AGENDA ITEM: ___7____

TRUCKEE TAHOE AIRPORT DISTRICT

BOARD OF DIRECTOR STAFF REPORT

AGENDA TITLE: **Temporary Seasonal Control Tower**

MEETING DATE: **October 25, 2017**

PREPARED BY: **Hardy Bullock, Director of Aviation & Community Services**

RECOMMENDED ACTION: Task 1 – Review, consider, and receive public comment on the Temporary Seasonal Control Tower (Tower) performance assessment for the operating period from June 1, 2017 through September 15, 2017. Task 2 – Consider Tower funding for winter 2017-2018 and summer of 2018.

REPORT FORMAT: This staff report contains analysis based on data and professional opinion collected from airport staff, the community, Midwest ATC, professional pilots, airport users, tenants, and consultants. This report summarizes all of the available information related to the performance of the Tower. The initial concept of a Tower was discussed at the February 2, 2016 Board workshop. The **deliverables and the goals** of the Tower Program were presented to the Board at the following meetings: January 25, 2017, March 27, 2017 Workshop, and June 28, 2017. The January 25, 2017 report is attached herein for reference. At the end of the Team reports is a Tower Report Summary. Each member of the team will briefly present their findings.

REMARKS | *Hardy Bullock, Director of Aviation & Community Services*

1. Peak traffic volumes for the summer period were larger than ever before with growth in the turboprop and jet aircraft categories. Neither the Tower nor the District control the volume of flight operations at the airport.
2. During certain peak periods, the Tower facility was operating beyond its designed capacity.
3. Staff, Midwest ATC and Oakland Center worked daily to assure the safe and orderly flow of traffic. The orchestration of this three-way relationship was more complex than anticipated.
4. Staff measured the Tower service level continuously. Adjustments took place daily throughout the summer to ensure the flying public was receiving the level of service commensurate with the highest levels of safety and industry best practices.
5. Staff measured the Tower's impact on annoyance continuously. Adjustments took place daily throughout the summer to ensure Midwest ATC was responsive to the needs of the community while following operational agreements with the District.

6. We just got started, then we closed! The performance of the Tower is reliant on routine. It is staff's opinion that we simply have not had enough time to perfect a routine. Staff is confident with additional time training, familiarization and procedure development, improvements to annoyance reduction are feasible and possible. Staff is optimistic that additional training and coordination with Tower staff, Oakland Center, airport users and airport staff will yield improvements to the Tower operation

DISCUSSION: The Federal Aviation Administration (FAA) delegates all tower authority to local airports. The FAA offers no guidance or criteria outlining an airport's need for a Control Tower. The District constructed the Tower and procured Midwest ATC to operate the Tower for the summer of 2017 as a test. Year one **deliverables** as presented to the Board at the January 25, 2017 Board Meeting (see attached staff report) that have been accomplished:

1. Tower Services available from 6:30 AM to 8 PM (actual hours were 7:00 AM to 9:00 PM) or at the discretion of the District.
2. Positive Tower control of aircraft course and altitude within 4.3 nautical miles (5 SM) of the airport.
3. Separation of ground traffic up to the non-movement area, roughly the ramp area and hangar rows.
4. Separation of specialized aviation services such as skydiving, glider, and flight training activity.
5. Separation of ground vehicles and aircraft in the movement areas such as taxiways and runways.
6. Support of curfew and calm wind runway utilization. (There is still some question as to success of calm wind runway program. This is discussed further on page 11.)
7. Support of policy directives such as no touch-and-go's, no repeat operations, no practice approaches. *(Deemed incongruent with Federal Directives)*
8. Issuance/clearance delivery of Visual Flight Rules and Instrument Flight Rules arrival and departure procedures.
9. Enhance safety during periods of airfield construction.

Year one Tower **goals** included both safety enhancement and community annoyance reduction. Staff was tasked with measuring the success of the Tower and reporting back to the community and Board on the following items:

Safety Enhancement (Tower Metrics Staff Report #7)

1. Reduce runway incursions
2. Reduce communication error
3. Reduce loss of separation that leads to mid-air collisions
4. De-conflict aeronautical uses such as soaring, skydiving, business jets, and small aircraft

Annoyance Reduction

1. Use route and altitude assignment to reduce aircraft annoyance on arrival and departure through known waypoint and procedure use (Project Fact Sheet #1, #2, #6)
2. Sequencing and separating aircraft for arrival and departure to avoid delays and holds (Project Fact Sheet #3)

3. Assign a preferred departure runway or procedure (Project Fact Sheet #4, #5)
4. Track comments including the type of comments received and the issues raised for comparison with and without the Tower (Project Fact Sheet #8)

COMMUNITY OUTREACH | *Marc Lamb, Manager Aviation & Community Services & Freshtracks Communications*

The District completed an ambitious public outreach campaign designed to inform the community on every aspect of the Tower Program. Prior to inception of the Tower, staff initiated public outreach via six neighborhood community meetings in 2016 (with over 200 attendees), and gauged the public pulse of implementing a Tower Program. The question was asked during these public meetings, "Would you support the idea of an air traffic control tower (financed with public funds), in favor of improved aviation safety at KTRK, shortened flight times overhead and possibly reduced neighborhood noise and annoyance?" The overwhelming answer was "Yes!" Prior to starting regular Tower Operations in June 2017, staff held a "Tower Open House" with over 300 people attending.

During Tower Operations, staff continued outreach efforts to the community. Informative meetings were held weekly in May and June in the terminal building for anyone that had questions. We kept the community abreast of Tower Operations and traffic control efforts via e-blasts, social media, District publications and the website. A media and phone campaign let the general public know of the end of Tower Operations and invited them to attend, or provide input at the October 25, 2017 Board meeting.

After the Tower closing, Freshtracks Communications conducted a telephone survey contacting all noise commenters from 2016 and 2017. A total of 57 routine commenters were directly contacted and polled of which 28 responded. The questions and findings are reported in the attached document. In summary those households who have routinely commented to the airport regarding annoyance still had the same issues present in the summer of 2017. Most households still agreed that the Tower is a good idea if it can improve or reduce annoyance in the future. Many households commented that the Tower made annoyance worse. This concept may be explained based on the impacted location of the household relative to increasing peak period traffic.

The District circulated a survey to the commercial airfield operators at the airport including: Soar Truckee, Skydive Truckee Tahoe, Heli-Vertex, Sierra Aero, Care Flight, Mountain Lion Aviation, flight instructors, and charter operators such as Net Jets, Surf Air and Wheels Up. The results clearly indicate that this group feels the Tower was successful at reducing latent risk and enhancing safety. The survey shows vibrant support to continue the Tower Program. The commercial airfield operator survey results indicate the Tower's ability to reduce annoyance is inconclusive.

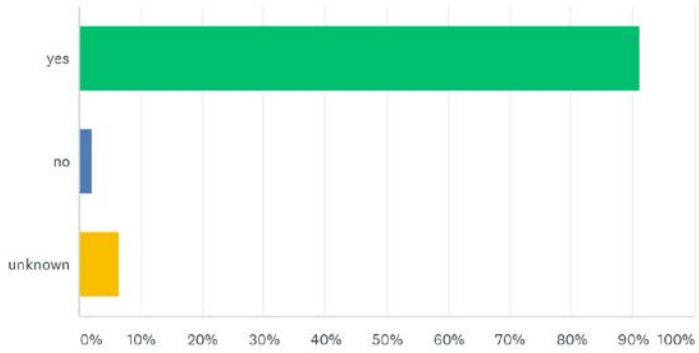
Commercial Airfield Operator Survey Results

Q1

Customize Export

Is the airport safer with a control tower?

Answered: 46 Skipped: 0

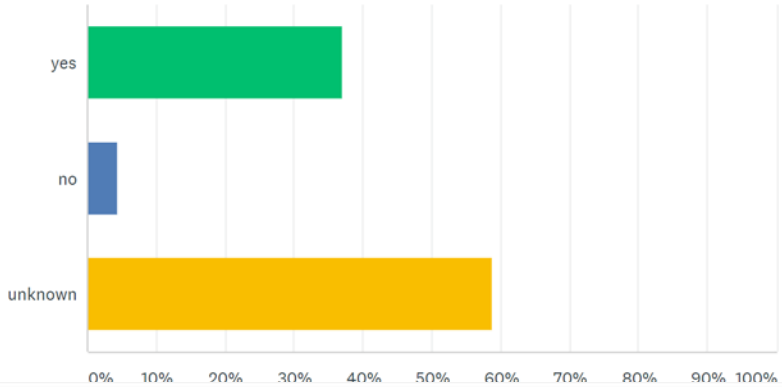


Q2

Customize Export

Did the control tower help reduce community annoyance?

Answered: 46 Skipped: 0

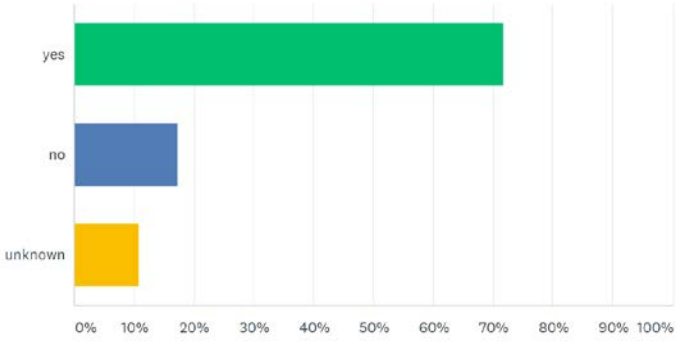


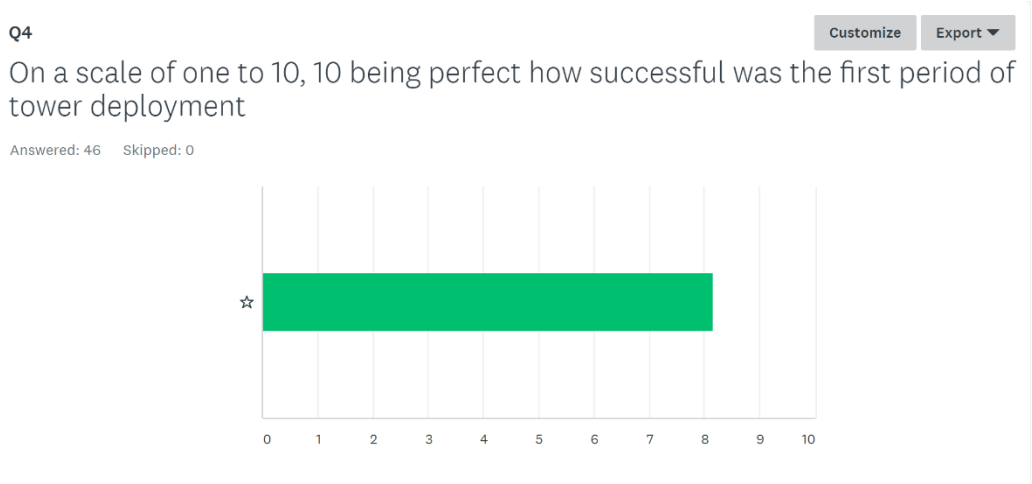
Q3

Customize Export

Based on the 2017 summer operational tempo is a tower required at KTRK?

Answered: 46 Skipped: 0





COMMUNITY ANNOYANCE & FLIGHT TRACK ANALYSIS | *Mike Cooke, Manager Aviation & Community Services*

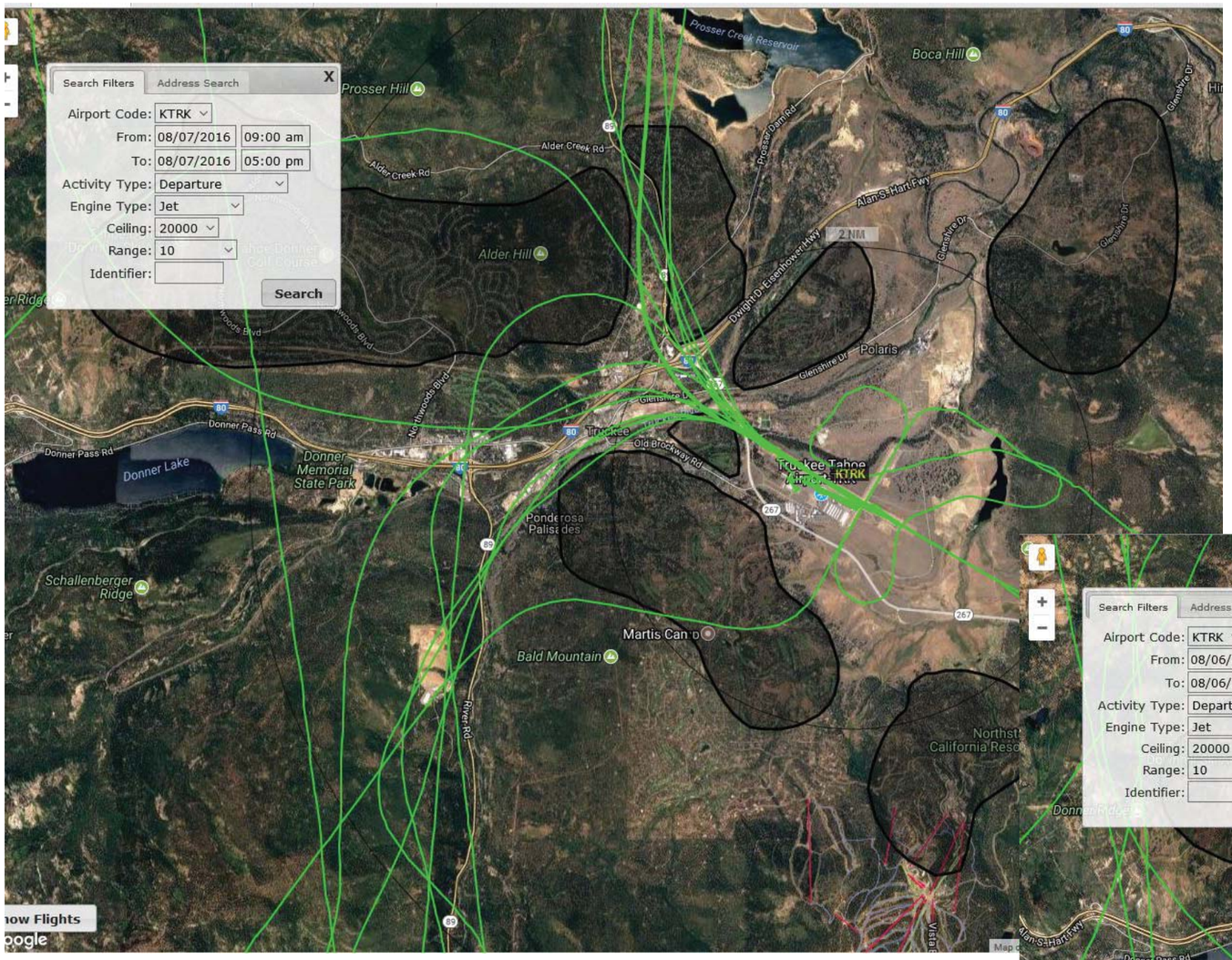
Comments decreased by about 10% during the third quarter of 2017. The Tower's influence on the overall comment volume is difficult to determine since other outreach programs and efforts were happening simultaneously. However, a large drop in comments from Northstar and Glenshire does indicate the Tower is routing traffic away from Glenshire and at higher altitude when on downwind near Northstar.

The responsiveness to issues within the sphere of control of the Tower was outstanding. Weekly meetings and multiple real-time discussions led to controller protocol changes that reduced or eliminated noise and annoyance for the commenting community. This alone may be the single biggest benefit to helping address community annoyance: a concerned and responsive Tower.

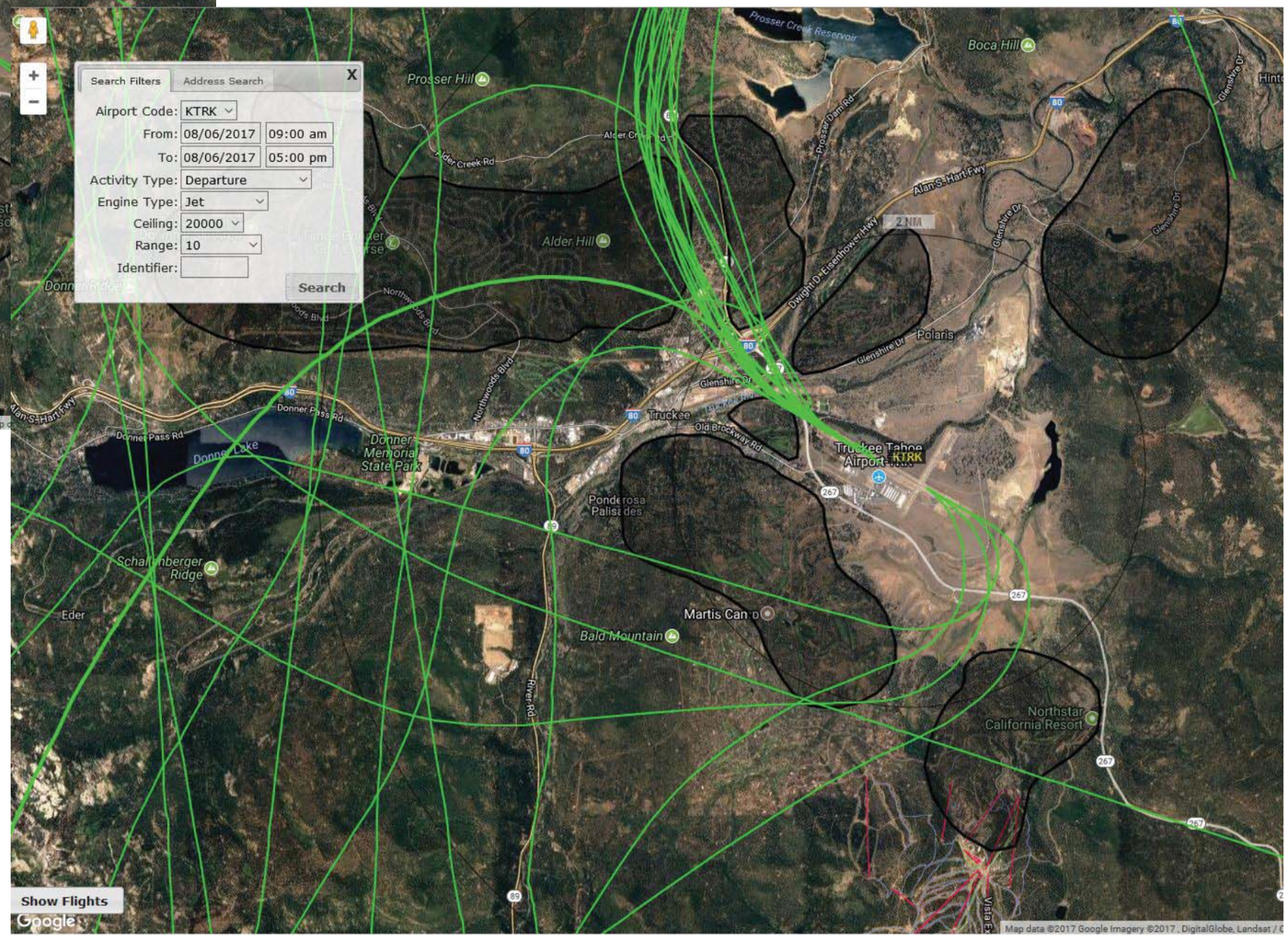
Commenters vacillated on the Tower's effectiveness primarily based on their residential zone. The same commenter would one day state it worked great and on another day state it's not effective. One of the recurring discussions was that flight patterns and procedures would not change with the Tower, so in some neighborhoods the effect of the Tower would be minimal. For example, residents along the 89 corridor to the north likely saw more overflight due to the fleet mix changes where more aircraft utilized instrument departure procedures than in past years. This flight corridor has consistent and routine overflight, the Tower will not reduce this impact unless IFR procedures are changed or modified.

For the period, the Tower reported 21,971 operations, which is about 3,680 operations more than TTAD data collection systems reported. The TTAD systems do not gather touch-and-go information and some transient helicopter operations, so staff believes there was an increase in overall operations but the actual amount would need more analysis. There is no question it was a busy period and the fleet mix appears to be moving in the direction of more jets and turboprops as a percentage of overall operations. Based on that trend, better procedure development and local traffic control would be the most effective means to influence air traffic in a way that minimizes community annoyance.

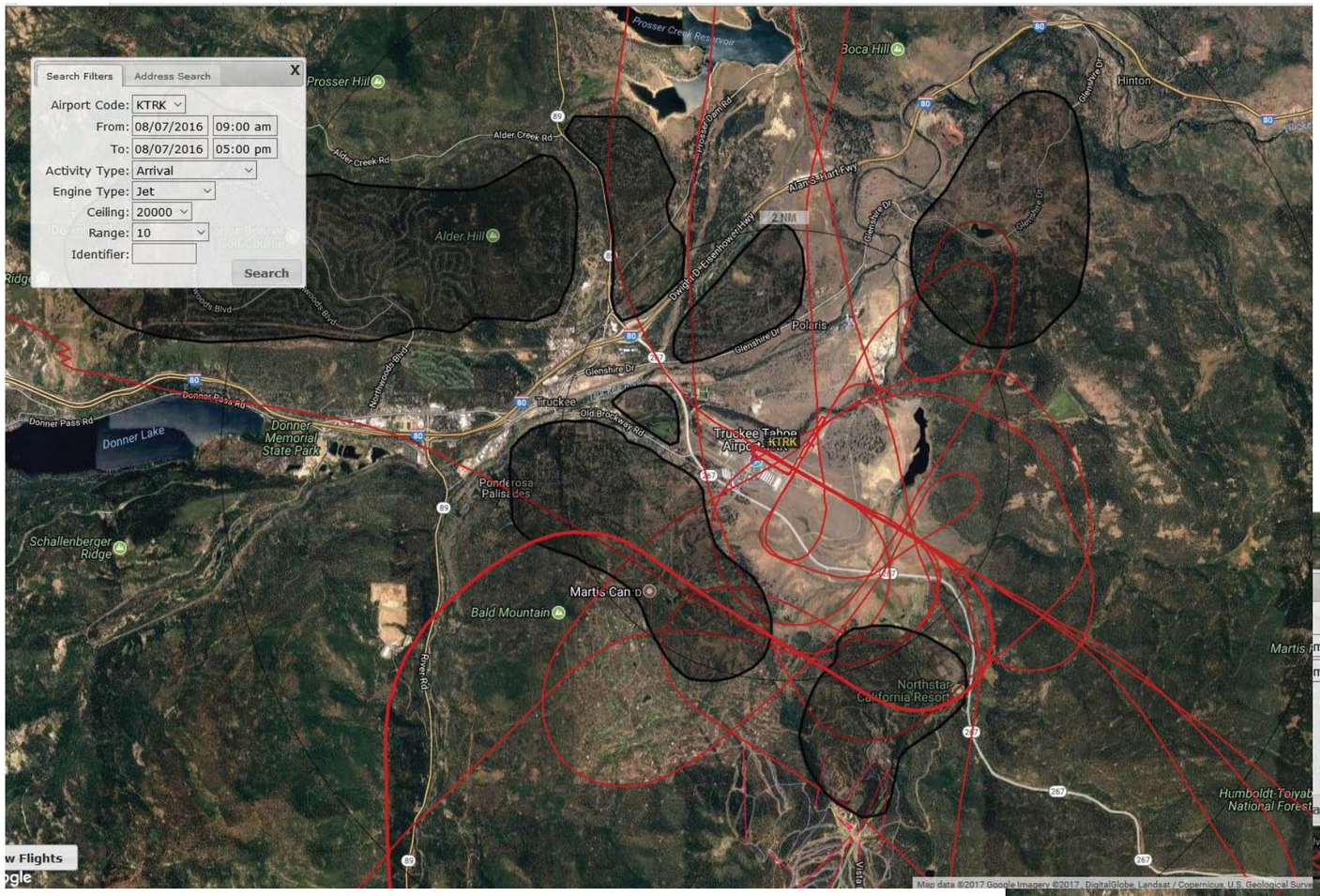
The track images below are samples from 2016 and 2017. They show the average track before and after the tower.



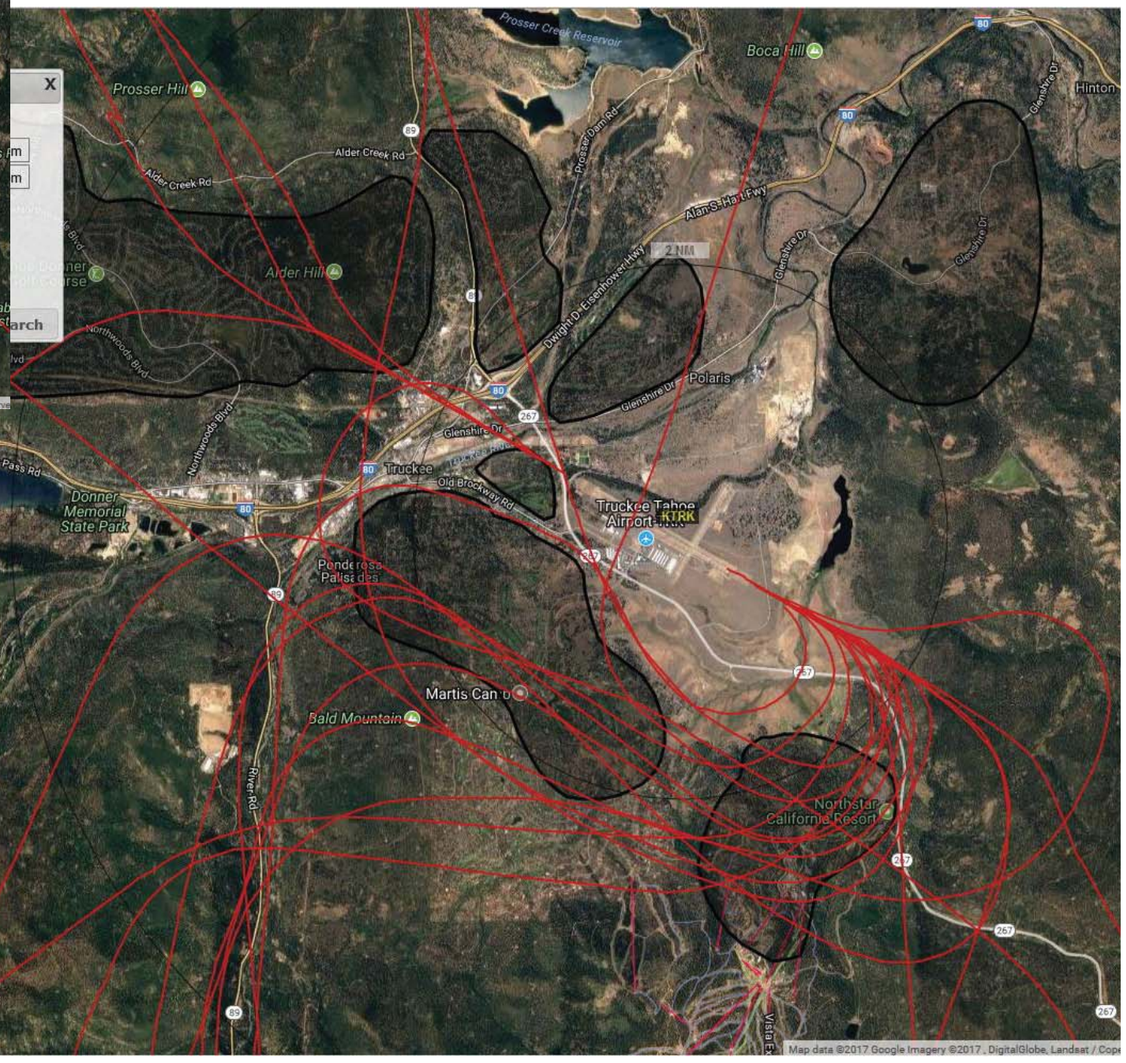
2016 Jet Departures
Sunday, August 7, 2016
9 a.m. - 5 p.m.



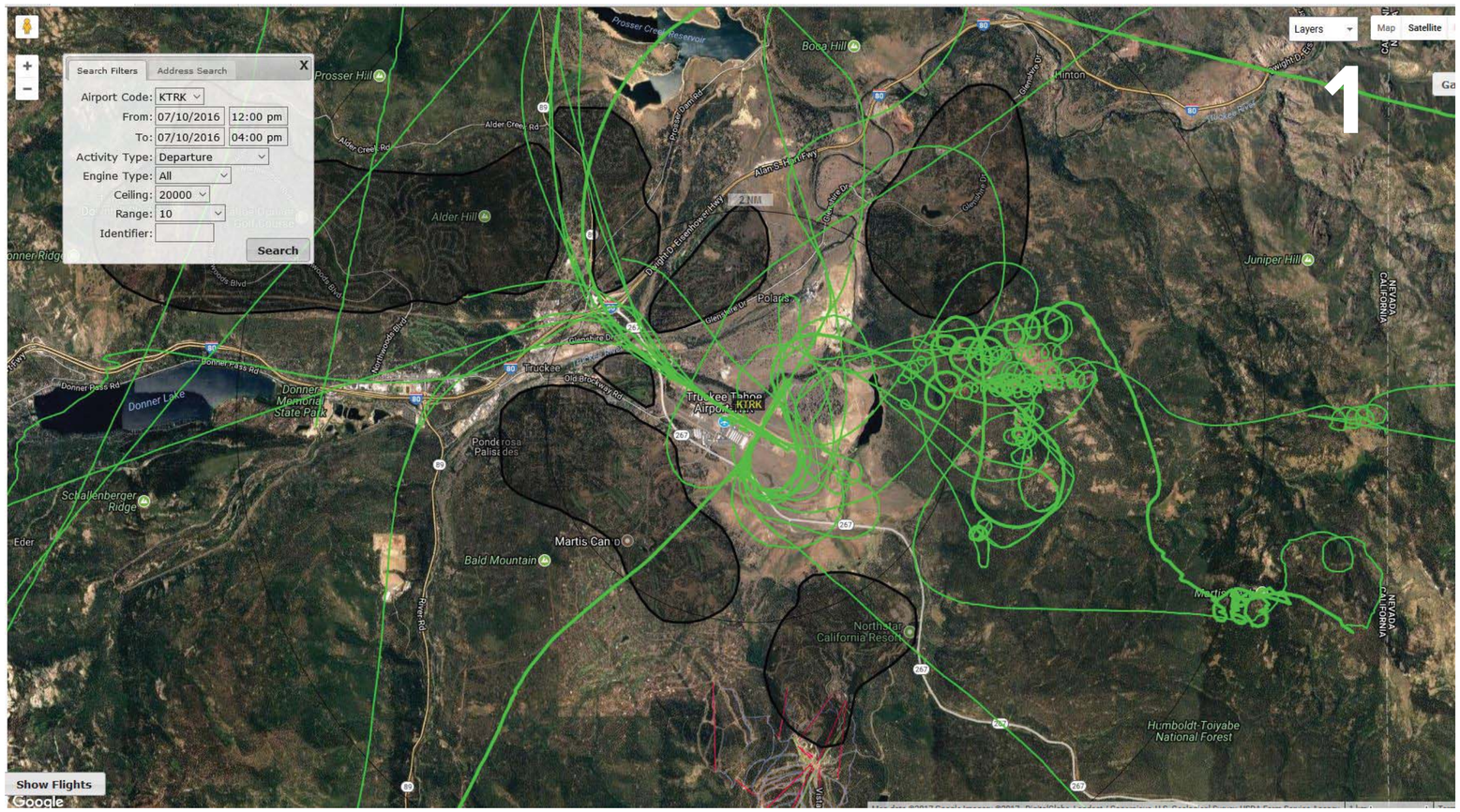
2017 Jet Departures
Sunday, August 6, 2017
9 a.m. - 5 p.m.



2017 Jet Arrivals
Sunday, August 6, 2017
9 a.m. - 5 p.m.



2016 Jet Arrivals
Sunday, August 7, 2016
9 a.m. - 5 p.m.

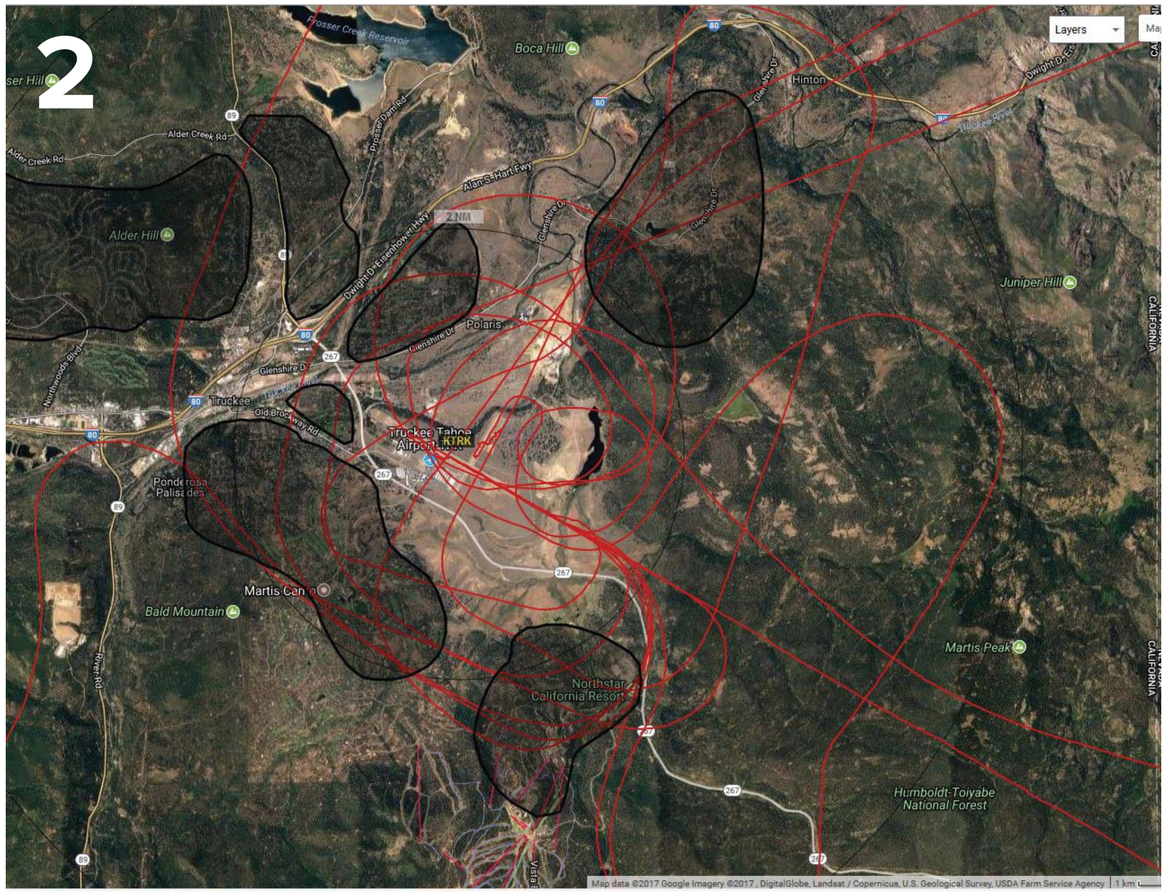


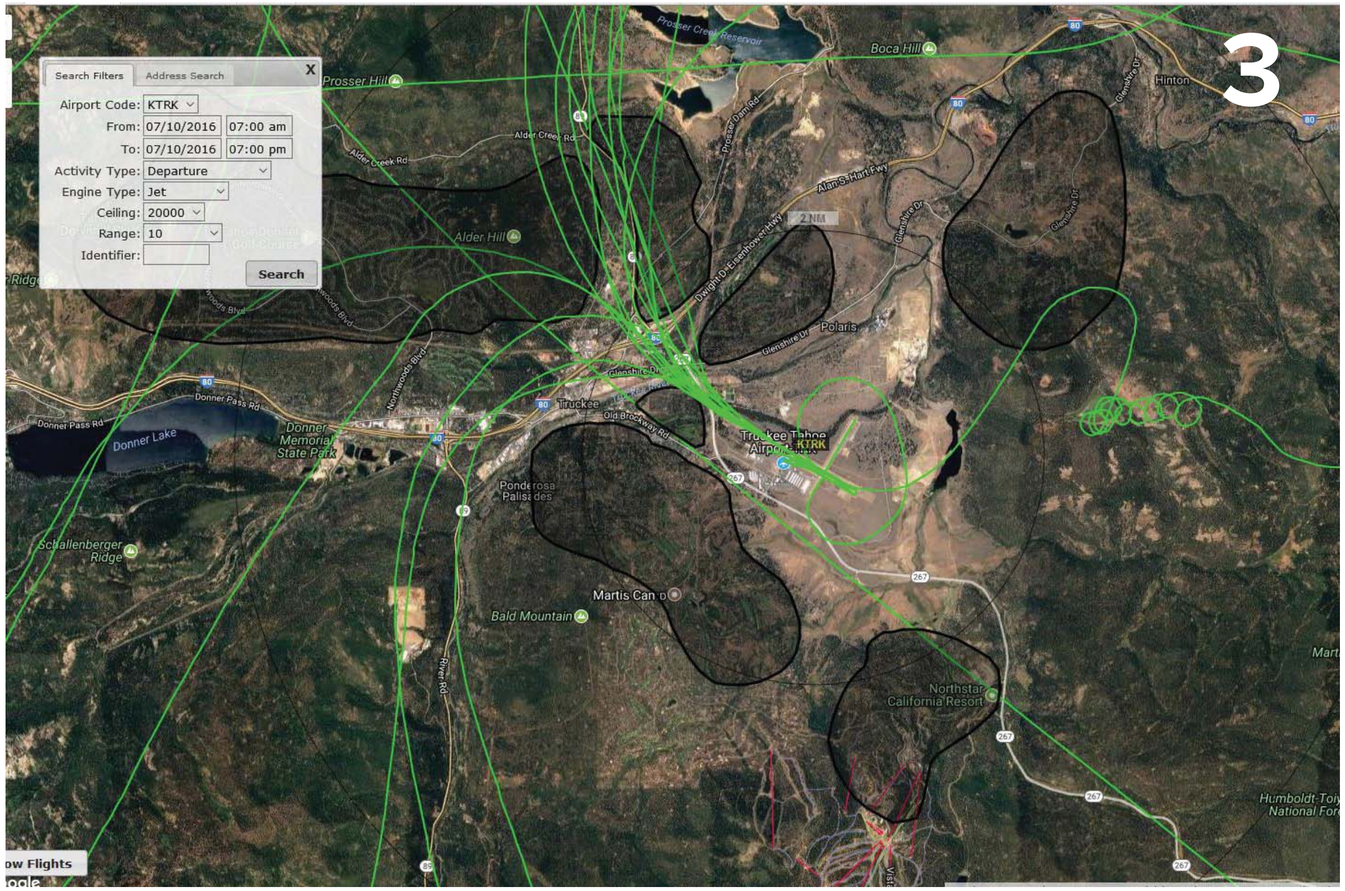
Sunday, July 10, 2016

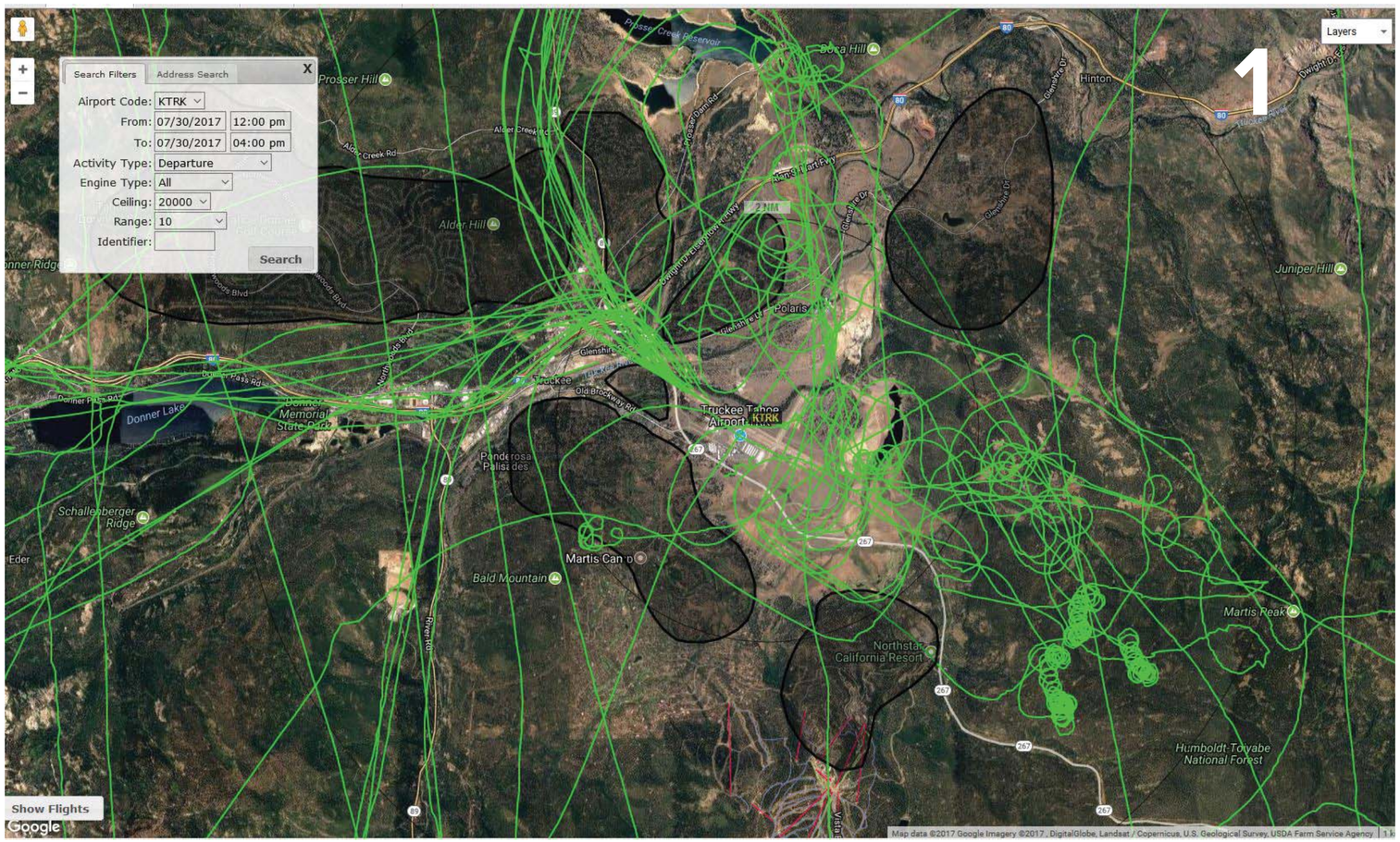
1. All Departures
12 - 4 p.m.

2. Jet Arrivals
7 a.m. - 5 p.m.

3. Jet Departures
7 a.m. - 5 p.m.





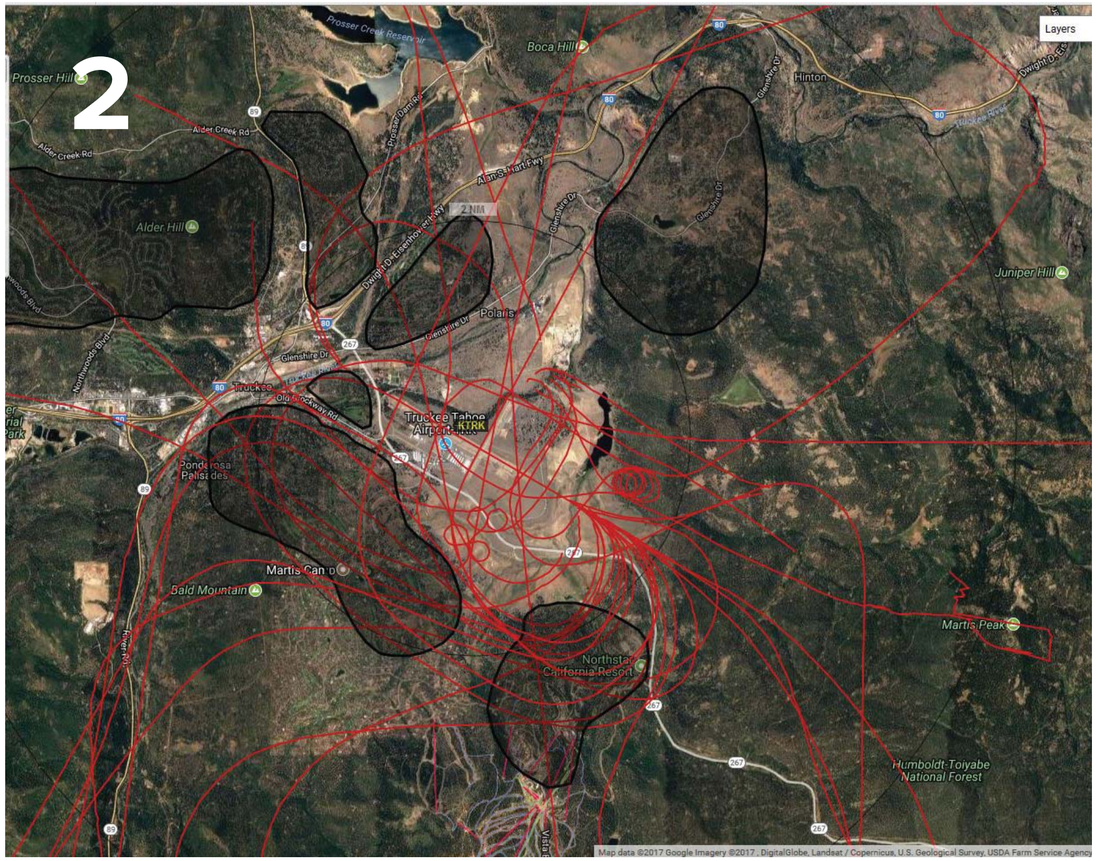


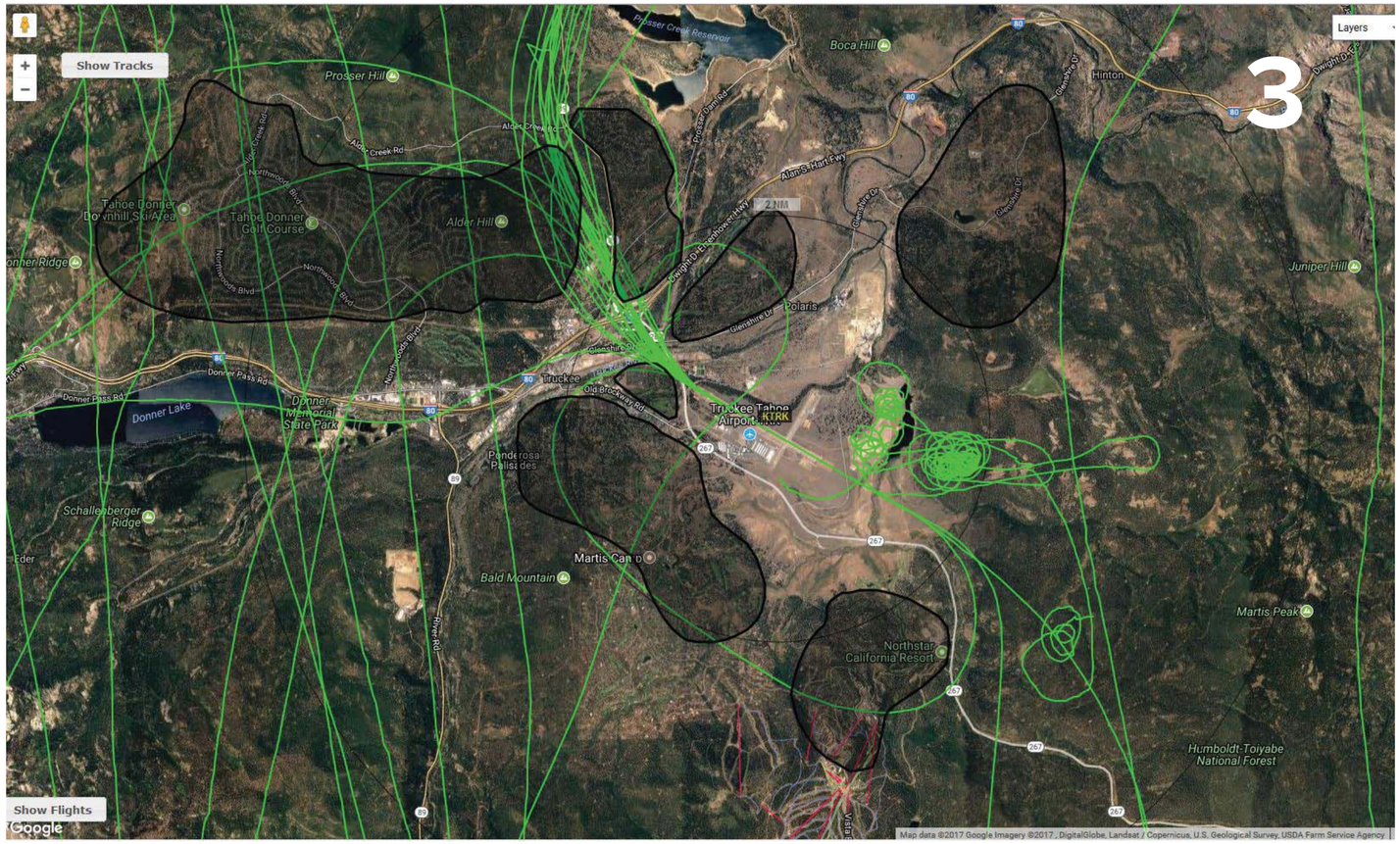
Sunday, July 30, 2017

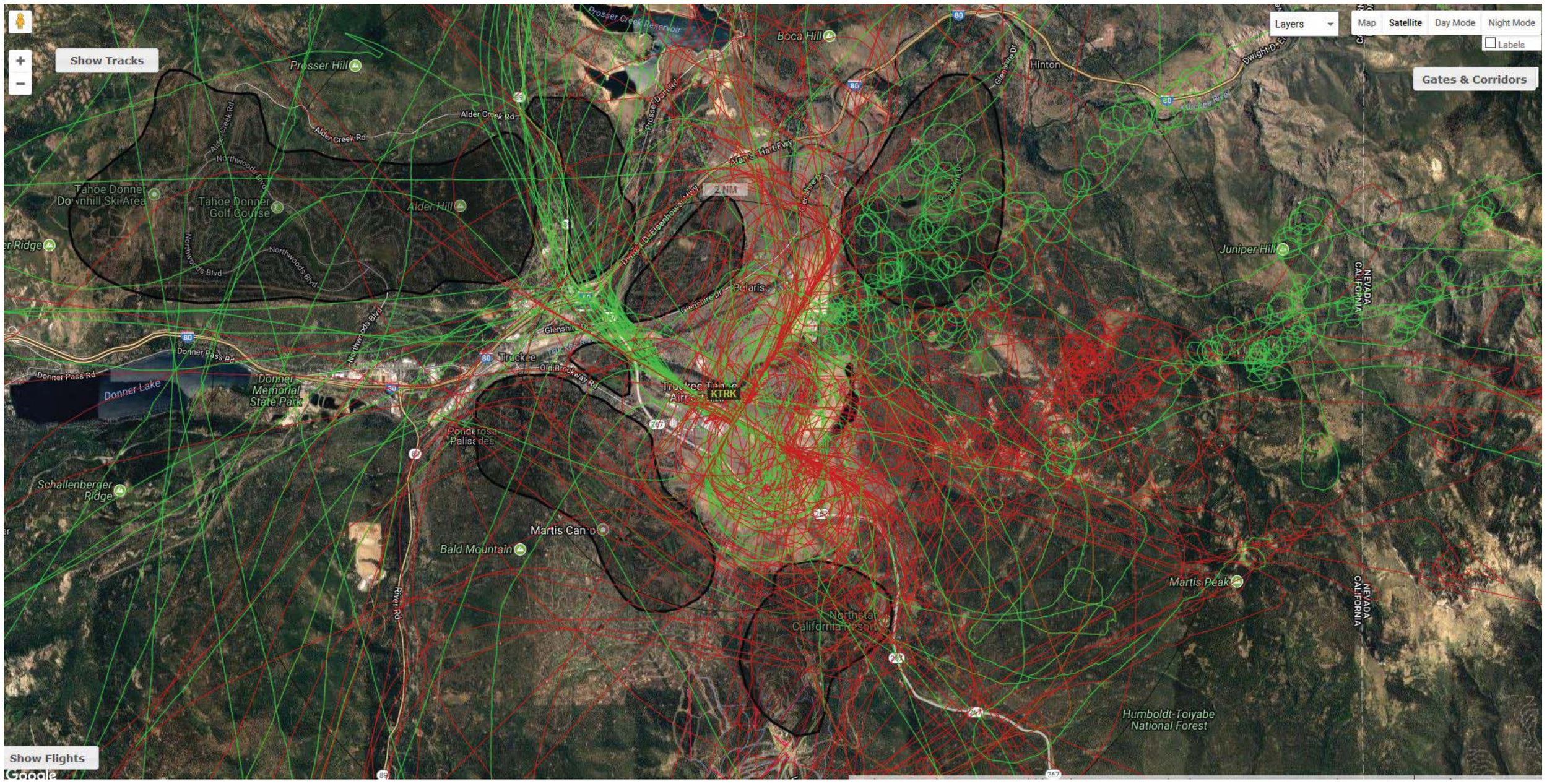
1. All Departures
12 - 4 p.m.

2. Jet Arrivals
7 a.m. - 5 p.m.

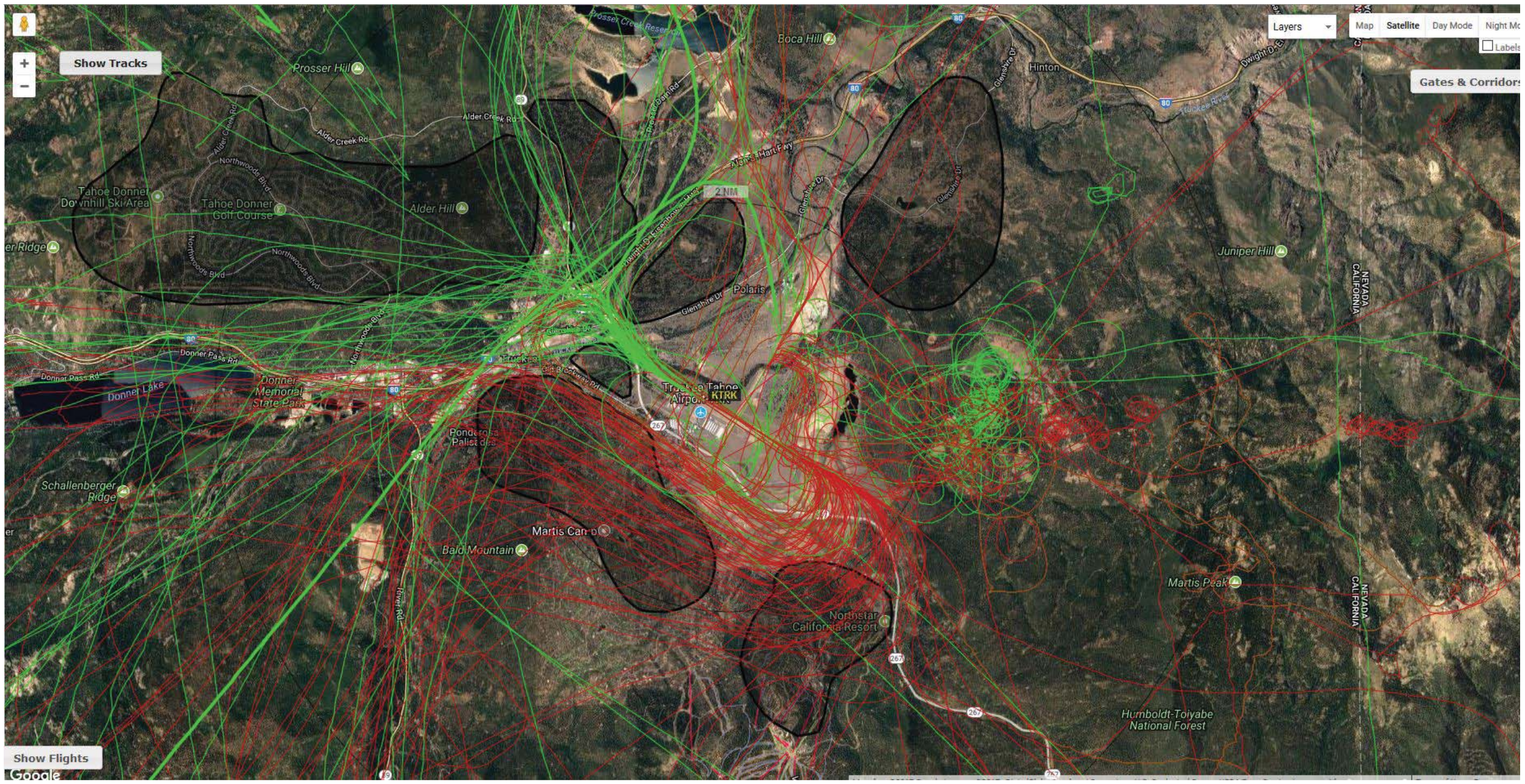
3. Jet Departures
7 a.m. - 5 p.m.





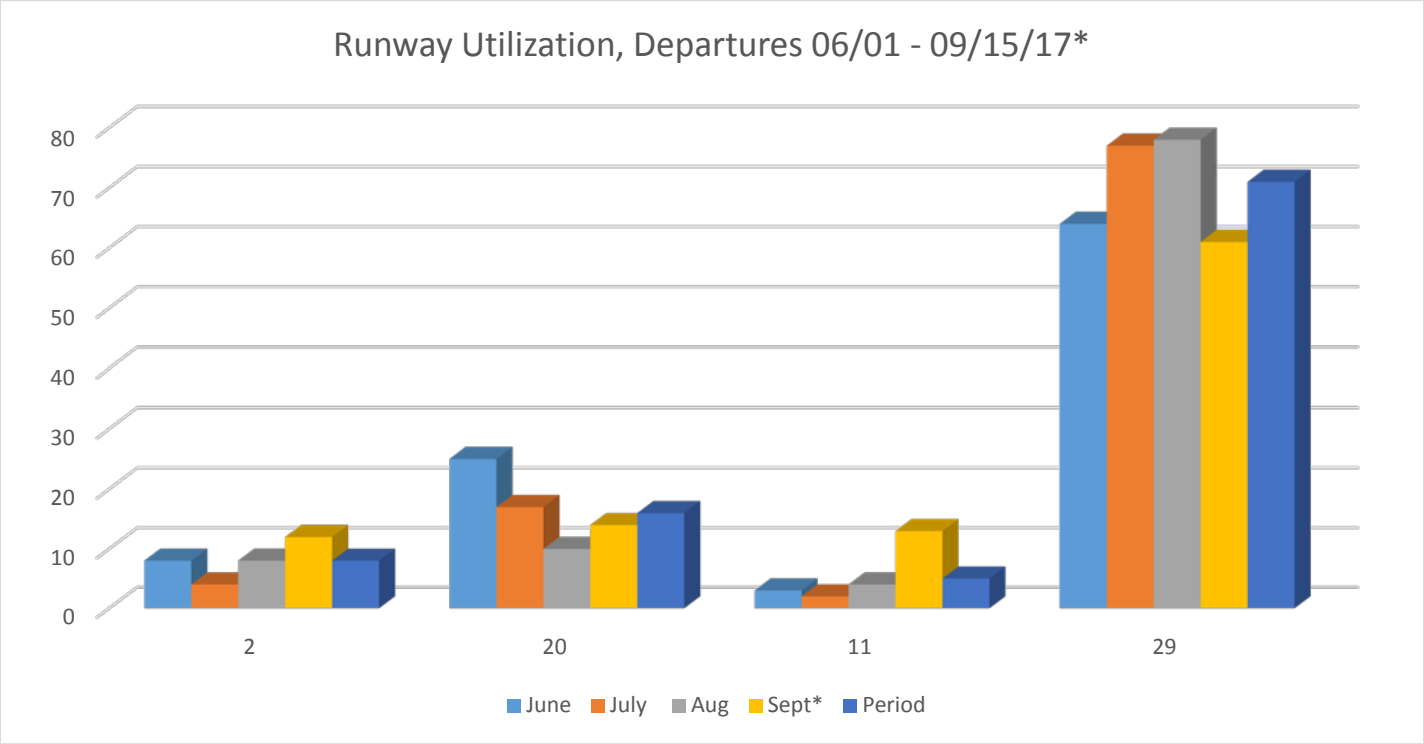


Saturday, July 22, 2016
All Operations 8 a.m. - 6 p.m.



Saturday, July 21, 2017
All Operations 8 a.m. - 6 p.m.

Analysis indicates the Tower did not increase utilization of Runway 02/20. Runway 2 utilization is down 3% while 20 is down 13%. Comparison between 2016 and 2017 is problematic since Runway 11/29 was closed on many occasions in August and September of 2016 for Taxiway Alpha repairs, so operations were forced onto the shorter runway falsely inflating the baseline 2016 runway utilization on runway 02/20. Weather and the changing fleet mix would also need analysis for further reporting. The following chart shows runway utilization for the period.



This table shows runway utilization by percentage for piston and turboprop aircraft from the periods in 2016 and 2017.

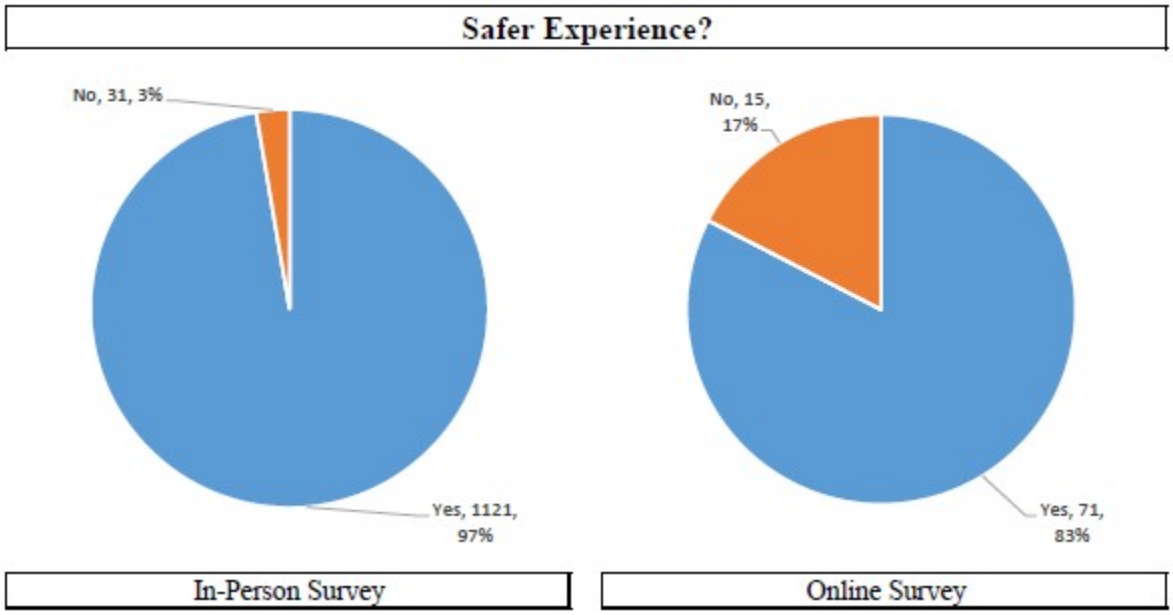
Runway Utilization by Percentage 06/01/16 - 09/15/16 Departures only, excludes Jets, Helos, Gliders						Runway Utilization by Percentage 06/01/17 - 09/15/17 Departures only, excludes Jets, Helos, Gliders					
2016						2017					
	June	July	Aug	Sept*	Period		June	July	Aug	Sept*	Period
Rwy 02	7	7	24	25	14	**Rwy 02**	8	4	8	12	8
Rwy 20	32	36	44	37	37	**Rwy 20**	25	17	10	14	16
Rwy 11	4	2	5	2	4	**Rwy 11**	3	2	4	13	5
Rwy 29	57	55	27	35	45	**Rwy 29**	64	77	78	61	71

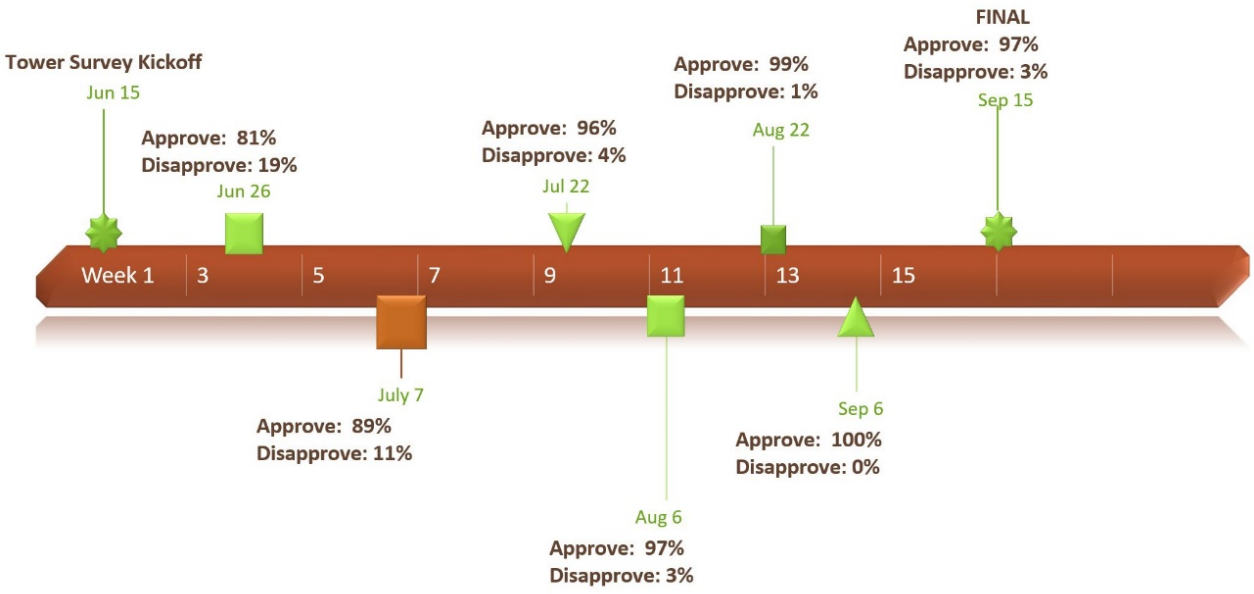
Note 2016 August and September values for 02/20 utilization were affected by construction.

PILOT OUTREACH POLLING & RESPONSE| *Katie Greenwood, Pilot & Passenger Outreach Coordinator*

Pilot outreach began in 2016. The scope included operators, dispatchers, chief pilots and flight clubs. Printed materials, NOTAMS, and web-based content was developed. This information was included

within my presentations during the roadshow seminars, at the airport on the ramp, and at other industry events. A survey was created to measure pilot's experiences with the Tower and services. The survey was placed online, at UNICOM and also presented in person. This feedback was instrumental in understanding the learning curve for the pilots, controllers and the airport as well. It is my observation as a staff member and aviator, the Tower not only improved efficiency, but likely decreased annoyance over residential areas, and greatly improved safety. 97% of 1,100 pilots surveyed agreed that the Tower increased safety. Pilots expressed overwhelming support in favor of the Tower and also requested that it be operational full-time. Truckee is already a challenging airport to fly in and out of. Having another set of eyes providing separation and issuing traffic advisories is helpful for a pilot – it can make them fly safer in the skies over Truckee.





SAFETY ASSESSMENT | *Stacey Justesen, Safety Coordinator*

Safety Management Systems (SMS) rely on participation, transparency, and faith that organizations will support people when they find safety related items. The philosophy behind a high functioning SMS program includes reporting, analysis, and predictive assessment to reduce the threat of accidents and incidents that cause damage and injury. **Keep in mind that the number of reports or even the type of report has no linear correlation with safety or risk.**

The first SMS Report, dated October 2016, highlighted the top 5 safety areas influencing operations and management of the Truckee Tahoe Airport. Each topic was generated using report analysis of the Vortex Safety Management System. There were 45 total reports for the 2016 calendar year.

The following is a review of 2016 reports:

- **9 Radio/Communications.** These occur due to pilots not talking, tuning incorrect frequencies, blocked transmissions or unclear transmissions. Often radio communication type events result in other hazards to aviation.
    - 3 with no radio transmissions heard
    - 4 resulted in runway incursions
    - 2 developed into Near Mid-air collision/Loss of separation events.
- **15 Runway Incursions.** Any occurrence involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for landing or takeoff.
    - 6 occurred during the construction period
    - 8 pilots were unfamiliar with operating at KTRK
    - 2 were trespassing incidents due to open access to the airside of the airport
- **3 Near Mid-Air Collision (NMAC)/Loss of Separation.** A NMAC is defined as an incident in which a possibility of collision occurs as a result of two aircraft being less than 500 feet to each other. Loss of separation would be anything less than the required separation.
    - 2 incidents resulted from the lack of adequate radio communications
    - 1 occurred as a result of pilot task saturation during an instructional flight
- **5 Flat or Blown Tire/Landing Gear.** Occur due to inadequate tire pressure, Foreign Object Debris (FOD), drift, incorrect gear handle position and improper braking action.
    - 4 occurred during the construction period
    - 2 were presumed to be due to under-inflated tires
    - 1 blown tire during landing with a significant crosswind
- **4 AOA Ramp/Gate Access.** The improper or hazardous operations of vehicles, aircraft or persons on the ramp.
    - 2 trespassing incidents; a woman walking her dog on the active runway, a POV driving on taxiways and crossing active runways
    - 1 speeding vehicle
    - 1 vehicle failed to give right of way to an aircraft

The following is a Vortex SMS reports comparison of 2016 and 2017 between June 1 and September 15.

2016: There were **22** SMS reports submitted.

- **7 Radio/Communications.**
- **6 Runway Incursions.**
- **4 NMAC/Loss of Separation.**
- **4 Flat or Blown Tire**
- **1 AOA Ramp/Gate Access.**

In 2016, Truckee Tahoe Airport did not have an operational Control Tower. Radio issues were the primary safety issue, which developed into 3 NMAC/Loss of separation incidents and 2 runway incursions. The single AOA report was an observation of a vehicle driving fast along the ramp.

2017: There were **21** SMS reports submitted.

- **8 Radio/Communications**
  - 7 were the result of pilots failing to read NOTAMS (private, corporate and military)
    - 1 situation (balloon camp) resulted in an incursion
  - 1 pilot insisted on using UNICOM frequency while airborne before Tower opened
- **4 Runway Incursions**
  - 1 resulted from NOTAMS (balloon camp)
  - 2 were trespass incidents
    - Person riding a bike on movement area during Airshow
    - Person walked onto Runway 2/20 from skydive area
  - 1 was a canine that crossed Runway 2/20
- **0 NMAC/Loss of Separation**
- **1 Flat or Blown Tire**
  - 1 blown tire due to improper braking action
- **8 AOA Ramp/Gate Access**
  - 1 man walked onto Runway 2/20 from skydive area
  - 3 incidents of tenants taxiing in front of terminal
  - 2 vehicles dangerous driving on ramp
  - 1 vehicle entered during night runway construction
  - 1 aircraft dangerous taxi on ramp

Two new categories developed this year. These will be summarized year over year, but not included here:

- **6 Pilot Error**
  - Traffic pattern, Hard landing, Ground loop
- **7 TTAD Operations topics**
  - Services and observations

The most significant safety improvement that the Tower directly affected was stopping one incident from progressively compounding into a worse scenario. This is especially true of Radio/Communication events that have typically transpired into incursions and NMACs. There were seven incidents in which Tower coordinated aircraft around planes that were not talking on the appropriate frequency. For example, an aircraft maneuvered for an approach and landing on runway 11 without talking on Tower or UNICOM frequency. Tower prevented an accident, NMAC or incursion by preventing other traffic from landing on the active runway, 29, which is opposite traffic.

There were Zero NMAC/Loss of separation incidents.

Another safety improvement was fewer and less dangerous incursion events. Tower prevented an accident when it instructed two planes to go-around after a person unknowingly walked onto the approach end of Runway 2. Tower was also responsible for pointing out the biker during the Airshow and coordinating airplane traffic around balloon flights that were not on frequency.

There was an increase in Vortex SMS reporting in 2017, which can be associated with:

- More observers on the field, including Tower control personnel with an elevated 360-degree observation of the airport.
- Staff members more adept at using the SMS program.
- More staff "buy-in" with the SMS program.

OPERATIONS AND MAINTENANCE AFFECTS FROM TOWER OPERATIONS | *Mark Covey, OM Staff Ramp Lead*

It is the observation of the Operations and Maintenance Staff that the implementation of the ATC Tower at KTRK provided an overall safer operational environment and more streamlined, fluid ramp operations this summer.

As part of the transition, we developed an efficient new ground movement protocol. GA aircraft were taxied to transient parking via taxiways L and C, whereas itinerant, short stay aircraft were taxied to D, E, F, and larger RON (Remain Over Night) were taxied to the ramp via M & G. Large, long stay (4 days or longer) were parked in the runway 11 run-up. Rotor aircraft were staged at the jet amp to provide added safety on the ramp. All aircraft except GA were instructed to hold short of the ramp until they spoke to the FBO via UNICOM frequency. This helped the Operations Team immensely to accommodate the needs of all customers while keeping operational control of all facets of the airfield. Maintaining full operational control of the ramp was not only essential given the large uptick in air traffic, but also unprecedented.

The Tower provided a much better flow to arriving and departing aircraft. In most cases, IFR departure clearances were obtained while ground services were being performed, allowing for quicker turn-around times. At times when Oakland Center was saturated with IFR traffic and a clearance was not readily available, the "old" large runway 29 run-up area was utilized as the "IFR release waiting area," accommodating 4-5 aircraft and allowing VFR traffic to taxi and depart without delay. When there was congestion around taxiway hotspots, ground controllers could taxi aircraft away from the congestion so that a smooth flow was maintained.

FBO/Operations personnel were able to devote greater attention to the customer in front of them. Staff could focus on the task at hand without having to continuously monitor air and ground action. Staff was also able to provide proper attention and time to explain arrival, departure and noise abatement procedures, as well as detailing local attractions, providing directions and insight into local amenities.

Safety was greatly enhanced by having a service never before offered: professional Air Traffic Controllers with eyes and ears on the airspace and ground with the ability to provide landing clearances based on aircraft type, wind direction and airspace traffic. Prior to this, pilots sequenced themselves based on wind direction and "see and avoid" flying on a CTAF frequency. Soaring and skydiving operations were safely integrated into the system by positive contact with the Tower during their operations. Gone were the concerns that two aircraft would attempt to land on opposing runway ends or that a plane would make right traffic for Runway 29 through the glider port/skydiving area.

During the initial onset of Tower operation, the learning curve was a bit steep. Through weekly meetings with senior airport staff, the Tower manager and airport operations lead, as well direct lines of communication between the airport and Tower, efficiency was attained and safety greatly enhanced, while lowering the stress levels of FBO/Operations staff.

TOWER REPORT SUMMARY

It is staff's opinion from the aeronautical perspective, the initial seasonal test period of the Tower was successful. The pilot community has expressed support for the Tower in every measurable way. The tenants that provide aeronautical services to itinerate and homebased aviators agree the Tower is a requisite part of the airport infrastructure given the current levels of activity. These two groups have voiced overwhelming support of the Tower for its ability to enhance safety and reduce latent confusion. These groups have expressed support for the Tower for its ability to conduct orderly operations of an aeronautical ecosystem comprised of a diverse group of aeronautical users – skydivers, gliders, ultralights, business jets, small planes, scheduled charter operators and training aircraft. The Tower staff feel the initial period was successful. The staff members of the airport feel the Tower enhanced safety and reduced the confusion and congestion in ground operations, parking, and services. UNICOM staff experienced a more structured and manageable peak period flow. Safety was measurably enhanced in most areas with a dramatic removal of near mid-air collisions and loss of separation threats. "Relief" was the most common term used to express the feelings of the pilot community. I for one felt a deep sense of security knowing that a professional air traffic controller was managing the airspace and ground movement while the airport had the ability to influence aircraft through this process.

It is also staff's opinion from a community perspective that the current data is inconclusive and does not support the concept that a Tower dramatically reduces community annoyance at this phase. The assumptions that were made by Midwest ATC and staff prior to opening included the following:

1. **Additional route instruction to airborne aircraft from a Tower controller would ground track an aircraft on paths of lower residential overflight:** This assumption was false. There is not enough space given the volume of operations absent certified/published procedures to route

an aircraft free of all residential areas. Furthermore annoyance experienced by households underneath routine IFR flight paths lead to noise complaints implicating the Tower. Tower or no tower these areas will experience overflight.

2. **The Tower could control the overflight altitude of an aircraft to reduce low flights in and around neighborhoods adjacent to the airport:** This concept was successful for neighborhoods in Sierra Meadows and Northstar, but was eroded by aircraft making touch-and-go's and repetitive training flights. This concept was partially successful.
3. **The Tower could enhance utilization of the preferred runway 02/20:** This concept was unsuccessful based on the data we have presently. Midwest ATC can improve their method of clearance delivery to enhance utilization of this runway. However, the reality of the airport operation is that Soar Truckee and Skydive Truckee Tahoe have approximately 8,000 annual operations on Runway 20. It is improper, infeasible, and unsafe to have head-to-head opposing operations on a single runway. By mid-summer it was apparent that Midwest ATC had significant reservation for supporting this opposing operational configuration. While this is a fact, staff did feel Midwest, when safe and appropriate, tried to clear suitable small aircraft to Runway 02 and 20 for departure.
4. **The Tower would use known waypoints and noise abatement procedures to route aircraft in community friendly ways**: This was accomplished, however during periods of peak traffic the tower focused on separating aircraft first and foremost. These times coincide with the community's threshold for annoyance which make the busy periods difficult to mitigate from an annoyance perspective using the Control Tower as the primary implement due to the sheer volume of traffic during peak cycles.
5. **The business of running a Tower is complicated**: The Tower was not open long enough to master the art of controlling aircraft at Truckee Tahoe Airport. It is staff's opinion that with additional training and experience the Tower staff will improve in every way. Additional direction from the airport is required. With these two additions the Tower will improve its ability to control the path of a VFR aircraft.
6. **Surveillance (ADS-B) and charted procedure development are essential to meet our goals**: After this Tower test period staff is more confident that obtaining surveillance and creating new charted visual and IFR procedures, coordinated with Oakland Center, could have substantial noise reduction benefits to our community as well as enhancing safety.

In Summary

1. The year one deliverables were achieved. The year one goals related to safety were achieved. The year one annoyance reduction goals have not been fully achieved yet. There is still more to do.
2. From an aeronautical perspective the Tower was successful for its ability to reduce latent safety threats and enhance orderly flow of aircraft while separating desperate aeronautical uses.
3. Tower operation requires constant staff input and support. Additional improvement on the community annoyance side are possible with additional Tower staff training, airfield configuration, procedure development, and surveillance.
4. The Truckee Tahoe Airport is constrained by terrain which focuses aircraft in certain areas. A VFR (Visual Flight Rules) Tower, due to its limitations, is not the most effective tool by its self for controlling an aircraft's ground track absent published procedures and surveillance. The

Tower is effective in issuing reporting points, altitude restrictions, calling pattern turns, and other noise and annoyance measures.

5. It is staff's recommendation to operating the Tower for the winter 2017-2018, as well as the summer season 2018 to build on the success of the summer of 2017 and institute improvements and enhancements to our noise abatement programs.

WHAT'S NEXT: The Board is considering two Tower operational periods. The period from December 15, 2017 to February 28, 2018 and the summer of 2018 (June 1 to September 19, 2018. If approved by the Board staff will prepare for this period by:

1. Establishing ground communications for the Tower.
2. Meeting with Oakland Center to secure operational agreements.
3. Developing protocol for Midwest ATC operations.
4. Completing pilot outreach.
5. Completing public outreach.
6. Explore additional ways the Tower may control aircraft ground tracks.
7. Make enhancements to the MLAT flight tracking system to assist the Tower in understanding the location of aircraft to reduce annoyance.
8. Audit pilot outreach channels and information to better support the goals of the Tower.

If the Board decides to operate the Tower, Staff will complete another Tower performance assessment report following the winter operating period.

FISCAL IMPACT: $145,000 for the next operational period from December 15, 2017 to February 28, 2018. Additionally a cost of up to $9,000 may be incurred to bring communications to the Tower. Staff does not have a quote from Midwest ATC on the summer 2018 season. If the Board decides to move forward, staff will procure a quote and return for Board approval.

PUBLIC COMMUNICATIONS: All channels of communication available to the District have been used to complete both the public and pilot outreach functions.

SAMPLE MOTION(S): I move to authorize the General Manager to enter into negotiations with Midwest ATC to secure service of the Tower for the period from December 15, 2017 through February 28, 2018 and summer of 2018 (June 1 through September 19, 2018).

ATTACHMENTS:

Tower Deliverables Staff Report

Tower Project Fact Sheet

Freshtracks Communications Temporary Tower Program Assessment

AGENDA ITEM: 14

TRUCKEE TAHOE AIRPORT DISTRICT

BOARD OF DIRECTOR STAFF REPORT

AGENDA TITLE: **Seasonal Control Tower Update**

MEETING DATE: **January 25, 2017**

PREPARED BY: **Hardy S. Bullock Director of Aviation & Community Services**

RECOMMENDED ACTION: No action required, advisory report of progress.

DISCUSSION: At the February 2, 2016 Board of Directors annual offsite workshop, the Board discussed the potential benefits and unintended consequences of installing a temporary seasonal, non-federally funded airport control tower (tower). Staff presented the following information:

- Request for Information closed January 5, 2016. Four vendors replied with cost and services to provide seasonal temporary tower facilities and staffing at KTRK.
- Rough order of magnitude cost ranges from $400K – 600K for tower service from MAY 1 – OCT 31. The FY2017 Budget includes $500,000.
- Four days at Air Traffic Control Association meetings, East Hampton Airport, and discussions with operators, tower providers, and FAA representatives resulted in the following findings:
    - No data indicates additional operations from tower.
    - Tower enhances safety.
    - Tower may or may not enhance capacity.
    - Tower is responsible for directing pilots to use Noise Abatement Procedures and local procedures based on Memorandum of Understanding with District.
    - Oakland Center will work directly with tower to place aircraft as directed by airport congruent with safety.
    - Utilization of a tower is the decision of the airport operator not the FAA.

- Mixed aeronautical uses benefit from the control, oversight, and direction of a tower controller although some operations may see greater restriction and reduced tempo.

Following a comprehensive discussion by the Board, staff was directed to develop a complement of information to support an informed decision regarding a tower. This information included pricing, availability, and a detailed description of deliverables achieved through the performance of a tower service contract in the inception year (2016) and subsequent years.

At the March 23, 2016 Board meeting, Staff presented comprehensive information regarding a tower. The Board authorized Staff to implement a tower for operation within the 2017 summer operating period. Additional discussions regarding the tower occurred at the budget workshop and the Board meeting where the final budget was adopted.

During the summer of 2016, Staff and the selected services provider, Midwest ATC conducted site survey activities and completed the Safety Risk Management Determination which outlined the proper airfield site placement and any potential risks associated with the final site selection. During the fall of 2016 Staff and Midwest ATC completed selection and sourcing of the supporting structures, final site diagrams, and FAA authorization. Additional meetings with Oakland Center, the FAA controlling authority for aircraft in flight at Truckee Tahoe Airport, yielded supportive results.

The next steps for the project include:

1. Meeting with Nevada County Building Department and the Nevada County Planning Department for permits and authorization of construction of a temporary aerial structure.
2. Receive engineering plans, specifications for a temporary tower.
3. Saw cut and pour reinforced concrete for tower pad.
4. Run electrical service.
5. Run communication service.
6. Configure secured network infrastructure for flight tracking display.
7. Configure certified Automated Weather Observation System.
8. Secure containers, paint and crane in place.
9. Complete external stairs.
10. Develop Letter of Agreement between Oakland Center and KTRK.
11. Develop Letter of Agreement between KTRK and Midwest ATC for community annoyance reduction activity and protocol.
12. Develop Letter of Agreement between KTRK and Midwest ATC outlining the movement control area.
13. Implement the Temporary Seasonal Control Tower Outreach Plan to the local community and the wider airport/pilot community.
14. Amend the Airport Facility Directory and Airport 5010 Date package.
15. Apply for the Federal Rulemaking to establish a Class D Surface Area at KTRK.
16. Receive Initial Certification by the FAA.

Based on the current timeline for installation, some of the products, services, and deliverables of an airport control tower may not be available to the District until year two or even year three of the contract. Listed below in (blue) are some of the general responsibilities of a control tower. These apply to any installation scenario and will be present in all deployment timelines. Below in (green) is a list of deliverables associated with a year one (2017), year two (2018), and year three (2019) tower deployment.

General Responsibilities of an Airport Traffic Control Tower

Advisory Circular 90-938

Maintain familiarity with the positions, equipment, and duties required to operate a Non-Federal Airport Control Tower (NFCT).

Ensure operational continuity during the transfer of position responsibility.

Issue pertinent weather and airport information via SIGMETs, AIRMETs, PIREPS, and NOTAMs, etc.

Maintain training records for each air traffic control specialist in the facility.

Ensure that air traffic control services are provided in a safe, orderly, and efficient manner.

Ensure that each air traffic control specialist in the NFCT manager's employ is properly qualified and current in the application of air traffic control services.

Maintain a comprehensive pilot education program that includes pilot/controller forums to discuss and or clarify local procedures and airspace matters.

Ensure that voice recorders and other essential equipment are checked for suitable operation at the beginning of each shift.

Ensure that voice recorder tapes are retained for a minimum of 45 days, excluding tapes containing information pertaining to accidents/incidents. Tapes pertinent to accidents or incidents should be retained as detailed in FAA Order 8020.16, Chapter 7, Paragraph 101.

Ensure a daily record of air traffic operations log is maintained in the operational quarters.

EMERGENCY OPERATIONS AND HAZARDOUS CONDITIONS.

To ensure that emergency operations (for example accidents/incidents) data are documented, it is essential for NFCT air traffic managers to record and report all accidents/incidents in the same manner as would FAA-operated ATCTs (in accordance with FAA Order 8020.16 and 8020.11). The purpose of such reports and records is to provide essential information for follow-up investigations and help in the development of new procedures and regulations. The NFCT air traffic managers, or a designated representative, upon becoming aware of conditions that are hazardous to a safe operation, should immediately notify airport management to restrict or suspend operations as necessary until the necessary corrections are made.

Year One (2017) Deliverable of a Non-Federal Airport Control Tower (NFCT)

Tower Services available from 6:30 AM to 8 PM or at the discretion of the District.

Positive tower control of aircraft course and altitude within 4.3 nautical miles (5 SM) of the airport.

Separation of ground traffic up to the non-movement area, roughly the ramp area and hangar rows.

Separation of specialized aviation services such as skydiving, glider, and flight training activity.

Separation of ground vehicles and aircraft in the movement areas such as taxiways and runways.

Support of curfew and calm wind runway utilization.

Support of policy directives such as no touch and gos, no repeat operations, no practice approaches.

Issuance/clearance delivery of Visual Flight Rules and Instrument Flight Rules arrival and departure procedures.

Enhance safety during periods of airfield construction.

Year Two (2018) Deliverable of a Non-Federal Airport Control Tower (NFCT)

Memorandum of Agreement with Oakland Center for Standard Instrument Departure and Standard Terminal Arrival Routes.

Preferred Runway Program.

Visual Flight Procedures or enhanced use of special procedures to shift traffic toward areas of low residential density. *May require enhanced surveillance*

Year Three (2019) Deliverable of a Non-Federal Airport Control Tower (NFCT)

Visual Flight Procedures.

Next Gen products such as required or performance based navigational procedures.

Surveillance products such as ADSB separation, enhanced clearance delivery and airspace efficiency/ optimization.

FISCAL IMPACT: The cost associated with the deployment of an airport control tower is significant. Staff estimates the following cost:

Year One Cost Estimates	
Tower rental, mobilization, demobilization	$148,500
Tower operation from June 15, 2016 to September 15, 2016	$234,500
CONTRACTOR SUBTOTAL	$383,000
Design, Engineering, infrastructure	$25,000
Consultation legal, aviation	$10,000
IT Engineering and surveillance	$6,000
Public outreach printing, advertising	$1,000
Pilot outreach printing, advertising	$1,500
Unknown (2.5%)	$10,663
DISTRICT DIRECT COST SUBTOTAL	$54,163
TOTAL	**$437,163**

PUBLIC COMMUNICATIONS: Considerable public communication is necessary for successful implementation. First and Foremost would be the pilot data publications required to inform the community of pilot users. These include the Airport Facility Directory FAA 5010, multiple data aggregator sites such as AirNav, etc. Additional channels include direct meetings with local pilots and special meetings with routine users such as Surf Air, Net Jets, etc. The local community will be informed through our website, e-blast, Sierra Sun, and KTKE Radio presence. The attached timeline outlines the communication effort that is currently underway.

ATTACHMENTS:

1. Timeline
2. Photos
3. Communications Timeline (Marc Lamb)

Options for TTAD Facilities and Resources to Reduce Community Annoyance

Project Fact Sheet

Objective: Discuss the temporary seasonal tower success measurement metrics. Staff will also review other options to reduce noise and annoyance such as Runway 02/20 modifications as outlined in Master Plan as well as leveraging the use of Hangar A9 and Executive Hangars as options to reduce community annoyance by reducing repositioning.

Temporary Tower

- Staff proposes to measure and monitor the following tower operating metrics during the summer operational period:
    1. Route aircraft to the runway using local, pre-published landmarks such as *Landfill, Bypass, Scales, Balloon Track, and Gateway.*(Flight Tracking Data)
    2. Request the aircraft maintain a minimum altitude during approach, *7500 MSL.* (Flight Tracking Data)
    3. Sequence arriving aircraft to reduce go-arounds, holds, and delays which extend flight time and lengthen community noise exposure.(Pilot Surveys)
    4. Assign a preferred runway for departure.(Flight Track/Camera Data)
    5. Assign a preferred departure procedure.(Flight Tracking Data)
    6. Assign a direction and rough course of flight congruent with published noise abatement procedures.(Flight Tracking Data & Community Surveys)
    7. Reduce incursions, loss of separation, communication errors, and conflicts. (Safety Management System Data).
    8. We will track comments including the type of comments received and the issues raised for comparison with and without Control Tower.
- In October of 2017, Staff will analyze and compare track data, camera data, surveys, comments, pilot information and other data to compare the summer 2017 experience from previous summer peak periods to gain insight as to tower performance.

Runway Modifications

- Longer runways allow a wider array of aircraft utilization.

Temporary Tower Program Assessment

Noise Commenter Opinion

Truckee Tahoe Airport District

October 13, 2017

Submitted by:

Freshtracks Communications

Creating Paths Forward

www.fresh-tracks.org

Overview

As Truckee Tahoe Airport District (TTAD) staff and Board of Directors evaluate the 2017 Temporary Air Traffic Control Tower Program (Tower Program) for effectiveness, impact on aviation safety and community noise and annoyance, public opinion is one criteria that will be used to evaluate the success of the Program.

To help staff and Board understand the community opinions surrounding the Tower Program, Freshtracks conducted a mini-outreach effort in September 2017. The goal of this mini-outreach effort was to gather and summarize community opinions of the Tower Program.

Specifically, the outreach focused on the members of the public who commented on noise and annoyance in both the summer of 2016 and 2017 to get feedback on any perceived changes since the inception of the Tower Program, as well as to encourage those who have commented on noise and annoyance to attend and provide comment at the October, 25, 2017 TTAD Board meeting.

Mini-Outreach Methodology

Commenter Phone Survey

For commenters who contacted the Airport in both 2016 summer months and 2017 summer months, Freshtracks conducted a brief phone survey to assess their opinions about the Tower Program.

Freshtracks contacted **57** community members who submitted noise and annoyance comments in both 2016 and 2017. Of those, **28** responded to the survey questions, in person, over the phone.

Direct Phone Outreach to All Commenters

Beyond those contacted for the survey, Freshtracks directly contacted the remaining **82** additional noise commenters from the summer of 2017 to invite them to the October 2017 Board of Directors discussion of the Tower Program. If staff did not reach a person, they left a voicemail with the information about the meeting.

Summary of Findings

Out of the 28 survey respondents, only one person felt that the tower helped with noise and annoyance this year. See attached spreadsheet for summary of all comments. While some were hopeful it might have, most felt it either made no difference or made things worse – saying they felt the tower actually directed traffic over their home.

Most respondents were receptive to continued use of the tower if it made more improvements to noise and annoyance next year, but some of those wanted to see significant, quantifiable improvements.

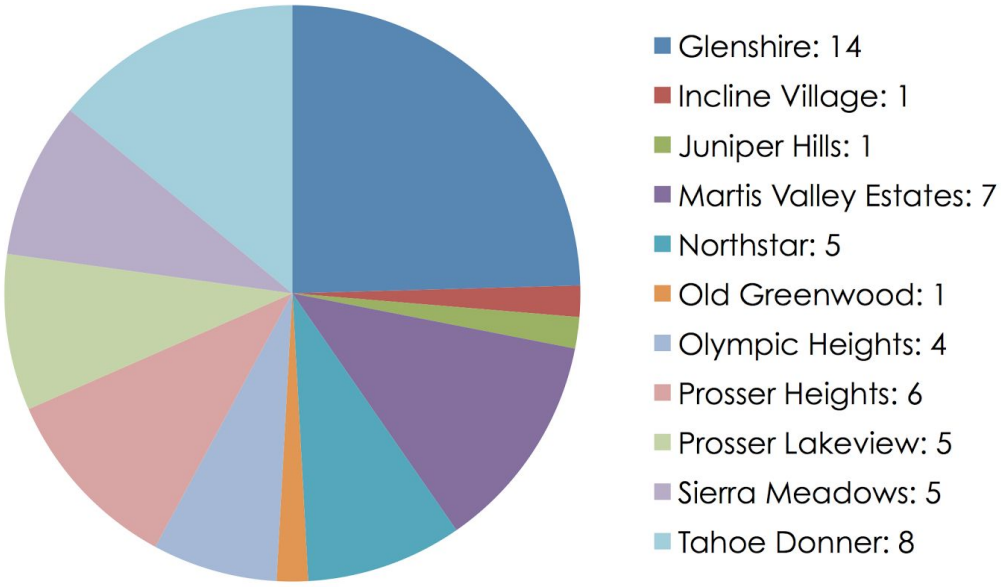
When asked if they supported the tower for safety and not noise, many struggled with the question, feeling they had to say they supported safety, but still prioritized noise and annoyance.

In general, those who chose to speak with Freshtracks and take the survey were appreciative of the opportunity to discuss the matter and to be informed of the October 25 Board meeting.

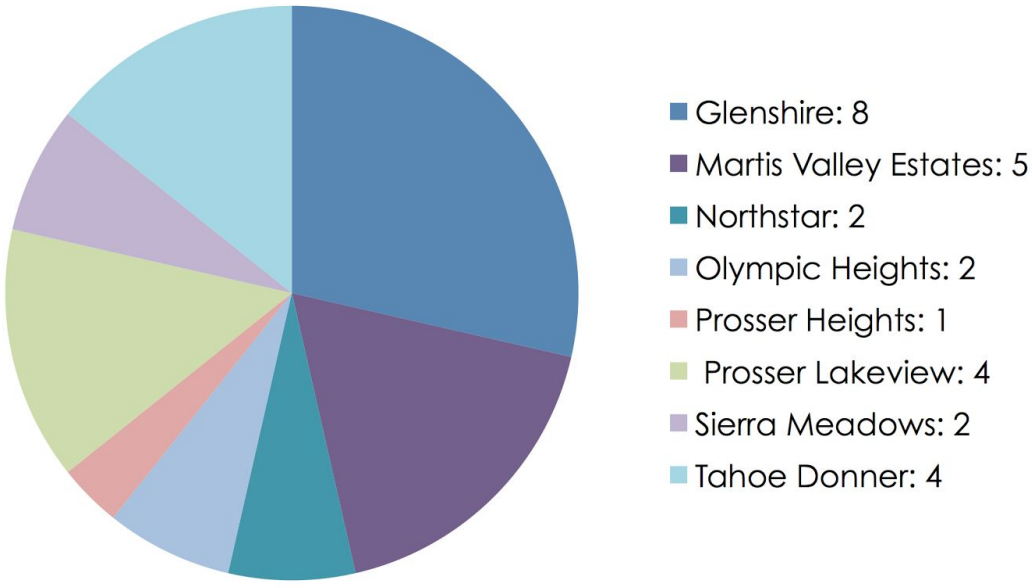
Neighborhoods Surveyed

Below is a breakdown of those surveyed by neighborhood, and those who responded by neighborhood.

Contacted: 57



Responded: 28



Temporary Tower Program Evaluation

Noise Commenter Survey Responses

October 13, 2017

Question	Answered Yes	Answered No	Answered Unsure/Mixed
Question 1: Understanding that air traffic operations increased from 2016 to 2017, following national trends, do you think the tower has affected noise or annoyance?	**1** *Summary Response: I only complained once this season*	**17** *Summary Response: It's made it worse, sending traffic right over my house, more circling, increased traffic, increased jets, didn't meet expectations, more traffic over Prosser*	**10** *Summary Response: It has changed the type of noise (more jets), not sure, I hope the tower made a difference, I don't know*
Question 2: If staff finds further improvements to the Tower Program could be made that could potentially lessen noise and annoyance next year, do you think it is worth pursuing in 2018?	**20** *Summary Response: Don't have a choice, anything that can help, it would need to make a big difference, it has to make an immediate difference, if you can prove its effectiveness*	**3** *Summary Response: It's making things worse, tower is part of the problem, tower is increasing traffic, Airport won't discipline any pilots so they won't change*	**5** *Summary Response: Don't think it will make a difference but support it if it does, if it really can improve my neighborhood – otherwise use funding for other noise abatement, yes, but my gut feeling is the tower is sending traffic over my home*
Question 3: If evaluation of the tower empirically shows an improvement in Airport and aviation safety, do you think it is worth pursuing in 2018 even if it doesn't improve noise and annoyance?	**13** *Summary Response: Yes, but my biggest concern is noise, yes but pilots need to take responsibility for noise, yes but I'm not aware of major safety issues or concerns, have to say yes because any reasonable person has to be in favor of safety*	**7** *Summary Response: No, noise is my chief concern/complaint, I don't buy it, just a waste, I think it will bring more traffic, while safety is a priority if you can't control noise what's the point? Safety is the pilot's responsibility*	**8** *Summary Response: No opinion, nobody wants to be unsafe but does safety bring more traffic? Need radar in conjunction with tower, safety is not up to the public, not aware of a safety issues at Airport that needs to be addressed*

*** Survey Participants:** *A total of* **57** *individuals who submitted comments in 2016 + 2017 were contacted. Of those 57 individuals,* **28** *responded and participated in the phone survey.*

About Freshtracks

Freshtracks is a Sierra-based consulting firm specializing in facilitation, strategic planning, public outreach and information services for mission-driven and service organizations. For more than 15 years, Freshtracks has been helping nonprofit, government entities and communities create and implement compelling plans, public information and outreach campaigns that garner participation and strengthen understanding of complex planning and policy issues. From branding public mental health campaigns to conducting community surveys for tourism priorities to creating brochures for Lake Tahoe beach access issues, Freshtracks has the team to turn highly technical, complicated information into easy-to-understand materials that improve participation and trust in controversial or complex planning processes. For more information about Freshtracks to : www.fresh-tracks.org.