

Nest Z

Project Description

Zipline Nest Z Unmanned Aerial Test Facility - Project Description

Zipline Background

Zipline is the world's largest and most experienced drone delivery company, and we seek to improve access equality for all people. To date, Zipline has safely completed more than 1.4 million commercial deliveries and makes a delivery every 60 seconds – mostly to rural communities. Zipline can safely deliver tens of thousands of items, including medical supplies and prescriptions, animal semen and vaccines, groceries, food, and retail items. Zipline's drone delivery system also reduces carbon emissions compared to traditional ground delivery and can deliver to hard-to-reach places when ground delivery is slow or is not an option.

At its core, Zipline is a mission-driven public health and agricultural logistics company. Zipline's technology has primarily been used in rural and agricultural areas – making over 1 million deliveries in those communities. Among those 1 million deliveries, agriculture-specific uses have been a large and growing proportion, including:

- 101,000+ animal vaccines delivered to farmers;
- 35,000+ animal insemination straws delivered to farmers; and
- Dozens of agricultural- and gardening-related consumer products for homeowners and farmers in Arkansas and Texas.

In Appendix A, we've attached a handout that provides more detail on exactly how Zipline supports agriculture and farmers. Please also visit our website at:

<https://www.flyzipline.com/business/solutions/farming>.

Nest Z Research and Testing Facility Located on Yolo Land & Cattle Ranch

Yolo Land & Cattle Ranch ("YLC"), a 7,445 acre working ranch, has hosted one of Zipline's drone testing facilities ("Nest Z") since 2019. Yolo Land & Cattle is dedicated to promoting small-businesses and agriculture in Yolo County, including through critical technical innovation. YLC is owned by the Stone family, who Zipline approached in its search for a large, contiguous tract of private land to test its drone technology that was also similar to Zipline's operational delivery environments. The Stones were impressed by Zipline's mission to deliver medical and veterinary supplies and agreed to grant a license for Zipline to perform test flights in the ranch's airspace. Zipline's research and testing facility, Nest Z, is located approximately 4 miles southwest of Esparto and coexists harmoniously with YLC's ranching operations, nestled in the ranch's hills. Nest Z's use of that property is incidental to Yolo Land & Cattle's agricultural operation and does not have any impact on YLC's operations, including their cattle and livestock grazing.

It has been a tremendous partnership over the years, providing economic support for YLC's ranch operations. Zipline has also provided a major boost to the local Yolo economy through vendor

relationships – about \$1 million in 2024 – and through bringing dozens of highly specialized, technical jobs to the area.

Zipline Facility Use: Small Agricultural Research Facility

Yolo Land & Cattle includes Assessor's Parcel Number 047-140-018, which is an approximately 480-acre parcel, with the Nest Z facility utilizing less than 5 acres in the southern area of that parcel. The General Plan land use designation of that parcel is Agriculture and Open Space and the zoning is Agricultural Extensive (A-X).

Zipline's Nest Z testing facility's use is best characterized as a "small experimental agricultural research facility" per Section 8-2.306(q) of the Yolo County Code ("YCC"). Section 8-2.307 defines "[a]gricultural ... research" as "industrial or scientific uses subordinate to, and in support of agriculture, and include product processing plants and agriculturally based laboratories or facilities for the production or research of food, fiber, seeds, animal husbandry or medicine, and may include administrative office space in support of the operation." The inclusion of "industrial" uses in the research facilities allowed under Section 8-2.306(q) reflects the intent to allow a wide range of uses that are not limited to experimental farming, but, as reflected in the definition, include uses that "support" agriculture.

Zipline's product is designed and tested at YLC to enable Zipline to bring the benefits of drone delivery to farmers, ranchers, and rural community members just like YLC. Given the delay and environmental impacts of ground vehicle deliveries to rural and agricultural areas and the time sensitivity for deliveries related to animal husbandry and care, Zipline seeks to fill a gap in the accessibility of deliveries critical to agricultural operations, especially with temperature-controlled products. With deliveries intended to be made to functioning agricultural operations, having a testing facility within Yolo Land & Cattle helps simulate the real-life environment in which Zipline will support agricultural operations. Additionally, while the YCC does not define "industrial," the YCC provides that the purpose of "industrial" zones "is to provide for areas that allow a wide range of heavy to light manufacturing, repair, wholesaling, business, professional, and research and development uses." The breadth of uses captured under "industrial" reflects the broad range of industrial uses allowed as research facilities supporting agriculture. Please see below for more details on Zipline's agricultural research at Nest Z.

Zipline remains committed to providing support to farmers and agriculture, wherever located, and especially in Yolo County. The research and testing we conduct at our Yolo County research facility is critical to these efforts and the continued development of our technology.

Nest Z Site Description

The Nest Z facility includes a combination of mobile modular office buildings, storage units, docking stations, and mock delivery sites (designed to look like backyards, campgrounds, farms, etc.) to support its operations. The infrastructure is designed to accommodate drone activities while maintaining operational efficiency and safety. The site is managed by Zipline Flight Operations and Facilities personnel. Zipline has a valid business license in Yolo County and regularly hosts and collaborates with a number of

key regulators and stakeholders, including Federal Aviation Administration officials, federal and state senators and congressmen, first responders, and senior leadership of major corporations.

Zipline's operations are closely regulated by the Federal Aviation Administration ("FAA"). Zipline's flights, maintenance, and operations at Nest Z are subject to FAA overview and regulations, including its operations at Nest Z. Further, pursuant to FAA regulations, Zipline's drone delivery system has undergone multiple environmental assessments under the National Environmental Policy Act ("NEPA"). All NEPA assessments have resulted in a finding of "no significant impact." Zipline's mission is not only to provide access equality to all people, but also reduce environmental harm and carbon emissions.

Offices and Equipment:

- A 60ft x 40ft WillScot modular office building
- A two-story WillScot modular office building, totaling 2,400 square feet
- A modular WillScot building measuring 20ft x 24ft
- Two large 40ft x 40ft tents
- Twenty-one 20ft Connex boxes for storage – contents include:
 - Retired or old package boxes
 - Facilities-related items
 - Spare parts for docks and equipment
 - No batteries are stored in the Connex boxes (see below for battery storage)
- Thirty drone docking towers
 - All docking towers have ballasted foundations, so they are noninvasive and removeable
 - 3 additional towers are proposed for installation
- Several temporary mock delivery sites designed to simulate backyard environments
- One visual observer tower (10-12 feet tall) located approximately one mile south of the main facility (approved by the landlord and land conservancy and installed in November 2024; see appendix for VO tower photo)
 - GPS coordinates: 38.633445, -122.068515
 - Staffed by a dedicated employee who monitors air traffic in the surrounding airspace whenever Zipline has drones in the air, functioning similarly to how an airport control tower ensures the safety of aircraft operations
 - Consists of a shelter on top of a base with steps, no bathrooms or other infrastructure
 - Powered by solar and battery system

Utility and Power:

- Water supply is sourced from an on-site well
- Power is provided by a hybrid power system:
 - Grid electricity is used to power critical infrastructure such as the kitchen and the server room

- Other power is provided by hybrid system in which fully permitted generators charge batteries that provide supplemental power for additional operational needs
- In the long term, Zipline would prefer to transition fully to grid power, depending on long-term viability of the site Diesel fuel for the generators is maintained in two 500-gallon double-walled aboveground fuel tanks
- One 250-gallon double-walled gasoline tank is used to fuel ATVs for package retrievals and paraland retrievals when needed

Security:

Security is provided through a multi-layered access control system. Entry to the facility requires passing through three gates, including an access control gate equipped with a numbered keypad. Only authorized personnel with the correct access code can enter the property.

Water Supply:

- Approximately 18 people are on-site each day. Water is used for toilets and dishwashing only.
- Estimated yearly water use is 0.34 acre-feet per year; drinking water is not included in this estimate.

Drone Use:

- Drone operations are conducted subject to Zipline's rigorous testing plan to ensure operational safety and functionality of the drone system.
- Drone operations are strictly confined within the Yolo Land and Cattle property with an automated keep-out zone to ensure aircraft do not leave the boundaries of the property.
- Drones are designed to be quiet and unobtrusive. Indeed, the testing facility is where Zipline tests solutions to lower and improve sound of its system. Currently, the maximum noise level is 64 dB(A) at 100 feet, but the average noise level is between 50-55 dB(A) per drone at 100 feet. This is roughly equivalent to the noise level of car traffic at 300 feet or a refrigerator in the next room.
- Drones are required by the FAA to have navigational lights (flashing strobe with fixed red and green lights on wings) that are required by the FAA to be visible at 3 statute miles. Zipline applies the statutorily required minimum light intensity while ensuring safe operations.
- Batteries from the aircraft are subject to strict handling protocols. Batteries that are no longer usable for operations are either are returned to Zipline's manufacturing and maintenance facility or put in battery containment zone, from which they are collected for disposal by a licensed provider.

Zipline plans to expand its facility to enhance storage capacity, increase drone docking infrastructure, and improve testing environments for delivery operations. These upgrades aim to support the company's growing operational needs and technological advancements.

Planned Additions to the Facility:

- 12 additional 20ft x 8ft x 8ft6in Connex boxes for storage
- 3 additional drone docking towers
- Expansion of temporary mock delivery sites designed to resemble backyards

The proposed expansions will enable Nest Z to optimize its operational workflow, enhance drone storage and maintenance capabilities, and facilitate comprehensive testing environments. These upgrades will ensure continued efficiency and innovation in drone-based delivery solutions.

Additional Details:

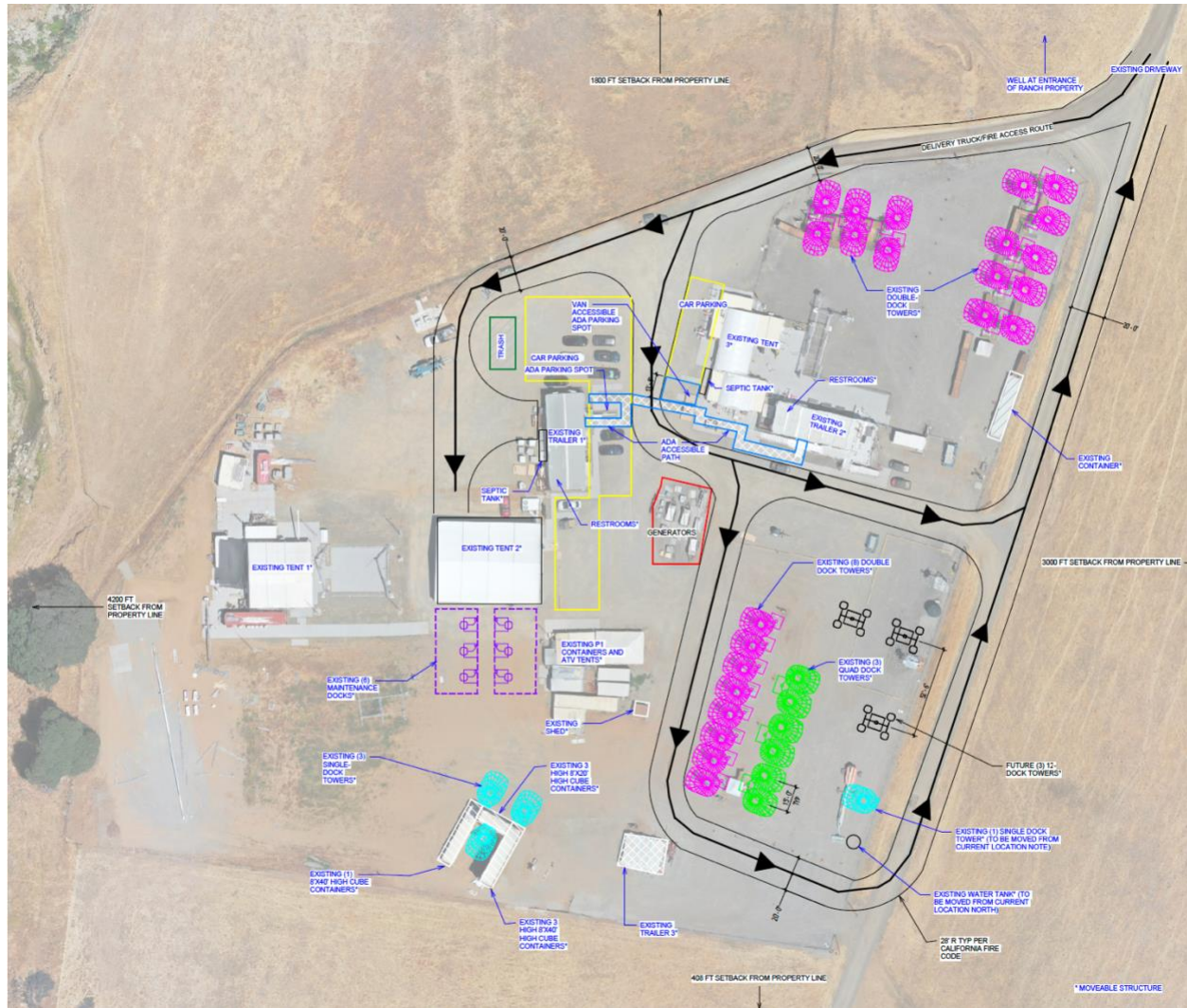
- Current operational footprint (i.e. acreage not used for agriculture): 4.9 acres
- Planned footprint at full build-out: 4.9 acres
- Schedule of operations: 24/7
- Current number of employees/contractors who work at the site on a typical workday: 9-12 on day shift, 4-6 for night and overnight shifts; total: 13-18 daily
- Approximate number of daily employees at the site at full build-out: same as above
- Current number of daily test flights: 500-600
- Approximate number of daily test flights at full build-out: 2500
- Average distance of flights: 2km-6km round trip
- Average duration of flights: 5-15 minutes
- Maximum number of drones flying at once: 20
- Average number of drones flying: 7-8
- Maximum flight altitude: 700 feet above ground level (limited number of test flights)
- Standard flight altitude: 330 feet / 100 m above ground level

Nest Z

Project Description



Site Plan - Zipline Nest Z Facility (see also separate attachment)



Nest Z

Project Description



Site Location Aerial





Visual Observer Tower

Zipline's Commitment to Supporting Farmers and Agriculture

Zipline was founded to create the first logistics system that serves all humans equally. **We design, manufacture, and operate the world's largest instant logistics and delivery system.**

Zipline is a trusted partner for businesses, governments, and consumers and currently supports the healthcare, public health, restaurant, retail, e-commerce, and animal health sectors. We make thousands of agricultural and animal health deliveries each month and have enabled hundreds of farmers, distributors, and agro-vets with our services. We have multiple partnerships in Rwanda, Ghana, and Kenya, in addition to operations across three different continents.



Healthy livestock starts with better logistics

Zipline uses instant logistics to make agriculture more effective and efficient for everyone involved, from providers to distributors to farmers and vets.

Zipline is an end-to-end supply chain solution and the world's only national-scale instant logistics operator. Our service comprises best-in-class warehousing and inventory management, on-demand distribution and logistics, as well as data and performance management. By embedding these services into health systems, Zipline expands equitable access while decreasing costs and enabling data-driven decision-making.

Potential use cases with Zipline include:

- Routine or On-Demand Inventory Distribution
- Stock-out Response
- Emergency Delivery
- Disaster Response
- Hard-to-Reach Distribution
- Rare & High-Value Fulfillment



Scale logistics operations

Our drone-based service is more cost-effective, reliable, and efficient than ground-based logistics.



Access reliable cold chain

Our end-to-end cold chain means storage and delivery reduces waste and maximizes effectiveness.



Optimize inventory management

Leverage advanced chain-of-custody tools, end-to-end tracking to ensure delivery of genuine goods.



Drive performance with data and insights

Drive supply chain performance with metrics and forecasting based on real-time, unit-level data.

Trusted partners



Capabilities



Advanced Chain-of-Custody

Every delivery features robust live tracking features down to the unit-level, digital signature and identity verification for recipients when necessary, and proof-of-delivery records.



End-to-End Cold Chain

Zipline can store ultra low temperature cold chain at our state of the warehouses, and deliver temperature-sensitive and fragile orders with pack-outs up to 12 hours at -20° C and 48 hours at 2-6° C.



Simple-to-Use Software

Zipline uses a simple, focused digital integration and dashboard that empowers users to manage orders and deliveries while reducing the complexity of traditional workflows.

Impact

1M+ autonomous deliveries

35K+ artificial insemination straws delivered

101K+ animal vaccine doses delivered

100M+ autonomous miles flown



Easier access

Provide farms, big and small, with high-quality medical goods and services.



Cost savings

Lower inventory requirements that reduce wastage and operational costs.



Faster response

Offer instant delivery when animals are sick, in heat, or require immediate attention.



Reduced risk

Prevent zoonotic outbreaks and large-scale herd losses.



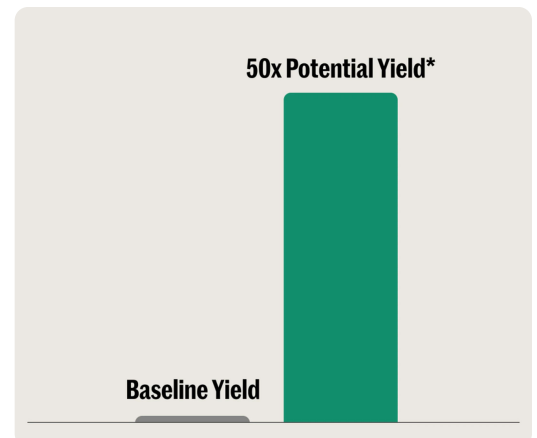
More reliable cold chain

Ensure essential products keep their potency when traveling long distances.



Improved forecasting

Real-time data enables better planning and resource allocation.



* Based on average dairy yield of cows (AJOL, USDA)

Case Study: Reliable animal healthcare at a national scale.

Rwanda Agriculture Board

Challenge

Accessing high-quality, time-sensitive animal health essentials like vaccines and artificial insemination straws was a core challenge for farmers and agrovets across Rwanda. The Rwanda Agriculture Board (RAB) needed a new way to increase nationwide product access without the high costs and product wastage.

Solution

Zipline partnered with RAB to create a national-scale fulfillment and delivery network of animal health products. RAB can respond to the time-sensitive demands in minutes instead of hours or days — and all without an expensive cold chain infrastructure. Zipline operates as RAB's sole distributor and has delivered hundreds of thousands of vaccine doses and artificial insemination straws to date.



**Rwanda
Agriculture
Board**



Our partnership with Zipline will help us to be sure that the vaccine we deliver from Zipline to the farmer is properly managed and be sure that the quality of that vaccine is fulfilling the quality required.

Dr. Fabrice Ndayisenga

Head of Animal Resources and Innovation
Rwanda Agriculture Board