timing building is required to accommodate the beginner area's relocation, though this move is not needed for the installation of the new Beginner lift alone. Moving the Nordic stadium north is expected to have minimal impact on the Nordic skiing experience and would optimize space for both downhill and Nordic skiers.

Further planning is needed before implementing changes to trails, snowmaking, lighting, or the stadium to ensure all upgrades align with Giants Ridge's long-term vision for both skiing and golf operations.

4.8. Base Area Improvements

The Base Area Concept Plan aims to unify Giants Ridge's base area, improving circulation and amenities to create a seamless experience for both guests and operators. In it, non-skiing winter activities will expand to accommodate a wider range of guests and complement existing offerings. Planned summer/fall offerings will integrate seamlessly with existing activity offerings and expand the resort's capacity to be a year-round destination for events and vacations. This section comprises a summary of the plan.

The implications of these Base Area Improvements for guest services, food service seating, and parking are captured in the "Vision Plan" parts of each respective section. However, many of these improvements can be implemented at any time, independent of other resort projects.

North Hub

The North Hub, or main base area, extends from the Nordic Center/Golf Club House to the South Chalet.

Circulation and Amenity Improvements: Significant improvements include:

- A reorganization of parking and vehicular circulation to enhance efficiency and streamline guest arrival. This includes creating a consistent vehicular "edge" that connects the Main Chalet and Lodge, establishing a unified flow.
- A pedestrian promenade with distinct landscaping to provide clear guest orientation and link all indoor and outdoor spaces cohesively.
- Year-round amenities, including a central outdoor space with an ice ribbon/track, seating areas, a water feature, an upgraded destination playground with natural design elements, and an outdoor amphitheater for events and performances.

Planned Winter Activities: An ice skating ribbon is proposed between the Lodge and the Main Chalet. This family friendly activity will help activate this area as a gathering space—especially if hot drinks are sold nearby.

Planned Summer Activities: A summer water feature will be located where the winter ice skating loop is planned, unifying this central gathering space for summer visitors. An outdoor amphitheater will utilize a forested backdrop as a venue for various events, such as concerts, weddings, and retreats. A natural playscape will replace the existing playground with play elements that tie into the surrounding nature.

South Hub

The South Hub includes the existing Snowsports Pavilion, Lot D, and the maintenance facility. It primarily serves alpine racers, their families, and advanced skiers.

Circulation and Amenity Improvements: A new, simple “South Hub Guest Service Building” will offer essential services like seating and restrooms, with the existing Snowsports Pavilion remaining for overflow on race days. Parking and circulation improvements are also recommended, both to improve the parking experience and to increase the number of spaces available.

Planned Winter Activities: To support the snow tubing operation, the existing handle tow will be replaced with a conveyor. Relative to handle tows, conveyors are more user-friendly, do not require a snow surface below them to operate, and can be used in summer (i.e., for mountain biking).

Planned Summer Activities: Mountain biking is already popular at the resort. The new tubing conveyor will support a bike park with a pump track, various flow trails, and skills park. The shorter trails and technical features will facilitate skill building while being approachable to newer mountain bikers.

The following figures depict the winter and summer North and South Hub plans for Giants Ridge, respectively.

NORTH HUB: WINTER



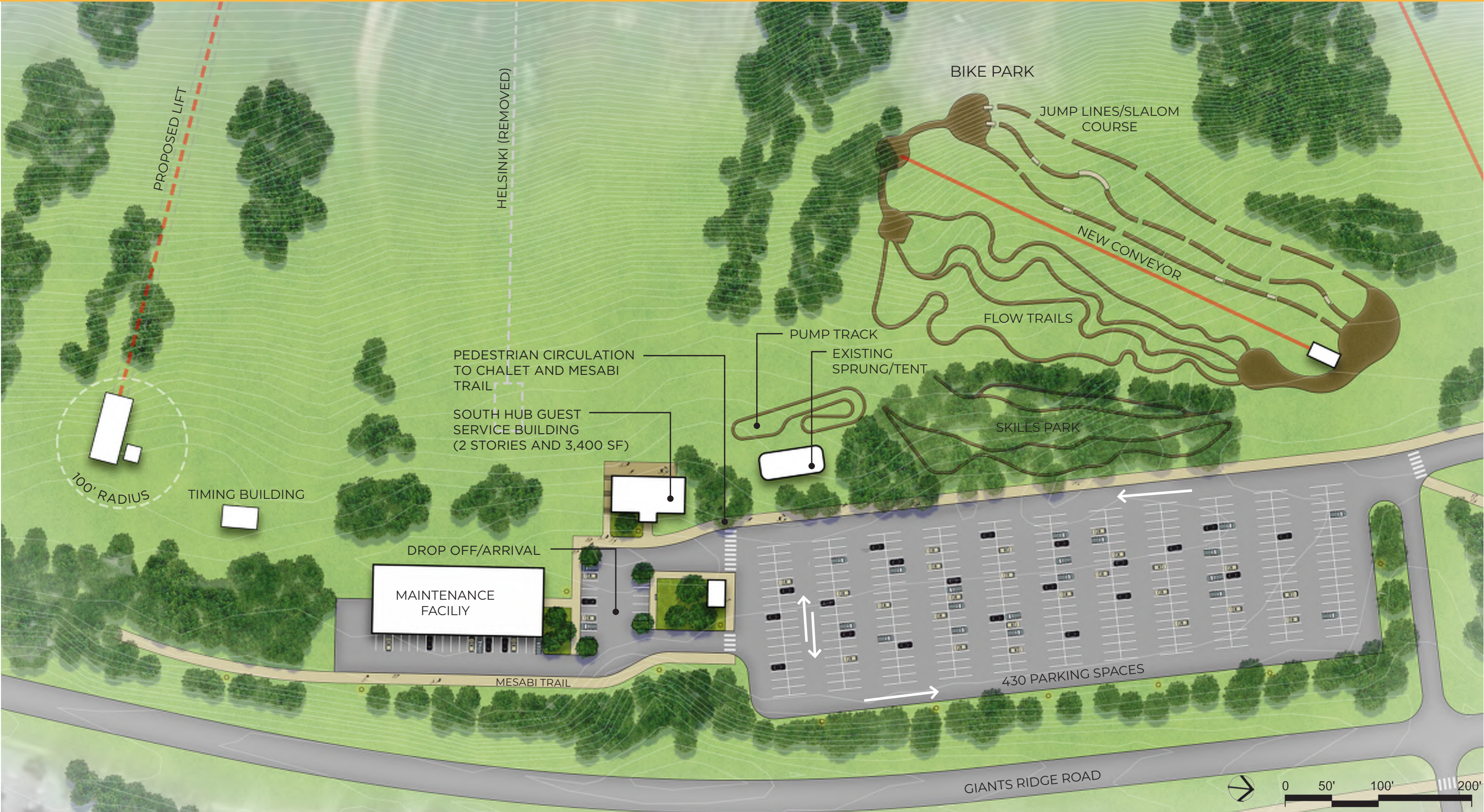
NORTH HUB: SUMMER



SOUTH HUB: WINTER



SOUTH HUB: SUMMER



4.9. Guest Services

Upgrade Plan

Due to the Upgrade Plan's slightly lower SAOT/PAOT, recommendations for quantities of guest service space, seating, and parking are slightly lower in this scenario. Giants Ridge's existing guest service facilities contain sufficient total space to accommodate the anticipated demands. However, as discussed in the Existing Conditions section, the existing space could be allocated more efficiently to better meet the resort's needs.

The following table captures this Upgrade Plan scenario, which recommends Giants Ridge have 37,520 to 48,270 square feet of indoor space. The space recommended to accommodate the resort's Existing Condition is 39,780 to 51,170 square feet. Giants Ridge currently has 44,322 square feet of indoor space, placing it solidly in the middle of both these recommended ranges.

Table 19 – Space Use Recommendations – Upgrade Plan

Service Function	Existing Total (sf)	Recommended Range	
		Low (sf)	High (sf)
Ticket Sales/Guest Services	686	510	620
Public Lockers	450	510	620
Seasonal Lockers	1,931	2,100	3,150
Rentals/Repair	3,611	2,800	3,600
Retail Sales	853	950	1,160
Snowsports School	344	760	930
F&B Seating	7,503	8,260	9,900
Kitchen/Servery/BOH	4,195	4,140	6,920
Restrooms	2,110	2,390	2,920
Ski Patrol/First Aid	1,110	1,020	1,240
Administration	3,877	2,800	3,420
Employee Lockers/Equipment	701	1,120	1,370
Storage	3,649	2,030	2,480
Circulation/Mechanical/Walls	13,302	8,130	9,940
TOTAL SQUARE FEET	44,322	37,520	48,270

Unless existing space is redistributed, Giants Ridge's guest and employee experiences are unlikely to change in a noticeable way under the Upgrade Plan scenario.

Vision Plan

The addition of new lifts and terrain, and the increase in SAOT/PAOT they cause, creates a need for additional guest service space at Giants Ridge. In the Vision Plan, the resort will require 48,000 to 61,610 square feet of guest service space. This need will primarily be felt at the south end of the resort, near the new South Pod lift, and at the far north end of the resort, near the relocated beginner terrain and the new Beginner lift.

Table 20 – Space Use Recommendations – Vision Plan

Service Function	Existing Total (sf)	Recommended Range	
		Low (sf)	High (sf)
Ticket Sales/Guest Services	686	670	820
Public Lockers	450	670	820
Seasonal Lockers	1,931	2,100	3,150
Rentals/Repair	3,611	2,800	3,600
Retail Sales	853	1,250	1,530
Snowsports School	344	1,010	1,230
F&B Seating	7,503	10,740	12,880
Kitchen/Servery/BOH	4,195	5,370	9,010
Restrooms	2,110	3,160	3,860
Ski Patrol/First Aid	1,110	1,340	1,640
Administration	3,877	3,640	4,440
Employee Lockers/Equipment	701	1,820	2,220
Storage	3,649	2,690	3,280
Circulation/Mechanical/Walls	13,302	10,740	13,130
TOTAL SQUARE FEET	44,322	48,000	61,610

In this scenario, additional guest service space will be added in the new South Hub Guest Service Building. The Base Area Concept Plan shows this facility as being 6,800 square feet: two 3,400 square foot floors, with an additional 1,170 square foot outdoor patio for seating and race viewing. This building will position Giants Ridge within the recommended guest service space range for the Vision Plan.

The South Hub Guest Service Building will facilitate the separation of racers and non-racers—two distinct groups with clashing space use needs, at times. It will also alleviate the pressure that the Snowsports Pavilion experiences on race days, which are some of the higher visitation days experienced by the resort as a whole. Like the Snowsports Pavilion, this facility will have basic functions such as brown bag seating, restrooms, and lockers.

Options for additional guest service space should be explored at the north end of the resort, if/when the beginner area is relocated and the new Beginner lift is built. Ski school should be a primary function of this new north end space—ideally with room to accommodate full day lessons and daycare needs.

4.10. Food and Beverage Service

Upgrade Plan

As with guest service space, the Upgrade Plan’s reduced SAOT/PAOT mildly alleviates some of the resort’s existing seating shortage. In its Existing Condition, Giants Ridge has a shortage of approximately 150 restaurant seats; in the Upgrade Plan, it will be short 111 seats with no changes to existing seating venues.

Table 21 – Recommended Restaurant Seats – Upgrade Plan

	Main Lodge	South Chalet	Snowsports Pavilion	Lodge	Total Resort
% of Lunchtime Total	60%	10%	10%	20%	100%
Lunchtime Capacity (PAOT + 5%)	1,090	182	182	363	1,817
Average Seat Turnover	3	1.5	1.5	2.5	-
Existing Seats	386	90	40	124	640
Recommended Seats	363	121	121	145	751
Difference	23	-31	-81	-21	-111
Seating Capacity (Guests)	1,158	135	60	310	1,663

Because peak days typically correspond with races, seating will likely not be an issue on regular ski days. On peak days, seating deficits will continue to be experienced in the popular BOKB restaurant. Shortages will also continue in the Snowsport Pavilion on race days, until the new South Hub Guest Service Building is constructed in the Vision Plan. Additional seating can be created throughout the resort by densifying (adding more tables and chairs to) existing venues and encouraging guests to store items in cubbies instead of on tables, which will free up seating and increase the turnover rate of venues where this practice is common.

Vision Plan

Like guest service space, Giants Ridge's existing food service seating will also be in short supply under the SAOT/PAOT conditions of the Vision Plan.

Table 22 – Recommended Restaurant Seats – Vision Plan

	Main Lodge	South Chalet	Snowsports Pavilion	Lodge	Total Resort
% of Lunchtime Total	60%	10%	10%	20%	100%
Lunchtime Capacity (PAOT + 5%)	1,418	236	236	473	2,363
Average Seat Turnover	3	1.5	1.5	2.5	-
Existing Seats	386	90	40	124	640
Recommended Seats	473	157	157	189	977
Difference	-87	-67	-117	-65	-337
Seating Capacity (Guests)	1,158	135	60	310	1,663

Once built, the new South Hub Guest Service Building will help alleviate this seating shortage. As noted in the Upgrade Plan, additional seating can be created by densifying existing venues and encouraging practices that promote higher table turnover.

In the Base Area Concept Plan, a food and beverage kiosk is planned in the North Hub near the ice skating ribbon. When weather allows, this small facility will absorb demand from other restaurants, keeping guests outside and reducing crowding within buildings. This will be particularly helpful when the new Beginner lift adds capacity to the North Hub. Outdoor seating with firepits at South Chalet will also make outdoor space more appealing, alleviating some pressure on that facility.

4.11. Parking and Access

Upgrade Plan

Similar to guest service areas and food service seating, the Upgrade Plan's slightly lower SAOT/PAOT also decreases parking requirements.

Table 23 – Recommended Parking – Upgrade Plan

	Multiplier	Total
PAOT + 5%	-	1,817
# of guests arriving by bus (2 buses)	-	70
# of guests arriving by car with a snowmobile trailer	-	4
# of guests arriving by car	-	1,743
Recommended bus parking spaces	35.0	2
Recommended snowmobile trailer parking spaces	1.0	4
Recommended car parking spaces	2.8	616
Equivalent car spaces for buses (1 bus = 4.5 cars)	4.5	9.0
Equivalent car spaces for snowmobiles (1 snowmobile = 2 cars)	2.0	8.0
Recommended employee car parking spaces	1.0	118
Total recommended spaces	-	751
Upgrade Plan parking spaces	-	688
Surplus/deficit	-	-63
Upgrade Plan parking capacity (people)	-	1,613

In past seasons, this 63-space deficit was offset by Lot E, which had approximately 60 spaces. The presence of this convenient overflow lot made it rare that people would need to shuttle from the Quarry Lot. With no changes to the existing parking lots, and no convenient overflow parking, Quarry Lot shuttles may need to be run on a greater number of peak days each season.

Vision Plan

The loss of Lot E, combined with the increased SAOT/PAOT in the Vision Plan, will exacerbate Giants Ridge's existing parking shortage. The Base Area Concept Plan addresses this in Giants Ridge's immediate base area to the extent possible, while also improving circulation and the arrival experience.

In the North Hub, parking spaces will be eliminated to improve drop-off areas, back-of-house operations, and vehicular circulation. This will decrease the total number of parking spaces in Lots A, B, and C from 388 to 331. Changes to parking patterns will improve drop-off areas and circulation in the South Hub. Expanding Lot D to the east and west could yield a net gain in 130 spaces, bringing the South Hub's total parking capacity to 430. Some tree clearing would be required to accomplish this. Without the expansion, the parking and circulation improvements will decrease Lot D's existing capacity from 300 to 280 spaces.

Table 24 compares Giants Ridge's recommended number of parking spaces for the full Vision Plan SAOT/PAOT to the number of spaces that would be available if all parking and circulation recommendations in the Base Area Concept Plan are implemented.

Table 24 – Recommended Parking – Vision Plan

	Multiplier	Total
PAOT + 5%	-	2,363
# of guests arriving by bus (2 buses)	-	70
# of guests arriving by car with a snowmobile trailer	-	4
# of guests arriving by car	-	2,289
Recommended bus parking spaces	35.0	2
Recommended snowmobile trailer parking spaces	1.0	4
Recommended car parking spaces	2.8	809
Equivalent car spaces for buses (1 bus = 4.5 cars)	4.5	9.0
Equivalent car spaces for snowmobiles (1 snowmobile = 2 cars)	2.0	8.0
Recommended employee car parking spaces	1.0	118
Total recommended spaces	-	944
Vision Plan parking spaces	-	761
Surplus/deficit	-	-183
Vision Plan parking capacity (people)	-	1,820

In the Base Area Concepts Plan, the 130-space gain in the South Hub will more than offset the 57-space loss in the North Hub, yielding a net 73-space gain across the resort. However, the Vision Plan's increased SAOT/PAOT will create the need for additional parking. As in the Upgrade Plan, Giants Ridge may need to run shuttles to/from the Quarry Lot on a higher number of days each winter than has been necessary in seasons past. On typical days, parking is not anticipated to be an issue.

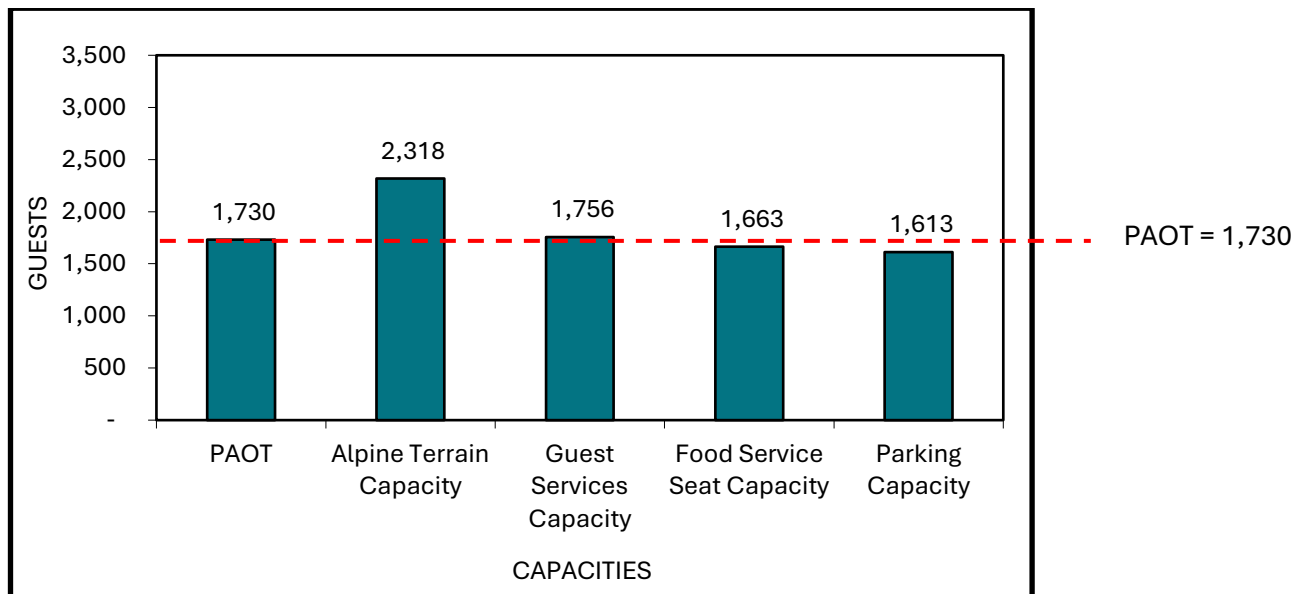
As noted, many recommendations in the Base Area Concepts Plan can be implemented at any time. If the loss of Lot E exacerbates parking challenges, steps to implement parking and circulation improvements should be taken sooner.

4.12. Ski Area Balance and Limiting Factors

Upgrade Plan

As in the Existing Conditions balance chart, resort balance is evaluated by comparing the capacities of Giants Ridge's facilities to its Upgrade Plan PAOT of 1,730. This number is comprised of an SAOT of 1,620 downhill skiing guests and an additional 110 other guests. SAOT is the relevant metric for Alpine Terrain Capacity; Guest Services Capacity, Food Service Seat Capacity, and Parking Capacity should all be compared to PAOT.

Illustration 4 – Resort Balance – Upgrade Plan



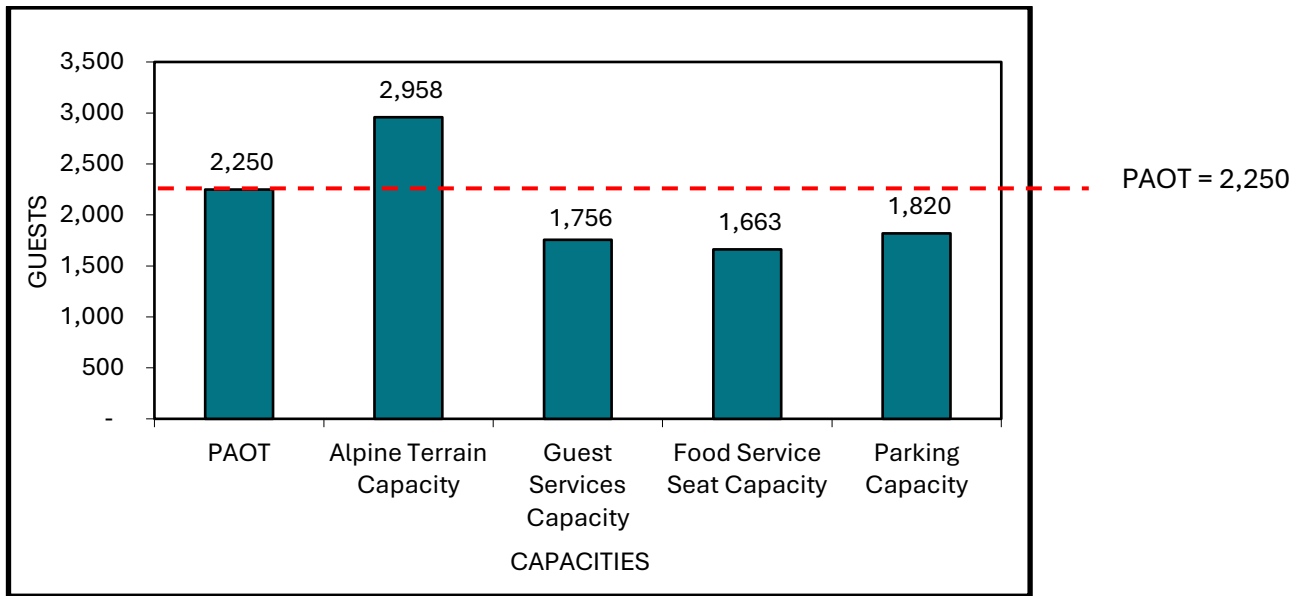
As shown, Giants Ridge will be more balanced in the Upgrade Plan than it is in its Existing Condition, with no changes made to guest services, food service seating, and parking. The Upgrade Plan's slightly lower PAOT increases the likelihood that Giants Ridge's existing facilities will be able to meet guest demands on high visitation days.

If peak day shortages are experienced, strategies requiring varying levels of investment can be employed to address these deficits. Easier-to-implement strategies include densifying existing restaurant seating; more involved options include expanding Lot D and constructing the new South Hub Guest Service Building.

Vision Plan

In the Vision Plan, SAOT increases to 2,140, and PAOT increases to 2,250. Terrain expansions will ensure that the downhill skiing experience remains comfortable and disbursed for guests; improvements to guest services, food service seating, and parking can offset the deficits that guests and employees of Giants Ridge will otherwise experience.

Illustration 5 – Resort Balance – Vision Plan



As noted throughout the Vision Plan sections, the South Hub Guest Services Building has the potential to alleviate much of the guest services and food service seating shortages that Giants Ridge will otherwise experience. Improvements to parking and circulation recommended in the Base Area Concepts Plan will alleviate parking challenges; however, it is likely that parking spaces will continue to be insufficient on peak days. Shuttling guests to/from the Quarry Lot may become a race-day norm.

Moving forward, it will be important to monitor the levels of visitation of all winter users to understand visitor needs and translate those into resort infrastructure requirements. Achieving and maintaining balance—and the desired recreational experience that it affords—should continue to be a priority as Giants Ridge evolves.

5. Conclusion

Giants Ridge is in good condition, with well-maintained facilities that reflect its importance as a regional recreational asset. Investments in key infrastructure, including snowmaking systems, RFID gates, the new terrain park rope tow, and the new Aquatic Center, demonstrate a commitment to keeping the facility competitive and ensuring it continues to offer high-quality experiences for guests. Giants Ridge's popularity for races, events, and hosting various user groups further underscores its regional significance.

This positive outlook is a testament to the State of Minnesota and IRRR's continued dedication to the facility and its planning efforts. As explained throughout this Mountain Operations Assessment, sustained investment remains crucial to ensure that Giants Ridge continues to thrive. Prioritization of items in the Upgrade Plan, and careful consideration of recommendations in the Vision Plan and Base Area Concept Plan, will help guide future enhancements.

Looking forward, potential future pinch points, such as parking, should be closely monitored. Implementing elements of the Base Area Concept Plan as needed will help address both enduring and emerging challenges while aligning with the broader goals of the IRRR to foster long-term growth and success at Giants Ridge.