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CAL UAS

## **Cal UAS Executive Summary**

In 2013 Cal UAS was formed and consisted of a group of technologists seeking consideration by the FAA as a remote test site for unmanned aircraft systems. The Cal UAS group has since incorporated in the State of California and is engaged in the business of designing, developing, manufacturing, and selling various types of small unmanned systems for the commercial sector. Cal UAS systems are both rotary and fixed wing and are designed-to-build based on requirements set forth in the burgeoning growth areas of agriculture, wind turbine inspections, aerial mapping for utility companies, search and rescue missions, and first-responders.

Cal UAS offers a systems engineering approach to end-users by providing a full-up functional “system” consisting of hardware, software, sensors, and including three days of training.

Ease of use and affordability are goals as UAS are designed and fully integrated by the Cal UAS team.

The Cal UAS Team has a collective 40 years experience as technologists, scientists, and engineers working toward advancements in unmanned system technologies. Cal UAS has expanded partnerships to create a nexus for refining existing technology and forging future innovations that are potentially as innumerable as the applications this young industry is expected to yield.

Cal UAS is headquartered in Ridgecrest, CA.

## Gary Parsons

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**From:** Eileen Shibley <eshibley@me.com>  
**Sent:** Friday, May 30, 2014 12:30 PM  
**To:** Gary Parsons  
**Cc:** Eileen Shibley  
**Subject:** Cal UAS private investments

Gary,

Per our conversation yesterday, I am forwarding information relative to past and future private investments in Cal UAS. Beginning in March 2014, private investments to date in Cal UAS total \$84,000, 67% of which came out of my own pocket.

Commitments for future investments have been received from 9 investors in various amounts. Six of these investments are pending Ridgecrest City Council action on the Economic Development funds. That is because these investors believe that we, as a start up, will have a higher probability of succeeding if we get seed money from the City's grant funding to help defray the cost of building the production facility here in Ridgecrest. The minimum amount of investment is \$20,000. The total amount committed is \$300K. That will get us going on hiring.

We've sold three units to date and each of the units we sell comes with three days of training in Ridgecrest. Our second set of training will occur in Ridgecrest next week.

I would anticipate that private investments in the company would continue into the future but at a higher rate as investors see our success.

Thanks for the clarification on dates.

Eileen

Eileen Shibley, CEO  
Cal UAS, Inc.  
760-382-1049  
[eshibley@me.com](mailto:eshibley@me.com)



# Cal UAS

California  
Unmanned  
Aircraft  
Systems

City of Ridgecrest  
100 West California Avenue  
Ridgecrest, CA 93555  
Attn: Gary Parsons

May 1, 2014

Mr. Parsons,

As requested in your letter dated April 16, 2014 and in an effort to provide your office and the city council with information needed to evaluate the Cal UAS proposal, the following information is provided in the format requested.

Cal UAS believes the number of new jobs that will result if the council funds our proposal is:

After year one, 10 jobs with an average employee salary level of \$90,000

After year five, 55 jobs with an average employee salary of \$100,000

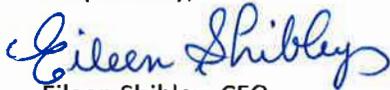
Cal UAS plans to sell small unmanned aircraft systems from our Ridgecrest location and we estimate the annual taxable sales in year one to be \$600,000 and in year five to be \$3,500,000

Cal UAS would lease a manufacturing location in Ridgecrest. Our requirements would be for approximately one half acre with at least 2,500 sq ft of office, admin, conference, and training space as well as at least 4,500 sq feet of manufacturing space.

Included in the price of each unmanned aircraft unit sold to a different customer is three days of training at our Ridgecrest location. We believe this would result in approximately 50 people per month visiting Ridgecrest for three or four nights to attend training. Cumulatively, this could mean up to 600 hotel nights annually.

In order to accomplish the above, Cal UAS believes a minimum amount of funding required to make our proposal successful is \$1,196,000. The Cal UAS plan is to use equity capital to fund the remaining requirements such as salaries, taxes, insurance, etc. Our goal is to get our equity capital through individual private investments.

Respectfully,



Eileen Shibley, CEO

Cal UAS, Inc.  
760-382-1049



# Cal UAS

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City of Ridgecrest  
100 West California Avenue  
Ridgecrest, CA 93555  
Attn: Gary Parsons

31 March 2014

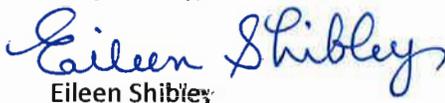
Mr. Parsons,

Cal UAS, Inc. submits the following information and respectfully requests consideration of economic development grant funds for the purpose of establishing a high-tech state-of-the-art manufacturing, production, and training facility in Ridgecrest, California. Cal UAS is a Ridgecrest based, locally owned and managed, California Corporation committed to advancing the state of the art in unmanned systems technologies. Our goal is to serve the commercial markets in the fields of precision agriculture, wind turbine inspections, utility company line inspections, aerial surveying, search and rescue, and civil engineering applications.

Cal UAS is also committed to working with the local school district toward a goal of being an incubator environment for potential future employees in students currently interested in the science, technology, engineering, and math (STEM) fields. We are also very tightly aligned with the recently approved California iDEA Innovation Hub. The goal is to nurture technology and be agents of change relative to technology innovation in this burgeoning field of unmanned systems.

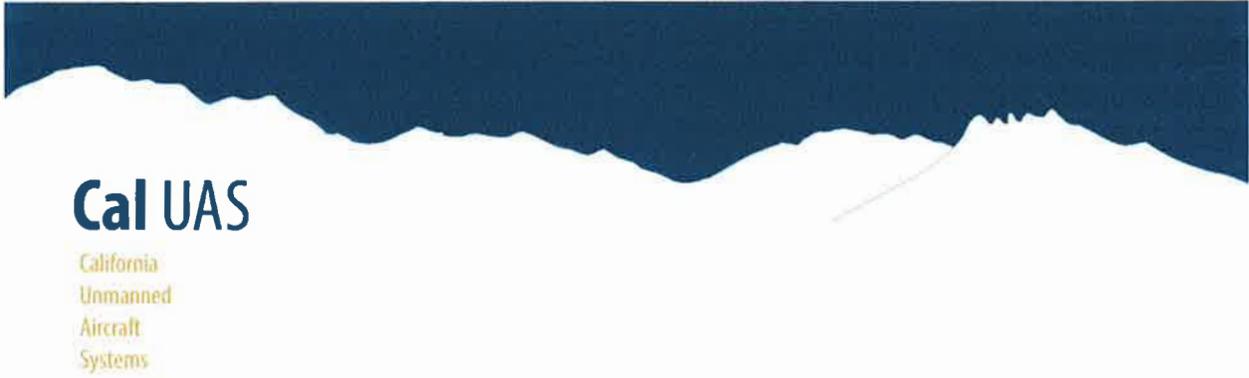
Cal UAS requests consideration of funds in the amount of \$1,196,000 to procure the larger pieces of equipment required to manufacture robots, modify a structure for production, and equip our training facility. We also request consideration of two years lease in an existing structure in Ridgecrest. Cal UAS has already begun production of our precision robots and we anticipate our endeavor to create approximately 55 jobs over the next five years. We anticipate our sales to cumulatively reach \$10,400,000 with the resulting sales tax benefitting the City. Also, with each unmanned system sold, three days of training (for two people) are provided at our Ridgecrest site. With eventual sales anticipated of 25 per month, this would result in approximately 50 people per month visiting Ridgecrest for three or four nights to attend training. Please see attached for amplifying information.

Respectfully,



Eileen Shibley

Eileen Shibley, CEO  
Cal UAS, Inc.  
760-382-1049



**Cal UAS**

California  
Unmanned  
Aircraft  
Systems

## **Cal UAS Design and Fabrication Ridgecrest Headquarters**

### **Facility Design Objective**

Focus on modern, clean, computer-driven assembly technologies that significantly reduce OSHA and insurance burden while providing a well-rounded production environment with an emphasis on design.

### **Design Department**

Three design rooms provide the primary innovative and design workspaces in the facility. Since a vast majority of the shop equipment will be software driven, a distributed 3D design environment is essential for efficient workflow from conception to working model.

### **Prototyping Department**

Modern flight is achieved through software with less of an emphasis on traditional aerodynamics. This innovative facility will boast the tools necessary to rapidly prototype and produce working electronic SMD solutions.

### **Manufacturing**

Avoiding overly mature technologies (CNC End Mills, Lathes, presses, etc.), dirty technologies (waterjet, plasma jet, laser jet, woodwork, spray booth) and immature emerging technologies (YAG Sintered Metal, miniature 3D robotic) leaves the facility to focus on the primary mission of sUAS development and mass production. 3D CNC routing and milling will serve as the facilities cornerstone as these technologies produce part strength beyond that of 3D printing.

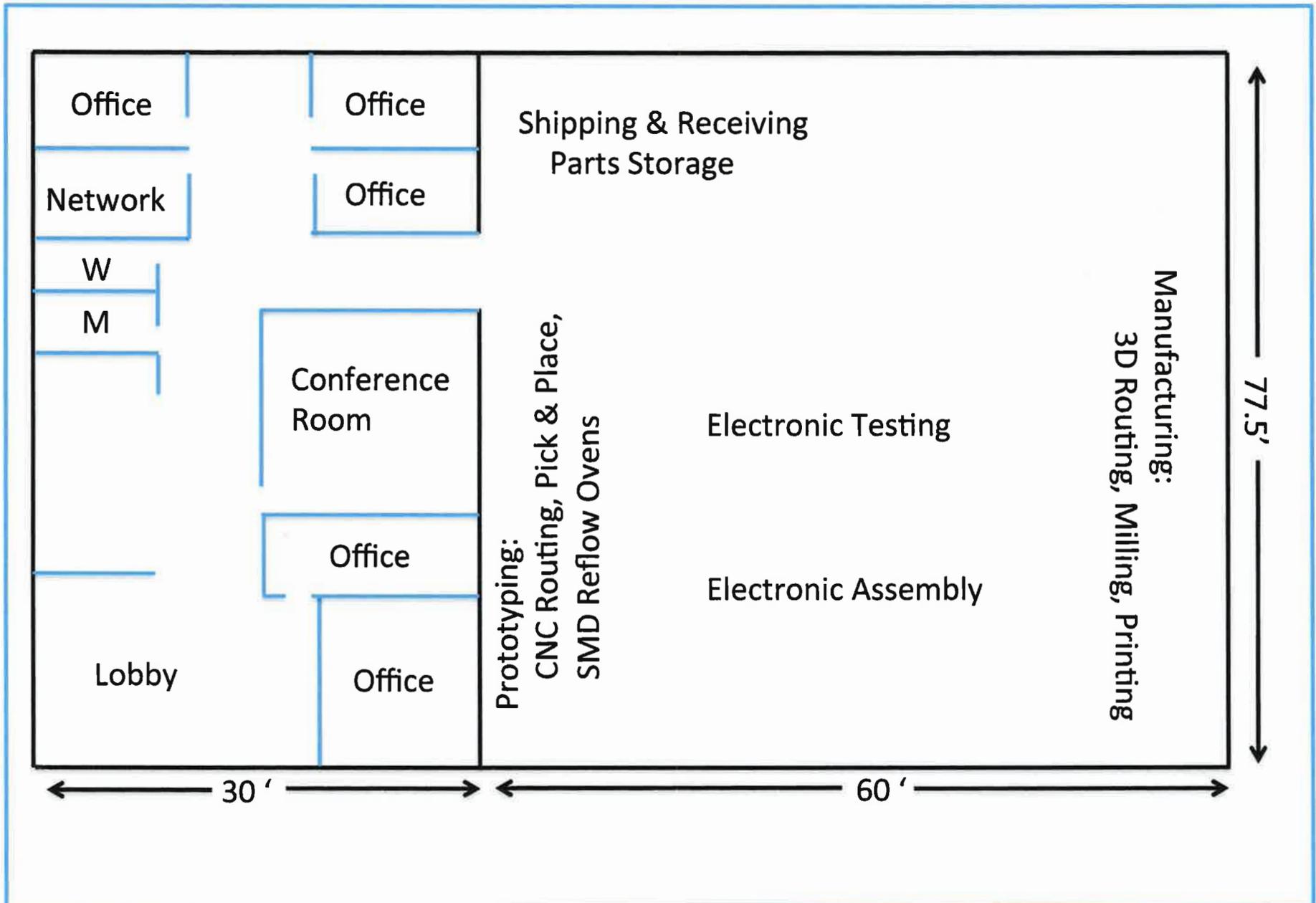
### **Shipping/Receiving/Parts Storage**

Standard ISP-based security systems monitor equipment as well as provide asset protection.

### **Training Center**

The price of each sUAS unit produced includes three days training to be performed at Cal UAS Headquarters in Ridgecrest, CA.

# Cal UAS Bldg at 543 Graaf St. in Ridgecrest, CA



# Cal UAS

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Systems



## Monarch

### Dual Sensor Aerial Mapping Robot

We created the Monarch™ after working with local farmers and California technology companies to develop the best robotic system for mapping and crop analysis using multi-spectral cameras and software.



#### Specifications

Weight: 12-15 lbs.  
Time Aloft: 30 Minutes  
Coverage: 160 Acres  
Waypoints: Unlimited  
Ceiling: 400' AGL  
NIR Formats: NDVI, SAVI  
EO Sensor: 16mm, 16Mpx



#### PixHawk Autopilot

Powerful on-board processing and advanced mission planning software make this the heart of the Monarch™. The PixHawk is the next generation of autopilot from 3DR Robotics, the leader in open source robotics.



#### TetraCam ADC Micro

Multispectral imaging cameras and technology from TetraCam provide critical data for crop research. The Monarch™ uses the ADC Micro, the smallest NIR sensor, to create NDVI data overlays of crop health.



#### Sony NEX 5R

The NEX 5 creates highly detailed ortho-mosaic photography and is triggered simultaneously with the ADC Micro for perfect overlays. Both cameras (EO, NIR) are safely housed in a custom payload cushion.

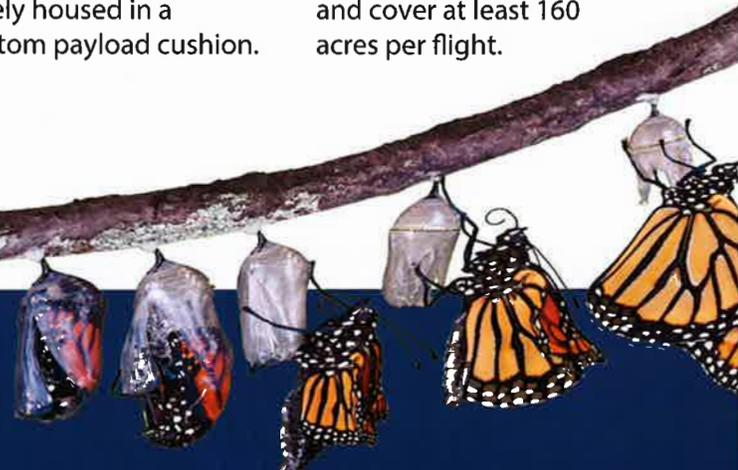


#### Cal UAS Airframe

Multirotor air vehicles are less affected by wind and can follow a computerized path better than fixed wing airplanes. The Monarch™ is built to take superior photographs and cover at least 160 acres per flight.



California Unmanned Aircraft Systems  
P.O. Box 1235  
Ridgecrest, CA 93556 - [www.caluas.com](http://www.caluas.com)



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# Monarch

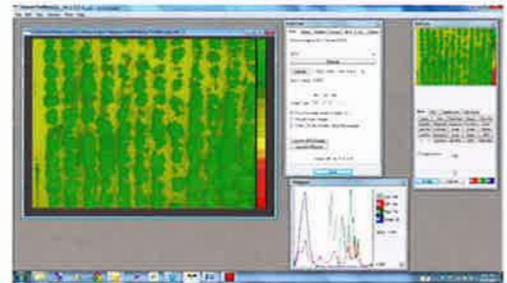


## Dual Sensor Aerial Mapping Robot

Mission Planner is the flight control software that helps the operators plan and program an automatic route into the Monarch™ prior to each unique mapping mission. It provides real time flight data including voice alerts that allow the operators to listen to the robot's progress as they watch it perform. Cal UAS provides operators the chance to learn the inner workings of Mission Planner, the software used to control flight, during our three day Monarch™ Operator Course. Operators will learn techniques specific to their needs using the following software packages:



PixelWrench2 from TetraCam is a powerful image editing program that includes tools specific to multi-spectral images. The program accepts NIR/Green/Red or other bands of captured images from the ADC or MCA family of Tetracam sensing systems and aligns, registers and re-combines these according to user-defined or standard algorithms to produce new images that may be used to indicate conditions such as plant stress or the presence or relative abundance of specific monitored compounds.



PixMapper from Pix4D is used to generate orthomosaics, DSMs and Point clouds from aerial and oblique imagery using any camera and lens, including multi-band images. Keep full control over your projects at all times by assessing and editing all tie points (GCPs, Check points, etc.). Use the fully automatic workflow and let the software handle all calibration and processing to achieve survey grade accurate output with centimeter-grade, LiDAR like 3D precision. Cal UAS will help new Monarch™ owners make the most of this application.



Cal UAS follows the Code of Conduct provided by AUVSI. This code is intended to provide those who design, test, and operate UAS for public and civil use, a set of guidelines and recommendations for safe, non-intrusive operations. Acceptance and adherence to this code will contribute to safety and professionalism and will accelerate public confidence in these systems. The code is built on three specific themes: Safety, Professionalism, and Respect.

Please go to: <http://www.auvsi.org/conduct> to review the code in its entirety.

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