

Department of Commerce and Consumer Affairs

CERTIFICATE OF GOOD STANDING

I, the undersigned Director of Commerce and Consumer Affairs of the State of Hawaii, do hereby certify that

HAWAII ACADEMY OF SCIENCE

was incorporated under the laws of Hawaii on 11/19/2001 ; that it is an existing nonprofit corporation; and that, as far as the records of this Department reveal, has complied with all of the provisions of the Hawaii Nonprofit Corporations Act, regulating domestic nonprofit corporations.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Department of Commerce and Consumer Affairs, at Honolulu, Hawaii.

Dated: January 16, 2020

Director of Commerce and Consumer Affairs



Application Submittal Checklist

The following items are required for submittal of the grant application. Please verify and check off that the items have been included in the application packet.

- 1) Certificate of Good Standing (If the Applicant is an Organization)
- 2) Declaration Statement
- 3) Verify that grant shall be used for a public purpose
- 4) Background and Summary
- 5) Service Summary and Outcomes
- 6) Budget
 - a) Budget request by source of funds ([Link](#))
 - b) Personnel salaries and wages ([Link](#))
 - c) Equipment and motor vehicles ([Link](#))
 - d) Capital project details ([Link](#))
 - e) Government contracts, grants, and grants in aid ([Link](#))
- 7) Experience and Capability
- 8) Personnel: Project Organization and Staffing



NEAL ATEBARA, BOARD CHAIR

01/17/20

AUTHORIZED SIGNATURE

PRINT NAME AND TITLE

DATE

**DECLARATION STATEMENT OF
APPLICANTS FOR GRANTS PURSUANT TO
CHAPTER 42F, HAWAII REVISIED STATUTES**

The undersigned authorized representative of the applicant certifies the following:

- 1) The applicant meets and will comply with all of the following standards for the award of grants pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant is awarded;
 - b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;
 - c) Agrees not to use state funds for entertainment or lobbying activities; and
 - d) Allows the state agency to which funds for the grant were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant.
- 2) If the applicant is an organization, the applicant meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is incorporated under the laws of the State; and
 - b) Has bylaws or policies that describe the manner in which the activities or services for which a grant is awarded shall be conducted or provided.
- 3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and
 - b) Has a governing board whose members have no material conflict of interest and serve without compensation.

Pursuant to Section 42F-103, Hawaii Revised Statutes, for grants used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant used for the acquisition of the land.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Hawaii Academy of Science
(Typed Name of Individual or Organization)


(Signature)

01/17/20
(Date)

Neal Atebara
(Typed Name)

Board Chair
(Title)

Application for Grants

If any item is not applicable to the request, the applicant should enter "not applicable".

1. Certificate of Good Standing (If the Applicant is an Organization)

A current Certificate of Good Standing can be found immediately after the cover page of this proposal

2. Declaration Statement

A signed copy of the Declaration is attached to this proposal

3. Public Purpose

The ability to create a resource and portal of all current STEM related programs, events and opportunities will give choices to students, families and teachers in the possibility of pursuing a STEM related pathway that would benefit the state's workforce development needs

II. Background and Summary

Background: The Hawaii STEM Coalition was founded in 2018 as an informal gathering of volunteer-based STEM organizations that serve the State of Hawaii through events and competitions with a focus on all K-12 students and teachers statewide. The coalition is currently being administered pro-bono through the Hawaii Academy of Science.

The coalition recognized that working in silos limited the potential of each organization. Each STEM organization seeks funding from the same list of sponsoring agencies as well as volunteers, mentors and cross-over of student/teacher participation. Data on STEM education collected by each organization is fragmented and only gives a small piece of the larger picture of STEM education in Hawaii.

The Coalition received its first funding through a Grant-in-Aid from the State Legislature in 2019 to achieve this goal of unification and studying the **ROI** of investing in STEM events. The grant is currently in progress and the feasibility study is in the assessment phase, working in conjunction with the Department of Education, University of Hawaii and industry. Real data of STEM education in the K-12 school system is currently being collected and will be presented to stakeholders when the grant period has commenced. The funding resulted in a more organized system of collaboration which is critical to ensuring the continuation of quality STEM programs in Hawaii.

The coalition members include the following volunteer-based organizations: The Hawaii Association of Future Farmers of America (HAFFA), Hawaii First Robotics (HFR), Hawaii State Science Olympiad (HSSO), Science Bowl and VEX Robotics. The Hawaii Academy of Science (HAS) is the only organization with a paid staff and provides in-kind services to administer the funds received on behalf of the coalition. All members hold a non-profit 501(c)(3) status.

Summary of Proposed Project:

As all of the Coalition organizations continue to run **on a volunteer basis**, expansion of existing programs is vital to its sustainability. Members of the STEM Coalition recognized the need to not only partner solely for funding purposes but partnering in programmatic areas as well to increase expansion, decrease costs and reach an even broader group of K-12 students. Due to the contract execution date, the 2019 study has only covered 6 months of data for a four-year longitudinal assessment. Therefore, we are seeking **one grant** that will be used to continue the study and also provide support for the following new goals and objectives:

Goal 1: To expand the unified initiative of volunteer-run Hawaii STEM organizations throughout the State

Objective 1.1 Expansion of programs - all of the STEM Coalition programs will expand their competitions to schools that were not being targeted.

Objective 1.2 Broadening the Coalition website to include more access to Statewide programs outside of the STEM Coalition. These programs will be categorized by subject matter, type of program (competition, workshop, internship, paid internship, work-study). and also, by geographic location for easier search results.

Objective 1.3 The website will track the number of visitors to the site and also ask for feedback from the organizations to see if there were outcomes directly related to the website. The research will analyze if there is an increase in STEM engagement and if participation is more prevalent as a result of more choices and opportunities within their areas of interest.

Objective 1.4 The research coordinator hired by the 2019 Grant-in-Aid will continue to add the programs from objective 1.2 to the feasibility study.

Objective 1.5 Members of the STEM Coalition and a few participating students will conduct a science program workshop in underserved locations (the Leeward coast and/or outer islands) to increase

Goal 2: Identify synergistic outcomes within the STEM Coalition to create cross-organization events and programs to increase STEM engagement and ROI

Objective 2.1 STEM Coalition program partnership - Develop a new competition with partnering STEM coalitions (HAFFA and VEX) to see if there are any ROI.

Objective 2.2 Assessment of STEM Coalition programs currently integrated into school curriculum Hawaii FIRST Robotics, Hawaii State Science Olympiad, Science Bowl and Hawaii Academy of Science will partner on an assessment of all of its current programs that are aligned with the new State Science standards integrated into the classroom. Private/public partnerships with local Universities and industry to ensure curriculum is aligned with industry standards and prepare for career and college readiness.

Objective 2.3 Showcase and Demo STEM Coalition projects at year-round events. The STEM Coalition will create a showcase and support the on-going competitions throughout the year. Top projects, teams and students from each STEM organization competition will showcase their projects and/or prototypes to the public.

Objective 2.4 Evaluate the effectiveness of collaboration and year-round exposure. Include assessment of students recruited by the STEM Coalition showcase

The public purpose and need to be served

Early exposure and education in the Science, Technology, Engineering and Mathematics (STEM) are vital to Hawaii's future. These skills are in high demand, and this demand is projected to continue to increase dramatically in the future. STEM provides our students with the critical thinking and methodologies necessary for a robust workforce. STEM enrichment programs, often run entirely by volunteers, play an important role in augmenting traditional classrooms, particularly for public schools in underserved areas. Hawaii STEM Coalition programs offer hands-on opportunities to solve real-world problems using cutting edge tools and technology.

Describe the target population to be served

The target population includes local K-12 students throughout the State of Hawaii.

Describe the geographic coverage

This Coalition of volunteer-run STEM organizations serves an estimated 10,140 students and volunteers throughout the State of Hawaii, grades K-12.

III. Service Summary and Outcomes

Scope of work, tasks and responsibilities

| Goal #1: To expand the unified initiative of volunteer-run Hawaii STEM organizations throughout the State | | | |
|--|--|--------------------------------|--------------|
| Objective | Task | Responsible Party | Month |
| Objective 1.1 Expansion of programs | Identify STEM programs outside of the coalition and categorize by subject, outcome and geographic location | STEM Coalition and Coordinator | July |
| Objective 1.2 Broadening the Coalition website | Expand the Hawaii STEM Coalition site to provide access to STEM programs by category and geographic location | STEM Coalition and Coordinator | July-Sept |
| Objective 1.3 Utilize website to increase data set | Make surveys available on-line to capture broader numbers | STEM Coalition and Coordinator | July |
| Objective 1.4 Coordinate data | Utilize the data to identify gaps in STEM coverage | STEM Coalition Coordinator | July-Dec |
| Objective 1.5 Evaluate expansion data | Review data for increase participation and tracking of student pathways | STEM Coalition Coordinator | May-June |
| Objective 1.6 Conduct a project showcase at a school or classroom at underserved/rural locations | Expand awareness and participation of science programs to underserved populations | STEM Coalition and Coordinator | April - May |

| GOAL #2: Identify synergistic outcomes within the STEM Coalition to create cross-organization events and programs | | | |
|--|---|--------------------------------|--------------|
| Objective | Task | Responsible Party | Month |
| Objective 2.1: STEM Coalition program partnership | Develop a new competition with partnering STEM coalitions (HAFFA and VEX) to see if there are any ROI (See expansion plan under HAAFFA section) | STEM Coalition and Coordinator | July |

| | | | |
|---|---|--------------------------------|-----------------------------|
| Objective 2.2: Assessment of STEM Coalition programs integrated into school curriculum | Survey schools to see if there are STEM Coalition programs that are aligned with the new State Science standards integrated into the classroom. Identify public/private sector to validate alignment in career and college readiness | STEM Coalition and Coordinator | July-Oct |
| Objective 2.3: STEM Coalition showcase | Coordinate amongst the coalition members to attend events and showcase the top projects/students of the competitions | STEM Coalition and Coordinator | November |
| Objective 2.4 Evaluation of cross-organization events and programs | Prepare findings from the programs and event | STEM Coalition and Coordinator | July, December, April, June |

HAWAII STEM COALITION: Organization Member Profiles

The following members of the Hawaii STEM Coalition have unique STEM platforms that contribute to the learning outcomes and workforce development needs described in the proposal. Below is a brief summary of each organization, its mission, reach and overall contribution to the State of Hawaii. The Hawaii STEM Coalition is open to all STEM organizations, and it will continue to grow and gather important data that has not been collected previously

HAWAII STEM COALITION 2019 STATEWIDE STATISTICS

| | Science Bowl | Hawaii Assoc Future Farmers of America | Hawaii First Robotics | VEX Robotics | Hawaii State Science Olympiad | Hawaii Academy of Science |
|-------------------------------|--------------|--|-----------------------|--------------|-------------------------------|---------------------------|
| Students at School Level | 104 | 400 | 1,354 | 1,840 | 2,000 | 6,200 |
| Students at District/Regional | 104 | 200 | 889 | 1,405 | 2,000 | 1,311 |
| Students at State Level | 104 | 80 | 951 | 410 | 600 | 418 |
| Students at National/Intl | 5 | 8 | 445 | 100 | 30 | 27 |
| Participating Schools | 14 | 18 | 90 | 159 | 75 | 180 |
| Volunteers | 120 | 50 | 900 | 1,500 | 200 | 600 |



The Hawaii Academy of Science -
Founded in 1925, the Hawaii Academy of Science (HAS) is a private 501(c)(3) non-

profit professional society that started as a lead organization in bringing scientific chapters, groups and associations together to discuss topics relevant to the culture and community. Over the years HAS became the state affiliate the American Association for the Advancement of Science (AAAS), the world's largest general scientific society as well as an affiliate of the International Science & Engineering Fair (ISEF)/Science for the Society and Public. The mission of the Academy is to create a better world through Science and Education. With this mission in mind, the Academy has conducted the Hawaii State Science & Engineering Fair (HSSEF) for middle and high school students every year since 1958 along with symposiums, workshops, outreach events and scientific community gatherings. HAS is excited to revisit its collaborative roots by working with the scientific community to meet common goals through a unified effort through the establishment of the Hawaii STEM Coalition. HAS will provide *in-kind* support to the proposed project.

Hawaii Association of Future Farmers of America (HAFFA)

The National FFA Organization was founded in 1928 and the Hawaiian Association FFA was chartered in 1929. FFA programs were found throughout the Territory in intermediate and high schools. Agriculture Education included agriculture production and FFA leadership training, which featured competitions in public speaking and other ag-related activities.



This proud legacy almost ended in 2010, a low point in agricultural education in the public schools. Enrollment in Natural Resources and the FFA intra-curricular program diminished to an all-time low, due to factors including Weighted Student Formula (WSF) funding and an emphasis on pure academics as opposed to applied sciences. Thanks to the efforts of a core group of agriculture teachers and external organizational support, the program survived and is now beginning to thrive.

The FFA is uniquely poised to prepare students to apply STEM knowledge to research and to agricultural production and agri-science careers. After facing near extinction, the Hawaii FFA has re-emerged with a strategic view as a structured and valuable component of the greater agriculture movement. Operationally, we are guided by the United Nations Sustainable Development Goals, the strategic plans of the HDOE and our supporters, and most recently by the Governor's call to double local food production by 2020.

Expansion Plan with VEX

- Participate in a 4-hour Design Thinking orientation (this will be the common problem-solving construct – with Design Thinking Hawaii)
- Examine 4 agriculture production scenarios

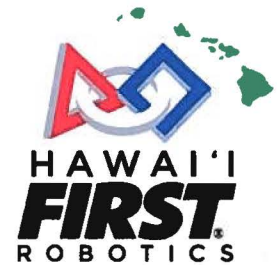
- Develop a process to select two ag production challenges (one middle school-based and one high school-based) and invent robotics solutions (one must be aquatic and one land or lab based)
- Visit Agriculture school sites
- Agriculture - Prepare school farms with examples of production challenges
- Robotics – Conduct on-site assessments and begin empathy, definition and ideation stages
- Continue DT process into the prototyping and testing phases
- Apply prototypes at agriculture school sites
- Regroup to demonstrate solutions
- Peer review

HAFFA estimated expenses: \$15,000

HAFFA would like to request: \$7,000

Hawaii FIRST Robotics (HFR)

The Mission of Hawaii FIRST Robotics is to inspire young people to be science and technology leaders and innovators, by engaging them in exciting mentor-based programs that build science, engineering, and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication and leadership.



FIRST is more than just robots. FIRST participation is proven to encourage students to pursue education and careers in STEM-related fields, inspire them to become leaders and innovators, and enhance their 21st century work-life skills.

In Hawaii, HFR plans, organizes, underwrites, and hosts FIRST Tournaments and provides opportunities for students from Kindergarten through High School to collaborate and compete, and in doing so, fulfill the following needs:

- Increase interest in Science, Technology, Engineering and Math (STEM)
- Increase STEM understanding
- Ready students for a career in STEM
- Increase workforce skills
- Build life values

Expansion Plan: Hawaii FIRST Robotics is actively working in collaboration with FIRST National to establish a unified FIRST Ecosystem in Hawaii to umbrella all four FIRST Robotics Programs under a single non-profit organization. The primary objective of establishing Hawaii FIRST Robotics as the sole Program Delivery Partner for the FIRST Territory in Hawaii is to leverage consolidated resources and create a cohesive forward movement toward growth, program quality, sustainability and scalability. Currently, Hawaii FIRST Robotics organizes and funds the following FIRST Programs: FIRST Lego

League Jr. (FLL Jr.), FIRST Lego League (FLL) and FIRST Tech Challenge (FTC). Through this FIRST Ecosystem initiative, Hawaii FIRST Robotics will add the FIRST Robotics Competition (FRC) program to its program deliveries. The size of FRC's exposure and expenses will nearly double Hawaii FIRST Robotics annual budget in FYE2021.

The holistic benefits to unifying all four programs under Hawaii FIRST Robotics are:

- Unification of brand identity and digital presence
- Unification of fundraising
- Unification of cross-program advocacy with the Department of Education and other educational institutions
- Stronger progression of student participation from K through 12th grade
- Leveraging of resources: costs, volunteers, management]
- Increase in ROI as a result of additional program participation of four FIRST programs

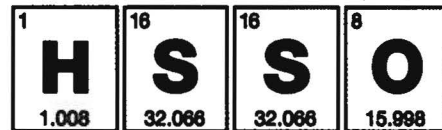
Preliminary planning has begun with a targeted July 2020 – June 2021 roll out of the FIRST Ecosystem under Hawaii FIRST Robotics.

HFR estimated expenses: \$142,250

HFR would like to request: \$75,000

Hawaii State Science Olympiad (HSSO) Since 2004, the Hawai'i State Science Olympiad (www.hssso.org), a federally recognized 501(c) (3) non-profit organization, has been dedicated to improving the quality of K-12 science education in Hawai'i. The National Science Teachers' Association, the National Governor's Association and the past four U.S. Presidents have cited the Science Olympiad organization as a model program to spark student interest in science, technology, engineering and mathematics (STEM) and provide to support learning and discovery for students of various gifts and talents. To date, Hawaii's own HSSO has provided exciting opportunities in STEM exploration to over 25,000 students statewide. At its core, the Science Olympiad program is about creating life shaping/changing opportunities for students. Through our program, a diverse body of students is able to participate in a wide range of science-based activities that meet Common Core, Hawai'i State and National Science standards.

Hawai'i State Science Olympiad



As part of the national Science Olympiad system, HSSO provides a tournament-based program for K-12 students across all islands of Hawai'i. Each year, we organize over one dozen tournaments across the state encompassing 18 tournament events and provide the rules and educational materials for each event to teacher-coaches from participating schools. In 2015, 84 schools and other organizations, and over 2,200 students, participated in our tournaments. The tournament events cover a wide range of topics including, but not limited to, astronomy, biology, chemistry, ecology, engineering, forensics, geology, medicine, physics, robotics, technology and zoology. Science Olympiad events engage students in hands-on, problem-based activities

designed to challenge as well as excite. These events are real science including inquiry-based experiments that allow even our youngest student to experience the fun and excitement of making new discoveries.

The HSSO community has grown steadily since its inception. Last year, over 1,500 students from 84 teams from every island in the State participated in six regional tournaments for high school (C Division) and middle school students (B Division), five to seven elementary school (A Division) tournaments, and our final tournament. Winners in the B and C Division are then offered the opportunity to represent Hawaii at the National Science Olympiad tournament held in July. Even with this success, there are many students who are not exposed to our program. HSSO State Directors continually engage with Department of Education staff, school administrators and teachers to further grow the program within our state, especially for Title I schools in some of Hawaii's most disadvantaged communities.

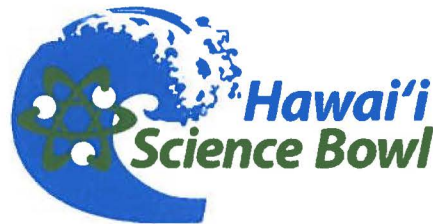
The Hawai'i State Science Olympiad budget for operating budget is \$47,000. HSSO receives all its funding through the generosity of partner corporations (historically 50%), community foundations (13%), team registration fees (28%) and individual donations (9%, approximately half of which come from HSSO officers and board members)

Expansion Plan: HSSO plans on continuing with initiatives to further drive the capabilities of our regional tournament directors to provide the highest quality forums for STEM competition through the state, and start additional programs to bring the HSSO program to more students. Specifically, we will be looking to add two more regional tournaments to Oahu to better serve the large student population on the island, and increasing the amount of equipment and materials available to both our tournament directors and the schools that they support, particularly on the neighbor islands, to make the program more cost-effective and meaningful to the schools and students. Additionally, we will seek to expand and make more formal our Elementary Science Olympiad program throughout the state to foster bringing an increased awareness and greater opportunities for our youngest keiki to explore the STEM world.

HSSO estimated expenses: \$55,000

HSSO would like to request: \$45,000

Science Bowl The Hawai'i Science Bowl (HSB) was founded in 1994 and is the only qualifying competition in Hawaii that is recognized by the U.S. Department of Energy for the National Science Bowl, which is held annually in Washington D.C. HSB is a fast-paced Jeopardy style competition between high school teams statewide. Teams are given questions on a variety of STEM (Science Technology Engineering Math) related topics, which test both their knowledge of STEM and their competitive skills in responding quickly, correctly and strategically before the other competing team answers the question.



The mission of the Hawaii Science Bowl is to elevate participating high school students' mastery of STEM disciplines by providing a highly competitive event that requires going far beyond standard school requirements. The competition provides students with the skills necessary to assist them in Hawaii's emerging knowledge-based economy and is a catalyst to mastering core STEM subjects. Successful teams spend countless hours outside of their regular high school classes to prepare for the competition.

The Hawaii Science Bowl competition features 20 teams, 100 students, 20 coaches, and over 100 volunteers. Over the last 25 years, 54 Hawaii high schools across the state and over 2,400 Hawaii students and their advisors have participated in the competition and approximately 120 students have represented Hawaii on the national stage. Past participants have become engineers, scientists and lawyers.

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Expansion Plan: Science Bowl will reach out to more schools throughout the state and simultaneously reinstate the Student tours which was not available between 2012-2018 due to a lack of funding. This tour allows students to participate in personal behind the scenes science tours by working scientists at Mauna Kea observatories (both on mountain and base camps); Volcano's National Park Observatory, Maui Space Surveillance System, Maui Supercomputing Center, Pacific Missile Range Command Center, Ocean Thermal Energy Conversion (OTEC) power plant, and we need funding to continue this program.

Many past participants have shared that competing in the Hawaii Science Bowl helped them with attending the college of their choice and receiving internships and/or scholarships.

Science Bowl estimated expenses: \$22,000
Science Bowl would like to request: \$15,000

VEX Robotics The VEX Robotics Design System offers students an exciting platform for learning about areas rich with career opportunities spanning science, technology, engineering and math (STEM). These are just a few of the many fields students can explore by creating with VEX robotics technology. Beyond science and engineering principles, a VEX Robotics project encourages teamwork, leadership and problem solving among groups. It also allows educators to easily customize projects to meet the level of students' abilities.

Career Skills: With the rapid proliferation of many varieties of robotic devices, domestic, institutional, and commercial, this is an industry that likely will need a growing work force, as individuals and organization become consumers of robots and all groups will need access to some level of familiarity and expertise with them. Beyond those who will earn their living full time designing, maintaining, and installing and setting up, robots,

familiarity with them will be a plus across the population. Schools should increase the experiences in this area that they offer students.

Innovation, Problem Solving, Creativity: There are few areas more misunderstood than the teaching and learning of Innovation, problem solving, and creativity. And while these have often in the past decade been cited as absolutely essential skill sets and bodies of knowledge for today's graduates to leave school with, the "How To" of teaching them has very infrequently been included in standards documents and is not served well by a readily available body of curriculum, documented activities, and materials—other than in the area of Student Robotics, which has much to offer already.

Goals

1. Sustain and expand access to VEX robotics, grades 3-12
4. Incentivize use of VEX robotics in the classroom during the regular school day
5. Support qualifying leagues and tournaments.
6. Support VEX State Championships
7. Support Robotics Education and Competition Foundation Hawaii Signature Event

Expansion Plan:

- o Teacher training: STEM via VEX robotics
- o Host a VEX robotics Partner Summit
- o Pilot the Robotics Aerial Drone Competition (<https://www.roboticseducation.org/rad/>)
- o Expand global collaboration in VEX robotics (China, Japan, Korea)

Budget

- o State VEX Championships and Signature event: \$20,000
- o Qualifying tournament, league support (Big Island, Maui, Oahu, Molokai): \$48,000
- o Incentivizing use of VEX robotics during the school day: \$35,000
- o Supporting global collaboration in VEX robotics in particular to Pacific rim via exchange programs \$20,000
- o Pilot the Robotics Aerial Drone Program \$15,000
- o Host VEX Partner summit to provide training and standardization, vision planning: \$15,000

VEX estimated expenses: \$153,000

VEX would like to request: \$63,000

2. Provide a projected annual timeline for accomplishing the results or outcomes of the service;

| | | |
|--------|--|-------------|
| Task 1 | Establish a planning committee to implement STEM coalition showcase | Quarter 1 |
| Task 2 | Identify programs being offered outside of the STEM Coalition and begin phase II of feasibility study to increase tracking of ROI. | Quarter 1 |
| Task 3 | Assessment of schools that are currently using STEM coalition programs to meet science standards | Quarter 1-2 |
| Task 4 | Create expansion plan surveys and disseminate to all of the organizations to report on any increase of ROI as a direct result | Quarter 3 |
| Task 5 | Begin to transition new programs to the website for statewide usage along with open resource materials for schools that wish to align STEM programs to State science standards | Quarter 3-4 |
| Task 6 | Reporting, grant administration and fiscal reports | Quarter 1-4 |

3. Describe its quality assurance and evaluation plans for the request. Specify how the applicant plans to monitor, evaluate, and improve their results; and

Each objective will be closely monitored by the Hawaii STEM Coalition Executive Committee to ensure tasks and deliverables stay on schedule. The Committee will meet on a bi-monthly basis to review the detailed tasks. The project results will be sent to available faculty and staff at the Hawaii Department of Education and the University of Hawaii at Manoa (STEM Program office, College of Engineering, College of Tropical Agriculture and Human Resources) along with industry experts identified in the for feedback on career and college readiness

4. List the measure(s) of effectiveness that will be reported to the State agency through which grant funds are appropriated (the expending agency).

These Measures of Effectiveness are relevant in the areas of STEM engagement and directly correlate to the project timeline:

- Report the number of student participants in all STEM programs within the Coalition
- Report the number of schools participating in all STEM programs within the Coalition
- Report on the increase of STEM programs outside of the Coalition and any increase in statewide numbers for the ROI
- Evaluate data showing direct correlation between STEM programs

- and program expansion
- Evaluate the number of schools using STEM Coalition programs to meet State science standards
- Evaluate usage of the open source materials as a result of the synergistic assessment by tracking website visitation
- Evaluate and report on the survey results at the Coalition showcase
- Track the number of visitors utilizing the website to see if there is an increase in STEM participation as a result of the Coalition showcase
- Evaluate and report survey results on the college and career readiness

The research provided to the State will focus on the new collective of STEM coalition programs and how these programs are impacting the STEM educational to workforce pipeline via the website and study. The DOE and the legislature will be able to use this information as a result of this strategic shared funding. \$235,000, of which \$205,000 will provide strategic program support for the five different nonprofit STEM programs, and \$30,000 for a half-time researcher to work with the Coalition to continue research that began in the second quarter of FY20, and identify non-government sources of funding to help grow the coalition’s mission.

IV. Financial

Budget

1. The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.
 - a. Budget request by source of funds ([Link](#))
 - b. Personnel salaries and wages ([Link](#))
 - c. Equipment and motor vehicles ([Link](#))
 - d. Capital project details ([Link](#))
 - e. Government contracts, grants, and grants in aid ([Link](#))
2. The applicant shall provide its anticipated quarterly funding requests for the fiscal year 2021.

| Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total Grant |
|-----------|-----------|-----------|-----------|-------------|
| 72,500 | 105,000 | 50,000 | 75,000 | 235,000 |

3. The applicant shall provide a listing of all other sources of funding that they are seeking for fiscal year 2021.

4. The applicant shall provide a listing of all state and federal tax credits it has been granted within the prior three years. Additionally, the applicant shall provide a listing of all state and federal tax credits they have applied for or anticipate applying for pertaining to any capital project, if applicable. **N/A**
5. The applicant shall provide a listing of all federal, state, and county government contracts, grants, and grants in aid it has been granted within the prior three years and will be receiving for fiscal year 2021 for program funding.
 1. **2019 Grant-in-Aid \$160,000**
6. The applicant shall provide the balance of its unrestricted current assets as of December 31, 2019. **N/A**

V. Experience and Capability

1. Necessary Skills and Experience

As community and event organizers with paid staff, HAS will assist the coalition with resources that will cut time and costs for each member (IN-KIND). The HAS office will also provide administrative oversight and work with members to sustain and secure funding to increase capacity and build current infrastructures by streamlining resources and identifying priorities to meet their financial goals. The HAS Board will also assist as needed on a pro-bono consultant basis.

2. Facilities

HAS will provide facilities to the Coalition on a pro-bono basis as a service to the STEM community. HAS is extremely fortunate to be generously sponsored by the University of Hawaii at Manoa, College of Education for nearly two decades. The office is located in the College of Education portables as a fully furnished office that can accommodate four staff members. Phone, Hawaii.edu emails, internet, copying machines and access to the University of Hawaii network are readily available to assist the Coalition members.

VI. Personnel: Project Organization and Staffing

1. Proposed Staffing, Staff Qualifications, Supervision and Training

Hawaii STEM Coalition Executive Committee will oversee that the deliverables are met for each task as described in the proposal. The committee consists of the executive leaders from each STEM organization and will meet monthly.

Jessica Ayau Dumlao (to be paid as an independent contractor for the purpose of this study). Ms Dumlao was hired through the 2019 Grant-in-Aid to coordinate and disseminate all research activities and reporting. Ms. Dumlao will be the liaison

between the STEM coalition members and will oversee the feasibility study. She has a diverse STEM background having worked with the Hawaii Space Grant Consortium, Center for Microbial Oceanography/Research and Education along with educational experience at the Hawaii Department of Education

Dr. Courtney Chang from the Hawaii Academy of Science will work closely with the coordinator to ensure the study is carried out in a timely manner (IN-KIND). Dr. Chang has experience in grants management and is a former higher education instructor at Kapiolani Community College's STEM program.

2. Organization Chart

SEE ATTACHED

3. Compensation

Research/Program Coordinator (Independent Contractor) - \$30,000

VII. Other

1. Litigation

N/A

2. Licensure or Accreditation

N/A

3. Private Educational Institutions

N/A

4. Future Sustainability Plan

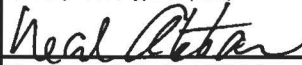
The applicant shall provide a plan for sustaining after fiscal year 2020-21 the activity funded by the grant if the grant of this application is:

- (a) Received by the applicant for fiscal year 2020-21, but
- (b) Not received by the applicant thereafter.

BUDGET REQUEST BY SOURCE OF FUNDS

Period: July 1, 2020 to June 30, 2021

Applicant: Hawaii Academy of Science

| BUDGET CATEGORIES | Total State Funds Requested (a) | Total Federal Funds Requested (b) | Total County Funds Requested (c) | Total Private/Other Funds Requested (d) |
|---|------------------------------------|--|-------------------------------------|--|
| A. PERSONNEL COST | | | | |
| 1. Salaries | | | | |
| 2. Payroll Taxes & Assessments | | | | |
| 3. Fringe Benefits | | | | |
| TOTAL PERSONNEL COST | | | | |
| B. OTHER CURRENT EXPENSES | | | | |
| 1. Airfare, Inter-Island | | | | |
| 2. Insurance | | | | |
| 3. Lease/Rental of Equipment | | | | |
| 4. Lease/Rental of Space | | | | |
| 5. Staff Training | | | | |
| 6. Supplies | | | | |
| 7. Telecommunication | | | | |
| 8. Utilities | | | | |
| 9. Subcontractors | 235,000 | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
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| 20. | | | | |
| TOTAL OTHER CURRENT EXPENSES | 235,000 | | | |
| C. EQUIPMENT PURCHASES | | | | |
| D. MOTOR VEHICLE PURCHASES | | | | |
| E. CAPITAL | | | | |
| TOTAL (A+B+C+D+E) | 235,000 | | | |
| SOURCES OF FUNDING | | Budget Prepared By: | | |
| (a) Total State Funds Requested | 235,000 | Amy Weintraub | 808-956-7930 | |
| (b) Total Federal Funds Requested | 0 | Name (Please type or print) Phone | | |
| (c) Total County Funds Requested | 0 |  | 1/17/20 | |
| (d) Total Private/Other Funds Requested | 0 | Signature of Authorized Official Date | | |
| TOTAL BUDGET | 235,000 | Neal Atebara, Board Chair Name and Title (Please type or print) | | |

BUDGET JUSTIFICATION - PERSONNEL SALARIES AND WAGES

Period: July 1, 2020 to June 30, 2021

Applicant: Hawaii Academy of Science

| POSITION TITLE | FULL TIME EQUIVALENT | ANNUAL SALARY A | % OF TIME ALLOCATED TO GRANT REQUEST B | TOTAL STATE FUNDS REQUESTED (A x B) |
|--|----------------------|--------------------|---|--|
| N/A - STEM Coordinator/Researcher named in the proposal is an Independent Contractor | | | | \$ - |
| | | | | \$ - |
| | | | | \$ - |
| | | | | \$ - |
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| | | | | \$ - |
| | | | | \$ - |
| TOTAL: | | | | |
| JUSTIFICATION/COMMENTS: | | | | |

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Period: July 1, 2020 to June 30, 2021

Applicant: Hawaii Academy of Science

| DESCRIPTION EQUIPMENT | NO. OF ITEMS | COST PER ITEM | TOTAL COST | TOTAL BUDGETED |
|--------------------------------|-----------------|------------------|---------------|-------------------|
| N/A | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| TOTAL: | | | | |
| JUSTIFICATION/COMMENTS: | | | | |

| DESCRIPTION OF MOTOR VEHICLE | NO. OF VEHICLES | COST PER VEHICLE | TOTAL COST | TOTAL BUDGETED |
|---------------------------------|--------------------|---------------------|---------------|-------------------|
| N/A | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| | | | \$ - | |
| TOTAL: | | | | |
| JUSTIFICATION/COMMENTS: | | | | |

BUDGET JUSTIFICATION - CAPITAL PROJECT DETAILS

Period: July 1, 2020 to June 30, 2021

Applicant: Hawaii Academy of Science

| FUNDING AMOUNT REQUESTED | | | | | | |
|--------------------------------|--|---------------|-----------------------|----------------------------------|--------------------------------------|--------------|
| TOTAL PROJECT COST | ALL SOURCES OF FUNDS RECEIVED IN PRIOR YEARS | | STATE FUNDS REQUESTED | OTHER SOURCES OF FUNDS REQUESTED | FUNDING REQUIRED IN SUCCEEDING YEARS | |
| | FY: 2018-2019 | FY: 2019-2020 | FY:2020-2021 | FY:2020-2021 | FY:2021-2022 | FY:2022-2023 |
| PLANS | | | | | | |
| LAND ACQUISITION | | | | | | |
| DESIGN | | | | | | |
| CONSTRUCTION | | | | | | |
| EQUIPMENT | | | | | | |
| TOTAL: | N/A | N/A | N/A | N/A | N/A | N/A |
| JUSTIFICATION/COMMENTS: | | | | | | |

GOVERNMENT CONTRACTS, GRANTS, AND / OR GRANTS IN AID

Applicant: Hawaii Academy of Science

Contracts Total: 160,000

| | CONTRACT DESCRIPTION | EFFECTIVE DATES | AGENCY | GOVERNMENT ENTITY (U.S. / State / Haw / Hon / Kau / Mau) | CONTRACT VALUE |
|----|-----------------------------|------------------------|-------------------------|--|-----------------------|
| 1 | Grant-in-Aid | 07/01/19 - 06/30/20 | Department of Education | State | 160,000 |
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**ORGANIZATIONAL CHART
Hawaii STEM Coalition**

