

# **TIMBERLINE**

## **MOUNTAIN SPECIFICATIONS SUMMARY**

### **DESIGN CRITERIA**

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

#### **Trail System**

Each trail must have generally consistent grade within a given ability level to provide an interesting and challenging ski experience for the ability level for which the trail is designed. Optimum trail widths should vary depending upon topographic conditions and the caliber of the skier being served. The trail network must minimize cross-traffic and should provide the full range of ability levels consistent with market demand. The trails must be designed and constructed to minimize off fall-line conditions and to avoid bottlenecks and convergence zones, which might produce skier congestion.

#### **Lift Design**

Ski lifts should be placed to serve the available ski terrain in the most efficient manner, while considering a myriad of factors such as wind conditions, round-trip skiing and access needs, interconnectability between other lifts and trails, and the need for circulatory space at the lower and upper terminal sites. Additionally, it should be understood that the vertical rise and length of ski lifts for a particular mountain are the primary measures of overall attractiveness and marketability of a ski area.

#### **Capacity Analysis and Design**

Comfortable Carrying Capacity (CCC) is defined as an optimal level of utilization for the ski area (the number of visitors that can be accommodated at any given time) which guarantees a pleasant recreational experience, while at the same time preserving the quality of the environment. The accurate estimation of the CCC of a mountain is a complex issue and is the single most important planning criterion for the resort. Given proper identification of the mountain's true capacity, all other related skier service facilities can be planned, such as base lodge seating, mountain restaurant requirements, sanitary facilities, parking, and other skier services. The CCC figure is based on a comparison of the uphill hourly capacity of the lift system to the downhill capacity of the trail system, taking into account the typical amount of vertical terrain desired by skiers of varying ability levels.

#### **Base Area Design**

Particular consideration should be given to the relationship of the base area to the mountain facilities. Upon arrival at the ski area, skiers should be able to move directly from parking or other arrival points, through ticketing or rental locations, to the base of the lifts. Walking distance and vertical differential between the base area facilities and lifts should be minimized in an effort to move skiers directly onto the mountain. Vehicle, pedestrian, and skier circulation should be coordinated to create a safe and pleasant base area environment.

## Balance of Facilities and Limiting Factors

The mountain master planning process emphasizes the importance of balancing recreational facility development. The size of the skier service functions must be adequate for the CCC of the mountain. The true capacity of the overall ski area is determined by the lowest of the limiting factors. The limiting factor of the ski area can either be trail capacity, lift capacity, support facility capacity, or parking capacity.

The future development of a ski area should be designed and coordinated to maintain a balance between skier demand, ski area capacity (lifts and trails), and the supporting equipment and facilities (e.g., grooming machines, day lodge services and facilities, utility infrastructure, access, and parking).

## EXISTING SKI RESORT FACILITIES

The overall balance of the existing ski area is evaluated by calculating the skier capacities of Timberline's various facility components, and, in turn, comparing these capacities to the ski area's CCC. This examination of capacities helps to identify the ski resort's strengths and weaknesses or surpluses and deficiencies. With an understanding of the ski area's strengths and weaknesses, the next step is to identify improvements that will both help bring the existing ski area into better equilibrium, and help the resort meet the ever-changing needs of their skier marketplace.

### Lifts

A total of six lifts service the skiable terrain at Timberline. Specifications for the existing lifts are set forth in Table 1.

**TABLE 1**  
**LIFT SPECIFICATIONS – EXISTING CONDITIONS**

Map Ref.	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Plan. Length (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (persons/hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Bruno, C-2	5,885	5,840	45	365	368	12%	630	300	57	Poma, 1987
B	Molly's Express, DC-4	5,835	4,990	845	5,175	5,244	16%	1,200	1,000	200	Doppelmayr, 2000
C	Pucci, C-3	5,920	5,350	570	3,350	3,398	17%	1,330	450	61	Poma, 1987
D	Stomin' Norman, DC-4	6,245	5,460	785	4,325	4,396	18%	1,500	1,000	160	Doppelmayr, 2000
E	Magic Mile Express, DC-4	6,990	5,915	1,075	5,250	5,359	20%	1,600	950	143	Poma, 1992
F	Palmer Express, DC-4	8,470	6,940	1,530	5,250	5,468	29%	1,800	1,000	133	Doppelmayr, 1996

- **Top Elevation** – This is the elevation at the top terminal of the lift.
- **Bottom Elevation** – This is the elevation of the bottom terminal of the lift.
- **Vertical Rise** – This is the difference in elevation between the top and bottom terminals.

- **Horizontal Length** – This is the length of the lift, from top terminal to bottom terminal, as measured on the mapping (i.e., a two-dimensional measurement).
- **Slope Length** – This is the length of the lift, from top terminal to bottom terminal, as measured on the ground (i.e., a three-dimensional measurement).
- **Average Grade** – This is the average slope gradient (in percent) of the terrain under the length of the lift, from top terminal to bottom terminal.
- **Hourly Capacity** – This is the number of guests trips (one ride for one guest = one guest trip) per hour that a lift can accommodate.
- **Rope Speed** – This is the speed that a lift can transport guests, as expressed in number of feet per minute.
- **Carrier Spacing** – This is the distance in feet between each guest carrier (chair, gondola cabin).

**Terrain** - Specifications for the existing terrain are set forth in Table 2.

**TABLE 2**  
**TERRAIN SPECIFICATIONS – EXISTING CONDITIONS**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	Outer West	8,483	6,964	1,519	5,449	5,665	379	49.3	28%	37%	Advanced Intermediate
2	Palmer	8,482	6,947	1,535	5,328	5,555	651	83.0	29%	35%	Advanced Intermediate
3	Bean's Run	8,460	7,003	1,458	5,553	5,779	506	67.1	26%	40%	Advanced Intermediate
4	Coffel's Run	6,988	6,191	797	3,542	3,637	322	26.9	22%	30%	Low Intermediate
5	West Mile	6,987	6,116	870	4,121	4,222	406	39.3	21%	33%	Low Intermediate
6	East Mile	6,986	5,922	1,064	5,268	5,391	380	47.0	20%	34%	Low Intermediate
7	Otto Loop	6,935	5,922	1,013	5,876	6,001	265	36.6	17%	35%	Intermediate
8	Paint Brush Terrain Run	6,240	5,546	694	3,953	4,022	114	10.5	18%	28%	Advanced Intermediate
9	Stormin' Norman	6,242	5,561	681	3,698	3,767	113	9.8	18%	26%	Low Intermediate
10	Conway's Corner	6,245	5,661	584	3,276	3,333	110	8.4	18%	25%	Novice
11	Blossom Return	6,240	5,926	314	2,360	2,394	83	4.6	13%	25%	Novice
12	Glade	5,927	5,460	466	3,026	3,071	125	8.8	15%	28%	Novice
13	Thunder Upper	5,923	5,667	256	1,505	1,529	81	2.8	17%	24%	Novice
14	Lift Line Pucci Upper	5,917	5,686	230	1,254	1,277	56	1.6	18%	24%	Novice
15	Main Run Pucci	5,923	5,696	227	1,358	1,379	74	2.3	17%	25%	Novice

**TABLE 2**  
**TERRAIN SPECIFICATIONS – EXISTING CONDITIONS**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg, Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
	Upper										
16	Bruno	5,884	5,843	41	351	356	174	1.4	12%	12%	Beginner
17	Nona's Bologna	5,685	5,633	52	372	376	94	0.8	14%	16%	Novice
18	Alpine	5,769	5,511	258	1,979	2,005	57	2.6	13%	31%	Low Intermediate
19	Access to Stormin' Norman	5,533	5,462	70	556	562	78	1.0	13%	18%	Novice
20	West Leg Road	5,688	5,360	328	4,814	4,835	30	3.3	7%	14%	Novice
21	Walt's Baby	5,625	5,350	275	2,071	2,093	80	3.8	13%	21%	Novice
22	Bob Elmer	5,639	5,493	147	670	695	78	1.2	22%	37%	Advanced Intermediate
23	Wingle's Wiggle	5,592	5,442	151	837	864	57	1.1	18%	45%	Advanced Intermediate
24	Hydro's	5,434	5,365	69	408	416	64	0.6	17%	25%	Low Intermediate
25	Thunder Lower	5,666	5,350	316	2,014	2,048	112	5.3	16%	41%	Intermediate
26	Lift Line Pucci Lower	5,675	5,512	163	826	846	58	1.1	20%	25%	Low Intermediate
27	Main Run Pucci Lower	5,686	5,537	149	789	805	99	1.8	19%	25%	Low Intermediate
28	Slalom	5,671	5,437	234	773	813	118	2.2	30%	43%	Advanced Intermediate
29	Wy'east	5,565	5,383	182	738	774	94	1.7	25%	46%	Advanced Intermediate
30	West Run	5,539	5,322	217	1,132	1,165	92	2.5	19%	51%	Advanced Intermediate
31	Vicky's Run	5,818	5,001	817	5,125	5,232	114	13.7	16%	52%	Intermediate
32	Molly's Run	5,631	5,277	354	1,866	1,925	93	4.1	19%	55%	Advanced Intermediate
33	Back Way	5,350	4,997	353	3,419	3,449	96	7.6	10%	31%	Low Intermediate
34	West Pitch	5,197	5,000	197	538	581	97	1.3	37%	58%	Expert
35	Cut Off	5,131	5,026	105	329	346	93	0.7	32%	40%	Advanced Intermediate
Total						87,209	442.7	456.1			

- **Top Elevation** – This is the elevation at the beginning (top) of the trail.
- **Bottom Elevation** – This is the elevation at the end (bottom) of the trail.
- **Vertical Drop** – This is the difference in elevation between the beginning and end of the trail.
- **Horizontal Length** – This is the length of the trail centerline, from beginning of the trail to the end, as measured on the mapping (i.e., a two-dimensional measurement). A trail centerline is an imaginary line drawn down the middle of a trail.

- **Slope Length** – This is the three-dimensional length of the trail centerline, from beginning of the trail to the end, as measured on the ground or by use of three-dimensional mapping technology (i.e., AutoCADD, Arcview).
- **Average Width** – This is the average width of the entire trail, from top to bottom. This may be determined by field measurements, or by calculation utilizing the given trail acreage and slope length (i.e., acreage x 43,560ft/slope length).
- **Area** – This is the total number of acres of terrain occurring within a trail boundary. This may be determined utilizing GIS, or by calculation utilizing slope length and average width.
- **Average Grade** – This is the average slope gradient (in percent) of the trail’s centerline, from the beginning of the trail to the end.
- **Maximum Grade** – This is the maximum gradient (in percent) occurring anywhere on the trail.
- **Skier Rider Ability Level** – The following gradients were used to determine the skier ability level of the mountain terrain:

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

Source: SE GROUP

Exceptions to these standards occur when access to a trail is limited to a higher ability level trail. For example, if a novice trail can only be accessed by a low intermediate trail, than it will be designated as a low intermediate trail rather than novice.

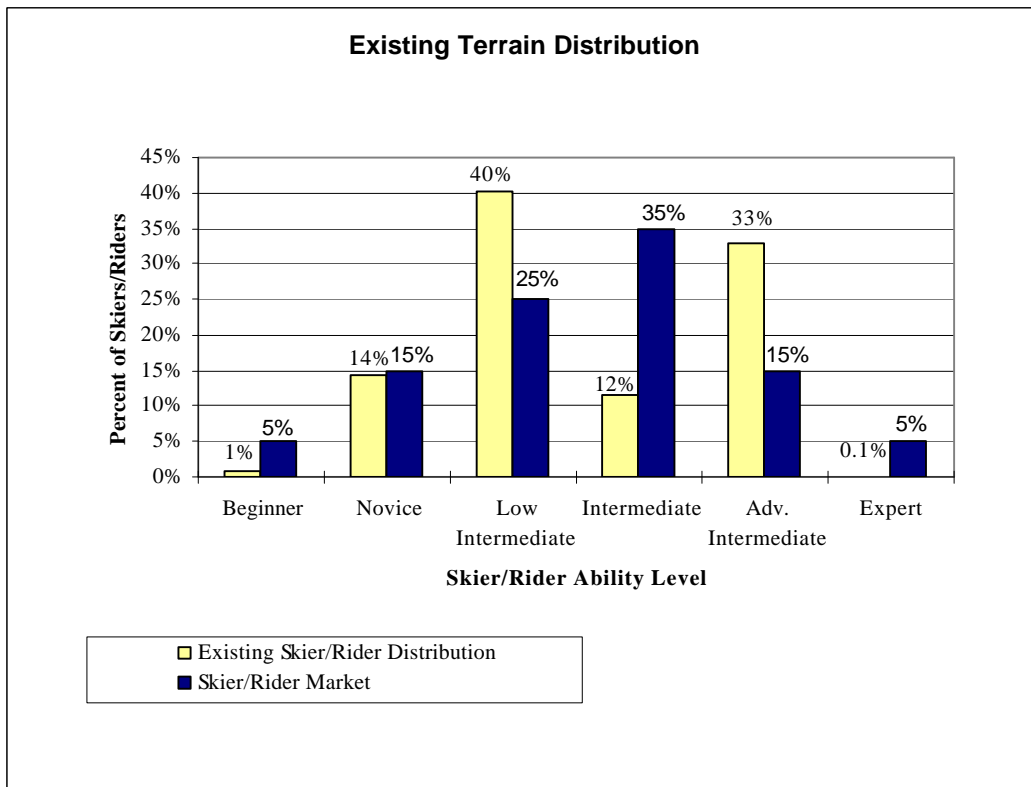
### **Skier Distribution**

Specifications for the existing skier distribution are set forth in Table 3 and Charts 1 and 2.

**TABLE 3**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – EXISTING CONDITIONS**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	42.6	1%	5%
Novice	37.6	677.2	14%	15%
Low Intermediate	136.8	1,914.8	40%	25%
Intermediate	55.5	555.3	12%	35%
Adv. Intermediate	223.5	1,564.4	33%	15%
Expert	1.3	3.9	0%	5%
Total:	456.1	4,758	100%	100%

**CHART 1**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – EXISTING CONDITIONS**



The above table and chart compare Timberline’s ‘skier distribution’ with the market demand for each ability level. Skier distribution is determined as follows:

- Each trail is designated by ability level, as listed in Table 2. Each ability level has a standard design density for the ideal number of skiers occupying each acre of terrain at one time. The widely accepted density criteria for ski areas in western North America are listed below.

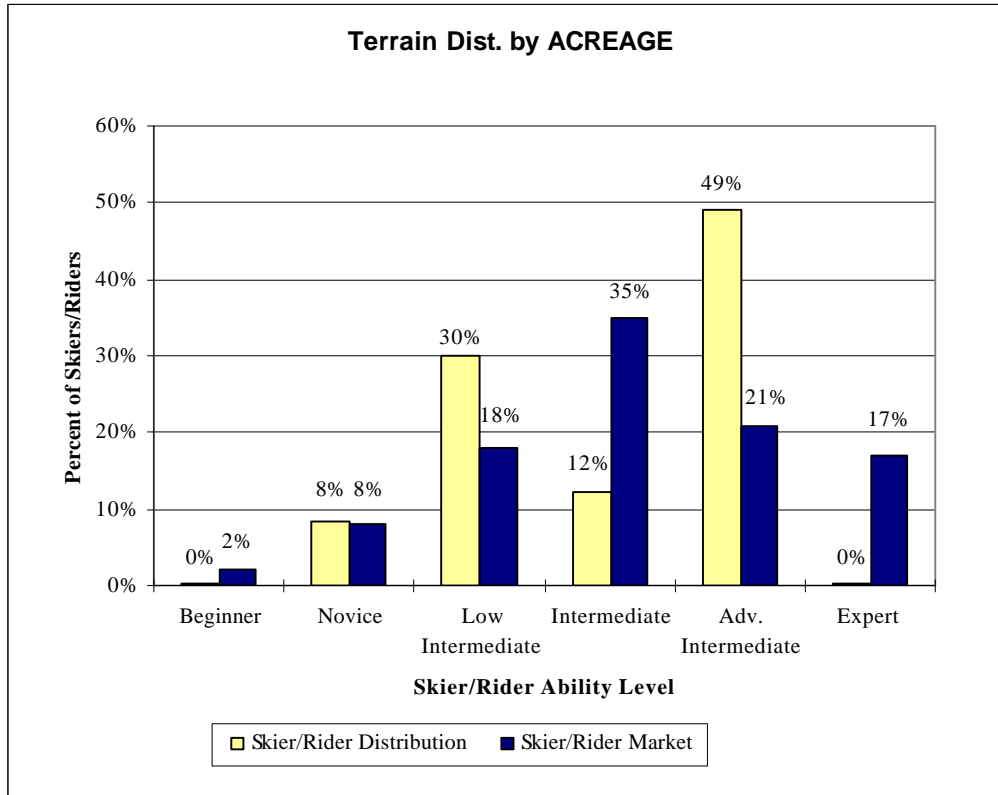
<u>Skier Ability</u>	<u>Trail Density</u>
Beginner	25-35 skiers/acre
Novice	12-25 skiers/acre
Low Intermediate	8-20 skiers/acre
Intermediate	6-15 skiers/acre
Advanced Intermediate	4-10 skiers/acre
Expert	2-5 skiers/acre

Source: SE GROUP

- The number of acres of terrain designated to each ability level is multiplied by the standard design density for each ability level (Skier/Rider Capacity [guests]).
- This total for each ability level is expressed as a percentage of the total number of skiers (Skier/Rider Distribution [%]).
- This percentage – or skier distribution – is then compared with the market demand for each ability level (Skier/Rider Market [%]).

The available ski terrain should be capable of accommodating the full range of ability levels consistent with market demand. As shown in the table and chart above, Timberline currently has an abundance of Low Intermediate and Advanced Intermediate terrain and a deficit of Beginner, Intermediate, and Expert terrain. The reason for the abundance of Low Intermediate terrain is that most of the skiing available on the middle and lower mountain is Low Intermediate or Novice terrain. The reason for the abundance for Advanced Intermediate terrain is the huge amount of terrain off the Palmer Express lift (almost half of the total terrain at Timberline) is all Advanced Intermediate.

**CHART 2**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS – EXISTING CONDITIONS**



The above table and chart compare the Timberline’s ‘acreage distribution’ by ability level with the market demand (as expressed in acres) for each ability level. This is determined as follows:

- The market demand (in acres) is determined by dividing the market demand (percentage) of each ability level by the standard design density (per acre) for each ability level. This number for each ability level is expressed as a percentage of the total.
- The skier/rider distribution (in acres) is determined by dividing the number of acres of terrain in each ability level with the total number of acres.

Consistent with the previous analysis comparing skier distribution by ability levels, the acreage distribution by ability levels comparison shows the same abundance of Low Intermediate and Advanced Intermediate Terrain.

**Skier Distribution with Upper Mountain Closed**

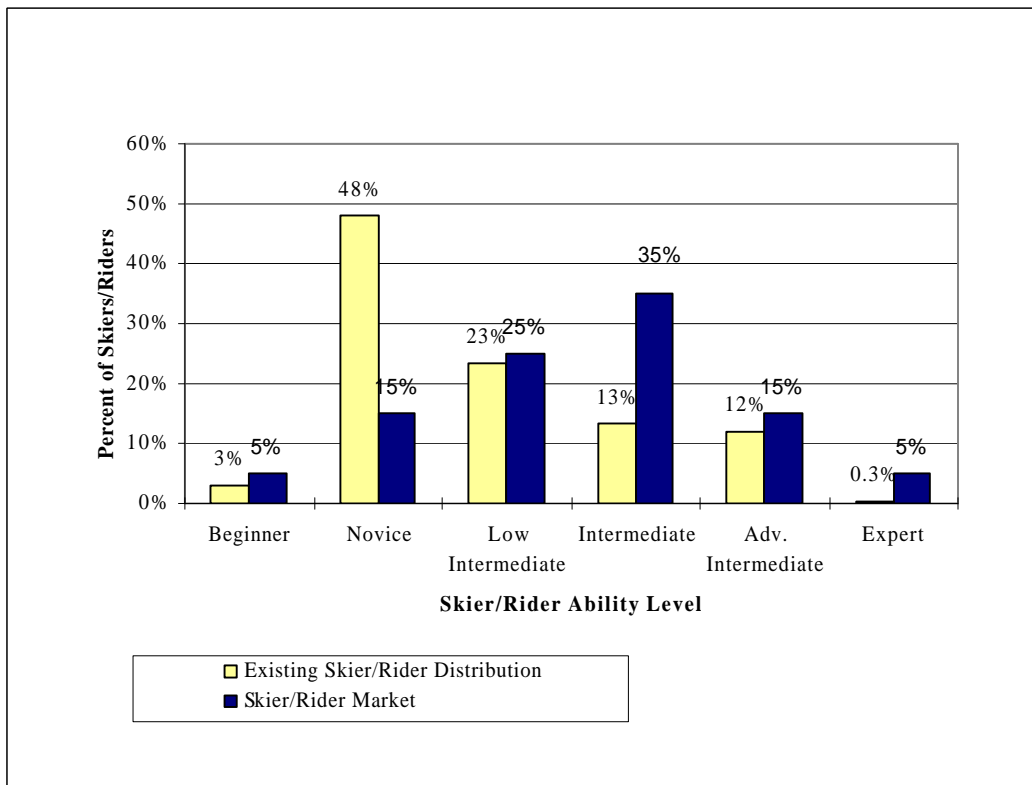
Due to inclement weather, Timberline is forced to close the upper lifts for an average of 40% of the days during the winter months. The highest lift, the Palmer Express, is very often closed, and the Magic Mile is frequently closed as well. Note - These lifts are used extensively for summer operation of the ski area. The total available terrain as well as the terrain distribution of the overall mountain is significantly altered on a frequent basis during the winter as a result of these lifts closing. Specifications for the existing skiable terrain and skier distribution without the upper two

lifts are set forth in Table 4. As shown, the total acreage drops to about a quarter of the whole mountain and a very significant shortage of Intermediate and higher terrain becomes apparent.

**TABLE 4**  
**SKIER DISTRIBUTION BY ABILITY LEVELS –**  
**EXISTING CONDITIONS WITH UPPER MOUNTAIN CLOSED**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	42.6	3%	5%
Novice	37.6	677.2	48%	15%
Low Intermediate	23.6	329.8	23%	25%
Intermediate	19.0	189.7	13%	35%
Adv. Intermediate	24.1	168.6	12%	15%
Expert	1.3	3.9	0%	5%
Total:	106.9	1,412	100%	100%

**CHART 3**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS –**  
**EXISTING CONDITIONS WITH UPPER MOUNTAIN CLOSED**



## Comfortable Carrying Capacity

CCC is derived from the resort's supply of vertical transport (i.e., the combined uphill hourly capacities of the lifts) and demand for vertical transport (i.e., the aggregate number of runs demanded multiplied by the vertical rise associated with those runs). CCC is calculated by dividing vertical supply (VTF/Day) by Vertical Demand. The calculation of Timberline's CCC is described in the Table 5. The CCC of the lift and trail network at Timberline is calculated at 3,090 guests per day. It is not uncommon for ski areas to experience peak days during which skier visitation exceeds the CCC by as much as 25 percent. However, it is not recommended to consistently exceed the CCC due to the resulting decrease in the quality of the recreational experience, and thus the resort's repeat business.

**TABLE 5**  
**CLASSIFICATION OF COMFORTABLE CARRYING CAPACITY – EXISTING CONDITIONS**

Map Ref.	Lift Name / Lift Type	Slope Length (ft)	Vert. Rise (ft)	Hourly Cap. (PPH)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Load Eff. (%)	Adj. Hourly Cap (PPH)	VTF/Day (000)	Vertical Demand (ft)	CCC (skiers)
A	Bruno, C-2	368	45	630	7.00	0	15	536	169	1,500	110
B	Molly's Express, DC-4	5,244	845	1,200	7.00	0	10	1,080	6,388	15,934	400
C	Pucci, C-3	3,398	570	1,330	7.00	5	10	1,131	4,511	7,695	590
D	Stomin' Norman, DC-4	4,396	785	1,500	7.00	0	10	1,350	7,418	10,903	680
E	Magic Mile Express, DC-4	5,359	1,075	1,600	7.00	10	5	1,360	10,234	16,067	640
F	Palmer Express, DC-4	5,468	1,530	1,800	6.50	0	5	1,710	17,006	25,285	670
Total		24,232		8,060				7,166	45,726		3,090

## Density Analysis

Specifications for the existing density analysis are set forth in Table 6.

**TABLE 6**  
**SKI TRAIL DENSITY ANALYSIS – EXISTING CONDITIONS**

Map Ref.	Daily Lift Capacity	Guest Dispersement				Density Analysis				
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Trails (guests)	Trail Area (acres)	Actual Trail Density (guests/ac.)	Acceptable Trl. Density (guests/ac.)	Diff. (+/-)	Density Index (%)
A	110	28	35	11	36	1.4	25	30	-5	83%
B	400	100	11	94	195	30.5	6	10	-4	60%
C	590	148	68	142	232	26.9	9	14	-5	64%
D	680	170	162	99	249	45.8	5	14	-9	36%
E	640	160	0	128	352	152.1	2	13	-11	15%
F	670	168	86	156	260	199.4	1	13	-12	8%
Total:	3,090	774	362	630	1,324	456.1	5	14	-9	38%

The calculation of capacity for a ski area is based in part on the acceptable number of skiers that can be accommodated on each acre of ski terrain at any one given time. The widely accepted density criteria for ski areas in western North America are listed in the first section.

These criteria assume that on an average day, approximately 33 percent of the total number of skiers in the area will be on the trails at any one time. The remainder of the skiers are either in lift lines, riding the lifts, or utilizing skier support services. The densities listed above have been used in the analysis of Timberline’s trail densities.

The density index is a percentage comparison of the actual trail density with the acceptable trail density. A 100% index represents a balance between the actual and acceptable trail density. An index under 100% indicates that the actual trail density is lower than the acceptable trail density. An index above 100% indicates that the actual trail density is higher than the acceptable trail density. Table 5 indicates that all of Timberline trails are below the acceptable trail density. This is a very desirable situation, indicating that none of Timberline’s trails are typically overly crowded.

### **Parking**

Total parking capacity should be balanced with CCC. The issue of parking is quite complicated at Timberline. The majority of skiers come to Timberline in cars or buses and park in the day-skier parking lots, meaning that the existing parking lots are usually filled to capacity. Since there are 920 parking spaces, the theoretical capacity of the parking lots is around 2,900 people, which is close to the mountain CCC of 3,090. However, the situation is complicated by the fact that many people come to Timberline as sight-seers, rather than as skiers. This means that a significant portion of the 920 available parking spaces are used by cars that do not contain skiers. A good example of this can be taken from December 29, 2001. The parking lots were full by 12:30 p.m., and ski area employees counted actual passengers. On that day, 2,893 people arrived at Timberline, for an average vehicle occupancy of 3.145. However, only 1,861 tickets were sold that day. Another example is from February 17, 2002. While the parking lots were full by 11:30 a.m., only 2,073 tickets were sold; of those, only 317 season pass holders were counted.

The parking problem is compounded when a significant number of buses arrive at Timberline. For example, on February 9, 2002, all lots were full by 1:00 p.m. with 804 cars and 18 buses, for a total of 3,249 people. However, only 1,718 tickets were sold. Using this data, along with data from numerous other days this season, it is calculated that between 20-30% of people arriving at Timberline on a typical day are not skiers. Therefore, the number of parking spaces available for skier cars is around 700. This leaves Timberline about 300 spaces short of the number needed to meet existing mountain lift and trail capacity. This is illustrated in Table 7. Even if all existing parking spaces were used by skiers, there still would be a deficit of around 100 parking spaces.

**TABLE 7  
PARKING ANALYSIS – EXISTING CONDITIONS**

	Multiplier	Timberline
CCC of portal		3,090
peak day requirement	1.20	3,708

# requiring parking (non walk/shuttle)	1.00	3,708
# of guests arriving by car	0.78	2,892
# of guests arriving by bus	0.22	816
Required car parking spaces	3.10	933
Required bus parking spaces	40.00	20.4
Equivalent car spaces (1 bus=4.5 car)	4.5	91.8
Required employee car parking spaces		
Total required spaces		1,025
Existing Effective Available parking spaces		700
<b>Surplus/deficit</b>		<b>-325</b>

### **Resort Balance and Limiting Factors**

The overall balance of the existing ski area is evaluated by calculating the capacities of the resort's various facilities, as compared to the resort's CCC. The greatest factor limiting Timberline from reaching CCC, while maintaining a quality guest experience, is parking capacity. As shown by skier counts and lift ticket sales, Timberline does not reach its CCC, even on days when the parking lot is completely full. It is therefore reasonable to say that the capacity of Timberline is around 2,200 people, which is defined by the amount of parking available to skiing guests. As a result of this, two undesirable situations arise when the upper mountain closes, which happens on an average of 40% of the winter days. First is the situation that occurs when the lifts are closed in the middle of the day. In this case, all of the skiers are then forced to ski the lower mountain, causing crowding and long lift lines. Since the remaining mountain only has a terrain capacity of 1,412 skiers, as shown in Table 4, skier density numbers get quite high, resulting in slope crowding. In this situation, overall skier densities on the lower mountain reach increase from 5 skiers per acre to 17 skiers per acre, or more than tripling the densities of the ski resort when the whole mountain is open. This situation creates a density index of 120% of acceptable density, and in some cases reaching 170% of acceptable densities. Secondly, when the lifts are closed for the entire day, a situation that often occurs when heavy snowfall makes operation of the upper lifts impossible for an extended period, the entire resort becomes under utilized. This occurs because the distribution and variety of terrain on the lower mountain does not meet the needs of the overall skier market.

## PROPOSED UPGRADING PLAN – ALTERNATIVE 2

### Lifts

Timberline is proposing to add an additional lift to their existing lift system. The lift would be on the lower part of the mountain and would primarily service new terrain. As stated above, the intent of the lift would be to improve the skiing product available on the lower mountain, which is especially important on the frequent days when the upper mountain is closed due to inclement weather.

Lift specifications under Alternative 2 are set forth in Table 8.

**TABLE 8**  
**LIFT SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 2**

Map Ref.	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Plan. Length (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (persons/hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Bruno, C-2	5,885	5,840	45	365	368	12%	630	300	57	Poma, 1987
B	Molly's Express, DC-4	5,835	4,990	845	5,175	5,244	16%	1200	1000	200	Doppelmayr, 2000
C	Pucci, C-3	5,920	5,350	570	3,350	3,398	17%	1330	450	61	Poma, 1987
D	Stomin' Norman, DC-4	6,245	5,460	785	4,325	4,396	18%	1500	1000	160	Doppelmayr, 2000
E	Magic Mile Express, DC-4	6,990	5,915	1,075	5,250	5,359	20%	1600	950	143	Poma, 1992
F	Palmer Express, DC-4	8,470	6,940	1,530	5,250	5,468	29%	1800	1000	133	Doppelmayr, 1996
G	Timberline Express	6,030	4,850	1,180	6,420	6,528	18%	1800	1000	133	<i>Proposed Lift</i>

- **Top Elevation** – This is the elevation at the top terminal of the lift.
- **Bottom Elevation** – This is the elevation of the bottom terminal of the lift.
- **Vertical Rise** – This is the difference in elevation between the top and bottom terminals.
- **Horizontal Length** – This is the length of the lift, from top terminal to bottom terminal, as measured on the mapping (i.e., a two-dimensional measurement).
- **Slope Length** – This is the length of the lift, from top terminal to bottom terminal, as measured on the ground (i.e., a three-dimensional measurement).
- **Average Grade** – This is the average slope gradient (in percent) of the terrain under the length of the lift, from top terminal to bottom terminal.
- **Hourly Capacity** – This is the number of guests trips (one ride for one guest = one guest trip) per hour that a lift can accommodate.

- **Rope Speed** – This is the speed that a lift can transport guests, as expressed in number of feet per minute.
- **Carrier Spacing** – This is the distance in feet between each guest carrier (chair, gondola cabin).

### Terrain

Timberline proposes to add approximately 62 acres of terrain on eight new trails, all of which would be accessed from the new lift. Specifications for the proposed trails are set forth in Table 9. The new terrain as proposed would provide highly desirable skiing. The runs are in the fall-line and provide enough variations in width and slope to provide good terrain variety. The only location where any traversing would be required is on D1B, which is intended to provide access to the new terrain from the bottom of the Pucci lift. There are no significant flat areas on any of the runs.

**TABLE 9  
TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 2**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	Outer West	8,483	6,964	1,519	5,449	5,665	379	49.3	28%	37%	Advanced Intermediate
2	Palmer	8,482	6,947	1,535	5,328	5,555	651	83.0	29%	35%	Advanced Intermediate
3	Bean's Run	8,460	7,003	1,458	5,553	5,779	506	67.1	26%	40%	Advanced Intermediate
4	Coffel's Run	6,988	6,191	797	3,542	3,637	322	26.9	22%	30%	Low Intermediate
5	West Mile	6,987	6,116	870	4,121	4,222	406	39.3	21%	33%	Low Intermediate
6	East Mile	6,986	5,922	1,064	5,268	5,391	380	47.0	20%	34%	Low Intermediate
7	Otto Loop	6,935	5,922	1,013	5,876	6,001	265	36.6	17%	35%	Intermediate
8	Paint Brush Terrain Run	6,240	5,546	694	3,953	4,022	114	10.5	18%	28%	Advanced Intermediate
9	Stormin' Norman	6,242	5,561	681	3,698	3,767	113	9.8	18%	26%	Low Intermediate
10	Conway's Corner	6,245	5,661	584	3,276	3,333	110	8.4	18%	25%	Novice
11	Blossom Return	6,240	5,926	314	2,360	2,394	83	4.6	13%	25%	Novice
12	Glade	5,927	5,460	466	3,026	3,071	125	8.8	15%	28%	Novice
13	Thunder Upper	5,923	5,667	256	1,505	1,529	81	2.8	17%	24%	Novice
14	Lift Line Pucci Upper	5,917	5,686	230	1,254	1,277	56	1.6	18%	24%	Novice
15	Main Run Pucci Upper	5,923	5,696	227	1,358	1,379	74	2.3	17%	25%	Novice
16	Bruno	5,884	5,843	41	351	356	174	1.4	12%	12%	Beginner
17	Nona's Bologna	5,685	5,633	52	372	376	94	0.8	14%	16%	Novice
18	Alpine	5,769	5,511	258	1,979	2,005	57	2.6	13%	31%	Low Intermediate
19	Access to Stormin'	5,533	5,462	70	556	562	78	1.0	13%	18%	Novice

**TABLE 9**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 2**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
	Norman										
20	West Leg Road	5,688	5,360	328	4,814	4,835	30	3.3	7%	14%	Novice
21	Walt's Baby	5,625	5,350	275	2,071	2,093	80	3.8	13%	21%	Novice
22	Bob Elmer	5,639	5,493	147	670	695	78	1.2	22%	37%	Advanced Intermediate
23	Wingle's Wiggle	5,592	5,442	151	837	864	57	1.1	18%	45%	Advanced Intermediate
24	Hydro's	5,434	5,365	69	408	416	64	0.6	17%	25%	Low Intermediate
25	Thunder Lower	5,666	5,350	316	2,014	2,048	112	5.3	16%	41%	Intermediate
26	Lift Line Pucci Lower	5,675	5,512	163	826	846	58	1.1	20%	25%	Low Intermediate
27	Main Run Pucci Lower	5,686	5,537	149	789	805	99	1.8	19%	25%	Low Intermediate
28	Slalom	5,671	5,437	234	773	813	118	2.2	30%	43%	Advanced Intermediate
29	Wy'east	5,565	5,383	182	738	774	94	1.7	25%	46%	Advanced Intermediate
30	West Run	5,539	5,322	217	1,132	1,165	92	2.5	19%	51%	Advanced Intermediate
31	Vicky's Run	5,818	5,001	817	5,125	5,232	114	13.7	16%	52%	Intermediate
32	Molly's Run	5,631	5,277	354	1,866	1,925	93	4.1	19%	55%	Advanced Intermediate
33	Back Way	5,350	4,997	353	3,419	3,449	96	7.6	10%	31%	Low Intermediate
34	West Pitch	5,197	5,000	197	538	581	97	1.3	37%	58%	Expert
35	Cut Off	5,131	5,026	105	329	346	93	0.7	32%	40%	Advanced Intermediate
D1A	<i>Proposed Run</i>	5,331	4,847	484	2,391	2,450	129	7.3	20%	40%	Advanced Intermediate
D1B	<i>Proposed Run</i>	5,340	5,235	105	1,125	1,132	46	1.2	9%	15%	Novice
D2	<i>Proposed Run</i>	5,471	5,072	399	2,283	2,322	107	5.7	17%	28%	Intermediate
D3	<i>Proposed Run</i>	5,535	5,072	463	2,680	2,733	114	7.1	17%	37%	Advanced Intermediate
D4	<i>Proposed Run</i>	5452	4850	603	3939	3990	104	9.5	15%	25%	Low Intermediate
D4A	<i>Proposed Run</i>	5374	4850	525	3522	3567	26	2.1	13%	19%	Low Intermediate
Lift Line	<i>Proposed Run</i>	6061	4846	1215	6626	6766	150	23.3	18%	41%	Intermediate
West Leg	<i>Proposed Run</i>	5384	4858	526	8945	8970	27	5.6	6%	13%	Novice
Total						119,140		518.0			

- **Top Elevation** – This is the elevation at the beginning (top) of the trail.
- **Bottom Elevation** – This is the elevation at the end (bottom) of the trail.

- **Vertical Drop** – This is the difference in elevation between the beginning and end of the trail.
- **Horizontal Length** – This is the length of the trail centerline, from the beginning of the trail to the end, as measured on the mapping (i.e., a two-dimensional measurement). A trail centerline is an imaginary line drawn down the middle of a trail.
- **Slope Length** – This is the three-dimensional length of the trail centerline, from beginning of the trail to the end, as measured on the ground or by use of three-dimensional mapping technology (i.e., AutoCADD or GIS).
- **Average Width** – This is the average width of the entire trail, from top to bottom. This may be determined by field measurements, or by calculation utilizing the given trail acreage and slope length (i.e., acreage x 43,560ft/slope length).
- **Area** – This is the total number of acres of terrain occurring within a trail boundary. This may be determined by GIS measurement, or by calculation utilizing the slope length and average width.
- **Average Grade** – This is the average slope gradient (in percent) of the trail’s centerline, from the beginning of the trail to the end.
- **Maximum Grade** – This is the maximum gradient (in percent) occurring anywhere on the trail.
- **Skier Rider Ability Level** – The following gradients were used to determine the skier ability level of the mountain terrain:

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

Source: SE GROUP

Exceptions to these standards occur when access to a trail is limited to a higher ability level trail. For example, if a novice trail can only be accessed by a low intermediate trail, than it will be designated as a low intermediate trail rather than novice.

## **Skier Distribution**

Skier distribution specifications under Alternative 2 are set forth in Table 10 and Charts 3 and 4.

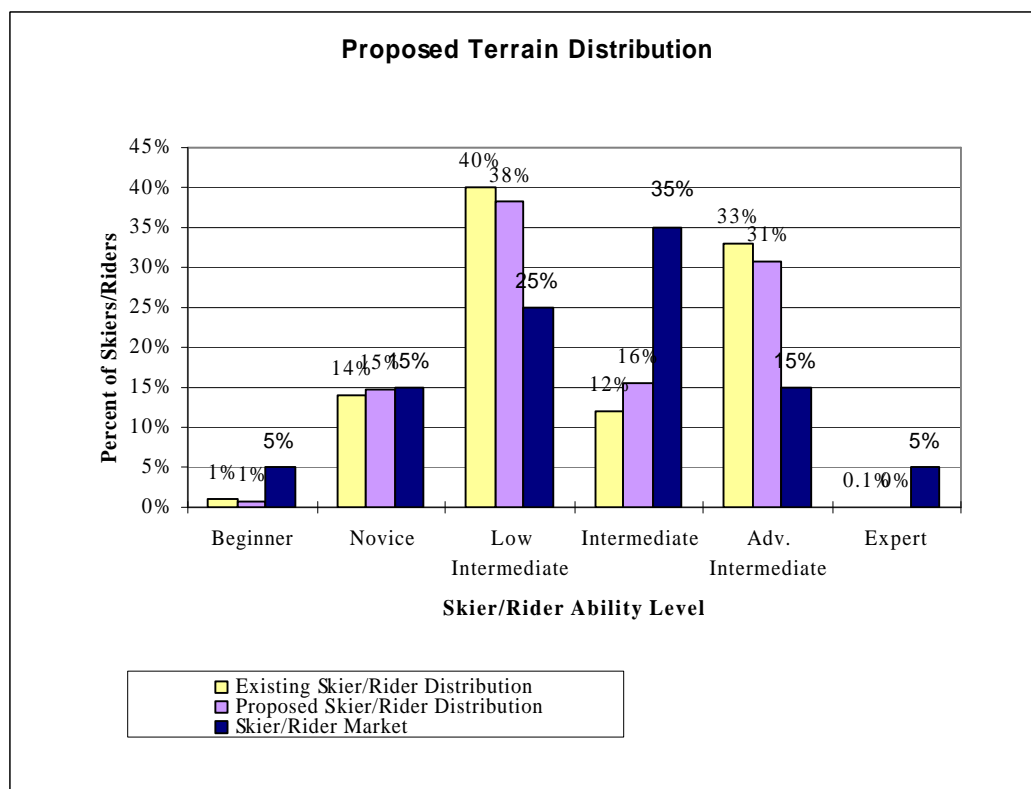
**TABLE 10**

**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 2**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	42.6	1%	5%
Novice	44.4	800.0	15%	15%
Low Intermediate	148.4	2077.8	38%	25%
Intermediate	84.5	845.1	16%	35%
Adv. Intermediate	237.9	1665.3	31%	15%
Expert	1.3	3.9	0%	5%
<b>Total:</b>	<b>518.0</b>	<b>5,435</b>	<b>100%</b>	<b>100%</b>

**CHART 3**

**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 2**



The above table and chart compare Timberline’s ‘skier distribution’ with the market demand for each ability level. Skier distribution is determined as follows:

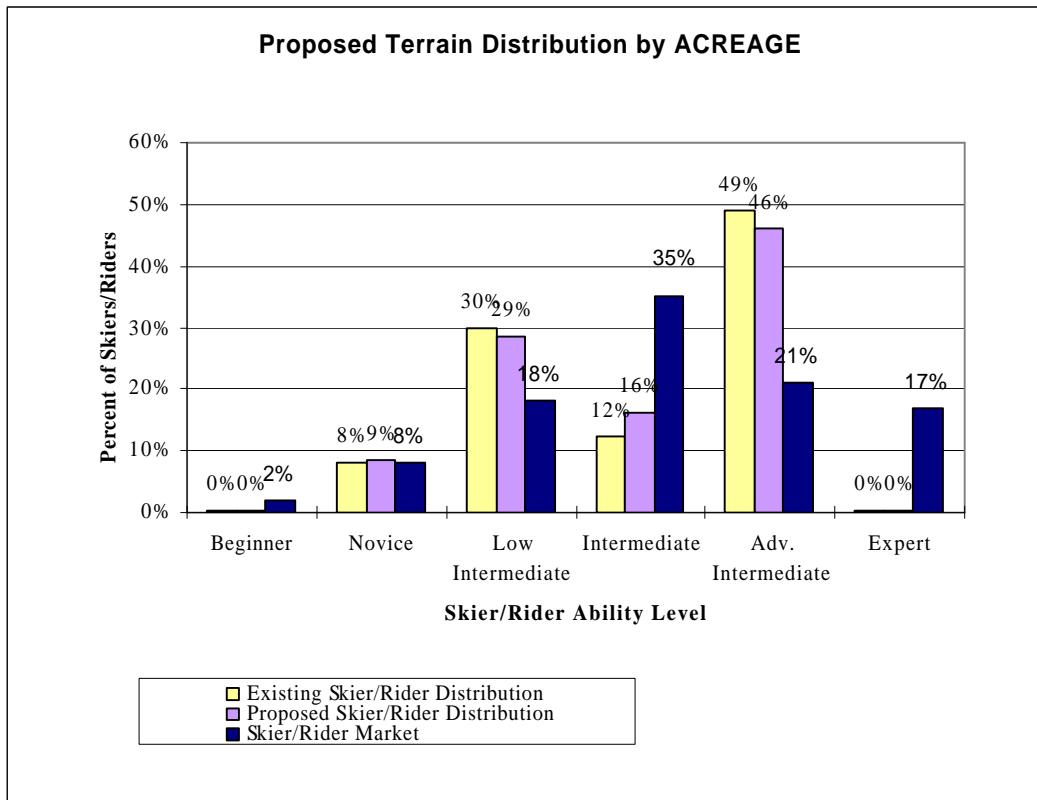
- Each trail is designated by ability level, as listed in Table 9. Each ability level has a standard design density for the ideal number of skiers occupying each acre of terrain at one time. The

widely accepted density criteria for ski areas in western North America are listed in the first section.

- The number of acres of terrain designated to each ability level is multiplied by the standard design density for each ability level (Skier/Rider Capacity [guests]).
- This total for each ability level is expressed as a percentage of the total number of skiers (Skier/Rider Distribution [%]).
- This percentage – or skier distribution – is then compared with the market demand for each ability level (Skier/Rider Market [%]).

The available ski terrain should be capable of accommodating the full range of ability levels consistent with market demand. As shown in the table and chart above, the proposed upgrades will improve the overall terrain distribution by bringing it closer to the skier market goals. Since the total amount of terrain added is not very large, the percentages do not change significantly, but they do improve the overall distribution.

**CHART 4**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 2**



The above table and chart compare the Timberline’s ‘acreage distribution’ by ability level with the market demand (as expressed in acres) for each ability level. This is determined as follows:

- The market demand (in acres) is determined by dividing the market demand (percentage) of each ability level by the standard design density (per acre) for each ability level. This number for each ability level is expressed as a percentage of the total.

- The skier/rider distribution (in acres) is determined by dividing the number of acres of terrain in each ability level with the total number of acres.

Consistent with the previous analysis comparing skier distribution by ability levels, the acreage distribution by ability levels comparison also indicates that the proposed upgrades will improve the overall distribution.

### Skier Distribution with Upper Mountain Closed

As mentioned above, due to inclement weather, Timberline is forced to close the upper lifts on an average of 40% of the days during the winter months. As a result, the total available terrain as well as the terrain distribution of the overall mountain is significantly altered on a frequent basis during the winter. The total acreage drops to about a quarter of the whole mountain and a very significant shortage of Intermediate and higher terrain becomes apparent. The primary reason for installing the new lift, and creating the associated terrain, is to help remedy this situation. The proposed terrain will provide much needed Intermediate and higher terrain for the days when the upper mountain is closed, or undesirable, due to weather. Specifications for the proposed skiable terrain and skier distribution without the upper two lifts are set forth in Table 11. As shown, terrain would be added for all ability levels, except Beginner and Expert. Very significant increases would be made for Intermediate terrain, where the amount of terrain would more than double, and for Advanced Intermediate terrain, where the amount of terrain would almost double. These increases would have a very beneficial effect on the quality of the ski experience on days when the upper mountain is unavailable.

**TABLE 11**  
**SKIER DISTRIBUTION BY ABILITY LEVELS –**  
**PROPOSED UPGRADING – ALTERNATIVE 2 - WITH UPPER MOUNTAIN CLOSED**

Skier/Rider Ability Level	Existing Trail Area (acres)	Proposed Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	1.4	42.6	2%	5%
Novice	37.6	44.4	800.0	38%	15%
Low Intermediate	23.6	35.2	492.8	24%	25%
Intermediate	19.0	47.9	479.5	23%	35%
Adv. Intermediate	24.1	38.5	269.5	13%	15%
Expert	1.3	1.3	3.9	0%	5%
Total:		168.8	2,088	100%	100%

### Comfortable Carrying Capacity

As stated before, comfortable carrying capacity (CCC) is the optimum number of guests accommodated by a mountain resort, at any one time, which affords a high-quality recreational experience and helps ensure sound stewardship of the land. The calculation of Timberline’s Upgrading Plan CCC is described in Table 12. As illustrated, the proposed upgrading program

increases the CCC of the lift and trail network at Timberline to about 3,990 guests per day (an increase of 29 percent).

**TABLE 12**

**CLASSIFICATION OF COMFORTABLE CARRYING CAPACITY – PROPOSED UPGRADING – ALTERNATIVE 2**

Map Ref.	Lift Name / Lift Type	Slope Length (ft)	Vert. Rise (ft)	Hourly Cap. (PPH)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Load Eff. (%)	Adj. Hourly Cap (PPH)	VTF/Day (000)	Vertical Demand (ft)	CCC (skiers)
A	Bruno, C-2	368	45	630	7.00	0	15	536	169	1,500	110
B	Molly's Express, DC-4	5,244	845	1,200	7.00	0	10	1,080	6,388	15,934	400
C	Pucci, C-3	3,398	570	1,330	7.00	5	10	1,131	4,511	7,695	590
D	Stomin' Norman, DC-4	4,396	785	1,500	7.00	0	10	1,350	7,418	10,903	680
E	Magic Mile Express, DC-4	5,359	1,075	1,600	7.00	10	5	1,360	10,234	16,067	640
F	Palmer Express, DC-4	5,468	1,530	1,800	6.50	0	5	1,710	17,006	25,285	670
G	Timberline Express	6,528	1,180	1,800	7.00	0	10	1,620	13,381	14,818	900
Total:		30,760		9,860				8,786	59,107		3,990

**Density Analysis**

Density specifications under Alternative 2 are set forth in Table 13.

**TABLE 13**

**SKI TRAIL DENSITY ANALYSIS – PROPOSED UPGRADING – ALTERNATIVE 2**

Map Ref.	Daily Lift Capacity	Guest Dispersement				Density Analysis				
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Trails (guests)	Trail Area (acres)	Actual Trail Density (guests/ac.)	Acceptable Trl. Density (guests/ac.)	Diff. (+/-)	Density Index (%)
A	110	28	35	11	36	1.4	25	30	-5	83%
B	400	100	11	94	195	30.5	6	10	-4	60%
C	590	148	68	142	232	26.9	9	14	-5	64%
D	680	170	162	99	249	45.8	5	14	-9	36%
E	640	160	0	128	352	152.1	2	13	-11	15%
F	670	168	86	156	260	199.4	1	7	-6	14%
G	900	225	81	176	418	61.9	7	11	-4	64%
Total:	3,990	999	443	806	1,742	518.0	6	12	-6	46%

The calculation of capacity for a ski area is based in part on the acceptable number of skiers that can be accommodated on each acre of ski terrain at any one given time. See table in the first section for these numbers.

These criteria assume that on an average day, approximately 33 percent of the total number of skiers in the area will be on the trails at any one time. The remainder of the skiers are either in lift lines, riding the lifts, or utilizing skier support services. The densities listed above have been used in the analysis of Timberline's trail densities.

The density index is a percentage comparison of the actual trail density with the acceptable trail density. A 100% index represents a balance between the actual and acceptable trail density. An index under 100% indicates that the actual trail density is lower than the acceptable trail density. An index above 100% indicates that the actual trail density is higher than the acceptable trail density. Table 13 indicates that under the proposed upgrading plan, all of Timberline's trails will remain in the desirable situation of being well below acceptable trail densities.

### **Parking**

Timberline does not propose to provide any additional parking at this time. There is no reason to expect that the current situation of non-skiers using 20-30% of the available parking spaces would change in any appreciable way. Therefore, there will continue to be approximately 700 parking spaces available for skier use.

### **Resort Balance and Limiting Factors**

If the proposed lift and terrain were to be constructed, the overall capacity and balance of the ski resort would stay essentially the same as it is now. This is because the limiting factor of available parking would not change, and would effectively keep the capacity of the resort at the existing 2,200 people. However, there should be two effects of the proposed upgrades. First, the terrain densities on the lower mountain would be acceptable on the days when the upper mountain is closed. Under the proposed configuration, skier densities will decrease from the existing 17 skiers per acre with the upper mountain closed to 13 skiers per acre. This matches the desired trail density for Timberline when the upper mountain is closed. This will allow for a much more desirable ski experience. Secondly, the effect of the new lift and terrain on utilization of the resort would hopefully be significant. The addition of this terrain would not only increase total acreage, but would give the lower mountain a very different feel, providing a more varied and much improved skiing experience. This should lead to better utilization and more desirable distribution of skiers on days when the upper mountain is closed, or undesirable, due to weather conditions.

## PROPOSED UPGRADING PLAN – ALTERNATIVE 3

### Lifts

As in Alternative 2, Timberline is proposing to add an additional lift to their existing lift system. The lift would be on the lower part of the mountain and would primarily service new terrain. As stated above, the intent of the lift would be to improve the skiing product available on the lower mountain, which is especially important on the frequent days when the upper mountain is closed due to inclement weather.

Specifications for Timberline’s lifts under Alternative 3 are set forth in Table 14.

**TABLE 14**  
**LIFT SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref.	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Plan. Length (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (persons/hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Bruno, C-2	5,885	5,840	45	365	368	12%	630	300	57	Poma, 1987
B	Molly's Express, DC-4	5,835	4,990	845	5,175	5,244	16%	1200	1000	200	Doppelmayr, 2000
C	Pucci, C-3	5,920	5,350	570	3,350	3,398	17%	1330	450	61	Poma, 1987
D	Stomin' Norman, DC-4	6,245	5,460	785	4,325	4,396	18%	1500	1000	160	Doppelmayr, 2000
E	Magic Mile Express, DC-4	6,990	5,915	1,075	5,250	5,359	20%	1600	950	143	Poma, 1992
F	Palmer Express, DC-4	8,470	6,940	1,530	5,250	5,468	29%	1800	1000	133	Doppelmayr, 1996
G	Timberline Express	6,020	4,850	1,170	6,370	6,506	18%	1800	1000	133	<i>Proposed Lift</i>

- **Top Elevation** – This is the elevation at the top terminal of the lift.
- **Bottom Elevation** – This is the elevation of the bottom terminal of the lift.
- **Vertical Rise** – This is the difference in elevation between the top and bottom terminals.
- **Horizontal Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the mapping (i.e., a two-dimensional measurement).
- **Slope Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the ground (i.e., a three-dimensional measurement).
- **Average Grade** – This is the average slope gradient (in percent) of the terrain under the length of the lift, from the top terminal to bottom terminal.
- **Hourly Capacity** – This is the number of guests trips (one ride for one guest = one guest trip) per hour that a lift can accommodate.

- **Rope Speed** – This is the speed that a lift can transport guests, as expressed in number of feet per minute.
- **Carrier Spacing** – This is the distance in feet between each guest carrier (chair, gondola cabin).

### Terrain

Timberline proposes to add approximately 63 acres of terrain on nine new trails, all of which would be accessed from the new lift. Specifications for the proposed trails are set forth in Table 15. The new terrain as proposed would provide desirable skiing. The runs are in the fall-line and provide enough variations in width and slope to provide good terrain variety. There are no significant flat areas on any of the runs. A situation arises in this alternative that results in less desirable skiing than in Alternative 2, the proposed action. In Alternative 3, the runs (except D4) have been narrowed below the 5,050 elevation mark. This will have two consequences. First, only expert skiers will be able to ski the lift line from the 5,050 feet elevation point down to the bottom terminal. This means that all other skiers on the Lift Line trail, D3, and D2 will have to traverse down a section of the West Leg Road until they reach the intersection on run D1A. This section of West Leg is only about 7%, so it would create a less desirable situation. Second, because of the first issue, skiers on all runs except D4 and West Leg will have to ski the lower section of D1A, a section that is proposed to be narrower than in Alternative 2. Under this alternative, there will be a density of 30 skiers per acre on that lower section of D1A, or three times the desired density for an intermediate trail. This will create an undesirable situation of slope crowding on that section of trail.

**TABLE 15**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft.)	Plan Length (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	Outer West	8,483	6,964	1,519	5,449	5,665	379	49.3	28%	37%	Advanced Intermediate
2	Palmer	8,482	6,947	1,535	5,328	5,555	651	83.0	29%	35%	Advanced Intermediate
3	Bean's Run	8,460	7,003	1,458	5,553	5,779	506	67.1	26%	40%	Advanced Intermediate
4	Coffel's Run	6,988	6,191	797	3,542	3,637	322	26.9	22%	30%	Low Intermediate
5	West Mile	6,987	6,116	870	4,121	4,222	406	39.3	21%	33%	Low Intermediate
6	East Mile	6,986	5,922	1,064	5,268	5,391	380	47.0	20%	34%	Low Intermediate
7	Otto Loop	6,935	5,922	1,013	5,876	6,001	265	36.6	17%	35%	Intermediate
8	Paint Brush Terrain Run	6,240	5,546	694	3,953	4,022	114	10.5	18%	28%	Advanced Intermediate
9	Stormin' Norman	6,242	5,561	681	3,698	3,767	113	9.8	18%	26%	Low Intermediate
10	Conway's Corner	6,245	5,661	584	3,276	3,333	110	8.4	18%	25%	Novice
11	Blossom Return	6,240	5,926	314	2,360	2,394	83	4.6	13%	25%	Novice
12	Glade	5,927	5,460	466	3,026	3,071	125	8.8	15%	28%	Novice

**TABLE 15**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
13	Thunder Upper	5,923	5,667	256	1,505	1,529	81	2.8	17%	24%	Novice
14	Lift Line Pucci Upper	5,917	5,686	230	1,254	1,277	56	1.6	18%	24%	Novice
15	Main Run Pucci Upper	5,923	5,696	227	1,358	1,379	74	2.3	17%	25%	Novice
16	Bruno	5,884	5,843	41	351	356	174	1.4	12%	12%	Beginner
17	Nona's Bologna	5,685	5,633	52	372	376	94	0.8	14%	16%	Novice
18	Alpine	5,769	5,511	258	1,979	2,005	57	2.6	13%	31%	Low Intermediate
19	Access to Stormin' Norman	5,533	5,462	70	556	562	78	1.0	13%	18%	Novice
20	West Leg Road	5,688	5,360	328	4,814	4,835	30	3.3	7%	14%	Novice
21	Walt's Baby	5,625	5,350	275	2,071	2,093	80	3.8	13%	21%	Novice
22	Bob Elmer	5,639	5,493	147	670	695	78	1.2	22%	37%	Advanced Intermediate
23	Wingle's Wiggle	5,592	5,442	151	837	864	57	1.1	18%	45%	Advanced Intermediate
24	Hydro's	5,434	5,365	69	408	416	64	0.6	17%	25%	Low Intermediate
25	Thunder Lower	5,666	5,350	316	2,014	2,048	112	5.3	16%	41%	Intermediate
26	Lift Line Pucci Lower	5,675	5,512	163	826	846	58	1.1	20%	25%	Low Intermediate
27	Main Run Pucci Lower	5,686	5,537	149	789	805	99	1.8	19%	25%	Low Intermediate
28	Slalom	5,671	5,437	234	773	813	118	2.2	30%	43%	Advanced Intermediate
29	Wy'east	5,565	5,383	182	738	774	94	1.7	25%	46%	Advanced Intermediate
30	West Run	5,539	5,322	217	1,132	1,165	92	2.5	19%	51%	Advanced Intermediate
31	Vicky's Run	5,818	5,001	817	5,125	5,232	114	13.7	16%	52%	Intermediate
32	Molly's Run	5,631	5,277	354	1,866	1,925	93	4.1	19%	55%	Advanced Intermediate
33	Back Way	5,350	4,997	353	3,419	3,449	96	7.6	10%	31%	Low Intermediate
34	West Pitch	5,197	5,000	197	538	581	97	1.3	37%	58%	Expert
35	Cut Off	5,131	5,026	105	329	346	93	0.7	32%	40%	Advanced Intermediate
D1A	Proposed Run	5387	5072	315	2241	2271	90	4.7	14%	31%	Advanced Intermediate
D1B	Proposed Run	5341	5234	106	1147	1154	45	1.2	9%	16%	Novice
D2	Proposed Run	5481	5088	394	2219	2258	123	6.4	18%	28%	Intermediate
D2A	Proposed Run	5201	4849	352	1788	1831	108	4.5	20%	40%	Intermediate
D3	Proposed Run	5538	5076	461	2830	2885	127	8.4	16%	35%	Advanced Intermediate
D4	Proposed Run	5927	4851	1076	6701	6799	110	17.1	16%	26%	Low Intermediate
D4A	Proposed Run	5455	5319	136	1010	1020	83	1.9	13%	19%	Low

**TABLE 15**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
											Intermediate
Lift Line	Proposed Run	6029	4853	1176	6355	6493	109	16.3	19%	41%	Intermediate
West Leg	Proposed Run	5234	4861	373	5767	5786	21	2.8	6%	17%	Novice
Total						117,707		519.4			

- **Top Elevation** – This is the elevation at the beginning (top) of the trail.
- **Bottom Elevation** – This is the elevation at the end (bottom) of the trail.
- **Vertical Drop** – This is the difference in elevation between the beginning and end of the trail.
- **Horizontal Length** – This is the length of the trail centerline, from beginning of the trail to the end, as measured on the mapping (i.e., a two-dimensional measurement). A trail centerline is an imaginary line drawn down the middle of a trail.
- **Slope Length** – This is the three-dimensional length of the trail centerline, from beginning of the trail to the end, as measured on the ground or by use of three-dimensional mapping technology (i.e., AutoCADD or GIS).
- **Average Width** – This is the average width of the entire trail, from top to bottom. This may be determined by field measurements, or by calculation utilizing the given trail acreage and slope length (i.e., acreage x 43,560ft/slope length).
- **Area** – This is the total number of acres of terrain occurring within a trail boundary. This may be determined by GIS measurement, or by calculation utilizing the slope length and average width.
- **Average Grade** – This is the average slope gradient (in percent) of the trail’s centerline, from the beginning of the trail to the end.
- **Maximum Grade** – This is the maximum gradient (in percent) occurring anywhere on the trail.
- **Skier Rider Ability Level** – The following gradients were used to determine the skier ability level of the mountain terrain:

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

Source: SE GROUP

Exceptions to these standards occur when access to a trail is limited to a higher ability level trail. For example, if a novice trail can only be accessed by a low intermediate trail, then it will be designated as a low intermediate trail rather than novice.

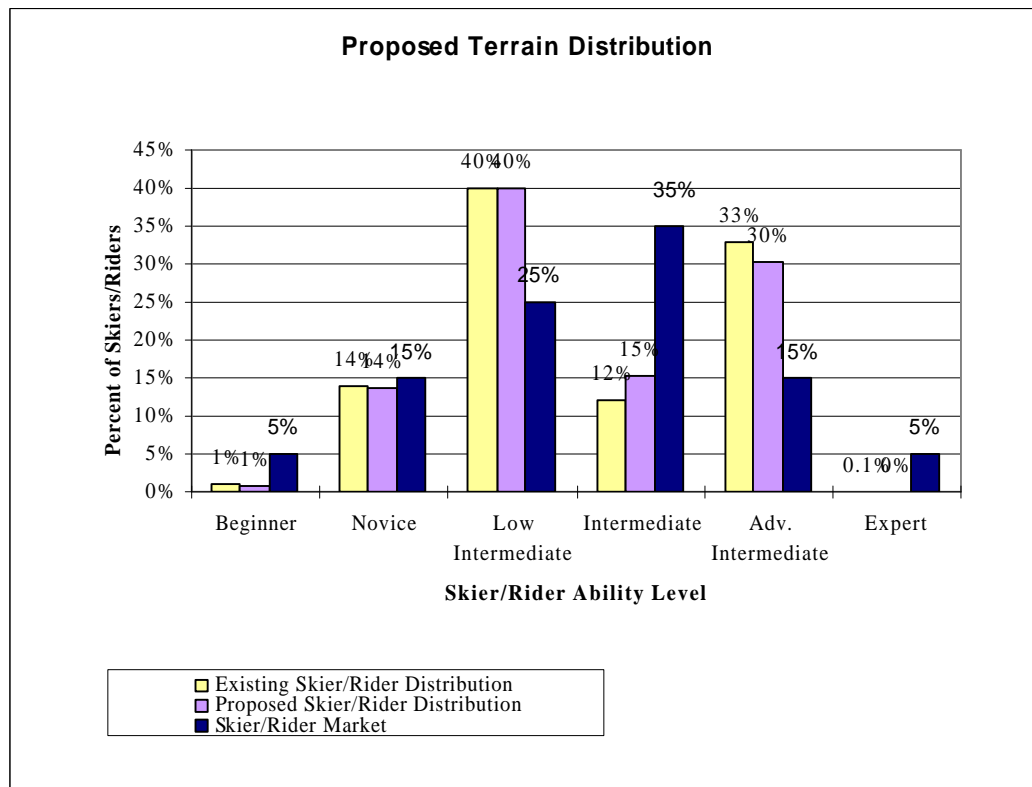
### Skier Distribution

Specifications for the proposed skier distribution are set forth in Table 16 and Charts 5 and 6.

**TABLE 16**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 3**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	42.6	1%	5%
Novice	41.6	748.7	14%	15%
Low Intermediate	155.8	2181.5	40%	25%
Intermediate	82.7	826.6	15%	35%
Adv. Intermediate	236.6	1656.0	30%	15%
Expert	1.3	3.9	0%	5%
Total:	519.4	5,459	100%	100%

**CHART 5**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 3**

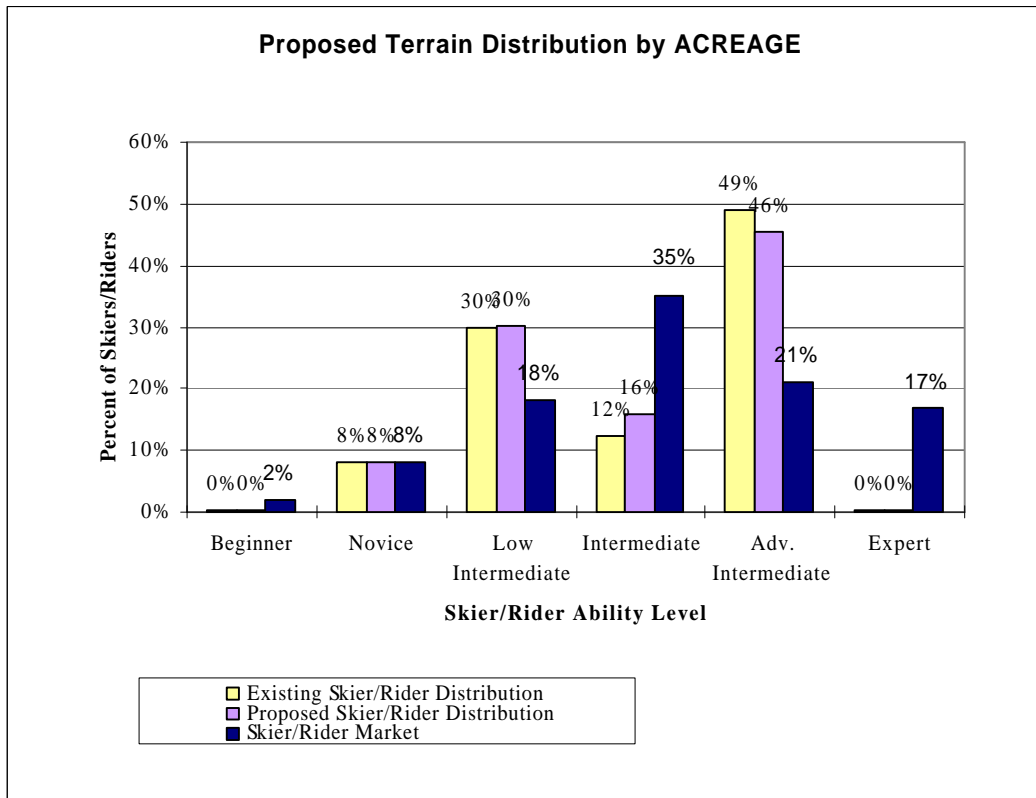


The above table and chart compare Timberline’s ‘skier distribution’ with the market demand for each ability level. Skier distribution is determined as follows:

- Each trail is designated by ability level, as listed in Table 9. Each ability level has a standard design density for the ideal number of skiers occupying each acre of terrain at one time. The widely accepted density criteria for ski areas in western North America are listed in the first section.
- The number of acres of terrain designated to each ability level is multiplied by the standard design density for each ability level (Skier/Rider Capacity [guests]).
- This total for each ability level is expressed as a percentage of the total number of skiers (Skier/Rider Distribution [%]).
- This percentage – or skier distribution – is then compared with the market demand for each ability level (Skier/Rider Market [%]).

The available ski terrain should be capable of accommodating the full range of ability levels consistent with market demand. As shown in the table and chart above, the proposed upgrades will improve the overall terrain distribution by bringing it closer to the skier market goals. Since the total amount of terrain added is not very large, the percentages do not change significantly, but they do improve the overall distribution.

**CHART 6**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 3**



The above table and chart compare Timberline’s ‘acreage distribution’ by ability level with the market demand (as expressed in acres) for each ability level. This is determined as follows:

- The market demand (in acres) is determined by dividing the market demand (percentage) of each ability level by the standard design density (per acre) for each ability level. This number for each ability level is expressed as a percentage of the total.
- The skier/rider distribution (in acres) is determined by dividing the number of acres of terrain in each ability level with the total number of acres.

Consistent with the previous analysis comparing skier distribution by ability levels, the acreage distribution by ability levels comparison also indicates that the proposed upgrades will improve the overall distribution of skiers.

**Comfortable Carrying Capacity**

As stated before, comfortable carrying capacity (CCC) is the optimum number of guests accommodated by a mountain resort, at any one time, which affords a high-quality recreational experience and helps ensure sound stewardship of the land. The calculation of Timberline’s Upgrading Plan CCC is described in Table 17. As illustrated, the proposed upgrading program increases the CCC of the lift and trail network at Timberline to about 3,990 guests per day (an increase of 29 percent).

**TABLE 17****CLASSIFICATION OF COMFORTABLE CARRYING CAPACITY – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref.	Lift Name / Lift Type	Slope Length (ft)	Vert. Rise (ft)	Hourly Cap. (PPH)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Load Eff. (%)	Adj. Hourly Cap (PPH)	VTF/Day (000)	Vertical Demand (ft)	CCC (skiers)
A	Bruno, C-2	368	45	630	7.00	0	15	536	169	1,500	110
B	Molly's Express, DC-4	5,244	845	1,200	7.00	0	10	1,080	6,388	15,934	400
C	Pucci, C-3	3,398	570	1,330	7.00	5	10	1,131	4,511	7,695	590
D	Stomin' Norman, DC-4	4,396	785	1,500	7.00	0	10	1,350	7,418	10,903	680
E	Magic Mile Express, DC-4	5,359	1,075	1,600	7.00	10	5	1,360	10,234	16,067	640
F	Palmer Express, DC-4	5,468	1,530	1,800	6.50	0	5	1,710	17,006	25,285	670
G	Timberline Express	6,506	1,170	1,800	7.00	0	10	1,620	13,268	14,737	900
Total:		30,738		9,860				8,786	58,994		3,990

**Density Analysis**

Ski trail density specifications under Alternative 3 are set forth in Table 18.

**TABLE 18****SKI TRAIL DENSITY ANALYSIS – PROPOSED UPGRADING – ALTERNATIVE 3**

Map Ref.	Daily Lift Capacity	Guest Dispersement				Density Analysis				
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Trails (guests)	Trail Area (acres)	Actual Trail Density (guests/ac.)	Acceptable Trl. Density (guests/ac.)	Diff. (+/-)	Density Index (%)
A	110	28	35	11	36	1.4	25	30	-5	83%
B	400	100	11	94	195	30.5	6	10	-4	60%
C	590	148	68	142	232	26.9	9	14	-5	64%
D	680	170	162	99	249	45.8	5	14	-9	36%
E	640	160	0	128	352	152.1	2	13	-11	15%
F	670	168	86	156	260	199.4	1	7	-6	14%
G	900	225	81	176	418	63.2	7	11	-4	63%
Total:	3,990	999	443	806	1,742	519.4	6	12	-6	46%

The calculation of capacity for a ski area is based in part on the acceptable number of skiers that can be accommodated on each acre of ski terrain at any one given time. See table in the first section for these numbers.

These criteria assume that on an average day, approximately 33 percent of the total number of skiers in the area will be on the trails at any one time. The remainder of the skiers are either in lift lines, riding the lifts, or utilizing skier support services. The densities listed above have been used in the analysis of Timberline's trail densities.

The density index is a percentage comparison of the actual trail density with the acceptable trail density. A 100% index represents a balance between the actual and acceptable trail density. An index under 100% indicates that the actual trail density is lower than the acceptable trail density. An index above 100% indicates that the actual trail density is higher than the acceptable trail density. Table 13 indicates that under the proposed upgrading plan, all of Timberline's trails will remain in the desirable situation of being well below acceptable trail densities.

### **Parking**

Timberline does not propose to provide any additional parking at this time. There is no reason to expect that the current situation of non-skiers using 20-30% of the available parking spaces would change in any appreciable way. Therefore, there will continue to be approximately 700 parking spaces available for skier use.

### **Resort Balance and Limiting Factors**

If the proposed lift and terrain were to be constructed, the overall capacity and balance of the ski resort would stay essentially the same as it is now. This is because the limiting factor of available parking would not change, and would effectively keep the capacity of the resort at the existing 2,200 people. However, there should be two effects of the proposed upgrades. First, the terrain densities on the lower mountain would be acceptable on the days when the upper mountain is closed. Under the proposed configuration, skier densities will decrease from the existing 17 skiers per acre with the upper mountain closed to 13 skiers per acre. This matches the desired trail density for Timberline when the upper mountain is closed. This will allow for a much more desirable ski experience. Secondly, the effect of the new lift and terrain on utilization of the resort would hopefully be significant, although the skiing would not be as desirable as in Alternative 2. The addition of this terrain would not only increase total acreage, but would give the lower mountain a very different feel, providing a more varied and much improved skiing experience. This should lead to better utilization and more desirable distribution of skiers on days when the upper mountain is closed, or undesirable, due to weather conditions. However, due to the addition of the required traverse and likely slope crowding on D2A (as described above), the skiing product in this alternative would not be as desirable as in the proposed action.

## PROPOSED UPGRADING PLAN – ALTERNATIVE 5

### Lifts

As in Alternative 2, Timberline is proposing to add an additional lift to their existing lift system. The lift would be on the lower part of the mountain and would primarily service new terrain. As stated above, the intent of the lift would be to improve the skiing product available on the lower mountain, which is especially important on the frequent days when the upper mountain is closed due to inclement weather. This alternative would require a lower-capacity lift to be built. The other alternatives would have an 1800 person per hour lift, whereas this alternative would have a 1600 person per hour lift. The reason for this is that the CCC (see below) of the lift needs to stay at 900 skiers, and since the lift in this alternative is significantly longer, the capacity would have to be dropped down. This could cause longer lifts lines during high use days as compared to Alternatives 2 and 3.

Specifications for Timberline’s lifts under Alternative 5 are set forth in Table 19.

**TABLE 19**  
**LIFT SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref.	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Plan. Length (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (persons/hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Bruno, C-2	5,885	5,840	45	365	368	12%	630	300	57	Poma, 1987
B	Molly's Express, DC-4	5,835	4,990	845	5,175	5,244	16%	1200	1000	200	Doppelmayr, 2000
C	Pucci, C-3	5,920	5,350	570	3,350	3,398	17%	1330	450	61	Poma, 1987
D	Stomin' Norman, DC-4	6,245	5,460	785	4,325	4,396	18%	1500	1000	160	Doppelmayr, 2000
E	Magic Mile Express, DC-4	6,990	5,915	1,075	5,250	5,359	20%	1600	950	143	Poma, 1992
F	Palmer Express, DC-4	8,470	6,940	1,530	5,250	5,468	29%	1800	1000	133	Doppelmayr, 1996
G	Timberline Express	6,060	4,775	1,285	7,470	7,620	17%	1600	1000	150	<i>Proposed Lift</i>

- **Top Elevation** – This is the elevation at the top terminal of the lift.
- **Bottom Elevation** – This is the elevation of the bottom terminal of the lift.
- **Vertical Rise** – This is the difference in elevation between the top and bottom terminals.
- **Horizontal Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the mapping (i.e., a two-dimensional measurement).
- **Slope Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the ground (i.e., a three-dimensional measurement).

- **Average Grade** – This is the average slope gradient (in percent) of the terrain under the length of the lift, from the top terminal to bottom terminal.
- **Hourly Capacity** – This is the number of guests trips (one ride for one guest = one guest trip) per hour that a lift can accommodate.
- **Rope Speed** – This is the speed that a lift can transport guests, as expressed in number of feet per minute.
- **Carrier Spacing** – This is the distance in feet between each guest carrier (chair, gondola cabin).

### Terrain

Timberline proposes to add approximately 71 acres of terrain on nine new trails, all of which would be accessed from the new lift. Specifications for the proposed trails are set forth in Table 20. While most of the runs proposed in this alternative are in the fall-line and vary enough in width and slope to provide interesting, varied terrain; there are two problems with run design of this alternative. First is that extensive grading would be required in various locations to make some of the proposed runs work. Second is that almost all of the runs would have extensive traverses and flat areas. Skiers on runs D3 and D2 would have to traverse out along West Leg Road for about 825 feet at a grade of 7%, which is well below the desired traverse grade of 10%. However, the most significant problem is that almost all skiers, anyone on runs D1, D2, D2A, D3, and the Lift Line trail, would have to traverse a 600 foot length of the road with less than 1% grade. Since it is not possible to slide on skis or a snowboard at this grade, skiers would have to skate or hike with their skis, and snowboarders would have to take off their boards and walk. This type of condition is considered unacceptable by modern ski area design standards.

**TABLE 20**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg, Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	Outer West	8,483	6,964	1,519	5,449	5,665	379	49.3	28%	37%	Advanced Intermediate
2	Palmer	8,482	6,947	1,535	5,328	5,555	651	83.0	29%	35%	Advanced Intermediate
3	Bean's Run	8,460	7,003	1,458	5,553	5,779	506	67.1	26%	40%	Advanced Intermediate
4	Coffel's Run	6,988	6,191	797	3,542	3,637	322	26.9	22%	30%	Low Intermediate
5	West Mile	6,987	6,116	870	4,121	4,222	406	39.3	21%	33%	Low Intermediate
6	East Mile	6,986	5,922	1,064	5,268	5,391	380	47.0	20%	34%	Low Intermediate
7	Otto Loop	6,935	5,922	1,013	5,876	6,001	265	36.6	17%	35%	Intermediate
8	Paint Brush Terrain Run	6,240	5,546	694	3,953	4,022	114	10.5	18%	28%	Advanced Intermediate
9	Stormin' Norman	6,242	5,561	681	3,698	3,767	113	9.8	18%	26%	Low Intermediate

**TABLE 20**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
10	Conway's Corner	6,245	5,661	584	3,276	3,333	110	8.4	18%	25%	Novice
11	Blossom Return	6,240	5,926	314	2,360	2,394	83	4.6	13%	25%	Novice
12	Glade	5,927	5,460	466	3,026	3,071	125	8.8	15%	28%	Novice
13	Thunder Upper	5,923	5,667	256	1,505	1,529	81	2.8	17%	24%	Novice
14	Lift Line Pucci Upper	5,917	5,686	230	1,254	1,277	56	1.6	18%	24%	Novice
15	Main Run Pucci Upper	5,923	5,696	227	1,358	1,379	74	2.3	17%	25%	Novice
16	Bruno	5,884	5,843	41	351	356	174	1.4	12%	12%	Beginner
17	Nona's Bologna	5,685	5,633	52	372	376	94	0.8	14%	16%	Novice
18	Alpine	5,769	5,511	258	1,979	2,005	57	2.6	13%	31%	Low Intermediate
19	Access to Stormin' Norman	5,533	5,462	70	556	562	78	1.0	13%	18%	Novice
20	West Leg Road	5,688	5,360	328	4,814	4,835	30	3.3	7%	14%	Novice
21	Walt's Baby	5,625	5,350	275	2,071	2,093	80	3.8	13%	21%	Novice
22	Bob Elmer	5,639	5,493	147	670	695	78	1.2	22%	37%	Advanced Intermediate
23	Wingle's Wiggle	5,592	5,442	151	837	864	57	1.1	18%	45%	Advanced Intermediate
24	Hydro's	5,434	5,365	69	408	416	64	0.6	17%	25%	Low Intermediate
25	Thunder Lower	5,666	5,350	316	2,014	2,048	112	5.3	16%	41%	Intermediate
26	Lift Line Pucci Lower	5,675	5,512	163	826	846	58	1.1	20%	25%	Low Intermediate
27	Main Run Pucci Lower	5,686	5,537	149	789	805	99	1.8	19%	25%	Low Intermediate
28	Slalom	5,671	5,437	234	773	813	118	2.2	30%	43%	Advanced Intermediate
29	Wy'east	5,565	5,383	182	738	774	94	1.7	25%	46%	Advanced Intermediate
30	West Run	5,539	5,322	217	1,132	1,165	92	2.5	19%	51%	Advanced Intermediate
31	Vicky's Run	5,818	5,001	817	5,125	5,232	114	13.7	16%	52%	Intermediate
32	Molly's Run	5,631	5,277	354	1,866	1,925	93	4.1	19%	55%	Advanced Intermediate
33	Back Way	5,350	4,997	353	3,419	3,449	96	7.6	10%	31%	Low Intermediate
34	West Pitch	5,197	5,000	197	538	581	97	1.3	37%	58%	Expert
35	Cut Off	5,131	5,026	105	329	346	93	0.7	32%	40%	Advanced Intermediate
D1	Proposed Run	5385	4863	522	3128	3189	104	7.6	17%	42%	Advanced Intermediate
D2	Proposed Run	5478	5068	410	2283	2324	135	7.2	18%	28%	Low Intermediate
D2A	Proposed Run	5275	5025	250	1431	1455	101	3.4	17%	24%	Intermediate
D3	Proposed Run	5538	5080	457	2533	2587	138	8.2	18%	35%	Low Intermediate

**TABLE 20**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft.)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
D4	Proposed Run	5927	4773	1154	7329	7436	114	19.4	16%	29%	Advanced Intermediate
D4A	Proposed Run	5094	4776	318	1966	2002	142	6.5	16%	42%	Intermediate
D4B	Proposed Run	5455	5318	137	1019	1030	82	1.9	13%	19%	Low Intermediate
Lift Line	Proposed Run	6076	5409	667	4044	4109	144	13.6	16%	30%	Low Intermediate
West Leg	Proposed Run	5078	4857	221	4802	4814	25	2.8	5%	10%	Beginner
Total						116,154		526.8			

- **Top Elevation** – This is the elevation at the beginning (top) of the trail.
- **Bottom Elevation** – This is the elevation at the end (bottom) of the trail.
- **Vertical Drop** – This is the difference in elevation between the beginning and end of the trail.
- **Horizontal Length** – This is the length of the trail centerline, from beginning of the trail to the end, as measured on the mapping (i.e., a two-dimensional measurement). A trail centerline is an imaginary line drawn down the middle of a trail.
- **Slope Length** – This is the three-dimensional length of the trail centerline, from beginning of the trail to the end, as measured on the ground or by use of three-dimensional mapping technology (i.e., AutoCADD or GIS).
- **Average Width** – This is the average width of the entire trail, from top to bottom. This may be determined by field measurements, or by calculation utilizing the given trail acreage and slope length (i.e., acreage x 43,560ft/slope length).
- **Area** – This is the total number of acres of terrain occurring within a trail boundary. This may be determined by GIS measurement, or by calculation utilizing the slope length and average width.
- **Average Grade** – This is the average slope gradient (in percent) of the trail’s centerline, from the beginning of the trail to the end.
- **Maximum Grade** – This is the maximum gradient (in percent) occurring anywhere on the trail.
- **Skier Rider Ability Level** – The following gradients were used to determine the skier ability level of the mountain terrain:

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

Source: SE GROUP

Exceptions to these standards occur when access to a trail is limited to a higher ability level trail. For example, if a novice trail can only be accessed by a low intermediate trail, than it will be designated as a low intermediate trail rather than novice.

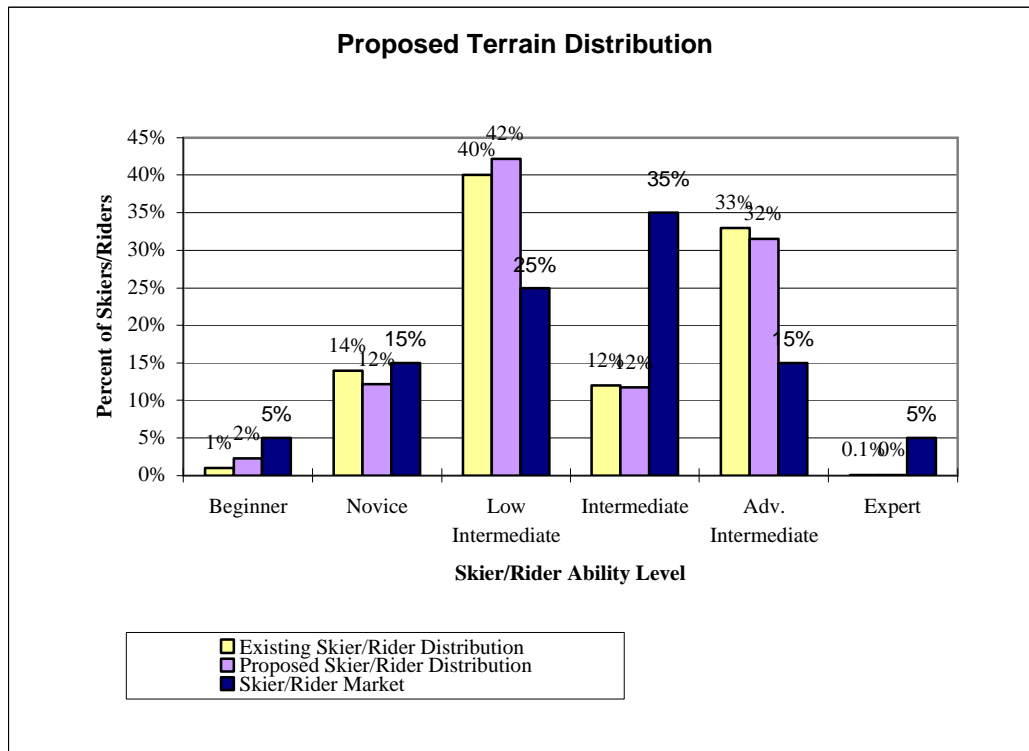
### Skier Distribution

Skier distribution specifications under Alternative 5 are set forth in Table 21 and Charts 7 and 8.

**TABLE 21**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 5**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	4.2	126.2	2%	5%
Novice	37.6	677.2	12%	15%
Low Intermediate	167.7	2348.1	42%	25%
Intermediate	65.4	654.1	12%	35%
Adv. Intermediate	250.5	1753.7	32%	15%
Expert	1.3	3.9	0%	5%
Total:	526.8	5,563	100%	100%

**CHART 7**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 5**



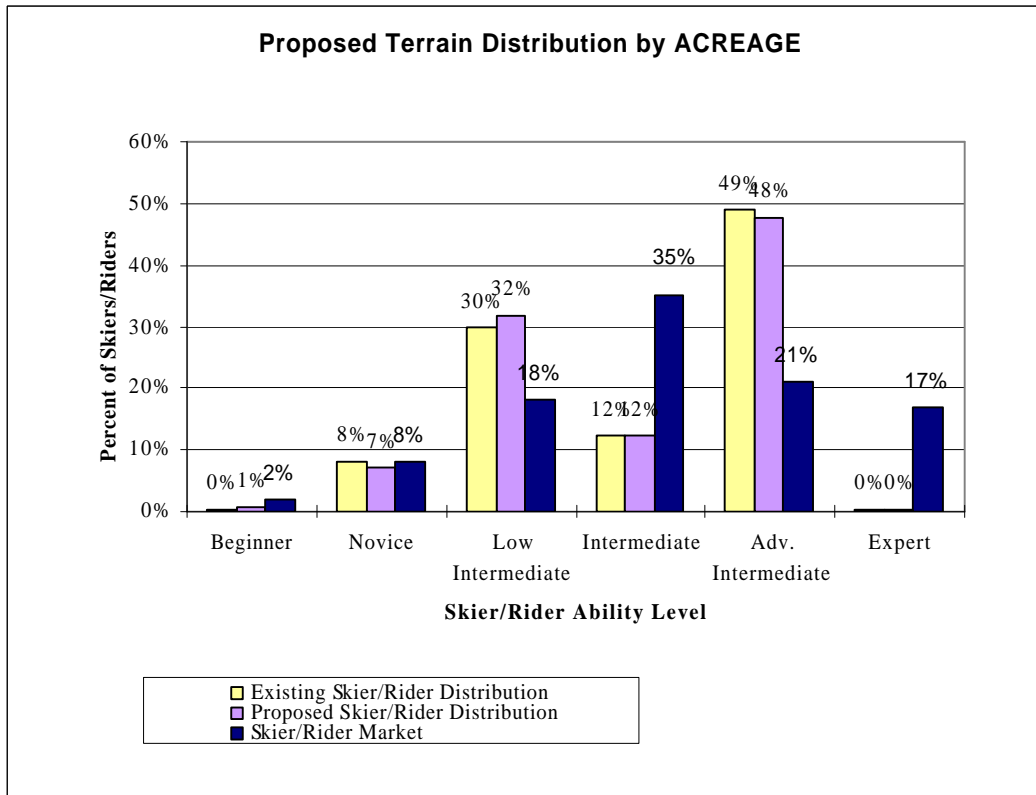
The above table and chart compare Timberline’s ‘skier distribution’ with the market demand for each ability level. Skier distribution is determined as follows:

- Each trail is designated by ability level, as listed in Table 9. Each ability level has a standard design density for the ideal number of skiers occupying each acre of terrain at one time. The widely accepted density criteria for ski areas in western North America are listed in the first section.
- The number of acres of terrain designated to each ability level is multiplied by the standard design density for each ability level (Skier/Rider Capacity [guests]).
- This total for each ability level is expressed as a percentage of the total number of skiers (Skier/Rider Distribution [%]).
- This percentage – or skier distribution – is then compared with the market demand for each ability level (Skier/Rider Market [%]).

The available ski terrain should be capable of accommodating the full range of ability levels consistent with market demand. As shown in the table and chart above, the proposed upgrades under Alternative 5 will not improve the overall terrain distribution. Under the existing conditions, Timberline has a significant surplus of Low Intermediate terrain, and this alternative will increase that imbalance by providing 31 acres of new Low Intermediate terrain. There will be increases in Intermediate and Advanced Intermediate terrain, but since those increases are relatively small, they do not show up in the overall distribution. A primary goal of the new lift and associated runs is to provide Intermediate and Advanced Intermediate terrain to skiers when the upper mountain is

closed due to inclement weather. This alternative will meet that goal, but not as effectively as other alternatives since it has a smaller amount of that type of proposed terrain.

**CHART 8**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 5**



The above table and chart compare Timberline’s ‘acreage distribution’ by ability level with the market demand (as expressed in acres) for each ability level. This is determined as follows:

- The market demand (in acres) is determined by dividing the market demand (percentage) of each ability level by the standard design density (per acre) for each ability level. This number for each ability level is expressed as a percentage of the total.
- The skier/rider distribution (in acres) is determined by dividing the number of acres of terrain in each ability level with the total number of acres.

Consistent with the previous analysis comparing skier distribution by ability levels, the acreage distribution by ability levels comparison also shows that the proposed upgrades will not improve the overall distribution of ski terrain.

### **Comfortable Carrying Capacity**

As stated before, comfortable carrying capacity (CCC) is the optimum number of guests accommodated by a mountain resort, at any one time, which affords a high-quality recreational experience and helps ensure sound stewardship of the land. The calculation of Timberline’s Upgrading Plan CCC is described in Table 22. As illustrated, the proposed upgrading program

increases the CCC of the lift and trail network at Timberline to about 3,990 guests per day (an increase of 29 percent). However, the proposed lift in this alternative would have to be installed at a lower capacity than other the other alternatives, since it is significantly longer. This could lead to longer wait times on peak days.

**TABLE 22**

**CLASSIFICATION OF COMFORTABLE CARRYING CAPACITY – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref.	Lift Name / Lift Type	Slope Length (ft)	Vert. Rise (ft)	Hourly Cap. (PPH)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Load Eff. (%)	Adj. Hourly Cap (PPH).	VTF/Day (000)	Vertical Demand (ft)	CCC (skiers)
A	Bruno, C-2	368	45	630	7.00	0	15	536	169	1,500	110
B	Molly's Express, DC-4	5,244	845	1,200	7.00	0	10	1,080	6,388	15,934	400
C	Pucci, C-3	3,398	570	1,330	7.00	5	10	1,131	4,511	7,695	590
D	Stomin' Norman, DC-4	4,396	785	1,500	7.00	0	10	1,350	7,418	10,903	680
E	Magic Mile Express, DC-4	5,359	1,075	1,600	7.00	10	5	1,360	10,234	16,067	640
F	Palmer Express, DC-4	5,468	1,530	1,800	6.50	0	5	1,710	17,006	25,285	670
G	Timberline Express	7,620	1,285	1,600	7.00	0	10	1,440	12,953	14,447	900
Total:		31,852		9,660				8,606	58,679		3,990

**Density Analysis**

Ski trail density specifications under Alternative 5 are set forth in Table 23.

**TABLE 23**

**SKI TRAIL DENSITY ANALYSIS – PROPOSED UPGRADING – ALTERNATIVE 5**

Map Ref.	Daily Lift Capacity	Guest Dispersement				Density Analysis				
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Trails (guests)	Trail Area (acres)	Actual Trail Density (guests/ac.)	Acceptable Trl. Density (guests/ac.)	Diff. (+/-)	Density Index (%)
A	110	28	35	11	36	1.4	25	30	-5	83%
B	400	100	11	94	195	30.5	6	10	-4	60%
C	590	148	68	142	232	26.9	9	14	-5	64%
D	680	170	162	99	249	45.8	5	14	-9	36%
E	640	160	0	128	352	152.1	2	13	-11	15%
F	670	168	86	156	260	199.4	1	7	-6	14%
G	900	225	55	183	437	70.7	6	11	-5	53%
Total:	3,990	999	417	813	1,761	526.8	5	12	-7	44%

The calculation of capacity for a ski area is based in part on the acceptable number of skiers that can be accommodated on each acre of ski terrain at any one given time. See table in the first section for these numbers.

These criteria assume that on an average day, approximately 33 percent of the total number of skiers in the area will be on the trails at any one time. The remainder of the skiers are either in lift lines, riding the lifts, or utilizing skier support services. The densities listed above have been used in the analysis of Timberline's trail densities.

The density index is a percentage comparison of the actual trail density with the acceptable trail density. A 100% index represents a balance between the actual and acceptable trail density. An index under 100% indicates that the actual trail density is lower than the acceptable trail density. An index above 100% indicates that the actual trail density is higher than the acceptable trail density. Table 23 indicates that under the proposed upgrading plan, all of Timberline's trails will remain in the desirable situation of being well below acceptable trail densities.

### **Parking**

Timberline does not propose to provide any additional parking at this time. There is no reason to expect that the current situation of non-skiers using 20-30% of the available parking spaces would change in any appreciable way. Therefore, there will continue to be approximately 700 parking spaces available for skier use.

### **Resort Balance and Limiting Factors**

If the proposed lift and terrain were to be constructed, the overall capacity and balance of the ski resort would stay essentially the same as it is now. This is because the limiting factor of available parking would not change, and would effectively keep the capacity of the resort at the existing 2,200 people. However, there should be two effects of the proposed upgrades. First, the terrain densities on the lower mountain would be acceptable on the days when the upper mountain is closed. Under the proposed configuration, skier densities will decrease from the existing 17 skiers per acre to 12 skiers per acre. This is below the desired trail density for Timberline when the upper mountain is closed, creating a desirable situation. However, the reasons for this situation are both that there would be more new terrain added in this alternative than any other, and also that the proposed lift would be installed at a lower capacity, so fewer skiers can be transported on an hourly basis. This lower lift capacity could also lead to longer lift lines on peak days as compared to Alternatives 2 and 3. Secondly, however, the effect of the new lift and terrain on utilization of the resort is uncertain. The addition of this terrain would increase total acreage and would change the feel of the lower mountain, since the new terrain encompasses a wide range of ability levels and would provide a more varied ski experience. However, there is the situation near the bottom of the proposed terrain where skiers on five of the proposed trails would have to travel across a 600 foot section of trail with virtually no downhill grade. Since this section could not be skied and would require hiking, it is considered unacceptable by modern ski design standards. This situation would make this alternative undesirable and so it is uncertain if this alternative would lead to better utilization.

## PROPOSED UPGRADING PLAN – ALTERNATIVE 8

### Lifts

Under Alternative 8, Timberline is proposing to add an additional lift to their existing lift system. The lift would be on the lower part of the mountain and would primarily service new terrain. As stated above, the intent of the lift would be to improve the skiing product available on the lower mountain, which is especially important on the frequent days when the upper mountain is closed due to inclement weather.

Specifications for Timberline’s lifts under Alternative 8 are set forth in Table 24.

**TABLE 24**  
**LIFT SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 8**

Map Ref.	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Plan. Length (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (persons/hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Bruno, C-2	5,885	5,840	45	365	368	12%	630	300	57	Poma, 1987
B	Molly's Express, DC-4	5,835	4,990	845	5,175	5,244	16%	1200	1000	200	Doppelmayr, 2000
C	Pucci, C-3	5,920	5,350	570	3,350	3,398	17%	1330	450	61	Poma, 1987
D	Stomin' Norman, DC-4	6,245	5,460	785	4,325	4,396	18%	1500	1000	160	Doppelmayr, 2000
E	Magic Mile Express, DC-4	6,990	5,915	1,075	5,250	5,359	20%	1600	950	143	Poma, 1992
F	Palmer Express, DC-4	8,470	6,940	1,530	5,250	5,468	29%	1800	1000	133	Doppelmayr, 1996
G	Timberline Express	6,060	4,985	1,075	6,445	6,550	17%	1800	1000	133	<i>Proposed Lift</i>

- **Top Elevation** – This is the elevation at the top terminal of the lift.
- **Bottom Elevation** – This is the elevation of the bottom terminal of the lift.
- **Vertical Rise** – This is the difference in elevation between the top and bottom terminals.
- **Horizontal Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the mapping (i.e., a two-dimensional measurement).
- **Slope Length** – This is the length of the lift, from the top terminal to bottom terminal, as measured on the ground (i.e., a three-dimensional measurement).
- **Average Grade** – This is the average slope gradient (in percent) of the terrain under the length of the lift, from the top terminal to bottom terminal.

- **Hourly Capacity** – This is the number of guests trips (one ride for one guest = one guest trip) per hour that a lift can accommodate.
- **Rope Speed** – This is the speed that a lift can transport guests, as expressed in number of feet per minute.
- **Carrier Spacing** – This is the distance in feet between each guest carrier (chair, gondola cabin).

### Terrain

Timberline proposes to add approximately 57 acres of terrain on eleven new trails, all of which would be accessed from the new lift. Specifications for trails Under Alternative 8 are set forth in Table 25. The new trails in this alternative would be mostly in the fall line and would not require many traverses for circulation. The trails are have consistent width and descend straight down the fall-line, so the terrain would not be varied. As discussed below in the distribution section, the runs are on gentler terrain than the other alternatives and so would be classified mostly as Low Intermediate runs. Run D4 will pose some significant construction problems; it will require two bridges and some grading.

**TABLE 25**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 8**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg, Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	Outer West	8,483	6,964	1,519	5,449	5,665	379	49.3	28%	37%	Advanced Intermediate
2	Palmer	8,482	6,947	1,535	5,328	5,555	651	83.0	29%	35%	Advanced Intermediate
3	Bean's Run	8,460	7,003	1,458	5,553	5,779	506	67.1	26%	40%	Advanced Intermediate
4	Coffel's Run	6,988	6,191	797	3,542	3,637	322	26.9	22%	30%	Low Intermediate
5	West Mile	6,987	6,116	870	4,121	4,222	406	39.3	21%	33%	Low Intermediate
6	East Mile	6,986	5,922	1,064	5,268	5,391	380	47.0	20%	34%	Low Intermediate
7	Otto Loop	6,935	5,922	1,013	5,876	6,001	265	36.6	17%	35%	Intermediate
8	Paint Brush Terrain Run	6,240	5,546	694	3,953	4,022	114	10.5	18%	28%	Advanced Intermediate
9	Stormin' Norman	6,242	5,561	681	3,698	3,767	113	9.8	18%	26%	Low Intermediate
10	Conway's Corner	6,245	5,661	584	3,276	3,333	110	8.4	18%	25%	Novice
11	Blossom Return	6,240	5,926	314	2,360	2,394	83	4.6	13%	25%	Novice
12	Glade	5,927	5,460	466	3,026	3,071	125	8.8	15%	28%	Novice
13	Thunder Upper	5,923	5,667	256	1,505	1,529	81	2.8	17%	24%	Novice
14	Lift Line Pucci Upper	5,917	5,686	230	1,254	1,277	56	1.6	18%	24%	Novice
15	Main Run Pucci Upper	5,923	5,696	227	1,358	1,379	74	2.3	17%	25%	Novice

**TABLE 25**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 8**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
16	Bruno	5,884	5,,843	41	351	356	174	1.4	12%	12%	Beginner
17	Nona's Bologna	5,685	5,633	52	372	376	94	0.8	14%	16%	Novice
18	Alpine	5,769	5,511	258	1,979	2,005	57	2.6	13%	31%	Low Intermediate
19	Access to Stormin' Norman	5,533	5,462	70	556	562	78	1.0	13%	18%	Novice
20	West Leg Road	5,688	5,360	328	4,814	4,835	30	3.3	7%	14%	Novice
21	Walt's Baby	5,625	5,350	275	2,071	2,093	80	3.8	13%	21%	Novice
22	Bob Elmer	5,639	5,493	147	670	695	78	1.2	22%	37%	Advanced Intermediate
23	Wingle's Wiggle	5,592	5,442	151	837	864	57	1.1	18%	45%	Advanced Intermediate
24	Hydro's	5,434	5,365	69	408	416	64	0.6	17%	25%	Low Intermediate
25	Thunder Lower	5,666	5,350	316	2,014	2,048	112	5.3	16%	41%	Intermediate
26	Lift Line Pucci Lower	5,675	5,512	163	826	846	58	1.1	20%	25%	Low Intermediate
27	Main Run Pucci Lower	5,686	5,537	149	789	805	99	1.8	19%	25%	Low Intermediate
28	Slalom	5,671	5,437	234	773	813	118	2.2	30%	43%	Advanced Intermediate
29	Wy'east	5,565	5,383	182	738	774	94	1.7	25%	46%	Advanced Intermediate
30	West Run	5,539	5,322	217	1,132	1,165	92	2.5	19%	51%	Advanced Intermediate
31	Vicky's Run	5,818	5,001	817	5,125	5,232	114	13.7	16%	52%	Intermediate
32	Molly's Run	5,631	5,277	354	1,866	1,925	93	4.1	19%	55%	Advanced Intermediate
33	Back Way	5,350	4,997	353	3,419	3,449	96	7.6	10%	31%	Low Intermediate
34	West Pitch	5,197	5,000	197	538	581	97	1.3	37%	58%	Expert
35	Cut Off	5,131	5,026	105	329	346	93	0.7	32%	40%	Advanced Intermediate
D1	Proposed Run	5341	5059	281	2080	2108	46	2.2	14%	32%	Low Intermediate
D2	Proposed Run	5414	5150	264	1471	1499	114	3.9	18%	28%	Low Intermediate
D2A	Proposed Run	5390	4989	401	2231	2272	123	6.4	18%	26%	Low Intermediate
D3	Proposed Run	5533	5077	456	2512	2558	122	7.1	18%	29%	Low Intermediate
D3A	Proposed Run	5395	5298	97	553	562	116	1.5	17%	21%	Low Intermediate
D4	Proposed Run	5676	4990	686	4904	4967	108	12.3	14%	33%	Low Intermediate
D4A	Proposed Run	5587	5543	44	315	324	152	1.1	14%	24%	Low Intermediate
D4B	Proposed Run	5453	5422	31	561	565	86	1.1	6%	15%	Low

**TABLE 25**  
**TERRAIN SPECIFICATIONS – PROPOSED UPGRADING – ALTERNATIVE 8**

Map Ref	Trail / Area Name	Top Elev. (ft.)	Bottom Elev. (ft)	Vert Drop (ft)	Plan Length (ft)	Slope Length (ft)	Avg, Width (ft)	Slope Area (ac)	Avg. Grade (%)	Max. Grade (%)	Ability Level
											Intermediate
Connector	Proposed Run	6018	5833	185	1076	1093	103	2.6	17%	23%	Low Intermediate
Lift Line	Proposed Run	6076	4988	1088	6493	6599	96	14.6	17%	39%	Intermediate
West Leg	Proposed Run	5384	5050	333	5209	5225	32	3.8	6%	13%	Novice
Total						114,981		512.9			

- **Top Elevation** – This is the elevation at the beginning (top) of the trail.
- **Bottom Elevation** – This is the elevation at the end (bottom) of the trail.
- **Vertical Drop** – This is the difference in elevation between the beginning and end of the trail.
- **Horizontal Length** – This is the length of the trail centerline, from beginning of the trail to the end, as measured on the mapping (i.e., a two-dimensional measurement). A trail centerline is an imaginary line drawn down the middle of a trail.
- **Slope Length** – This is the three-dimensional length of the trail centerline, from beginning of the trail to the end, as measured on the ground or by use of three-dimensional mapping technology (i.e., AutoCADD or GIS).
- **Average Width** – This is the average width of the entire trail, from top to bottom. This may be determined by field measurements, or by calculation utilizing the given trail acreage and slope length (i.e., acreage x 43,560ft/slope length).
- **Area** – This is the total number of acres of terrain occurring within a trail boundary. This may be determined by GIS measurement, or by calculation utilizing the slope length and average width.
- **Average Grade** – This is the average slope gradient (in percent) of the trail’s centerline, from the beginning of the trail to the end.
- **Maximum Grade** – This is the maximum gradient (in percent) occurring anywhere on the trail.
- **Skier Rider Ability Level** – The following gradients were used to determine the skier ability level of the mountain terrain:

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

Source: SE GROUP

Exceptions to these standards occur when access to a trail is limited to a higher ability level trail. For example, if a novice trail can only be accessed by a low intermediate trail, than it will be designated as a low intermediate trail rather than novice.

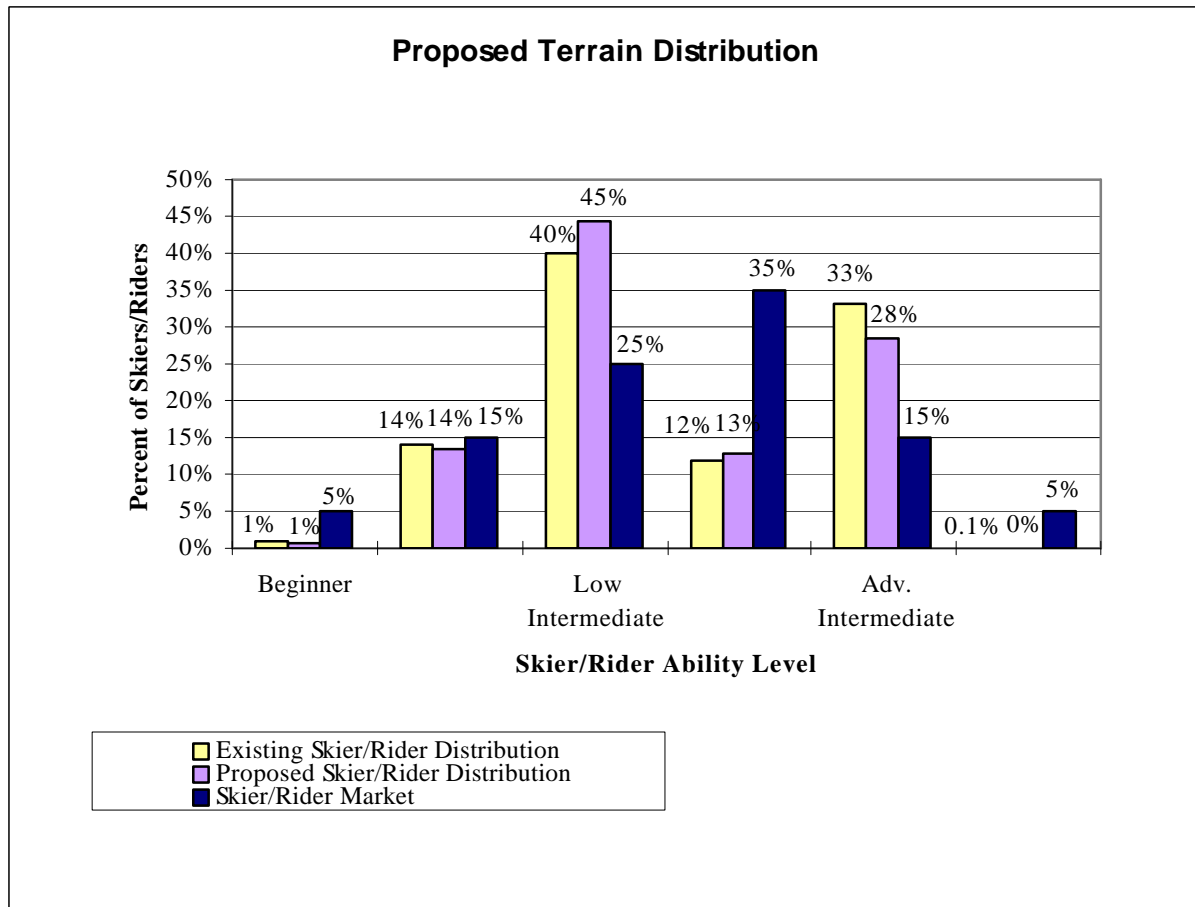
### Skier Distribution

Skier distribution specifications Under Alternative 8 are set forth in Table 26 and Charts 9 and 10.

**TABLE 26**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 8**

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	42.6	1%	5%
Novice	41.4	745.9	14%	15%
Low Intermediate	175.1	2451.9	45%	25%
Intermediate	70.1	700.8	13%	35%
Adv. Intermediate	223.5	1564.4	28%	15%
Expert	1.3	3.9	0%	5%
Total:	512.9	5,509	100%	100%

**CHART 9**  
**SKIER DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 8**



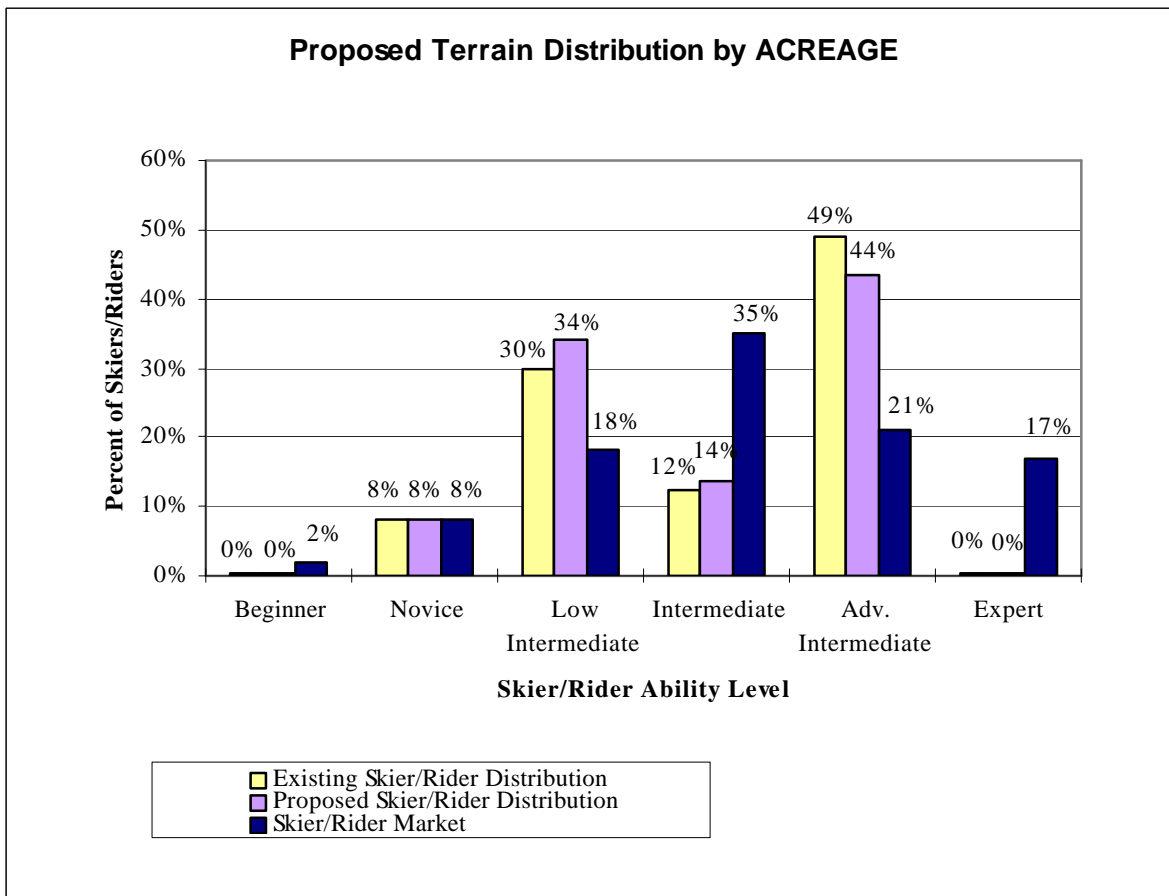
The above table and chart compare Timberline’s ‘skier distribution’ with the market demand for each ability level. Skier distribution is determined as follows:

- Each trail is designated by ability level, as listed in Table 9. Each ability level has a standard design density for the ideal number of skiers occupying each acre of terrain at one time. The widely accepted density criteria for ski areas in western North America are listed in the first section.
- The number of acres of terrain designated to each ability level is multiplied by the standard design density for each ability level (Skier/Rider Capacity [guests]).
- This total for each ability level is expressed as a percentage of the total number of skiers (Skier/Rider Distribution [%]).
- This percentage – or skier distribution – is then compared with the market demand for each ability level (Skier/Rider Market [%]).

The available ski terrain should be capable of accommodating the full range of ability levels consistent with market demand. As shown in the table and chart above, the proposed upgrades under Alternative 8 will not improve the overall terrain distribution. Under the existing conditions, Timberline has a significant surplus of Low Intermediate terrain, and this alternative will increase

that imbalance by providing nine new Low Intermediate runs. Only one of the new runs will be Intermediate, which is the type of terrain that is most needed at Timberline. A primary goal of the new lift and associated runs is to provide Intermediate and Advanced Intermediate terrain to skiers when the upper mountain is closed due to inclement weather. This alternative will not meet that goal, since the terrain provided in this alternative is almost exclusively Low Intermediate.

**CHART 10**  
**ACREAGE DISTRIBUTION BY ABILITY LEVELS – PROPOSED UPGRADING – ALTERNATIVE 8**



The above table and chart compare the Timberline’s ‘acreage distribution’ by ability level with the market demand (as expressed in acres) for each ability level. This is determined as follows:

- The market demand (in acres) is determined by dividing the market demand (percentage) of each ability level by the standard design density (per acre) for each ability level. This number for each ability level is expressed as a percentage of the total.
- The skier/rider distribution (in acres) is determined by dividing the number of acres of terrain in each ability level with the total number of acres.

Consistent with the previous analysis comparing skier distribution by ability levels, the acreage distribution by ability levels comparison also indicates that the proposed upgrades will not improve the overall distribution, but rather will contribute to the existing terrain imbalances.

## Comfortable Carrying Capacity

As stated before, comfortable carrying capacity (CCC) is the optimum number of guests accommodated by a mountain resort, at any one time, which affords a high-quality recreational experience and helps ensure sound stewardship of the land. The calculation of Timberline's Upgrading Plan CCC Alternative 8 is described in Table 27. As illustrated, the proposed upgrading program increases the CCC of the lift and trail network at Timberline to about 3,990 guests per day (an increase of 29 percent).

**TABLE 27**

### CLASSIFICATION OF COMFORTABLE CARRYING CAPACITY – PROPOSED UPGRADING – ALTERNATIVE 5

Map Ref.	Lift Name / Lift Type	Slope Length (ft)	Vert. Rise (ft)	Hourly Cap. (PPH)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Load Eff. (%)	Adj. Hourly Cap (PPH)	VTF/Day (000)	Vertical Demand (ft)	CCC (skiers)
A	Bruno, C-2	368	45	630	7.00	0	15	536	169	1,500	110
B	Molly's Express, DC-4	5,244	845	1,200	7.00	0	10	1,080	6,388	15,934	400
C	Pucci, C-3	3,398	570	1,330	7.00	5	10	1,131	4,511	7,695	590
D	Stomin' Norman, DC-4	4,396	785	1,500	7.00	0	10	1,350	7,418	10,903	680
E	Magic Mile Express, DC-4	5,359	1,075	1,600	7.00	10	5	1,360	10,234	16,067	640
F	Palmer Express, DC-4	5,468	1,530	1,800	6.50	0	5	1,710	17,006	25,285	670
G	Timberline Express	6,550	1,075	1,800	7.00	0	10	1,620	12,191	13,573	900
Total:		30,782		9,860				8,786	57,917		3,990

## Density Analysis

Density specifications under Alternative 8 are set forth in Table 28.

**TABLE 28**

### SKI TRAIL DENSITY ANALYSIS – PROPOSED UPGRADING – ALTERNATIVE 8

Map Ref.	Daily Lift Capacity	Guest Dispersement				Density Analysis				
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Trails (guests)	Trail Area (acres)	Actual Trail Density (guests/ac.)	Acceptable Trl. Density (guests/ac.)	Diff. (+/-)	Density Index (%)
A	110	28	35	11	36	1.4	25	30	-5	83%
B	400	100	11	94	195	30.5	6	10	-4	60%
C	590	148	68	142	232	26.9	9	14	-5	64%
D	680	170	162	99	249	45.8	5	14	-9	36%
E	640	160	0	128	352	152.1	2	13	-11	15%
F	670	168	86	156	260	199.4	1	7	-6	14%
G	900	225	76	177	422	55.4	8	13	-5	60%
Total:	3,990	999	438	807	1,746	512.9	6	13	-7	46%

The calculation of capacity for a ski area is based in part on the acceptable number of skiers that can be accommodated on each acre of ski terrain at any one given time. See table in the first section for these numbers.

These criteria assume that on an average day, approximately 33 percent of the total number of skiers in the area will be on the trails at any one time. The remainder of the skiers are either in lift lines, riding the lifts, or utilizing skier support services. The densities listed above have been used in the analysis of Timberline's trail densities.

The density index is a percentage comparison of the actual trail density with the acceptable trail density. A 100% index represents a balance between the actual and acceptable trail density. An index under 100% indicates that the actual trail density is lower than the acceptable trail density. An index above 100% indicates that the actual trail density is higher than the acceptable trail density. Table 13 indicates that under the proposed upgrading plan, all of Timberline's trails will remain in the desirable situation of being well below acceptable trail densities.

### **Parking**

Timberline does not propose to provide any additional parking at this time. There is no reason to expect that the current situation of non-skiers using 20-30% of the available parking spaces would change in any appreciable way. Therefore, there will continue to be approximately 700 parking spaces available for skier use.

### **Resort Balance and Limiting Factors**

If the proposed lift and terrain were to be constructed, the overall capacity and balance of the ski resort would stay essentially the same as it is now. This is because the limiting factor of available parking would not change, and would effectively keep the capacity of the resort at the existing 2,200 people. However, there should be two effects of the proposed upgrades. First, the terrain densities on the lower mountain would be much better on the days when the upper mountain is closed. Under the proposed configuration, skier densities will decrease from the existing 17 skiers per acre to 14 skiers per acre. This is 10% over the desired trail density for Timberline when the upper mountain is closed. This will allow for a more desirable ski experience, although those densities would be higher in this alternative than in other alternative, as a result of the smaller amount of new terrain. Secondly, however, the effect of the new lift and terrain on utilization of the resort is uncertain. The addition of this terrain would increase total acreage, but would not change the feel of the lower mountain, since almost all of the new terrain would be Low Intermediate terrain, of which Timberline already has a surplus. Since this would not provide a more varied skiing experience, it is uncertain if this alternative would lead to better utilization.