DECISION PAPER

Date: January 18, 2018

Issue: Snowbird Chairlift Replacement

The existing Snowbird Chairlift was installed in 1971 and has undergone several modifications to extend its useful life. Management believes the Snowbird Chairlift has exceeded its useful life. Following a system drive failure in 2017, which further identified useful life concerns for the lift, an extensive study of a potential lift replacement was conducted which included Tahoe Donner Management, the Board of Directors, Finance and General Plan Committee (GPC) along with industry professionals. The lift replacement study is included for your continued review, but focuses on industry best practices for lift lifecycle and further improving the beginner experience at the Tahoe Donner Ski Resort; from base area terrain management, lift safety, and lift offload experience. After extensive research and analysis, management recommends the follow;

1. January 27, 2018: Board review funding considerations to further refine lift replacement and base area improvements as a beginner Ski Resort.
2. February 2, 2018: Board hold a Special Board Meeting to review the complete joint GPC / Finance Committee / Management & Industry Professional recommendation to replace the Snowbird Chairlift along with base area improvements.

Background:

Through November of 2017, competitive quotes for a new fixed-grip triple chair were obtained by management. Subsequently, management, GPC, and Board members have asked how additional Learning Center improvements could also be integrated during this chairlift replacement, allowing further safety improvements on the lift and on adjacent ski slopes, while also improving TDA's customer service throughout the learning experience; including chairlift alignment which was then further developed and shared with the Board in an Information Paper on December 18, see attached.

Many alignment options and improvements have been considered, where detailed analysis between management and consultants concluded that by trading locations between the existing Snowbird Chairlift and Caterpillar Conveyor (C2) location, many benefits would be captured. C2 would be placed on ideal learning terrain and adjacent to the existing Warming Hut and Learning Center Conveyor (C3). Also, by shortening the Snowbird Chairlift alignment slightly from the top, the run-out is extended which alleviates skier traffic near the exit ramp. With this swap, additional opportunities to implement necessary grading and additional Learning Center improvements are now available. Additional upgrades include Terrain Based Learning, power supply relocation, gallery covers at both C2 and C3 conveyors, shrouding at Eagle Rock, and snowmaking vaults, which would remove all obstacles and open the entire Snowbird run for improved safety and skiable terrain.

DECISION PAPER

On January 5, 2018, management hosted a Community Meeting at the Downhill Ski Resort, where discussions focused on how a new chairlift alignment would improve operations and member experience, and how it may affect neighbors. Management has prepared initial schematic drawings that show proposed tower locations, as well as a collage depicting approximate size and location of new towers, see attached.

Chairlift removal and installation is similar to many construction projects. To be guaranteed a place in line for the construction timeline this summer, and to proactively work with long-lead-times of chairlift materials and to secure key local contractors for earthwork and electrical improvements, management will be seeking the Board's approval and commitment to proceed with a chairlift manufacturer in early February, 2018. This allows for necessary planning and coordination for removal of the existing chairlift in late spring, then new chairlift installation through the summer, for inspections, testing and employee training ahead of the 2018-2019 winter season.

Options:

1. Management to proceed with Civil, Electrical, and Chairlift Engineering costs studies, not to exceed $60,000. This option allows management to further refine cost estimates of this project in order for the Board to meet during a Special Board Meeting in the coming weeks to fully address this project and potentially award overall budget and contract approvals.

Recommendation:
Management recommends the Board approve Option 1.

Prepared By: Forrest Huisman

Reviewed By: Michael Salmon

Board Meeting Date: January 27, 2018
General Manager Approval to place on agenda :_____Date: _____

INFORMATION

December 16, 2017

Purpose: Board update regarding the proposed Snowbird Lift replacement at TDA's Downhill Ski Resort.

Background: Built in 1970, the Snowbird Lift currently operates a series of fixed-grip, two-seat chairs, accessing mostly moderate terrain for member and public skiers that possess Level 4 abilities and up. As detailed in the attached 2013 Planning Document, the Snowbird Lift is now beyond its useful life, has the uphill capacity of 900 skiers per hour, but is deliberately run at reduced speeds to maximize beginner experience and user safety.

In January of 2017 the Tahoe region experienced several power fluctuations and outages. During one of these events, the drive for Snowbird Lift lost a link card which stores parameters for the drive to function properly. The drive was last replaced in 1995, and locating a replacement link card and software to reload the parameters proved to be a challenging task, as the original manufacturer is no longer in business. Fortunately, Ski Area management located a link card and necessary software, then coordinated with a distant programmer so that the Lift could be repaired and be made operational without losing further revenue during the upcoming MLK weekend.

On June 23rd, the Tahoe Donner Board of Directors voted unanimously to approve funding for a Snowbird Lift replacement, and with continued support from the Finance and General Plan Committees, the Board voted on October 28th to use Replacement Reserve Funds to replace the Snowbird Lift in 2018. In response, Staff has obtained bids Doppelmayr and SkyTrac, including preview of any available and qualified second-hand units. The GPC Chairman also provided additional metrics on the importance of replacing the existing Snowbird Lift during the November 18th Board update. ECOsign is simultaneously underway with a master plan report for the Downhill Ski Area, which includes Lift capacity and alignment options that aim to improve skier circulation, efficient access to learning center, and overall guest safety. The Lift alignment and project scope details are attached.

With the Board's approval to proceed with a new Snowbird Lift at the January 2018 Board meeting, Staff will proceed with ordering necessary Lift components with sufficient lead-time for installation during the following summer months, allowing for testing and staff training ahead of the 2018 winter operations.

Discussion:

- Current and proposed Lift alignment with preliminary project schedule and costs
- TDA Staff asks the Board of Directors for direction leading up to a January decision

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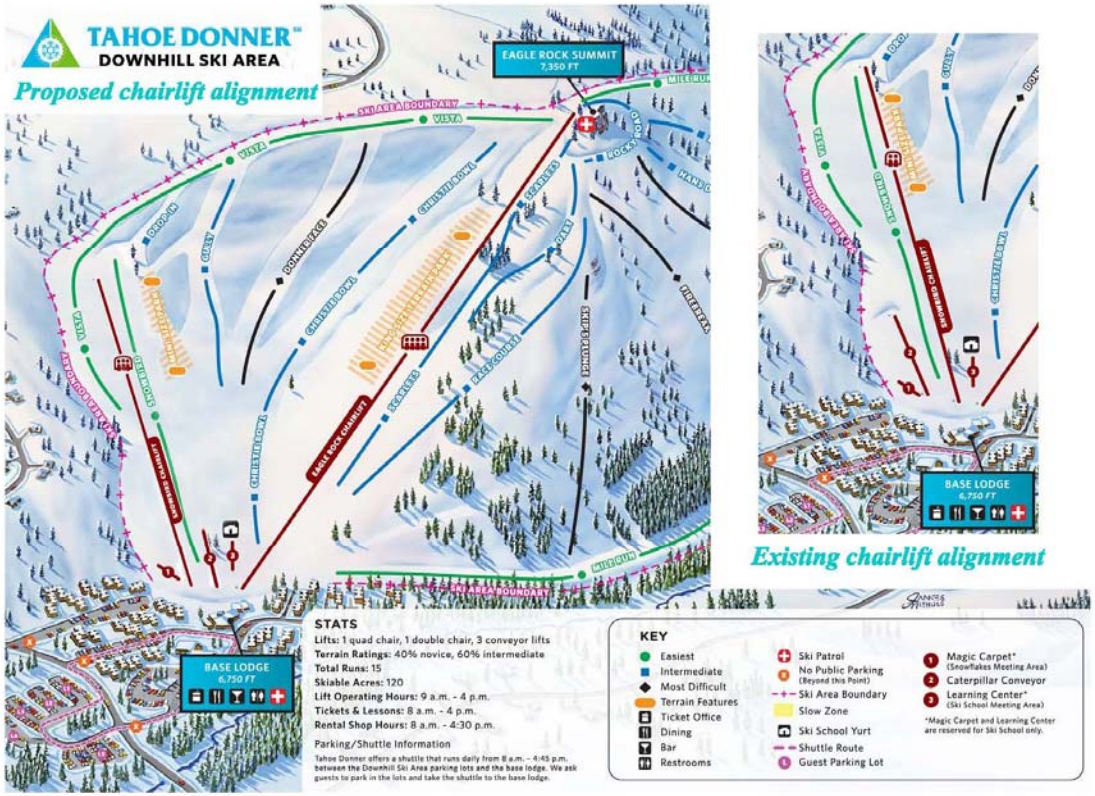
Prepared By: Forrest Huisman, Director of Capital Projects

Snowbird Chairlift replacement and Learning Center improvements

at Tahoe Donner Downhill Ski Area



Vision

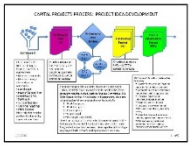
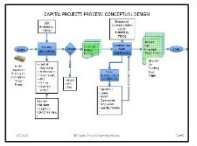
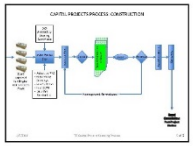
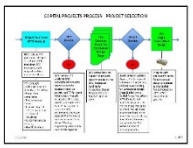
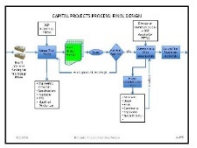
- Provide guests with **The Best Place to Begin**, while improving customer service and guest experience at Tahoe Donner's Learning Terrain.
- **Tahoe Donner** is a vibrant and desirable mountain community, providing attractive and well-maintained facilities, events, programs, and leading customer service to its members, guests, and public, all while maintaining accessible and healthy natural surroundings.

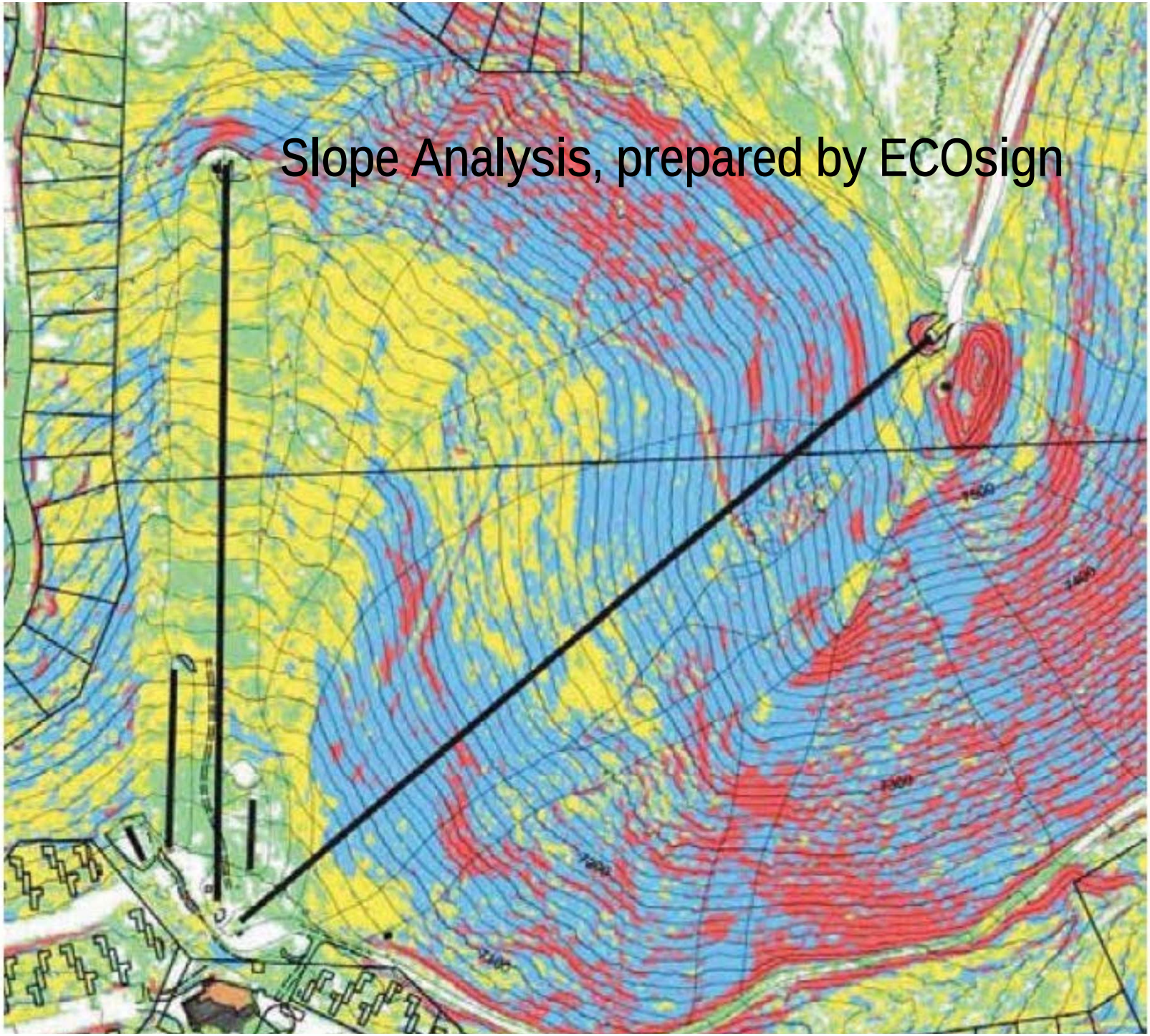
Goals and Objectives

- Per direction of the Tahoe Donner Board of Directors, General Plan Committee and Finance Committee, Staff works to upgrade the Association Amenities and related infrastructure.
- Replacing the Snowbird Chairlift will provide;
  - Improved access to beginner terrain
  - Reliable Chairlift technology.
  - Compliance to forthcoming ANSI and Cal-OSHA requirements
- Upon Board approval, and meeting sufficient lead times for manufacturing and shipment, Chairlift installation could begin as early as this summer, for testing and training ahead of 2018 winter season.
- The General Plan Committee is actively preparing a master plan report on all available options for a new Downhill Ski Lodge. Their draft report is available online at; http://www.tahoedonner.com/members/capital-projects/active-projects-2/consider-phased-downhill-ski-lodge-and-lift-replacement/

For a new chairlift to be installed and ready for the 2018-2019 Ski Season, the following steps have occurred and will continue to be necessary;

- **6/23/2017;** Board approved transfer of $1.5MM in Member Equity to Replacement Reserve Fund to bolster ending balance after Chairlift is replaced.
- **10/28/2017;** Board approval of 2018 budget and chairlift replacement
- **Fall 2017;** Chairlift pricing and Learning Center options prepared
- **12/4/2017;** General Plan Committee Review and Update on Chairlift replacement options
- **12/16/2017;** Board update on Chairlift Replacement and Learning Center options.
- **1/5/2017;** Community Meeting at Downhill Ski Area; discussions on Learning Center options
- **1/27/2018;** Board approval required for Staff to proceed with chairlift contract.


Slope Analysis, prepared by ECOsign

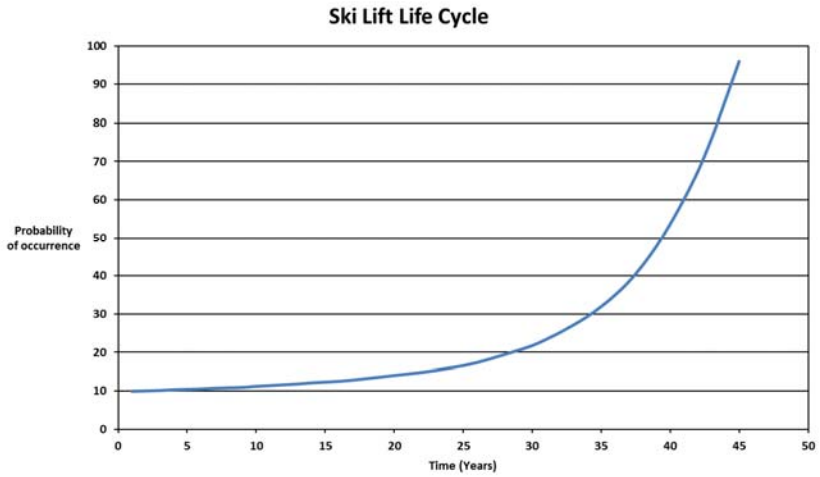
Current Snowbird Chairlift
c.1971

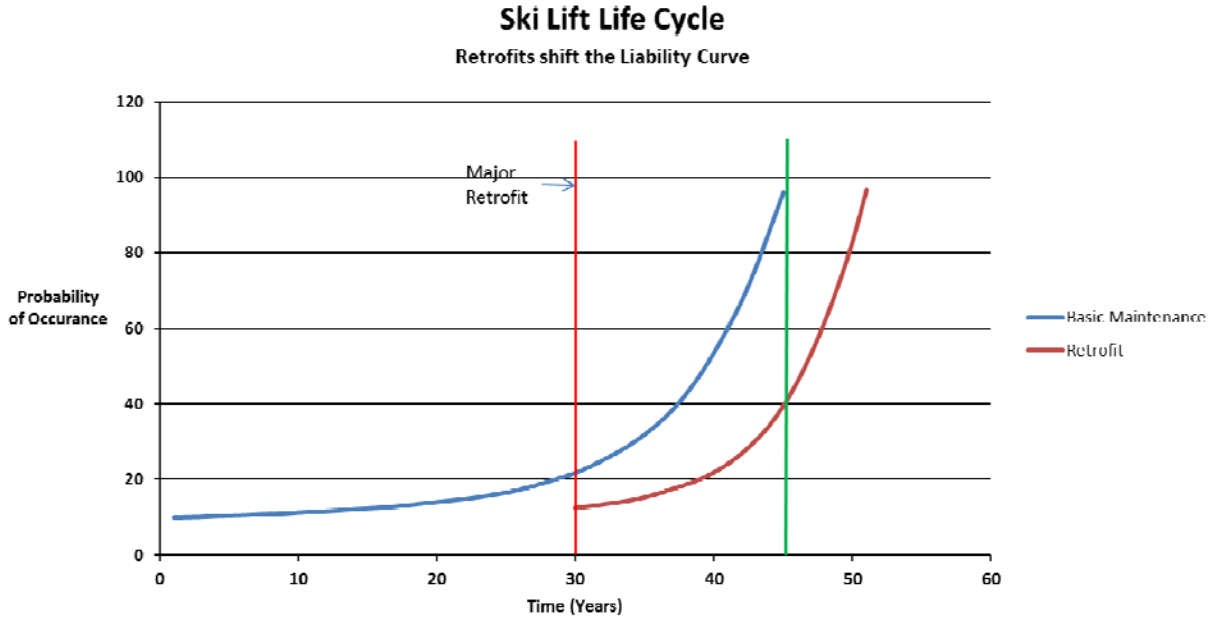
Current Status and Chairlift Statistics

- The existing Snowbird Chairlift currently meets all annual inspections, but is nearing the end of its useful life and exceeds the average age of lifts in the U.S.
- SLI, the original manufacturer of the Snowbird Chairlift, is no longer in business, making replacement parts and trained service technicians difficult to source.
- Bottom and Top Terminals currently constrain skiable terrain and reduce circulation.
- Forthcoming code changes require new tower head platforms for maintenance access.
- Old sheave design requires regular tower access and maintenance during storms.
- Additional mechanical breakdowns could impact service levels and reduce revenues.

General Specifications	Units	Current Snowbird Lift
Year of construction	Year	1971
Lift type		Fixed-grip, Double Chair
Carrier capacity	Number	2
Drive Location		Bottom
Tensioning Location		Top
Load Speed, design maximum	ft/min or m/s	350
Horizontal Length	feet	1632.15
Vertical Rise	feet	224.25
Line Speed	ft/min or m/s	350
Trip Time	minutes	5.05
Uphill Capacity	Design in pph	900
Downhill capacity	%	Maintenance only
Carrier Interval	Design in seconds	9
Carrier Spacing	Design in feet	55.9

Ski Lift / Mechanical Life Cycle, Industry Overview





Current considerations for the used chairlift market;

- Manufacturer's history
- Lifts maintenance history
- Compatibility for upgrades for code compliance
- Availability of support and parts compatible with Eagle Rock
- Find a qualified contractor to install a used chairlift
- Brokers specializing in used chairlifts
  - http://www.resortboneyard.com/l/lifts
  - http://www.skiresortequipment.com/ariel-lifts

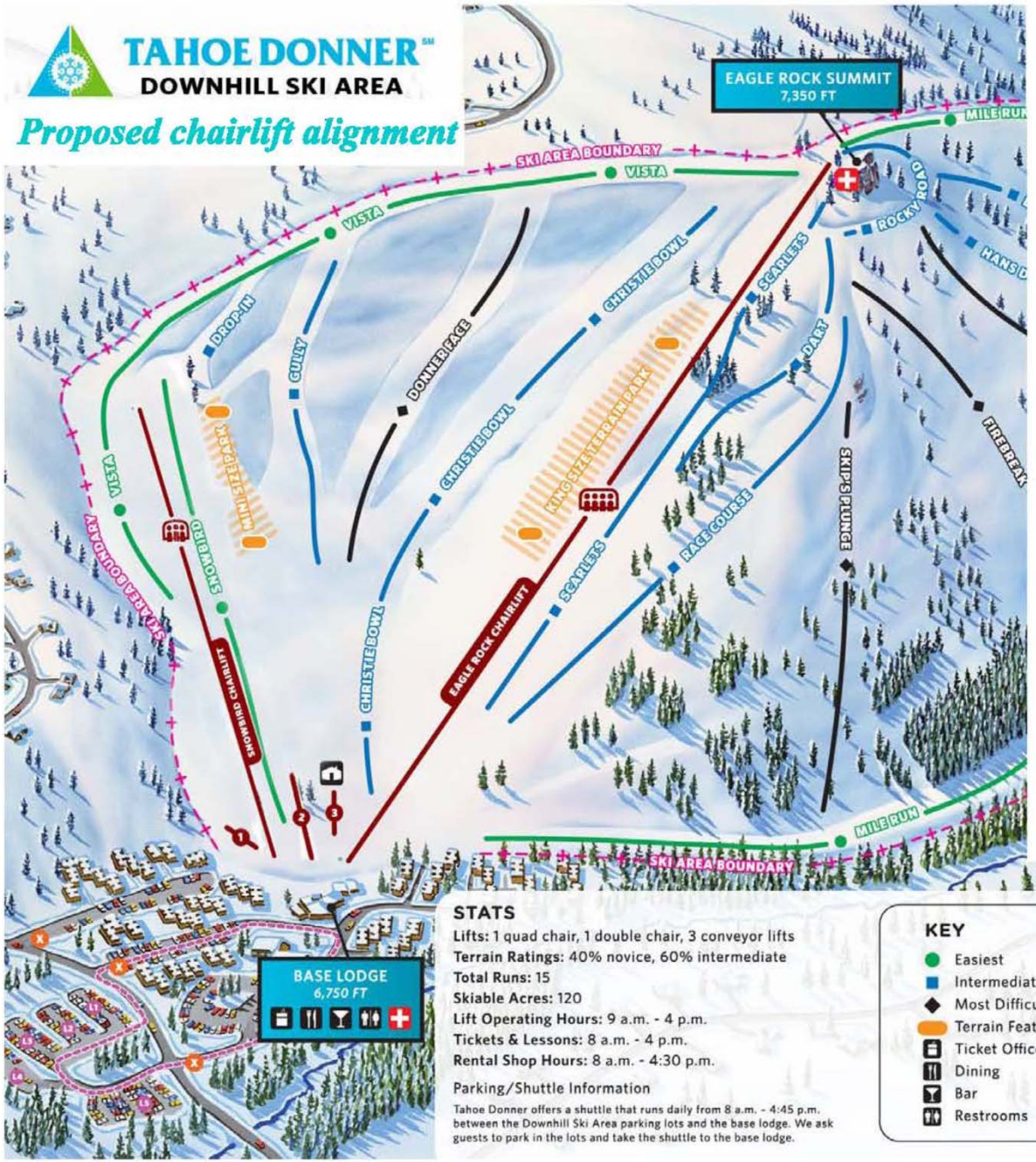
Chairlift Alignment and Learning Center Upgrades

- The new Chairlift could be placed in the existing alignment, although opportunities for an improved Learning Center are as follows;
  - The new Chairlift could trade places with Conveyor 2 (C2), which could be reduced in length to provide consistent learning terrain as well as access the existing Yurt.
  - Gallery covers could be installed to improve learning experience and reduce opening time after winter storms.
  - Resulting space may allow for improved Terrain Based Learning.

General Specifications	Units	Current Snowbird Lift	Proposed Snowbird replacement (Skytrac)
Year of construction	Year	1971	2018
Lift type		Fixed-grip, Double Chair	Fixed-grip Triple-chair
Carrier capacity	Number	2	3
Drive Location		Bottom	Bottom
Tensioning Location		Top	Bottom
Load Speed, design maximum	ft/min or m/s	350	400
Horizontal Length	feet	1632.15	1600
Vertical Rise	feet	224.25	210
Line Speed	ft/min or m/s	350	400
Trip Time	minutes	5.05	4.7
Uphill Capacity	Design in pph	900	1500
Downhill capacity	%	Maintenance only	Maintenance only
Carrier Interval	Design in seconds	9	7.2
Carrier Spacing	Design in feet	55.9	48

TAHOE DONNER℠
DOWNHILL SKI AREA

Proposed chairlift alignment



Existing chairlift alignment

STATS

Lifts: 1 quad chair, 1 double chair, 3 conveyor lifts
Terrain Ratings: 40% novice, 60% intermediate
Total Runs: 15
Skiable Acres: 120
Lift Operating Hours: 9 a.m. - 4 p.m.
Tickets & Lessons: 8 a.m. - 4 p.m.
Rental Shop Hours: 8 a.m. - 4:30 p.m.

Parking/Shuttle Information

Tahoe Donner offers a shuttle that runs daily from 8 a.m. - 4:45 p.m. between the Downhill Ski Area parking lots and the base lodge. We ask guests to park in the lots and take the shuttle to the base lodge.

KEY

- Easiest
- Intermediate
- Most Difficult
- Terrain Features
- Ticket Office
- Dining
- Bar
- Restrooms
- Ski Patrol
- No Public Parking (Beyond this Point)
- Ski Area Boundary
- Slow Zone
- Ski School Yurt
- Shuttle Route
- Guest Parking Lot
- 1 Magic Carpet* (Snowflakes Meeting Area)
- 2 Caterpillar Conveyor
- 3 Learning Center* (Ski School Meeting Area)

*Magic Carpet and Learning Center are reserved for Ski School only.

Recommendations for a Fixed-grip, Triple-chair

- Ski-school instructors can efficiently manage one student on either side during loading and unload.
- A lighter chair has less swing speed during skier unload, which eliminates the need for a steeper exit ramp (similar to top of Eagle Rock), providing a safer and superior learning experience for beginner skiers.
- Easier for maintenance and lift operations due to the reduced mass of the chair.
- A triple-chair can move just as many guests per hour as a quad-chair, because quad chairs have slightly greater spacing on the cable to keep total skier weight the same and within engineering specifications.

Example of a Gallery cover that could be installed at existing conveyors to enhance learning experience and reduce opening time after winter storms.

Squaw Valley's Learning Center; **First Venture**

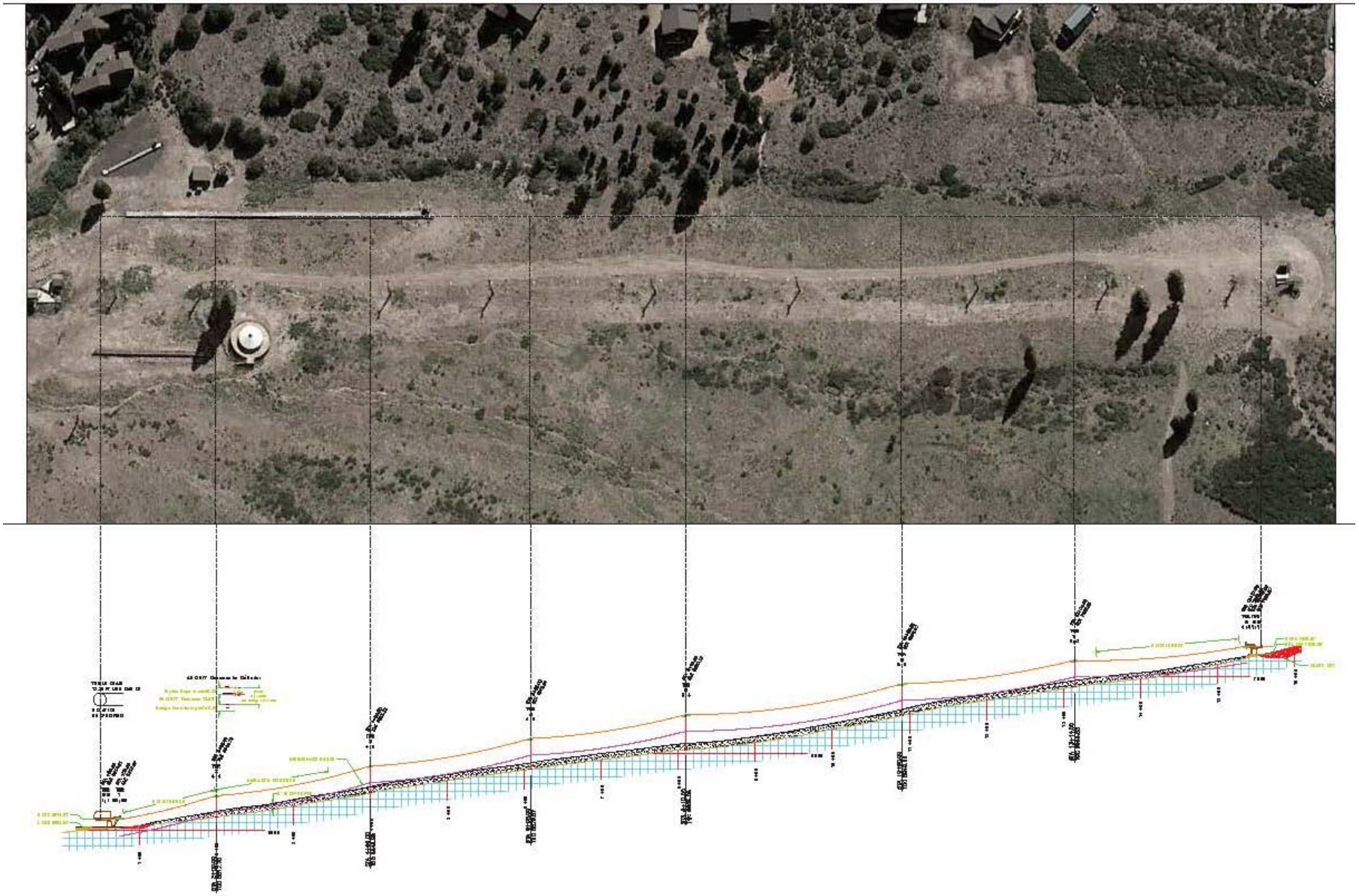
Conveyor Cover

Fixed-grip Triple Chair

"Kid Stops" U-Block System from Leitner-Poma of America also available.


Power Supply could be relocated near existing cooling tower, improving circulation near the base area.
relocate

Initial Engineering Analysis and Tower locations



Six proposed towers versus nine existing

Initial Engineering Analysis and Tower locations

- Proposed Tower’s 4 and 5 shown at edge of Snowbird Run
- Green is for discussion purposes only, Towers will be painted black
- Towers will be +/- 30’ tall, similar to Eagle Rock
- Existing trees help filter views of Tower 4 from adjacent homes.

Estimated Budget for Snowbird Chairlift Replacement and Learning Center improvements during Summer of 2018

Estimated Project Total for Snowbird Chairlift replacement on current alignment (RRF)	
Replacement Cost includes the following;	
New Snowbird Chairlift; Fixed- Grip, Triple Chair. Includes; demolition of existing chair and delivered in parking lot for scrapping, survey work and staking, concrete footing installation, tower installation, mechanical terminal installation, low/high voltage wiring beyond disconnect, communications line and owner supplied fiber optic line installation, haul rope installation, Painting of towers and all areas, Adjustments and alignments, lighting and heating of operator enclosures, lift certifications and load acceptance test.	
Agency approvals, applications, permits, conditions (CA State, Town of Truckee, Lahontan Water Quality Board)	
Survey of existing topography	
Soils Engineering and Geotechnical Surveying	
Disposal of old Chairlift, for scrapping or donation.	
Platforms for Load and Unload; design, permitting and construction, neveplast surfacing top and bottom terminals	
Final earthwork, grading, erosion control, revegetation	
Sale of (63) chairs and haul rope ($300 per chair)	
Galvanic Cathodic protection at reinforced concrete foundations	
Upgrades necessary to supply 480V, 3 phase to main disconnect at drive terminal	
Fulltime APU (Tier-4 DIESEL) - with tertiary power via hydrostatic motor	
Main Disconnect, Distribution Panel, Step down transformer for 240/120v etc.	
Full Regen Drive Module, converts from AC to DC and back to AC via modules, resulting in cleaner power, protection	
Upgraded (2) 8' x 12' operator houses (included)	
Restraint bar with elbow rest with map and Kid-stops between knees	
Fiber engineering, hardware, interconnects and final installation	
OSHA required Lift Evacuation, signage, and Tower Maintenance Equipment	
Option to re-use newer Top Terminal and existing Operating House	
Sales Tax	
Contingency (5%)	
Estimated Project Total (RRF)	**$ 1,500,351**

Board approved in 2018 Budget, 10/28/2017

Estimated Project Total for new Learning Center improvements (DF)	
Grading for relocated bottom and top terminals, including new C2 alignment	
Relocate C2 and shorten to 300'	
Gallery Covers for C2 & C3 (C1 cover not recommended)	
Snowmaking Vaults	
Eagle Rock Shrouding Improvements to eliminate icing and improve service levels	
Electrical Upgrades and TDPUD fees- Disconnect and Transformer, including carpets, rebate for existing boxes (RRF)	
Sales Tax	
Contingency (10%)	
Estimated Project Total (Combined DF and RRF)	**$ 525,000**

Estimated Combined Project Costs in 2018 (Combined RRF and DF)	**$ 2,025,351**

2018 Preliminary RRF

Preliminary 2018 Project Count 286

Preliminary 2018 RRF Budget	$ 6,354,191	
Snowbird Lift	$ 1,500,351	SBL
Trout Creek Expansion	$ 1,244,439	TCEXP
Trout Creek Pools	$ 314,224	TCP
	$ 3,295,177	

11/29/2017

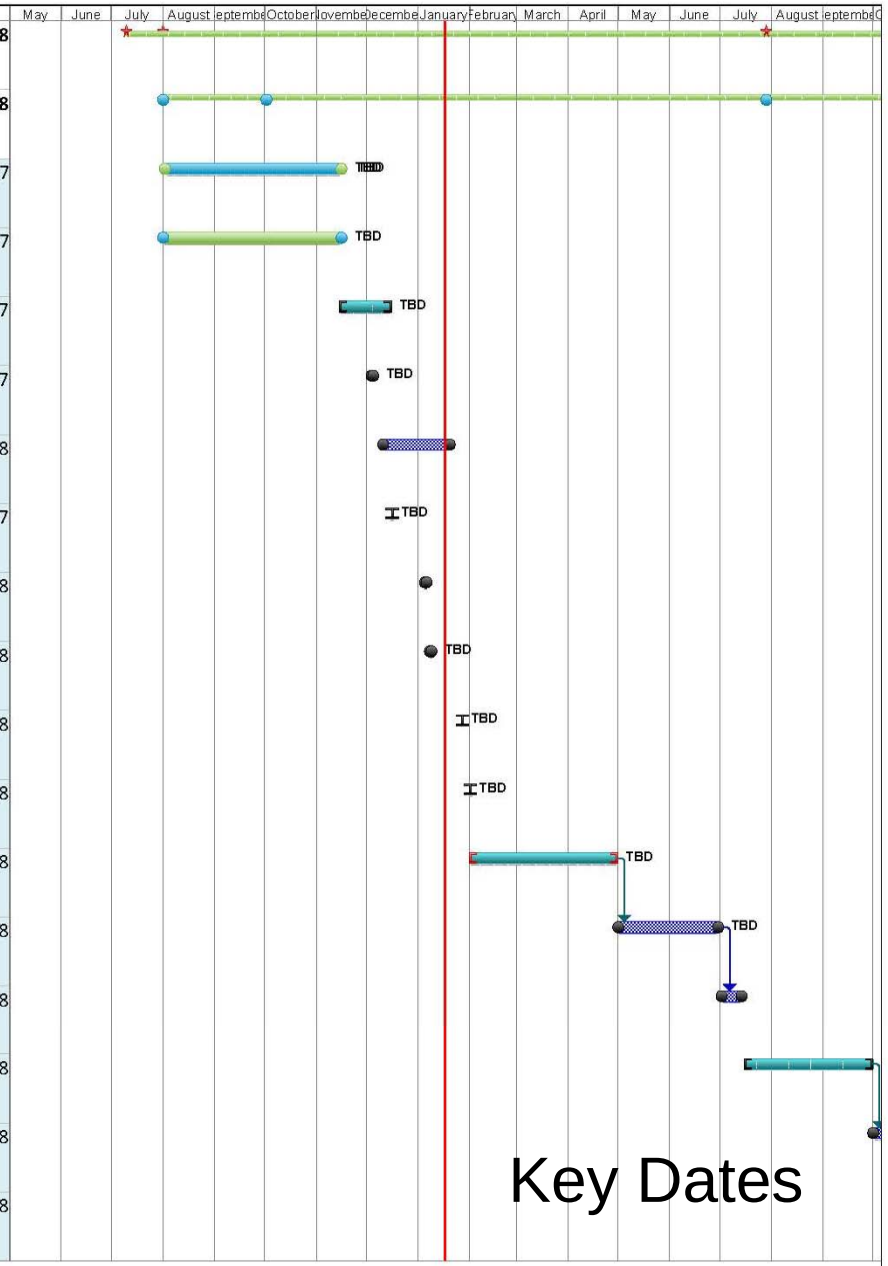
Category	Component	ID	Location	Service Date - (Note: The "Day" of the "Service Date" must be greater than the Fiscal Year "Day")	Est Useful Life	Adjusted Life	Replacement Date	Total Basis Cost	Future Replacement Cost	Sub-Schedule
Computers	Gasboy - Maintenance Software License	E	MIS	9/4/2017	1	0.00	09/04/18	1,632	1,665	
Computers	VICOMAP - Website	E	MIS	9/4/2017	1	0.00	09/04/18	1,550	1,581	
Software	Gold Mine Software	E	MIS	6/1/2017	1	0.00	06/01/18	1,500	1,518	
Asphalt/Paving	Campground - Asphalt - Stripe	E	Campground	2/1/2017	2	(1.00)	02/01/18	1,200	1,203	
Software	SnapOn Software Upgrade	C	Maintenance	4/1/2017	1	0.00	04/01/18	1,108	1,116	
Software	Arc GIS - Forestry - Software	E	MIS	3/10/2017	1	0.00	03/10/18	1,081	1,087	
Asphalt/Paving	Marina Pthwys-Ramp Seal	E	Marina	4/22/2016	2	0.00	04/22/18	253	255	
								6,273,196	6,354,191	

SNOWBIRD LIFT

Subschedule - SBL

Lift Component	Snowbird Lift Towers	C	Ski Area - Lift Maintenance	6/1/1997	50	(29.00)	06/01/18	719,200	728,043	
Lift Component	Snowbird Bullwhl -2 -	C	Ski Area - Lift Maintenance	6/1/2005	20	(7.00)	06/01/18	311,000	314,824	
Lift Component	Snowbird-Chairs (63)	C	Ski Area - Lift Maintenance	6/1/1991	30	(3.00)	05/31/18	132,804	134,437	
Lift Component	Snowbird Lift Shacks	C	Ski Area - Lift Maintenance	3/2/2017	15	(14.00)	03/02/18	62,000	62,302	
Lift Component	Snowbird Gear Box	C	Ski Area - Lift Maintenance	6/1/2007	20	(9.00)	05/31/18	42,165	42,683	
Lift Component	Snowbird Haul Rope	C	Ski Area - Lift Maintenance	6/1/2000	30	(12.00)	06/01/18	40,920	41,423	
Lift Component	Snowbird Tower Bushings	C	Ski Area - Lift Maintenance	12/1/1997	25	(4.00)	12/01/18	37,200	38,219	
Roofing	Snowbird Roof-Siding-Lift Shacks	C	Ski Area - Lift Maintenance	6/1/1997	20	1.00	06/01/18	28,520	28,871	
Lift Component	Snowbird Aux Motors	C	Ski Area - Lift Maintenance	6/1/1994	25	(1.00)	06/01/18	24,800	25,105	
Electrical	Snowbird Control Panel lw vlt	C	Ski Area - Lift Maintenance	6/1/2000	20	(2.00)	06/01/18	18,600	18,829	
Lift Component	Snowbird Drive	C	Ski Area - Lift Maintenance	6/1/2000	20	(2.00)	06/01/18	18,600	18,829	
Lift Component	Snowbird Sheaves	C	Ski Area - Lift Maintenance	6/1/2015	2	1.00	05/31/18	12,400	12,552	
Lift Component	Snowbird Lift Boom Fabrc	C	Ski Area - Lift Maintenance	6/1/1997	30	(9.00)	06/01/18	6,200	6,276	
Structural	Snowbird Motor Room - Structural Repair	E	Ski Area - Lift Maintenance	6/1/2014	15	(11.00)	06/01/18	6,200	6,276	
Lift Component	Snowbird Chair Pads	C	Ski Area - Lift Maintenance	10/1/2010	10	(2.00)	10/01/18	5,580	5,705	
Misc Component	Snowbird Tower Pads	C	Ski Area - Lift Maintenance	1/14/2016	7	(5.00)	01/13/18	5,335	5,341	
Pumps/Motors	Snowbird Drive Mtrs Rebld	C	Ski Area - Lift Maintenance	8/1/2010	10	(2.00)	08/01/18	4,464	4,541	
Electrical	Snowbird Main Electrical Shutoff	C	Ski Area - Lift Maintenance	1/1/2016	15	(12.00)	12/31/18	3,968	4,087	
Pumps/Motors	Snowbird Drive Repairs	E	Ski Area - Lift Maintenance	2/17/2017	10	(9.00)	02/17/18	2,000	2,008	
									1,500,351	

ID	Task Name	Start	Finish
1	**Timeline for Snowbird Chair Replacement**	**Mon 7/10/17**	**Sat 7/28/18**
2	**Project Tasks**	**Mon 10/2/17**	**Sat 7/28/18**
3	Procure pricing estimates from Doppelmayr	Tue 8/1/17	Wed 11/15/17
4	Pricing estimates from SkyTrac	Tue 8/1/17	Wed 11/15/17
5	Review available second-hand units	Wed 11/15/17	Fri 12/15/17
6	GPC Discussion on Snowbird replacement	Mon 12/4/17	Mon 12/4/17
7	Member Communication	Mon 12/11/17	Fri 1/19/18
8	Board Discussion on Snowbird replacement	Sat 12/16/17	Sat 12/16/17
9	Member Update at Downhill Ski Lodge at 4pm	Fri 1/5/18	Fri 1/5/18
10	GPC update for Board Action	Mon 1/8/18	Mon 1/8/18
11	Board Action on Snowbird replacement	Sat 1/27/18	Sat 1/27/18
12	Chairlift Vendor approved	Thu 2/1/18	Thu 2/1/18
13	Chairlift Manufacturing Lead-time	Thu 2/1/18	Mon 4/30/18
14	Contractor Mobilizes for Removal	Tue 5/1/18	Fri 6/29/18
15	Chairlift Deliveries arrive	Mon 7/2/18	Fri 7/13/18
16	Installation of Chairlift	Mon 7/16/18	Sun 9/30/18
17	Chairlift Testing and Training	Mon 10/1/18	Fri 12/7/18
18	New Snowbird Operational	Sat 12/8/18	Mon 12/31/18

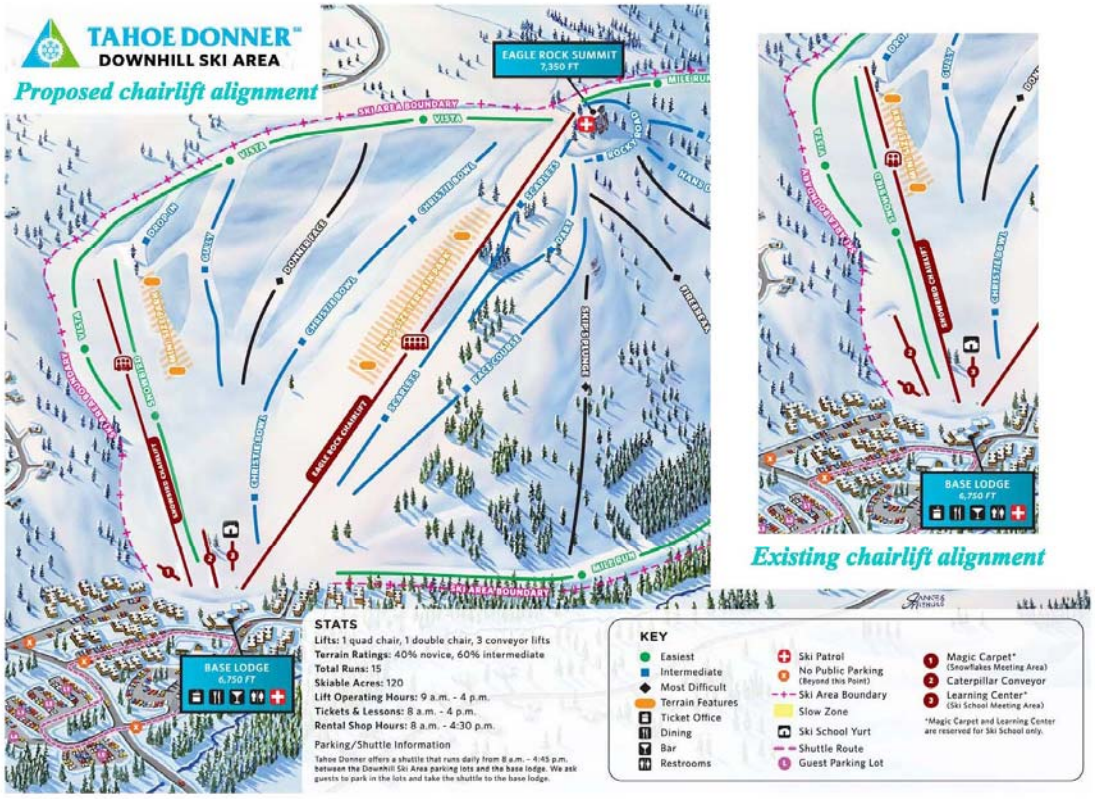


Common Questions;

- Why would we not want to install a detachable chair lift? *Detachable technologies move large numbers of people, but neither snowbird's slope capacity or chairlift length warrant the tripled upfront expense.*
- Regionally, who else is running a fixed-grip triple chair? Squaw's First Venture Lift is a fixed-grip triple chair, accessing some of their best learning terrain and improving their ski-school experience.
- Would moving Snowbird Chairlift improve the skier experience? By moving the Chairlift east by approximately 100', the lift towers would no longer in the middle of the ski run. And although access to the lift line is approximately 70 more feet on level terrain, Conveyor 2 could provide efficient access. When unloading the chair at the top terminal, this orientation provides about three times more space to safely exit and orient downhill.
- Reasoning behind buying a new chairlift versus buying an old chairlift. New Chairlift technology and built-in code compliance would prevent costly retrofits and future liability.
- Have we thought about relocating C1 and providing terrain base learning? Additional review is underway to consider all opportunities within available space.
- It is important for C1 and C2 to be covered. Staff aims to provide quotes for installing gallery covers on all three conveyors.
- What are we doing to improve the beginner experience?. By relocating Snowbird and related power supplies, while combining caterpillar (C2) and learning center conveyors (C3), great improvements could be made to improve skier circulation and to overall beginner experience. Future improvements may include regrading three flat spots along Mile Run for improved terrain.

New Chairlift Highlights;

- Improved access to beginner terrain
- Safe and reliable Chairlift technology
- Compliance to forthcoming ANSI and Cal-OSHA requirements



Existing chairlift alignment