

A photograph of the Robert Ferguson Observatory at night. The observatory building is illuminated with a warm, reddish-orange light, highlighting its central dome and two side wings. The sky above is a deep, dark blue, filled with numerous stars, suggesting a clear night. The foreground shows a dark, silhouetted landscape with trees and a dirt path.

ROBERT FERGUSON OBSERVATORY

STRATEGIC PLAN 2022 - 2025

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EXECUTIVE SUMMARY

Robert Ferguson Observatory (RFO) is run by the Valley of the Moon Observatory Association (VMOA), a 501(c)(3) non-profit organization comprised of volunteer amateur and professional astronomers. RFO has fulfilled its mission of offering educational programs about science and astronomy for students, the public, and in support of educators for almost 25 years. The observatory is almost all-volunteer run and typically serves about 9,000 visitors annually. VMOA is responsible for the construction, maintenance and utilization of the Robert Ferguson Observatory, and is part of "Team Sugarloaf," the five non-profit organizations that formed a partnership to operate Sugarloaf Ridge State Park.

The observatory has a robust volunteer program with close to 200 volunteers working tirelessly to deliver programs to the public, offer public star parties and solar viewing events, provide classes and workshops, as well as manage the myriad of behind-the-scenes tasks to keep the observatory running smoothly.

This strategic plan presents the direction for VMOA, in the operations and management of the Robert Ferguson Observatory for the next few years to 2025. As a non-profit, our volunteers operate and manage many aspects of the observatory, by means of donations, memberships, and income from educational and tourism programs. In addition to providing public and private events, our volunteers continue to observe the night skies and carry out research and conduct astrophotography.

Our purpose is to give the public a place to foster their interest and passion in astronomy and space and to inspire young people to pursue further education or careers in astronomy or related STEM fields to help meet the growing future demand for individuals in these industries. We strive to broaden our reach to underserved populations in Sonoma and surrounding counties to provide equitable opportunities to all socio-economic groups.



Our vision is to be recognized as a leading center for public astronomy education in Sonoma County, serving students, families, and the general public.

Our Mission is to offer educational programs about science and astronomy for students, the public, and in support of educators.

Behind the scenes, RFO is actively expanding and diversifying its board of directors and volunteer base, developing new programs and services, and is partnering with local businesses, universities, and schools to maximize our exposure, nurture collaboration, and address resource and fund development in order to expand programs and maintain/upgrade our telescopes and facilities.

Key strategies to make each of these objectives possible are given, and these form the foundation for the more detailed development plan that presents an implementation road map for our fund development initiatives over the foreseeable future.

While RFO has been in operation for more than two decades, it is still young as an organization and is looking to grow into an organization that is considered a premier educational and research institution. Given its already positive brand recognition and reputation, and dedicated volunteer workforce, we feel it is moving in the right direction and will continue to operate for decades to come through effective collaboration, good financial management, efficient operations, and smart growth.

The implementation, budgeting and detailed tasks are not addressed in this high-level strategic plan. A detailed development plan establishes an implementation road map and budget for the organization aligned with the vision and mission.

The remainder of this document discusses the strategic context of our organization, RFO's purpose, vision, mission and values, and our objectives and key strategies to achieve those goals. A detailed development plan will expand on each of the key strategies with a range of initiatives and key performance indicators.



STRATEGIC CONTEXT

In order to achieve our goals over the next few years we must be cognizant of the issues and trends that can impact our future both negatively and positively. These topics include both the issues faced at an industry level by all astronomy-related organizations, as well as the unique issues that can impact our county, including our demographics and education, entertainment, and tourism industries.

Light Pollution and Threats to the Dark Night Sky

One of the most prominent issues currently facing astronomy is the increase in light pollution resulting in the loss of the dark skies needed to view our solar system and deeper into space. In addition to the increasing light pollution, visual obstruction of the night skies will be exacerbated by the increasing number of satellites launched. SpaceX alone plans for a satellite system that includes 12,000 satellites. In subsequent plans a second phase has been added which brings the total to 40,000 satellites arranged in orbital “shells” at altitudes from 335km to 614km. (1) Compare that to the largest man-made “constellation” before 2019: 70 satellites from Iridium, a satellite phone company. While these satellites will help provide fast internet access to almost all parts of the globe, this increase in the number of satellites has raised concerns regarding crowding out visibility of the night sky for astronomical observations and astrophotography. Public education programs and a raising of corporate awareness are needed to ensure the protection of dark night skies for continued optical telescope viewing for education and research.

Locally, threats to the dark night sky are exacerbated by possible future building plans causing light pollution, such as the proposed Kenwood Ranch development project composed of a resort, winery, and homes. In a county that is consistently experiencing extremely low housing availability, the possibility of future building impacting light pollution is plausible.



Renewed Focus on Space Exploration, Research, and Astronomy

In recent years, interest in astronomy and everything space-related has flourished with the build-up and excitement surrounding the James Webb Telescope, NASA's plans to return to the moon, Space X's success with rocket launches, as well as private endeavors of business leaders (Richard Branson, Elon Musk, and Jeff Bezos) to get to space. With both government and private agencies devoting billions of dollars to space exploration, this excitement will continue into the foreseeable future. In 2020, the United States was by far the leading spender on space exploration, with government space program spending amounting to over 47 billion U.S. dollars. With expectations that the growing space economy will more than triple in size in the next decade, (2) including forecasts that space will grow to become a \$1.4 trillion market, education and qualifications in space-related fields incorporating astronomy, astrophysics and space science will be in high demand. With our history of "striking the spark" of interest and passion in astronomy, we are well positioned to continue fostering knowledge, experience, and research in space science in our community.

Increased Emphasis on STEM in Education Programs

Science, Technology, Engineering, and Mathematics (STEM) education is being focused on at all academic levels due to our world becoming increasingly complex and competitive. There is a need for students who engage in careers in these industries to be prepared to meet the challenges that affect our global population. At the same time there is also more emphasis being placed on experiential, hands-on learning. Given our proximity to many K-12 schools, junior colleges, and universities, RFO has the opportunity to act as a dark sky lab and education center. Especially if we can continue to update our scientific equipment and expand our educational and outreach offerings, we can aid in the need to provide students with astronomy-based, experiential learning opportunities.



Drivers of Change

Several other factors act as drivers of change for organizations involved in astronomy, and for venues located in our particular county. With the current renewed interest in space, mainstream media has responded with regular content, providing new information on advances in astronomy, space exploration, and citizen science that add to public knowledge and help stimulate public interest in astronomy and space.

Technology has evolved to allow advancements such as remote access of telescopes, and the ability to store and analyze large amounts of data. In today's fast changing world, it is important to keep up with technological advancements, staying relevant in the eyes of the public.

Tourism is also evolving with travelers expecting more experiential and/or educational entertainment options. Unique, one-of-a-kind, and memorable experiences are sought out and shared with acquaintances.

Given the nature of our county, it is important to consider the wealth of diversity and culture in our community and ensure inclusivity of all members of our society. The more we can adopt and embrace our differences in nationality, ethnicity, gender, sexual orientations, age, language, ability, socio-economics, values, goals, and life experiences, the richer our organization will become. Cultural diversity and inclusion provide opportunities for RFO to develop new programs that embrace the multiplicity of our society.

Lastly, there are drivers of change that are unplanned and unpredictable, as we have seen most recently with the global pandemic, and locally, increasing wildfires in California. In order to not only survive, but prosper, the Robert Ferguson Observatory will need to be quick and responsive to leverage opportunities, while also managing risks.

(1) "Goodbye darkness, my old friend ~ Vast satellite constellations are endangering the most ethereal of global commons: the night sky," *The Economist*, November 27, 2021.

(2) "Bank of America expects the space industry to triple to a \$1.4 trillion market within a decade," CNBC, October 4, 2020

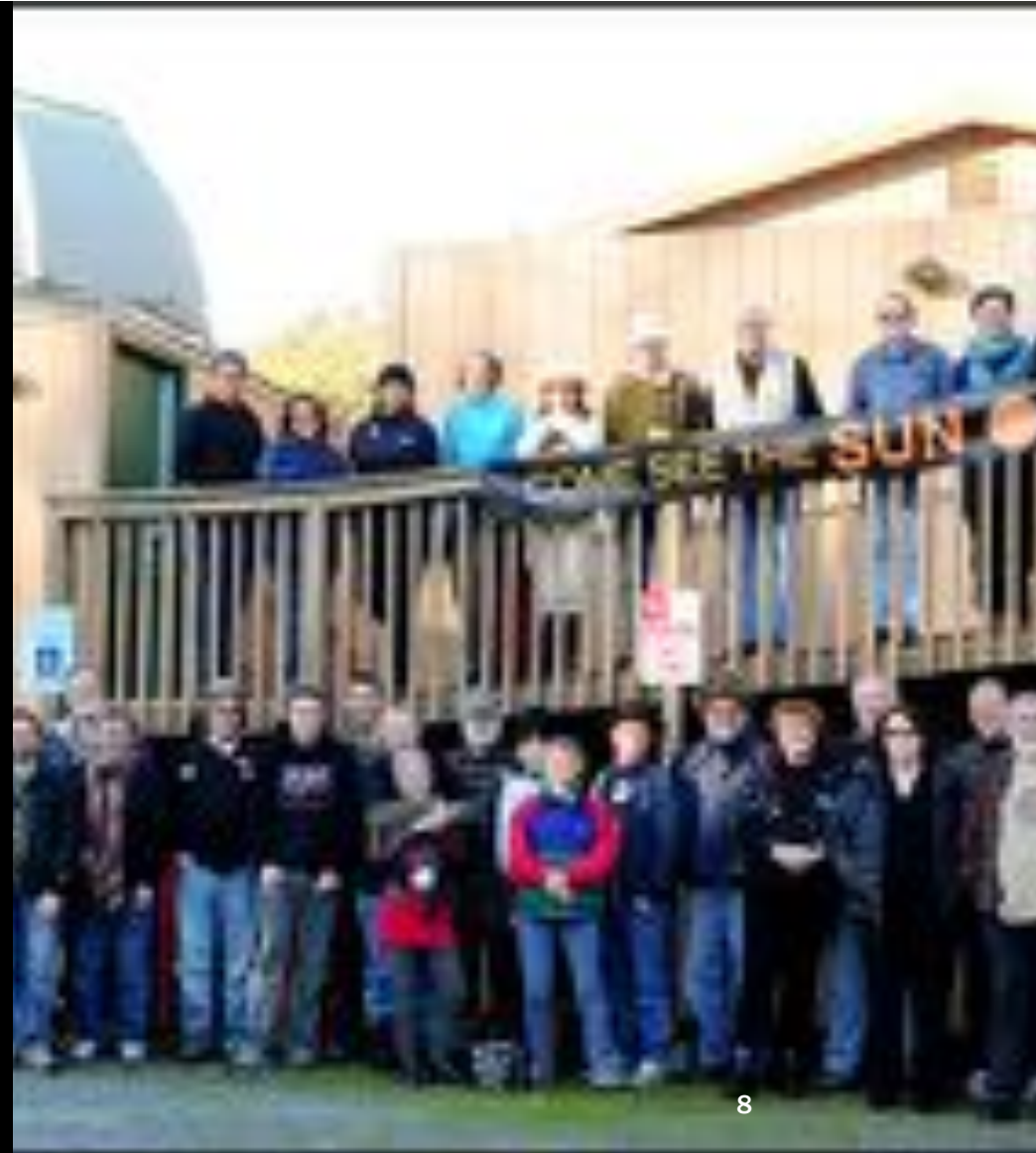


STRENGTHS AND VULNERABILITIES

One of the Robert Ferguson Observatory's greatest strengths is its people. Many current docents have been involved since the inception of the observatory about 25 years ago and are extremely dedicated and passionate. Indeed the observatory was all-volunteer run for over 20 years and currently just holds one full-time Executive Director and part-time accountant. All other aspects of running the observatory, from delivering programs to the public, offering public star parties and solar viewing events, providing classes and workshops, as well as managing all behind-the-scenes tasks to keep the observatory running smoothly are performed by close to 200 volunteers.

The reliance on key volunteers in operations, administration and maintenance is a major vulnerability should they leave or become sick or incapacitated. It has proved difficult to recruit, train and retain enough skilled volunteers to cover increasing demand for our services. Moreover, many of our most experienced volunteers are of advanced age and may no longer be able to dedicate the hours required. The appointment of qualified, paid staff will be required to meet increasing demands into the future.

During the time that the observatory was all-volunteer run the funds raised from public and private events met the organization's basic expenses. However, the board came to the determination several years ago that greater administrative oversight was needed in order for the organization to thrive and grow, which is when it hired its first Executive Director. Paid staff is needed to recruit, train, and retain our docent base, provide strategic leadership, and develop partnerships in the community. Increased income from diverse sources is being sought to ensure greater financial stability in the future.



RFO's location in a small valley on top of Sugarloaf Ridge State Park not only provides a location with dark skies in a semi-metropolitan area, but also ensures an ongoing contractual agreement with the State of California and RFO's other strategic partners. Given that we are also in the heart of Sonoma Valley, a globally known tourist destination, we receive a continual stream of out-of-town visitors. Further, our location within a state park and near a campground gives us brand recognition by association.

The observatory has an excellent reputation for its public star parties and classes run by highly committed, well-trained and knowledgeable docents, as our growing demand represents. Our public star parties run from January through November, one to two times per month (depending on the new moon) and provide both an educational and tourist experience for the public. Likewise, we are experiencing an increasing demand for private events, many of them for youth-related non-profits, and receive bookings months in advance. More skilled operators are needed to meet the demand and not burn out our existing docent pool.

The building, astronomical telescopes and equipment are aging, but of high quality and these are carefully serviced and maintained. To meet the growing demand for comprehensive education and night sky experiences, upgrades to telescopes and equipment are needed. In addition, RFO was gifted an external planetarium that could be used on nights where the skies are less than optimal for star gazing, at schools and events, as well as during the day. This could act as another revenue source for the observatory but thousands of dollars are needed to get it into proper working condition.



A program that pre-dates the observatory and inspired its inception is the Striking Sparks program. This program was started by Robert Ferguson, the observatory's namesake, in 1985 when he built a telescope with a student to "strike a spark" of interest in science and astronomy. That first "spark" of interest contributed to the student ultimately graduating with a Ph.D. in Astrophysics. The program continued through the Sonoma County Astronomical Society, and later was transferred to the Robert Ferguson Observatory in 2019. Initially volunteers hand built about 200 telescopes, but more recently Orion Dobsonian telescopes are purchased through funds donated by sponsors. In the program's 36-year history, 287 telescopes have been awarded, striking a flurry of sparks in Sonoma County students.

Another of the observatory's strengths is the astronomy education programs it delivers to schools and youth-related non-profit groups, such as girl scouts and boy scouts. Pre-pandemic, some of these programs entailed visits to schools and other interested groups. The evening private events provide a captivating and powerful learning experience for students. However, with many schools cutting funds and time for field trips, and the cumbersome nature of transporting students up the mountain to the observatory, it would benefit us to reach students in other ways, such as enhancing classroom visits and getting the portable planetarium operational.

Our solar observing and radio astronomy programs are also areas of opportunity for RFO. Historically solar observing has been a free event, held during the day prior to our public star parties. However, both the need to plan for and cap attendance as well as maximize revenue opportunities necessitates us to begin offering these services as paid events.



Although the volunteers had kept the observatory going for two decades without staff and developed good basic administrative practices, the observatory lacks the staff required to optimize some day-to-day operations and program management and an administrative person for financial operations. Some policies and procedures require updating and in some cases creation, and plans need to be established for risk management, bookkeeping and other corporate functions. The COVID-19 pandemic has stressed the importance of business continuity planning and underlined the need to explore ways to increase the resilience of the organization. Nevertheless, the negative ramifications of the pandemic were minimized by the agility of the organization and the creative solutions that were quickly implemented. It is this kind of responsiveness to challenges that will serve the organization well into the future.

While demand for our services is increasing, our current resources are becoming more limited and our docent pool is stretched thin. With our resources stretched to the limit, it will become necessary to look outside of the organization for other revenue sources in order for the organization to grow. Income from star parties and private events can barely provide for the current, basic needs of the observatory and provides little opportunity for expansion or improvement of existing services and infrastructure. Event income cannot be significantly increased at present due to logistical limitations with volunteers. Therefore, to be successful we will need to generate a continued flow of income from other sources such as corporate sponsorships, grants, and other development opportunities.

This will entail fundraising through a variety of avenues and the observatory will need to build its fundraising knowledge and expertise quickly.



COMPETITION

The Robert Ferguson Observatory enjoys the distinction of being the only observatory open to the public in Sonoma County, and indeed, offers the largest telescope that is accessible to the public in Northern California, the 40-inch reflector telescope. There are observatories for educational use at Piner High School and Sonoma State University, but the next closest public observatory is Chabot Space and Science Center in Oakland, almost two hours south of RFO.

RFO was designed for use by the general public and as such is well poised to become the primary center for public astronomy education in Sonoma County. That being said, the aging infrastructure could be improved to better meet the future demands for education, tourism and research.

Competition also presents itself in the form of other education and entertainment venues in Sonoma County that market themselves to tourists. Our competitive position can be greatly improved by enhancing the visitor experience. From an infrastructure point of view this means developing amenities such as improving the retail store, making the planetarium operational, enhancing the capability for visitors to engage in astrophotography, and perhaps eventually improving the classroom / learning center. If Sugarloaf Ridge State Park would dedicate the group campground next to the observatory to RFO use, that would also allow flexibility in booking events, training docents, and being able to provide better visitor experiences.



PURPOSE, VISION, MISSION AND VALUES

Purpose

The purpose of the Robert Ferguson Observatory is to give the public a place to foster their interest and passion in astronomy and space and to inspire young people to pursue further education or careers in astronomy or related STEM fields to help meet the growing future demand for individuals in these industries.

Vision

Our vision for Robert Ferguson Observatory is to be recognized as the primary center for public astronomy education in Sonoma County, serving students, families, and the general public.

Mission

Our mission is to offer educational programs about science and astronomy for students, the public, and in support of educators.



In order to meet our mission, our values are:

Education: Core to our mission is education and we strive to continue to deliver both public and private programs that educate our community in science and astronomy.

Competence: We aim to be a driver of primary astronomy research for students and amateur astronomers.

Partnership: Through strengthening partnerships with schools and other organizations we hope to broaden our reach, thereby educating more people and solidifying our place in the community.

Passion: We undertake our work with enthusiasm and dedication.

Inspiration: We continue to “strike the spark” with young people to encourage them to pursue higher education and careers in STEM fields.

Inclusivity: We ensure that all members of our very diverse county are represented in our visitors, volunteer group, and board and that we extend the same opportunities to individuals from all races, genders, sexual orientations, ethnicities, nationalities, socioeconomic groups, (dis)abilities, and ages and that all are served with sensitivity, respect, and fairness.

Growth: We recognize that in order to continue achieving our mission into the future we will need to grow our operations, embrace innovative thinking, and explore new opportunities.



OBJECTIVES AND KEY STRATEGIES

This strategic plan presents a road map for the Robert Ferguson Observatory to follow to help us achieve our goals for the coming years. Our strategic objectives present an image of the vision we have for the organization in 2025, and the key strategies provide a more focused plan of our actions to achieve those objectives.

Our first five strategic objectives are external objectives and encompass the areas of inspiration and education, programs and events, market awareness, inclusivity, and research. Achievement of these external objectives is dependent on our internal objectives of sound financial management, effective operations, successful partnerships, effective recruitment and training of a dedicated volunteer force and staff, and capital and infrastructure improvements.



Objective 1: Inspiration and Education

Provide public education services and programs to inspire an interest in astronomy for the people of Sonoma County and beyond, through public star parties, classes, private programs, and at schools and science-related events.

Key Strategies for Education

- Interface with schools and other youth-related organizations to bring astronomy-based curriculum and the Striking Sparks program to students and educators.
- Develop and enhance STEM, astronomy and space science education and outreach programs for both onsite and offsite events.
- Continue engaging youth through our Young Astronomers program.
- Create mentoring opportunities for high school and college students.
- Maintain, improve, and expand education equipment, resources and infrastructure, including planetarium, library, research equipment, and classroom.



Objective 2: Programs and Events

Provide inspirational and educational science-based tourism experiences.

Key Strategies for Programs and Events

- Utilize our high tourist location to reach out to area visitors to grow attendance at our public events and promote observatory rentals.
- In conjunction with other organizations and businesses in the local tourism industry, augment both our on-site and outreach events.
- Gain an understanding of visitor expectations and needs by utilizing feedback gained online and in-person.
- Improve visitor experiences on-site by increasing retail store offerings.
- Provide proficient telescope operators, presenters, and star guides for both on-site and off-site events.
- Continue to create and deliver programs that meet the public's needs, including expanding in the areas of radio astronomy, solar observing, astrophotography, family-friendly events, planet walks, Spanish language programs, and daytime programming.



Objective 3: Market Awareness

Position RFO as a premier education-based tourist destination.

Key Strategies for Market Awareness

- Market ourselves both as the primary public astronomy education facility in Sonoma County, as well as a venue for visitors to have an out-of-this-world experience.
- Develop relationships with local media outlets to promote our services and events.
- Promote our Membership program to increase the number of RFO advocates and ambassadors in our community, strengthening our overall public awareness.

Objective 4: Inclusivity

Ensure all members of our community are represented in our visitors, volunteer group, and board.

Key Strategies for Inclusivity

- Continue building our board and volunteer group in a way that represents our diverse community.
- Create programs that meet the needs of, and embrace, the multiplicity of our society.
- Retain the ability of all individuals, in every socioeconomic level, to benefit from our services by participating in programs such as Museums for All and the library's Discover and Go program.



Objective 5: Research

Build our research capabilities and collaborate with other groups to conduct astronomical scientific research using RFO facilities.

Key Strategies for Research

- Develop research committee by growing interested members, focusing on specific research targets, and sharing information.
- Foster relationships with local schools and universities to enhance research opportunities.
- Facilitate research through collaboration with local and national scientists and astronomers.
- Ensure the optimal condition of the RC20 research grade telescope and make available for research use.
- Utilize radio telescope equipment and solar observing scopes for research and demonstration purposes.
- Collaborate with the Search for Extraterrestrial Intelligence (SETI) Institute to continue hosting equipment at RFO that surveys the sky automatically for evidence of laser communication from other civilizations.



Objective 6: Financial Management

Summary

Key Strategies for Financial Management

- Develop financial viability through reliable financial management planning and processes and diverse sources of income.
- Ensure financial sustainability by regularly reviewing our costs and revenues and altering both if necessary.
- Maintain financial governance and a balanced budget.
- Make up the margin of needed revenues not met by program proceeds by exploring government and foundation grants and corporate sponsorships.



Objective 7: Internal Operations and Processes

Develop expertise in a range of management areas to ensure effective operations management and mitigate risk and liabilities.

Key Strategies for Internal Operations and Processes

- Ensure effective operations management through well-defined operational governance and efficient processes.
- Regularly review and update operations management policies, processes and procedures.
- Empower key volunteers to handle various management and administrative roles.
- Build essential management plans including risk management, business continuity and disaster recovery plans, and regularly test these plans.
- Create plans for environmental emergencies, i.e. fire, and ensure volunteers are trained appropriately.
- Ensure relevant occupation health & safety plans and procedures are in place and all volunteers receive the required training.
- Complete the background check and fingerprinting process of key volunteers to ensure compliance of working with underage youth.



Objective 8: Partnerships

Leverage our existing partnerships and create new ones to further our development in the areas of research, education, and tourism.

Key Strategies for Partnerships

- Utilize our member partners of Team Sugarloaf to collaborate on future programs and services that can benefit both constituencies.
- Develop partnerships with schools and other youth-related organizations for the purpose of furthering our educational mission, research opportunities, and mentoring programs.
- Partner with tourist-related organizations and businesses to leverage both our on-site and outreach events, and to build brand awareness.



Objective 9: Volunteers and Staff

Recruit and retain dedicated volunteers and maintain a friendly, inclusive environment where volunteers can contribute existing skills and learn new ones, and hire staff as needed, once financially feasible, to ensure streamlined operations.

Key Strategies for Volunteers and Staff

- Recruit and train volunteers to be proficient telescope operators, demonstrators, and presenters for public and private on-site events.
- Recruit and train a cadre of paid Star Guides to manage private outreach events, and on-site events as needed.
- Retain volunteers by providing opportunities to learn new skills and utilize existing expertise, building positive relationships, providing social activities, and encouraging ownership of various programs and tasks.
- When financially possible, hire additional staff as needed to relieve the burden on volunteers for administrative and management tasks.



Objective 10: Capital Improvements

Undertake upgrades of assets and infrastructure, including the observatory building, telescopes, and other equipment.

Key Strategies for Capital Improvements

- Obtain funding for capital works to make necessary upgrades to telescopes.
- Continue maintenance on building and surrounding grounds to ensure public safety and optimal flow of guests.
- Work with California's Department of Parks and Recreation and Team Sugarloaf to dedicate the group campground adjacent to the observatory to RFO use.
- Obtain funding to get the portable planetarium operational for use at on-site and off-site events, at schools, and other educational programs.
- Create a process and space for dealing with telescope donations that can be used by volunteers or sold for revenue. Add a number of telescopes to our library system that can be checked out by docents for personal use or at events.
- Improve classroom facilities for educational use and for utilizing the observatory for daytime programs.



KEY SUCCESS FACTORS

There are several factors that are critical in determining the success or failure of the Robert Ferguson Observatory to achieve its mission and reach its strategic goals. These factors are key areas that must be met for us to survive and prosper and need to be actively managed. These critical success factors include:

People – Recruitment and retention of volunteers who are dedicated, highly trained and passionate with a customer service focus operating in an inclusive and supportive environment, as well as paid staff to manage key activities.

Leadership – Strong strategic direction by the board, committees, and staff, offering strategic thinking, effective management, and good communication and planning.

Financial – Financial stability and sufficient revenue to both meet current needs and expenses, as well as provide opportunities for growth, through expanded programs, fund raising, sponsorship, grants, and donations.

Brand Awareness – Marketing and public relations activities to lead us from “the best kept secret” to the go-to place to inspire and educate students, families, and the general public.

Programs/Services – Inspirational education, tourist, and scientific programs and events that are well promoted and valued for their knowledge content and enjoyment.

Process – Efficient and streamlined operations that are continually updated and improved.

Infrastructure and Equipment – Effective and reliable infrastructure, equipment and facilities that are technologically relevant and continually maintained and upgraded.



CONCLUSION

While the observatory has been in operation for more than two decades, it is nevertheless “young” as an organization in that it has only been a few years since it moved from an all-volunteer organization to retaining paid staff and formalizing our strategic direction and goals.

We’ve come to a critical time in our organization in that the demand for our programs and services have been growing exponentially, while our resources have not been able to keep up with that demand.

The goal of this strategic plan is to clarify the desired future we would like to achieve. It provides guidance to the observatory board of directors, management staff, volunteers, and all our stakeholders, for helping us achieve our vision of being recognized as the primary center for public astronomy education in Sonoma County, serving students, families, and the general public. We must be agile, cognizant of trends, embrace continuous improvement and keep moving forward.

Through the exceptional passion and dedication of our volunteers, board, staff, and donors, we are confident that we will succeed in reaching our objectives. However, we also realize that we cannot plan for every challenge, as the last years of the pandemic have shown us. We may experience some setbacks in our attempts at achieving our goals, but we will continue to learn and grow from our experiences. In order for the Robert Ferguson Observatory to be a success throughout the next several years we must move forward together, ensuring that our partnerships with all stakeholders remain strong. We must stick to and embrace our purpose and mission; respect and value the contribution of all our stakeholders; celebrate our successes, and continue to inspire the public to look up at the stars.



