











Truckee Tahoe Airport Maintenance Plan- Mechanical

Refer to the Summary document for more elaboration on replacement and maintenance plan

Picture	Unit type	Quantity	Manufacturer	Model	Fuel type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement cost	Maintenance	Maintenance Cost	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-2027	2028-2032		
	Water Heater	1	Bradford White	MIS0456LN10	Natural Gas	50,000 BTU		80%	50 Gallons	1997	yes although wall screws may not be sufficient	seems tight	Auto/ Water temp		Drain pan, PTRV, no Insulating blanket	2017	\$ 1,000	2013 Replace Wall Screws with Lag Screws, Add thermal blanket	\$ 100	100				1000									
	Furnace	1	Carrier	58RAV095-12	Natural Gas	92,000 BTU	74,000 BTU	80%		1997	Duct is hung, not braced although this probably is sufficient	seems tight, Needs lateral bracing	Honeywell Programmable Thermostat	Yes	Filter needs to be changed, duct work should be cleaned Both outside air vents need to be open	2017 With a 92% efficient furnace and add condensate drain line, reconfigure flues and new programmable thermostat	\$ 6,000	Twice yearly Change Filter	\$ 50	50	50	50	50	6000	50	50	50	50	50	250	250		
	Radiant Heaters	10	Modine	MHR 30 or 60	Natural Gas	30,000 or 60,000				1997?	yes	None	3 generic thermostats	Yes, except for mezzanine which appears to have the circuits switched off.	Unit in North Bay has burnt/melted plastic on grill. Insure that battening net is uncompromised	Plan for 1 failure replacement starting in 2015 until all have been replaced	\$1000/year					1000	1000	1000	1000	1000	1000	1000	1000	1000	2000		
	Ceiling Fans	5	Unknown	Unknown 52" Diameter approximately	Electric					2004?	None	none	Dial fan speed	Yes		2020 replace all 5 fans and controls	\$2,000	Add Humidistat control and on/off/auto switch	\$500	500													
	Bathroom Exhaust Fans	2	Penn Zephyr	Unknown	Electric				unknown-larger capacity	1997?	None	seems tight	Occupancy Sensor	Yes		2017	\$800																
	South Bay Exhaust Fan	1	Power Ventilator Co.	SX105BC	Electric						yes		Time Dial	Yes				Install CO and combustible gas sensor for auto turn on & Lubricate	\$1000 Initial and \$50 year	1050	50	50	50	50	50	50	50	50	50	250	250		







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	Vehicle Exhaust Fans	2	DSP-Monoxivent	536 1 52	Electric					1997?				Yes		2037		Might need to replace electrical contactors every 5 years depending on use	200	200										200	200
	Fire Suppression	1		Wet														Annual Inspection, Occasional Head failure or leak fixing	\$100 yearly for heads in addition to inspection	100	100	100	100	100	100	100	100	100	100	500	500
	Grease interceptor	1	Unknown															Routine cleaning	assumed already included in budget												
Recommended	CO and combustible gas alarm for North Bay															2013	\$1,000			1000											
Recommended	Insulation																	Fix loose insulation in north bay	\$ 300.00	300											
	Unit Heaters	2	Reznor		Natural gas					1994?	No lateral bracing		Basic thermostat	Did not attempt, boxes too close, hasn't been started in at least 8 years	10 years life remaining if used	2023 if used again with Reznor UEAS-130	\$ 4,500	Add lateral brace ASAP 1.5ft clearances must be maintained	\$ 800	800										4500	







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	Exhaust fan	1									None				Not currently used			If going to be used need new belts & lube.																
Warehouse B																																		
	Unit Heater	2	Reznor	UDAP175	Natural Gas	175,000 BTU	145250 BTU	83%		Sep-02	No lateral bracing	Could use sealing	Basic thermostat	yes	Dusty fan needs cleaning	2022 93% efficiency Reznor UEAS-130	\$ 9,000	Add lateral brace ASAP Add programmable thermostat	\$800 & \$600	1400								9000						
Warehouse C																																		
	Unit Heaters	2	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994	No lateral bracing	Seems tight	Basic thermostat	Did not attempt, boxes too close		2024 with 93% efficiency UEAS-130 if used	9000	2013 Add lateral brace	\$ 800	800								9000						
Warehouse D																																		
	Unit Heater- non operating?	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Basic thermostat	Did not attempt, Trailer too close				2013 Fill in wall and fire caulk at flues to provide 1 Hour fire rating. Change flue to double wall or move termination to within space Add Lateral Bracing	\$900	900														
	Unit Heater operating	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Programmable thermostat	Running	Fans wired up in front of unit	2014 with UEAS-180 & add lateral bracing	6000	2013 remove fans Fill in wall and fire caulk at flues to provide 1 Hour fire rating	\$ 1,500	7500														
Warehouse E2																																		
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Basic thermostat	Did not attempt, too much paper	Space needs special consideration given the amount of paper files here	2024 with 93% efficiency UEAS-130 if used	4500	2013 Add Lateral Bracing	400	400								4500						
														Additional fire/smoke separation because of large amount of paper	2013 Confirm fire ratings	4000																		
Recommended																																		








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Warehouse E3																																
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994	No lateral bracing	Could use sealing	Basic thermostat	yes	Confirm fire ratings with amount of fuel stored. May require fire/smoke separation & explosion-proof equipment.	2013 Confirm fire ratings 2017 Add programmable thermostat	TBD	2013 Add Lateral Bracing	400	400												
	Exhaust Fan	1											could not find			Not in use. If used need to lubricate and change belts																
Warehouse Bathroom																																
	Wall Heater	1	Unknown	Unknown	Electric	Unknown	Unknown			1970's?	None	None	dial	yes	No guard, safety hazard	2013 with Electric Hydronic wall heater	\$200			200												
	Water Heater	1	Hoyt	6 FC	Electric	1500 Watts			6 Gallons	1980's?	None	N/A		yes		2014 add lateral bracing	\$600			600												
	Exhaust Fan	1	Unknown											yes		2025	\$300													300		
	Portable radiant Heater	1													remove when properly sized wall heater is installed																	






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Hanger M																																		
	Dry Fire Suppression															2025 replace air compressor	\$1,000	Replace heads as needed	\$100/year	100	100	100	100	100	100	100	100	100	100	100	1500	500		
	Unit Heater	1	Reznor	EGE02	Electric											2025	\$750														750			
	Water Heater			Unknown	electric				10 gallon?							2025	\$500															500		
	Exhaust Fan															2025	\$200																200	
Hanger L																																		
	Unit Heater	1	Reznor	EGE02	Electric											2025	\$750																750	
	Dry Fire Suppression	1														2025 replace air compressor	\$1,000	Replace heads as needed	\$100/year	100	100	100	100	100	100	100	100	100	100	100	1500	500		
Careflight																																		
	Cocktop Exhaust Fan	1								2011	None					2032	\$400	Inspect quarterly & clean filters as needed																400






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	Water Heater	1	Bradford White	M440T6BN	Natural Gas	40,000 BTU		80%	40	October 2011	Yes	Common with Furnace		yes		2032	\$1,000	Brace Flue ASAP	\$200	200											1000
	Furnace	1	Lennox	G16Q4-75-1	Natural Gas	75,000 BTU		79.10%		1985	Flue needs more bracing	Common with Water Heater	Programmable Thermostat		Air filter needs to be changed	2015	\$4,000	See above for Flue change air Filter twice yearly	60	60	60	4060	60	60	60	60	60	60	60	300	300
	Air conditioning	1	Carrier	38CK036340	Electric	208V/30A Rating			3 Ton	2000						2015	\$2,000	Refrigerant recharge if needed	\$200	200		2000									
	Bath Exhaust Fan	2	Unknown		Electric								wall switch			2025	\$400													400	
Garage 	Unit Heater	1	Reznor	FE200-H	Natural gas	200,000 BTU	160,000 BTU	80%		1994	No lateral bracing	Needs to be sealed	Basic thermostat	Yes	Needs to be dusted	2024 with 93% efficiency UEAS-130 if used	4500	Add lateral brace ASAP	400	400											4500





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	Water Heater	1	Rheem	81VP108	Electric	2000 Watts			10	1992	None	None		Yes		2017	\$500	Add Lateral bracing	50	50												
	Bath Exhaust Fan	1	Unknown		Electric								Wall Switch			2020	\$200									200						
	Abandoned Wall heater	1											Basic thermostat	No				Make sure circuit is disconnected	\$100	100												
EAA																																
	Exhaust Fan	1	Acme Centri Master	PNU135RGG2	Electric		1/2 HP						Switch	No Fire Suppression exists under hood	2013 Move fan to roof to provide code clearances Add Fire Suppression to hood		\$5,000	Clean, Change Belt,	\$ 50	5050	50	50	50	50	50	50	50	50	50	50	250	250
	Furnace	1	Rheem	RGRA-10EZAJS	Natural Gas	105,000 BTU	97,000 BTU	92%		2000						2025	\$6,000	Add additional strapping including lateral bracing to duct. Change filter twice yearly. Condensate drain exits side of building and drips onto walkway which is not best practice should go to sewer drain. Add condensate neutralizer. Add 1/4" screen to flues for code pest control	200 , 60, & 300	560	60	60	60	60	60	60	60	60	60	60	6300	300







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	Water Heater	1	Noritz	N-0635	Natural Gas	194,000 BTU			193 Gal/HR	2004		Appears acceptable				2030	\$2,000														2000	
	Domestic Range Hood	1											Switch	No	Assumed not used																	
	Wall Furnace	1	Louisville Tin & Stove Co.	DVC 5 92	Natural Gas	55,000 BTU		75-80%		1994?			Basic Thermostat	No	Spark ignition but gas did not turn on	2013 By extending duct from furnace and removing this unit	\$500			500												
	Bath Exhaust Fan	2	Unknown													2020	\$200									200						
	Exhaust hood and Fan	1	Coleman adapted furnace										Switch	yes	Backdraft damper is not automatic																	
	Furnace- Likely same as other EAA furnace	1								2000?						2025	\$6,000	Add additional strapping including lateral bracing to duct. Change filter twice yearly. Condensate drain exits side of building and drips onto walkway which is not best practice should go to sewer drain. Add condensate neutralizer.	200 , 60, & 300	560	60	60	60	60	60	60	60	60	60	300	300	
Garage space- Unable to access																																

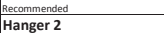





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Hanger 1																																
	Unit Heaters	3	Reznor	FE250	Natural Gas	250,000 BTU	200,000 BTU	80%		1994	No Lateral Bracing	Might need sealing	Basic Thermostat			2018 with UEAS-260 & adjust lateral bracing	18000	Add lateral brace ASAP	1500	1500						18000						
	Unit Heater	1	Reznor	UDAS200	Natural Gas	200,000	166,000 BTU	83%		2010	Lateral Bracing					2035 with UEAS-260	\$6,000															
	Water Heater	1	GE	GE50T06AAG	Electric	4500 Watts			50 Gal	2006	No Bracing	N/A	Yes			2031 with Natural gas fired unit	\$1,500	Add lateral bracing ASAP	50	50											1500	
	Furnace	1	BDP/Carrier	395CAV060135	Natural Gas	132000 BTU	107,000 BTU	81%		1994			lock box over bottom thermostat, top thermostat does not work			2018 with 92% Efficient model with AC	\$8,000	Change Filter	\$60 yearly	60	60	60	60	60	8060	60	60	60				
	Bath Exhaust Fan	2	Unknown													2014	\$400				400											
	Shower	1	Unknown															replace valve set	\$ 400	400												







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	Spray insulation															When used regularly 2014?	\$20,000	2013 Seal holes to outside	500	500	20,000										
																															
	Unit Heater	1	Reznor	SCA250-6	Natural Gas	250,000 BTU	200,000 BTU	80%		1990's?		Combustion & Exhaust	Basic Thermostat	Yes		2015 with UEAS-180 & adjust lateral bracing	6000	Add Lateral bracing ASAP	400	400				6000							
	Furnace	1	Rheem	RGAA-125A	Natural Gas	125,000 BTU	100,000 BTU	80%		1979?			Basic Thermostat			2013 Replace with 92% condensing furnace and programmable thermostat	\$ 5,000.00	Replace filter twice yearly	60	5060	60	60	60	60	60	60	60	60	60	300	300
	Bath Exhaust Fans	2	Unknown													2013	\$400			400											
	Water Heater	1	GE	GE30S06AAG	Electric	4500 Watts			30 Gal	2012	No Lateral bracing	N/A		Yes		2037	\$600	Add lateral brace ASAP	\$ 50	50											
	Wall Furnace	1	Williams	450FX-R	Natural Gas	50,000 BTU	37,500 BTU	75%		1986?		yes	Programmable Thermostat	yes		2013 Duct from furnace below and remove unit	1000			1000											


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Modular																																	
	Wall Furnace/AC	1	Bard	WA242-A1Dxxkxxx	Electric	14,000 Watts				2000?			Thermostat			2016	\$2,000						2000										
Hertz																																	
	Furnace	1	Bryant	376CAV	Natural Gas	69,000 BTU	56,000 BTU	81%		1997				Yes		2022 Replace with 92% condensing furnace and programmable thermostat and air conditioning	\$ 8,000.00	Add lateral bracing to ducts	200	200										8000			
	Water heater	1	Bradford White	M1130R6D513	Electric				44 Gal							2030	1500	Remove Insulating blanket, not needed and add lateral bracing. Insulate pipes	\$200	200											1500		
	Wall Heater	2	Unknown										dial	No		Remove and disconnect circuit	100			100													
Civil Air Patrol																																	
	Electric Wall Heater	2	Various		Electric									yes	Downstairs	2013 with electric hydronic wall heater	800			800													
	Portable Electric Heater	2													Fire Hazard	2013 with electric hydronic wall heater	\$800			800													

Truckee Tahoe Airport Maintenance Plan- Mechanical

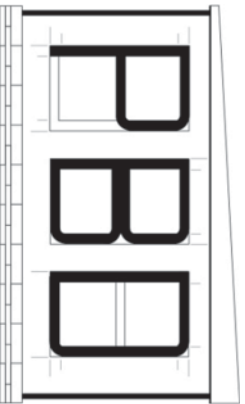
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	Unused ducts and fans	3																Remove and close up	200	200											

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Airport Wide																															
	Plumbing fixtures (toilets/sinks etc.)															Plan for replacing one fixture/year	\$500 yearly		\$500 yearly	500	500	500	500	500	500	500	500	500	500	2500	2500
	Natural gas lateral bracing														Various locations are not well secured			Add bracing & Strapping	\$1,000	1000											
Total		84																		40,800	22,250	14,250	4,250	10,500	28,450	2,250	4,650	2,250	19,190	41,550	12,550
																				Grand Total										202,940	



PROSSER BUILDING & DEVELOPMENT, INC.

Truckee Tahoe Airport District Maintenance Plan
Summary of Mechanical Observations and Recommendations
July 15, 2013

As requested PBD, Inc. has conducted a thorough investigation of the Mechanical systems at the Truckee Tahoe Airport. 84 individual mechanical units were observed and cataloged. The units at the new Administration Building are not included in this report because of their recent installation and predicted life is greater than 20 years. The units that were observed are for space heating & cooling, water heating, ventilation and exhaust. The units ranged in age from more than 35 years old to 4 months old.

The attached spreadsheet details each unit sorted by building. Recommended maintenance and replacement costs and timeframes are given. Costs are listed per year for the first 10 years, then every 5 years for years 11-20. Costs are given in 2013 dollars. This report does not intend for forecast inflation or construction cost escalation.

The recommendations do not include system design. We have assumed that the existing equipment is adequately sized and is providing adequate heating, ventilation or air conditioning. Licensed engineers and contractors should be used to confirm suitability and size, and install proposed equipment per codes and industry standards. Retaining a California registered Mechanical Engineer is recommended to optimize energy efficiency and comfort, based on actual facility use at the time of unit replacement.

Items listed for 2013 should be addressed as soon as possible because of code deficiencies, hazards, or likely early failure.

There are a few systems that will require more decision making based on their expected use. For example, most heaters in the Warehouse areas, Maintenance Garage and Hangar 1 see limited use and will probably last for 5-10 years or more. However they are not seismically braced and are unsafe. In high-use areas we recommend replacing the units now with proper bracing. On units that will see less use and are not critical, seismic bracing should be installed now. New bracing on an old unit would later need to be adapted if the unit is replaced. Ideally the unit heaters should be replaced with 92% efficient models. However, these models require a condensate drain plumbed to sewer, which may be impractical or cost prohibitive, in which case 82% models can be used.

The recommendations assume it is better to plan for replacement of the units so unexpected failure (with associated elevated costs and temporary heating) can be avoided. Some units may last longer than expected. We recommend the District evaluate their risk tolerance with respect to sudden failure of a unit.

In addition to the listed maintenance, other routine maintenance is required. This report does attempt to describe every routine maintenance activity. For example, all water heater temperature and pressure relief valves should be tested annually. We recommend at a minimum, every piece of equipment be annually inspected by a qualified professional.

On leased spaces, we recommend the following notifications be sent to tenants in some fashion. Avoiding this notification may put occupants at risk. District should review with their attorney prior to any notifications:

1. Tenant has installed equipment and is responsible for code compliance, maintenance, or repair of that equipment. Changes may be required to the equipment to bring it into compliance.
2. Tenant may be using the space in a manner that requires construction of fire-ratings, equipment upgrades, or other changes.

So the District can prepare, the units will likely fail or loose efficiency in the following manner:

Unit Heaters: Although many smaller parts may fail incrementally, eventually the heat exchanger will become corroded and result in a repair that is almost as costly as a complete replacement. At this point it is better to completely replace the unit. Heat exchanger perforation can result in carbon monoxide poisoning.

Furnaces: Although many smaller parts may fail incrementally, eventually the heat exchanger will become corroded and result in a repair that is almost as costly as a complete replacement. At this point it is better to completely replace the unit. Heat exchanger perforation can result in carbon monoxide poisoning.

Water Heaters: Electric water heaters will usually fail by corrosion of the heating element. The heating elements can be replaced if a compatible element can be located. It may be faster and more cost effective to replace the entire unit, especially for the smaller types. Gas burners, solenoid valves, and similar devices can be replaced. Tank leakage should result in replacement. Many water heaters do not have pans under them, so visual inspection is imperative.

Exhaust Fans: Bearings will usually fail in exhaust fans. Belts may also break in indirectly driven fans. Belts are not catastrophic but bearings can be. They will lose efficiency over time but will usually fail before efficiency is compromised too much. Belt and bearing failure may cause audible noise.

It is also recommended that the administration building mechanical systems be further optimized as the use of the building is more understood. \$3,000 per year for the next 3 years should be budgeted for this optimization.

Please note that this report is based on visual observation, engineering judgment and experience. This is not an exhaustive report. No destructive testing or destructive investigation was performed.

PBD, Inc. is available to perform additional, detailed reviews if confirmation of any of the above is desired. Capabilities include thermal imaging, airflow measuring, and further physical investigations.

Respectfully submitted,

Peter Beaupre, P.E.