



COPPER MOUNTAIN RESORT 2011 MASTER DEVELOPMENT PLAN

Prepared by:





Table of Contents

1. Introduction	1-1
1.1 Location	1-2
1.2 Resort Summary	1-2
1.3 Background and Development History	1-3
1.4 Abstract of the Master Development Plan.....	1-4
<i>Lift Replacements</i>	1-5
<i>Lift Additions</i>	1-5
<i>Terrain Improvements</i>	1-6
<i>Guest Services</i>	1-6
<i>Snowmaking</i>	1-7
<i>Operations</i>	1-7
1.5 Goals and Objectives of this Master Development Plan.....	1-7
1.6 Development Philosophy and Market Position.....	1-8
2. Design Criteria for Resort Planning	2-1
2.1 Regional/Destination Resorts.....	2-2
<i>Regional Destination Resorts</i>	2-2
<i>National and International Destination Resorts</i>	2-3
2.2 Base Area Design.....	2-4
2.3 Mountain Design	2-4
<i>Trail Design</i>	2-4
<i>Lift Design</i>	2-7
<i>On-Mountain Guest Services</i>	2-7
<i>Capacity Analysis and Design</i>	2-8
2.4 Balance of Facilities	2-8
2.5 Management of National Forest System Lands.....	2-9
<i>Pertinent Forest Plan Direction</i>	2-9
<i>Recreation Opportunity Spectrum</i>	2-11
<i>Scenery Management and the Built Environment Image Guide</i>	2-12
<i>Accessibility to Public Lands</i>	2-14
3. Site Inventory	3-1
3.1 Topography	3-1
3.2 Slope Gradients at Copper Mountain Resort.....	3-1
3.3 Solar Aspect at Copper Mountain Resort.....	3-3



4. Existing Facilities	4-1
4.1 Summary of the Existing Guest Experience	4-1
4.2 Existing Lift Network.....	4-2
<i>Lift Discussion and Overview</i>	4-5
4.3 Existing Terrain Network.....	4-9
<i>Terrain Variety</i>	4-9
<i>Developed Alpine Trails</i>	4-9
<i>Existing Terrain Distribution by Ability Level</i>	4-18
<i>Alternate Terrain</i>	4-19
4.4 Existing Capacity Analysis	4-23
<i>Comfortable Carrying Capacity</i>	4-23
<i>Density Analysis</i>	4-25
<i>Lift and Terrain Network Efficiency</i>	4-27
4.5 Existing Guest Services Facilities, Food Service Seating & Space Use Analysis	4-28
<i>Skier Services Locations</i>	4-28
<i>Space Use Analysis</i>	4-30
<i>Food Service Seating</i>	4-38
4.6 Existing Parking and Resort Access	4-40
4.7 Existing Alternate and Non-Winter Activities	4-42
<i>Winter</i>	4-42
<i>Summer</i>	4-42
4.8 Existing On-Mountain Operations	4-43
<i>Ski Patrol/First Aid</i>	4-43
<i>Snowmaking Coverage</i>	4-43
<i>Grooming Operations</i>	4-44
<i>Maintenance Facility</i>	4-44
4.9 Existing Utilities and Infrastructure	4-44
<i>Water</i>	4-44
<i>Sewer</i>	4-45
<i>Power</i>	4-45
<i>Natural Gas</i>	4-45
<i>Fuel Storage</i>	4-45
<i>Road Network</i>	4-45
4.10 Resort Capacity Balance and Limiting Factors	4-46
4.11 Vegetation Management Plan	4-46
5. Prior Project Approvals	5-1
6. Upgrade Plan	6-1
6.1 Summary of the Upgrade Plan	6-1

6.2	Upgraded Lift Network.....	6-2
	<i>Planned Lift Replacements/Modifications</i>	<i>6-5</i>
	<i>Planned Lift Additions</i>	<i>6-8</i>
6.3	Upgraded Developed Terrain Network	6-9
	<i>Terrain Variety.....</i>	<i>6-9</i>
	<i>Developed Alpine Trails.....</i>	<i>6-10</i>
	<i>Terrain Distribution by Ability Level</i>	<i>6-20</i>
	<i>Alternate Terrain</i>	<i>6-21</i>
6.4	Upgraded Capacity Analysis	6-24
	<i>Comfortable Carrying Capacity.....</i>	<i>6-24</i>
	<i>Density Analysis</i>	<i>6-28</i>
	<i>Lift and Terrain Network Efficiency Analysis</i>	<i>6-32</i>
6.5	Upgraded Skier Services Facilities and Food Service Seating	6-33
	<i>Skier Services Locations.....</i>	<i>6-33</i>
	<i>Space Use Analysis</i>	<i>6-35</i>
	<i>Food Service Seating.....</i>	<i>6-42</i>
6.6	Upgraded Parking and Resort Access	6-44
	<i>Parking.....</i>	<i>6-44</i>
6.7	Upgraded Alternate and Non-Winter Activities	6-46
	<i>Winter</i>	<i>6-46</i>
	<i>Summer</i>	<i>6-46</i>
6.8	Upgraded On-Mountain Operations	6-46
	<i>Ski Patrol/First Aid</i>	<i>6-46</i>
	<i>Snowmaking Coverage</i>	<i>6-46</i>
	<i>Grooming Operations.....</i>	<i>6-47</i>
	<i>Maintenance Facilities.....</i>	<i>6-48</i>
6.9	Upgraded Utilities and Infrastructure	6-48
	<i>Water</i>	<i>6-48</i>
	<i>Sewer.....</i>	<i>6-48</i>
	<i>Power.....</i>	<i>6-48</i>
	<i>Fuel Storage.....</i>	<i>6-48</i>
	<i>Road Network.....</i>	<i>6-49</i>
	<i>Mountain Communications</i>	<i>6-49</i>
6.10	Upgraded Resort Capacity Balance and Limiting Factors	6-49
6.11	Future Lift-Served terrain.....	6-50
7.	Summer Activities and Operations Plan	7-1
7.1	Existing Summer Activities	7-1
	<i>Existing Mountain Biking.....</i>	<i>7-1</i>
7.2	Upgraded Summer activities.....	7-1
	<i>Summer “Activity Zones”.....</i>	<i>7-1</i>



List of Tables

TABLE 2-1: TERRAIN GRADIENTS.....	2-5
TABLE 2-2: SKIER ABILITY MARKET BREAKDOWN	2-5
TABLE 2-3: SKIER DENSITY PER ACRE	2-6
TABLE 4-1: LIFT SPECIFICATIONS – EXISTING CONDITIONS.....	4-4
TABLE 4-2: TERRAIN SPECIFICATIONS – EXISTING CONDITIONS.....	4-13
TABLE 4-3: TERRAIN DISTRIBUTION BY ABILITY LEVEL – EXISTING CONDITIONS	4-18
TABLE 4-4: HIKE-TO TERRAIN SPECIFICATIONS – EXISTING CONDITIONS	4-20
TABLE 4-5: GLADES SPECIFICATIONS – EXISTING CONDITIONS	4-22
TABLE 4-6: COMFORTABLE CARRYING CAPACITY – EXISTING CONDITIONS.....	4-24
TABLE 4-7: DENSITY ANALYSIS – EXISTING CONDITIONS	4-26
TABLE 4-8: INDUSTRY AVERAGE SPACE USE RESORT TOTAL – EXISTING CONDITIONS	4-31
TABLE 4-9: INDUSTRY AVERAGE SPACE USE EAST VILLAGE – EXISTING CONDITIONS	4-33
TABLE 4-10: INDUSTRY AVERAGE SPACE USE CENTER VILLAGE – EXISTING CONDITIONS.....	4-34
TABLE 4-11: INDUSTRY AVERAGE SPACE USE UNION CREEK – EXISTING CONDITIONS	4-35
TABLE 4-12: INDUSTRY AVERAGE SPACE USE SOLITUDE STATION – EXISTING CONDITIONS	4-36
TABLE 4-13: INDUSTRY AVERAGE SPACE USE FLYERS – EXISTING CONDITIONS	4-37
TABLE 4-14: INDUSTRY AVERAGE SPACE USE T REX – EXISTING CONDITIONS	4-38
TABLE 4-15: RECOMMENDED RESTAURANT SEATING*	4-39
TABLE 4-16: PARKING/BUS/LODGING CAPACITY – EXISTING CONDITIONS	4-41
TABLE 6-1: LIFT SPECIFICATIONS – UPGRADE PLAN.....	6-3
TABLE 6-2: TERRAIN SPECIFICATIONS – UPGRADE PLAN.....	6-14
TABLE 6-3: TERRAIN DISTRIBUTION BY ABILITY LEVEL – UPGRADE PLAN	6-20
TABLE 6-4: HIKE-TO SPECIFICATIONS – PROPOSED UPGRADES	6-22
TABLE 6-5: GLADES SPECIFICATIONS – PROPOSED UPGRADES	6-24
TABLE 6-6: COMFORTABLE CARRYING CAPACITY – UPGRADING PLAN.....	6-26
TABLE 6-7: DENSITY ANALYSIS – UPGRADING PLAN	6-29
TABLE 6-8: INDUSTRY AVERAGE SPACE USE RESORT TOTAL – UPGRADE PLAN	6-35
TABLE 6-9: INDUSTRY AVERAGE SPACE USE EAST VILLAGE – UPGRADE PLAN.....	6-37
TABLE 6-10: INDUSTRY AVERAGE SPACE USE CENTER VILLAGE – UPGRADE PLAN.....	6-38
TABLE 6-11: INDUSTRY AVERAGE SPACE USE UNION CREEK – UPGRADE PLAN	6-39
TABLE 6-12: INDUSTRY AVERAGE SPACE USE SOLITUDE STATION – UPGRADE PLAN	6-40
TABLE 6-13: INDUSTRY AVERAGE SPACE USE FLYERS – UPGRADE PLAN.....	6-41
TABLE 6-14: RECOMMENDED RESTAURANT SEATING* – UPGRADE PLAN	6-43
TABLE 6-15: PARKING/BUS/LODGING CAPACITY – UPGRADE PLAN	6-45
TABLE 6-16: SNOWMAKING COVERAGE SUMMARY	6-47

List of Charts

CHART 4-1: TERRAIN DISTRIBUTION BY ABILITY LEVEL – EXISTING CONDITIONS	4-19
CHART 4-2: TOTAL SPACE USE AND RECOMMENDATIONS – EXISTING CONDITIONS	4-32
CHART 4-3: RESORT BALANCE – EXISTING CONDITIONS	4-46
CHART 6-1: TERRAIN DISTRIBUTION BY ABILITY LEVEL – UPGRADE PLAN	6-21
CHART 6-2: TOTAL SPACE USE AND RECOMMENDATIONS – UPGRADE PLAN	6-36
CHART 6-3: RESORT BALANCE – UPGRADE PLAN.....	6-50

List of Figures

FIGURE 1: VICINITY MAP
FIGURE 2: EXISTING CONDITIONS
FIGURE 3: SLOPE GRADIENT ANALYSIS
FIGURE 4: SLOPE ASPECT ANALYSIS
FIGURE 5: UPGRADE PLAN
FIGURE 6: SNOWMAKING PLAN
FIGURE 7: INFRASTRUCTURE PLAN
FIGURE 8: SUMMER RECREATION



1. Introduction



1. INTRODUCTION

The purpose of this Master Development Plan is to provide future direction for the development and improvement of Copper Mountain Resort, ensuring both a balance of facilities and a wide variety of amenities affording an exceptional guest experience in a manner which is sustainable to the business, operations, and the surrounding environment. This Master Development Plan (MDP) provides a thorough assessment of existing operations, and facilities, at Copper Mountain Resort (CMR) and identifies a comprehensive plan for future improvements to the resort.

This MDP has been prepared in compliance with the terms and conditions of the Powder-Copper Mountain, LLC. Forest Service Term Special Use Permit (SUP), which was re-issued December 10, 2009 and extends through December 31, 2049. Copper Mountain Resort is located partially on private land and partially on public, National Forest System (NFS) lands. Although the ski area operates on both private and public lands, this MDP focuses primarily on winter recreation projects located on public lands, which are directly related to the operation of the Alpine ski area. However, a separate section has been reserved within this document for the future inclusion of Chapter 7 – Summer Activities and Operations Plan.

This MDP document replaces the “*Copper Mountain Resort Ski Area Master Plan*,” dated September 1988, which has served Copper Mountain well for 22 years. Contemporarily, CMR and the Forest Service completed the “*Copper Mountain Resort Final Environmental Impact Statement, Trails and Facilities Improvements*” in January 2006 (2006 FEIS). The 2006 FEIS, and accompanying Record of Decision (ROD), thoroughly assessed and approved an extensive suite of on-mountain projects. Additionally, the “*Copper Mountain Resort, Environmental Assessment, Tenmile Creek Facilities Improvements and Restoration Project*” was completed in September 2008, which approved additional parking and a stream restoration east of Colorado Highway 91. In June 2002, the Forest Service completed the “*Copper Mountain Resort, Environmental Assessment, Kokomo Lift and Teaching Terrain Improvements*” document. This authorized a series of upgrades and improvements in the Union Creek area of CMR. Finally, spanning the period 1998 to 2006, a series of two Decision Memos (Categorical Exclusions), and one Supplemental Information Report have been prepared and issued approving the upgrade and replacement of the existing Highpoint Lift.



All of the aforementioned approval documents are cited in greater detail within Chapter 5 of this MDP. These previously approved project elements have been included within this MDP and are specifically distinguished on Figure 5.

It is important to note that Forest Service “acceptance” of this MDP does not convey “approval” of any projects contained within the document that have not received prior approvals via the various entitlement processes summarized above, and detailed in Chapter 5. Implementation of any of the projects that have not received prior approvals is contingent upon site-specific environmental review and approval via the National Environmental Policy Act (NEPA). This MDP is consistent with the terms and conditions of CMR’s SUP, and the general direction of the White River National Forest Land and Resource Management Plan – 2002 Revision (2002 Forest Plan), discussed in greater detail below. This MDP is a dynamic document, which may be amended periodically to accommodate technological innovations and evolving guest expectations over a ten-year planning horizon.

1.1 LOCATION

Copper Mountain Resort is located partially on private land, and partially on the White River National Forest (WRNF), in Summit County, Colorado. The vast majority of the skiing facilities (i.e., the lifts and trails) are located on NFS lands. The ski area is located approximately 75 miles west of Denver, and 20 miles east of Vail, off Interstate 70. The closest town is Frisco, Colorado, which is approximately 7 miles northeast of the resort (refer to Figure 1). CMR is accessed via exit 195 off of Interstate 70, and is located immediately adjacent to the interstate. The existing ski area occupies approximately 2,465 acres of total skiable terrain. Elevations range from 9,710 feet elevation at the base of the ski slopes to 12,300 feet at the summit.

1.2 RESORT SUMMARY

Copper Mountain Resort currently operates a total of 22 lifts (one high speed six-pack, four high speed quad chairs, five triple fixed-grip chairs, five double fixed-grip chairs, two surface lifts, four conveyors, and a tubing lift). “Developed lift-served skiable terrain” includes 125 trails totaling approximately 1,375 acres. The remainder of CMR’s skiable terrain is comprised of un-developed bowls and gladed skiing which totals approximately 1,115 acres. Skier support facilities include the three separate base areas—the East Village, Center Village, and Union Creek—and three on-mountain food/guest service facilities. Guest parking is provided throughout the resort with the majority of the day skier parking located to the east of the East Village area. Presently, snowmaking infrastructure is sufficient to cover approximately

333 acres of the developed, groomed terrain, and ensures optimal snow conditions throughout the mountain. Summer activities include a championship golf course (designed by Dye Designs), scenic lift rides, mountain biking, hiking, a climbing wall, boat rentals and other attractions.

The surrounding area contains five other ski resorts in the vicinity of CMR, with primary competition coming from Breckenridge Ski Resort, Keystone Resort, Loveland Ski Area, Arapahoe Basin, and Vail Mountain—all of which cater to a mix of destination visitors and day-skiers. CMR has experienced a modest decrease in annual visitation since the 2005/06 winter season, with average annual visitation over the past ten seasons being approximately 985,000 skiers.

Copper Mountain Resort's market is composed both of destination skiers, as well as day visitors from within Summit County, and the Denver/Front Range metropolitan area. CMR is considered by many to be a "locals" mountain and receives more visitation from in-state skiers than out-of-state. Destination guests tend to be approximately 30% of total guests, lower than the 60% average for similar sized resorts in the Rocky Mountain Region.¹

1.3 BACKGROUND AND DEVELOPMENT HISTORY

During the early to mid-1800s, Colorado gold rush miners were initially attracted to Summit County's surrounding streams and rivers for their placer gold. These miners later staked claims in the area and utilized a variety of techniques in search of gold. At what is currently CMR, some low-grade copper ore, and a small quantity of silver, were found, but no significant gold deposits were discovered.

In the late 19th century, Judge John S. Wheeler bought 320 acres near the current site of the Alpine lift, founded a settlement, and promoted it as a retreat from the tough mining lives in the mountains. By 1880, Wheeler Junction had 225 residents, and was a popular crossroads due to its central location. A railroad station was built on the line from Denver to Leadville in 1882. However, by 1907 (after the gold rush), the town was deserted and only a few sheep farmers remained in the area. Old buildings and remnants of Wheeler Junction can still be found in the vicinity of the base of Alpine Lift.

The property changed hands several times between the 1920s and 1960s. However, in 1954, Paul Hauk, a US Forest Service Ranger, recommended the valley for ski area development, and identified the slopes of Copper Mountain as one the best

¹ Based on annual lodging and parking reports; Kottke National End of Season Surveys



potential areas for ski resort development in the country. Several developers looked at the site to build a ski area, but it was not until 1968 that a group emerged with the foresight, experience, and resources to develop a ski resort.

In 1968, Chuck Froelicher, and a group that included Chuck Lewis along with 16 other investors, formed Copper Mountain Associates, which purchased the 280 acres at the base of what would become Copper Mountain Resort. In January of 1969, Mr. Froelicher submitted a special use permit application to the US Forest Service (Forest Service) to study and develop plans to build a ski resort and base area village. In August of that year, the Forest Service approved the application, and a study permit was granted covering 2,500 acres on Copper Mountain. Planning the resort, as well as finding the capital necessary for development, took more than two years.

Mr. Lewis was already well-known in the business of Colorado skiing, but it is for the development of Copper Mountain Resort that he is best known. He was in charge of developing the resort, and was the driving force behind the vision and the majority of its construction. His development of CMR pioneered new methods of capital financing and environmental protection—creating a new model for ski resort development. Possessing a strong character, Lewis famously stated “I’m gonna build me a killer ski resort.” He remained the president of the CMR until 1982.

Construction began in 1971. The resort opened for skiing in 1972 with 26 miles of trails, five lifts, and two buildings. Over 120,000 lift tickets were sold the first season. The first lodging opened in 1973. World Cup races were hosted in 1976. Development continued throughout the 1970s and 1980s—with the first high-speed detachable lift being installed in 1986. In 1997, Intrawest Corporation purchased the resort, and started a multi-year, \$500 million redevelopment primarily focused on the Village at Copper. Two new detachable lifts were installed in 1998, Super Bee and Excelsior, the most recent significant lift projects. In 2006, Intrawest was acquired by Fortress Group, LLC who subsequently sold Copper Mountain Resort to Powder Corp in December 2009.

1.4 ABSTRACT OF THE MASTER DEVELOPMENT PLAN

- Chapter 2 describes the design criteria used for mountain planning purposes specific to CMR, as well as this document’s relationship to the 2002 White River National Forest Revised Land and Resource Management Plan.
- Chapter 3 describes the site inventory of the existing resort, including physical resources, opportunities and limitations, and environmental determinants.

- Chapter 4 addresses the existing conditions at CMR and evaluates the balance of resort operations, facilities, and infrastructure including components such as lifts, guest services, snowmaking, and parking capacities. This section provides the baseline conditions from which the planning strategies for future upgrades are based.
- Chapter 5 is included to provide a detailed summary of the numerous prior project approval documents and processes.
- Chapter 6 presents the Upgrade Plan, which consists of both Previously Approved/Unimplemented Projects, as well as newly proposed projects. All of which are within the existing SUP boundary.
- Chapter 7 provides a placeholder for a future amendment to this MDP, which will detail a Summer Activities and Operations Plan.

In brief summary, projects detailed in the Chapter 6 – Upgrade Plan, include:

Lift Replacements

- Upgrade the Alpine Lift to a detachable lift and extend the top terminal up-mountain.
- Extend the Excelerator lift base terminal slightly downhill.
- Upgrade the American Flyer to higher capacity six-passenger lift.
- Replace and realign the Highpoint lift with a detachable lift.
- Replace and realign the Kokomo lift with a detachable lift.
- Upgrade the Lumberjack lift to a detachable lift.
- Replace and realign the Storm King lift.
- Upgrade and re-align the Sierra lift.

Lift Additions

- Construct a West to East connector lift between American Flyer and American Eagle to access new terrain and improve circulation (N lift).
- Construct a surface lift to serve the Catalyst terrain park.
- Construct two new conveyors serving teaching terrain in vicinity of the top terminals of the Kokomo lift.



- Construct one new conveyor and relocate three existing conveyors (The Glide, Rugrat, and Slingshot) along teaching terrain adjacent to the bottom terminal of the Kokomo lift.
- Construct a surface lift in the vicinity of Sierra Lift to access Copper Bowl.
- Construct lift to access Tucker Mountain.

Terrain Improvements

- Create approximately 56 acres of new skiing terrain on the frontside (between Alpine and Lumberjack).
- Provide approximately 11 acres of new skiing terrain in the Resolution lift area.
- Approximately 260 acres of terrain, which is currently “hike-to access,” will become lift-served via realignment of the Sierra Lift, and installation of the Tucker lift.
- Develop approximately 12 acres of terrain associated with the planned teaching lift improvements.
- Create approximately 60 acres of additional gladed terrain across the ski area.
- Provide approximately 500 acres of terrain for Snowcat Tours within the bowl directly south of the ridgeline between Tucker Mountain and Jacques Peak.

Guest Services

- Develop a new on-mountain food/guest service facility in the vicinity of the existing Flyers restaurant.
- Upgrade or replace the existing Solitude Station Restaurant.
- Construct a warming hut with limited food and beverage service adjacent to the top of the Rendezvous lift.
- Construct picnic deck in Resolution area (on private land).
- Construct a ski school facility with limited food and beverage in conjunction with the planned conveyor lifts at the top of the Kokomo lift.
- Construct a new on-mountain guest warming hut/ski patrol station at the summit of Tucker Mountain in conjunction with the previously mentioned lift project.

- Install additional on-mountain restroom facilities as depicted on the Upgrade Plan.

Snowmaking

- Add approximately 120 acres of snowmaking trails and connector segments on the front side of the mountain.
- Develop micro-hydroelectric capabilities, which will interface with existing and planned snowmaking infrastructure.
- Construct an on-mountain snowmaking water storage reservoir.

Operations

- Construct a new ski patrol duty station at the summit of Tucker Mountain.
- Construct a new snow-vehicle maintenance and mountain operations facility near the top of the American Eagle lift.
- Develop minor connector roads to facilitate the installation of key projects.
- Install additional radio communication infrastructure in support of CMR's communications network.

1.5 GOALS AND OBJECTIVES OF THIS MASTER DEVELOPMENT PLAN

As a result of evolving expectations and demands in today's skier/rider market, resorts are increasingly focusing on raising service standards, improving the recreational experience, and addressing shortcomings in their terrain offerings and operations. CMR must strive to improve its offerings in order to remain viable in the competitive regional skier/rider market.

The purpose of this MDP is to provide direction for the future development of CMR to ensure a balance of facilities and variety of amenities in order to enhance the guest experience and improve operational efficiencies. Through an in-depth assessment of opportunities and constraints at the ski area, CMR will remain competitive in the local skier market, better retain existing guests, and attract new visitors. A number of general and specific objectives have been identified to guide the future direction of CMR. These include:

- Primary focus has been placed on improving the guest experience within the existing Special Use Permit Boundary.



- Provide facility and service upgrades in order to improve the overall quality of the Alpine skiing experience.
- Expand, replace, and improve guest support facilities and services to meet existing visitation levels, as well as plan for future increases in visitation.
- Enhance skiing opportunities for families, entry-level, and low skill level guests by reconfiguring Novice and teaching lifts and terrain.
- Expand Intermediate level skiing opportunities, as this is the majority of CMR's clientele.
- Provide improved circulation between CMR's three primary base portals.

The 2011 Master Development Plan is a conceptual planning document, essentially serving as a “road map” for future improvements at CMR. By identifying the type, size, capacity, and location of improvements that are appropriate to achieve the goals of the resort, this MDP establishes the direction and priorities for the physical improvement of mountain and base area facilities at CMR over the next decade. Thus, this MDP provides a comprehensive portrayal of how the resort will function across the public and private lands interface. It is expected that additional site-specific design will be warranted and completed at the time of individual project implementation on both NFS and private lands.

1.6 DEVELOPMENT PHILOSOPHY AND MARKET POSITION

Since its inception, CMR has always benefitted from its exceptional terrain variety and the naturally occurring separation of terrain areas by ability level. These are unique attributes that have allowed the resort to become known as “the skier’s mountain.” Over the years, CMR has made strategic infrastructural investments on the mountain to ensure the provision of efficient lift systems and enhancing the ability of guests to move about the mountain to the areas they enjoy most. Continuing the vision of its founders, the present development philosophy of the resort is well characterized as “improving the best skier’s mountain in the United States.” CMR continues to seek ways to deliver an exceptional guest experience, which will provide the visitor with “unexpected value.”

CMR operates in one of the most competitive markets in North America, guest expectations are high, and continually changing. Since achieving a record of 1.13 million skier visits during the 2005/06 season, CMR has experienced a softening of its market capture, recording 834,089 skier visits in the 2009/10 winter. The majority of the projects contained within this MDP have been strategically planned to position

CMR to grow market share, and continue to improve the on-mountain guest experience.

Guest survey data indicates that CMR excels in providing a challenging variety of terrain with efficient lifts and easy accessibility to the resort. Survey results also signify that CMR's on-mountain food service facilities/opportunities, family programs, and off-hill/après skiing activities can be improved. While this MDP is primarily concerned with the on-mountain aspects of development, the information is nonetheless beneficial in understanding the areas for CMR to improve upon.

This MDP document is the culmination of a comprehensive resort assessment and planning process, which carefully considered the strengths and opportunities that will shape the future of CMR. While the MDP does not propose any singularly extensive project, the suite of proposed, and approved, upgrades to the current operation will cumulatively allow CMR to respond to the needs of the guest and make significant improvements to operational efficiencies.



2. Design Criteria



2. DESIGN CRITERIA FOR RESORT PLANNING

Design criteria are an important concept in resort master planning. Chapter 2 provides an overview of the basic design criteria for which Chapter 4 (Existing Ski Area Facilities) and Chapter 6 (Upgrade Plan) are based. By design, information presented in Chapter 2 is general in nature, and related to the concept of resort master planning. Chapters 3, 4, 5, 6, and 7 present information that is specific to Copper Mountain Resort.

A variety of facility design criteria—each of which helps to create a quality ski experience—influence the upgrading and expansion of ski areas. At mountain resorts, guests expect to participate in recreation associated with mountains, enjoy dining and shopping opportunities, and enjoy a mix of other vacation experiences in a mountain setting. A destination resort must offer a multitude of services, amenities, and experiences to meet these expectations. Design parameters that guide the development of everything from the pedestrian-oriented, social environment, to the on-mountain experience, all contribute to the success of a destination resort.

Along with design guidelines, awareness of consumer preferences is crucial to the overall performance of a resort—for both recreational amenities and real estate product. Resort upgrades must be pursued to: (1) attract and retain target customers; (2) satisfy existing unmet needs; and (3) improve a resort’s overall market effectiveness and efficiency.

Copper Mountain Resort’s current and future niche in the ski industry is best defined by both regional and destination markets, serving a spectrum of diverse visitors. As discussed in Chapter 1, CMR serves a broad range of guests from Front Range day-skiers, to families, to guests from beyond the Rocky Mountain region. To accommodate these users of varying ability levels, CMR strives to provide opportunities relative to each guest’s demographic. Currently, CMR provides a diversity of recreation offerings to a wide range of guests; this capability will be further enhanced through the projects included in this MDP. Since CMR caters to the national spectrum, its distribution of guests tends to match the wide ability range of the national guests (refer to Table 2-2).



The following paragraphs describe the types of destination mountain resorts that typify CMR, and the principal base lands and mountain design criteria that lead to the development of a successful resort. More specifically pertaining to CMR, each of these descriptions details how the resort's design contributes to its niche.

2.1 REGIONAL/DESTINATION RESORTS

One common characteristic of destination resorts is that they cater to a significant vacation market and thus offer the types of services and amenities vacationers expect. At the same time, some components of the destination resort are designed specifically with the day-use guest in mind (e.g., day-use parking). Additionally, the employment, housing, and community services for both full-time and second-home residents created by destination resorts all encourage the development of a vital and balanced community. This inter-relationship is helpful to the long-term success of the destination resort.

Destination mountain resorts can be broadly defined by the visitation they attract, in most instances either regional or national/international. Within these categories are resorts that are purpose-built and others that are within, or adjacent to, existing communities. CMR is an example of a resort constructed adjacent to an existing community—the towns of Frisco, Silverthorne, Dillon and Breckenridge—which are rich in cultural history, and provide a destination guest with a sense of the Mountain West of Colorado. This combination of a desirable setting and history supplements the overall experience of a guest visiting CMR—a regional, national, and international destination resort.

Regional Destination Resorts

Regional destination resorts largely cater to a “drive market.” While day-use guests play a large role, the regional destination resort also appeals to vacationers. At CMR, lodging is a component, but due to the average length of stay, and perhaps more importantly a guest's vacation budget, lodging and related services and amenities are usually less extensive than what is common for national/international destination guests. Where the regional destination resort has evolved from within, or adjacent to, an existing community, services are often supplied by proprietors in the existing community. Even though a portion of the services offered within the Town of Frisco cater directly to guests of the resort or summer vacationers to Summit County, proprietors within the Town also supply services to “locals,” which helps maintain the balanced lifestyle that permanent residents and second home owners enjoy.

National and International Destination Resorts

National and international destination resorts appeal and cater to a significant “fly-in” market, due to a combination of the unique character and level of services offered by either or both the mountain facilities and base village. CMR national/international guest expectations are higher than for many of the resort’s regional destination guests. These guests expect abundant opportunities to participate in a variety of vacation experiences. This guest mind-set stems from the expectation that their destination vacation will likely represent the apex of their skiing season, and hence the appetite for varied experiences will be great. In addition to a weeklong visit, guests may also hope to participate in the resort and community on a more regular or permanent basis (through ownership of real estate and part-time residency).

There is a growing demand for mountain destination resorts to provide activities outside of snow sports. At some of the more mature mountain destinations, non-skiing wintertime guests account for a very substantial percentage of overall guest population. Furthermore, many of the guests who do ski will not use the mountain facilities every day of their visit. Thus, the ratio of total days skied to total room-nights can be as low as half. Even for the day-use guest at a destination resort, skiers are spending less of their day on the mountain. This is due to several factors, including: (1) shifting expectations of what a mountain vacation is about (participation in a variety of experiences not just skiing); (2) the advent of high-speed lift technology (allows guests to satisfy their vertical demand in a shorter period of time); and (3) an aggregate population of guests, which is aging and requires lesser amounts of vertical demand. In the summer, the resort and community have very high summer utilization due to a dramatic increase in summer mountain vacations. Hence, all of these trends add up to a significant demand for attractions and amenities that complement a resort’s skiing facilities.

National and international destination resorts, including CMR, offer a wide variety of lodging types, including hostels, motels, hotels, inns, bed and breakfast inns, townhomes, condominiums, and single family chalets. Visitor participation in the real estate market has diversified substantially in the last two decades and includes ownership, either whole or fractional, as well as “usage”—like timeshare and club participation. Typically, where the mountain facility is a primary driver for visitation, lodging is clustered at or near the mountain’s base area. Amenities usually include a wide variety of restaurants, lounges, shops, conference facilities, and perhaps theatres or concert venues, recreation centers (e.g., swimming, fitness equipment, and indoor courts), etc. Aside from Alpine skiing, recreational activities



may include snow tubing, Nordic skiing, snowshoeing, sleigh rides, snowmobiling, mountain and road biking, walking, golf, tennis, horseback riding, angling, swimming, spa treatments, etc.

A mountain resort that evolves near or adjacent to an existing community—particularly one that has a tourism-base economy—typically benefits from the significant infrastructure already in place (i.e., there is less need for a resort to develop infrastructure and create services at the base of the mountain). Some mountain facilities have evolved immediately adjacent to the town and hence have developed virtually none of their own destination services.

2.2 BASE AREA DESIGN

Particular consideration should be given to the relationship between the base area and the mountain facilities. Upon arrival at the ski area, skiers should be able to move directly from parking, through ticketing or rentals, 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 an organized and pleasant base area environment.

Design of the base lands for a mountain resort involves establishing appropriate sizes and locations for the various elements that make up the development program. The complexion and interrelationship of these elements varies considerably depending on the type of resort and its intended character.

Planners rely on resort layout as one tool to establish resort character. The manner in which resort elements are inter-organized, both inside the resort core and within the landscape setting, along with architectural style, help to create the desired character. As an example, there may be a desire to create vitality and animation, such as at Quebec's Mont Tremblant Resort, or conversely to create serenity, such as at Utah's Sundance Resort.

2.3 MOUNTAIN DESIGN

Trail Design







Slope Gradients and Terrain Breakdown

Terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. In essence, ability level

designations are based on the maximum sustained gradient calculated for each trail. While short sections of a trail can be more or less steep without affecting the overall run designation, a sustained steeper pitch may cause the trail to be classified with a higher difficulty rating.







The following general gradients are used to classify the skier difficulty level of the mountain terrain.

**Table 2-1:
Terrain Gradients**

	Skier Ability	Slope Gradient
	Beginner	8 to 12%
	Novice	to 25%
	Low Intermediate	to 35%
	Intermediate	to 45%
	Advanced Intermediate	to 55%
	Expert	over 55%

The distribution of terrain by skier ability level and slope gradient is compared with the market demand for each ability level. It is desirable for the available ski terrain to be capable of accommodating the full range of ability levels reasonably consistent with market demand. The market breakdown is shown in Table 2-2.

**Table 2-2:
Skier Ability Market Breakdown**








	Skier Ability	Percent of Skier Market
	Beginner	5%
	Novice	15%
	Low Intermediate	25%
	Intermediate	35%
	Advanced	15%
	Expert	5%



Trail Density

The calculation of capacity for a ski area is based in part on the target number of skiers and riders that can be accommodated, on average, on a typical acre of terrain at any one given time. The criteria for the range of trail densities for North American ski areas are listed below in Table 2-3.

**Table 2-3:
Skier Density per Acre**

Skier Ability		Trail Density
	Beginner	25 to 40 skiers/acre
	Novice	12 to 30 skiers/acre
	Low Intermediate	8 to 25 skiers/acre
	Intermediate	6 to 20 skiers/acre
	Advanced Intermediate	4 to 15 skiers/acre
	Expert	2 to 10 skiers/acre
	Alpine Bowls	0.5 skier/acre

These density figures account for the skiers that are actually populating the trails and do not account for other guests who are either waiting in lift lines, riding the lifts, using the milling areas or other support facilities. Empirical observations and calculations indicate that, on an average day, approximately 40% of the total number of skiers/riders at a typical resort is on the trails at any given time. Additionally, areas on the mountain, such as merge zones, convergence areas, lift milling areas, major circulation routes, and egress routes, experience higher densities periodically during the day.

Trail System

A resort's trail system should be designed to provide a wide variety of terrain to meet the needs of the entire spectrum of ability levels as well as the resort's particular market. Each trail should provide an interesting and challenging experience within the ability level for which the trail is designed. Optimum trail widths vary depending upon topographic conditions and the caliber of the skier/rider being served. The trail network should provide the full range of ability levels consistent with each level's respective market demand.

In terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business, one of the more important factors has proven to be variety of

terrain. This means providing developed runs for all ability levels—some groomed on a regular basis and some not (e.g., bowls, trees, and terrain parks and pipes). This concept is explored in greater detail in Chapter 4, Section C (Existing Terrain Network).

In summary, a broad range of terrain satisfies skiers/riders from Beginner through Expert ability levels within the natural topographic characteristics of the ski area.

Terrain Parks

Terrain parks have become a vital part of most mountain resorts' operations, and are now considered an essential mountain amenity. The presence of terrain parks at mountain resorts has changed various operational and design elements. The demand for grooming can increase, as terrain parks often require specialized or dedicated operators, grooming machines, and equipment (such as half-pipe cutting tools). Terrain parks typically require significant quantities of snow, either natural or man-made, often increasing snowmaking demand. Terrain parks can affect circulation on the mountain, as the parks are often points of destination.

Lift Design

The goal for lift design is to serve the available terrain in an efficient manner, i.e., having the minimum number of lifts possible while fully accessing the terrain and providing sufficient uphill capacity to balance with the available downhill terrain capacity. In addition, the lift design has to take into consideration such factors as: wind, round-trip utilization of a the terrain pod, access needs, interconnectability between other lift pods, the need for circulation space at the lower and upper terminal sites, and the presence of natural resources (e.g., visual impacts, wetlands, and riparian areas). The vertical rise, length and ride time of lifts across a mountain are important measures of overall attractiveness and marketability of any resort.

On-Mountain Guest Services

On-mountain guest service facilities are generally used to provide food service (cafeteria-style or table service), restrooms, and limited retail, as well as ski patrol and first aid services, in closer proximity to upper-mountain terrain. This eliminates the need for skiers and riders to descend to the base area for similar amenities. It has also become common for resorts to offer ski/board demo locations on-mountain, so skiers and riders can conveniently test different equipment throughout the day.



Capacity Analysis and Design

Comfortable Carrying Capacity (CCC) is defined as a level of utilization for a given resort that provides a pleasant recreational experience, without overburdening the resort infrastructure. CCC does not indicate a maximum level of visitation, but rather the number of visitors that can be “comfortably” accommodated on a daily basis. The accurate estimation of the CCC of a mountain is a complex issue and is the single most important planning criterion for the resort. Related skier service facilities, including base lodge seating, mountain restaurant requirements, restrooms, parking, and other guest services are planned around the proper identification of the mountain’s true capacity.

CCC is derived from the resort’s supply of vertical transport (the vertical feet served combined with the uphill hourly capacities of the lifts) and demand for vertical transport (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, and factors in the total amount of time spent in the lift waiting line, on the lift itself, and in the downhill descent.

Note: since CCC is designed to model a comfortable level of visitation, it is common for resorts to experience peak days during which visitation exceeds the CCC by as much as 25 to 30%.

2.4 BALANCE OF FACILITIES

The mountain master planning process emphasizes the importance of balancing recreational facility development. The sizes of the various guest service functions are designed to match the CCC of the mountain. The future development of a resort should be designed and coordinated to maintain a balance between accommodating guest needs, resort capacity (lifts, trails, and other amenities such as tubing), and the supporting equipment and facilities (e.g., grooming machines, day lodge services and facilities, utility infrastructure, access, and parking). Note that it is also important to ensure that the resort’s CCC balances with these other components, facilities, and services at the resort. Since CCC is primarily derived from the resort’s lift network, it is possible to have a CCC that is effectively lower than the other components.

2.5 MANAGEMENT OF NATIONAL FOREST SYSTEM LANDS

Pertinent Forest Plan Direction

2002 Revised WRNF LRMP

CMR operations that are conducted on NFS lands within the Special Use Permit (SUP) area must comply with the management directions provided in the 2002 Forest Plan. The 2002 Forest Plan includes 33 separate Management Areas for different portions of the forest based on ecological conditions, historic development, and anticipated future conditions. CMR falls within the 8.25 Management Area, which directs:

“Facilities may be intensively used throughout the year to satisfy a variety of seasonal recreational demands. Base areas that serve as entrance portals are designed as gateways to public lands. Forested areas are managed as sustainable cover with a variety of species and age classes in patterns typical of the natural landscape character of the area. Protection of scenic values is emphasized through application of basic landscape aesthetics and design principles, integrated with forest management and development objectives.”²

Management Policies and Direction

The 2002 Forest Plan FEIS addressed the role of MDPs, which are a component of each ski area permit and states:

“New technology and changing skier preferences with regard to terrain and on mountain services motivate ski areas to adapt and change in order to remain competitive. Because of this, master development plans are dynamic. The Forest Service participates with ski areas in planning changes to meet public needs. Prior to approval for implementation, the master development plan and its component parts are subject to environmental analysis in accordance with the National Environmental Policy Act and other relevant laws and regulations.”³

The enabling authorities for the Forest Service are contained in many laws enacted by Congress and in the regulations and administrative directives that implement

² USDA Forest Service. 2002. White River National Forest Land and Resource Management Plan 2002 revision. White River National Forest, Glenwood Springs, CO.

³ USDA Forest Service. 2002. Final environmental impact statement, Volume 1, for the White River National Forest land and resource management plan 2002 revision. White River National Forest, Glenwood Springs, CO. p 3-437



these laws.⁴ These authorities allow the Forest Service to provide recreation opportunities to facilitate the use, enjoyment, and appreciation of National Forests.

The Forest Service is authorized to approve certain uses of NFS lands under the terms of SUPs.⁵ Generally, SUPs for recreational developments are issued and administered for uses that serve the public, promote public health and safety, and provide land stewardship. In accomplishing these objectives, the SUP held by CMR authorizes the following:

“Ski lifts and tows, ski trails, day lodge, restaurants, maintenance and snowmaking facilities, roads, utilities, parking, signs, radio base facilities, explosive cache, and other facilities and improvements needed in the operation and maintenance of a four-season resort.”

Downhill skiing is an important component of the recreation opportunities offered by National Forests. The National Recreation Strategy, a result of the 1987 President’s Commission for America’s Outdoors, gives the Forest Service a major role in providing recreation opportunities on National Forests through partnerships such as those with the ski industry.⁶

With annual skier visitation of typically about one million guests each season, CMR remains one of the most popular resorts in the United States. The 2002 Forest Plan anticipates that the population growth in Colorado, and along the Front Range in particular, will contribute to an increase in skier visits over the next ten years. The implementation of the planned and approved projects within this MDP will allow CMR to better accommodate the existing skier demand at the ski area and provide an improved experience for guests. Additionally, the theme of Management Area 8.25 is discussed in the 2002 Forest Plan and states:

“Ski areas are developed and operated by the private sector to provide opportunities for intensively managed outdoor recreation activities during all seasons of the year. This management area also includes areas with potential for future development.”⁷

⁴ These laws include: the Organic Administrative Act (1897), the Weeks Act (1911), the Multiple-Use Sustained Yield Act (1960), the Forest and Rangeland Renewable Resources Planning Act (1974), the National Forest Management Act (1976), and the National Forest Ski Area Permit Act (1986).

⁵ 16 USC 497. 1999. 64 FR 8681-8690. National Forest Ski Area Permit Act of 1986 – as adopted in 1999. February 22.

⁶ USDA Forest Service. 1988. National Recreation Strategy. April.

⁷ White USDA Forest Service. 2002. White River National Forest Land and Resource Management Plan 2002 revision. White River National Forest, Glenwood Springs. CO. p. 3-80

The 2002 Forest Plan FEIS provides detailed information on “potential expansion areas” at existing ski areas across Eagle, Garfield, Pitkin, and Summit counties. Related to the CMR SUP area, and specifically related to planned projects discussed in this MDP, the 2002 Forest Plan FEIS states:

“Tucker Mountain is located on the south side of Copper Bowl. The majority of this area is inside the ski area boundary and planned for development. A snowcat provides skiers access to the top of the mountain.”⁸

Recreation Opportunity Spectrum

The CMR SUP area is designated within the 2002 Forest Plan to have Recreation Opportunity Spectrum (ROS) setting of “Rural,” and this setting is described in the “1986 ROS Book” as:

“Predominantly a culturally modified setting where the natural environment has been substantially modified, i.e., structures are readily apparent, pastoral or agricultural or intensively managed, wildland landscapes predominate as viewed from visually sensitive roads and trails. Access is primarily via conventional motorized use on roads. Contact frequency with other users may be moderate to high in developed sites and moderate away from developed sites.”

As stated in the 2002 Forest Plan Final Environmental Impact Statement:

“Recreational benefits from ski areas include managed, convenient access to National Forest System lands for visitors participating in such activities as hiking, mountain biking, viewing scenery, skiing, and snowboarding. Ski areas provide year-round natural resource-based recreation. The number of recreation opportunities enhanced by lift served access generally is proportional to the number of acres allocated to the 8.25 management area.”⁹

The assigned desired ROS condition class is the maximum level of use, impact, development, and management that an area should experience over the life of the Forest Plan. The ROS is not prescriptive; it serves as a tool for land managers to identify and mitigate change. Recreational carrying capacity is a consequence of adopting specific ROS classes for which a landscape will be managed.

⁸ Ibid. p. 3-462

⁹ Ibid. p. 3-430



Scenery Management and the Built Environment Image Guide

Scenery Management System

In addition to providing recreation experiences and the production of numerous resources, public landscapes provide beauty, which is a valuable resource to many Forest Service constituencies. This resource is explicitly recognized in the law. The National Environmental Policy Act requires equal consideration of aesthetics and science. The Forest Service requires application of Scenery Management to all National Forest System lands. In brief, the Scenery Management System (SMS) is a systematic approach for assessing visual resources in a project area and then using the assessment findings to help make management decisions regarding proposed projects. The system is founded on an ecological aesthetic, which recognizes that management which preserves the integrity, stability, and beauty of the biotic community preserves the scenery, as well.

The 2002 Forest Plan establishes acceptable limits of change for Scenic Resources.¹⁰ The acceptable limits of change are the documented Scenic Integrity Objectives (SIO), which serve as a management goal for scenic resources.

Scenic Integrity Objectives

A project can cause visual resource change that can be objectively measured. Viewer response to this change, although subjective, usually displays broad patterns of consensus. Thus, visual impacts comprise both the landscape change and viewer response to that change. By assessing the existing visual character of an area in terms of pattern elements (form, line, color and texture) and pattern character (dominance, scale, diversity, and continuity), it is possible to identify the extent to which the visual character of a facility will exhibit visual contrast with the landscape, or its converse, visual compatibility.

People experience the visual environment as an integrated whole, not as a series of separate objects. Scenic Integrity is a measure of the degree to which a landscape is visually perceived to be complete, indicating the degree of intactness and wholeness of the landscape character. The SMS uses SIOs, which range from Very High (unaltered) to Very Low (heavily altered). The SIO for the CMR SUP as designated in the 2002 Forest Plan is Low and Very Low, with the entirety of the current operational boundary identified as Very Low. The extreme southern and western portion of the SUP area (outside of the current operational boundary) is identified as

¹⁰ USDA Forest Service. 2002. White River National Forest Land and Resource Management Plan 2002 revision. White River National Forest, Glenwood Springs, CO.

Low. This Low designation applies to both Jacque Peak and Tucker Mountain. This SIO befittingly refers to landscapes where the valued landscape character “appears heavily altered.” The frame of reference for measuring achievement of SIOs is the valued attributes of the “existing” landscape character “being viewed.” In an area with a Low SIO, the landscape character appears “moderately altered,” and deviations begin to dominate the valued landscape character being viewed but they borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes or architectural styles outside the landscape being viewed. Deviations should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within. A Very Low SIO refers to landscapes that are “heavily altered,” and deviations may strongly dominate the valued landscape character and may not borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes, or architectural styles outside the landscape being viewed. Deviations must be shaped and blended with the natural terrain (landforms) so that elements such as unnatural edges, roads, landings, and structures do not dominate the composition. However, the 2002 Forest Plan states that all National Forest System lands shall be managed to attain the highest possible visual quality commensurate with other appropriate public uses, costs, and benefits.¹¹

Built Environment Image Guide

In concept, the Built Environment Image Guide (BEIG) is designed to ensure thoughtful design and management of the built environment, which includes: administrative and recreation structures, buildings, lifts (with regard to coloration), landscape structures, site furnishing, structures on roads and trails, and signs installed or operated by the Forest Service, its cooperators, and its permittees. It focuses on the image, appearance, and structural character of facilities. Three core contexts are stressed throughout the BEIG: (1) environmental; (2) cultural; and (3) economic.

The BEIG provides general guidance regarding the image, aesthetics, and overall quality of recreational and administrative structures on NFS lands, but it does not contain enforceable “standards” pertaining to aesthetic quality as would be found in a typical Forest Plan. As indicated on pages 250–252 of the BEIG, specific direction for the design of administrative and recreational facilities is found in the Forest Service Manual (FSM) and Forest Service Handbooks (FSH).

¹¹ Ibid. p. AA-17



The environmental, cultural, and economic contexts with which the BEIG is based are important considerations in development of structural facilities (not including lift terminals) within the CMR SUP area. Furthermore, there are some elements of the BEIG within the “Rocky Mountain Province” section (pages 159–178) that should be taken into account when designing and constructing facilities on NFS lands.

The CMR SUP includes language that the ski area should establish an “architectural theme” that would drive design elements and plans for the structural components of the ski area. Currently, CMR has not established an “architectural theme” for their on-mountain facilities. In conjunction with initiating detailed planning of new facilities, CMR will define an “architectural theme” for structures as they are developed in the future.

White River National Forest Building Design Review

In addition to the considerations suggested by the BEIG, the White River National Forest has an established Building Design Review process which is applicable to the development of on-mountain projects such as buildings. This process entails review of preliminary designs and plans by the Forest Landscape Architect early in the design process to ensure compliance with Forest Service objectives.

Accessibility to Public Lands

In June 2005, the Forest Service released the Accessibility Guidebook for Ski Areas Operating on Public Lands, 2005 Update. This guidebook provides information for ski areas authorized under a SUP to work with the Forest Service in providing equal opportunities for all people, including those with disabilities. CMR will maintain consistency with this guidebook for future development projects occurring on public lands.

Ski areas operating under special-use authorization from the Forest Service are required to comply with both the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 (Section 504). The ADA applies because CMR operates as a “public accommodation;” moreover, CMR is a business open to the public. Section 504 applies because CMR operates under a SUP authorized by the Forest Service. Through the SUP, the ski area agrees to abide by these and all other laws, regulations, and policies of the federal government.

Significant legislation that preceded the ADA includes the Architectural Barriers Act (ABA) of 1968 and the Rehabilitation Act of 1973, as amended. ABA was the first measure passed by Congress to ensure access to facilities. The ABA requires that all

facilities built, bought, or leased by or for a Federal agency be accessible. Section 504 of the Rehabilitation Act states: “No otherwise qualified individual with a disability in the United States shall, solely by reason of his disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive Agency.”

CMR currently complies with this legislation through their active involvement in assisting disabled guests with skiing and other recreation activities. Through future site-specific NEPA and design development reviews, CMR will work closely with the Forest Service to ensure accessibility measures are taken to provide equal opportunity to all users of public lands.



3. Site Inventory



3. SITE INVENTORY

Chapter 3 provides a brief overview of some of the unique characteristics of the ski area, including private and NFS lands that were taken into consideration when assembling this Master Plan.

3.1 TOPOGRAPHY

Copper Mountain Resort (CMR) is located on: the north and east facing slopes of Copper Peak, with a summit elevation of 12,441 feet above sea level; the north and south facing slopes of Union Peak, with a summit elevation of 12,313 feet above sea level; and the north facing slopes of Tucker Mountain, with a summit elevation of 12,337 feet above sea level. The upper reaches of the resort are located at or near these peaks. The upper reaches of Copper Peak and Union Peak, and the South facing section of Union Peak and all of Tucker Mountain are characterized by open alpine bowls. The frontside of the mountain, the north facing slopes of Copper Peak and Union Peak are defined by two distinct ridges, both traveling northward from each of the two peaks. These ridges, and the valley that separates them, are defining in the layout and design of the ski resort. Circulation between the two ridges is challenging and they create spate sections of the ski mountain, primarily defined by the Super Bee and American Flyer lifts. The trails at CMR are primarily located off these ridges, extending north from the summits and dropping east and west down to the base areas.

The base area sits in the valley that contains Tenmile Creek, and separates Tenmile Range from Copper Mountain. The base village sits at an elevation of approximately 9,700 feet above sea level. The highest lift serviced point at the ski area is around 12,300 feet above sea level. The average slope gradient from the base area to the summit of Copper Mountain is around 27%.

3.2 SLOPE GRADIENTS AT COPPER MOUNTAIN RESORT

As discussed in Chapter 2, terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. Regardless of the slope gradient for a particular trail, if it feeds into a trail that is rated higher in difficulty, its ability level must be rated accordingly (*Bee Road*, for example). Conversely, if a trail is fed only by trails of a higher ability level than



the maximum slope of the trail would dictate, it also must be rated accordingly (*Skid Road*, for example).

Slope gradients at CMR are depicted on Figure 3.

- **0 to 8% (0 to 5 degrees):** too flat for skiing and riding, but ideal for base area accommodations, and other support facility development.
- **8 to 25% (5 to 15 degrees):** ideal for Beginners and Novices, and typically can support some types of development.
- **25 to 45% (15 to 25 degrees):** ideal for Intermediates, and typically are too steep for development.
- **45 to 70% (25 to 35 degrees):** ideal for Advanced and Expert skiers/riders, and pose intermittent avalanche hazards.
- **>70% (>35 degrees):** too steep for all but the highest level of skiing/riding. These areas are typically allocated as Expert only and are closely managed by the resort operator for avalanche control.

As shown in Figure 3, CMR is very well suited for a ski resort (as was recognized since the 1950s). The large areas of green and blue shading indicate substantial opportunity for beginner, novice, and intermediate skiing—while plenty of advanced and expert slopes are also found. There is a good diversity of slope gradients, but the quality and quantity of beginner to intermediate level terrain is remarkable. The existing layout at CMR has taken advantage of this natural topography. As examples, the Lumberjack lift is located entirely on terrain that is ideal for novice level skiers, the Timberline Express and American Eagle lie in areas that are virtually all consistent intermediate level terrain, and the backside lifts of Blackjack and Mountain Chief are primarily on expert level areas.

It should be noted that having consistent slopes of a given ability level for the entire length of a lift (as CMR does) is a relatively rare and very desirable situation, as it allows skiers of that ability level to continuously ski the trails off the lift without any sections that are either too steep or too flat for that level.

A further desirable situation at CMR is the natural separation of terrain that is suited for the differing ability levels. At many resorts, the steep terrain is located physically above the flatter terrain. This creates an undesirable situation where expert level skiers ski the steep terrain above, but then have to ski through the lower level terrain in order to reach the bottom of a lift. This creates conflicts between the fast-skiing upper ability level skiers and the cautious lower ability level skiers. This situation

largely does not occur at CMR, where terrain that is suitable for a given ability level is topographically distinct. For example, the lower level and teaching terrain available off of Lumberjack and Kokomo is physically separated and not subject to having upper ability level skiers coming down from higher terrain. Similarly, the Alpine and Superbee lifts have upper level terrain top to bottom, so upper level skiers can ski those without concern about encountering low level skiers.

3.3 SOLAR ASPECT AT COPPER MOUNTAIN RESORT

Slope aspect plays an important role in snow quality and retention. The variety of exposures present opportunities to provide a range of slope aspects that can respond to the changes in sun angle, temperature, wind direction, and shadows. Typical constraints in relation to the various angles of exposure are discussed in the following text.

- **North-facing:** ideal for snow retention, minimal wind scour, minimal sun exposure. In most cases, north-facing slopes offer the best skiing opportunities from a solar aspect standpoint. Fresh snow will retain its quantity and quality for the longest duration on these aspects. However, on very cold days with icy, frozen, or other low quality snow conditions, north-facing slopes offer a poor ski experience.
- **Northeast-facing:** ideal for snow retention, minimal wind scour, minimal sun exposure.
- **East-facing:** good for snow retention, some wind scour, morning sun exposure. Often provides the best ski experience on cold, sunny days with hard snow—particularly in the morning when the sun warms these areas and softens the snow.
- **Southeast-facing:** fair for snow retention, moderate wind scour, morning and early afternoon sun exposure.
- **South-facing:** at lower elevations, poor for snow retention, moderate wind scour, full sun exposure. Due to typically poor snow quality, south-facing slopes are usually considered to be the least favorable aspect for skiing. However, on very cold (sunny) days with very hard or icy snow conditions, these are likely to provide the best ski experience.
- **Southwest-facing:** poor for snow retention, high wind scour, full sun exposure.



- **West-facing:** fair for snow retention, high wind scour, late morning and afternoon sun exposure. As many skiers (consciously or otherwise) like to follow the sun around the mountain, west-facing slopes are often popular for afternoon skiing.
- **Northwest-facing:** good for snow retention, moderate wind scour, some afternoon sun.

Slope aspects at CMR are depicted on Figure 4.

Copper Mountain Resort is located on distinct peaks, with exposures, and most ski terrain, generally north-facing, and as such is well situated for a ski resort, with a good range of north-east aspects to north-west aspects. The terrain accessed off the south side of Union Peak is an exception as it has a more south to south-west aspect. While snow in this area is generally of poorer quality than on the north facing slopes; this could be desirable in certain situations. The other notable exception is the Resolution area, which faces strongly east to south-east. This could present good morning skiing opportunities in certain situations. There is very limited west-facing terrain. As stated, the significant majority of the terrain is north facing, with a range of north-east to north-west. While this does provide the best skiing in most cases, the only concern could be that the lack of slopes with differing aspects could limit opportunities during conditions when north-facing terrain is not the most desirable.



4. Existing Conditions



4. EXISTING FACILITIES

The following section contains an examination and analysis of existing facilities at Copper Mountain Resort (CMR). Completion of a thorough resort inventory is the first step in the master planning process and involves the collection of data pertaining to the resort's existing facilities. This inventory includes lifts, trails, the snowmaking system, base area structures, guest services, other resort functions/activities, day-use parking, operations, and utilities/infrastructure. The analysis of the inventoried data involves the application of current industry standards to CMR's existing facilities. This process allows for the comparison of the resort's existing facilities to those facilities commonly found today at resorts of similar size and composition.

The overall balance of the existing resort is evaluated by calculating the capacities of various facility components and then comparing these capacities to the resort's CCC. This examination of capacities helps to identify surpluses, deficiencies, opportunities, and constraints as a resort. The next step is the identification of improvements which would bring the existing facilities into better equilibrium, and will assist the resort in meeting the ever-changing expectations of their marketplace. Accomplishing these objectives will result in a well-balanced resort which provides an adequate array of services and experiences to satisfy guest expectations for a quality recreational experience.

The examination of existing facilities presented in this chapter correlates with Figure 2.

4.1 SUMMARY OF THE EXISTING GUEST EXPERIENCE

Determining the resort CCC is an important first step in evaluating the overall guest experience because it enables planners to understand the overall balance of the resort facility. Empirical observations and a close examination of CMR's principal components reveal some key surpluses and deficiencies.

CMR's CCC is computed by analyzing the resort's supply of, and demand for, vertical transport. The capacity of the lift and trail network was determined to be approximately 11,870 guests. From a terrain standpoint, the resort has a lift-served trail network of around 1,375 acres, which is easily capable of proving a high-quality recreation experience for those guests. Additionally, there are over 1,100 acres of alternate style terrain, which provides good terrain variety.



Generally speaking, the current guest experience at CMR is good. The base area and Village are generally new, and are well designed and built. Base area lodging options, restaurants, and shopping are plentiful. As discussed, the natural terrain is close to ideal for a ski resort, with long, consistent fall-line trails of all ability levels, topographical separation of terrain of different ability levels, and some of the best teaching terrain in the industry. The lift system is efficient and effective, with generally easy circulation around the mountain, and several high-speed lifts. On most weekdays and non-peak weekends, actual daily visitation levels at the resort are below the calculated CCC, meaning that long lift lines are uncommon on these days, and most skier service facilities are not over-burdened. CMR typically receives good snowfall, and when snowfall is below average, and to ensure early opening dates, a snowmaking system is in place to provide adequate snow coverage to a significant quantity of ski terrain.

Despite its attributes, there are a number of deficiencies at CMR that detract from the guest experience and may contribute to the resort's inability to capture and retain market share. Foremost among these deficiencies is the lack of on-mountain guest facilities. The existing on-mountain restaurants are deficient in size and are generally old and in poor physical condition, which can create a negative impression of the resort. Additionally, restaurant seating space overall is not adequate for the demand. Many of the existing lifts are old and low capacity, which results in long lift lines at certain lifts on peak days, also creating a negative impression of the ski area. Also, while the lift system overall is efficient, there are a few key links that could improve access and circulation around the mountain. Access to the teaching terrain can be significantly improved, there are a number of areas that could be improved with strategic grading, and additions to non-developed style terrain would be beneficial.

4.2 EXISTING LIFT NETWORK

CMR's lift network consists of 21 ski lifts. These lifts include:

- One high speed six passenger lift: Super Bee
- Four high speed four-passenger (quad) chairs: American Eagle, American Flyer, Timberline Express, and Excelsior
- Five fixed-grip triple chairs: Resolution, Kokomo, Lumberjack, Rendezvous, and Sierra
- Five double fixed-grip chairs: Alpine, Pitchfork, Highpoint, Blackjack, and Mountain Chief

- Two surface tows: Storm King and Gem
- Four conveyors: The Glide, Easy Rider, Rugrat, and Slingshot

CMR also operates a conveyor lift that is dedicated to the tubing operation, named Stinger, bringing the total number of operated lifts to 22. Stinger is available to the neighboring HOA's and general skiing public for better access to the Super Bee. However, this lift is not included in this analysis, as it is not a lift that serves the developed trail network.

The resort's total uphill design lift capacity has been calculated at 30,812 people-per-hour (pph). Table 4-1 below summarizes the technical specifications for the existing lifts, and Figure 2 illustrates the location of existing lifts.



**Table 4-1:
Lift Specifications – Existing Conditions**

Lift Ref	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Design Capacity (pers./hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Year Installed
A	Alpine <i>C-2</i>	11,521	9,787	1,734	5,661	32	1,200	500	50	Yan 1979
A1	Resolution <i>C-3</i>	11,970	10,549	1,421	4,490	34	1,200	500	75	Poma 1985
C	Gem s	9,804	9,750	54	490	11	450	300	40	Poma 1972
C1	Pitchfork <i>C-2</i>	9,812	9,751	61	532	12	1,200	500	50	Heron 1979
D	The Glide <i>c</i>	9,819	9,810	9	77	12	720	80	7	Sunkid 1998
E	Excelsior <i>DC-4</i>	12,022	11,182	840	3,231	27	2,450	1,080	106	Poma 1998
ER	Easy Rider <i>c</i>	9,770	9,762	8	101	8	720	80	7	Magic Carpet 2000
F	American Eagle <i>DC-4</i>	11,236	9,760	1,476	6,276	24	2,312	1,000	104	Poma 1989
H	Highpoint <i>C-2</i>	10,791	9,829	962	4,973	20	1,200	500	50	Yan 1976
I	Timberline Express <i>DC-4</i>	11,580	10,480	1,101	5,065	22	2,640	1,080	98	Doppelmayr 1994
K	Kokomo <i>C-3</i>	10,171	9,849	321	2,642	12	1,800	500	50	Poma 1981
L	Lumberjack <i>C-3</i>	10,820	10,130	690	4,268	16	1,800	500	50	Poma 1981
M	Storm King s	12,298	11,885	414	1,884	23	900	630	42	Poma 1985
O1	American Flyer <i>DC-4</i>	11,661	9,770	1,891	9,951	19	2,400	1,000	100	Poma 1986
R	Rendezvous <i>C-3</i>	11,877	11,354	524	3,397	16	1,800	500	50	Yan 1982
RR	Rugrat <i>c</i>	9,822	9,812	10	101	10	720	80	7	Magic Carpet 2000
S	Sierra <i>C-3</i>	12,119	11,377	741	3,058	25	1,200	500	75	Yan 1983
SB	Super Bee <i>DC-6</i>	11,996	9,710	2,286	8,984	27	2,980	1,080	130	Poma 1998
SS	Slingshot <i>c</i>	9,843	9,834	9	148	6	720	80	7	Kaiser 2002
4	Blackjack <i>C-2</i>	11,926	11,167	758	2,402	33	1,200	500	50	Yan 1973
6	Mountain Chief <i>C-2</i>	12,293	11,498	795	2,489	34	1,200	500	50	Yan 1977

c = carpet

s = surface lift

C2 = fixed-grip double chairlift

C3 = fixed-grip triple chairlift

C4 = fixed-grip quad chairlift

Source: SE Group

Lift Discussion and Overview

The following lift overview follows CMR's lift network generally on a progression from lifts accessing easier terrain to advanced terrain.

An important aspect to note is the high demand placed on the out-of-base lifts. Almost all of the skiers on a given day will use the Super Bee, American Eagle, or American Flyer lifts to access the mountain, since other options (Alpine, Highpoint, and Kokomo) are all long, slow rides on older lifts. Since these lifts also serve excellent repeat-ski terrain, they are also used heavily throughout the day by skiers repeat-skiing the terrain. Added to this is the lack of circulation between the Copper and Union Peak areas (both east-to-west and west-to-east), which is discussed in the terrain section below, causing skiers to be forced to ski down to the base to circulate between the areas—a factor that results in even more use of these three lifts. Further compounding the high use of these lifts is the lack of on-mountain facilities (as discussed in the Guest Services section below), which also forces skiers to the base area for any facility use need. All of these factors combine to result in very heavy demand for these three lifts. In certain situations, there can be long lift lines at these three lifts and minimal lift lines at any other lifts.

Union Creek Area

The Glide, Slingshot, and Rugrat are located adjacent to The Schoolhouse and are used for beginners' and children's lessons. Despite the limited terrain available, these lifts serve their function well. The Kokomo lift serves repeat-skiing terrain, and provides access to the Lumberjack lift. As an access lift, the fixed-grip triple is not as effective as other types of lifts. The Lumberjack lift is popular and serves Novice level repeat-ski terrain. However, the slow speed of this lift makes a long lift ride time which reduces the attractiveness of the area. As a general rule, skiers prefer not to have lift ride times of over 10 minutes. Since this area is a beginner and novice level area, the lift is typically operated at slower than maximum speeds. Depending on the speed at which this lift is operated, ride times can well exceed this criteria.

A challenge with the functionality of the Union Creek area is the distance between The Schoolhouse and the bottom terminal of Kokomo. At around 350 feet length, with almost 36 feet vertical rise, it is difficult for beginners and kids to access. While the Slingshot conveyor can be used to make this easier, moving the bottom terminal to a location close to the base buildings would greatly improve the area.

Additionally, the teaching area accessed by the conveyors area is constrained in size.



Highpoint Chairlift

Installed in 1976, Highpoint, often referred to as “H Lift,” is CMR’s oldest operating chairlift. This lift accesses excellent novice and low intermediate level skiing terrain and the resort’s primary terrain park. A fixed-grip double, this lift has a low hourly capacity and is quite slow as compared to modern detachable lifts. As an example, it takes longer to ride Highpoint than it does to ride American Flyer, which is twice as long. This lift also exceeds the 10-minute ride time maximum criteria.

As a result of the constraints that make these lift unattractive to ride, the whole Union Creek area is underutilized. In addition, this means that the Union Creek is rarely used as a portal to the mountain, resulting in higher use of the Center Village.

American Flyer

A very popular lift, the American Flyer provides both crucial out-of-base capacity as well as providing access to some popular repeat-ski terrain. It is the longest lift at CMR. The American Flyer was the first detachable lift installed at CMR, in 1986. As detachable lifts typically last 20 to 25 years, this lift is close to the upper end of the expected life cycle. The lift is experiencing mechanical difficulties that are making it more difficult to maintain.

The only constraint to this lift is its popularity—on high visitation days, lift lines can be quite long. Additionally, the demand for this lift as an out-of-base lift is very high, meaning that lines are often quite long in the morning as guests use this lift to access upper lifts on the mountain. Replacing this lift with a higher capacity lift would be very beneficial.

Timberline Express

The Timberline Express lift is the most popular Intermediate level lift at CMR. It provides access to numerous long, consistent, fall-line Intermediate trails. It was built in 1994 and is in good condition.

American Eagle

The American Eagle lift is the second lift out of the Center Village area. Also a detachable lift, it was built in 1989. It provides out-of-base access as well as access to popular Intermediate level repeat-ski terrain. Lift lines can be long at this lift as well during morning egress periods.

Teaching Lifts in Center Village

Pitchfork, Gem, and Easy Rider are a double, a surface tow, and a conveyor that are located adjacent to Center Village. They are used for teaching on peaks days when the Union Creek area is over capacity. They are also used in early season conditions when the Union Creek area has not yet opened for the season.

Super Bee

Super Bee is the only lift out of the East Village. Almost as long as the American Flyer, it is very popular and accesses excellent Intermediate and Advanced level trails.

Alpine Lift

The Alpine lift access quality Advanced and Expert level trails. Additionally, the terrain accessed from the Alpine lift provides upper level skiers a good option when weather conditions on the upper mountain make skiing there undesirable. However, the lift is significantly underutilized, due to its length. It is a fixed-grip double lift, and at over a mile long, it is the longest ride time at CMR—and over the 10-minute maximum ride time criteria.

Additionally, this lift can be used as an access point to the mountain, for guests parking in the Triple Treat lot. However, since there are no guest services or ticket sales facilities, this option is only available for guests who do not need to purchase day tickets—seasons pass holders for example. Also, to use this lift as an out-of-base lift to access the upper mountain, the most logical and popular route is to ski west to the Excelerator lift or east to the Resolution lift. However, due to the location and elevation of the top terminal of Alpine lift, this route requires skiing down an undesirable traverse. As a result, due to the length of the lift ride, lack of ticket facility, and difficult circulation option from the top, this out-of-base function is not used extensively.

Resolution and Storm King Lifts

The Resolution lift serves expert terrain on the east facing slope of Copper Peak. The lift is in good condition and effectively serves the terrain. At over 4,000 feet in length, it is a long ride for a fixed-grip lift, but since it serves upper level skiers, it can be run at higher speeds so the ride time isn't prohibitive.

Storm King is a surface tow that provides access to Copper Peak. A small amount of terrain is access for repeat-skiing (the Bariloche and Hallelujah Ridge areas), but



primarily this lift access the Spaulding Bowl area, which is repeat-skied by skiing down to the bottom of the Resolution lift. Additionally, the Storm King lift is used by skiers on the Copper Peak side to access the Copper Bowl area. This lift was installed in 1985, due to its age replacement parts are becoming increasingly difficult to acquire.

Excelerator Lift

Built in 1998, the Excelerator Lift accesses Intermediate and Advanced level terrain on the north to north-west facing slopes of Copper Peak. The lift and the terrain it accesses see high levels of use. One challenge with this lift is the location of the bottom terminal. While it functions well for repeat-skiing, or anyone skiing down to it from Super Bee, it is difficult to access from the popular Solitude Station Restaurant. Presently, guests wishing to access the Excelerator lift from Solitude Station must negotiate a flat traverse across skier traffic to access the base of the lift.

Rendezvous Lift

The Rendezvous lift is a fixed-grip triple that access Novice level terrain at the upper section of the mountain. Additionally, the lift is used to access the Blackjack and Mountain Chief lifts in the Copper Bowl area. Riding this lift is the only way to access the Copper Bowl area without hiking from the Union peak side.

Sierra Lift

The Sierra lift accesses Union Bowl and other Advanced and Expert level terrain. Due to frequent high winds, the top terminal of the lift is located well below the top of Union Peak. As a result, it is not possible to access the Copper Bowl area from the top of this lift without hiking. A realignment of this lift (or addition of a lift or tow to transport skiers to the peak) would not only give access to more repeat-skiable terrain, but would allow for access to the Copper Bowl area.

Copper Bowl Area – Blackjack and Mountain Chief Lifts

The Blackjack and Mountain Chief lifts, in conjunction, provide access to the Copper Bowl area. The Mountain Chief lift accesses the top of Union Peak, from which skiers hike up the ridge to access the various parts of Copper Bowl. Blackjack is used to access the lower sections of the area and to provide return access for skiers who traverse around to the Tucker Mountain side.

4.3 EXISTING TERRAIN NETWORK

Terrain Variety

Terrain variety is the key factor in evaluating the quality of the actual guest experience (as opposed to lift quality, restaurant quality, or any other factor). In SKI Magazine's Reader Resort Ratings, "terrain variety" is ranked as the second most important criterion in readers' choice of a ski destination, behind only snow quality, and ahead of such other considerations as lifts, value, accessibility, resort service, and others. This is a relatively recent industry trend, representing an evolution in skier/rider tastes and expectations. The implication of the importance of terrain variety is that a resort must have a diverse, interesting, and well designed developed trail system, but also have a wide variety of alternate style terrain, such as mogul runs, trees, glades, and terrain parks and pipes. At resorts across the nation, there is a growing trend favoring these more natural, unstructured types of terrain, since the availability of this style of terrain has become one of the more important factors in terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business.

To provide the highest quality guest experience, resorts should offer groomed runs of all ability levels and some level of all the undeveloped terrain types to the extent practical. Undeveloped terrain is primarily used by Advanced and Expert level skiers/riders during desirable conditions (e.g., periods of fresh snow, spring corn, etc.). Even though some of these types of terrain only provide skiing/riding opportunities when conditions warrant, they typically represent the most intriguing terrain, and are the areas that skiers/riders strive to access. CMR provides a wide variety of high quality alternate style terrain. This terrain varies from large open bowls to extensive glades to natural open meadow areas. Some of this terrain is accessible from the lifts, some is hike-to access, and some is accessed from a free snow-cat ride.

In summary, to provide the highest quality guest experience, resorts should offer some level of all these terrain types, to the extent practical. Even though some of these terrain types only provide opportunities when conditions warrant, variety is increasingly becoming a crucial factor in guests' decisions for where to visit.

Developed Alpine Trails

The developed, or formalized, terrain network at CMR consists of the named, defined, lift-serviced, maintained trails at the resort. Despite the importance of undeveloped, alternate-style terrain, formalized runs represent the baseline of the



terrain at any resort, as they are where the majority of guests ski and ride, and they are usually the only place to ski/ride during the early season, periods of poor or undesirable snow conditions, avalanche closures, and certain weather conditions. As such, the developed trail network represents a true reflection of acreage used by the average skier/rider on a consistent basis, as well as that used by virtually all guests during the aforementioned conditions. Therefore, the total acreage of the terrain and the ability level breakdown must be sufficient to accommodate the full capacity of the resort.

Based on the rationale presented in the preceding paragraph, and for the purposes of this analysis, only the developed trail network is applied to the trail acreage calculations, skier/rider classification breakdown, trail capacity, and density formulas.

The existing trail configuration is shown in Figure 2. The ski area is served by a network of approximately 125 trail segments accommodating a variety of ability levels, as depicted in the table below. The trail system accounts for roughly 1,375 acres of terrain, with significant additional opportunities for hike-to bowls, glades, and other types of alternate style terrain (discussed separately).

As previously mentioned, the terrain network at CMR is excellent overall. There is sufficient quantity, good variety, and the overall circulation flow works well. One shortcoming of the trail network, in relation to circulation, is the lack of a route to ski from the Copper Peak area, the top terminals of Super Bee and Excelsior, to the bottom of Rendezvous and Sierra. This east-to-west connection in the upper mountain would be beneficial. A summary of CMR's terrain network, organized by lift pod, is provided below.

Teaching Terrain

First-time beginner skiers are somewhat constrained by the quantity of teaching terrain available off the three conveyors in Union Creek. Additionally, the physical separation of the lifts presents a challenge to the functionality of these lifts.

The Novice level terrain off of Kokomo and Lumberjack is excellent. Opportunities exist to increase the amount of terrain off of the Lumberjack lift, to improve the terrain variety available for Novice level skiers.

This teaching terrain is some of the best to be found in the industry, with a quantity and quality that is rarely matched. The natural division of this area from the rest of

the mountain is very desirable. The problem with the terrain is that it is not well lift-served.

Highpoint Area

The trails here are mostly Novice and Low Intermediate level. This is also the location of CMR's primary terrain park. The only constraint is that several of the trails are narrow as compared to modern standards.

Frontside

This the large amount of terrain that is generally accessed by Timberline Express, American Flyer, American Eagle, Excelsior, and Super Bee. All of this terrain is well designed and takes advantage of significant natural attributes like consistent fall-lines, consistent grades, and natural division of terrain by ability level. There is good distribution of the terrain by ability level and circulation generally works well. The only constraint is a topographical one, the difficulty of circulating between the east and west of the frontside.

Opportunities exist to infill trails between the existing trails to increase the variety of terrain available.

Alpine and Resolution Areas

Good quality Advanced and Expert trails are found off these lifts. They are only constrained by a lack of overall acreage of terrain. Both areas would be improved with additional trails, particularly ones that would increase the variety of terrain types.

Upper Mountain and Backside

Much of the terrain available off of the Strom King, Rendezvous, Sierra, Blackjack, and Mountain Chief is above timberline and so is characterized by open bowls and natural openings and meadows. The variety of this terrain is good, as is the presence of routes of differing ability levels.

Skiing off Union Peak to the north-west gives access to a large natural open area named Union Meadow. There is plenty of grade to return a developed trail (Soliloquy) but the lack of a cleared, developed trail makes the connection difficult.



The only constraint is the alignment of the Storm King and the challenges that are created in the ability to access all the available terrain, specifically access to Copper Bowl.

The table below lists the specifications for all the developed trails at CMR.

**Table 4-2:
Terrain Specifications – Existing Conditions**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
01	Far East	11,511	9,790	1,721	5,721	154	20.2	32	56	Expert
02	Too Much	11,506	9,789	1,717	5,704	159	20.8	32	52	Adv. Intermediate
03	Triple Treat	11,486	9,803	1,683	5,306	189	23.1	34	47	Adv. Intermediate
04	Formidable	10,843	9,806	1,038	3,190	168	12.3	35	50	Adv. Intermediate
07	Treble Cliff	10,303	9,801	502	1,660	143	5.4	32	51	Adv. Intermediate
08	Rosi's Run	10,828	9,758	1,069	3,457	266	21.1	33	50	Adv. Intermediate
09	Overlode	10,828	9,925	903	2,778	165	10.5	34	48	Adv. Intermediate
10	Ore Deal	10,468	9,779	689	2,044	190	8.9	36	49	Adv. Intermediate
11	Green Acres	9,814	9,750	64	588	234	3.2	11	17	Novice
11.5	Gem	9,798	9,751	47	460	174	1.8	10	13	Beginner
12	Oh No	11,664	10,802	862	3,934	169	15.3	23	40	Intermediate
13	Drain Pipe	11,943	11,604	338	1,035	349	8.3	35	62	Expert
14	Andy's Encore	11,957	10,091	1,867	7,840	224	40.3	25	48	Intermediate
14b	Skid Road	10,053	9,717	336	2,461	251	14.2	14	32	Low Intermediate
14c	West Encore	11,608	11,297	311	1,604	292	10.7	20	31	Intermediate
14d	Slot Car Track	11,556	11,328	228	1,660	30	1.1	14	27	Intermediate
14e	Upper Skid Road	10,455	10,427	28	286	85	0.6	10	10	Novice
15	Collage	11,921	9,785	2,136	8,946	140	28.8	25	46	Intermediate
15b	Easy Rider	9,771	9,764	7	122	135	0.4	8	8	Beginner
16	Bouncer	11,181	9,760	1,421	6,250	158	22.7	23	46	Intermediate
18	Copperopolis	11,656	11,190	466	1,831	257	10.8	26	43	Intermediate
19	Brennan's Grin	11,981	11,291	691	2,428	124	6.9	30	51	Adv. Intermediate
20	CDL's	11,974	11,249	725	2,541	205	11.9	30	42	Adv. Intermediate
20.5	Mine Dump	11,986	11,342	644	2,053	118	5.5	33	40	Intermediate
21	Ptarmigan	12,015	11,224	791	3,032	181	12.6	27	42	Intermediate
22	Hallelujah	11,865	11,291	575	1,965	388	17.5	31	46	Adv. Intermediate



**Table 4-2:
Terrain Specifications – Existing Conditions**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
22.125	Looking Glass	11,673	11,098	575	1,315	160	4.8	49	69	Expert
22.25	Slip Not	11,693	11,172	521	1,210	110	3.0	48	59	Expert
22.375	Ute Overlook	11,635	11,216	419	1,037	126	3.0	44	56	Expert
22b	Hallelujah Ridge	12,299	11,867	432	2,100	266	12.8	21	39	Intermediate
22c	Bariloche	12,294	11,870	424	1,690	385	15.0	26	37	Intermediate
22d	Spaulding Ridge	12,308	12,041	267	1,893	197	8.6	14	37	Intermediate
23	Rhapsody	11,157	10,881	276	1,091	144	3.6	26	36	Intermediate
24	Main Vein	11,166	9,760	1,405	5,646	266	34.4	26	43	Intermediate
25	Fair Play	10,801	10,231	570	2,208	191	9.7	27	37	Intermediate
25b	Foul Play	10,556	10,320	236	935	166	3.6	26	31	Intermediate
26	Bittersweet	11,233	10,219	1,014	4,740	168	18.2	22	46	Intermediate
27	Upper Leap Frog	10,381	10,333	48	387	146	1.3	12	16	Novice
27b	Lower Leap Frog	10,279	10,219	60	456	131	1.4	13	17	Low Intermediate
28-L	Lower Carefree	10,135	9,782	352	1,370	300	9.4	27	35	Intermediate
28-U	Upper Carefree	10,744	10,153	591	3,708	209	17.8	16	25	Low Intermediate
28b	Liberty	10,908	10,514	394	1,690	180	7.0	24	33	Low Intermediate
29-L	Lower Lovely	10,034	9,807	227	1,273	209	6.1	18	27	Low Intermediate
29-M	Middle Lovely	10,305	10,042	264	1,357	230	7.2	20	34	Low Intermediate
29-U	Upper Lovely	10,699	10,313	386	2,102	274	13.2	19	26	Low Intermediate
29b	Lovely Lane	10,250	10,148	102	604	72	1.0	17	23	Low Intermediate
30	Scooter	10,490	9,860	630	3,251	145	10.8	20	35	Low Intermediate
30b	Rugrat	9,823	9,811	11	127	116	0.3	10	10	Beginner
30c	The Glide	9,818	9,810	8	97	125	0.3	12	12	Beginner
30d	Slingshot	9,843	9,834	9	145	92	0.3	6	6	Beginner
31	Vein Glory	10,792	9,851	941	4,893	185	20.8	20	34	Low Intermediate
31b	Hidden Vein	10,196	9,923	273	1,427	169	5.5	20	32	Low Intermediate

**Table 4-2:
Terrain Specifications – Existing Conditions**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
32-L	Lower Easy Feelin'	10,236	9,857	379	1,989	158	7.2	19	26	Low Intermediate
32-U	Upper Easy Feelin'	10,617	10,256	360	1,520	136	4.7	24	31	Low Intermediate
33	Coppertone	11,422	10,334	1,088	6,819	171	26.8	16	25	Novice
33b	See and Ski	10,964	10,846	117	531	169	2.1	23	30	Low Intermediate
34	I-Dropper	11,128	10,551	577	2,237	133	6.8	27	35	Low Intermediate
35	Minor Matter	10,677	10,479	198	1,723	100	4.0	12	18	Novice
36	Woodwinds	10,908	10,427	481	2,367	163	8.9	21	25	Novice
36.5	Woodwinds Traverse	10,454	10,172	283	3,282	103	7.8	9	15	Novice
37-L	Lower High Point	10,875	10,704	171	920	219	4.6	19	22	Novice
37-M	Middle High Point	11,161	10,882	279	1,200	254	7.0	24	29	Low Intermediate
37-U	Upper High Point	11,718	11,167	552	3,428	252	19.8	16	43	Intermediate
38	American Flyer	11,401	10,459	942	4,285	218	21.4	23	34	Low Intermediate
39	The Moz	11,554	10,482	1,072	4,707	241	26.0	23	49	Intermediate
39.5	Little Burn	11,544	10,720	823	3,098	127	9.1	28	42	Intermediate
40	Copperfields	11,523	10,545	978	4,176	208	20.0	24	35	Intermediate
41	Windsong	11,586	10,480	1,106	4,940	187	21.3	23	39	Intermediate
42	Tempo	11,370	11,163	207	844	74	1.4	25	35	Intermediate
43	Jacque's Pique	11,371	10,711	660	3,019	122	8.4	23	45	Intermediate
44-L	Lower Soliloquy	10,613	10,487	126	927	157	3.3	14	21	Novice
44-U	Upper Soliloquy	11,586	10,620	965	5,732	179	23.6	17	33	Low Intermediate
45.5	Bruce's Way	10,289	10,196	93	601	152	2.1	16	18	Novice
45-L	Lower Roundabout	10,170	9,832	338	3,167	150	10.9	11	22	Novice
45-M	Middle Roundabout	10,823	10,172	651	4,025	248	22.9	16	27	Novice
45-U	Upper Roundabout	11,006	10,798	208	2,445	178	10.0	9	19	Low Intermediate
46	Fairway	10,491	10,081	410	2,522	222	12.8	17	25	Novice
47	Prospector	10,266	10,010	256	1,689	162	6.3	15	21	Novice



**Table 4-2:
Terrain Specifications – Existing Conditions**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
48	West Tenmile	10,818	10,224	594	3,884	144	12.9	15	27	Novice
49	Clear Cut	10,711	10,548	163	704	486	7.9	24	37	Intermediate
50	I-Way	10,735	10,638	97	1,063	64	1.6	9	19	Novice
52	Wheeler Creek	11,849	11,127	722	4,295	218	21.5	17	32	Low Intermediate
53	Union Gap	11,412	11,198	214	1,022	184	4.3	21	32	Low Intermediate
54	Lower Sluice	11,348	11,231	117	551	164	2.1	22	28	Low Intermediate
54b	Upper Sluice	11,562	11,440	122	372	118	1.0	35	42	Intermediate
55	Union Park	11,872	11,357	515	3,561	352	28.7	15	35	Low Intermediate
56	Indian Ridge	11,627	11,405	222	556	405	5.2	44	71	Expert
57	Little Trees	11,943	11,606	336	992	201	4.6	37	58	Expert
58	Endeavor	12,005	11,589	416	1,128	193	5.0	40	52	Adv. Intermediate
59	Revenge	12,088	11,373	716	2,815	249	16.1	27	55	Expert
60	Kaboom	12,131	11,369	762	3,167	205	14.9	25	57	Expert
62	Timber Ridge	12,106	11,583	523	2,259	345	17.9	24	45	Intermediate
63	Gold Digger	11,876	11,380	497	1,761	254	10.3	30	45	Adv. Intermediate
64	Retreat	12,113	11,206	906	3,770	279	24.1	25	42	Adv. Intermediate
64b	Far West	12,288	11,674	615	2,085	467	22.4	31	38	Adv. Intermediate
65-L	Lower Easy Road Traverse	11,196	9,874	1,322	17,989	27	11.2	7	25	Novice
65-U	Upper Easy Road Traverse	12,002	11,197	804	10,476	25	2.2	8	20	Novice
66	Easy Road Too	11,155	10,721	433	5,268	30	3.7	8	17	Novice
67	Bee Road	10,844	10,710	134	2,066	27	1.3	7	16	Intermediate
68	Bee Traverse	10,139	9,859	280	2,194	92	4.6	13	46	Adv. Intermediate
69	Road Home	9,803	9,714	89	353	55	0.4	26	33	Low Intermediate
00	Double Zero	11,989	11,641	348	892	343	7.0	43	58	Expert
000	Triple Zero	12,015	11,639	375	970	301	6.7	43	73	Expert
A	Highline	11,964	10,561	1,403	4,366	232	23.2	34	76	Expert

**Table 4-2:
Terrain Specifications – Existing Conditions**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
B	Sawtooth	11,957	10,552	1,405	4,472	213	21.9	33	76	Expert
C	Cabin Chute	11,695	10,556	1,139	4,475	138	14.2	26	50	Adv. Intermediate
D	Cross Cut	11,642	10,630	1,012	3,487	147	11.8	31	50	Adv. Intermediate
CB 03-L	Lower Lillie G	11,770	11,187	583	1,801	278	11.5	35	59	Expert
CB 03-U	Upper Lillie G	12,289	11,760	529	2,042	597	28.0	27	41	Intermediate
CB 04	Rattler	11,772	11,353	419	1,182	504	13.7	38	51	Adv. Intermediate
CB 05	Allcante	12,086	11,387	698	1,924	507	22.4	39	53	Adv. Intermediate
CB 07	Golden Crest	12,150	11,514	635	1,723	311	12.3	40	55	Expert
CB 08	Julie's Vision	12,200	11,633	568	1,630	418	15.6	37	52	Adv. Intermediate
CB 08.5	Six Shooter	12,260	11,804	456	1,238	385	10.9	40	51	Adv. Intermediate
CB 09	Matchless	12,300	11,561	739	2,240	447	23.0	35	63	Expert
CB 14	Otto Bahn	11,925	11,170	756	6,010	99	13.7	13	25	Low Intermediate
SB 01	Boardwalk	12,344	12,213	132	1,173	152	4.1	11	22	Adv. Intermediate
SB 02	Park Place	12,214	11,810	404	1,120	529	13.6	39	49	Adv. Intermediate
SB 03	Marvin Gardens	12,286	11,763	523	1,296	201	6.0	44	60	Expert
SB 04	Calendar Chute	12,274	11,783	491	1,170	129	3.5	47	59	Expert
SB 05	Patrol Chute	12,344	11,793	551	1,370	216	6.8	45	82	Expert
SB 06	Cornice Chute	12,312	11,796	516	1,312	294	8.9	44	75	Expert
SB 09	So Fine	12,219	11,748	470	1,120	426	11.0	47	85	Expert
SB 10	Pacific Cornice	12,101	11,710	391	902	310	6.4	49	70	Expert
SB 11	Atlantic Cornice	12,051	11,678	373	884	197	4.0	47	63	Expert
TOTAL					318,969		1,377			

Source: SE Group



Existing Terrain Distribution by Ability Level

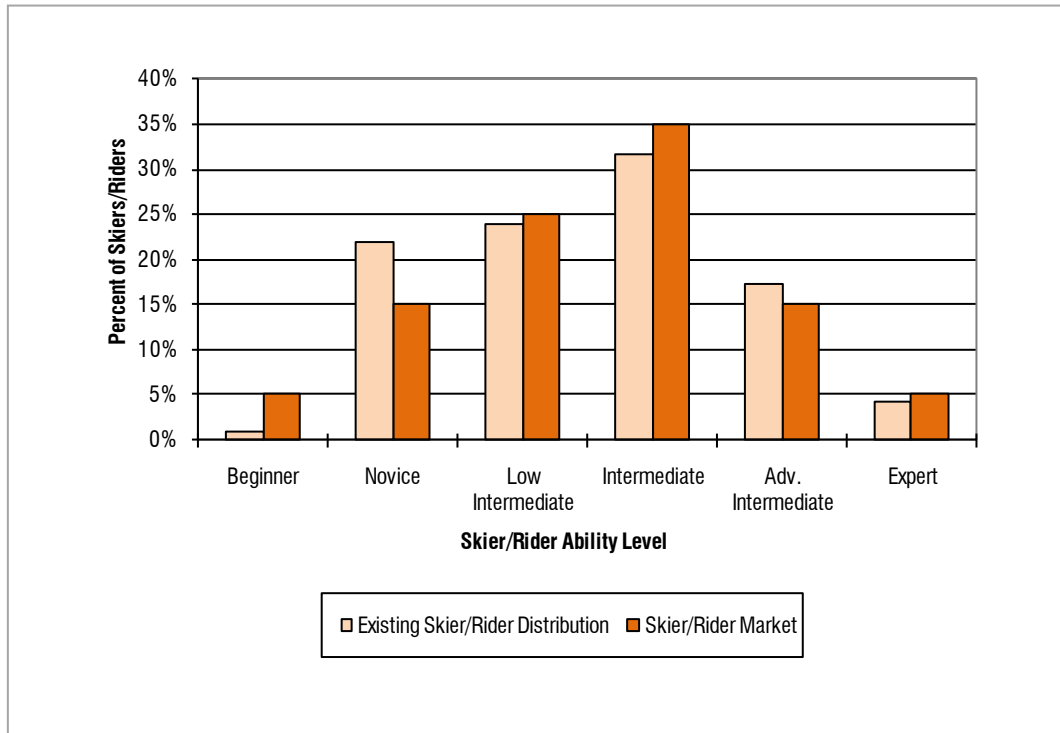
The potential demand for terrain through the full range of skill levels is close to the ideal breakdown for the regional destination skier market, with the exception of Beginner and Novice terrain. The terrain classification breakdown of the existing ski area is set forth in the following table and chart. The last column in this table represents what can be considered the ideal skill level distribution in the relevant skier market and provides a comparison with the existing breakdown at CMR.

**Table 4-3:
Terrain Distribution by Ability Level – Existing Conditions**

Skier/Rider Ability Level	Trail Area	Skier/Rider Capacity	CMR Skier/Rider Distribution	Skier/Rider Market
	(acres)	(guests)	(%)	(%)
● Beginner	3.1	94	1	5
● Novice	146.9	2,351	22	15
■ Low Intermediate	258.6	2,586	24	25
■ Intermediate	425.1	3,401	32	35
◆ Adv. Intermediate	311.2	1,867	17	15
◆ Expert	232.2	464	4	5
TOTAL	1,377.2	10,763	100	100

Source: SE Group

**Chart 4-1:
Terrain Distribution by Ability Level – Existing Conditions**



Source: SE Group

Table 4-3 and Chart 4-1 clearly illustrate a fairly close match between CMR's existing terrain distribution and the market demand for all ability levels. With the extensive novice terrain off Lumberjack and Highpoint, CMR has an abundance of Novice terrain. There also is a slight abundance of Advanced Intermediate level terrain and slight deficiency of Expert and Intermediate. There is a notable deficiency of true beginner terrain. Overall, however, there is a good balance of terrain for the varying ability levels.

Alternate Terrain

In terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business, one of the more important factors has proven to be variation in terrain. This means having developed runs of all ability levels, some groomed on a regular basis and some not, as well as mogul runs, bowl skiing, gladed skiing, back-country style (hike-to) skiing, and terrain parks and pipes. To provide the highest quality guest experience, resorts should offer all terrain types to the extent it is practical. Even though some of these types of terrain only provide opportunities



when conditions warrant, terrain variety is increasingly becoming a crucial factor in guests' decisions regarding their ski destinations.

Hike-To Terrain

CMR provides hike-to access to a significant quantity of open bowls, natural meadows, chutes, and glades. These are primarily on Union Peak, in Copper Bowl and on Tucker Mountain. In total, these areas constitute 818 acres, as detailed in Table 4-4 below. Depending on snow conditions, these areas are popular destinations for CMR's more advanced guests.

**Table 4-4:
Hike-to Terrain Specifications – Existing Conditions**

Trail Area/Name	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
Allcante	64	180	193	0.8	38	39	Intermediate
Golden Crest	41	180	212	0.9	22	23	Novice
Julie's Vision	81	200	539	2.5	44	48	Advanced Intermediate
Six Shooter	40	112	362	0.9	39	39	Intermediate
Bradley's Plunge	706	2,023	541	25.1	38	65	Expert
Schaeffer's	707	2,062	577	27.3	37	82	Expert
Iron Mask	660	1,960	501	22.5	36	74	Expert
Lallarookn	1,100	5,859	297	40.0	19	49	Advanced Intermediate
Freemont 1	1,005	2,262	740	38.4	50	74	Expert
Freemont 2	1,128	2,806	507	32.7	44	63	Expert
Freemont 3	1,029	2,700	441	27.3	42	68	Expert
Freemont 4	944	2,563	498	29.3	40	70	Expert
Freemont 5	845	2,171	536	26.7	43	68	Expert
The Taco	658	1,826	960	40.3	39	63	Expert
The Nacho	674	3,117	1,771	126.7	22	38	Intermediate
Buzzard's Alley	494	1,248	686	19.7	44	63	Expert
Union Peak	623	1,668	676	25.9	41	76	Expert
Union Meadows	1,231	6,395	2,257	331.4	20	40	Intermediate
TOTAL		39,333		818			

Source: SE Group

Snowcat Access

CMR operates a first come, first served free snowcat operation on Tucker Mountain. The snowcats operate from 10:00 a.m. to 1:30 p.m. each day of the week, weather dependent. Note that the Tucker Mountain terrain is open for hiking even when the snowcat isn't operating. This service picks up guests near the base of the Mountain Chief lift and drops them along the ridgeline or on the summit of Tucker Mountain, as conditions warrant. Approximately 320 acres of terrain (included in the 818 acres discussed above) can be accessed from this point. In Table 4-4 above, the terrain accessible from the snowcat is generally *Freemont* 1-5, the *Taco*, and the *Nacho*. This service is very popular and it provides a very backcountry-like experience to CMR's guests.

Glades

CMR also provides access to a significant quantity of lift-accessible glades. Glades are found on the upper mountain in addition to the sides of, and in between, developed trails. Existing glades constitute approximately 293 acres, as detailed in Table 4-5 below, and are labeled on Figure 2. Depending on snow conditions, these areas are also popular destinations for CMR's more advanced guests.

Note: one glade listed below, the *Taco Glade*, is hike-to access. The remainder are easily accessed from existing lifts.

CMR has identified opportunities throughout its SUP boundary to selectively thin and manage forested areas in a manner that would improve glade skiing and make it more functional for a wider range of ability levels.



**Table 4-5:
Glades Specifications – Existing Conditions**

Trail Area/Name	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
Black Bear Glade	699	1,830	410	17.2	42	61	Expert
Free Fall Glade	830	2,228	353	18.1	40	55	Advanced Intermediate
Glade	501	1,224	1,031	29.0	45	56	Expert
Sail Away Glades	283	760	454	7.9	41	51	Advanced Intermediate
Cache Glades	479	1,101	571	14.4	49	63	Expert
Spaulding Glades	531	2,075	903	43.0	27	41	Intermediate
Upper Enchanted Forest	710	2,180	2,346	117.5	35	55	Advanced Intermediate
Lower Enchanted Forest	311	910	1,252	26.2	36	45	Advanced Intermediate
The Taco Glade	103	360	566	4.7	30	32	Low Intermediate
Jimmy Z's	366	1,024	377	8.9	38	51	Advanced Intermediate
Buzz's Glade	260	686	172	2.7	41	48	Advanced Intermediate
Slot Car Glade	156	560	267	3.4	29	38	Intermediate
TOTAL				293			

Source: SE Group

Backcountry and Sidecountry Access

Within CMR's SUP boundary, an "Operational Boundary is established. This Operational Boundary represents the extent of the presently developed, maintained, and patrolled ski area. In some areas, the Operational boundary is contiguous with the SUP boundary, in other areas, it is not. Terrain areas which lie beyond CMR's Operational Boundary, but within the SUP boundary are characterized as "Sidecountry." Sidecountry differs from more common "backcountry" in that it lies within the extent of the ski area's SUP area and has therefore been established as being appropriate for future lift-served, developed, Alpine skiing. Additionally, these areas are within Management Area 8.25, as designated within the 2002 Revised White River National Forest Land and Resource Management Plan (Forest Plan). As such, all portions of the CMR SUP boundary have been established in the Forest Plan as being allocated to lift-served Alpine skiing opportunities.

Presently, there is one Forest Service access point along CMR's operational boundary located along the skier's left edge of the *West Tenmile* trail. This access point provides an established exit for skiers wishing to access terrain within the Guller Creek drainage. This is additionally the principal access route for skiers heading to "Janet's Cabin" which is operated by the Summit Huts Association.

Terrain Parks

Terrain parks have become a vital part of most mountain resorts' operations, and are now considered an essential mountain amenity. Popularity of terrain parks continues to increase, and is dependent on regional location of the resort, demographics of the resort's target guests, and, significantly, the quality of the parks.

CMR has numerous terrain parks, mostly accessed off the American Flyer lift. Additional access is from Highpoint and American Eagle lifts. The parks include:

- Catalyst – The flagship park and the largest park at CMR. Large sized features, including rails, boxes, jibs, and jumps, this park is for Advanced to Experts users
- Eagle Jib Park – This is the early season park as well as a lower level jib park. This park is popular for riding rails and progression in rail riding
- Superpipe – a 22-foot competition level superpipe
- Highpoint – located off the Highpoint trail, below the top of the American Flyer lift
- Jiberish – located off of Lower Highpoint, this is a dedicated jib park
- Kidz Park – true to the name, this is a dedicated park for younger and lower level park riders

CMR updates and modifies the terrain parks throughout the season in response to market demands and user preferences.

4.4 EXISTING CAPACITY ANALYSIS

Comfortable Carrying Capacity

As stated earlier, the accurate calculation of a ski area's CCC is an important, complex analysis and is the single most important planning criterion for the ski area. All other related skier service facilities can be evaluated and planned based on the proper identification of the mountain's capacity. The detailed calculation of CMR's current CCC is described in the table below and is calculated at 11,870 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% to 30%.



**Table 4-6:
Comfortable Carrying Capacity – Existing Conditions**

Map Ref.	Lift Name, Lift Type	Slope Length (ft.)	Vertical Rise (ft.)	Actual Design Capacity (guests/hr.)	Oper. Hours (hrs.)	Up-Mtn. Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly Cap. (guests/hr.)	VTF/Day (000)	Vertical Demand (ft./day)	Daily Lift Capacity (guests)
A	Alpine C-2	5,661	1,734	1,200	7.00	-	5	1,140	13,834	21,975	630
A1	Resolution C-3	4,490	1,421	1,200	6.50	-	5	1,140	10,531	19,558	540
C	Gem s	490	54	450	7.00	-	5	428	161	3,712	40
C1	Pitchfork C-2	532	61	1,200	7.00	-	15	1,020	436	2,922	150
D	The Glide c	77	9	720	7.00	-	-	720	43	1,568	30
E	Excelerator DC-4	3,231	840	2,450	6.75	20	5	1,838	10,416	13,810	750
ER	Easy Rider c	101	8	720	7.00	-	-	720	40	1,125	40
F	American Eagle DC-4	6,276	1,476	2,312	7.00	25	5	1,618	16,723	13,584	1,230
H	Highpoint C-2	4,973	962	1,200	7.00	25	10	780	5,255	10,970	480
I	Timberline Express DC-4	5,065	1,101	2,640	6.75	10	5	2,244	16,670	12,887	1,290
K	Kokomo C-3	2,642	321	1,800	7.00	10	30	1,080	2,428	3,384	720
L	Lumberjack C-3	4,268	690	1,800	6.75	10	30	1,080	5,034	7,785	650
M	Storm King s	1,884	414	900	6.25	20	10	630	1,630	9,777	170
O1	American Flyer DC-4	9,951	1,891	2,400	7.00	25	5	1,680	22,233	11,986	1,850
R	Rendezvous C-3	3,397	524	1,800	6.50	15	10	1,350	4,594	7,260	630
RR	Rugrat c	101	10	720	7.00	-	-	720	48	1,336	40
S	Sierra C-3	3,058	741	1,200	6.75	5	5	1,080	5,404	14,127	380
SB	Super Bee DC-6	8,984	2,286	2,980	7.00	25	5	2,086	33,377	20,706	1,610
SS	Slingshot c	148	9	720	7.00	-	-	720	45	864	50
4	Blackjack C-2	2,402	758	1,200	6.25	-	5	1,140	5,403	20,702	260
6	Mountain Chief C-2	2,489	795	1,200	6.25	-	5	1,140	5,668	17,182	330
TOTAL		70,219		30,812				24,353	159,973		11,870

Source: SE Group

Density Analysis

An important aspect of ski area design is the balancing of uphill lift capacity with downhill trail capacity. Trail densities are derived by contrasting the uphill, at-one-time capacity of each lift system (CCC) with the trail acreage associated with each lift pod. At any one time, skiers are dispersed throughout the resort, while using guest facilities and milling areas, waiting in lift mazes, riding lifts, or enjoying descents. For the trail density analysis, 25% of each lift's capacity is presumed to be inactive—using guest service facilities or milling areas.

The active skier population can be found in lift lines, on lifts, or on trails. The number of skiers waiting in line at each lift is a function of the uphill hourly capacity of the lift and the assumed length of wait time at each lift. The number of guests on each lift is the product of the number of uphill carriers and the capacity of the lift's carriers. The remainder of the skier population (the CCC minus the number of guests using guest facilities, milling in areas near the resort portals, waiting in lift mazes, and actually riding lifts) is assumed to be descending trails.

Trail density is calculated for each lift pod by dividing the number of guests on the trails by the amount of trail area that is available within each lift pod. The trail density analysis compares the calculated trail density for each lift pod to the desired trail density for that pod (i.e., the product of the ideal trail density for each ability level and the lift's trail distribution by ability level).

The trail density analysis considers only the acreage associated with the developed trail network, as described above (refer to Figure 2 – Existing Conditions). The density analysis for the existing conditions at CMR is illustrated in the table below. This table shows that there is a surplus of downhill terrain capacity in relation to uphill lift capacity. This situation is desirable from the quality of skiing perspective, and is reflected in the low skier densities. The implications of the table are discussed following the table.



**Table 4-7:
Density Analysis – Existing Conditions**

Lift Name/Type	Daily Lift Capacity	Guest Dispersal				Density Analysis				Density Index (%)
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Terrain (guests)	Terrain Area (acres)	Terrain Density (guests/ac.)	Target Trail Density (guests/ac.)	Diff. (+/-)	
Alpine C-2	630	158	38	215	219	80.0	3	5	-2	60
Resolution C-3	540	135	95	171	139	124.6	1	3	-2	33
Gem s	40	10	0	12	18	1.8	10	30	-20	33
Pitchfork C-2	150	38	34	18	60	3.2	19	16	3	119
The Glide c	30	12	0	12	6	0.3	22	30	-8	73
Excelerator DC-4	750	188	214	92	256	78.6	3	6	-3	50
Easy Rider c	40	16	0	15	9	0.4	24	30	-6	80
American Eagle DC-4	1,230	308	270	169	483	115.6	4	9	-5	44
Highpoint C-2	480	120	39	129	192	81.6	2	11	-9	18
Timberline Express DC-4	1,290	323	262	175	530	148.6	4	9	-5	44
Kokomo C-3	720	180	126	95	319	12.2	26	16	10	163
Lumberjack C-3	650	163	36	154	297	60.4	5	15	-10	33
Storm King s	170	43	74	31	22	100.7	0.2	7	-7	3
American Flyer DC-4	1,850	463	280	279	828	127.0	7	11	-4	64
Rendezvous C-3	630	158	45	153	274	47.9	6	10	-4	60
Rugrat c	40	16	0	15	9	0.3	27	30	-3	90
Sierra C-3	380	95	90	110	85	121.4	1	5	-4	20
Super Bee DC-6	1,610	403	243	289	675	149.2	5	7	-2	71
Slingshot c	50	20	0	22	8	0.3	26	30	-4	87
Blackjack C-2	260	65	38	91	66	60.1	1	6	-5	17
Mountain Chief C-2	330	83	95	95	57	63.0	1	4	-3	25
TOTAL	11,870	2,997	1,979	2,342	4,552	1,377	6	9	-3	65

Source: SE Group

The density figures set forth show that for most of the individual lift/trail systems, the actual trail densities are lower than the target design criteria. The exceptions to this are the Kokomo and Pitchfork areas, where the actual density is higher than the target density. These are both novice teaching areas. The implication of this is a slight over-utilization of the terrain off those lifts, indicating that opportunities should be pursued to develop additional teaching terrain, if practical. The average density numbers for the overall resort are listed along the bottom row of Table 4-7. These averages have been weighted for the lift system's CCC. When compared with industry standard criteria, the actual average skier densities experienced at CMR are approximately 65% of the acceptable standard. This is an indication that, on the average, trail crowding is not a common occurrence at CMR. Note that specific trails, such as egress trails towards the end of the day, can consistently have high densities. However, the low density numbers also indicate under-utilization of the existing terrain, indicating that there may be more skiers than necessary waiting in lift lines or on slow lifts. This can indicate an opportunity to upgrade existing lifts and/or install new lifts within the existing boundaries of the resort, without creating undesirably high skier densities.

Lift and Terrain Network Efficiency

Overall resort efficiency is becoming an increasingly important factor in the industry. This relates not only to energy efficiency and operational efficiency, but also to efficiency of the design and layout of the resort. The idea behind ski area design efficiency is to have a well balanced lift and trail network (i.e., the uphill lift capacity balances with the downhill trail capacity that it serves) that is efficiently served its lifts, while maintaining desired CCC rates, circulation routes, and service to the full spectrum of skier ability levels and types.

Within the context of ski area design, the term "Lift Network Efficiency" refers to the amount of effort and cost required to operate and maintain the lift network, as compared to the number of guests served (i.e., the daily capacity or CCC). The energy and costs related to the ski area efficiency include, but are not limited to: power use, operational labor, maintenance costs and labor, increased indirect administrative costs, and various direct and indirect costs associated with higher staff levels to perform these tasks. From this standpoint, the most efficient scenario is to have the fewest number of lifts possible that can comfortably and effectively serve the capacity and circulation requirements of the resort, while creating a balance of capacity with the available terrain.



One way to analyze Lift and Terrain Network Efficiency is to calculate the average CCC per lift at a given resort. While this calculation does not relate to the overall capacity of the resort, it can indicate if: 1) the resort is not getting maximum utilization out of its lifts, or 2) there are more lifts than necessary for the capacity levels of the resort. When calculating this average, conveyors and surface tows are not included, as the CCC calculations (and operating costs) for them are so low that it would skew the overall average. Optimally, and as a planning goal, the average CCC per lift would likely be close to 1,000. Industry-wide, the average CCC per lift is approximately 650. The average CCC per lift at CMR is about 730. This indicates that CMR has a better than average lift network efficiency, and that there is likely a somewhat lower lift cost, in terms of both energy use and financial/operational cost, per skier than most resorts. Primary contributing factors to this include: the well-designed, effective lift layout; the length and functionality of the primary lifts; and the fact that all lifts can be skied (there are no transport-only lifts).

Terrain Network Efficiency refers to the amount of effort required to properly maintain the terrain (snowmaking costs, grooming costs, energy costs, ski patrol costs, summer trail maintenance costs, increased administrative costs, costs associated with higher staff levels to perform these tasks, etc). From this standpoint, the most efficient scenario is to have a quantity of terrain that closely meets the target density requirements (as displayed in the Density Analysis above). CMR scores less well in this analysis, as the overall density index is only at 65%. This indicates that more terrain is maintained than can be effectively served by the existing lift network. This again shows an ability to upgrade the lifts within the existing area, without the need for significant terrain expansions. Upgrading the lifts would provide more efficient use of the existing terrain.

4.5 EXISTING GUEST SERVICES FACILITIES, FOOD SERVICE SEATING & SPACE USE ANALYSIS

Skier Services Locations

Skier service facilities are located at base area staging locations and in on-mountain buildings. Base area staging locations, or portals, are 'gateway' facilities that have three main functions:

- Receiving arriving guests (from a parked car, a bus, or from adjacent accommodations)
- Distributing the skiers onto the mountain's lift and trail systems

- Providing the necessary guest services (e.g., tickets, rentals, food and beverage, and restrooms)

Portal-related skier services are currently offered in three base area staging locations at CMR: the East Village, the Center Village, and Union Creek.

On-mountain skier service facilities are generally used to provide restaurant seating and restrooms, as well as ski patrol and first aid services, in closer proximity to upper-mountain ski terrain. It has also become common for ski areas to offer ski demo locations on-mountain, so skiers can conveniently test different skis throughout the day. At CMR, on-mountain services are primarily provided at the Solitude Station facility at the top of the American Eagle lift, with additional food service at Flyers and T-Rex Grill, off American Flyer and Timberline Express.

Base Area

Main day skier parking is located in the vicinity of the East Village, around Tenmile Creek. Shuttles then take guests to all of the three base areas. The exception to this is the Triple Treat lot and the Alpine lift. Guests parking in the Triple Treat lot can access the mountain directly via the Alpine lift. Although, as discussed previously, there are no ticket sales facilities at that location, so that option rarely used. Lodging is located in all three base areas, but is focused on Center and East villages. Guests disperse to these three portals, then access the mountain. The various skier service functions that are available in the base area include: food service, bars/lounge, restrooms, guest services, ski school, Daycare, rental/repair shop, retail, ticket sales, public lockers, ski patrol/first aid, and administrative offices.

On-Mountain

On-mountain skier services are available at the top of the American Eagle lift, in the Solitude Station facility. Additional food service is located at Flyers and T-Rex Grill, off American Flyer and Timberline Express. Ski patrol space is ample and located at Patrol Headquarters at the top of Super Bee, and at several duty stations around the mountain. Services available on-mountain are limited to food service, restrooms, and ski patrol. It is important to note that current on-mountain restroom facilities are limited and not adequately located to serve guests beyond the front side of the mountain. All on-mountain food service opportunities are older facilities and are in generally poor condition. They are considered inadequate to meet the demands of existing use.



Space Use Analysis

Sufficient guest service space should be provided to accommodate the existing resort CCC of 11,870 guests per day. The distribution of the CCC is utilized to determine guest service capacities and space requirements for skier services at base area portals and on-mountain facilities. The CCC should be distributed between each guest service facility location according to the number of guests that would be utilizing the lifts and terrain associated with each facility.

In addition to distributing the CCC amongst the base area and on-mountain facilities, guest service capacity needs and the resulting spatial recommendations are determined through a process of reviewing and analyzing the current operations to determine specific guest service requirements that are unique to the resort.

Based upon a CCC of 11,870 skiers, Table 4-8 below compares the current space use allocations of the visitor service functions to industry norms for a resort of similar market orientation and regional context as CMR. Square footage contained in this table is calculated to illustrate how the ski area compares to industry averages, and should not be considered absolute requirements. Service functions include:

- **Restaurant Seating:** All areas designated for food service seating, including: restaurants, cafeterias, and brown bag areas. Major circulation aisles through seating areas are designated as circulation/waste, not seating space.
- **Kitchen/Scramble:** Includes all food preparation, food service, and food storage.
- **Bar/Lounge:** All serving and seating areas designated as restricted use for the serving and consumption of alcoholic beverages. If used for food service, seats are included in seat counts.
- **Restrooms:** All space associated with restroom facilities (separate women, men, and employees).
- **Guest Services:** Services including resort information desks, kiosks, and lost and found.
- **Adult Ski School:** Includes ski school booking area and any indoor staging areas. Storage and employee lockers directly associated with ski school are included in this total.
- **Rentals/Repair:** All rental shop, repair services, and associated storage areas.

- **Kid's Ski School:** Includes all daycare/nursery facilities, including booking areas and lunch rooms associated with ski school functions. Storage and employee lockers directly associated with ski school are included.
- **Retail Sales:** All retail shops and associated storage areas.
- **Ticket Sales:** All ticketing and season pass sales areas and associated office space.
- **Public Lockers:** All public locker rooms. Any public lockers located along the walls of circulation space are included, as well as the 2 feet directly in front of the locker doors.
- **Ski Patrol/First Aid:** All first aid facilities, including clinic space. Storage and employee lockers directly associated with ski patrol are included in this total.
- **Administration/Employee Lockers & Lounge/Storage:** All administration/employee/storage space not included in any of the above functions.

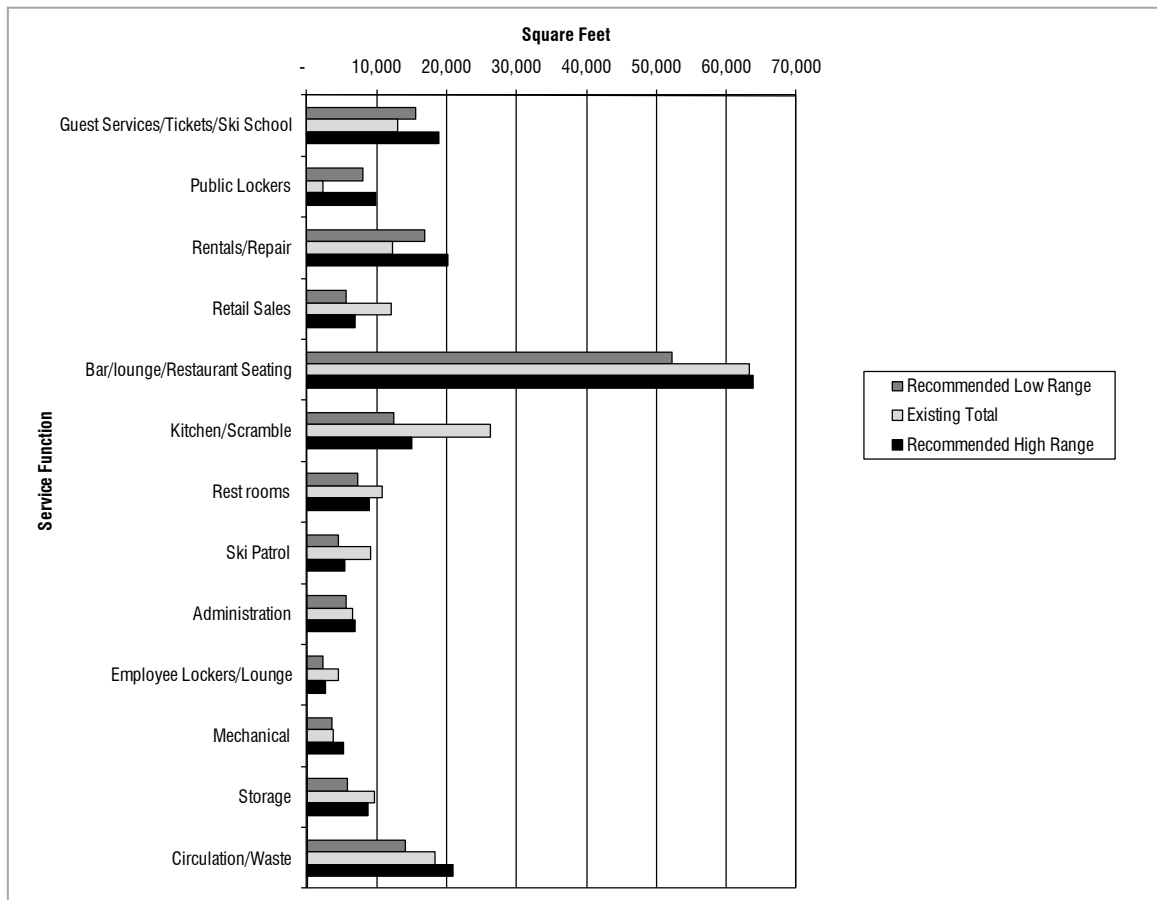
Table 4-8:
Industry Average Space Use
Resort Total – Existing Conditions

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	13,007	15,490	18,930	(2,483)	(5,923)
Public Lockers	2,363	8,010	9,800	(5,647)	(7,437)
Rentals/Repair	12,290	16,910	20,120	(4,620)	(7,830)
Retail Sales	12,019	5,600	6,860	6,419	5,159
Bar/Lounge/Restaurant Seating	63,205	52,250	63,860	10,955	(655)
Kitchen/Scramble	26,161	12,350	15,100	13,811	11,061
Rest rooms	10,712	7,290	8,910	3,422	1,802
Ski Patrol	9,090	4,480	5,490	4,610	3,600
Administration	6,565	5,610	6,860	955	(295)
Employee Lockers/Lounge	4,470	2,250	2,740	2,220	1,730
Mechanical	3,756	3,520	5,240	236	(1,484)
Storage	9,676	5,860	8,720	3,816	956
Circulation/Waste	18,258	14,060	20,940	4,198	(2,682)
TOTAL SQUARE FEET	191,572	153,680	193,570	37,892	(1,998)

Source: SE Group



Chart 4-2:
Total Space Use and Recommendations – Existing Conditions



Source: SE Group

As shown in the above table and chart, CMR has adequate overall skier service space. The resort falls right at the high end of the recommended range for building space. While several categories of existing space are relatively close to the recommended range of space, there are a few notable exceptions where there are deficiencies. Guest services/Ski School, Public Lockers, and Rentals/Repair are all notably short on space. There are significant surpluses in Retail space, Kitchen area, and Employee Locker/Lounge space.

The following tables and text address the existing space use at each guest service facility. The space recommendations are directly related to the distribution of the resort's capacity to the various guest service facilities located in the base area and on-mountain.

Base Area – East Village

Skier service facilities in the East Village include Copper Station, Snowflake, and Foxpine. The buildings and facilities at both East Village and Center Village are newer and are in good condition. They serve the needs of the guests using these portals well, and have sufficient space to accommodate some future growth.

**Table 4-9:
Industry Average Space Use
East Village – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	850	800	980	50	(130)
Public Lockers	378	2,400	2,940	(2,022)	(2,562)
Rentals/Repair	4,448	5,700	6,410	(1,252)	(1,962)
Retail Sales	4,197	1,680	2,060	2,517	2,137
Bar/Lounge/Restaurant Seating	17,460	12,690	15,510	4,770	1,950
Kitchen/Scramble	7,251	2,160	2,640	5,091	4,611
Rest rooms	1,650	1,270	1,560	380	90
Ski Patrol	-	780	960	(780)	(960)
Administration	-	-	-	-	-
Employee Lockers/Lounge	-	-	-	-	-
Mechanical	936	740	1,090	196	(154)
Storage	3,750	1,240	1,820	2,510	1,930
Circulation/Waste	5,266	2,970	4,360	2,296	906
TOTAL SQUARE FEET	46,186	32,430	40,330	13,756	5,856

Source: SE Group

As shown in the table above, the East Village's base area facilities are above the high end of the recommended range in total square footage and almost all categories are beyond the high end of the range. The only categories that show deficiencies are Public Lockers and Rental/Repair. The surplus of restaurant space, in particular, shows that this facility could accommodate more use than it currently sees.

Base Area – Center Village

Skier facilities in Center Village include Copper One Lodge, Mountain Plaza, the Mill Club, Copper Junction, the Conference Center, and Edge.



**Table 4-10:
Industry Average Space Use
Center Village – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	4,345	4,030	4,930	315	(585)
Public Lockers	1,687	4,410	5,390	(2,723)	(3,703)
Rentals/Repair	6,122	8,810	10,770	(2,688)	(4,648)
Retail Sales	7,092	3,080	3,770	4,012	3,322
Bar/Lounge/Restaurant Seating	34,749	24,430	29,860	10,319	4,889
Kitchen/Scramble	10,814	5,680	6,940	5,134	3,874
Rest rooms	6,185	3,350	4,100	2,835	2,085
Ski Patrol	1,040	2,060	2,520	(1,020)	(1,480)
Administration	5,705	4,770	5,830	935	(125)
Employee Lockers/Lounge	2,920	1,910	2,330	1,010	590
Mechanical	2,180	1,690	2,520	490	(340)
Storage	3,250	2,810	4,200	440	(950)
Circulation/Waste	7,961	6,750	10,090	1,211	(2,129)
TOTAL SQUARE FEET	94,050	73,780	93,250	20,270	800

Source: SE Group

As shown in the table above, the Center Village's base area facilities fall just above the high end of the recommended range in total square footage and almost all categories fall above the high end of the range. The only categories that show deficiencies are Public Lockers and Rental/Repair. The surplus of restaurant space is largely due to the use of the Conference Center for overflow seating.

Base Area – Union Creek

Skier facilities in Union Creek include Union Creek and The School House. Union Creek is the primary ski school portal. The buildings in Union Creek are older than the other base areas, are smaller in size, and are generally less functional.

**Table 4-11:
Industry Average Space Use
Union Creek – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	7,812	10,660	13,020	(2,848)	(5,208)
Public Lockers	298	1,200	1,470	(902)	(1,172)
Rentals/Repair	1,720	2,400	2,940	(680)	(1,220)
Retail Sales	730	840	1,030	(110)	(300)
Bar/lounge/Restaurant Seating	7,156	6,920	8,460	236	(1,304)
Kitchen/Scramble	3,507	1,930	2,360	1,577	1,147
Rest rooms	1,748	1,140	1,390	608	358
Ski Patrol	-	700	860	(700)	(860)
Administration	860	840	1,030	20	(170)
Employee Lockers/Lounge	-	340	410	(340)	(410)
Mechanical	640	730	1,090	(90)	(450)
Storage	1,216	1,210	1,810	6	(594)
Circulation/Waste	2,003	2,910	4,350	(907)	(2,347)
TOTAL SQUARE FEET	27,690	31,820	40,220	(4,130)	(12,530)

Source: SE Group

As shown in the table above, the Center Village's base area facilities fall below the recommended range in total square footage and in most categories. The only categories that show a notable surplus is Kitchen space. The deficiency of Ski School space is particularly notable, as this area is the primary Ski School portal. This deficiency should be addressed.

On-Mountain – Solitude Station

Solitude Station was built in 1972 and provides the primary on-mountain food service facility for CMR. The location is convenient for guests skiing on the Copper Peak side of the resort (Super Bee, American Eagle, etc.), but it cannot be accessed from the Union Peak or Copper Bowl side of the mountain (American Flyer, Timberline Express, Sierra, etc.) without skiing down to Center Village.



**Table 4-12:
Industry Average Space Use
Solitude Station – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	-	-	-	-	-
Public Lockers	-	-	-	-	-
Rentals/Repair	-	-	-	-	-
Retail Sales	-	-	-	-	-
Bar/lounge/Restaurant Seating	3,840	6,710	8,200	(2,870)	(4,360)
Kitchen/Scramble	4,150	2,110	2,580	2,040	1,570
Rest rooms	922	1,250	1,520	(328)	(598)
Ski Patrol	-	770	940	(770)	(940)
Administration	-	-	-	-	-
Employee Lockers/Lounge	1,550	-	-	1,550	1,550
Mechanical	-	290	440	(290)	(440)
Storage	1,460	490	730	970	730
Circulation/Waste	3,028	1,170	1,750	1,858	1,278
TOTAL SQUARE FEET	14,950	12,790	16,160	2,160	(1,210)

Source: SE Group

This analysis of space use suggests that space available at Solitude Station is in-line with demand. However, the demand for this facility is likely restricted due to the small size and condition of the facility. It has a capacity of only about 1,000 guests per day; or about 25% of the skiers on that part of the mountain, implying that the remaining guests descend to the base area for food service. CMR is confident that the size of the facility is limiting the demand placed on it, and that a larger, newer, better appointed facility would be well used.

On-Mountain – Flyers

The existing Flyers is a small grill deck without indoor seating, restrooms, or any other facilities. However, the location is very convenient for guests skiing American Flyer and Timberline Express, as well as all of the upper mountain lifts. Additionally, there are spectacular views from this location. As a result, there is significant interest in a food service facility at this location.

**Table 4-13:
Industry Average Space Use
Flyers – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	-	-	-	-	-
Public Lockers	-	-	-	-	-
Rentals/Repair	-	-	-	-	-
Retail Sales	-	-	-	-	-
Bar/lounge/Restaurant Seating	-	1,090	1,330	(1,090)	(1,330)
Kitchen/Scramble	231	340	420	(109)	(189)
Rest rooms	-	200	250	(200)	(250)
Ski Patrol	-	120	150	(120)	(150)
Administration	-	-	-	-	-
Employee Lockers/Lounge	-	-	-	-	-
Mechanical	-	50	70	(50)	(70)
Storage	-	80	120	(80)	(120)
Circulation/Waste	-	190	280	(190)	(280)
TOTAL SQUARE FEET	231	2,070	2,620	(1,839)	(2,389)

Source: SE Group

This analysis of space use shows a significant deficiency of space at the Flyers location. However, this analysis is assuming that most of the skiers on this side of the mountain would still be descending to the base areas for food service. If a food service facility were to be built at this location, the demand for it would certainly be significantly higher.

On-Mountain – T-Rex Grill

The T-Rex Grill is another grill deck with no indoor seating. This is a newer, nice food service facility at the base of the Timberline Express lift. It has 415 square feet of existing space, with numerous large decks for outdoor seating. An additional building houses restrooms. The sheltered location and good sun exposure make the outdoor seating usable on most days. While the recommended space for it is about twice the existing size, the facility is functional and well-used.



**Table 4-14:
Industry Average Space Use
T Rex – Existing Conditions**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	-	-	-	-	-
Public Lockers	-	-	-	-	-
Rentals/Repair	-	-	-	-	-
Retail Sales	-	-	-	-	-
Bar/lounge/Restaurant Seating	-	410	500	(410)	(500)
Kitchen/Scramble	208	130	160	78	48
Rest rooms	207	80	90	127	117
Ski Patrol	-	50	60	(50)	(60)
Administration	-	-	-	-	-
Employee Lockers/Lounge	-	-	-	-	-
Mechanical	-	20	30	(20)	(30)
Storage	-	30	40	(30)	(40)
Circulation/Waste	-	70	110	(70)	(110)
TOTAL SQUARE FEET	415	790	990	(375)	(575)

Source: SE Group

On-Mountain – Other Facilities

There are numerous other small on-mountain facilities at CMR. These facilities include ski patrol stations at the top of Super Bee and other locations around the mountain, and a restroom facility at the top of Super Bee.

Food Service Seating

A key factor in evaluating restaurant capacity is the turnover rate of the seats. A turnover rate of 2 to 5 times is the standard range utilized in determining restaurant capacity. Sit-down dining at ski areas typically results in a lower turnover rate, while “fast food” cafeteria style dining is characterized by a higher turnover rate.

Furthermore, weather has an influence on turnover rates at ski areas, as on snowy days skiers will spend more time indoors than on sunny days. As a result of input from CMR management, an average seating turnover rate of 3.5 times was used for this analysis. Note that this turnover rate applies specifically to indoor seating, while a lower turnover rate is used for outdoor seating, due to its lower average utilization. The following table summarizes the seating requirements at CMR, based on a logical distribution of the CCC to each service building/location.

**Table 4-15:
Recommended Restaurant Seating***

	East Village	Center Village	Union Creek	Solitude Station	T-Rex Grill	Flyers	Total Resort
Lunchtime Capacity (CCC)	2,179	5,733	1,947	2,130	129	345	12,464
Average Indoor Seat Turnover	3.5	3.5	3.5	3.5	3.5	3.5	
Existing Indoor Seats	556	861	385	306			2,108
Recommended Seats*	622	1,638	556	609	37	99	3,561
Difference	-66	-777	-171	-303	-37	-99	-1,453
Existing seating capacity	1,946	3,014	1,348	1,071	0	0	7,378
Existing Outdoor Seats	224	98	102	154	95	25	698
Average Outdoor Seat Turnover	2	2	2	2	2	2	
Seating capacity including Outdoor Seats	2,394	3,210	1,552	1,379	190	50	8,774

*Recommended seats are based on existing CCC
Source: SE Group



As shown in the table above, there is a very significant deficit of indoor seating capacity at all locations, totaling a deficit of 1,453 restaurant seats. Even if all the outdoor seats are included, there is still a shortage of seats.

4.6 EXISTING PARKING AND RESORT ACCESS

All day skier parking at CMR is located in the base area. Parking occurs on both private and public lands. There are seven separate parking areas on private land, with a total capacity of 2,605 cars, and two parking areas on public lands, with a capacity of 1,804 parking spaces.

Vehicle occupancy counts confirm that average car occupancy at CMR is 2.37 people per car, a ratio that is in line with the national average of 2.3 to 2.7 people per car.

On typical days, employees do use some of these parking spaces, estimated to be around 500 spaces.

The Summit County run transportation system, the Summit Stage, brings skiers and employees to the resort. Also, a few charter buses typically bring guests.

Additionally, there are many lodging units that are in close enough proximity to the lifts that they do not need to drive.

The following table analyzes CMR's existing parking and lodging capacity.

**Table 4-16:
Parking/Bus/Lodging Capacity – Existing Conditions**

Lodging Capacity	
Total Existing Guest Units	1,353
Units in Rental Pool	1,100
Guests per Unit ^a	5.5
Average Occupancy Rate ^b	59%
<i>Guests from Lodging</i>	<i>3,570</i>
Bus/Shuttle Capacity	
Number of Charter buses ^c	4
<i>Riders per bus</i>	<i>40</i>
<i>Guests by Charter Bus</i>	<i>160</i>
Average Summit Stage Daily Riders ^d	1,246
Percent going to Copper ^e	17%
<i>Guests by Summit Stage</i>	<i>212</i>
<i>Total Guests from Lodging/Buses</i>	<i>3,941</i>
<i>Existing CCC</i>	<i>11,870</i>
<i>Resulting Parking Requirement (guests)</i>	<i>7,929</i>
Existing Parking Capacity Analysis	
<u>Private Land</u>	
Beeler Lot	126
Chapel Lot	381
Triple Treat	154
B-Lot	100
Alpine/Edge Lot	1,754
Maintenance Lot	61
Wheeler Lot	29
<i>Subtotal Private Land Parking Spaces</i>	<i>2,605</i>
<u>Public Land</u>	
North Tenmile	412
Far East Lot	1,392
<i>Subtotal Public Land Parking Spaces</i>	<i>1,804</i>
<i>Grand Total Parking Spaces</i>	<i>4,409</i>
<i>Required Employee Parking Spaces^f</i>	<i>500</i>
<i>Total Day Skier Parking Spaces</i>	<i>3,909</i>
Guests per car ^g	2.37
<i>Total Existing Guest Parking Capacity</i>	<i>9,264</i>
<i>Existing Parking Surplus</i>	<i>1,336</i>
Total Parking/Bus/Lodging Capacity	13,206

Notes:

^a Source is CMR management—based on actual counts^b Source is estimate for average day from CMR management^c Source is Summit Stage (free Summit County transportation system) for Frisco to CMR Route.^d Source is surveys by Summit Stage and CMR—35% of daily ridership is morning hours, 50% of that is employees^e Source is survey of lodging companies—actual counts.^f Based on approximately 650 employees per day—adjusted to account for employees parking at shop lot and employees on Summit Stage^g Source is CMR management—based on parking lot observations.

Source: SE Group



Including lodging, buses, and day skier parking, total Resort Access is 13,206 guests. The existing skier parking lots have sufficient capacity to park 3,909 guest cars, which is roughly 870 more cars than typically required on days when skier numbers are close to the CCC of 11,870. It should be noted, however, that some of this capacity is occasionally used by overflow from the lodging units. Lodging units have separate dedicated parking for each unit, but occasionally groups will arrive with more cars per unit than are dedicated to that unit. On these occasions, those cars are parked in the day skier lots.

4.7 EXISTING ALTERNATE AND NON-WINTER ACTIVITIES

Winter

Non-Skiing winter activities include:

- Tubing at The Tubing Hill, located in the East Village at the base of the Super Bee lift. Hours are typically 11 a.m. to 7 p.m.
- Ice Skating at West Lake
- Nordic Skiing
- Snowshoeing
- Snowmobiling
- Dog Sledding
- Sleigh Ride
- Athletic Club/Spa
- Woodward at Copper – a year-round indoor and outdoor ski and snowboard training camp dedicated park and pipe progression.

Summer

Summer activities at CMR include:

- Golf
- Downhill Mountain Biking
- Scenic chairlift ride and hiking
- Climbing Wall
- Boating

- Mini Golf
- Athletic Club/Spa
- Woodward at Copper

A more detailed discussion of existing and planned summer activities will be provided in Chapter 7.

4.8 EXISTING ON-MOUNTAIN OPERATIONS

Ski Patrol/First Aid

The primary ski patrol/first aid facility at CMR is located at the Patrol Headquarters, at the summit of Super Bee lift. Additional facilities are located in Center Village, and at duty stations on-mountain including the Timberline patrol at the top of American Flyer and the Union patrol near the summit of Union Peak. These four facilities effectively serve the terrain, with the exception of Tucker Mountain. The three on-mountain facilities are adequately sized, but the base facility (located in the lower patrol room of the Copper Conference Center) is too small to effectively serve the needs. This facility should be two to three times the existing size.

Snowmaking Coverage

As stated previously, CMR's snowmaking system covers 333.3 acres of the developed trail network. The snowmaking season usually lasts an average of 90 days, and is usually started around the 25th of September and is finished by the 31st of December. Water rights are currently decreed for 343 acre feet. Snowmaking covers primarily a variety of Beginner through Intermediate level terrain on the frontside of the mountain. See Figure 6 for snowmaking coverage.

The snowmaking system has a major positive effect on CMR's operation, assuring that adequate snow coverage is present throughout the resort, especially during the early part of the season. While providing for early season skiing, snowmaking also extends the spring season by creating a good base for subsequent snow to build upon. In summary, snowmaking has allowed the ski area to be open more days, and ensures snow quality throughout the resort, thereby achieving greater continuity of operation and a resultant increase in ski area utilization.



Grooming Operations

Under current operations, CMR presently has 16 grooming vehicles in the grooming fleet. Nine machines are used per shift, with two eight-hour shifts per night. This allows for about 500 acres of grooming per night. Additionally, five groomers are dedicated to the terrain parks and pipes every night. This acreage includes about 70% of the Beginner and Intermediate terrain as well as some upper level trails.

Maintenance Facility

CMR's maintenance facilities are comprised of several buildings located on private land. They include: a vehicle maintenance building of 10,800 square feet, a warehouse for Rental/Rental at 5,000 square feet, a Lift/Electrical facility at 3,000 square feet, a carpentry shop at 800 square feet, a base area operations building of 500 square feet, two warehouse buildings at 6,000 square feet each, a laundry at 2,400 square feet, and a mechanical maintenance shop at 900 square feet. In addition, four smaller facilities are: the transportation office at 600 square feet, transportation staff lockers at 480 square feet, a vehicle maintenance storage area of 400 square feet and a rental/retail storage area of 480 square feet.

The vehicle maintenance building has twelve bays: seven for rubber tire maintenance, four for tracked vehicles, and one for slope and grooming maintenance. There are two employee lockers/lounge spaces in the complex, at 1,200 square feet.

With the exception of the vehicle maintenance building, the complex is in good condition and is adequately sized for the functions that it serves. The vehicle maintenance building is in poor condition and does not have adequate space for serving the needs of maintaining the resort's 400 vehicles.

4.9 EXISTING UTILITIES AND INFRASTRUCTURE

Existing utilities are shown on Figure 7.

Water

The domestic water system for all of the base area buildings and facilities is a public system operated by a special district. Water source is three wells in the valley and is pumped up to the mountain. Storage capacity is 1 million gallons total: 250,000 gallons at the lower Mein Vein tank and, 750,000 gallons at the Lewis Ranch tank. The three valley wells presently produce 1,700 gpm primarily for fire protection. A fourth well, at 500 gpm, is planned and approved for the future as a backup. There is

adequate water capacity for existing use in the base area. However, on-mountain capacity is restricted and will need to be increased for future use.

Sewer

The sewer system for the resort is operated by Copper Mountain Consolidated Metropolitan District. Present peak day capacity at the sewer plant is adequate and the plant is designed and approved for 1.1 million gallons per day. This quantity is considered adequate for all current and possible future use, and is consistent with the industry standard of 7 to 10 gallons per person per day.

Power

Electrical power is supplied by Xcel Energy, via a primary line that originates at the Mayflower sub-station on private land owned by Climax Mining. There are two mountain feeds and two village feeds—overhead to the village, then underground. There is adequate power capacity for all current and future anticipated needs.

Natural Gas

A high-pressure natural gas pipeline runs in the bike path right-of-way east of the resort, running from Climax Mining property to the Town of Frisco. The line is owned and maintained by Xcel Energy. Capacity is adequate for all current and future anticipated needs.

Fuel Storage

Fuel storage is located adjacent to the vehicle maintenance complex and at Control Building Number One. There are a 12,000-gallon diesel tank and a 12,000-gallon gasoline tank at the vehicle maintenance building. There are a 20,000-gallon diesel tank and a 6,000-gallon gasoline tank at the Control Building. Additionally, all lifts have auxiliary power supply fuel tanks. All tanks fully comply with applicable codes and are adequate for current demand. Future needs will require additional fuel storage capacity.

Road Network

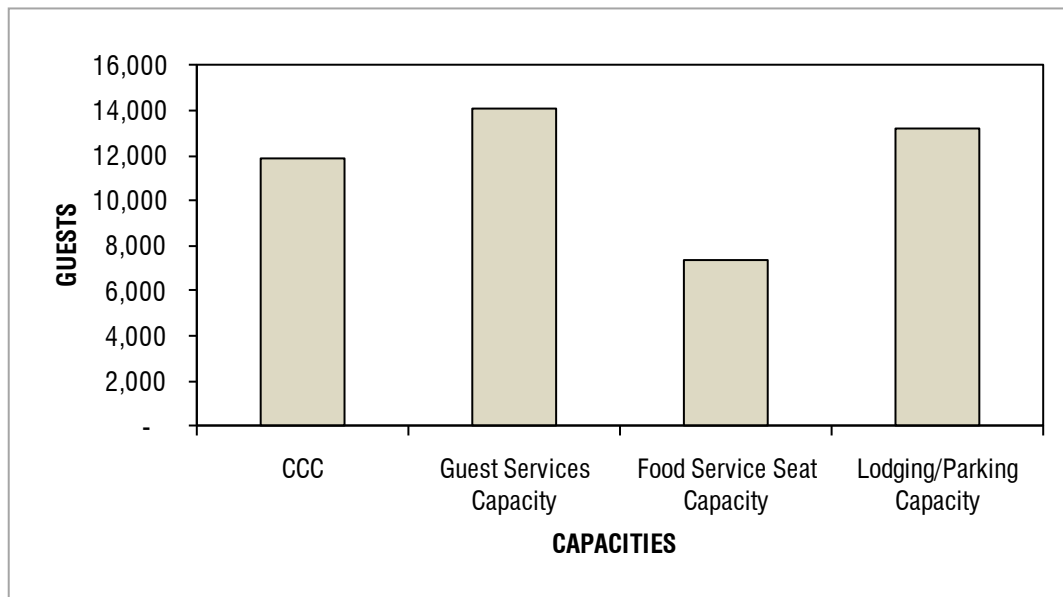
Approximately 14.5 miles of mountain roads exist connecting the base area to various locations and facilities across the mountain. Locations of existing roads are shown in Figure 7.



4.10 RESORT CAPACITY BALANCE AND LIMITING FACTORS

The overall balance of the existing ski area is evaluated by calculating the capacities of the resort's various facilities and comparing those facilities to the resort's CCC. The above discussed capacities are shown in Chart 4-3.

Chart 4-3:
Resort Balance – Existing Conditions



Source: SE Group

As the above chart indicates, the lift capacity derived CCC is lower than both the Guest Services and Lodging/Parking capacities. As discussed in the Density Analysis above, the terrain capacity is above the CCC, indicating an opportunity to upgrade the lift system without the need for significant terrain expansions. The most noteworthy aspect of the chart is the deficit of skier space in general, and food seating space in particular. This situation needs to be remedied to meet the demands of existing levels of public visitation. As discussed, the lack of on-mountain food service and restroom facilities are particular concerns. Parking and lodging capacity is not currently a limiting factor.

4.11 VEGETATION MANAGEMENT PLAN

In conjunction with the preparation of the “*Copper Mountain Resort Final Environmental Impact Statement, Trails and Facilities Improvements*,” (2006 FEIS) and accompanying Record of Decision (ROD), a vegetation management plan was prepared for CMR. This process involved the completion of “common stand exams”

for each of CMR's inter-trail tree islands and the creation of stand-specific management recommendations. CMR is committed to the proactive management of forest health within the SUP area and will continue to advance these projects via the annually submitted Summer Operating Plan.



5. Prior Project Approvals



5. PRIOR PROJECT APPROVALS

Throughout the past eight years, CMR has completed numerous site-specific project approval processes in fulfillment of the requirements of the National Environmental Policy Act (NEPA). While several of these previously approved projects have been successfully implemented, many remain approved but unimplemented. This section of the MDP is provided to articulate the prior approval processes, and summarize the nature of the projects that have received approval. In the interest of brevity, these project approval processes are summarized here with the corresponding approval document being accurately cited as reference. The projects themselves have been depicted on Figure 5 (the Upgrade Plan) as “Previously Approved.” For more specific detail, the reader is referred to the individual approval document.

Most significantly, Copper Mountain Resort and the Forest Service completed the “*Copper Mountain Resort Final Environmental Impact Statement, Trails and Facilities Improvements*,” in January 2006 (2006 FEIS). The 2006 FEIS, and accompanying Record of Decision (ROD), thoroughly assessed and approved an extensive suite of on-mountain projects including:

- Increasing the resort’s Comfortable Carrying Capacity to 14,990 guests.
- Approximately 55 acres of additional Skiable Terrain.
- Authorization of 43 acres of miscellaneous tree removal, programmatically allocated across seven sub-watersheds.
- One new Chairlift installation and Upgrades to two existing lifts.
- Approximately 148.2 acres of additional snowmaking coverage, and associated water use.¹²
- An increase in CMR’s Peak Water Diversion Rate from 5 to 7 cubic feet per second.
- Renovation and expansion of the Solitude Station.
- Development of an on-mountain snow vehicle/operations maintenance shop.
- Associated facility and supporting utility upgrades and installations.

¹² In 2010 snowmaking was installed on American Flyer and Windsong (30.1 acres) leaving approximately 118.1 acres of approved snowmaking remaining from the 2006 ROD.



Additionally, the “*Copper Mountain Resort, Environmental Assessment, Tenmile Creek Facilities Improvements and Restoration Project*” was completed in September 2008, which approved an additional 1,508 parking spaces, associated modifications to State Highway 91 and a stream restoration project for a portion of Tenmile Creek, east of State Highway 91.

Via the document “*Copper Mountain Resort, Environmental Assessment, Kokomo Lift and Teaching Terrain Improvements*,” approved in June 2002, CMR received site-specific approval for a number of projects in the Union Creek/Kokomo/Lumberjack lift areas. In summary, this process approved the following project elements:

- Replacement and realignment of the Kokomo Lift with an upgrade to an eight-person gondola.
- The installation of a Teaching Lift west of the planned top terminal of the Kokomo Lift.
- Two Surface Conveyor Lifts for teaching in the vicinity of the Kokomo Lift top terminal.
- An additional 53.5 acres of snowmaking coverage area.
- A 300-seat Warming/Guest Service facility atop the Kokomo Lift.
- Necessary, and associated, utility and infrastructural support for the approved projects.

Finally, a series two Decision Memos (Categorical Exclusions) and one Supplemental Information Report (SIR) have assessed and approved the replacement and upgrade of the existing Highpoint Lift in a variety of alignments/configurations over the period 1998 to 2006. Presently, this project is planned for implementation in the summer of 2011.¹³

¹³ November 1998 – Decision Memo and Biological Assessment/Evaluation, March 1999 – Supplemental Information Report, November 2006 – Decision Memo.



6. Upgrade Plan



6. UPGRADE PLAN

The purpose of this Upgrade Plan is to provide direction for the future development of Copper Mountain Resort which ensures a balance of facilities and a variety of amenities and opportunities—all leading to an improved recreational experience. It is designed to improve the recreational experience as well as operational efficiencies. This plan will allow CMR to continue sustainability in its operations and remain competitive in the national and regional destination skier market, help retain existing guests, and attract new visitors. The Upgrade Plan is depicted on Figure 4.

6.1 SUMMARY OF THE UPGRADE PLAN

Paramount to this Upgrade Plan is addressing deficiencies in CMR's aging lift network and on-mountain guest facilities. The Upgrade Plan addresses the lift network in several ways: increased out-of-base lift capacity; replacement of fixed-grip lifts with overly long ride times, rework of teaching area to better utilize existing terrain, realignment of lifts to better access existing terrain, and strategic lift installations. By addressing all of these areas, access to, and circulation throughout, the resort will be improved. A few opportunities to increase skiable terrain within the boundaries of the existing resort are planned, with an emphasis on increasing terrain variety.

Out-of-base lift capacity and dispersal across the mountain will be improved with the replacement of American Flyer and Highpoint. The Union Creek teaching area will be greatly improved with the replacement of both the Kokomo and Lumberjack lifts, the relocation (and increase in number) of the conveyor lifts, and the addition of a small teaching chairlift. A new west-to-east connector lift will be installed to create a connection from the Union Peak side to the Copper Peak side without requiring a return to the base area. Excelsior will be extended to improve access to the bottom terminal. Alpine will be replaced with a detachable lift and extended to improve utilization and access to terrain. Both Storm King and Sierra will be replaced and realigned to improve access to terrain. Finally, a chairlift will be installed to gain lift-service access to Tucker Mountain.

Planned grading projects around the mountain, mainly focused on circulation routes, will improve the terrain network. In addition, the Upgrade Plan calls for approximately 90 new acres of terrain, providing lift served access to approximately 260 acres of terrain that is currently hike-to access only, and 60 acres of new glades



to be constructed at the resort. Snowmaking coverage is planned to be expanded on approximately 120 acres on critical connecting trails throughout the resort.

Trail widening and grading along with snowmaking projects specifically located on *Upper Andy's Encore*, *Oh No*, and *Rosi's Run* are planned in conjunction with the development of the Super Bee Training Venue for the United States Ski Team.

Upgrades to the on-mountain guest services are also a key component of the plan. Solitude Station is planned to be either renovated or removed and replaced with an expanded and improved facility, and a new food service facility is planned for the current location of Flyers. These guest service projects will greatly improve CMR's on-mountain food service capabilities. Additional guest service locations, and restrooms, are planned at strategic locations throughout the resort.

With implementation of the Upgrade Plan, CMR's CCC will increase from 11,870 to 15,630 guests per day.

6.2 UPGRADED LIFT NETWORK

As discussed above, the cornerstone of the Upgrade Plan is a substantial upgrade to the lift network. Overall, seven of CMR's primary chairlifts are planned to be removed and replaced, four new chairlifts will be installed, one existing lift will be extended, and the teaching conveyors will be moved and three new conveyors added. The following table includes detailed information on the lift specifications in the Upgrade Plan.

**Table 6-1:
Lift Specifications – Upgrade Plan**

Lift Ref	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Design Capacity (pers./hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
A	Alpine DC-4	11,682	9,787	1,895	6,577	30	2,400	1,000	100	Replace
A1	Resolution C-3	11,970	10,549	1,421	4,490	34	1,200	500	75	Poma 1985
C	Gem s	9,804	9,750	54	490	11	450	300	40	Poma 1972
C1	Pitchfork C-2	9,812	9,751	61	532	12	1,200	500	50	Heron 1979
D	The Glide c	9,836	9,831	5	77	6	720	80	7	Relocate
E	Excelerator DC-4	12,022	11,165	857	3,503	25	2,450	1,080	106	Poma 1998
ER	Easy Rider c	9,770	9,762	8	101	8	720	80	7	Magic Carpet 2000
F	American Eagle DC-4	11,236	9,760	1,476	6,276	24	2,312	1,000	104	Poma 1989
H	Highpoint DC-4	10,802	9,812	990	5,059	20	2,400	1,000	100	Replace
I	Timberline Express DC-4	11,580	10,480	1,101	5,065	22	2,640	1,080	98	Doppelmayr 1994
K	Kokomo DC-4	10,176	9,824	352	3,039	12	1,800	750	100	Replace
L	Lumberjack DC-4	10,870	10,130	740	4,755	16	2,400	1,000	100	Replace
M	Storm King s-2	12,298	11,827	471	2,082	23	1,200	750	75	Replace
N	West to East Connection DC-4	11,249	10,265	984	4,437	23	2,400	1,000	100	Replace
O1	American Flyer DC-6	11,661	9,770	1,891	9,951	19	3,000	1,000	120	Replace
R	Rendezvous C-3	11,877	11,354	524	3,397	16	1,800	500	50	Yan 1982
RR	Rugrat c	9,841	9,833	8	101	8	720	80	7	Relocate
S	Sierra DC-4	12,266	11,354	912	3,801	25	2,400	1,000	100	Replace
SB	Super Bee DC-6	11,996	9,710	2,286	8,984	27	2,980	1,080	130	Poma 1998
SS	Slingshot c	9,855	9,843	12	148	8	720	80	7	Relocate
4	Blackjack C-2	11,926	11,167	758	2,402	33	1,200	500	50	Yan 1973
6	Mountain Chief C-2	12,293	11,498	795	2,489	34	1,200	500	50	Yan 1977
PA-L1	Lumberjack Teaching Lift C-2	10,949	10,775	174	1,396	13	1,000	350	42	New
PA-L2	Tucker Mtn Lift C-3	12,321	11,197	1,124	2,996	41	1,200	500	75	New
P-C1	Union Creek Carpet 1 c	9,877	9,857	20	180	11	600	60	6	New
P-C2	Union Creek Carpet 2 c	10,162	10,134	28	204	14	600	60	6	New



**Table 6-1:
Lift Specifications – Upgrade Plan**

Lift Ref	Lift Name, Lift Type	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Design Capacity (pers./hr.)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
P-C3	Union Creek Carpet 3 <i>c</i>	10,164	10,146	18	154	12	600	60	6	New
P-1	Catalyst Terrain Park Lift <i>c</i>	10,586	10,376	210	1,028	21	600	100	10	New
P-2	Union Meadows Surface Tow <i>s</i>	12,265	12,095	170	601	30	1,500	300	12	New

c = carpet

s = Surface lift

C2 = fixed-grip double chairlift

C3 = fixed-grip triple chairlift

C4 = fixed-grip quad chairlift

DC6 = Detachable Six Passenger chairlift

* the Kokomo lift would either be a Chondola or Gondola

Colored text indicates planned lift improvements

Source: SE Group

The following lifts are not planned to change with the Upgrade Plan, and as such are not discussed separately below: Super Bee, American Eagle, Timberline Express, Rendezvous, Blackjack, and Mountain Chief.

Planned Lift Replacements/Modifications

Union Creek Area

In order to improve CMR's ability to cater to beginner/novice level skiers and riders, the Upgrade Plan includes an extensive redesign of the area. The enhancements will create an ideal progression to the learning experience for both skiers and riders, and a model venue for the Ski and Ride School program. Additionally, the Kokomo-Lumberjack lift combination will create alternative, high-speed lift access to the Timberline Express lift.

To enhance the overall teaching opportunities at Union Creek, three existing conveyor lifts (The Glide, Rugrat, and Slingshot) will be relocated adjacent to the existing Kokomo lift bottom terminal and along the north side of Lower Roundabout. This will be CMR's primary teaching venue for first-time beginner and novice skiers. The conveyors will be placed in series along with a new conveyor above the three relocated conveyors. The lowest conveyor (The Glide) will be directly accessible from the Union Creek base facilities, which then provides access to the conveyors above.

The existing Kokomo triple chairlift will be replaced with either a chair or gondola. The lift's top terminal will be located slightly uphill of the existing Kokomo top terminal, and the bottom terminal will be located adjacent to the Union Creek base facilities so it is more easily accessible than the current Kokomo bottom terminal. This new lift will be used for round trip skiing as well as to transport beginning skiers and riders to two conveyor lifts that are strategically located for ease of access to the Kokomo lift, on the gentle terrain adjacent to the lift's top terminal. These conveyors and slopes will be used by CMR's Ski and Ride school, especially on peak days when overflow teaching terrain is needed.

As demand warrants, a teaching chairlift will be added near the top of Lumberjack. This would be a low, slow double chairlift on teaching terrain slightly steeper than slopes available adjacent to the Kokomo lift. The previously approved Lumberjack Teaching lift, formerly known as the Kokomo Teaching lift, will be accessed from the new Lumberjack detachable chairlift. (Refer to Chapter 5 for additional information regarding the previously approved projects discussed in this chapter.)



The existing Lumberjack triple chairlift is quite slow and relatively long, resulting in a very long ride-time. As a result, the terrain served by Lumberjack, while ideally suited for entry level Novice skiers, is dramatically underutilized. In order to reduce the Lumberjack ride-time, thereby increasing utilization of the area, as well as continuing the progression for learning skiers and riders, the Lumberjack chairlift will be upgraded to detachable technology. The lift will also be extended at the top to take advantage of additional terrain that is available and facilitate access from Lumberjack to Timberline.

These projects are located on both private lands and NFS lands. The bottom terminal and much of the length of the Kokomo upgrade, as well as the bottom terminal and a portion of the lower length of Lumberjack, are located on private lands, with the remainder of the projects on NFS lands.

Highpoint Chairlift

The existing Highpoint double chairlift will be replaced with a detachable quad chairlift along a similar alignment. The new lift will increase utilization on the high quality terrain in the area that has historically been avoided due to the long ride time on the existing Highpoint double chair. Additionally, the new lift will provide direct, high-speed, out-of-base access from the Union Creek base area to the Timberline Express lift, causing Union Creek to become a more popular portal for accessing the mountain in the morning.

The bottom terminal of the new Highpoint lift has been shifted to the east of the Schoolhouse building in order to reduce congestion in front of the Union Creek base facilities. In conjunction with the new terminal location, new skiways will be established—one from lower Scooter and one from lower Vein Glory/Easy Feelin’—to segregate the Novice and Intermediate level skiers using the Highpoint runs from the beginners and kids at Kokomo and on Roundabout trail.

The majority of the Highpoint replacement is located on NFS lands with the exception of the bottom terminal and a short section of the lower length of the lift that is located on private land.

American Flyer

The existing American Flyer chairlift is a mid-eighties vintage detachable lift that has reached its life expectancy. Accordingly, it will be replaced with new detachable technology. Given the popularity and out-of-base function of the Flyer, it will be upgraded from a quad to a six-passenger chairlift. The Flyer’s current alignment and

terminal locations work well for the terrain it services, so the new lift will follow the same alignment.

The majority of the American Flyer replacement is located on NFS lands with the exception of the bottom terminal and a short section of the lower length of the lift that is located on private land.

Alpine

The Alpine double chairlift serves CMR's longest and most demanding Expert runs—some of the finest Expert level fall-line runs in the state. However, the low capacity and long ride-time of the Alpine double causes it to be unpopular to Expert skiers. The previously approved upgrade of the Alpine lift to a detachable lift will attract more Expert skiers to this terrain, exploit the opportunity for lower mountain Expert skiing (i.e., when weather conditions are unfavorable on the upper mountain), and introduce efficient out-of-base access from the Triple Treat East and surrounding parking lots. In conjunction with the lift replacement, the top terminal will be moved approximately 900 feet uphill to improve access from Alpine to the Excelsior and Resolution lift/trail networks, this was also included in the prior approval of this lift project.

The majority of the Alpine replacement is located on NFS lands with the exception of the bottom terminal and a short section of the lower length of the lift that is located on private land.

Excelsior Extension

In order to improve access from the American Eagle top terminal to the base of Excelsior, and to account for skier circulation requirements evolving from proposed modifications to the Solitude Station, the bottom terminal of the Excelsior lift will be extended downhill nearly 300 feet.

This project is located entirely on NFS lands.

Storm King

The existing alignment of the Storm King platter lift bisects the fine bowl-skiing on Bariloche. In addition, the hourly capacity of the lift is undersized relative to the vast amount of terrain that it serves. Accordingly, the lift will be replaced with a higher-capacity T-bar, and the new lift will be relocated so that its top terminal will be in approximately the same location as the existing lift and the bottom terminal moved about 300 feet to the northwest, thereby removing the alignment from the center of the Bariloche bowl.



This project is located entirely on NFS lands.

Sierra (including Surface Lift option)

The Sierra triple chairlift serves very popular, high-alpine terrain including Union Bowl and Union Meadows. Because of wind issues, the lift's current top terminal is positioned well below the Union Peak ridge, so skiers and riders must hike to reach Union Peak and the upper reaches of Union Bowl and Union Meadows, as well as access to Copper Bowl. Given the popularity of the terrain served by the Sierra chairlift and its potential to provide enhanced access to Copper Bowl, it will be replaced with a higher capacity, detachable chairlift. Earlier alternatives were considered (and approved) for the lift replacement that would extend it to Union Peak. However, more recent concerns over wind closures and snow retention on the upper ridges of Union Peak lead to the conclusion that the top terminal should not be moved to any great extent from where it currently exists. Instead, a short surface lift will be installed that is accessible from the new Sierra lift top terminal and extends to the Union Peak ridge near the Mountain Chief top terminal. This combination of high-speed chairlift and short surface lift will result in a quick ride time to the Union Peak ridge and will become the primary access to Copper Bowl, Union Peak, Union Bowl and Union Meadows.

This project is located entirely on NFS lands.

Other Transportation Systems

In addition to the ski lifts described above, CMR presently operates a tracked over-the-snow transportation system between Center Village and Union Creek. While this is currently an over-the-snow system with carriers pulled by a snowmobile, this system could eventually become a fixed people mover fixed to a set track. This conveyance is located on private land.

Planned Lift Additions

See Union Creek Area discussion above for description of the previously approved Lumberjack Teaching chairlift, planned Roundabout Teaching chairlift, and planned Kokomo conveyors.

These projects are located entirely on NFS lands.

N Lift

From a skier/rider circulation perspective, a shortcoming of CMR is that traveling from the west side of the mountain (Timberline, American Flyer, Sierra, etc.) to the east side of the mountain (American Eagle, Excelsior, Super Bee, etc.) involves a seemingly roundabout and tedious trip including an extended ski-out to the Center Village and a relatively long ride on American Eagle or Super Bee. In order to facilitate the west-to-east transfer, a new lift will be installed from lower *Carefree* trail to near the top terminal of American Eagle. In addition to improving cross-mountain circulation, this detachable chairlift will also provide direct access to proposed Intermediate and Advanced ski runs, the Bittersweet Alpine ski racing venue, and the improved and expanded Sail Away Glades.

This project is located entirely on NFS lands.

Tucker Lift

The planned Tucker triple chairlift will provide lift service to the Expert terrain on Tucker Mountain that is currently served by snowcat, as well as newly cleared runs. The Tucker lift was previously approved along an alignment connecting the summit of Tucker Mountain to a point in Copper Creek about 1,500 feet downhill of the bottom terminal of Blackjack chairlift. After considering a variety of factors including skier circulation and construction/maintenance access to the new Tucker lift bottom terminal, the current proposal keeps the top terminal at the summit of Tucker Mountain but shifts the bottom terminal to a location adjacent to the current bottom terminal of Blackjack.

This project is located entirely on NFS lands.

6.3 UPGRADED DEVELOPED TERRAIN NETWORK

Terrain Variety

As discussed in the previous chapter, terrain variety is the key factor in evaluating the quality of the actual skiing and riding guest experience (as opposed to lift quality, restaurant quality, or any other factor). The implication of the importance of terrain variety is that a resort must have a diverse, interesting, and well designed developed trail network, but also have a wide variety of alternate style terrain, such as mogul runs, trees, glades, open parks, and terrain parks and pipes.

As discussed in Chapter 4, CMR currently has excellent terrain variety, with diverse developed terrain that has a good ability level distribution and natural division



between ability levels. Alternate style terrain is extensive and varied. Additionally, the density analysis shows that the existing terrain network is underutilized and can easily accommodate additional skiers without degrading the quality of the ski experience. As a result significant expansions to the terrain network are not required.

Developed Alpine Trails

Overall, 350 acres of trails are planned to be added to CMR's lift-served terrain network. Of that total, 261 acres are existing areas that are hike-to access currently, but will become lift served with lift realignments and installations. As a result, only 89 new acres of terrain are planned. All of the terrain upgrades are located within CMR's current special use permit boundary. The trail configuration under the Upgrade Plan is depicted in Figure 5.

Grading

As this Upgrade Plan is implemented, CMR plans to undertake strategic grading and trail widening projects on select trails, as detailed below. These projects are designed to improve skier/rider circulation and eliminate steep, abrupt pitches on teaching and novice terrain. Additional grading may be required as part of future on-going trail maintenance and would be addressed in future summer construction plans.

- Platform grading on traverse from top of Storm King to entrance of Upper Enchanted Forest, primarily on private land (*1.2 acres*)
- Platform grading on Lower Enchanted Forest traverse (*2.9 acres*)
- Platform grading on Sea Dog Juarez traverse (*1.5 acres*)
- Platform grading on Timberline Express connector (*2.0 acres*)
- Trail grading for the Super Bee Training Venue on *Upper Andy's Encore* adjacent to the A-lift top terminal (*1.3 acres*)
- Trail grading on *Lower Scooter* to ease the break-overs and to create a traverse platform into the bottom of the new Highpoint Lift bottom terminal location (*1.3 acres*)
- Platform grading just uphill of the Union Creek electric transformer, connecting the very bottom of *Vein Glory* to the new Highpoint Lift bottom terminal location (*1.2 acres*)
- Trail grading on *Lower Roundabout* and new Union Creek teaching terrain at the top of the Kokomo lift, partially on private land (undefined acreage until detailed design)

- Trail grading on *Upper Vein Glory* and *Easy Feelin'* to smooth surface
- Additional grading required for all proposed lift terminal and skier service sites (undefined acreage until detailed design)

Trail Improvements and Additions

Trail additions are identified on Figure 5 and are detailed in Table 6-2 below. Under the Upgrade Plan, CMR's developed trail network would increase from approximately 1,351 acres to 1,645 acres.

Trail Widening

- The following trails are planned to be widened in the Highpoint area: *Scooter*, *Vein Glory*, *Liberty*, *I-Dropper*, *Middle* and *Upper High Point*, *Lower* and *Upper Easy Feelin'*, *Easy Road* (access into *Carefree*), and *Woodwinds*. These trail widenings will, in conjunction with the lift replacement, increase the attractiveness and utilization of this area. The existing trails are too narrow for the grade and ability level.
- In the Kokomo area, *Lower* and *Upper Roundabout*, and *West Tenmile* will be widened to improve those trails.
- In the Super Bee pod, *Upper Andy's Encore*, *Oh No*, and *Rosi's Run* are planned to be widened.¹⁴
- The upper section of *Drain Pipe* in the Resolution area will be widened to improve access into the area.

Trail Additions

Teaching Terrain

- Lumberjack Teaching Terrain (PA-1, previously approved) at the top of Lumberjack. This is the terrain that would accompany the previously approved teaching lift.
- Upper Clear Cut (49-U) – this improves the connection from top of Lumberjack to Timberline Express.
- Timberline Express connector (46.5) – connects Timberline Express to top of Kokomo as an alternative to the Woodwinds Traverse (which does not have enough grade).

¹⁴ Safety fencing is also planned for sections of these trails, as depicted on Figure 5, for the Super Bee Training Venue.



- Upper Prospector (47-U) – a planned trail along the tree clearing that was initially done for the previously approved Kokomo gondola. This will add another Novice level trail to the Lumberjack area. The upgrade of this lift to a detachable will increase the number of skiers in the area, so the additional trail will help disperse them.
- Upper Roundabout Bypass (45.25) – this would be a bypass of the steeper pitch on Roundabout. The grade on the pitch is too steep for lower level skiers.

Highpoint Area

- Lower Scooter (30-L) – a planned trail to allow skiers on Loverly and Scooter to ski to the bottom of the new Highpoint Lift bottom terminal location.

Frontside

- “Race Arena” Trails (26.33 and 26.5) and Glades associated with N Lift. These trails will provide repeat skiing for the new west-to-east connector lift.
- Lower Enchanted Traverse (22.5) – a formalized traverse for east to west connection. As there is currently no connection from the Copper Peak area, the top terminals of Super Bee and Excelsior, to the bottom of Rendezvous and Sierra. This east-to-west connection in the upper mountain will help circulation and reduce the need for skiers to return to the base area.
- Sea Dog Juarez Traverse (33.5) – a lower portion of the east to west connection, this will allow skiers to continue the east-to-west circulation route and ski directly to Timberline Express without returning to the base area.

Resolution Areas

- North Cabin Chute (E1) and Upper Cabin Chute (E2) trails off Resolution (previously approved) to provide additional terrain in the Resolution area.

Upper Mountain, Backside, and Tucker Mountain

- West Bench Egress, this would create a formalized egress route from Union Meadows back to Timberline Express (previously approved).
- South Copper (CB 02) far skiers left trail on the Blackjack lift. This will give skiers on the Lillie G area the ability to ski down to the bottom terminal without skiing back under the lift. The trail will also be used by skiers coming over from Storm King, as it would avoid traversing across a flat section (previously approved).

- Freemont 2-5 (T2-T5) – additional widening and glading, particularly on the lower sections of the trails. With these trails becoming lift-served, they will require widening to accommodate the increased skier traffic (previously approved).

Snow Fencing

To improve terrain quality and snow retention, CMR proposes to locate segments of snow fencing in two key locations. In total, approximately ten segments of snow fence are proposed in the following locations: windward of the proposed Union Meadows Surface Lift, and approximately nine sections situated perpendicular to the ridge running from Tucker Mountain west to Jacques Peak.



**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
01	Far East	11,511	9,790	1,721	5,721	154	20.2	32	56	Expert
02	Too Much	11,506	9,789	1,717	5,704	159	20.8	32	52	Adv. Intermediate
03	Triple Treat	11,486	9,803	1,683	5,306	189	23.1	34	47	Adv. Intermediate
04	Formidable	10,843	9,806	1,038	3,190	168	12.3	35	50	Adv. Intermediate
07	Treble Cliff	10,303	9,801	502	1,660	143	5.4	32	51	Adv. Intermediate
08	Rosi's Run	10,828	9,758	1,069	3,457	266	21.1	33	50	Adv. Intermediate
09	Overlode	10,828	9,925	903	2,778	165	10.5	34	48	Adv. Intermediate
10	Ore Deal	10,468	9,779	689	2,044	190	8.9	36	49	Adv. Intermediate
11	Green Acres	9,814	9,750	64	588	234	3.2	11	17	Novice
11.5	Gem	9,798	9,751	47	460	174	1.8	10	13	Beginner
12	Oh No	11,664	10,802	862	3,934	169	15.3	23	40	Intermediate
13	Drain Pipe	11,943	11,604	338	1,035	353	8.4	35	62	Expert
14	Andy's Encore	11,957	10,091	1,867	7,840	224	40.3	25	48	Intermediate
14b	Skid Road	10,053	9,717	336	2,461	251	14.2	14	32	Low Intermediate
14c	West Encore	11,608	11,297	311	1,604	292	10.7	20	31	Intermediate
14d	Slot Car Track	11,556	11,328	228	1,660	30	1.1	14	27	Intermediate
14e	Upper Skid Road	10,455	10,427	28	286	85	0.6	10	10	Novice
15	Collage	11,921	9,785	2,136	8,946	140	28.8	25	46	Intermediate
15b	Easy Rider	9,771	9,764	7	122	135	0.4	8	8	Beginner
16	Bouncer	11,181	9,760	1,421	6,250	158	22.7	23	46	Intermediate
18	Copperopolis	11,656	11,190	466	1,831	257	10.8	26	43	Intermediate
19	Brennan's Grin	11,981	11,291	691	2,428	124	6.9	30	51	Adv. Intermediate
20	CDL's	11,974	11,249	725	2,541	205	11.9	30	42	Adv. Intermediate
20.5	Mine Dump	11,986	11,342	644	2,053	118	5.5	33	40	Intermediate
21	Ptarmigan	12,015	11,224	791	3,032	181	12.6	27	42	Intermediate
22	Hallelujah	11,865	11,291	575	1,965	388	17.5	31	46	Adv. Intermediate

**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
22.125	Looking Glass	11,673	11,098	575	1,315	160	4.8	49	69	Expert
22.25	Slip Not	11,693	11,172	521	1,210	110	3.0	48	59	Expert
22.375	Ute Overlook	11,635	11,216	419	1,037	126	3.0	44	56	Expert
22.5	Lower Enchanted Traverse	11,755	11,455	300	2,979	55	3.7	10	20	Novice
22b	Hallelujah Ridge	12,299	11,867	432	2,100	266	12.8	21	39	Intermediate
22c	Bariloche	12,294	11,870	424	1,690	385	15.0	26	37	Intermediate
22d	Spaulding Ridge	12,308	12,041	267	1,893	197	8.6	14	37	Intermediate
23	Rhapsody	11,157	10,881	276	1,091	144	3.6	26	36	Intermediate
24	Main Vein	11,166	9,760	1,405	5,646	266	34.4	26	43	Intermediate
25	Fair Play	10,801	10,231	570	2,208	191	9.7	27	37	Intermediate
25b	Foul Play	10,556	10,320	236	935	166	3.6	26	31	Intermediate
26	Bittersweet	11,233	10,219	1,014	4,740	168	18.2	22	46	Intermediate
26.33	Race Arena	11,139	10,381	758	2,805	154	9.9	28	51	Adv. Intermediate
26.5	Race Arena	10,932	10,451	482	1,554	141	5.0	33	44	Intermediate
27	Upper Leap Frog	10,381	10,333	48	387	146	1.3	12	16	Novice
27b	Lower Leap Frog	10,279	10,219	60	456	131	1.4	13	17	Low Intermediate
28-L	Lower Carefree	10,135	9,782	352	1,370	300	9.4	27	35	Intermediate
28-U	Upper Carefree	10,744	10,153	591	3,708	209	17.8	16	25	Low Intermediate
28b	Liberty	10,908	10,514	394	1,690	222	8.6	24	33	Low Intermediate
29-L	Lower Lovely	10,034	9,807	227	1,273	209	6.1	18	27	Low Intermediate
29-M	Middle Lovely	10,305	10,042	264	1,357	230	7.2	20	34	Low Intermediate
29-U	Upper Lovely	10,699	10,313	386	2,102	274	13.2	19	26	Low Intermediate
29b	Lovely Lane	10,250	10,148	102	604	72	1.0	17	23	Low Intermediate
30	Scooter	10,490	9,860	630	3,251	151	11.2	20	35	Low Intermediate
30-L	Lower Scooter	9,994	9,811	183	965	127	2.8	19	32	Low Intermediate
30b	Rugrat	9,841	9,833	8	101	107	0.2	8	8	Beginner



**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
30c	The Glide	9,836	9,831	5	77	118	0.2	6	6	Beginner
30d	Slingshot	9,855	9,843	12	148	98	0.3	8	8	Beginner
31	Vein Glory	10,792	9,851	941	4,893	208	23.3	20	34	Low Intermediate
31b	Hidden Vein	10,196	9,923	273	1,427	169	5.5	20	32	Low Intermediate
32-L	Lower Easy Feelin'	10,236	9,857	379	1,989	194	8.9	19	26	Low Intermediate
32-U	Upper Easy Feelin'	10,617	10,256	360	1,520	183	6.4	24	31	Low Intermediate
33	Coppertone	11,422	10,334	1,088	6,819	171	26.8	16	25	Novice
33b	See and Ski	10,964	10,846	117	531	169	2.1	23	30	Low Intermediate
33.5	Sea Dog Juarez Traverse	11,346	11,223	123	1,432	55	1.8	9	20	Novice
34	I-Dropper	11,128	10,551	577	2,237	137	7.0	27	35	Low Intermediate
35	Minor Matter	10,677	10,479	198	1,723	100	4.0	12	18	Novice
36	Woodwinds	10,908	10,427	481	2,367	195	10.6	21	25	Novice
36.5	Woodwinds Traverse	10,454	10,172	283	3,282	103	7.8	9	15	Novice
37-L	Lower High Point	10,875	10,704	171	920	219	4.6	19	22	Novice
37-M	Middle High Point	11,161	10,882	279	1,200	289	8.0	24	29	Low Intermediate
37-U	Upper High Point	11,718	11,167	552	3,428	270	21.3	16	43	Intermediate
38	American Flyer	11,401	10,459	942	4,285	218	21.4	23	34	Low Intermediate
39	The Moz	11,554	10,482	1,072	4,707	241	26.0	23	49	Intermediate
39.5	Little Burn	11,544	10,720	823	3,098	127	9.1	28	42	Intermediate
40	Copperfields	11,523	10,545	978	4,176	208	20.0	24	35	Intermediate
41	Windsong	11,586	10,480	1,106	4,940	187	21.3	23	39	Intermediate
42	Tempo	11,370	11,163	207	844	74	1.4	25	35	Intermediate
43	Jacque's Pique	11,371	10,711	660	3,019	122	8.4	23	45	Intermediate
44-L	Lower Soliloquy	10,613	10,487	126	927	157	3.3	14	21	Novice
44-U	Upper Soliloquy	11,586	10,620	965	5,732	179	23.6	17	33	Low Intermediate
45.5	Bruce's Way	10,289	10,196	93	601	152	2.1	16	18	Novice

**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
45-L	Lower Roundabout	10,170	9,832	338	3,167	141	10.3	11	22	Novice
45-M	Middle Roundabout	10,823	10,172	651	4,025	248	22.9	16	27	Novice
45-U	Upper Roundabout	11,006	10,798	208	2,445	220	12.3	9	19	Low Intermediate
45.25	Upper Roundabout Bypass	10,578	10,345	232	1,255	105	3.0	19	25	Novice
46	Fairway	10,491	10,081	410	2,522	222	12.8	17	25	Novice
46.5	T Rex Connector	10,464	10,203	261	2,827	54	3.5	9	17	Novice
47	Prospector	10,266	10,010	256	1,689	162	6.3	15	21	Novice
47-U	Upper Prospector	10,723	10,289	434	2,740	145	9.1	16	24	Novice
48	West Ten Mile	10,872	10,224	648	4,369	149	15.0	15	28	Novice
49	Clear Cut	10,711	10,548	163	704	486	7.9	24	37	Intermediate
49-U	Upper Clear Cut	10,780	10,726	55	326	86	0.6	17	18	Novice
50	I-Way	10,735	10,638	97	1,063	64	1.6	9	19	Novice
52	Wheeler Creek	11,849	11,127	722	4,295	218	21.5	17	32	Low Intermediate
53	Union Gap	11,412	11,198	214	1,022	184	4.3	21	32	Low Intermediate
54	Lower Sluice	11,348	11,231	117	551	164	2.1	22	28	Low Intermediate
54b	Upper Sluice	11,562	11,440	122	372	118	1.0	35	42	Intermediate
55	Union Park	11,872	11,357	515	3,561	352	28.7	15	35	Low Intermediate
56	Indian Ridge	11,627	11,405	222	556	405	5.2	44	71	Expert
57	Little Trees	11,943	11,606	336	992	201	4.6	37	58	Expert
58	Endeavor	12,005	11,589	416	1,128	193	5.0	40	52	Adv. Intermediate
59	Revenge	12,088	11,373	716	2,815	249	16.1	27	55	Expert
60	Kaboom	12,131	11,369	762	3,167	205	14.9	25	57	Expert
62	Timber Ridge	12,106	11,583	523	2,259	345	17.9	24	45	Intermediate
63	Gold Digger	11,876	11,380	497	1,761	254	10.3	30	45	Adv. Intermediate
64	Retreat	12,113	11,206	906	3,770	279	24.1	25	42	Adv. Intermediate
64b	Far West	12,288	11,674	615	2,085	467	22.4	31	38	Adv. Intermediate



**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
65-L	Lower Easy Road Traverse	11,196	9,874	1,322	17,989	27	11.2	7	25	Novice
65-U	Upper Easy Road Traverse	12,002	11,197	804	10,476	25	2.2	8	20	Novice
66	Easy Road Too	11,155	10,721	433	5,268	33	4.0	8	17	Novice
67	Bee Road	10,844	10,710	134	2,066	27	1.3	7	16	Intermediate
68	Bee Traverse	10,139	9,859	280	2,194	92	4.6	13	46	Adv. Intermediate
69	Road Home	9,803	9,714	89	353	55	0.4	26	33	Low Intermediate
00	Double Zero	11,989	11,641	348	892	343	7.0	43	58	Expert
000	Triple Zero	12,015	11,639	375	970	301	6.7	43	73	Expert
A	Highline	11,964	10,561	1,403	4,366	232	23.2	34	76	Expert
B	Sawtooth	11,957	10,552	1,405	4,472	213	21.9	33	76	Expert
C	Cabin Chute	11,695	10,556	1,139	4,475	138	14.2	26	50	Adv. Intermediate
D	Cross Cut	11,642	10,630	1,012	3,487	147	11.8	31	50	Adv. Intermediate
E1	North Cabin Chute	11,644	10,645	999	3,638	129	10.8	29	48	Adv. Intermediate
E2	Upper Cabin Chute	11,796	11,662	134	366	121	1.0	39	43	Intermediate
CB 02	South Copper	11,691	11,165	526	1,324	157	4.8	44	65	Expert
CB 03-L	Lower Lillie G	11,770	11,187	583	1,801	278	11.5	35	59	Expert
CB 03-U	Upper Lillie G	12,289	11,760	529	2,042	597	28.0	27	41	Intermediate
CB 04	Rattler	11,772	11,353	419	1,182	504	13.7	38	51	Adv. Intermediate
CB 05	Allcante	12,086	11,387	698	1,924	526	23.2	39	53	Adv. Intermediate
CB 07	Golden Crest	12,150	11,514	635	1,723	334	13.2	40	55	Expert
CB 08	Julie's Vision	12,200	11,633	568	1,630	482	18.0	37	52	Adv. Intermediate
CB 08.5	Six Shooter	12,260	11,804	456	1,238	418	11.9	40	51	Adv. Intermediate
CB 09	Matchless	12,300	11,561	739	2,240	447	23.0	35	63	Expert
CB 13	Lallarookn	12,342	11,242	1,100	5,859	117	15.8	19	49	Adv. Intermediate
CB 14	Otto Bahn	11,925	11,170	756	6,010	99	13.7	13	25	Low Intermediate
SB 01	Boardwalk	12,344	12,213	132	1,173	152	4.1	11	22	Adv. Intermediate

**Table 6-2:
Terrain Specifications – Upgrade Plan**

Ref	Trail Area/Name	Top Elev. (ft.)	Bot. Elev. (ft.)	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
SB 02	Park Place	12,214	11,810	404	1,120	529	13.6	39	49	Adv. Intermediate
SB 03	Marvin Gardens	12,286	11,763	523	1,296	201	6.0	44	60	Expert
SB 04	Calendar Chute	12,274	11,783	491	1,170	129	3.5	47	59	Expert
SB 05	Patrol Chute	12,344	11,793	551	1,370	216	6.8	45	82	Expert
SB 06	Cornice Chute	12,312	11,796	516	1,312	294	8.9	44	75	Expert
SB 09	So Fine	12,219	11,748	470	1,120	426	11.0	47	85	Expert
SB 10	Pacific Cornice	12,101	11,710	391	902	310	6.4	49	70	Expert
SB 11	Atlantic Cornice	12,051	11,678	373	884	197	4.0	47	63	Expert
T1	Freemont 1	12,200	11,195	1,005	2,262	844	43.9	50	74	Expert
T2	Freemont 2	12,306	11,178	1,128	2,806	507	32.7	44	63	Expert
T3	Freemont 3	12,330	11,302	1,029	2,700	441	27.3	42	68	Expert
T4	Freemont 4	12,304	11,360	944	2,563	498	29.3	40	70	Expert
T5	Freemont 5	12,304	11,459	845	2,171	536	26.7	43	68	Expert
T6	The Taco	12,258	11,600	658	1,826	960	40.3	39	63	Expert
UB 7	Buzzard's Alley	12,203	11,709	494	1,248	686	19.7	44	63	Expert
UB 8	Union Peak	12,270	11,647	623	1,668	676	25.9	41	76	Expert
PA-1	Lumberjack Teaching Trail	10,948	10,774	175	1,396	313	10.0	13	16	Beginner
PC-1	Union Creek Carpet 1	9,877	9,857	20	180	75	0.4	11	11	Beginner
PC-2	Union Creek Carpet 2	10,162	10,134	28	204	90	0.6	14	14	Beginner
PC-3	Union Creek Carpet 3	10,164	10,146	18	154	100	0.6	12	12	Beginner
TOTAL					366,658		1,728			

Source: SE Group



Terrain Distribution by Ability Level

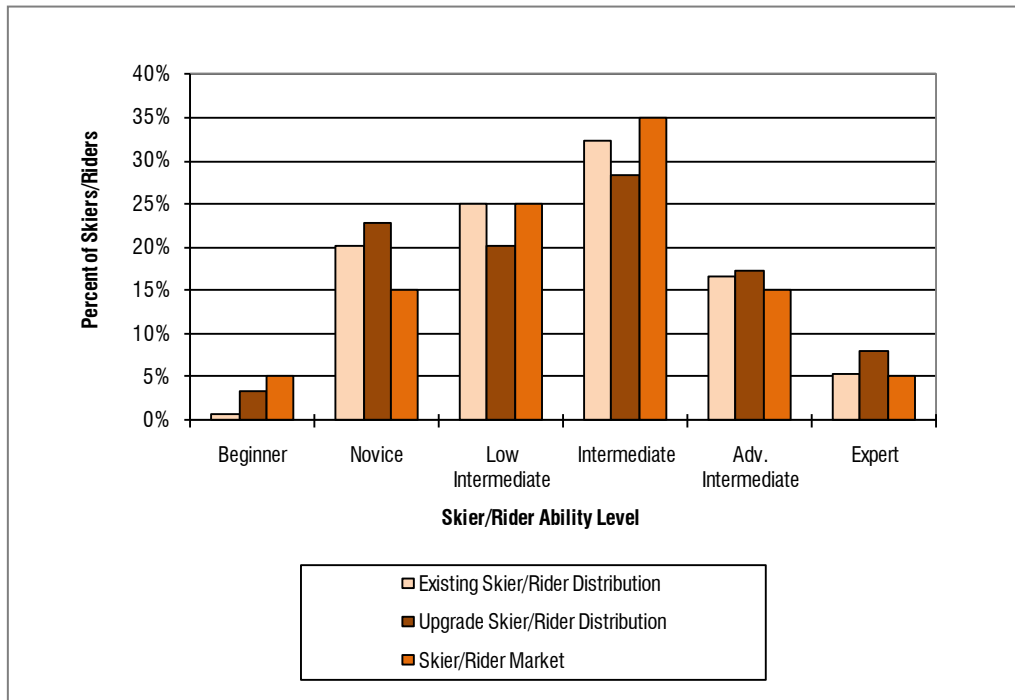
Demand exists for terrain through the full range of ability levels, in-line with the breakdown for the skier market. The terrain classification breakdown of the Upgrade Plan is set forth in the following table and chart. The last column in this table represents what can be considered the ideal overall skill level distribution and provides a comparison with the Upgrade Plan.

Table 6-3:
Terrain Distribution by Ability Level – Upgrade Plan

Skier/Rider Ability Level	Trail Area	Skier/Rider Capacity	CMR Skier/Rider Distribution	Skier/Rider Market
	(acres)	(guests)	(%)	(%)
Beginner	14.6	437	4	5
Novice	172.3	2,758	22	15
Low Intermediate	272.9	2,729	22	25
Intermediate	432.6	3,461	28	35
Adv. Intermediate	351.8	2,111	17	15
Expert	483.6	967	7	5
TOTAL	1,727.8	12,463	100	100

Source: SE Group

**Chart 6-1:
Terrain Distribution by Ability Level – Upgrade Plan**



Source: SE Group

As the above table and chart illustrate, the proposed upgrades will slightly shift CMR's terrain distribution in relation to the market demand. The most significant deficiency in the existing conditions, true first-time beginner terrain, has been brought closer in-line with market demand. The increases to Advanced and Expert level terrain are largely the result of adding the existing hike-to terrain off the Sierra lift and on Tucker Mountain to the lift-served developed terrain network. The increases to Novice are the result of the reconfiguration of the Union Creek teaching area. The decreases in percentages of Low Intermediate and Intermediate are the result of the increases to other categories.

Alternate Terrain

Overall, CMR's alternate terrain offerings will be expanded and improved. While a significant portion of existing hike-to terrain will become lift served in the upgrade plan with the installation of the Tucker and reconfiguration of Sierra lifts, the actual terrain will not be significantly altered, creating a lift-served backcountry style ski experience. Additionally, numerous glades are planned to expand the lift-served gladed terrain. Last, the existing snowcat operation on Tucker Mountain will be relocated to an area that will provide an improved and expanded experience.



Hike-to Terrain

Forty-six acres of hike-to terrain off Union Peak will become lift-served with the realignment of the Sierra lift. Two-hundred sixteen acres of terrain off Tucker Mountain that is currently hike-to and snowcat accessed will become lift served with the installation of the Tucker Lift. Since there are no proposed additions to hike-to terrain, this results in an overall decrease of 261 acres of hike-to terrain.

**Table 6-4:
Hike-to Specifications – Proposed Upgrades**

Trail Area/Name	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
Bradley's Plunge	706	2,023	541	25.1	38	65	Expert
Schaeffer's	707	2,062	577	27.3	37	82	Expert
Iron Mask	660	1,960	501	22.5	36	74	Expert
Lallarookn	1,100	5,859	180	24.2	19	49	Advanced Intermediate
The Nacho	674	3,117	1,771	126.7	22	38	Intermediate
Union Meadows	1,231	6,395	2,257	331.4	20	40	Intermediate
TOTAL		21,416		557.2			

Source: SE Group

Snow Cat Accessed Terrain

The success of the free snowcat tours on Tucker Mountain has led CMR to plan an increased operation. With the planned installation of the Tucker lift, the terrain that is presently used for the Snowcat operation would become lift-served. When this occurs, CMR plans to relocate the snowcat operation to the south side of the ridge which runs from Tucker Mountain to Jacques Peak. Snowcats would be operated to access the terrain off the south facing slopes of Tucker Mountain and the east facing bowl of Jacques Peak. The total quantity of terrain that will be accessible from the snowcat operation will be 500 acres. The extent of this planned operation is shown on Figure 7. Access to the area will be on over-the-snow roads, as shown in Figure 5, totaling approximately 3 miles. No ground disturbance is currently planned for these routes but may be re-evaluated in the future depending on operations. The entirety of the area is within CMR's current SUP boundary.

Gladed Expert Terrain

Under the Upgrade Plan, CMR will increase the extent of lift-served gladed terrain by 60 acres, from 293 to 353 acres, as detailed in Table 6-5 below.

Approximately 30 acres of glades will be created in the Alpine area. As shown on Figure 7, the glades will cover the areas between the existing trails. This will create an interesting and dynamic skiing experience for upper level skiers, as they will be able to between and across the existing trails, transitioning in and out of the gladed areas. Creating new types of ski terrain like this is vital for creating and maintaining a high degree of terrain variety.

Additionally, 15 acres of glades will be created adjacent to the existing Sail Away glades, which will be directly accessible off the new west-to-east connector lift, the N Lift.

A glade (Goose Chute Glades) will be created to the east of Copperopolis, totaling 8 acres. This glade will be accessible both from the extended Excelerator lift and the lengthened Alpine lift.

Previously approved glades (Powerline 3 Glades) are located to the skier's right along the lower portion of the Far East trail in the Alpine lift area. These glades total 5 acres.

Also note that 10 acres of glades are previously approved for the area between Formidable and Treble Cliff trails, however this is an existing gladed area, known as Black Bear and Free Fall glades. This glading, identified as 4-7 glades on Figure 5, will thin the area out further.

Glades will be created with varying degrees (i.e., percentages) of tree removal to improve and support Intermediate to Expert level skiing.



**Table 6-5:
Glades Specifications – Proposed Upgrades**

Trail Area/Name	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
Black Bear Glade	699	1,830	410	17.2	42	61	Expert
Free Fall Glade	830	2,228	353	18.1	40	55	Advanced Intermediate
Glade	501	1,224	1,031	29.0	45	56	Expert
Sail Away Glades	516	1,752	570	22.9	41	51	Advanced Intermediate
Cache Glades	479	1,101	571	14.4	49	63	Expert
Spaulding Glades	531	2,075	903	43.0	27	41	Intermediate
Upper Enchanted Forest	710	2,180	2,346	117.5	35	55	Advanced Intermediate
Lower Enchanted Forest	311	910	1,252	26.2	36	45	Advanced Intermediate
The Taco Glade	103	360	566	4.7	30	32	Low Intermediate
Jimmy Z's	366	1,024	377	8.9	38	51	Advanced Intermediate
Buzz's Glade	260	686	172	2.7	41	48	Advanced Intermediate
Slot Car Glade	156	560	267	3.4	29	38	Intermediate
Alpine Lift Glades (planned)	1,188	3,912	352	31.6	32	63	Expert
Goose Chute Glades (planned)	393	1,325	266	8.1	31	40	Intermediate
Powerline 3 Glade (prev. approved)	331	1,063	209	5.1	33	51	Advanced Intermediate
TOTAL		22,231		353			

Source: SE Group

Terrain Parks

CMR's existing terrain parks will continue to meet the needs of CMR's skiers and riders. While these terrain parks are not planned to be expanded or relocated under this Upgrade Plan, it is reasonable to assume that they will continue to evolve along with technology and customer preferences throughout, and between, each season.

6.4 UPGRADED CAPACITY ANALYSIS

Comfortable Carrying Capacity

As discussed previously in Chapter 2, the accurate calculation of a resort's Comfortable Carrying Capacity (CCC) is the single most important planning criterion for a resort. All other related guest service facilities can be evaluated and planned based on the proper identification of the mountain's CCC, which is derived from the resort's supply of vertical transport (the combined uphill hourly capacities

of the lifts) and demand for vertical transport (the aggregate number of runs demanded multiplied by the vertical rise associated with those runs).

CMR's existing CCC has been calculated at 11,870. Under the Upgrade Plan, CCC will increase, as detailed in the following table, and is calculated at 15,630 guests per day.



**Table 6-6:
Comfortable Carrying Capacity – Upgrading Plan**

Map Ref.	Lift Name, Lift Type	Slope Length (ft)	Vertical Rise (ft)	Actual Design Capacity (guests/hr)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly Cap. (guests/hr)	VTF/Day (000)	Vertical Demand (ft/day)	Daily Lift Capacity (guests)
A	Alpine DC-4	6,577	1,895	2,400	7.00	15	5	1,920	25,462	28,051	910
A1	Resolution C-3	4,490	1,421	1,200	6.50	0	5	1,140	10,531	19,558	540
C	Gem s	490	54	450	7.00	0	5	428	161	3,712	40
C1	Pitchfork C-2	532	61	1,200	7.00	0	15	1,020	436	2,922	150
D	The Glide c	77	5	720	7.00	0	5	684	24	521	50
E	Excelerator DC-4	3,503	857	2,450	6.75	20	5	1,838	10,630	15,588	680
ER	Easy Rider c	101	8	720	7.00	0	0	720	40	1,125	40
F	American Eagle DC-4	6,276	1,476	2,312	7.00	25	5	1,618	16,723	14,960	1,120
H	Highpoint DC-4	5,059	990	2,400	7.00	25	5	1,680	11,644	13,858	840
I	Timberline Express DC-4	5,065	1,101	2,640	6.75	10	5	2,244	16,670	12,887	1,290
K	Kokomo DC-4	3,039	352	1,800	7.00	15	5	1,440	3,548	4,110	860
L	Lumberjack DC-4	4,755	740	2,400	6.75	10	5	2,040	10,189	9,207	1,110
M	Storm King s-2	2,082	471	1,200	6.25	20	10	840	2,472	11,297	220
N	West to East Connection DC-4	4,437	984	2,400	7.00	20	5	1,800	12,395	15,026	820
O1	American Flyer DC-6	9,951	1,891	3,000	7.00	25	5	2,100	27,791	12,798	2,170
R	Rendezvous C-3	3,397	524	1,800	6.50	15	10	1,350	4,594	7,260	630
RR	Rugrat c	101	8	720	7.00	0	5	684	38	709	50
S	Sierra DC-4	3,801	912	2,400	6.75	5	5	2,160	13,290	20,053	660
SB	Super Bee DC-6	8,984	2,286	2,980	7.00	25	5	2,086	33,377	21,908	1,520
SS	Slingshot c	148	12	720	7.00	0	5	684	57	640	90
4	Blackjack C-2	2,402	758	1,200	6.25	0	5	1,140	5,403	20,702	260
6	Mountain Chief C-2	2,489	795	1,200	6.25	0	5	1,140	5,668	17,182	330
PA-L1	Lumberjack Teaching Lift C-2	1,396	174	1,000	7.00	0	5	950	1,157	2,761	420
PA-L2	Tucker Mtn Lift C-3	2,996	1,124	1,200	6.25	0	10	1,080	7,584	22,728	330
P-C1	Union Creek Carpet 1 c	180	20	600	7.00	0	5	570	80	829	100

**Table 6-6:
Comfortable Carrying Capacity – Upgrading Plan**

Map Ref.	Lift Name, Lift Type	Slope Length (ft)	Vertical Rise (ft)	Actual Design Capacity (guests/hr)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Misloading/Lift Stoppages (%)	Adjusted Hourly Cap. (guests/hr)	VTF/Day (000)	Vertical Demand (ft/day)	Daily Lift Capacity (guests)
P-C2	Union Creek Carpet 2 c	204	28	600	7.00	0	5	570	112	1,268	90
P-C3	Union Creek Carpet 3 c	154	18	600	7.00	0	5	570	72	1,018	70
P-1	Catalyst Terrain Park Lift c	1,028	210	600	7.00	0	5	570	839	4,473	190
P-2	Union Meadows Surface Tow s	601	170	1,500	7.00	80	0	300	358	7,676	50
TOTAL		84,314		44,412				35,365	221,345		15,630

Colored text indicates planned lift improvements

Source: SE Group



Density Analysis

As discussed in Chapter 4, an important aspect of resort design is the balancing of uphill lift capacity with downhill trail capacity. Trail densities are derived by contrasting the uphill, at-one-time capacity of each lift system (CCC) with the trail acreage associated with each lift pod. The trail density analysis considers only the acreage associated with the developed trail network. The density analysis for the Upgrade Plan is illustrated in the following table.

**Table 6-7:
Density Analysis – Upgrading Plan**

Lift Name	Daily Lift Capacity	Guest Dispersal				Density Analysis				Density Index (%)
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Terrain (guests)	Terrain Area (acres)	Terrain Density (guests/ac.)	Target Trail Density (guests/ac.)	Diff. (+/-)	
Alpine <i>DC-4</i>	910	228	96	210	376	80.0	5	5	0	100
Resolution <i>C-3</i>	540	135	95	171	139	136.4	1	3	-2	33
Gem s	40	10	0	12	18	1.8	10	30	-20	33
Pitchfork <i>C-2</i>	150	38	34	18	60	3.2	19	16	3	119
The Glide c	50	20	11	11	8	0.2	38	30	8	127
Excelsior <i>DC-4</i>	680	170	153	99	258	78.6	3	6	-3	50
Easy Rider c	40	16	0	15	9	0.4	24	30	-6	80
American Eagle <i>DC-4</i>	1,120	280	189	169	482	98.2	5	9	-4	56
Highpoint <i>DC-4</i>	840	210	84	142	404	82.0	5	11	-6	45
Timberline Express <i>DC-4</i>	1,290	323	262	175	530	151.3	4	9	-5	44
Kokomo <i>DC-4</i>	860	215	144	97	404	11.6	35	16	19	219
Lumberjack <i>DC-4</i>	1,110	278	68	162	602	77.4	8	16	-8	50
Storm King s-2	220	55	98	39	28	100.7	0	7	-7	0
West to East Connection <i>DC-4</i>	820	205	90	133	392	37.9	10	9	1	111
American Flyer <i>DC-6</i>	2,170	543	245	348	1,034	124.6	8	11	-3	73
Rendezvous <i>C-3</i>	630	158	45	153	274	51.6	5	10	-5	50
Rugrat c	50	20	11	14	5	0.2	20	30	-10	67
Sierra <i>DC-4</i>	660	165	180	137	178	161.8	1	4	-3	25
Super Bee <i>DC-6</i>	1,520	380	174	289	677	149.2	5	7	-2	71
Slingshot c	90	36	23	21	10	0.3	30	30	0	100
Blackjack <i>C-2</i>	260	65	38	91	66	65.8	1	6	-5	17
Mountain Chief <i>C-2</i>	330	83	95	95	57	75.1	1	4	-3	25
Lumberjack Teaching Lift <i>C-2</i>	420	105	79	63	173	11.5	15	28	-13	54
Tucker Mtn Lift <i>C-3</i>	330	83	54	108	85	208.0	0	2	-2	0
Union Creek Carpet 1 c	100	40	19	29	12	0.4	34	30	4	113



**Table 6-7:
Density Analysis – Upgrading Plan**

Lift Name	Daily Lift Capacity	Guest Dispersal				Density Analysis				Density Index (%)
		Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Terrain (guests)	Terrain Area (acres)	Terrain Density (guests/ac.)	Target Trail Density (guests/ac.)	Diff. (+/-)	
Union Creek Carpet 2 c	90	36	10	32	12	0.6	20	30	-10	67
Union Creek Carpet 3 c	70	28	10	24	8	0.6	14	30	-16	47
Catalyst Terrain Park Lift c	190	48	10	98	34	13.2	3	10	-7	30
Union Meadows Surface Tow s	50	13	15	10	12	5.2	2	2	0	100
TOTAL	15,630	3,986	2,332	2,965	6,347	1,728	8	10	-2	76

Source: SE Group

Table 6-7 shows that with the upgrades to the lift system, a closer balance will be achieved between uphill and downhill capacities. The overall density analysis shows that overall densities, while increasing, will remain below targets, meaning that the terrain will not feel overly crowded, but will be better utilized. Despite this overall balance, areas on the mountain, such as merge zones, convergence areas, lift milling areas, major circulation routes, and egress routes, would experience higher densities periodically during the day. Several lift systems are discussed separately below:

- With the replacement of the Alpine lift, the planned hourly capacity of the lift will be 2,400 people per hour, twice the existing hourly capacity. The result is the potential for twice as many skiers per acre on the existing terrain. As a result, the modeled density is right at the target for that type of terrain.
- The Pitchfork area trail density remains over the target. With no proposed modification to the lifts or trails in this vicinity, there will be no change from the existing conditions.
- Trail densities in the Kokomo area are planned to increase from the existing. With the replacement of the existing lift with a higher capacity, detachable lift the CCC of the area will increase. While the higher capacity will result in shorter lift lines, it also results in more skiers per hour being transported onto the terrain. Since the amount of terrain available off the lift is not planned to increase, the skiers per acre density will increase. With the existing lift having higher than target densities, the planned increase will result in even higher densities. While the modeled existing density is within the target range for Novice skiers, of 12 to 30 skiers per acre, as detailed in Chapter 2, the planned density will be over that range, at 35 skiers per acre.
- The west-to-east connection lift is modeled with a density that is slightly over the target. However, this figure only analyses the developed terrain, of which there is a relatively limited quantity available that can be repeat-skied from this lift. However, a significant quantity of gladed terrain, 30 acres, is also available to be repeat skied off this lift, which will effectively lower terrain densities in the area.
- The carpets are all right around target densities. Use of the carpets will be managed by the ski school, to ensure even distribution of guests throughout the area.
- Note that densities have, in general, increased for the terrain associated with lifts that are planned to be upgraded to new, and higher capacity, lifts. Since



the densities have not exceeded the targets, this should be viewed as beneficial, as this indicates better utilization of the lifts.

Lift and Terrain Network Efficiency Analysis

As discussed in Chapter 4, overall resort efficiency is becoming an increasingly important factor in the industry, relating not only to energy/operational efficiency, but also to efficiency of the design and layout of the resort. The idea behind resort design efficiency is to have a well balanced lift and trail network (i.e., the uphill lift capacity balances with the downhill trail capacity that it serves) that is efficiently served by the its lifts, while maintaining desired CCC rates, circulation routes, and service to the full spectrum of ability levels and types.

As discussed in Chapter 4 (Section D), this Master Development Plan analyzes Lift and Terrain Network Efficiency by calculating the average CCC per lift. When calculating this average, conveyors and surface tows are not included, as the CCC calculations (and operating costs) for them are so low that it would skew the overall average. Optimally, and as a planning goal, the average CCC per lift will likely be close to 1,000. Industry-wide, the average CCC per lift is approximately 650. CMR has an existing above-average CCC per lift at about 730. CMR is planning the replacement of several lifts with higher capacity models and the addition of four aerial lifts, although one of those lifts are teaching lifts and have low CCC values. As a result, the average CCC per lift in the Upgrade Plan will slightly increase to 782, or approximately a 7% increase. This means the CMR will maintain its better-than-average lift network efficiency, and continue to benefit from a somewhat lower lift cost, in terms of both energy use and financial/operational cost, per skier than most resorts.

As discussed in Chapter 4, CMR currently has a terrain efficiency (as expressed by the density analysis) of 65%. With the upgraded lift network, the terrain will become better utilized, with the ability to more effectively distribute guests around the resort. This increased utilization of the trails, as discussed above in the density analysis, results in an overall density of 78%, representing a significant increase in terrain efficiency.

6.5 UPGRADED SKIER SERVICES FACILITIES AND FOOD SERVICE SEATING

Skier Services Locations

CMR will continue to function with the three base area staging portals under the Upgrade Plan. On-mountain guest services will be significantly improved with the replacement of both Solitude Station and Flyers with new, expanded facilities.

Base Area Guest Services

CMR has planned for improvements to its base area facilities located on private lands, particularly in the Center Village/Union Creek area, and will continue to plan for future need. However, this Master Development Plan does not define what those improvements might entail. Currently, a 2008 PUD update approved by Summit County establishes the land uses and densities that will be permitted on the property. CMR will continue to work with Summit County to develop and implement base area improvement projects in the future.

On-Mountain Guest Services

The architectural design of planned new, and expanded, structures on NFS lands would be subject to Forest Service review and approval during future project proposal. The Forest Service will utilize the BEIG in any respective review of these facilities, as defined in Chapter 2 of this document. In addition to the considerations suggested by the BEIG, the White River National Forest has an established Building Design Review process which is applicable to the development of on-mountain projects such as buildings. This process entails review of preliminary designs and plans by the Forest Landscape Architect early in the design process to ensure compliance with Forest Service objectives.

Several on-mountain projects are planned, to address identified deficiencies in the overall guest experience. Foremost among these is the need for expanded on-mountain food service facilities. To address this need, two primary facilities will be constructed.

Solitude Station

On-mountain guest services at CMR will be greatly improved with a renovation or complete relocation and rebuild of the Solitude Station facility. If relocated, the expanded facility will be built to the west of the existing facility and will be between 22,000 and 28,000 square feet with (up to) approximately 1,000 seats. Refer to tables 5-9 and 5-11 below for specifications. This facility will not only accommodate the



food service demand for Super Bee, Excelsior (which will be lengthened to better interface with the new restaurant location), and American Eagle, but will also serve the upgraded Alpine lift (which will be lengthened in part to improve access to this facility), as well as the new west-to-east connector lift. It is anticipated that skiers on the Union peak side will use this lift specifically to access the restaurant for food service, without the need to ski down to the base area.

Flyers

The existing Flyers will be replaced with a restaurant facility. This facility will be smaller than the Solitude Station replacement, but will have 300 seats and be between 6,000 and 8,000 square feet in size. See tables below for specifications. This facility will accommodate the food service demand for skiers on American Flyer, Timberline Express, and the upper mountain lifts.

Additional On-Mountain Facilities

In addition to these two primary facilities, several other facilities are planned to address existing and future needs. These include:

- Ski school building at the top of the Kokomo lift (chair or gondola). The functions of this facility will include limited food and beverage service (likely targeted towards lessons participants and kid's programs), limited retail, restrooms, and a warming area.
- Warming Hut at the top of the Rendezvous Lift with limited food service (previously approved).
- Warming Hut at the top of the Lumberjack Lift with limited food service (previously approved).
- Ski Patrol/Warming Hut/limited food service building at the top of Tucker Lift. Since this lift is so distant from any other food service, some limited food selections (likely not requiring any kitchen preparation) will be provided (previously approved).
- Tracked Vehicle Maintenance and Mountain Operations Building near the top of the proposed N Lift (previously approved).
- Picnic Deck at the top of *Cross Cut* trail in the Resolution area.
- Radio Repeater Stations at top of Tucker, top of Union Peak, and top of Copper Peak.

- Restrooms located at the bottom of Blackjack Lift, bottom of Rendezvous lift, top of Lumberjack, bottom of Alpine lift, and the bottom of Resolution.
- Fuel Storage above Lumberjack.

Space Use Analysis

As discussed, the distribution of CCC is utilized to determine guest service capacities and space requirements for guest services at base area portals and on-mountain facilities. The CCC should be distributed between each guest service facility location according to the number of guests that will be utilizing the lifts and terrain associated with each facility. Sufficient guest service space should be provided to accommodate CMR's planned CCC of 15,630 guests per day.

Based on that planned CCC level, Table 6-8 and Chart 6-2 below compare existing space use allocations of the guest service functions to recommended future ranges. Square footage contained in this chart illustrate recommended ranges based on industry averages, and should not be considered absolute requirements.

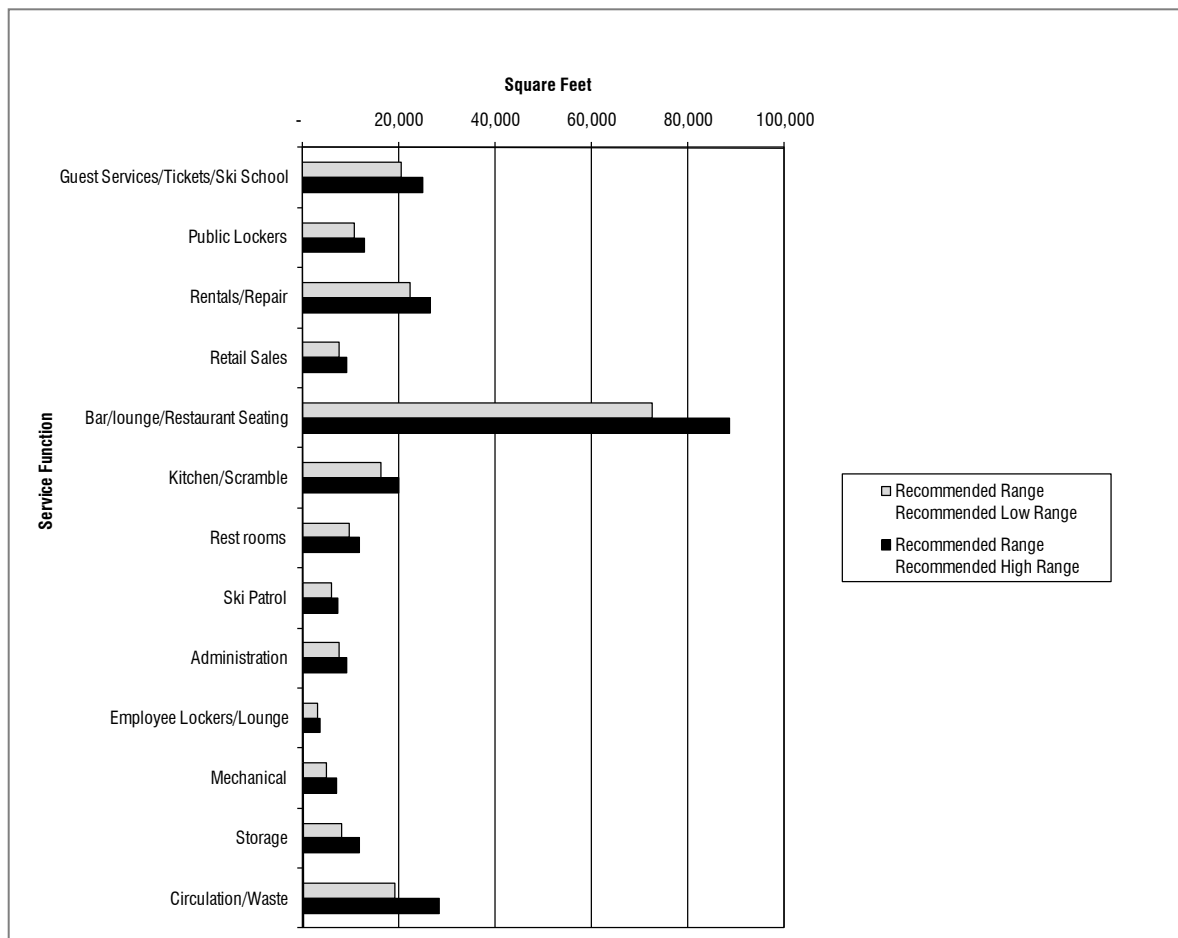
**Table 6-8:
Industry Average Space Use
Resort Total – Upgrade Plan**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	13,007	20,400	24,930	(7,393)	(11,923)
Public Lockers	2,363	10,550	12,890	(8,187)	(10,527)
Rentals/Repair	12,290	22,280	26,490	(9,990)	(14,200)
Retail Sales	9,622	7,390	9,020	2,232	602
Bar/Lounge/Restaurant Seating	63,205	72,420	88,510	(9,215)	(25,305)
Kitchen/Scramble	26,161	16,250	19,860	9,911	6,301
Rest rooms	10,712	9,600	11,720	1,112	(1,008)
Ski Patrol	9,090	5,910	7,230	3,180	1,860
Administration	6,565	7,390	9,020	(825)	(2,455)
Employee Lockers/Lounge	4,470	2,950	3,610	1,520	860
Mechanical	3,756	4,750	7,070	(994)	(3,314)
Storage	9,676	7,900	11,750	1,776	(2,074)
Circulation/Waste	18,258	18,970	28,240	(712)	(9,982)
TOTAL SQUARE FEET	189,175	207,280	260,980	(18,105)	(71,805)

Source: SE Group



Chart 6-2:
Total Space Use and Recommendations – Upgrade Plan



Source: SE Group

The following tables and text address the Upgrade Plan space use at CMR's base areas and on-mountain facilities. The space recommendations are directly related to the distribution of the resort's capacity to the various guest service facilities located in the base area and on-mountain.

Base Area

As described in Chapter 4, both the East Village and Center Village currently have more overall space than is required, based on industry averages. With the projected increases of usages, both of these facilities would be appropriately sized, as displayed in the tables below. The Union Creek area has a current deficit of space, which is compounded by the projected increase in demand for space with the planned lift and trail upgrades for Union Creek.

East Village

**Table 6-9:
Industry Average Space Use
East Village – Upgrade Plan**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	850	1,060	1,290	(210)	(440)
Public Lockers	378	3,170	3,870	(2,792)	(3,492)
Rentals/Repair	4,448	7,500	8,440	(3,052)	(3,992)
Retail Sales	1,800	2,220	2,710	(420)	(910)
Bar/lounge/Restaurant Seating	17,460	16,300	19,920	1,160	(2,460)
Kitchen/Scramble	7,251	2,240	2,740	5,011	4,511
Rest rooms	1,650	1,330	1,620	320	30
Ski Patrol	-	820	1,000	(820)	(1,000)
Administration	-	-	-	-	-
Employee Lockers/Lounge	-	-	-	-	-
Mechanical	936	940	1,370	(4)	(434)
Storage	3,750	1,560	2,290	2,190	1,460
Circulation/Waste	5,266	3,740	5,490	1,526	(224)
TOTAL SQUARE FEET	43,789	40,880	50,740	2,909	(6,951)

Source: SE Group



Center Village

**Table 6-10:
Industry Average Space Use
Center Village – Upgrade Plan**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	4,345	5,310	6,490	(965)	(2,145)
Public Lockers	1,687	5,800	7,090	(4,113)	(5,403)
Rentals/Repair	6,122	11,610	14,180	(5,488)	(8,058)
Retail Sales	7,092	4,060	4,960	3,032	2,132
Bar/lounge/Restaurant Seating	34,749	31,020	37,910	3,729	(3,161)
Kitchen/Scramble	10,814	5,780	7,060	5,034	3,754
Rest rooms	6,185	3,410	4,170	2,775	2,015
Ski Patrol	1,040	2,100	2,570	(1,060)	(1,530)
Administration	5,705	6,280	7,670	(575)	(1,965)
Employee Lockers/Lounge	2,920	2,510	3,070	410	(150)
Mechanical	2,180	2,100	3,140	80	(960)
Storage	3,250	3,500	5,230	(250)	(1,980)
Circulation/Waste	7,961	8,410	12,560	(449)	(4,599)
TOTAL SQUARE FEET	94,050	91,890	116,100	2,160	(22,050)

Source: SE Group

Union Creek

**Table 6-11:
Industry Average Space Use
Union Creek – Upgrade Plan**

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Low	High	Low	High
Guest Services/Tickets/Ski School	7,812	14,030	17,150	(6,218)	(9,338)
Public Lockers	298	1,580	1,930	(1,282)	(1,632)
Rentals/Repair	1,720	3,170	3,870	(1,450)	(2,150)
Retail Sales	730	1,110	1,350	(380)	(620)
Bar/lounge/Restaurant Seating	7,156	9,350	11,430	(2,194)	(4,274)
Kitchen/Scramble	3,507	2,880	3,530	627	(23)
Rest rooms	1,748	1,700	2,080	48	(332)
Ski Patrol	-	1,050	1,280	(1,050)	(1,280)
Administration	860	1,110	1,350	(250)	(490)
Employee Lockers/Lounge	-	440	540	(440)	(540)
Mechanical	640	980	1,470	(340)	(830)
Storage	1,216	1,640	2,450	(424)	(1,234)
Circulation/Waste	2,003	3,930	5,880	(1,927)	(3,877)
TOTAL SQUARE FEET	27,690	42,970	54,310	(15,280)	(26,620)

Source: SE Group



On-Mountain Facilities

As discussed above, Solitude Station and Flyers facilities will be the primary on-mountain guest service facilities under build-out. The two facilities are addressed separately below.

As shown in Table 6-12 below, the size of the renovated or rebuilt Solitude Station will be around 22,000 to 28,000 square feet to accommodate the increased demand.

**Table 6-12:
Industry Average Space Use
Solitude Station – Upgrade Plan**

Service Function	Recommended Range	
	Low	High
Guest Services/Tickets/Ski School	-	-
Public Lockers	-	-
Rentals/Repair	-	-
Retail Sales	-	-
Bar/lounge/Restaurant Seating	11,640	14,220
Kitchen/Scramble	3,660	4,470
Rest rooms	2,160	2,640
Ski Patrol	1,330	1,630
Administration	-	-
Employee Lockers/Lounge	-	-
Mechanical	510	760
Storage	850	1,260
Circulation/Waste	2,030	3,030
TOTAL SQUARE FEET	22,180	28,010

Source: SE Group

As shown in Table 6-13 below and on Figure 4, the upgrade plan calls for a food service restaurant facility, at the location of the current Flyers grill deck, with a size of around 6,000 to 8,000 square feet.

**Table 6-13:
Industry Average Space Use
Flyers – Upgrade Plan**

Service Function	Recommended Range	
	Low	High
Guest Services/Tickets/Ski School	-	-
Public Lockers	-	-
Rentals/Repair	-	-
Retail Sales	-	-
Bar/lounge/Restaurant Seating	3,360	4,110
Kitchen/Scramble	1,060	1,290
Rest rooms	620	760
Ski Patrol	380	470
Administration	-	-
Employee Lockers/Lounge	-	-
Mechanical	150	220
Storage	240	360
Circulation/Waste	590	880
TOTAL SQUARE FEET	6,400	8,090

Source: SE Group

In addition to these two primary facilities, two additional food service facilities are planned: the Teaching Center and the Tucker Mountain facility.

The ski school building at the top of Kokomo is recommended to be at 2,000 to 3,000 square feet in size, depending on functions included. Functions will include limited food and beverage service (likely targeted towards lessons participants and kid's programs), limited retail, restrooms, and a warming area.

The Tucker Mountain facility would house a ski patrol station in addition to a guest warming hut space with limited food service. Since no kitchen is currently planned, the food service would likely be limited to pre-prepared foods. The recommended size of the facility is 1,000 to 1,500 square feet. This facility would serve the food service demand of skiers on the Tucker lift. Since this lift is so distant from any other food service, it is recommended to meet that demand.



The T-Rex Grill facility will continue to operate and serve the food service demand for skiers in that area.

Food Service Seating

Food service seating will continue to be provided, and is recommended for increases, at all existing restaurants, in addition to the new on-mountain restaurant facilities.

The following table summarizes the seating requirements at CMR, based on a logical distribution of the CCC to each service building/location.

**Table 6-14:
Recommended Restaurant Seating* – Upgrade Plan**

	East Village	Center Village	Union Creek	Solitude Station	T-Rex Grill	Flyers	Teaching Center	Tucker Mtn Grill	Total Resort
Lunchtime Capacity (CCC)	2,266	5,835	2,914	3,694	129	1,068	340	165	16,412
Average Indoor Seat Turnover	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Existing Indoor Seats	556	861	385	306					2,108
Recommended Seats*	648	1,667	833	1,055	37	305	97	47	4,689
Difference	-92	-803	-448	-749	-37	-305	-97	-47	-2,581
Upgrade Plan seating capacity	2,266	5,835	2,914	3,694	129	1,068	340	165	16,412
Existing Outdoor Seats	224	98	102	154	95	25			698
Average Outdoor Seat Turnover	4	4	4	4	4	4			
Seating capacity including Outdoor Seats	3,162	6,227	3,322	4,310	509	1,168	340	165	19,204

* Recommended seats are based on planned CCC
Source: SE Group



Seating and restaurant space recommendations are directly related to the food service capacity. The food service capacity is determined by the distribution of each lift system's CCC. It is assumed that guests will prefer to dine at the facility closest to the area they are using. To allow for this convenience, it is important to provide restaurant seating to accommodate the food service capacity requirement of the area. Additional seating will be supplied per the recommendations in the above table, with increases per facility commensurate with the deficiencies shown in the "Difference" line in the above table.

6.6 UPGRADED PARKING AND RESORT ACCESS

Parking

The following table details the required parking capacity for the upgrade plan. This analysis shows an increase of 590 lodging units and an increase on 1,364 total parking spaces. These increases, taken together, will easily accommodate the planned increase in demand, as shown in the table below. As in existing conditions, the surplus will allow for 1) accommodation of peak day demand, when visitation can be up to 25% over CCC, and 2) allow for overflow parking from the lodging units when guest groups bring more cars per unit than the dedicated parking spaces for each unit can hold.

Parking throughout the base villages will be reconfigured as the 2008 PUD is built out, with a net gain of around 400 spaces. The larger increase in spaces is the result of the Far East lot expansion on public lands (previously approved).

**Table 6-15:
Parking/Bus/Lodging Capacity – Upgrade Plan**

Lodging Capacity	
Total Existing Guest Units	1,353
Proposed/Approved Guest Units	590
Units in Rental Pool	1,690
Guests per Unit ^a	5.5
Average Occupancy Rate ^b	59%
<i>Guests from Lodging</i>	<i>5,484</i>
Bus/Shuttle Capacity	
Number of Charter buses ^c	4
<i>Guests by Charter Bus</i>	<i>160</i>
Average Summit Stage Daily Riders ^d	1,246
Percent going to Copper ^e	17%
<i>Guests by Summit Stage</i>	<i>212</i>
<i>Total Guests from Lodging/Buses</i>	<i>5,856</i>
<i>Upgraded CCC</i>	<i>15,630</i>
<i>Resulting Parking Requirement (guests)</i>	<i>9,774</i>
Upgraded Parking Capacity Analysis	
<u>Private Land</u>	
Triple Treat	313
Union Creek Lot	100
B-Lot	100
Alpine/Edge Lot	2,053
Maintenance Lot	50
West center lot	110
East center lot	269
Wheeler Lot	29
Subtotal Private Land Parking Spaces	3,024
<u>Public Land</u>	
North Tenmile	360
Far East Lot	2,389
<i>Subtotal Public Land Parking Spaces</i>	<i>2,749</i>
<i>Grand Total Parking Spaces</i>	<i>5,773</i>
<i>Required Employee Parking Spaces^f</i>	<i>600</i>
<i>Total Day Skier Parking Spaces</i>	<i>5,173</i>
Guests per car ^g	2.37
<i>Total Upgrade Guest Parking Capacity</i>	<i>12,260</i>
<i>Upgrade Parking Surplus</i>	<i>2,486</i>
Total Parking/Bus/Lodging Capacity	18,116

Notes:

^a Source is Copper Mountain management – based on actual counts^b Source is estimate for average day from Copper Mountain management^c Source is Summit Stage (free Summit County transportation system) for Frisco to Copper Mountain Route.^d Source is surveys by Summit Stage and Copper Mountain – 35% of daily ridership is morning hours, 50% of that is employees^e Source is survey of lodging companies – actual counts.^f Based on approximately 750 employees per day at build-out – adjusted to account for employees parking at shop lot and employees on Summit Stage^g Source is Copper Mountain management – based on parking lot observations.

Source: SE Group



6.7 UPGRADED ALTERNATE AND NON-WINTER ACTIVITIES

Winter

CMR will continue to offer the same existing alternate winter activities. No plans currently exist for expansion of alternate winter activities, but CMR will continue to evaluate the market and demand for such activities and respond accordingly.

Summer

CMR will continue to offer the same existing summer activities. See Chapter 7 for discussion of future summer operations and activities.

6.8 UPGRADED ON-MOUNTAIN OPERATIONS

Ski Patrol/First Aid

As noted in Chapter 4, CMR's existing ski patrol facilities effectively serve the terrain, with the exception of Tucker Mountain. To meet this existing need, and the projected increased need with the installation of the lift, the Upgrade Plan includes a new ski patrol duty station at the top of the new Tucker lift. The addition of this facility will round out CMR's ski patrol capabilities and allow better service to the public.

Snowmaking Coverage

In addition to on-going, routine maintenance and upgrades to CMR's extensive snowmaking system, the Upgrade Plan includes increasing the snowmaking coverage with an additional 120 acres, as shown in Figure 6.¹⁵

As discussed in Chapter 5, approximately 172 acres of additional snowmaking coverage have existing approvals (202 acres approved in the 2006 ROD minus the 30 acres built in 2010).¹⁶ When added to the existing 333 acres of coverage, this would bring the total coverage to 625 acres.

¹⁵ Snowmaking improvements on *Upper Andy's Encore*, *Oh No*, and *Rosi's Run* would support the Super Bee Training Venue.

¹⁶ The *Copper Mountain Resort Final Environmental Impact Statement, Trails and Facilities Improvements, Record of Decision* 2006, Page ROD-17 approved 148.2 acres of snowmaking coverage. An additional 53.5 acres of coverage was approved in the *Copper Mountain Resort, Environmental Assessment, Kokomo Lift and Teaching Terrain Improvements Decision Notice*, 2002, page DN/FONSI-9.

**Table 6-16:
Snowmaking Coverage Summary**

Existing		
Existing in 2006	303.2 acres	
<i>Built in 2010</i>	<i>21.4 acres</i>	<i>American Flyer</i>
	<i>8.7 acres</i>	<i>Windsong</i>
Existing in 2011	333.3 acres	
Previously Approved		
2006 ROD	148.2 acres	
<i>Built in 2010</i>	<i>-21.4 acres</i>	<i>American Flyer</i>
	<i>-8.7 acres</i>	<i>Windsong</i>
Remaining Approved from 2006 ROD	118.1 acres	
2002 Kokomo EA	53.5 acres	
Current Previously Approved	171.6 acres	
MDP Additions		
Planned Additional Coverage	119.7 acres	
TOTAL SNOWMAKING COVERAGE	624.6 acres	

With the potential water rights for up to 595 acre feet of water, all existing and planned snowmaking coverage can be accomplished within CMR's existing water right.

Additionally, a micro hydro-electric project is planned in conjunction with the existing and proposed snowmaking system/infrastructure. The first phase of this project would primarily utilize presently installed snowmaking pipelines and associated infrastructure. Water would be diverted near Control Building 2 from Wheeler Creek. This project would provide the added benefit of alleviating peak period flows in Wheeler Creek thereby providing an excellent opportunity for stream health restoration. A second phase of the hydroelectric project would make clever use of the planned snowmaking storage reservoir (to be located on the west side of the resort with a planned capacity of approximately 45 acre feet). This second phase would rely primarily on snowmaking pipelines and associated infrastructure. Preliminary feasibility assessments indicate that the first phase of this project could produce up to 350,000 kWh—equivalently enough energy to power two detachable quad chairlifts. The second phase could provide as much as 1.4 million kWh—sufficient energy for five additional chairlifts.

Grooming Operations

Since the planned additions to the developed terrain network are relatively small, no significant increases to the grooming fleet are anticipated. The fleet may need to



expand by two or three vehicles, and vehicles from the existing grooming fleet will be replaced as necessary according to age and hours of operation.

Maintenance Facilities

The existing maintenance complex will be updated as necessary; however, the most significant change to the maintenance facilities will be the addition of the approved on-mountain grooming vehicle maintenance and mountain operations facility. This facility will allow for more efficient grooming shift changes, easier grooming vehicle access to portions of the mountain that are distant from the existing facility, employee break room, and various mountain operations functions.

6.9 UPGRADED UTILITIES AND INFRASTRUCTURE

No specific independent utility or infrastructure projects are included in the Upgrade Plan. Upgrades and improvements to existing infrastructure such as power, water, and sewer (e.g., the new on-mountain food and beverage facility) will take place commensurate to the individual project. Utility projects are shown on Figure 7.

Water

Water lines will be required to the planned on-mountain guest service facilities, with connection to existing and planned tanks, as shown and detailed on Figure 7.

Sewer

As with water, sewer lines will be required to the planned on-mountain guest service facilities, with connections to existing infrastructure. As Solitude Station has an existing sewer line, a new line is not required, but will be required for Flyers and the teaching Center, as shown in Figure 7.

Any increases to capacity, if required, will be made commensurate to increases in visitation and in conjunction with other upgrade projects.

Power

Power will be required for the new lifts as well as other planned projects. Locations of planned power lines are shown on Figure 7. Power needs will be addressed on a site-specific basis, in conjunction with each given project.

Fuel Storage

Current fuel storage is considered adequate for current and anticipated near-term future use. A new fuel storage location has been identified for an area near the top of

the planned Lumberjack replacement, as shown on Figure 5. If additional fuel storage is required in the future, the need will be addressed at that time and any new facility would comply with current and applicable codes.

Road Network

Mountain roads will be required for construction and maintenance to both terminals of each planned lift, with the exception of the top terminal of the Tucker Lift. Road projects are listed below:

- Extend road from bottom of existing Storm King to new terminal location – 380 feet
- Road from top of Excelsior to top of Storm King – 2,080 feet
- Extend road in Resolution Bowl to picnic deck location – 800 feet
- Extend road from bottom of Mountain Chief to bottom of Blackjack for Tucker Lift install and maintenance of both lifts – 2,515 feet
- A previously approved Tucker Mountain access road for maintenance access from Old Highway 91 and a portion of the road is included in the emergency egress route – 5,000 feet

Access to all other planned lift terminals will be along existing mountain roads and ski terrain.

Mountain Communications

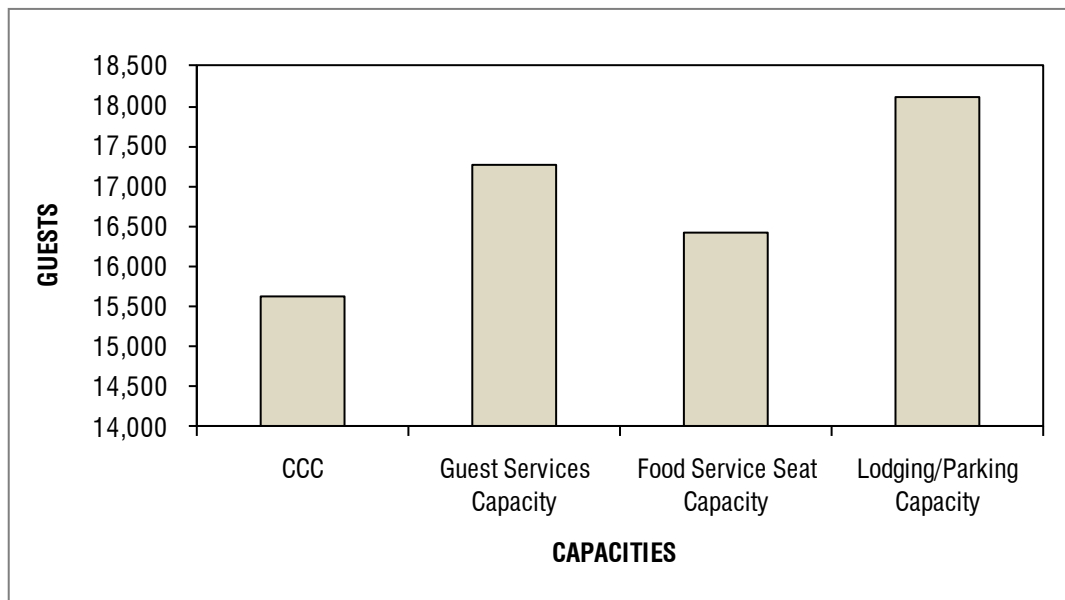
Mountain operations and ski patrol rely heavily upon effective radio communications. Presently there are a number of radio “dead spots” across the resort that would be alleviated via the installation of additional repeater infrastructure atop Copper and Union peaks, as well as atop Tucker Mountain.

6.10 UPGRADED RESORT CAPACITY BALANCE AND LIMITING FACTORS

The overall balance of the existing ski area is evaluated by calculating the capacities of the resort’s various facilities and comparing those facilities to the resort’s CCC. The above discussed capacities are shown in Chart 6-3.



**Chart 6-3:
Resort Balance – Upgrade Plan**



Source: SE Group

The mountain master planning process emphasizes the importance of balancing recreational facility development. The sizes of the various skier service functions are designed to match the CCC of the mountain. Proposals described in this Upgrade Plan for improvements to CMR have been configured to match the capacities of key resort operations, including lifts, terrain, guest services, food service seating, and parking with the resort CCC of 15,630 skiers.

As the above chart indicates, capacity of all skier services, including food service seating capacity, will be increased through upgrades to existing facilities and the construction of the new on-mountain facility. Capacity for parking and lodging will remain higher than CCC, allowing for peak day parking and lodging overflow.

6.11 FUTURE LIFT-SERVED TERRAIN

While CMR has not initiated nor completed any planning in the Jacques Basin/Jacques Peak area, and has no immediate plans to pursue lift-served skiing in this area, this section is included to provide a comprehensive planning document which encompasses all portions of CMR's existing Special Use Permit area.

The Jacques Basin area is presently included within CMR's existing SUP, as well as being designated in the White River National Forest Land and Resource Management Plan (Forest Plan) as appropriate for future lift-served Alpine skiing

(Management Area 8.25). In the future, this roughly 1,300 acre area (as depicted on Figure 5) could present a variety of high quality skiing terrain for Intermediate through Expert level guests.

At some point in the future, CMR will initiate a planning process in coordination with the Forest Service and other environmental agencies to evaluate the most appropriate configuration for the development of a lift and trail network within Jacques Basin and on Jacques Peak. CMR foresees preliminary planning taking place in conjunction with over the snow evaluations in this terrain area. At that time, limited tree clearing would be planned to allow snowcat access in support of evaluation activities.



7. Summer Activities and Operations Plan



7. SUMMER ACTIVITIES AND OPERATIONS PLAN

7.1 EXISTING SUMMER ACTIVITIES

CMR presently provides a variety of activities for summer guests including: scenic chairlift rides on American Eagle, lift-served mountain biking, an 18-hole championship golf course, disc golf, paddle boating, zip line over West Lake, a climbing wall, hiking, quad-power-jump, mini-golf, go-karts, and “Diggle” riding (mountain scooters). In addition, CMR is the year-round home of “WoodWard at Copper” which is a renowned ski and snowboard training camp dedicated to teaching and perfecting park and pipe skills. Augmenting WoodWard’s state-of-the-art indoor facility, Camp WoodWard also hosts, on-snow, spring and summer ski and snowboard camps.

Beyond the activities provided at CMR, Summit County provides a myriad of summer opportunities including; sailing/boating, backpacking, cycling, angling, music and art.

Existing Mountain Biking

Access to CMR’s mountain bike trails is via the American Eagle Lift. CMR provides Easy through Expert skill level lift-served, single-track mountain biking trails, as well as bicycle access on many of the maintained summer roads.

7.2 UPGRADED SUMMER ACTIVITIES

Summer “Activity Zones”

As a portion of this master planning process, CMR has identified five zones within which the majority of planned summer activities will be focused (as depicted on Figure 8 – the Summer Recreation Plan.) As a “mountain resort,” CMR has a unique opportunity to provide gravity based summer activities which are not possible elsewhere. These summer “activity zones” have been established within the MDP to identify, at a schematic level, where CMR will develop future summer activities.

Center Village Adrenaline Park – Zone 1

Located proximate to the Center Village, this zone will provide a planned Mountain Coaster, Zip-Lines, and Ropes Course. The existing disc golf course will continue to



be maintained within this zone. Other, non-gravity dependent activities would be provided on private land within the Center Village.

Spring and Summer Superpipe – Zone 2

The existing Superpipe, located adjacent to Center Village and within the Center Village Adrenaline Park zone, is planned to be used for events and Camp Woodward training. These functions will continue into the spring and summer as long as weather permits and the snow is maintained to provide a quality experience.

Woodward On-hill Summer Camp – Zone 3

Building on the popularity of the winter Catalyst Terrain Park and the Camp Woodward training facility, summer on-snow camps will continue to be offered within the existing Catalyst Terrain park and at the Superpipe location. These camps will primarily be offered in the early portion of the summer, to the extent that the snow features can be maintained.

Mid Mountain Adventure Zone – Zone 4

Augmenting the existing mountain bike trails system, this MDP incorporates an area between the Alpine Adventure and Bike Park zone and the Center Village Adrenaline Park zone. Mountain bike, both cross country and downhill trails, along with hiking trails will be planned for this zone.¹⁷ CMR also envisions a series of Zip Lines to be planned in this zone.

Alpine Adventure and Bike Park – Zone 5

Utilizing the area surrounding, and including, the existing Solitude Station, the Alpine Adventure Zone would include Zip Lines, a summer snow sports venue, and the development of three downhill-type mountain bike trails, ranging in ability level for beginner to expert. Additional hiking and biking trails presently exist within this zone. These trails would become lift-served with the planned summer operation of the Excelsior Lift. Conceptually, additional bike park features may be created adjacent to Solitude Station, including a “pump track” and “dirt jump area.”

¹⁷ In 1997 CMR prepared a Mounting Biking Trail Development and Trails Master Plan. Following the plan, a Categorical Exclusion was prepared. Since 1997, the sport of mountain biking and associated trails has evolved such that trails in the 1997 master plan are currently out of date. Therefore, at this time, CMR does not plan on implementing the network of trails from the 1997 Trails Master Plan.