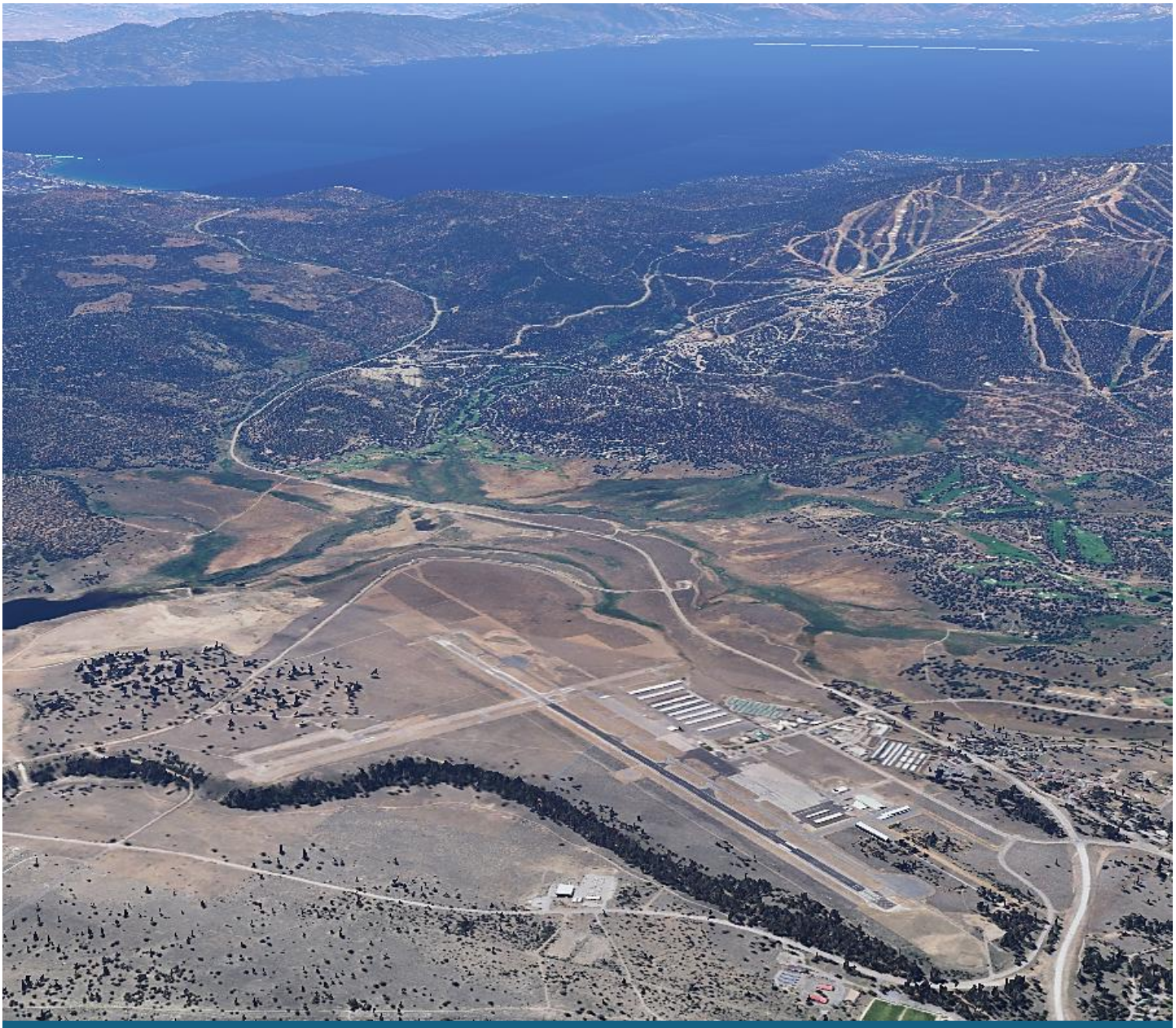

# Truckee Tahoe Airport District

## SAF Playbook

February 2025

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## Definitions

Blended SAF – In the context of KTRK, this represents approximately a 30% SAF/70% Jet-A blend, available 100% of the time as the only jet fuel offered

100LL – the most common low-lead aviation gasoline for non-jet (piston engine) applications

ACA - Association of California Airports

ASTM – ASTM International (formerly known as "American Society for Testing and Materials"), the global certification body for SAF and jet fuel standards

FBO – Fixed Base Operator, the primary provider of support services to general aviation users at an airport

GA – General Aviation

GHG – Greenhouse Gases

HEFA – Hydroprocessed Esters and Fatty Acids, a common pathway to produce synthetic (non-petroleum-based) hydrocarbons from fats and oils

Jet-A – Traditional fossil-derived jet fuel

KTRK – Truckee Tahoe Airport

MTOW - Max Take Off Weight

RFP – Request for Proposal

SAF – Sustainable Aviation Fuel

SFO – San Francisco international airport

SOX – Sulfur Oxides

# 1 Executive Summary

Aviation is one of the fastest growing and most difficult-to-decarbonize sectors globally. The industry recognizes that Sustainable Aviation Fuel (SAF) is the only option to materially decarbonize the sector in the near term. SAF must reach scale and price parity with fossil jet fuel to achieve industry decarbonization goals, including reaching net zero by 2050[1]. Private aviation and the coalition of 3,000 General Aviation (GA) airports in the US as part of the National Plan of Integrated Airport System (NPIAS) are uniquely positioned to act as an early catalyst in the transition away from fossil-based jet fuel by bolstering demand and adoption of SAF.

In 2022, Truckee Tahoe Airport (KTRK) made the strategic decision to take a leadership role in the SAF transition, and as of 2024 no longer offers fossil-only jet fuel. KTRK gradually established supply, distribution, and pricing for a blended SAF/Jet-A fuel product to achieve the transition. The purpose of this playbook is to document and share the strategy and success of the Truckee Tahoe Airport as the first airport in the United States to achieve blended-SAF-only sales. The playbook outlines how the airport navigated the change, adjusted as they learned, and the best practices that can enable replication and scale of a similar SAF transition.

[1] IATA – "Net zero 2050: sustainable aviation fuels" (2024)

# 2 Navigating Change

## 2.1 Call to Action

The aviation sector today accounts for roughly 3% of global emissions, with projections expected to reach upwards of 22% by 2050[2] if left unmitigated. In the race to decarbonize one of the most difficult to abate sectors, hydrogen fueled and electrified aircraft are expected to account for only 5% of emissions reductions by 2050[3], constrained by technology development timelines for applications beyond smaller aircraft and short-haul flights, the pace of aircraft fleet turnover, and the challenges of airport infrastructure overhaul. As aviation continues to grow, transitioning to SAF is the primary solution available to decarbonize aviation at scale over the coming decades.

Sustainable Aviation Fuel is molecularly similar fuel to petroleum, or fossil-based, jet fuel. It is a drop-in replacement with the ability to utilize existing infrastructure and power engines without any modification. SAF can be produced from a variety of non-fossil feedstocks that reduce greenhouse gas (GHG) emissions throughout the fuel lifecycle. As of this writing, ASTM regulation has approved 11 pathways to produce SAF[4]. All SAF is certified, blended, and recertified to ensure all safety specifications are met and requires additional testing beyond standard jet fuel. In achieving this ASTM certification, SAF is considered identical to fossil-derived jet fuel and thus can be used interchangeably up to a 50% blend (50% SAF and 50% fossil jet).

Today, over 95% of SAF production utilizes a technology called Hydroprocessed Esters and Fatty Acids (HEFA), a process very similar to typical petroleum jet fuel refining[5]. HEFA SAF is made from a variety of lipid-based feedstocks, which each have a different environmental impact. SAF can be made from vegetable oils, used cooking oil, agriculture residues, and other fats, oils, and greases that are pretreated, upgraded, and refined[6]. It is expected that over 85% of new SAF refineries built through 2028 will utilize this technology[7].

Today, SAF commonly yields GHG emissions reductions between 50-80%[8] but has the potential to reach up to 94%[9]. While primary emission reductions come from feedstocks, SAF also burns cleaner, reducing PM2.5 particulate emissions by up to 73%[10], Sulfur Oxides

[2] Dolsak and Prakask – "Different Approaches To Reducing Aviation Emissions: Review The Structure-Agency Debate In Climate Policy (2022)
[3] Danicort and Harris – "A Realistic Path To Net Zero Emissions For Commercial Aviation" (2023)
[4] IATA – "Disappointingly Slow Growth in SAF Production" (2024)
[5] Meijerink – "Technology Basics" (2023)
[6] AFDC – "Sustainable Aviation Fuel" (2024)
[7] IATA – "SAF Volumes Growing but Still Missing Opportunities" (2023)
[8] CARB – "Low Carbon Fuel Standard Reporting Tool Quarterly Summaries" (2024)
[9] AFDC – "Sustainable Aviation Fuel" (2024)
[10] Jasinski and Przysowa – "Evaluating the Impact of Using HEFA Fuel on the Particulate Matter Emissions from a Turbine Engine" (2024)

(SOX) by up to 37% at a 50% blend[11], and delivers air quality benefits to the communities surrounding airports.

As technology improves and cleaner feedstocks scale, reductions will continue to improve. SAF can be made with renewable energy, woody biomass, and other next-generation feedstocks; scaling technology and supporting research and development is critical[12]. While not all SAF is not created equal, all SAF has a decreased carbon intensity compared to petroleum-based fossil jet fuel.

***SAF IS THE PRIMARY SOLUTION***
*SAF offers a drop-in replacement to fossil jet fuel and can be used today in existing aircraft. Adoption of SAF may account for nearly 2/3rds of decarbonizing aviation by 2050 and will likely represent the primary low-carbon solution well beyond.*

Aircraft today are only certified to fly on a 50% SAF, 50% Jet-A blend[13] due to the aromatics in petroleum jet fuel that do not exist in SAF. While aromatics play a significant role in non-CO2 jet fuel emissions, they also are necessary to the physical and combustion properties of the overall mixture and play an integral role in maintaining engine seals and preventing leakage [14] . Synthetic, non-fossil-based aromatics called Synthetic Aromatic Kerosene (SAKs) can replace aromatics and efforts are already underway to safely lift the SAF blend limit using SAKs technology[15]. In 2023, a Virgin Atlantic transatlantic flight flew on the first 100% commercial SAF blend of 88% HEFA SAF and 12% SAKs[16]. Further, airplane and engine manufactures have committed to producing planes compatible with 100% SAF by 2030.

**The aviation sector has globally agreed upon SAF as the primary tool to decarbonize** without decreasing flight volume. The International Air Transport Association (IATA) projects that SAF will account for more than 65% of aviation decarbonization. Today, SAF faces a magnitude of barriers to scale. Primarily, the fuel is currently 3 to 5 times more expensive than fossil jet fuel, creating a difficult market for mass adoption by commercial aviation, which runs on particularly tight margins. Early adoption by customers that are more price elastic and committed to an industry transition to a sustainable future is critical to meeting aggressive decarbonization goals.

## 2.2 Building a Coalition and Strategic Vision

California's robust global economic presence, equivalent to the world's 5th largest economy, is anchored by the San Francisco Bay Area. The region represents a nexus of

[11] Gladstein, Neandross & Associates – "Sustainable Aviation Fuel: Greenhouse Gas Reductions from Bay Arewa Commercial Aircraft" (October 2020)
[12] Zahid, et al. – "Current outlook on sustainable feedstocks and processes for sustainable aviation fuel production" (2024)
[13] AFDC – "Sustainable Aviation Fuel" (2024)
[14] IATA – "SAF Handbook" (2024)
[15] IATA – "SAF Handbook" (2024)
[16] Virgin Atlantic – "Virgin Atlantic flies world's first 100% Sustainable Aviation Fuel flight from London Heathrow to New York JFK" (2023)

concentrated wealth that translates to high volumes of business and private aviation activity.

Historically, Truckee, California was a rail and logging community. In 1958, to bring in more tourism and in anticipation of the 1960 Olympics being held nearby, the Truckee Tahoe Airport District was established. The airport district initially used private and public funds to buy property and build a runway and terminal. Today, the airport district is funded by fuel sales, aircraft services and fees, building and hangar leases, local property taxes, and state and federal grants.

The community draws tourists to enjoy world class scenery, adventure, and the beautiful Lake Tahoe. Nestled about 200 miles northeast of Silicon Valley, the airport primarily services business and private aviation customers. In recent years, Truckee has seen an influx of affluent buyers from the San Francisco Bay Area in search of luxury mountain properties, adding to the property tax base that in part funds the airport district.

The North Lake Tahoe area, including Truckee, is an environmentally aware region. The Truckee Tahoe Airport District, with its origins in supporting private and business aviation, recognizes the importance of reducing GHG emissions to preserve the natural environment of the region. In 2021, the Airport District was a founding member in the Climate Transformation Alliance, a regional public-private partnership with a vision for carbon neutrality of the community by 2045.

In 2022, the Airport District board and leadership began developing a multi-year strategic plan for the first time. During the strategic planning process, they identified sustainability as a key pillar of the strategy, anchored in their shared vision of carbon neutrality. With the completion of the Airport District strategic plan in mid-2023, **implementing SAF was identified as an impactful and relatively straightforward solution for the airport to pursue to best serve the entire community, aligned to their strategy**. Globally and at individual airports, fuel burn is typically the primary source of carbon emissions, and the industry has already identified that SAF can have the largest impact in greenhouse gas reduction.

***THE VALUE OF A STRATEGIC PLAN.***
*The Truckee Airport is a values-driven airport. To make sure these values are implemented, the Board developed a Strategic Plan which included environmental stewardship. Once this was written into the plan, the decision to prioritize the transition to SAF was clear.*

Establishing environmental values and a SAF strategy in the airport's strategic plan has simplified decision-making during the SAF transition and empowered the management team to be responsive to feedback and emergent challenges. Airport staff were able to lean on the strategic plan to ensure the effort was prioritized and progressed as intended. Explicit strategic alignment of the community, airport staff, and the elected board has proven an asset in gradually transitioning operations to only provide a blended SAF product. Even with diverse perspectives represented on the board, there is shared support for SAF, whether rooted in strong environmental values or advocacy for tiered or progressive pricing for those who have the means.

Truckee is leading the aviation industry by prioritizing SAF adoption and positioning the airport for long-term success in a transitioning sector while maintaining operational excellence and financial viability. As SAF scales globally and in the US, state policy spreads, and investment continues, GA airports will be able to utilize a growing network of supply to transition to SAF at increasing blends. The SAF transition is a business-driven approach; adoption prepares airports for future regulations and market demands and gives airports with SAF a competitive edge as the voluntary and involuntary markets shift to domestic sustainable solutions.

## 2.3 Understanding Comparative Advantage

While the strategic plan provided alignment and buy-in for the SAF transition at KTRK, their access to supply, favorable policy, and ownership of the airport's fixed-base operator (FBO) allowed for streamlined deployment. These advantages, along with the operational simplicity of integrating SAF into existing process and infrastructure, are not unique to KTRK but certainly helped the airport act as a first mover and has paved the way for other GA airports to do the same.

**KTRK has a fuel supplier with access to SAF via a reliable producer.**

When KTRK was focused on increasing SAF availability for customers, the airport was contracted with supplier AvFuel, who sold one of the most reliably available SAF products. This fundamentally supported the airport during the early stages of providing SAF, as their supplier had access to the fuel. This also enabled the airport to gradually scale their own mix of SAF and Jet-A purchases and to work with AvFuel over time to eliminate pure Jet-A in favor of Blended SAF Only. A secondary effect was sending SAF demand signals to the supplier, a strong indicator to scale their supply and help ensure consistent availability.


**KTRK has geographic proximity and a favorable truck route from regional SAF blending and distribution.**

When KTRK began integrating SAF, there was only one major global producer, Neste. Neste is the national oil company of Finland and began the transition to producing renewable fuels over two decades prior. Due to this timely head start, Neste is still the world's leading producer of both renewable diesel and SAF and tapped into the California market in 2020. To access all available state tax credits and SAF incentives, Neste's "neat" or pure SAF is blended at the Sunoco blending facility in Selby, California, recertified, and transported to airports. The Bay Area quickly became the national hub for SAF, which Truckee was able to benefit from due to geographic proximity and the ease of access via trucking along the Interstate 80 corridor.

**KTRK benefits from state policy that incentivizes producers to sell into California.**

California was the first market of interest for SAF producers largely because of its policy incentives. Primarily, the California Low Carbon Fuel Standard provided financial incentive based on the lifecycle GHG emissions reduction of SAF compared to petroleum jet fuel, thus lowering the price of SAF and reducing its premium over jet fuel. Global production is growing rapidly, and significant domestic refining capacity is expected to come online in the next one to five years.

**A single business entity that owns and operates the airport simplifies a SAF transition.**

KTRK benefits from ownership of the airport FBO, making the implementation of new practices easier than working through a separate company operating the FBO. While ownership made this process seamless for Truckee, many FBOs in the industry are committed to supporting the SAF transition. Building the strategic objectives of a SAF transition into contracts or agreements with the FBO is another approach to reinforcing action.

**Drop-in SAF mitigates operational changes.**

Operationally, SAF requires no changes to sealants, equipment, or processes at the airport in any way. The ASTM certification of SAF ensures it is functionally equivalent and interchangeable with Jet-A. Consequently, virtually nothing changes when SAF is introduced to the fuel supply.

***BENEFITS OF A DROP IN FUEL***
*Understanding the logistical and operational ease of transitioning to SAF is key for airports, staff, and pilots. The product is a drop-in replacement in all aspects.*

## 2.4 Telling the Story

The aviation industry is historically resistant to change, price sensitive, and slow moving. As a price elastic, luxury service, the private aviation sub-industry is ideal to lead the transition to SAF.

Communicating with and educating private aviation users was a critical component to the transition at the Truckee Tahoe Airport. When the airport first added SAF to their fuel supply in limited amounts in 2021, uncertainty surrounded the product itself as it was new to many in the industry and there was limited understanding of the impact and the need. Developing relationships through one-on-one discussions and meetings with airport staff built trust with owners, pilots, and aviation teams. Users that were uncertain of the fuel required individual education on ASTM certification, blending, and verifying compatibility with existing planes, engines, and infrastructure. Direct and intentional communication regarding the product and the rationale behind its pricing was crucial to building trust. Educating private aviation users on the importance of SAF, illustrating practical and economic benefits, and offering the product firsthand yielded significantly more positive feedback than shaming them on the environmental impact of burning fossil jet fuel.

In private aviation, there can be a disparity in attitudes towards SAF adoption between the pilots and "the people in the back". Pilots tend to be price sensitive, as they interact directly with fuel operations crews. Reaching and influencing the owners or users of the private aircraft can sometimes mitigate resistance to price premiums because they often view any added fuel cost as a small fraction of their consumption of private aviation and associate SAF with outsized environmental benefits and reduced reputational risk.

> ***ASSUME THE BEST INTENTIONS***
> *Private and business aviators increasingly recognize their environmental impact and are aiming to be proactive in their commitment to sustainability. With a minimal % incremental cost, transitioning to SAF is a straightforward, impactful switch that does not require new infrastructure, making it an easy "yes", once the impacts are properly communicated.*

Several years into their SAF transition, KTRK now requires little outreach or education to users as awareness of SAF has increased. SAF is no longer a new product in aviation and incorporating the fuel into the supply now requires less direct education for users, pilots, and aviation teams. **Ensuring the ability to succinctly and accurately communicate the importance and impact of SAF to users is a critical component of a successful transition**. Engaging stakeholders is core to a successful SAF transition strategy - from the airport board members to end users, each member of the stakeholder ecosystem has an important role to play. Investing time into developing trusting relationships and educating on why prioritizing SAF is important is critical to a successful transition.

## 2.5 Implementing Change

### 2.5.1 Pricing

In a low-margin industry, the primary barrier SAF faces is its increased price compared to Jet-A. Achieving KTRK's vision of including SAF blends in all fuel deliveries required a thoughtful approach to pricing. As the first GA airport to offer only a SAF blend, **determining the correct fuel pricing strategy at KTRK was an experimental approach.**

Contextually, it is important to note that KTRK is a California special airport district (1 of 9 in the state) and thus receives some of its revenue from local property taxes, along with the commercial enterprises of the airport itself and other public funding. And, like many GA airports, private and business aviation customers are the core user. High-net-worth individuals and corporates who mostly utilize private aviation tend to be less price sensitive than the lower margin, highly competitive commercial aviation sector. Further, commercial passengers pay a 7.5% tax in addition to a passenger facility charge, whereas private flyers are only responsible for a small, $0.22 per gallon surcharge tax. This conventional pricing structure gives FBOs a potential significant margin on fuel sold to private aviation customers.

Truckee's initial strategy was to rely on the lower price sensitivity of those utilizing the airport to pay the premium for SAF along with a standard markup and margin for fuel. However, it became clear that bottom-line price was a large concern for customers and especially for

pilots and owner/operators, who interacted with the fuel operations staff at the airport. Some also responded with the desire to tanker-in fuel in from other airports to avoid the increased cost, forcing the airport to reevaluate its SAF pricing structure.

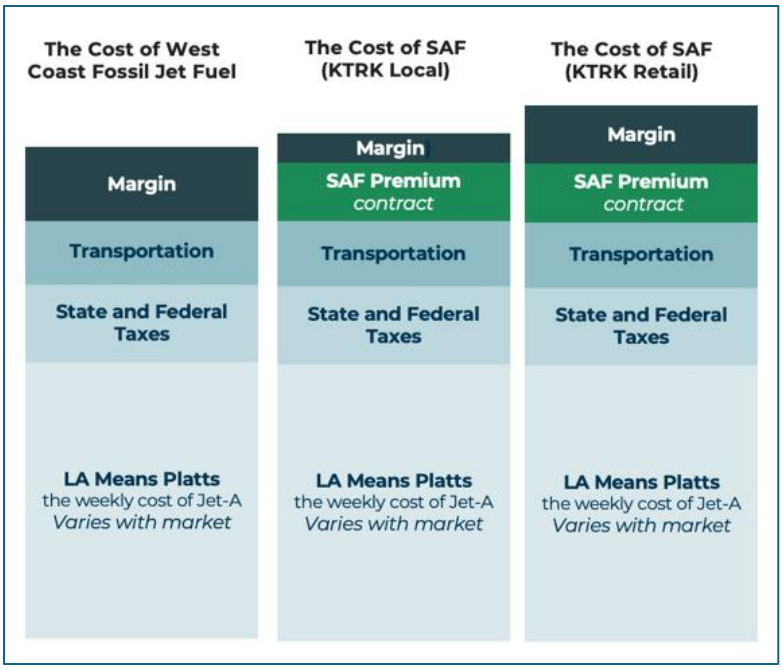
KTRK strategically aimed to discourage fuel tankering from other airports to mitigate the environmental impact of additional transportation emissions and noise and to promote the use of SAF. Based on this commitment, Airport leadership calibrated a pricing model to outcompete the cost of tankering that still ensured financial viability for the airport. This required reevaluation of the airport's pricing model to determine what price would be sufficient to cover the increased cost of the product, protect airport margins, and help address the price sensitivity of customers. KTRK also modeled the net cost (engine time, pilot time, aircraft operating cost, etc.) of tankering fuel from nearby airports to quantify the actual savings possible based on the relative cost of SAF at KTRK.

After discussion and consideration, **airport staff settled on a two-fold pricing strategy**. First and foremost, the airport made the decision to lower their margin by $1/gallon of fuel to account for the increased cost of SAF. This intentional decision to lower revenue was made possible in part by balance sheet revenue from other sources including property taxes, ramp fees, facility leases, but also from new landing fees for aircraft over 6500lbs MTOW. The margin reduction also reflected the values previously codified in the airport strategic plan, with the board recognizing the temporary tradeoff of revenue and sustainability to catalyze the SAF transition. Second, the airport implemented a tiered pricing strategy. This resulted in a different pricing model for local tenants, those on contract fuel agreements, and general retail customers.

> ***GET CREATIVE***
> *While Truckee is potentially advantaged in that it has access to property tax revenue, pricing solutions are possible. Implementing landing fees, tiering pricing models, and other creative changes bring SAF down to a price that makes sense for both the airport and consumers. Today, Truckee's prices are highly competitive.*

In August 2023, moving to a SAF only offering resulted in SAF pricing well in excess of regional Jet-A, with both a "locals" price and "contract/market rate" for the blended SAF fuel. This increased cost for SAF proved too steep and was met with resistance, and by October 2023 it was reduced by 50% for locals and 33% for contract and market customers. The need to experiment with pricing came with being the first significant movers in the SAF space; it also recognized how KTRK was actively listening to customers to truly understand when and why they pushed back, and to engage them in meaningful conversations. KTRK further refined the margin changes in July 2024, decreasing the local price 50% and slightly increasing the contract and market rate, ending with margin reduction of 66% for locals and 25% for contract and market customers.

The Airport District's decision to reduce the profit margin on SAF was not taken lightly, and there is always room for change, particularly as the product scales and prices go down. However, core to the Airport District's pricing strategy was always passing along the full cost of goods to the customer, while margin over cost continues to be refined. When SAF achieves price parity with Jet-A in the marketplace, it is expected there will no longer be any price premium applied or margin concession. The approach taken is seen as transitional while the entire aviation industry gradually adopts SAF. The Board made an active decision to support the decarbonization of aviation, knowing this initiative would have a meaningful impact on residents and air quality and aligns with the environmental values of the airport and community. At the end of the day, as one board member put it, "Had we not been able to affect the pricing, I am sure we would have gotten much more resistance."




## 2.5.2 Procurement

The SAF procurement process was taken step-by-step. Once KTRK had some experience from limited SAF purchasing and verified the airport had reliable processes and infrastructure to support SAF, **KTRK put out a fuel supplier Request for Proposal (RFP), explicitly including SAF procurement as part of the request**, to ensure it had covered the landscape of possible suppliers and captured the best market price. KTRK ultimately decided on a 5-year agreement with AvFuel, their previous supplier who already had a contract and relationship with a reliable global SAF producer and was able to secure delivery and the best price. As per the agreement, AvFuel is contracted to provide exclusively blended SAF with an average blend of 30% SAF / 70% Jet-A, acknowledging the exact blend ratio can vary slightly between deliveries due to upstream processes outside of AvFuel's control. KTRK has received blends of up to 38%.

Although Truckee had planned intermediate milestones for gradually increasing the proportion of deliveries that included SAF, the airport was incentivized to shift to including SAF in all deliveries quickly. The pricing structure from the supplier included a SAF premium on all fuel deliveries to the airport, resulting in a premium being paid on deliveries that may not include SAF. Because of that, receiving a mix of deliveries was undesirable. To gradually

increase deliveries of SAF, working closely with the supplier to confirm the increased SAF price is only placed on deliveries which include SAF is integral to a successful procurement and pricing strategy.

### 2.5.3 Distribution

KTRK and AvFuel also established an ordering system to prevent orders of only Jet-A from coming through. Given the multitude of actors across the supply chain, including terminal and trucking staff, who are far more familiar with providing Jet-A, this **backend ordering constraint helps ensure only SAF blend deliveries come to the airport.**

***SUPPLY CHAIN RELATIONSHIPS***
*An important step to ensuring a smooth transition to SAF is investing in relationships throughout the supply chain, all the way down to the drivers of trucks who deliver fuel. Truckee's proactive engagement facilitated predictable and precise SAF delivery protocols, demonstrating the importance of building robust logistics partnerships.*

SAF goes through multiple hands before reaching the wing of the plane at Truckee Tahoe Airport. It is refined, delivered to the port, blended, certified, and trucked to the airport. KTRK is not connected to a rail or pipeline, leaving trucking as the only way to receive fuel. The airport often receives multiple deliveries weekly in peak seasons, requiring intentional oversight and advanced orders from staff to maintain adequate supply. **Developing strong relationships with the trucking company and ground team is another critical component of a successful and timely transition.**

## 2.6 Learn and Adjust

The transition to offering only a SAF blend did not, and will not, happen overnight. While the transition is not inherently difficult logistically, as it does not require adjusting any infrastructure or operations, success hinges on continually increasing supply and removing barriers like securing large offtakes and addressing pricing. For KTRK, this included slowly increasing supply through collaboration with the supplier and adjusting pricing strategy to develop a model that was financially viable on the back end and for customers. Other key learnings from the strategic plan are included below.

**The importance of formalized milestones**. Within the strategic plan, including milestones to showcase progress is key to long-term success. KTRK included intermediate goals of achieving a SAF blend offering 25% of the time, then 50%, 75%, and eventually 100%. Setting these milestones, and achieving them ahead of schedule, clearly illustrated the airport's route of success.

**Educating operational staff on SAF.** The KTRK operational team had no process changes except for the addition of large graphic artistic wraps announcing "Sustainable Aviation Fuel" on the fuel trucks, which was purely for educational purposes. Where the operational team was in contact with customers, educating the team about SAF was key to make sure they communicated effectively with the pilots and operators.


**Anticipating shortages in supply.** With anticipation of possible future competition for SAF supply, KTRK is investing in expanded fuel storage capacity to buffer any interruptions in supply and maintain their advertised commitment offering only a SAF blend. Today, KTRK can hold 46,000 gallons of fuel onsite but intends to expand to 58,000 gallons both for SAF supply fluctuation and as a hedge against weather conditions, which can significantly impact their deliveries.

## 2.7 Sustain and Reinforce the Change

Amid market uncertainty, commitment to sustaining SAF acceleration through formal commitment, partnerships, contracts, and marketing is critical. In October 2024, the airport signed a 5-year contract with its supplier, AvFuel, after operating month-to-month due the previous contract expiring. The agreed upon rate for SAF will stay static for 5 years and will be an addition to the LA Means Platts rate, a variable rate updated each week, plus federal and state taxes and transportation costs. The price guarantees an average 30% blend of SAF.

As the market expands, users are looking to claim emissions reductions from SAF. Sustaining growth requires understanding of the full lifecycle and reliably retiring environmental attributes. As with jet fuel, each gallon of SAF burned has an environmental footprint, even if it is significantly lower than fossil fuel. By understanding and quantifying carbon intensity, users can verify the impact of each gallon of SAF in terms of GHG reduction. Being able to provide this data with integrity is an increasingly important component of the SAF transition in addition to understanding the impact. At the Truckee airport in 2023, transitioning to offering only a SAF blend avoided 798 MTCO2e reduced scope 3 emissions by 31%.

***CERTIFED AND RELIABLE***
*Ensuring the use of blockchain backed, reliable, and certified SAF Environmental Attributes is fundamental to a successful market transition. In the early stages, book and claim will continue to be pivotal to scaling SAF availability as it allows for price elastic consumers to purchase and claim emissions reductions from SAF even if they cannot get the physical fuel.*

With each batch of SAF, producers receive a Certificate of Quality (COQ) and develop a Product

Transfer Document (PTD) that verifies the origin of the fuel is what it is marketed as. The PTD quantifies the net carbon intensity of the SAF across the entire lifecycle, from the production and transport of the feedstocks to the processing and refining of the final SAF product and is the official source of record for users to claim the emissions reductions of those gallons of fuel. The environmental attribute can either be sold with the fuel and claimed by its user or sold separately where others pay for SAF premiums and can indirectly claim the emissions reductions in a process called "book and claim". In this process, the emissions reductions of a gallon of fuel can only be claimed once and then must be retired.

For KTRK, management of the environmental attributes of the SAF they purchase is still work in progress. A book and claim system, or chain of custody documentation beyond the standard bill of lading, is a new addition to the fuel supply chain and requires change throughout the process. It may even influence back-office processes including the invoicing and on-paper "ownership" of the fuel to properly track chain of custody.

Like procuring SAF itself, sending the demand signals about the importance of environmental attributes encourages supply chain actors to make these changes. Consequently, KTRK supplier AvFuel is working to stand up a PTD registry system for its users. It is imperative that any system to claim environmental attributes ensures the validity and integrity of those claims.

# 3 Replicate and Scale

The Truckee Tahoe Airport District is committed to supporting the network of GA and commercial airports in SAF expansion. Successfully transitioning to a consistent SAF blend is the highest impact change an airport can make to reduce carbon emissions today and is inherently the trajectory of the industry. Other airports can benefit from lessons learned and best practices from Truckee when replicating this change.

Transitioning away from fossil fuels in the aviation sector requires creative solutions and business model innovation but is achievable in the current market. This section outlines the areas of focus for any airport to tackle as they pursue a SAF transition.

**Clearly articulate that the SAF transition is a strategic business decision, supported from the top down**. At the Truckee Airport, this was seen as a triple bottom line and values-driven approach. Making the SAF transition an explicit strategic direction will accelerate decision making, empower staff to promptly and efficiently address challenges as they may arise in the context of their roles, and signal to the market that SAF is a good investment, ultimately lowering costs for everyone.

Furthermore, communicating an explicit strategy to suppliers and partners allows for SAF to be built into contracts, agreements, and RFPs for procurement. Decarbonization and sustainability efforts like SAF adoption are no longer an activity of "the sustainability team down the hall" - they are a core business decision that should be embodied in the operation of your entire organization.

**Put out an RFP for fuel suppliers and develop a lasting partnership.** As supply increases and SAF begins to scale globally, more producers are coming online, and price competition will become more impactful to contract prices. Be sure to contract with a trusted fuel supplier that has access to reliable production, blending, certification, and transportation.

**Advocate for your airport.** GA airports may be less centrally located, but California and the United States are well connected by rail, pipeline, and trucking access. Put pressure on your supplier to increase access to SAF for your customers. The commitment to SAF is strong within the aviation industry. Working in collaboration with California GA Airports will be critical to continuing demand signals across the ecosystem. Creative, aggregated offtake solutions can be considered to reach long-term, high-impact purchase agreements with existing and startup producers.

**Work with your supplier to make sure their back-end coding supports only SAF purchases** once you verify that fuel supply is available, and a contract reaches desired SAF levels. If your marketing and communication efforts include a SAF-only offering to users, ensuring the airport is following through reliably is incredibly important. Even with a growing knowledge base of SAF in the aviation industry, establishing guardrails with your supplier and removing your airport from Jet-A-only purchases ensures your supply will always include your marketed and promised SAF blend.

**Communicate, communicate, communicate!** Explain to your users what SAF is, why it's important, and why your airport has chosen to prioritize its use and availability. This can include unique destination specific SAF wraps on fuel tanks and fuel trucks at the airport, materials for pilots, customers, and aviation teams, editorials, op-eds, marketing at campaigns your airport, and sharing your experience with the industry at relevant conferences. Sharing your experience with other airports is especially important to showing that the transition to SAF is possible and more accessible than some may initially believe.

**Price is a catalyst.** Recognize that creative and possibly concessionary pricing is a temporary catalyst to accelerating a SAF transition. Determine the correct pricing model for your airport. This may be like KTRK and requires cutting your margin for a triple bottom-line approach or updating contract terms with FBOs. If so, look into options to increase revenue in other ways that may lessen the fiscal impacts while achieving the desired transition outcomes.

**There is an ever-growing demand to quantify, verify, and report on environmental impact, including GHG reductions.** Environmental attribute certification is an entirely new process in the traditional transaction of aircraft fuel purchasing, and another potential revenue source. As systems like book and claim come online, airports should begin integrating environmental attribute certification into their fuel procurement processes. Being able to provide this data with integrity is an increasingly important component of any SAF transition.

# 4 Looking Forward

Domestic SAF production accounted for just 0.44% of the estimated 25 billion gallons of jet fuel used in 2024[17]. Globally, SAF represents between 0.3%[18] and 0.5%[19] of jet fuel, highlighting the critical gap in supply and availability.

Every airport has a unique context with advantages and challenges to making a transition to SAF. Fortunately, the path forward as SAF scales is not a mystery. The next steps and opportunities are well understood and simply need to be applied in a regional context. In combination with the lessons and best practices above, the following areas represent core components any airport should consider when developing a SAF roadmap.

## 4.1 Environmental Attributes

The environmental attributes and certification of SAF is what verifies emissions reductions, carbon intensity, and feedstocks. It gives detailed information about how the fuel was produced and its associated environmental benefit. Reliable fuel attributes attached to each gallon of fuel are critical, as this enables users to claim emissions reductions. Truckee recognizes this as one clear next step the SAF transition. Each gallon of SAF holds both scope 1 and scope 3 GHG reduction attributes which can be offered to the buyer of the fuel to claim credit or sold separately through a book and claim registry. Until SAF supply chains, infrastructure, and volumes scale, book and claim systems will be a mechanism through which SAF is bought and sold that airports with access to physical SAF can utilize.

## 4.2 Procurement Volumes

Industry standard SAF blends today hover around 30%. While ASTM certification permits blends up to 50%, achieving D1655 certification for higher blend rates can present technical challenges that the industry is actively addressing. Achieving increased rates of SAF will require both industry and market demand to boost overall supply as well as overcoming certification and blending challenges. Truckee's ongoing desire for a greater SAF blend contributes to that market demand. HEFA production processes only allow for a small percentage, about 10-20%, of total fuel output to be SAF, which hinders overall SAF production volumes. Other technologies have capacity to produce SAF at higher percentages, another incentive to diversify production pathways.

## 4.3 Federal and State Policy

As with all energy transitions, the role of policy cannot be overstated. Though now expired, the Inflation Reduction Act's 40B Blender's Tax Credit has been one of the most influential policies in increasing SAF availability in the United States. Its replacement, the 45Z Clean

[17] EIA – "US Jet Fuel Consumption in 2023 Remained Below Pre-Pandemic High" (2024)
[18] IATA – "Disappointingly Slow Growth in SAF Production" (2024)
[19] Crownhart (MIT Technology Review) – "Cleaner jet fuel: 10 Breakthrough Technologies 2025" (2025)

Fuel Production Credit offers a less lucrative credit for SAF. It was left to the current Administration to develop and implement formal rules for claiming the 45Z credit.

Due to the ever-changing federal policy landscape, producers are looking to states to stand committed to SAF growth. The most impactful policy to incentivize SAF on the state-level is the Low Carbon Fuel Standard (LCFS), currently in place in Washington, Oregon, and California. New Mexico is undergoing rulemaking, and the policy is going through the legislative process in other states across the nation. Beyond the LCFS, state SAF tax incentives are becoming popular, as seen in Washington State, Illinois, and others, which airports can take advantage of.

## 4.4 Changing the Aviation Fuel Ecosystem

Unlike petroleum jet fuel, which has a relatively straightforward supply chain and requires only a simple financial interaction between two stakeholders - a producer and a buyer - the SAF supply chain is reliant on an entire ecosystem of players scaling successfully. From energy production, hydrogen, research and development, refining, blending, testing, transporting, incentivizing, advocating, funding, and more, scaling SAF is a team effort.

Airports play a critical role in this ecosystem and can help support regional coalitions and demand to scale SAF production and adoption. Organizations like the Association of California Airports (ACA), for instance, could utilize the collective individual buying power of GA airports in California to ensure stable SAF supply and send demand signals throughout the industry.

# 5 Other Sustainability Efforts

Beyond the transition to SAF, KTRK is committed to exploring ways to lower emissions across their entire carbon footprint and adopt other sustainable practices to protect the environment and their vibrant local community.


The airport has a larger community goal of achieving carbon neutrality by 2045. This includes continuing to collaborate with the Climate Transformation Alliance, electrifying the airport vehicle fleet and expanding power unit capacity, and developing a formal electrification plan. In addition to SAF jet fuel, KTRK is committed to researching and prioritizing the transition of 100LL fuel to an ASTM certified drop-in unleaded fuel replacement as soon as the regulatory environment and supply chain allows. The successful SAF transition is an excellent model to replicate for the eventual transition from 100LL to unleaded fuel.

Furthermore, the airport can play a role in an overarching climate and nature strategy that supports their community. This may include efforts to improve air quality, address water stress, support healthy ecosystems, enhance biodiversity, and develop adaptation and resilience efforts in the face of climate change, such as initiatives to mitigate wildfire risk, the associated environmental destruction, threat to the wilderness urban interface, and long-lasting health impacts.

# 6 Conclusion

Transitioning from petroleum fuels to renewables is the single largest impact an airport can have on lowering their carbon footprint. This transition is also ultimately the direction the industry will take over time. The Truckee Tahoe Airport District was well positioned to lead this transition based on favorable policy, customers, geographic location, and more. However, the unwavering commitment by the airport and community working in alignment is equally responsible for the swift transition to SAF. KTRK is proud to be the first airport globally to only offer a SAF blend to customers and is looking forward to increasing blend percentage as fuel availability allows.

# Truckee Tahoe Airport: SAF Transition Case Study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**Prepared by Earth Finance in partnership with the Truckee Tahoe Airport**