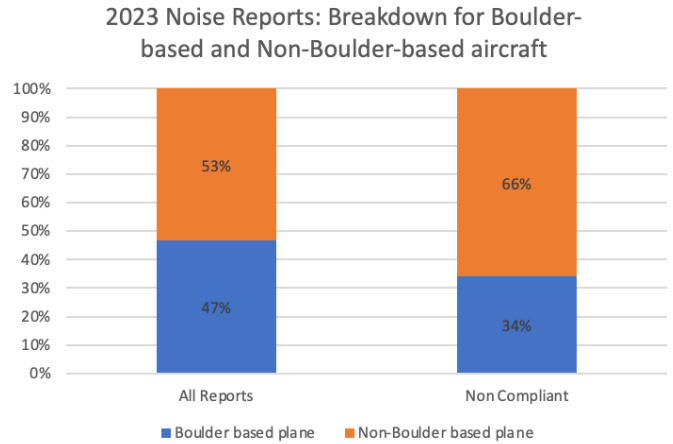


Leading the Way to Quieter Skies: Boulder Pilots Are Operating and Investing to Minimize Airplane Noise

Pilots at the Boulder Municipal Airport have long been committed to being good neighbors, seeking to minimize noise impacts through high rates of adherence to noise abatement guidelines, adapting flight patterns, and investing in new noise-reducing technologies.

Although Boulder-based pilots likely account for the overwhelming majority of flights at the airport (exact data are not yet available), in 2023 they accounted for less than 50% of all community noise reports, and only for one third of noise reports associated with flights that did not fully conform to the noise abatement guidelines.

Figure 1: More than half of all community noise reports and two thirds of all noise reports associated with non-compliant flights are caused by non-Boulder based aircraft.



Champions of Noise Abatement

For more than 30 years, Boulder-based pilots have taken the initiative to partner with the City of Boulder to develop and implement a voluntary noise abatement program, which is today one of the tightest and most restrictive programs of its kind in the country. It encourages pilots to:

- Avoid densely populated areas.
- Maintain minimum altitudes when flying over the populated areas of the city.
- Minimize flights during night-time hours.
- Restrict "Touch and Go" operations between 5pm and 8am.
- Use low power settings whenever safely possible.

Boulder-based pilots are making great efforts to fully comply with this program. Airport management analyzes each community noise report to determine whether a pilot might have been out of compliance in any way. Most flights are fully compliant and do not lead to any reports at all. Those that do result in a community noise report show that Boulder-based pilots have become much more compliant than transient pilots who may not be as familiar with the Boulder noise abatement guidelines.

The noise abatement program and the fact that the Boulder airport has a relatively short runway without an instrument approach (which means that the airport can only be used in fair weather conditions) have helped ensure that there is only minimal jet traffic at the Boulder airport. Jets are many times louder than other aircraft and the absence of jets keeps noise levels well below those experienced at other airports.

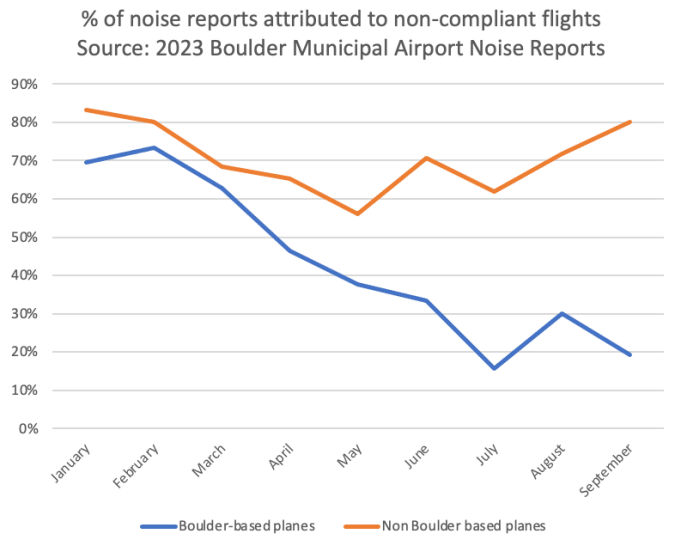


Figure 2: Throughout 2023, Boulder pilots have drastically improved compliance with noise abatement guidelines. Source: Boulder Municipal Airport Noise Log data analysis (published reports through September 2023)

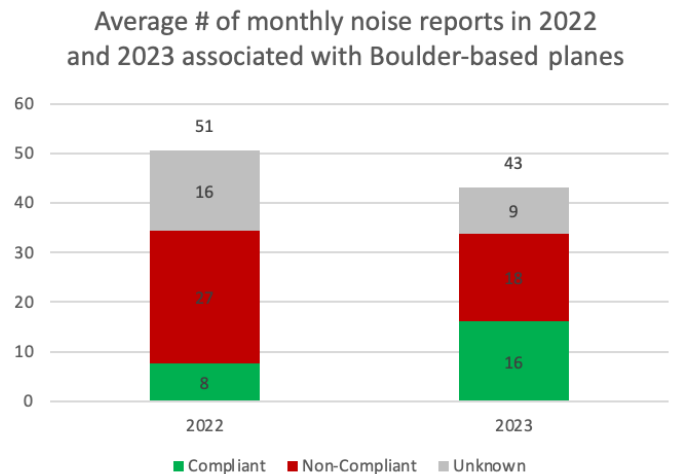


Figure 3: From 2022 to 2023 the monthly average number of noise reports attributed to Boulder-based planes declined by 15% (from 51 to 43) and the number of non-compliant flights declined by 35% (from 27 to 18). Source: Boulder Municipal Airport Noise Log data analysis (based on published reports through September 2023)

Above and Beyond the Published Noise Abatement Guidelines

Boulder pilots do even more than to adhere to the noise abatement program. Consider the following examples and results.

The two glider tow plane operators at the Boulder airport, Mile High Gliding, and the Soaring Society of Boulder, have jointly implemented the "Tow-Friendly Program" based on a detailed analysis of all community noise reports. The results are compelling:

- Gliders and tow planes account for approx. one third of all flight operations at the Boulder airport, but for only a small fraction of community noise reports: in 2022, only 11% of noise reports were specific to gliders or tow planes, and this percentage dropped to only 7% in 2023.

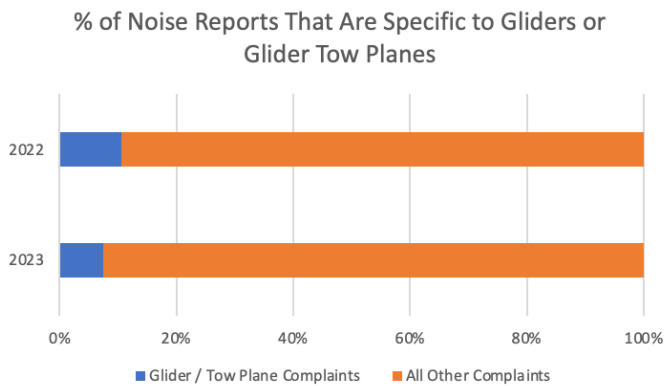


Figure 4: In 2023, gliders and/or tow planes only accounted for 7% of all noise reports, a reduction of almost 40% from 2022. Source: Boulder Municipal Airport Noise Log data analysis (based on published reports through September 2023)

- Even more significant, tow plane pilots are near 100% compliant with the noise abatement guidelines. In 2022, only 7 of the more than 6,000 tow plane flight operations showed a small variation from the guidelines. From January through September of 2023, there have so far been only 2 non-compliant tow plane flights. In other words: in 2022, only 1.7% of noise reports regarding non-compliant flights were caused by tow planes; in 2023, this percentage dropped further to 0.4%.

The Soaring Society of Boulder has gone even further by investing heavily in the latest technologies that additionally reduce noise impacts:

- Almost half of private member-owned gliders have been upgraded to self-launching sailplanes that do not require a separate tow plane to get airborne. There have not been any noise reports associated with such gliders.

¹ Source: <https://www.federalregister.gov/documents/2023/10/04/2023-21887/modernization-of-special-airworthiness-certification>

² Source: <https://www.easa.europa.eu/sites/default/files/dfu/TCDSN%20EASAA.644%20Issue%202.pdf>



Figure 5: Almost half of all privately-owned gliders at the Boulder airport have small fuel-efficient engines that are retracted once the glider is airborne. After launch, gliders typically fly in complete silence for many hours and often hundreds of miles, powered only by the sun and the wind.

- In 2023, one of the world's first fully electric self-launching gliders began operating at Boulder. More such gliders are on order.



Figure 6: This electric self-launching AS 34Me, serial number 5, one of the first in the world, began operating at the Boulder airport in 2023. It has a quiet electric motor, operates emissions-free, and can take off without assistance by a tow plane. The picture shows the glider prior to its inaugural flight at Williams, CA.

- The Soaring Society plans to upgrade its existing fleet of tow-planes to much quieter modern European manufactured Light Sport Aircraft as soon as the FAA allows such aircraft to be used for glider towing in the United States (this is anticipated with an early 2024 FAA update to rules regarding the use of light sport aircraft) ¹. The practical experience with such planes in Europe has shown that the use of such aircraft can dramatically reduce the noise impact on the surrounding communities.



Figure 7: The Soaring Society plans to invest in new modern Light Sport Aircraft (LSA) for glider towing, as seen here in Germany in one of the most densely populated areas in Europe. LSAs are many times quieter than traditional tow planes. FAA approval for glider towing in the United States is expected as early as 2024. The airplane pictured has a take-off noise level in the range of 62-71 db², an order of magnitude quieter than the traditional tow planes currently in operation.

Similar efforts to reduce noise are being made by Journeys Aviation, the local Fixed Base Operator (FBO) and the largest Boulder-based flight school.

- In 2023 Journeys began to operate two modern European-manufactured Light Sport Aircraft for flight training. These aircraft are much quieter than the traditional Cessnas in use by most flight schools across the country.



Figure 8: With a take-off noise rating of only 71db³, Journeys' two Pipistrel airplanes are several times quieter than typical training aircraft such as Cessna 172s which have a take-off noise rating of 78-85 db⁴ or Cessna 182s, which have a take-off noise rating of 81-88 db⁵.

³ Source: <https://www.easa.europa.eu/en/downloads/20782/en>

⁴ Source: <https://www.easa.europa.eu/en/downloads/8319/en>

⁵ Source: <https://www.easa.europa.eu/en/downloads/8317/en>

- Journeys also undertook major steps to ensure compliance with the noise abatement guidelines currently in place.
 - Implemented monthly discussions with CFIs regarding non-compliant flights
 - Contacted students and pilots of non-compliant flights to raise awareness
 - Encouraged avoiding touch and go operations at KBDU between 5pm and 8am
 - Developed a graphical representation of the common "pinch point" mistakes

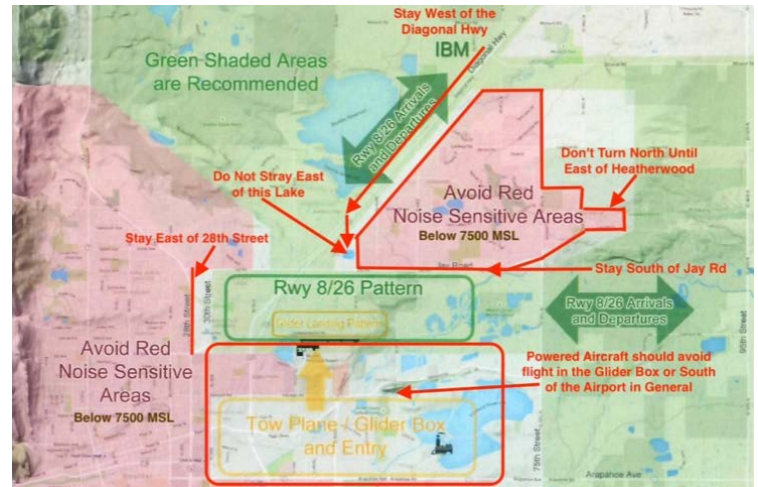


Figure 9: Map illustrating the Boulder noise abatement guidelines with specific instructions for pilots to avoid common mistakes and encourage full compliance.

These efforts have borne results that are reflected in the significant reduction in overall and non-compliant noise reports about Journeys Aviation aircraft over the past 19 months.

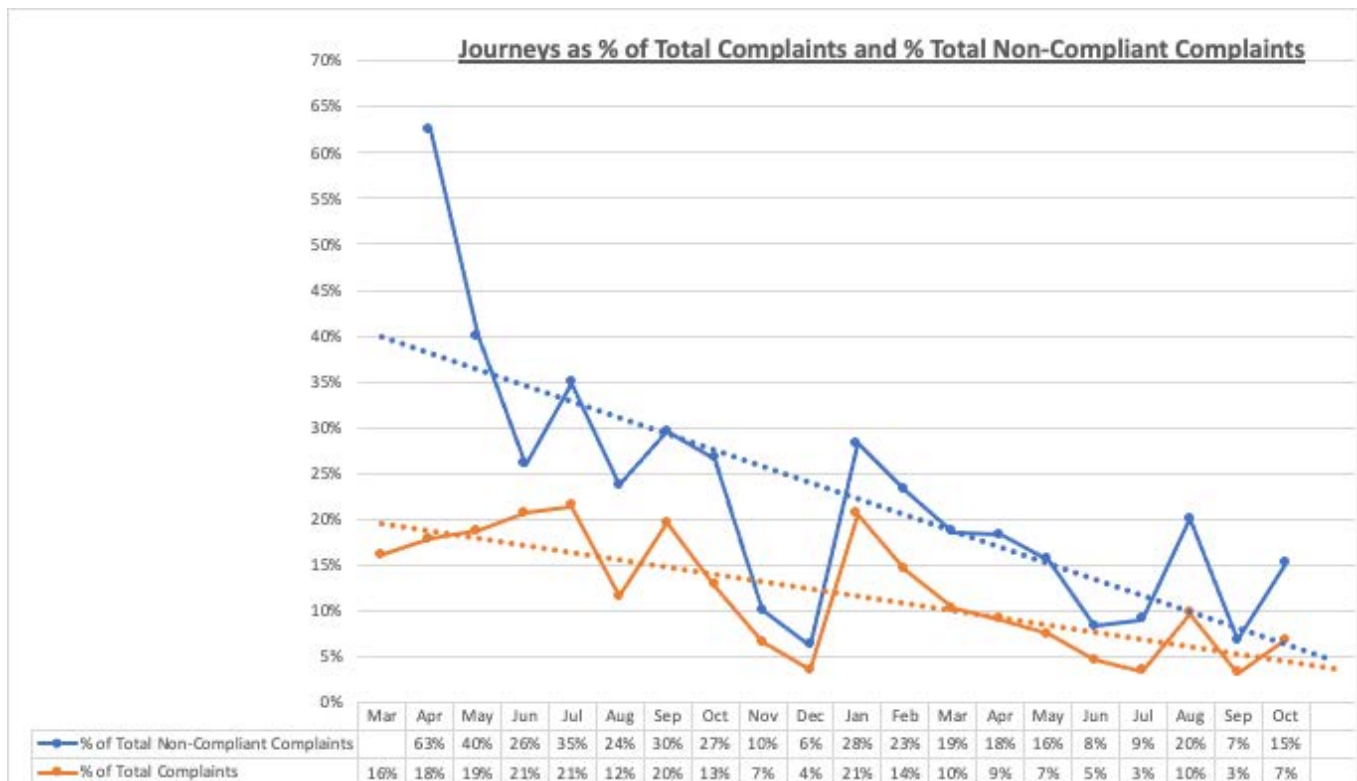


Figure 10: Journeys efforts to drive compliance are reflected in the monthly trend of noise reports, showing a drastic reduction in noise reports associated with Journeys' aircraft.

Calling on City Leadership to Support and Augment Pilot Noise Abatement Efforts

There are several specific opportunities to further reduce the impact of aircraft noise in the community that cannot be implemented by Boulder-based pilots on their own. To pursue these opportunities, Boulder pilots call on city and airport leadership to take the following actions:

- **Share location information associated with noise reports.** Most community noise reports are submitted anonymously and currently do not contain any information about the location from where the noise was observed. Adjusting the flight path is usually the easiest way for pilots to reduce noise impacts and pilots need to know where noise reports come from. To make noise reports more actionable we call on city leadership to collect and systematically share the location of noise reports.
- **Educate non-Boulder based aircraft operators.** Two thirds (66%) of all noise reports associated with non-compliant flights are caused by aircraft which are not based at Boulder. Data already gathered by the city show that major contributors are flight schools operating from nearby airports. We call on city leadership to reach out to these operators to spread the word of the Boulder Noise Abatement program and promote compliance with it. We also call on airport management to better communicate the noise abatement program to transient pilots through appropriate signage at the airport including at the departure end of each runway and in the refueling area.
- **Inform future residents about the existence of air traffic near the airport.** The city of Boulder is currently changing possible land uses near the airport from industrial and commercial to allow for the development of new residential areas. This is a great initiative to address the housing shortage. We call on city leadership to designate an Airport Influence Zone encompassing these areas so that future residents are aware of the pre-existing air traffic and can make well-informed housing decisions.
- **Enable, promote, and encourage the use of quiet modern aircraft for glider towing and flight training.** The FAA is currently gathering input for a new set of rules (MOSAIC) that apply to the use of Light Sport Aircraft in the United States. We call on city leadership to write to the FAA in support of such aircraft being allowed for glider towing⁶. Once permitted, the city can take additional steps to accelerate the fleet modernization through appropriate incentives.
- **Install electric outlets in the glider parking area at the airport.** The lack of electricity in the glider parking

area is currently a key impediment to the adoption of electric self-launching sailplanes. The electricity needs of such gliders are minuscule: less than \$1 of electricity is needed for such gliders to get airborne. We call on city leadership to install regular household-type 110V electric outlets such that electric gliders can be charged at the airport without having to be disassembled and trailered before and after each flight.

- **Remove the uncertainties around the future of the airport and create a predictable environment conducive to further investments.** The many questions regarding the future of the airport and its existing infrastructure have caused pilots and aircraft operators to think twice about investments into their fleets including noise-mitigation initiatives such as investing in mufflers, propellers, or quieter and more modern aircraft. We call on city leadership to remove these uncertainties and make investment decisions predictable.

Conclusion

Boulder pilots have long demonstrated that they are leading the way to minimize aircraft noise. Impressive results have already been achieved.

While it is impossible to eliminate all aircraft noise there are many more opportunities to further reduce it and to minimize its impact on the surrounding communities. Boulder pilots are ready and motivated to continue their efforts.

However, many of the additional opportunities cannot be achieved by Boulder-based pilots on their own. City leadership and action is needed to:

- Help pilots understand where noise reports originate so flight paths can be altered when safely possible;
- Educate non-Boulder based pilots about the noise abatement guidelines; and
- Establish an Airport Influence Zone to alert future neighbors to pre-existing air traffic.

Above all, only the city can create a predictable environment where aircraft operators are able and motivated to make substantial investments in new quieter aircraft and other technologies that can drastically reduce aircraft noise.

Antique Aircraft Association of Colorado
Vintage Aircraft Association of Colorado
Experimental Aircraft Association Chapter 1627
Soaring Society of Boulder
Boulder Airport Association
Boulder Aviation Association
Journeys Aviation, Inc.
Mile High Gliding

⁶ Instructions for providing feedback can be found here: <https://www.federalregister.gov/documents/2023/10/04/2023-21887/modernization-of-special-airworthiness-certification>. The comment period is open until January 22, 2024.