TRUCKEE TAHOE AIRPORT LAND USE COMMISSION

MINUTES OF MEETING
December 19, 2012

A meeting of the Truckee Tahoe Airport Land Use Commission (TTALUC) was held on Wednesday December 19, 2012 in the Truckee Tahoe Airport Meeting Room B, 10356 Truckee Airport Road, Truckee, California. The meeting was scheduled for 11:00 a.m.

Members Present: Dr. Mark Brown, Brent Collinson, Ken Foster, Paul Joiner, Jennifer Montgomery, Ted Owens, and Kevin Smith

Staff Present: Daniel Landon, Executive Director; Toni Perry, Administrative Assistant; Nevada County Transportation Commission

Standing Orders: Chairman Owens convened the Truckee Tahoe Airport Land Use Commission meeting at 11:06 a.m.

Pledge of Allegiance

PUBLIC COMMENT

There was no public comment.

CONSENT ITEMS

1. TTALUC Minutes

   April 6, 2012. *Approved.*

Commissioner Montgomery made a motion to approve the TTALUC Minutes of April 6, 2012. Commissioner Joiner seconded the motion. The motion passed unanimously.

INFORMATIONAL ITEMS

2. Correspondence

A. Letter to Denyelle Nishimori, Associate Planner at the Town of Truckee, regarding review of the *Initial Study For The Joerger Ranch Specific Plan,* June 11, 2012, File 40.2.4.

Executive Director Landon said he received the *Initial Study For The Joerger Ranch Specific Plan,* and given the proximity of the project to the airport, he wanted the Commission to be aware of it. He said as the Town goes forward with the Environmental Impact Report, staff will monitor the progress and keep the Commission apprised of any issues that come up related to the Truckee Tahoe Airport Land Use Compatibility Plan.

Chairman Owens asked for any questions or comments. There was no further discussion.

3. Reappointment of Commissioner Paul Joiner and Alternate Bridget Powers by the Placer County City Selection Committee

Executive Director Landon noted the reappointments of four-year terms and the continued membership of Commissioner Joiner and Alternate Powers. There was no further discussion.

ACTION ITEMS

4. Truckee Tahoe Airport District Staff Presentation on Utilization of Air Space

Commissioner Smith, Truckee Tahoe Airport General Manager, introduced Kevin Bumen, Director of Aviation and Business Services at the Truckee Tahoe Airport. Commissioner Smith said he wanted the Commissioners to be aware of a tool the Truckee Tahoe Airport has: a million dollar investment in a collaborative flight tracking system that tracks every aircraft that uses a transponder, which is essentially all aircraft, and gives data back from the flights. He said when the TTALUC looks at different land use proposals that come before them, the airport wanted the TTALUC to be aware of what their tracking system can do, how it works, and how it may be useful as the Commission talks and analyzes different proposals and alternatives.

Kevin Bumen told about how they collect the data in Truckee and explained that their system is very unique in many ways. He said the airport owns the hardware sensor system that collects the data on an aircraft, which is unusual in the world of flight tracking. Mr. Bumen reported that of the roughly 5,500 airports in the United States, there were about 160 airports that track aircraft operations, and of that set, there is a group of about 35 airports that actually own hardware that performs that function. He said the Truckee Tahoe Airport is in a very small category of airports that are actually in the business of maintaining the infrastructure that will monitor aircraft operations. He said he would not get too far into that today, but some of the interesting things about the hardware they use is that it is a technology called Multilateration, which are ground based sensors that function in the reverse of GPS. Mr. Bumen said there is a network of six sensors and they triangulate the position of "cooperative" aircraft with transponders onboard that send out a signal when they are interrogated and then the sensors can determine the position of the aircraft. He said radar is "non-cooperative" surveillance that looks for metal in the sky, typically. He noted that Multilateration has a much higher accuracy rate than radar due to the configuration of the technology.

Mr. Bumen said the system they have at the Truckee Tahoe Airport is the only one of its kind in North America; there are a handful of Multilateration systems in the United States. This particular vendor is from Eastern Europe and the Truckee Tahoe Airport is their first installation

in the U.S. He said Multilateration systems are used both for surface surveillance on airports, for actual positive guidance of aircraft, as well as for air traffic control purposes in Colorado and Alaska. Mr. Bumen said the Truckee Tahoe Airport is now exploring the option of commissioning the system for positive air traffic control. He said the Martis Valley and surrounding region has no air traffic control coverage below about 10,000 feet, so the aircraft below the radar horizon are not able to be seen by air traffic control and that is the reason why, if the Truckee Tahoe Airport wanted to track aircraft below that radar horizon down to the surface of the airport, they had to make that decision to invest in the sensors. Without it there was no other way to collect the data. He noted that a lot of the airports do not own the systems that collect the data because the FAA (Federal Aviation Administration) has very good radar coverage over the airport that they can acquire. Mr. Bumen said their system was very challenging to design, deploy, and test the network of sensors to make sure the data they were getting was reliable. He referred to the handout on page 2 that showed performance data and stated how they have tested the system in many ways and various standards that exist for multilateration in both the United States and Europe. He said their system performs very well based on those standards. The technology itself is interesting, but the data that comes out the other end is why they use it.

Mr. Bumen demonstrated on the projection screen a two-week period in July, of arrivals and departures; they call it spaghetti and staff "unwinds" it to answer whatever question they are asking, such as how many aircraft arrived, departed, flew over a certain area, what was their average track density, etc. They can do grid analysis and look at a particular grid laid over the landscape and look at what the intensity of flight activity was in that grid during a given period of time. He said it takes the guess work out of responding to concerns from the community, if someone questions flight intensity in certain areas, and asks if something changed; the system gives the airport a tool for internal use, as well as external use that has proven to be very helpful. Mr. Bumen said the system functions in three domains:

1) A display of a historical view for a certain time period. He said they archive up to five years of data and they can identify craft that operated from the airport, as well as craft that were up in the flight levels that never landed at the airport; therefore, they can do overflight analysis as well.
2) A near-time function that displays what happened three hours previously, or the day before.
3) There is also a real-time function.

Mr. Bumen said in those three domains the system fills some distinctly different roles of the new organization. He said this is a back-office role they use at the airport to service internal customers, external customers, consultants, the public, etc. The real-time function is used every day, both in the airport's Operation Center and it can be viewed on i-pads in their vehicles. He said airport staff are highly enabled with this system; this is not common that a smaller airport would be able to offer this level of detail about flight operations. He said they were fortunate in that regard and staff can now see things that they did not know were happening before the system was installed. Previously, they could only see what was visible outside the window; now their system sees everything. Mr. Bumen pointed out that the system only tracks cooperative aircraft, so if aircraft are not transponder equipped, for example, or some gliders have no electrical system in them, they do not track those aircraft. He said they have a very high level of participation with the system; there are very few aircraft that operate near their airport that they do not see. He noted it is in the pilot's best interest to keep the transponder on for many reasons.

Commissioner Brown asked if it matters what they are transmitting on their transponder; does it have to be 1200? Mr. Bumen said it will track the street code or 1200; it will track Mode A, C, S transponders and any of the various derivatives of those. Commissioner Brown asked if they do not have Mode C, how do you get their altitude. Mr. Bumen replied it will take a reported altitude from the transponder and the system can determine altitude as well. However, the transponder reported altitudes are typically better in terms of their accuracy.

Commissioner Joiner asked if it is possible to select out a single flight. Mr. Bumen replied absolutely. He said they have a new release of software, but he was demonstrating the software they were using up until one month ago. He can take the image and turn it into a 3-dimensional view, filter out tracks by asking to see what landed or departed from a certain runway during a given period of time that was piston-powered or jet-powered, etc. He said you can filter very quickly and efficiently what you are looking for in the "spaghetti of lines" shown. Commissioner Joiner said if you get a complaint from a citizen that someone is flying overhead at 200 feet, based on time and reported location, can you track that down to a specific aircraft. Mr. Bumen said you can actually go in on a Google Earth type of environment and put a dome over that particular point on the ground and do a PCA (point of closest approach) analysis and then you can run a period of time and look at the volume of activity that penetrated that dome at specific altitudes and set it to 500 feet, or 1,000 feet, or whatever criteria you want to apply to the search. You can get very specific by starting with a point on the ground and actually working backwards; rather than starting with a period of flight activity, you can start with the point on the ground and see how various periods of time influence it. Mr. Bumen said the system also allows you to do gate and corridor analysis where you can put up vertical planes and look at overflight intensity through a vertical plane at various altitudes. He stated this view is interesting, particularly in the area where aircraft are descending over Donner or Squaw Valley and they turn the corner right at Gateway; they look at altitude dispersion in those areas quite a bit. He said July is usually their peak month of operations.

Commissioner Joiner referred to the display being shown from the system output and asked what the repeated pattern of spirals were. Mr. Bumen said that was from gliders that are equipped with transponders and in the summer there is activity in the northeast corner of the Martis Valley and over Dry Lake. He said when the gliders transmit, the system sees them as constant spirals; known as pigtails. He is very proud of their system. When it is shown to the FAA, and they see the glider tracks, they shake their heads because radar cannot do that. He said their system is hitting an aircraft once a second and it is creating a geo-reference point in space that then becomes segments along a track. Mr. Bumen noted that typical radar at this range would hit the aircraft about every six to eight seconds, so the fidelity would be much degraded; the quality of the track that the Truckee Tahoe Airport gets is very high and they will see lighter aircraft maneuvering with turn diameters of 300 or 400 feet. He said it was pretty phenomenal and is one of the unique aspects of this technology that makes it very interesting.

Commissioner Foster asked if the system picks up the Mode S squinter information as to N number. Mr. Bumen said yes, the extended blocks; they get it from other sources too. Commissioner Foster asked, for example, you can pull up an N number and see where it has been over a certain period of time. Mr. Bumen said yes, but on the Mode S equipment only. He added that function is somewhat helpful, although about 95% of the use of the system, the identity of the aircraft, is not necessarily what they are looking for. They are typically interested in positional data, altitudes, two-dimensional flight paths; looking at the line on the ground. He said the aircraft identity usually comes to the airport from other sources, such as cameras on the airfield that provide more robust identity data. If an aircraft is Mode C equipped, which is a type

of transponder in the airplane, the airport will not know who it is. He said many of the tracks in the display he presented do not have identity attached, which is fine. Identity is a piece of the puzzle, but it is often not the most important piece for the airport.

Commissioner Foster said the real question is how effective the program is for noise abatement departures and arrivals. Mr. Bumen said he would show a slide that explains that function. He thought the real piece of that is how you want to define "effective", because if you look at concentrating flight tracks in a very narrow corridor on departure, Mr. Bumen would argue that the airport is very good at that. He said they have a way of calculating noise abatement on a daily basis and he sees their compliance often in the 90 percentile range. In the summer they drop down often into the 80's, but that is eight out of ten flights that are flying in a fashion off the end of the main runway that keeps them within about a 600 foot gate just over the end of the airport property. He thought they do very well in the near-airport environment; the farther you get from the airport, the more dispersion they have and that is natural at a general aviation airport, because you are not going to have the very described flight paths that you would in a larger air carrier airport where everyone is operating under very determined IFR (Instrument Flight Rules) procedures, under positive air traffic control. This tends to be a lot more ad-hoc flying closer to the airport. He said the benefit to that is you do not have the same piece of ground getting overflown all the time. The down side to it is you have more people being overflown, so the question is how do you balance that between the benefits of dispersion or concentration. He stated this is a very involved discussion that the airport Community Advisory Team wrestles with every month. They question if they should try to influence this or is the natural order of things just fine and let the dispersion happen. He said in spite of their efforts to concentrate in certain areas, they have quite a bit of dispersion going on. The slides he was showing were summertime so there is not quite the same concentration of instrument operations, but there are differences in the first two weeks of December that he would show.

Commissioner Montgomery said the slide being shown was for a two-week period, and asked if the track was the exact number of flights going in and out. Mr. Bumen said yes, there were about 1,080 tracks in that time frame that landed or departed. He said if he looked at the overflight volume during that same time, there were 12,500 flights passing in that air space. Commissioner Montgomery asked if the Commission could come back at a future meeting and maybe have an historical analysis of the amount of traffic at the airport over time for however long the records are kept, maybe the past decade, to see what those patterns are. She said that would be very useful to her in understanding future land uses. Mr. Bumen said the airport staff does quarterly reports that they do that are more tabular in nature; that get not only to the total operations per period, but the fleet mix within that (i.e. piston aircraft, turbo-props, turbine, runway utilization), where the reported impacts were in the community. He said they have very granular detail on a quarterly basis going back, depending on how consistent you want the format to be, there is at least six to seven years of data. Commissioner Montgomery said she would love to see that information at the next meeting.

Chairman Owens asked if they can set parameters to a maximum altitude. Mr. Bumen said their system captures everything up to 60,000 feet, so if it is in the airspace they want to see it. He stated that part of it is a public confidence piece. One of the big things in deploying these systems outside of the FAA data is if you look at where airports have gone off track with doing this tracking is that they configure an airport controlled system in a way that undermines public confidence in the data; i.e. "you filter that or you only track to this level". Mr. Bumen said you start to box-in your data in a way that people see ultimately they are not seeing everything; therefore, they say, "so that airplane that just flew over my house that you tell me was not on

your system;" it starts to become a confidence issue. He said from the very beginning they wanted to track everything from the surface up to navigable airspace ceilings and everything in between and not filter it at any level, just to insure they are seeing everything that is out there. He said that has proven to be very beneficial for them. Chairman Owens asked if they have only been running this new system for a couple of years. Mr. Bumen said they have been commissioned and had final acceptance status on the new system since February 2012, and they were in about one year of trials with the system to optimize it and did acceptance testing. He said it was about a nine month project to get sensors on the mountains; they have sensors at the top of Northstar, one on Martis Peak, Dry Lake, Glenshire School, Alder Hill Beacon, one at the airport, and there is a seventh site that is not deployed right now. Chairman Owens said the system is now running in the name of public safety and in benchmarking; going forward two or three years they will have quite a good compilation of statistical data on the new system for analysis. Mr. Bumen replied absolutely; the data will inform their Master Planning process, and it has some significant benefit to updating the Compatibility Plan. He thought there were future benefits in the planning process just from the accrual of data.

Commissioner Foster said he could see how certain segments of the public might ultimately be concerned by the picture that was just shown on the screen depicting two weeks of air travel at the airport. He could see how someone who is concerned about the airport being in their community would look at that picture and be freaked out seeing that many flights. Mr. Bumen said that was a good point. He said when they go to a public meeting and show all those flights, they often bring a grid analysis view with them. They determine a grid size and then you color those grids and they usually use a doubling function as they move closer to the airport. When someone looks at that view it is a lot less chaotic. The outer ring had one flight per week; the second ring had two flights per week; so, despite the chaos in the display, when you add the element of time and density to it, and someone realizes the red zone is only two flights a day, then it starts to put some coherency around it. Mr. Bumen said if you put the spaghetti view in front of someone, you typically get the "wow" reaction, so they try to pull it into the domain of what does it mean and what is going on in the view, because what you do not see is the element of time. He said if they ran that screen shot at high speed, which in the new program they will be able to do, he could take a two week period and show the "spaghetti", then take it away, and then run the flight operations at one hundred times speed. You would see gaps in there where there is hours and, in the winter months, even days when nothing happens; therefore, it starts to show the intermittency and the frequency of the flights. Mr. Bumen said when you look at functions that annoy people, such as flight operations, it is frequency, intensity, time, and duration, which are the big four. Chairman Owens said when you look at functions that annoy people, maybe you can compare the analysis to vehicle trips over I-80 during the same period of time. Mr. Bumen added to look at train traffic. He said after moving out of Tahoe Donner into town, he is amazed at the train traffic in the Town of Truckee.

Mr. Bumen showed a view using the newer software from a two-week period in December and he highlighted a couple of routes; earlier he showed the instrument approach from the west and this time he showed the instrument approach from the north to Runway 20; then he showed the TRUCK 3 instrument departure. He said they have the ability to go in and do a buffer analysis where you could then say within that buffered space, and for reference purposes, this is a .6 nautical mile wide corridor and you could ask how many operations were in that buffer relative to the entire bunch. There were about 320 operations in total on the screen. He said the new system is a much more powerful analytical tool.

Mr. Bumen then displayed for the Commission the "real-time" view, which uses a different software than the previous display. The screen showed real-time flight data with "curtains", which are extrusions of a three-dimensional path to the ground. As you look in 3-D, you can see the track over the ground of a given aircraft. He had a layer on of census data that shows population areas with some density attached to them; it is fairly generalized, but nonetheless it is representative of where people are on the ground. The display also showed a model of the potential noise impact of an aircraft on real-time and it was coded by color with the blue being perceptible, the green is going to be moving into noticeable, and then if it goes into the yellow and red it is going to be potentially obtrusive to people. He said they can monitor both the air space and the surface environment in real-time in pretty interesting ways. The routes shown on the display were various GPS ~~wave~~ way points on different approach procedures. They can see as an aircraft is flying a procedure they will pass right over the blue track. They can set parameters within the system to say that 50 decibels is too low and you bring it up to 60 decibels and the footprints will shrink a little bit. Mr. Bumen said these are modeled footprints; they are not corrected or correlated to any sort of microphones or noise monitors, so it is hypothetical, but it is representative. Commissioner Foster asked how the model can know how noisy the aircraft is. Mr. Bumen said they are currently using an assignment in the system where they say "model as", and you can model as various types of aircraft. Without identity data, you cannot use the actual aircraft model; so they pick a generalized model and apply that. He said you can go in and model everything as a Lear 35 versus a G-5 and you quickly see the differences; from a representative standpoint it becomes an interesting comparative tool. He said it is very much just for discussion purposes in that regard. Commissioners were very impressed with the real-time view.

Chairman Owens gave a scenario and asked if an aircraft went down, would the system enable the airport and/or public safety to locate specifically where the aircraft went down. Mr. Bumen said they could get a last known position pretty quickly and particularly on departures because the airport has a camera on each runway and if the aircraft used the full length of the runway there would be a picture of that airplane, which would give them a time reference. Then they could go back into their system and start from that time at that runway and figure out the presumed track of where they went, up to the point where they would drop off. Chairman Owens asked if that would be in addition to the transponder information. Mr. Bumen said the data from the camera and the transponder would be available to share with others through various means. Commissioner Foster asked how many miles out from the airport does the system monitor. Mr. Bumen said they are very reliable and accurate below 10,000 feet within ten miles. Above 10,000 feet, which they have to do in order to get over most of the mountain peaks, and outside of that ten mile area, the system goes out another good forty miles, so they see objects out to Pyramid Lake and close to Sacramento up high.

Mr. Bumen said there is a function on the system where you can go real-time and do a virtual out-the-window view from the pilot's perspective. Particularly when the traffic pattern is full and there is multiple aircraft on the pattern, he said you can actually insert yourself virtually in one of those airplanes and it will give you an out-the-window view and you will see the other aircraft moving around. He said that software platform did not exist when they first decided to acquire the system and there was no tool quite like this. He said they had talked with a number of vendors about things like the DVR function and some of the things that allow them to get more benefit from the investment and it was a "someday" kind of initiative. There are three airports in the world right now that are using this software: Truckee Tahoe Airport, San Francisco Airport, and Charles de Gaulle Airport in Paris. Mr. Bumen said Tahoe is the bookend test for them on the small end. Commissioner Foster asked what the investment was. Mr.

Bumen replied that the software he was describing is a service and it costs about $2,000 per month. Commissioner Foster asked what the total investment was. Mr. Bumen replied the total investment from day one in the system and rolling forward with acquisition/operation work is $1.5 or $1.6 million so far. He said they are into the warranty and operational period currently, so they are sustaining the system rather than growing it at this point. Commissioner Foster asked what the ongoing operational costs are. Mr. Bumen said they are a little less than $10,000 per month; when you add up end costs for maintenance, operations, subscriptions costs, and site leases to be paid for the equipment, it is about $100,000 plus per year.

Chairman Owens asked if there is any anticipation of when they will be facing a software upgrade that is major; five-years out or eight-years out. Mr. Bumen said because the system hardware they have is an air traffic control-grade system, the software updates are not quite like iPhones and things that come out with an update every three weeks. He said they are able to take an output from their sensors and then plug it into an upgraded piece of consumer commercial-grade software. This is not a certified piece of software for air traffic control, so the latitude that they can use to develop it is much greater, the cost is much lower, and Truckee can take an output from their sensors and plug it in; it is a much cheaper way to get their visualizations. He said if they were using a Talis Air Traffic Control Console they would be looking at software that would be like 1987. The FAA does not have things like this system for air traffic control purposes; their software is much more graphical and not nearly as evolved in the graphics.

Commissioner Collinson asked Mr. Bumen if he would like to say a little about Truckee Tahoe Airport's discussions with Oakland Center. Mr. Bumen said the Truckee Tahoe Airport started a conversation this past summer with the Oakland Center and Norcal Tracon about if they could possibly someday integrate the Tahoe data into their system for air traffic control purposes. That would allow a controller sitting down in the valley to not lose the aircraft arriving at Truckee at 10,000 feet as they approach the airport and then wait for them to call them on the ground. He said that conversation has been moving slowly but steadily forward. They are in the process right now of the safety case review where they look at both the potential safety benefit, as well as the business side of what it would cost the FAA to do this, and make some decisions about if and how to proceed. He said it has been through the vetting process at headquarters and they have turned the decision back to the region; they do not have any real issues with the idea, but it needs to be handled at the regional level. Mr. Bumen said Truckee Airport is working with both Oakland and the Western Pacific Region right now to share with them everything they have on the system, all the way from the original design specifications through the modeled coverage they have for various surveillance volumes. He said it is moving slowly forward and they hope to hear early in 2013 whether or not this is feasible and if they want to actually do this, as well as their own internal process to make sure they want to actually do this. He said part of what they want to understand from Oakland is if this goes forward, what is the airport's role in operating and maintaining the system in the future; who controls what and pays for what. Mr. Bumen said the State of Colorado has a project like this that serves their Colorado mountain airports; they are in Phase 3 of that project now that will be installed next summer and using a multilateration sensor that is certified for traffic control. The airports do not get the data; all the data goes to the FAA; it is generated at the state level up to the FAA. Mr. Bumen said they are in close contact with the Colorado Division of Aeronautics right now to learn about what they did.

Chairman Owens asked if there have been other airports who have come to the Truckee Tahoe Airport to see their system. Mr. Bumen said a few airports have come, as well as other technology companies that are looking at this and are quite interested to see it deployed. Executive Director Landon said the example given made it easy to see how the additional

information could benefit Oakland. He asked if there was data that Oakland could then give to Truckee that would be of benefit. Mr. Bumen said potentially, but the bigger benefit they could see is really the service to local customers to have separation services in the terminal environment that are missing right now. He said as far as getting additional data, he is less concerned about that. Mr. Bumen stated that Excellis is the software provider for Truckee's analysis software and Excellis is the next generation contractor for the FAA. Therefore, it is likely in the whole scheme of where it would go, their data would pipe from Truckee to Excellis, they would then send it back to the FAA, and the FAA would see it on their screen. He said there is a commercial provider in the picture now, so it is an interesting evolution of how air traffic control data is being disseminated. Truckee has a very close relationship with Excellis because they have a software contract with them, so it gives Truckee some excellent resources to understand from a technical side. Mr. Bumen said the project has a lot of milestones to achieve if it is going to be successful, and many of those, the outcome is still uncertain. He said Truckee should know more in 2013 as to if and how it could happen.

Commissioner Foster asked if it was reasonable to say that this data will ultimately, or at least potentially, affect almost every aspect of operation and planning at the Truckee Tahoe Airport if it was incorporated. Mr. Bumen replied not necessarily. Commissioner Foster said certainly the Master Plan process is going to be looking at the data. Mr. Bumen previously thought he was referring to if it was incorporated into Oakland Center. Commissioner Foster said he was referring to just operation and maintenance of the Truckee Tahoe Airport. Mr. Bumen replied absolutely. Commissioner Foster thought the diagram handed out to the Commission from the Truckee Tahoe Airport Land Use Compatibility Plan would change as a result of the new data. Mr. Bumen said the assumptions in the Compatibility Plan regarding how aircraft operate, where, with what intensity, and altitudes, was the best they had at the time the plan was created. If and when the plan is updated, they will have new and presumably better data; at least there will be a lot more data, which is not always helpful, but he would rather have some good data than a lot of so-so data. He feels like right now they have a lot of very good data and how that is used in the future is still something that is being formulated. Mr. Bumen said it is definitely a new tool in that process and for the Master Plan he thinks it becomes an interesting tool as well.

Commissioner Foster asked if the real-time picture they were viewing was up on a screen anywhere in the airport that people could come to see. Mr. Bumen said in the Unicom Operations Center upstairs they have both the real-time view, as well as the blue screen view that looks much more like a controllers display that is two-dimensional. He said they use the blue screen view as much for the air situation as they do for the surface situation. Mr. Bumen said they have four vehicle transponders that they can put on vehicles if they are out at night or in low lighting conditions or a snow storm. They can actually see vehicles on the surface and then an operator with an iPad can see where those vehicles are if they are out in another vehicle. He said they just acquired the capability that they can now make the iPad a transmitter, so if they run out of vehicles and transponders, you can go out and turn your iPad on the transmit mode and the iPad will become your beacon on the surface. Mr. Bumen said the Truckee Tahoe Airport is the smallest airport in the United States that has surface surveillance.

Commissioner Joiner asked if this is a closed system; i.e., he cannot go home and pull up this information. Mr. Bumen said not at this time; there is a tool similar to the view he was showing the Commission on the San Francisco Airport (SFO) noise website, which is essentially the same graphics engine for SFO. He said Truckee has not put theirs external as yet, but it has the ability to go external. That is a someday initiative they can certainly do. He added that airports do externalize this data and they typically delay it at least fifteen minutes, sometimes it is 24 hours;

it depends on what their agreements are and it is anonymous data at that point typically, other than maybe an airframe type that they will include. Mr. Bumen said one of the things they developed just as they were in the deployment phase of this new system is a policy that guides the use of their data for internal and external use, and that was another means of developing some trust with their stakeholders and trust with the community. He said the airport has a lot of information at their fingertips now and they are going to be very responsible stewards of that information and provide some assurance for their pilots that there will be some level of security of that information and some level of privacy with it. But, at the same time, the public's right to know what is happening is also honored in that process. Mr. Bumen said they developed that document and it served the airport well; it has never been a big point of contention, but they certainly did not want it to become one. He said it has become a point of contention at other airports, and that is why they were very diligent in getting it done. Airports that have gone down this path without really any concept of what they have, what it means, who gets what, and why, can cause contention very quickly; particularly if there is a hot-button issue in the community.

Chairman Owens suggested that this type of presentation become an annual report to the TTALUC; not necessarily to share again what the capabilities are, but he thought what would be interesting from the land use standpoint would be the patterns that begin to emerge over time. He said even more interesting to him would be when the airport implements something new to try to alter the flight behavior; where you can pinpoint it and show whether or not it is working. Chairman Owens said they have done a lot in the last two years with departures and approaches, but it would be very interesting if they would notice a little quirk they would want to fine tune and implement a change to see if your implementation actually bore out. Mr. Bumen said the area they are watching the most with that in mind is the approach path on the southern end of the airfield. He said this is a project they have been working on for a number of years that was originally a partnership with Net Jets to create what was called a visual RNAV arrival here. It ended up in a denied status with the FAA; they were not willing to allow a non-tower airport with no radar coverage a published procedure that would combine the certainty of GPS navigation with the assurance that the pilot is looking out the window to not run into anything. Mr. Bumen said it seems somewhat intuitive that you could do those things all at the same time, but it faced a number of unique obstacles and probably the most determinant was the question why is this small airport asking for this and how do you know what this stuff even is. He said they were ahead of the FAA in asking questions that they did not have answers to. Mr. Bumen said where they have gone with that since then is they should, in January, have these way-points available in all the public data bases and GPS systems for aircraft. He said on a website they use to disseminate their procedures, WhisperTrack.com, they essentially have an airport derived route diagram that they hope turbine operators will potentially utilize because it offers unique benefits; it prevents the circling down low over the valley, and you prevent the mixing of fast aircraft with slow aircraft in the traffic pattern; it has a number of safety benefits, and ultimately he thinks over the next few years it will be approved by the FAA. They know what the issues are now and they are working on plans to address them. Mr. Bumen said as Chairman Owens commented about watching change in operational patterns, that is one area they watch closely, because prior to having a system like the current one, you had no way to consistently measure if you made a change; or if you were trying to influence a change, to determine if you were having any success with it. He said that is the airport's first attempt at that type of study.

Commissioner Montgomery asked if the data boxes in each airplane measures in meters above sea level and knots. Mr. Bumen replied that it is feet above mean sea level. Therefore, pilots would look to either their mean sea level altitude or what is called AGL (i.e. how high am I above whatever piece of ground is below me), which in the mountains becomes a very critical

number. They look at the aircraft's altitude above sea level and then they have a heading, which is the other three numbers on display on the real-time screen, and then there is an air speed below that stated in knots. Commissioner Montgomery asked what some of the other numbers referred to, such as 54 and 178, that were displayed on the real-time screen. Mr. Bumen said those were the headings and those tend to be accurate; the knots tend to bounce up and down because every second the system is recalculating an air speed and it is not smoothing those. One of the benefits of processed data, he said, is you get some of the jumpiness out of the real-time system. Commissioner Montgomery noted there were several aircraft on the ground and assumed they were still transmitting and that is why they still appeared on the display; when they shut down they will disappear off the display. Mr. Bumen replied their transponders are still on. Commissioner Foster thought you would not see aircraft on the ground that have the Garmin transponder, which does not activate until it hits thirty knots. Mr. Bumen said that is correct; unless there is some override procedure on that the pilot is using, they do not see them.

Executive Director Landon asked how the way-points are established; the yellow triangles on the display. Mr. Bumen replied that typically they are affiliated with an instrument approach procedure, so they are part of a procedure that is very carefully designed and then validated through flight testing with the FAA. One of the challenges they have had in the last year with the route displayed is that those way-points are not part of a procedure, and the difference is that route is just a collection of way-points; you do not call up a Tahoe arrival into Truckee. He said the distinction is those way-points are individual; a lot of data bases drop out individual way-points if they are not affiliated with the procedure. He said there is a process to submit Digital Aeronautical Flight Information File (DAFIF) data to the National Flight Data Center and they will do some validation on it, and if you are lucky, you will get it published. Executive Director Landon said the way-points are just an agglomeration of data; there is not a beacon at that point that you know you crossed. Mr. Bumen said it is a point in space; a latitude and longitude and often an altitude that ends up in a data base and GPS. Those points in space calculations can be done by the aircraft, or even Truckee's system can reference to those points. Executive Director Landon said that is why you can have one over Lake Tahoe. Mr. Bumen said he likes to leave them up, because it also gives him some assurance; their system does not need any calibration or tweaking. If for some reason he starts having problems with a sensor, particularly a power problem because of some of the infrastructure on the mountaintops; power is probably their biggest liability in the system. He said if they lose a sensor due to a power failure they are fine; if they lose two sensors, the system moves into a warning status; if they lose three sensors, you will see flight tracks start to get funky, but that is 50% of the system down at that point and they have never had that happen. Executive Director Landon asked what their power source is currently for the sensors. Mr. Bumen replied that right now they have everything on conventional landline power; it is possible to run them on solar. They have a 30 minute battery backup on-site, if there is not a stand-by generator there, which some of the sites have, and the site will put itself to sleep if it is going to exhaust that resource.

Commissioner Brown repeated that this system is at SFO also and he asked if they are also engaging in discussion with Tahoe on the use of tying in their system with Oakland Center. Mr. Bumen clarified that SFO is only using this software package; SFO gets their data from the FAA, so they are not using multilateration sensors. He said the neighboring airport that is using multilateration is the Port of Portland, who are using it at both PDX and Hillsborough. Tahoe has a very close relationship with them, because they are doing similar types of things. It was an airport installed system for flight tracking purposes.

Chairman Owens said it was a very interesting topic. He commented that his dad was a pilot for many years and came to visit at Thanksgiving, so he brought him over to the terminal because when he was a kid there was nothing out here. His dad was amazed with the Unicom Center and was very impressed.

Chairman Owens gave direction to staff to revisit this topic in a year and feels there would be value in looking at the additional data gathered in the years' time.

5. Appointment of the Seventh Member of the TTALUC

Chairman Owens reviewed that the seventh member of the land use commission is to represent the general public. Executive Director Landon said there were two individuals who reapplied for the position, as when the first seventh member was appointed: Ken Foster and Doug Taggart. He informed the Commission that staff learned the previous Monday that Mr. Taggart had passed away since submitting his application. He added that he did not know any of the circumstances other than he passed away about two months previously. Commissioner Smith commented that it was of natural causes, or at least they were still ascertaining what happened. He added that Mr. Taggart had been sick.

Commissioner Montgomery made a motion to reappoint Ken Foster as the seventh member of the Truckee Tahoe Airport Land Use Commission representing the general public. Commissioner Joiner seconded the motion. The motion passed unanimously. There was no alternate appointed at this meeting.

Chairman Owens spoke condolences to the Taggart family.

6. Election of Officers

Chairman Owens noted the previous two years he served as Chairman and Commissioner Montgomery served as the Vice Chairman. He asked for nominations for Chairman of the TTALUC. Commissioner Montgomery nominated Commissioner Paul Joiner for Chairman. Commissioner Smith seconded the motion.

Commissioner Brown asked what about Vice Chairman Montgomery; whether she would like to take over as Chairman. Commissioner Montgomery said she ran a meeting last year and she likes to see the chairman position rotate and offer different people the opportunities to run the meetings. Commissioner Joiner asked the Commission if they were comfortable having a member from Lincoln be Chair, or would it be more appropriate for someone in Truckee to be Chair. Commissioner Collinson turned the question to the nominee and asked if he was comfortable taking on the role as someone from Placer County, which is located a ways away, and since the TTALUC does not affect the City of Lincoln. Commissioner Joiner said he was comfortable with it, he just wanted to be sure it is serving the best interest of the Commission. Chairman Owens said he could reassure Commissioner Joiner that there is no real damage that could be done. He was being asked to conduct the meetings. Commissioner Smith said he felt the same way as the Airport Manager that everyone on the Commission should have equal consideration as Chair to conduct the meetings and interact with staff.

Chairman Owens called a vote on the motion and the motion passed unanimously.

Chairman Joiner took over the meeting at this point and opened nominations for Vice Chairman of the TTALUC. Commissioner Montgomery nominated Commissioner Dr. Mark Brown. Commissioner Owens seconded the motion. There were no additional nominations. Chairman Joiner called for a vote on the motion and the motion passed unanimously.

COMMISSION ANNOUNCEMENTS

Commissioner Montgomery said this is an opportunity to ask staff for information or to report back on a topic at a future meeting. She knew that in the summer there was a fatality at the airport and there was some confusion as to whether it was in Nevada County or Placer County in terms of having a coroner show up; no confusion as far as emergency response teams. She asked staff to bring back an item for discussion about if there is a way to delineate more clearly which portion of the airport is in Placer County and what is in Nevada County, so there is not that type of confusion moving forward. Commissioner Owens said pertaining to coroner duties, Nevada County contracts with Placer County for coroner service. Commissioner Smith said the county line literally cuts through things; one side of a hangar could be in Nevada County and the other side of the hangar is in Placer County. Airport staff could show where that line bisects through the airport. Commissioner Montgomery said there was a bit of uncertainty as to which share of several internal reporting procedures belonged to which jurisdiction, so she would like to get some clarity, at least from her perspective. Chairman Joiner asked staff to bring this information back to a future meeting.

Commissioner Collinson said when he reviewed the minutes the previous weekend from last April, he was unable to recall details from that meeting. He requested staff to send out Minutes for review sooner, so it is more recent; instead of just remembering, he could check details. Executive Director Landon said we can send out the Minutes soon after the meeting and then the Commissioners will have something to refresh back to the meeting.

Commissioner Smith wanted the Commission to know that airport staff is working on the Master Plan update, and there is an Outreach Committee that will begin meeting in February, and then between March and April they are going to conduct several community outreach workshops. He said the Outreach Committee will be working to determine the best way to communicate with the pilot community, with affected neighborhoods, and with the Lake Tahoe Basin. They are not deciding what should be in the Master Plan, but there are questions they will be answering, and figuring out how to communicate; such as, what would be the best format for meeting with these different areas of the community. These meetings will be going on between the current date and May on the average portion of the Airport Master Plan Update. He said that some of the Commissioners may be contacted to be involved in this. Commissioner Montgomery said she would like to offer on behalf of the Municipal Advisory Councils that Placer County has for North Tahoe, Squaw Valley, and Donner Summit if they are interested in giving a presentation to any of those entities, they would be happy to host airport staff.

Commissioner Owens gave recognition on behalf of the TTALUC and congratulations to the Airport District's Excellence in Government Award given by the Truckee Donner Chamber of Commerce. He asked it be noted in the record.

Executive Director Landon noted that Commissioner Owens is concluding his service in Nevada County as a Supervisor and staff has been in contact with the Board of Supervisors so they can name a replacement subsequent to his departure. Commissioner Owens asked if the position on the TTALUC requires you be "on" the Board of Supervisors. Executive Director Landon replied

that his understanding is the person to fill the position is selected by the Board, but does not have to be a member of the Board. Commissioner Owens said he would let Supervisor Anderson and the Board Chair decide who to appoint, but he would have an interest to stay on the Commission.

There were no other comments.

SCHEDULE FOR NEXT MEETING

The next scheduled meeting of the Truckee Tahoe Airport Land Use Commission will be determined as the need arises, as stated in the TTALUC Bylaws.

ADJOURNMENT OF MEETING

Commissioner Montgomery made a motion to adjourn the meeting. Commissioner Owens seconded the motion. Chairman Joiner adjourned the meeting at 12:09 p.m.

Respectfully submitted: Antoinette Perry
Antoinette Perry, Administrative Assistant

Approved on: Oct. 4, 2013

By: Paul D. Joiner
Paul D. Joiner, Chairman
Truckee Tahoe Airport Land Use Commission