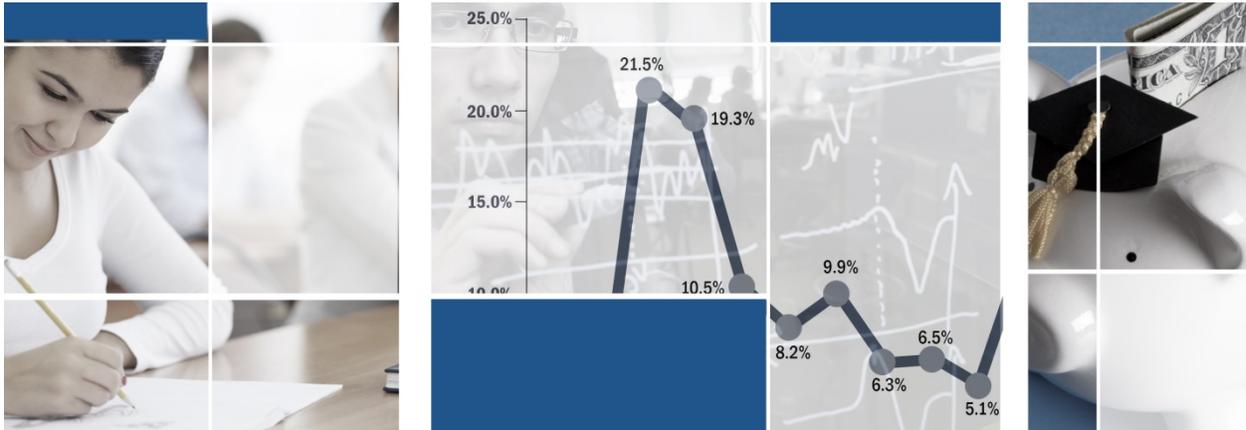


May 26, 2017



Virginia Research Investment Fund Call for Proposals – Round 1 Limited Submission

Activity	Key Dates
Call for Proposals Issued	May 26, 2017
Institutions Conduct Limited Submission Selection Process; Submit Binding LOI(s)	June 23, 2017
Selected Full Proposals Due	August 11, 2017
Notification of Invitation for Presentation to VRIC	To be determined
Presentation to VRIC by Finalists	To be determined
Award Announcement	December 1, 2017
Estimated Start Date	January 1, 2018

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STATE COUNCIL OF HIGHER
EDUCATION FOR VIRGINIA

VIRGINIA RESEARCH
INVESTMENT COMMITTEE

Fast Facts

Overview: The Virginia Research Investment Fund was created by the Virginia General Assembly in 2016 to foster economic development and job creation through innovative and collaborative research, development, and commercialization efforts and the recruitment and retention of eminent researchers. The Fund encourages cooperation and collaboration among public institutions of higher education and with the private sector. Grants from the Fund are intended to position the Commonwealth as a national leader in science-based and technology-based research, development, and commercialization.

Round 1 Focus: Proposals will be accepted for applied research and development and related commercialization of the product(s) or services resulting from the research. Limitations exist regarding the stage of product development and areas of research focus.

Limited Submission: Each Virginia public institution of higher education may submit two proposals as lead applicant. Institutions can participate as a partner in unlimited additional applications.

Binding Letters of Intent Due: June 23, 2017

Full Proposals Due: August 11, 2017

Estimated Start Date: January 1, 2018

Length of Award: One to five years

Award Amount: No minimum nor maximum award amount exists for Round 1.

Match: A 1:1 match is required.

Number of Grants: The Virginia Research Investment Committee has discretion to award all, some, or none of the available funding.

Website: [Round 1 Call for Proposals](#)

Questions:

Lynn Seuffert

Associate for Research Investment

State Council of Higher Education for Virginia

lynnseuffert@schev.edu

Documents for Download

Fast Facts ([pdf](#))

Cover Sheet – Applied Research, Development, and Commercialization ([Word](#))

Signature Page ([Word](#))

Application Template – Applied Research, Development, and Commercialization ([Word](#))

Budget Spreadsheet – Optional ([Excel](#))

Virginia Research Investment Fund

Commercialization of Academic Research; Economic Development

In recent years, several Virginia governmental entities have focused on the relationship between the commercialization of academic research and economic development. The Governor issued Executive Orders #23 and #26, regarding the establishment of the New Virginia Economy workforce initiative, strategic plan, and steering committee. The State Council of Higher Education for Virginia issued The Virginia Plan for Higher Education. The General Assembly created the Virginia Initiative for Growth and Opportunity in Each Region (GO Virginia), the Virginia Research Investment Fund (VRIF), and the Virginia Research Investment Committee (VRIC).

The New Virginia Economy, GO Virginia, and VRIF

- Accelerate innovation and entrepreneurs by pursuing policies and public-private partnerships which attract talent, encourage entrepreneurship, promote business development and investment, and champion the creation and commercialization of cutting-edge products and services (New Virginia Economy)
- Propel the diversification of the economy through collaborative regional opportunities and activities (Virginia Growth and Opportunity Board)
- Invest research funding to leverage private investment and collaboration among universities to commercialize their activities (John O. “Dubby” Wynne and Thomas F. Farrell II, Op-Ed, Richmond Times Dispatch, Nov. 12, 2016)
- Channel the impact of higher education to state and regional economic development (Virginia Plan for Higher Education)
- Capitalize on opportunities identified by the Commonwealth Research and Technology (R&T) Strategic Roadmap
- Improve the trends measured by Virginia’s Innovation Dashboard, the Innovation and Entrepreneurship Measurement System (IEMS)

The Virginia Plan: Higher Education’s Mission and Vision and SCHEV’s Priority Initiatives

Mission: Higher education in Virginia will advance postsecondary learning, research and public service that enhance the civic and financial health of the Commonwealth and the well-being of all its people.

Vision: Higher education will transform the lives of Virginians, our communities and our Commonwealth.

SCHEV Initiative #6: Promote economic development for the Commonwealth by implementing a long-term plan that supports recruitment and retention of research faculty, provides matches to federal and private research grants, and enhances commercialization of higher education research.

Target: By 2030, Virginia’s share of the national academic research and development expenditure total will have increased from 2.12% to 2.75% (a 30% increase), potentially representing an additional economic impact of \$1 billion or more.

Statutory Purpose and Goals

The 2016 Virginia General Assembly passed, and Governor Terry R. McAuliffe signed, legislation to support the academic research enterprise in the Commonwealth. Enacted as Article 8 of Chapter 31 of Title 23.1 (§23.1-3130 through §23.1-3133) of the Code of Virginia,

the legislation created the Virginia Research Investment Fund (VRIF) and an awarding body, the Virginia Research Investment Committee (VRIC). The statutes directed the State Council of Higher Education for Virginia (SCHEV), in consultation with VRIC, to establish the guidelines contained in this Call for Proposals. The statutes also directed SCHEV to provide staff support to VRIC for the administration of the Virginia Research Investment Fund.

In 2017, the General Assembly amended the authorizing statutes and added §23.1-3134.

Prospective applicants are encouraged to review [the amended statutes in full](#). Briefly, the purpose of the Fund and the four primary goals are outlined in §23.1-3131, below.

§23.1-3131. Virginia Research Investment Fund

C.1. Moneys in the Fund shall be used primarily for grants and loans to (i) foster innovative and collaborative research, development, and commercialization efforts in the Commonwealth in projects and programs with a high potential for economic development and job creation opportunities; (ii) position the Commonwealth as a national leader in science-based and technology-based research, development, and commercialization; (iii) attract and effectively recruit and retain eminent researchers to enhance research superiority at public institutions of higher education; and (iv) encourage cooperation and collaboration among public institutions of higher education, and with the private sector, in areas and with activities that foster economic development and job creation in the Commonwealth.

The statutes further indicate that grants from the Fund shall be awarded in areas of focus identified in the Commonwealth Research and Technology Strategic Roadmap (R&T Roadmap) and shall include the biosciences, cybersecurity, and data analytics.

Measures and Key Indicators of Progress Toward Goals

Because the statutes align grant awards with the R&T Roadmap, VRIF investments are expected to contribute to the improvement of the key indicators tracked on Virginia's Innovation Dashboard, the Commonwealth Innovation and Entrepreneurship Measurement System (IEMS). Available [here](#).

In addition to these indicators that measure the vitality of Virginia's innovation ecosystem, the Center for Innovative Technology chose a group of six technology benchmark states, based on economic similarities to Virginia and success in stimulating innovation and entrepreneurship. They include: California, Maryland, Massachusetts, North Carolina, Pennsylvania, and Texas. It can be expected that, over time, VRIF investments will contribute to Virginia's standing in relation to these benchmark states.

Additional measures will be tracked to document progress toward the ultimate goal to position Virginia as a national leader. Appendix C enumerates each statutory goal and the potential measures that will be used to track progress toward that goal. Because the return on R&D investment may occur many years in the future and may be difficult to attribute to a specific project, some measures will be tracked both in relation to specific VRIF projects and overall state ranking or achievement. Finally, long-range indicators related to individual projects will be tracked for five years after the end of the grant period.

Virginia Research Investment Committee

The Virginia Research Investment Committee (VRIC) is charged by statute to evaluate applications, taking into account the review, scoring, or prioritization by a panel of peer reviewers, and then to decide whether to approve an application for an award of a grant from the Fund (§23.1-3133 E & F). The peer review scoring criteria and the additional evaluation elements to be applied by VRIC are explained in the Application Processing, Review, and Award section below and in Appendix B.

Membership on VRIC is established by §23.1-3132. The Committee consists of five ex officio members and four non-legislative citizen members who are also members of the Virginia Growth and Opportunity (GO Virginia) Board.

Ex officio members:

- Director of the Council – Peter Blake (Chair)
- Secretary of Technology – Karen Jackson
- Secretary of Finance – Ric Brown
- Staff Director of the House Appropriations Committee – Robert Vaughn
- Staff Director of the Senate Finance Committee – Betsey Daley

Citizen members from GO Virginia:

- John “Dubby” Wynne (appointed by the House of Delegates)
- Heywood Fralin (appointed by the Senate)
- James “Jim” Dyke (appointed by the Governor)
- Vacant (to be appointed by the Governor)

Committee members’ terms on VRIC are coincident with their terms in office and their terms on the GO Virginia Board, respectively.

Best Practices and Shared Values in Principled Grantmaking

To maintain public trust, these shared values drive VRIC best practices in principled grantmaking and form the foundation for the guidelines that govern the VRIF proposal, peer review, and award processes. These shared values closely follow the core values of the National Institutes of Health.

Expert Assessment: Expertise on peer review panels will be suitable for evaluating the potential impact of the proposed work. No proposals will be funded that were not favorably evaluated by a peer review panel.

Transparency: Decisions for awards will be made solely using published review criteria.

Impartiality: Inappropriate influences will be removed from the review process. Award decisions will be rendered without the influence of conflicts of interest or the appearance of conflicts of interest. Awards will be made without bias or predisposition, either personal or professional. Awards will not be made based on predetermination.

Fairness: All applications will be evaluated using the same review processes. Decisions will be rendered based on information included in the proposal. ***After a call for proposals is issued***

for a round of funding, all conversations between institutions/researchers and VRIC members about specific projects will cease.

Privacy Protection for Applicants and Peer Review Panel Members: Peer review panel members and VRIC members will honor the spirit of the FOIA exclusions and closed meeting allowances for VRIF processes to ensure the privacy protection of applicants and peer reviewers.

Description of Funding Opportunity

Eligible Applicants

Eligible lead applicants are public institutions of higher education in Virginia.

Limited Submission

Each Virginia public institution of higher education may submit only two proposals as lead applicant. Institutions can participate as a partner in unlimited additional applications.

Type of Proposals

Proposals will be accepted for applied research and development and related commercialization of the product(s) or services resulting from the research.

Proposals will be accepted for research that has reached approximately the stage of development described below (See also, Appendix D representing the research-innovation continuum and a depiction of which stages are funded by other Virginia programs and Appendix E: Technology Readiness Levels):

1. Investigators should have begun the process of protecting their intellectual property (filed a disclosure or provisional patent).
2. Projects should have completed the proof of concept or initial invention/technical feasibility stage, preclinical stage of development, or be at technology readiness or maturity level of 6 or higher.
3. For drug development, applicants should be finished or almost finished with dose range and toxicity testing in animals; if an Investigational New Drug (IND) application to the FDA has not been submitted, applicants must propose to submit an IND application within one year of award and complete Phase I clinical protocols.
4. For medical devices, if an investigational device exemption (IDE) application has not been submitted to the FDA (if project requires it), applicants must propose to submit an IND application within one year of award and complete Phase I clinical protocols.
5. At the time of application, investigators will not be required to have formed a company or an industry partnership; applicants should propose to achieve this stage during the grant period.
6. At the time of application, the product of research will not be required to be licensed or optioned.
7. At the time of application, a non-provisional patent will not be required to have been issued (applicants must include intellectual property protection milestones on the required timelines in the application).

No funding will be awarded for exploratory studies, basic research, or theoretical development.

Applicants are encouraged to define the scope of the project in a manner that encompasses the full range of support that will be needed to bring a product to market.

By statute, grants shall be awarded in areas of focus chosen from those listed in the Commonwealth's Research and Technology Strategic Roadmap, which shall include, but not be limited to, the biosciences, cybersecurity, and data analytics.

Round 1 will focus on:

1. The biosciences, with particular interest in the neurosciences; and
2. Cybersecurity

Collaboration is required. Collaborative proposals may involve:

1. Cross-institutional (public-public or public-private) collaboration;
2. Collaboration between one or more public institutions and one or more private non-institutional entities (e.g., health systems, research and development companies, companies formed to commercialize the product(s) of the research, industry partners, etc.);
3. Multidisciplinary collaboration within a single public institution; or
4. Any combination of the above.

Award Type and Amount

The Virginia General Assembly appropriated \$12 million from the general fund and authorized an additional \$29 million in bond funds. Neither the Code of Virginia nor the Appropriation Act specify the period of time over which these funds should be awarded. Therefore, VRIC possesses discretion to award all, some, or none of this funding.

In Round 1, VRIC intends to award approximately \$4 million from the general fund and an unspecified amount from the bond fund.

No minimum nor maximum award amount exists for Round 1.

Funds will be awarded in the form of a grant, with a Memorandum of Understanding between the State Council of Higher Education for Virginia and the lead institution (Appendix F). Bond funds will be distributed through the Virginia College Building Authority 21st Century College and Equipment Program and will require an additional agreement in conjunction with the bond closing.

Matching Funds Required

A 1:1 match is required, as detailed in Application and Submission Information, below.

Period of Performance

Grant periods may be proposed ranging from one year to five years.

The grant period will begin on or about January 1, 2018.

Virginia's Freedom of Information Act and Open Meetings Law

Introduction

The Virginia Freedom of Information Act (FOIA) does not provide the same protection from exposure as federal Sunshine Laws for unfunded or funded grant proposals. Applicants should consult with their institution's counselor from the Office of the Attorney General.

Required Action: Applicants must make a written request for protection, identifying with specificity the data, information, or other materials for which protection is sought and stating the reason why protection is necessary. Please follow the directions below.

Description of FOIA Exclusion for VRIF

The Virginia Freedom of Information Act (FOIA) as codified at Va. Code §2.2-3705.6 Item 28 addresses protection for proposals submitted to VRIC. Please read the entirety of Item 28, as amended effective July 1, 2017, available [here](#).

The statute allows only the following information contained in a public record to be excluded from the mandatory disclosure provisions: Information relating to a grant application, or accompanying a grant application, submitted to the Virginia Research Investment Committee, to the extent that such records would reveal:

1. Trade secrets as defined in the Uniform Trade Secrets Act ([§59.1-336 et seq.](#)), disclosure of which would be harmful to the competitive position of a party to the grant application.
2. Financial information of a party to the grant application that is not a public body, including balance sheets and financial statements, that are not generally available to the public through regulatory disclosure or otherwise, disclosure of which would be harmful to the competitive position of a party to the grant application.
3. Research-related information produced or collected by a party to the grant application in the conduct of or as a result of study or research on medical, rehabilitative, scientific, technical, technological, or scholarly issues, when such information has not been publicly released, published, copyrighted, or patented, disclosure of which would be harmful to the competitive position of a party to the grant application.

The statute requires that the request for protection by applicants occur at the time the materials are submitted to VRIC.

Item 28 also gives VRIC the authority to approve or deny the request for protection.

Directions for Requesting Protection from Mandatory Disclosure

Applicants should submit two versions of their application packet. In one version, applicants should redact the information for which protection is sought. For each redaction, applicants should indicate (in the margin, via comments added to a pdf, or on a separate cover sheet) the reason why protection is necessary, keeping in mind that the statute allows three types of information to be protected when disclosure would be harmful to the competitive position of a party to the grant application.

SCHEV staff will notify applicants within two weeks of submission whether their request has been approved. If the request was not approved, SCHEV staff will work with applicants to navigate a path to protection or withdraw the application.

SCHEV Response to FOIA Request

In the event that SCHEV receives a FOIA request, the decision regarding what, if any, information is to be withheld from disclosure pursuant to the Virginia Freedom of Information Act rests within the sole discretion of the SCHEV FOIA officer, SCHEV staff, the VRIC Chair, and SCHEV's Attorney General representative. It is anticipated that the redacted version of the application would be released, without regard to whether the proposal was funded or not. SCHEV staff will inform the PI and lead institution the extent of the information released in response to the FOIA request.

Description of Open Meetings Law Exclusion for VRIF

Virginia's open meetings law is codified at Va. Code §2.2-3711, "Closed meetings authorized for certain limited purposes." Item A.48, as amended effective July 1, 2017, addresses the requirements for closed meetings of the Virginia Research Investment Committee. The full text is available [here](#).

Application and Submission Information

Limited Submission; Binding Letter of Intent

Round 1 is a limited submission competition. At the completion of the institution's internal selection process, a binding letter of intent for each selected proposal is required.

Simultaneously, the teams can begin developing the proposals for the selected projects.

The LOI should fit on one page, single spaced, and include:

- Name of lead institution
- Expected partner entities
- Names and departments of PI and any known Co-PIs and Co-Investigators, including at partner institutions
- Any relevant institutes/centers with which the research team will be affiliated
- Area of research focus
- Any other information about the proposal relevant to the convening of review panels, such as a synopsis that describes the work in sufficient detail to permit an appropriate selection of reviewers

The purpose of the LOI is to ensure that (1) peer review panels include the expertise required to score the proposal and (2) conflicts of interest are avoided.

For Round 1, the LOI is binding. An institution cannot submit a full proposal that does not align with the LOI.

Each LOI should be submitted separately from the office of sponsored programs via email to the SCHEV Associate for Research Investment, lynnseuffert@schev.edu. The text of the email should confirm that the proposal was selected through the limited submission process.

Due date for LOIs: June 23, 2017

Full Proposal (if selected by institution)

Please use the full proposal template in Appendix A. Refer to the scoring criteria included in Appendix B.

- Proposals may be single spaced.
- Font must be either Times New Roman 12 pt. or Arial 11 pt.
- Font for figures, tables, formulas, and diagrams can be reduced no smaller than Times New Roman 10 pt. or Arial 9 pt.
- Margins, in all directions, must be at least an inch; margins for illustrations, graphics, diagrams, tables or figures that take up a full page may be reduced no smaller than half an inch.
- Pages should be numbered on the bottom right.
- Inclusion of other information in headers or footers is at the discretion of the applicant.

Each full proposal, the corresponding redacted proposal (see FOIA section, above), and the Excel budget spreadsheet (if used) should be submitted from the office of sponsored programs via a single email to the SCHEV Associate for Research Investment, lynnseuffert@schev.edu. One pdf containing the full proposal and one pdf containing the redacted proposal is preferred. However, the Associate will accept submissions with multiple attachments for each version of the proposal. Please name the attachments so that the Associate can readily distinguish the redacted proposal and also determine that the application packet is complete.

Due date for full proposals: August 11, 2017

Budget and Budget Narrative

Please provide a detailed budget for each year of the grant period and cumulatively. The detailed budget should reflect planned expenditures of general fund amounts, bond funds, and the required 1:1 matching funds.

Please consider using the template Excel budget spreadsheet posted on the VRIF website [here](#). Please contact the SCHEV Associate for Research Investment for assistance with the formulas or to resolve issues with the spreadsheet.

Budgets will also be accepted in alternate formats (for example, a format published by an institution's office of sponsored programs or a budget extracted from an institution's electronic research administration portal).

Alternate budget formats should include all the usual direct cost budget categories: salaries/wages, benefits, travel, supplies, equipment, renovations/enhancements, rent, other direct costs, subrecipients (subawards or contracts to collaborating entities or vendors), etc. Alternate formats should also include planned expenditures of general fund amounts, bond funds, and the required 1:1 matching funds.

Any amounts requested from VRIF (i.e., included in the "VRIF Request" columns in the template budget) for equipment and renovations/enhancements are assumed to constitute a request for bond funding.

Amounts in the "VRIF Request" columns for all other budget categories are assumed to be requests for general fund monies.

VRIF funds cannot be used for indirect costs.

Below are examples of items of cost and the budget category in which each should be included:

- Fee-for-service research and computing core resources (other direct costs)
- Payments to or incentives for human study subjects (other direct costs)
- Patent and FDA application preparation costs (if work done by research team or other university personnel: salary and benefits; if external: consultants or subrecipients; fees: other direct costs)
- Effort to design protocol for Phase I clinical trial (personnel: salary, benefits)
- CEO to run spin-off company (personnel category of subrecipient budget)
- Expenditures for the dissemination of research findings (i.e., nationally prominent publications and presentations at conferences, symposiums, seminars, or workshops) (travel; supplies (posters, etc.); other direct costs (conference registration fees))
- Enhanced expertise or capacity for supportive services to the research team, such as tech transfer, IP protection, mentoring by experienced entrepreneurs (if internal, personnel, salary, benefits; if external, consultants or subrecipients)

The amounts for each budget line item must be documented and justified in the budget narrative. For proposals that contain a subaward(s), each subaward must include a separate budget narrative.

Matching Funds Guidelines

The budget narrative should include an explanation of the source(s) of matching funds.

- Commitment of a 1:1 match is a criteria for eligibility, rather than a review criteria (i.e., additional points will not be awarded for commitments of greater than a 1:1 match; however, applicants can note in their proposals or budget narratives an estimate of the total cost of the project and an indication of the total match that might be expended, during the grant period and/or throughout the innovation lifecycle).
- Waived costs of fee-for-service research and computing core resources, at the member rate, can be counted toward the match.
- Unrecovered indirects can be counted toward the match (as calculated using the basis in the institution's negotiated indirect agreement).
- Grantees cannot count Higher Education Equipment Trust Fund dollars toward the match.
- Use of Education & General Program (E&G) funds to satisfy the match, while not prohibited, should be rare. (E&G revenues are derived mainly from state appropriations and student tuition and fees.) Please consider the following possibilities: (1) correlating the costs in the project budget to which E&G funds will be applied to a benefit for undergraduate students; (2) offering E&G funds only as a placeholder in Year 4 or 5 with the realistic expectation for replacement with additional grant funding to be secured during the earlier years.
- Time and effort of personnel who will be paid by the institution (i.e., in-kind effort) usually cannot be counted toward the match (see also, bullet above regarding E&G funds). However, in unusual circumstances, and with prior notification to SCHEV staff, significant percentages of in-kind time and effort for personnel (~20% or more) can be offered toward the match requirement, with the understanding that VRIC members will consider the source of matching funds when making award decisions.
- The matching funds must be in-hand at time of award (or committed as documented by a legally binding grant award or pledge; applicants must identify which funds are in-hand and which are pledged).

- Documentation of pledges or grant awards should be kept at the institution (not included in the grant application package) and must include a payment or estimated drawdown schedule aligned with the requested grant period. Pledge payment schedules showing receipts to date and scheduled future payments are to be included in progress reports.
- If pledged funds are not received on the expected schedule within the grant period, the university must replace the funds not received with another eligible match or the unmatched portion of the grant award will be rescinded.
- The grantee institution must notify SCHEV staff of unpaid pledges immediately when a gift or grant has been revoked.
- The funds proposed as matching funds cannot be the same funds that have already been committed as a match to another project. However, three-way or circular matches are allowable. For example, dollars are used as the match for a non-VRIF grant, then that grant is used as a match for VRIF.
- If the match is another grant, that grantmaker’s terms and conditions or authorizing legislation must not prohibit use of those funds as a match.
- If the match is another grant, the nexus between the two projects must be clear (as determined by the VRIF peer review panel).
- Grantees cannot match one VRIF grant award (or subaward) with another VRIF grant award (or subaward).
- Expenditure of matching funds must be tracked and reported in progress reports.
- The commitment of matching funds is legally binding and is subject to audit.
- The signature of the applicant’s authorized signer indicates that the Vice President/Provost for Research (or equivalent, or designee) has conducted due diligence to ensure the offered match complies with these guidelines.

Application Processing, Review, and Award

Upon receipt via email of an application package, SCHEV staff will respond by return email within 24 hours to confirm receipt.

Review of applications is a three-stage process. The statutes that created VRIF state the criteria to be considered. These criteria have been translated into the peer review scoring criteria and the additional evaluation elements to be applied by VRIC, which are explained below and in Appendix B. The statute is quoted below.

§23.1-3133. Award from Virginia Research Investment Fund.

....

B. The guidelines, procedures, and criteria shall include, but not be limited to, requirements that applicants demonstrate and that the reviewers and the Committee consider:

1. Other grants, awards, loans, or funds awarded to the proposed program or project by the Commonwealth;
2. Other applications from the applicant for state grants, awards, loans, or funds currently pending at the time of the application; and
3. The potential of the program or project for which a grant or loan is sought to (i) culminate in the commercialization of research; (ii) culminate in the formation or spin-off of viable bioscience, biotechnology, cybersecurity, genomics, or similar

companies; (iii) promote the build-out of scientific areas of expertise in science and technology; (iv) promote applied research and development in the areas of focus identified in the Roadmap; (v) provide modern facilities or infrastructure for research and development; (vi) result in significant capital investment and job creation; or (vii) promote collaboration among the public institutions of higher education in the Commonwealth.

The first stage is an administrative review by SCHEV staff to ensure that proposal packets are complete and conform to administrative requirements in this Call for Proposals.

The statute requires that conforming applications be assigned to an external peer review panel with recognized science and technology expertise. The panel(s) will score and comment on the application as described in Appendix B. The statute further states: “Such entities include, but are not limited to, the Virginia Biosciences Health Research Corporation, the Innovation and Entrepreneurship Investment Authority, the Virginia Academy of Sciences, Engineering and Medicine, or any other entity deemed appropriate by the Council, including a scientific advisory committee created by the Council for the sole purpose of reviewing one or more applications received pursuant to this article.”

At the time of publication of this Call for Proposals, the peer review panel(s) are expected to comprise members of the Virginia Academy of Sciences, Engineering, and Medicine; venture capitalists and/or angel investors; and experienced entrepreneurs with expertise in start-ups created to commercialize the products of research.

Following peer review and in preparation for the third stage of review, SCHEV staff may conduct additional due diligence and/or ask applicants for clarifying information.

SCHEV staff will prepare a summary statement for each proposal that includes information such as the reviewers’ scores, written comments, a summary of strengths and weaknesses, or other summary highlights of the peer review panel discussion.

An application may be designated Not Recommended for Further Consideration (NRFC) if it lacks significant and substantial merit; presents serious ethical problems in the protection of human subjects from research risks; or presents serious ethical problems in the use of vertebrate animals, biohazards, and/or select agents. Applications designated as NRFC will not proceed to VRIC because such proposals cannot be funded.

After the scores and comments have been summarized and the proposals ranked, and SCHEV staff have added a Yes/No indication of whether the proposal is recommended for funding, in compliance with Va. Code §23.1-3133 E, SCHEV staff will forward to VRIC any proposal receiving a favorable evaluation, along with the scoring or prioritization.

The third stage is review by VRIC. During this final review, VRIC might request a presentation from the applicants. In compliance with Va. Code §2.2-3711, “Closed meetings authorized for certain limited purposes,” these meetings will be closed to the public.

VRIC members will review the proposals, starting with the prioritization, scores, and comments of the peer review panel and then adding their expertise and knowledge of the statewide impact and contribution the projects might have, including criteria such as:

- Whether the projected impact of the project merits the investment of state funds
- Members’ prioritization, on a case-by-case basis, of the criteria (i.e., two proposals receive similar overall scores, but one scores more highly on collaboration and another scores more highly on economic impact)

- The connection of the project to GO Virginia, if any, including the distribution of grant funding across GO Virginia regions
- The previous and pending state funding for the project and VRIC's interpretation of the merits of continuing to use state funding to further the progress of the project
- The source of matching funds, with E&G funds and/or in-kind effort viewed least favorably
- The length of the timeline to manufacture and sale of the product and/or job creation
- The results or preliminary results of the study authorized by the General Assembly (an assessment of the Commonwealth's research assets and recommendations regarding areas where Virginia may wish to direct its resources) that might be provided to VRIC in Fall 2017

VRIC will then hold a public meeting where a formal vote will be taken to determine which proposals will be funded. This meeting might occur directly following the closed meeting or on a different date.

SCHEV staff will forward reviewer scores and comments to the PI of unfunded projects.

Finally, per statute, all decisions by VRIC shall be final and not subject to further review or appeal. The Governor may announce any award approved by the Committee.

Reporting Requirements

Reports are required at intervals during the grant period. A final cumulative report is also required. Grantees also will be required to continue to report progress on some measures for five years after the end of the grant period. Adjustments might be made to the due dates below, depending on the date of award for each round of competition as well as the timeline and milestones in each proposal.

Annual General Audience Progress Report

VRIC is required to submit a report to the General Assembly each Nov. 1. In preparation for the submission of that report, grantees will submit a general audience progress report by Sept. 30 of each year.

The format for this report is still under development. SCHEV staff anticipate that information of interest to Virginia's elected representatives, members of the House Appropriations Committee and Senate Finance Committee, and taxpayers will be requested.

Semi-Annual Financial Reports

Semi-annual financial reports are required. These reports will be due on July 31 and January 31, documenting the financial status of the project through June 30 and December 31, respectively.

The format for these reports is still under development. SCHEV staff anticipate that reports generated from an institution's research dashboard or other accounting system reporting function that allows for the extraction of easily digestible statements will be accepted.

The reports will include information regarding the total amount awarded, the amount forwarded to the lead institution, the amount encumbered to date, the amount spent to date, and the amounts remaining (from the disbursement and total) for each budget category and for the same budget categories for each subaward.

Reports showing the same information for matching funds are required, if possible on the same report or a separate parallel report. For matching funds that were based on a pledge, pledge payment schedules showing receipts to date and scheduled future payments are to be included in progress reports.

Semi-Annual Technical Narrative Progress Reports

On July 31 and Jan. 31, technical progress reports in narrative form will be due, describing achievements through June 30 and Dec. 31, respectively.

The format for these reports is still under development. Grantees can expect the requested information to include data related to some of the measures listed in Appendix C: Measures and Indicators of Progress Toward Statutory Goals.

Reports Due Upon Request for Disbursement of Funds at Milestones

When a grantee reaches a milestone on their timeline that triggers the disbursement of funds, both a narrative report documenting the achievement of the milestone and a financial report documenting the expenditure of the already-disbursed funds is required.

If the grantee anticipates achieving a milestone within 30 days of the due date of the reports above, a request can be made to SCHEV staff to delay or accelerate reporting to coincide with the achievement of the milestone and reduce the need for additional reporting.

Reports Due Upon Request for No-Cost Extension

Requests for no-cost extensions should be made at least sixty (60) days prior to the desired effective date of the requested change. Preferably, grantees should anticipate the need to request a no-cost extension and make that request in concert with a scheduled progress report.

If more than 30 days have passed since the submission of the reports above, grantees will be required to submit reports at the time of a no-cost extension request. In addition to the reports, the request should provide a brief narrative justification for the extension, length of requested extension (maximum one year), amount of unexpended balance, and a timeline for activities and expenditure of the remaining funds.

Final Cumulative Narrative and Financial Reports

Final cumulative narrative and financial reports are due 60 days after the end of the grant period.

Reports Due on Some Measures for Five Years After End of Grant Period

Annually, for five years after the end of the grant period, grantees are required to submit reports documenting continuing progress on some of the indicators listed in Appendix C: Measures and Indicators of Progress Toward Statutory Goals. Potential indicators to be tracked include:

- Licenses, copyrights, patents, inventions, or income-producing processes discovered or arising from research supported in whole or in part by the VRIF
- FDA filings and approvals arising from research supported in whole or in part by the VRIF
- Follow-on grant awards or other funds received as a result of research supported in whole or in part by the VRIF
- Publications in peer-reviewed journals; impact factor of journal, number of times publications are “Cited By” other researchers
- Presentations at national conferences, both peer-reviewed and invited
- Awards bestowed on researchers who were supported by VRIF (National Academy membership, etc.)

- Start-ups and spin-off companies created
- Jobs created
- Salary of jobs created
- Sectors or occupations of created jobs

More information will be provided to grantees near the end of the grant period.

Award Administration

Information about post-award administration of grants will be under development throughout the first year after Round 1 awards are made.

SCHEV staff would like to build a relationship with grantees and foster a collaborative approach to addressing issues and removing any roadblocks that arise.

For details regarding post-award revisions that require prior approval, along with other conditions of award, please see Appendix F: Terms and Conditions of Award, specifically Attachment 1. Special Terms and Conditions.

Appendix A: Application Template – Applied Research, Development, and Commercialization

An applied research, development, and commercialization proposal must contain the following sections:

1. Cover Sheet
2. Assurances and Certifications (Appendix F)
3. Signature of AOR
4. Table of Contents
5. Scientific Summary
6. General Audience Summary
7. Results from Prior State Funding
8. Description of Pending Proposals for State Funding
9. Proposal Narrative
10. References Cited
11. Biographical Sketch(es)
12. Facilities, Equipment and Other Resources (if requesting bond funds for equipment or facilities)
13. Budget and Budget Justification
14. Current and Pending Support

1. Cover Sheet (See website)

2. Assurances and Certifications (Appendix F)

3. Signature Page for Authorized Organizational Representative (AOR) (See website)

4. Table of Contents

5. Scientific Summary (1 point)

Provide a one-page summary of the proposed project suitable for the peer review panel, which will include scientists, venture capitalists, and small business start-up entrepreneurs who have familiarity with research and commercialization of the products of research, but perhaps not deep knowledge of your field. This summary will be posted on the VRIF website if the project is funded.

6. General Audience Summary (1 point)

Provide a one- to two-page summary for a general audience. This summary will be used to craft the press release issued by the Governor's Office if your proposal is funded. This summary might be posted on the VRIF website if the project is funded.

7. Results from Prior State Funding (unscored, but considered by VRIC)

List appropriations by the General Assembly and grants awarded through state-funded competitions to any members of the project team for prior projects within the last five years. Briefly describe the results. Describe the relationship to this proposed project (if none, please state that). You must include information related to the following competitions: VBHRC, CHRB, CIT, Tobacco Commission, GO Virginia, Virginia Economic Development Partnership.

8. Description of Pending Proposals for State Funding (unscored, but considered by VRIC)

List pending proposals to state-funded grant competitions or for appropriations from the General Assembly and describe their relationship to this proposed project. You must include information related to the following competitions: VBHRC, CHRB, CIT, Tobacco Commission, GO Virginia, Virginia Economic Development Partnership.

9. Proposal Narrative (78 points total; 15 single-spaced pages maximum)

Background and Significance (15 points)

Briefly discuss the background and present state of knowledge in the field nationally; include information on where Virginia currently ranks on this topic and explain why your institution is uniquely qualified or in a unique position to attain national recognition in this area of focus. Discuss the current standard of care or existing scientific/technology/engineering approaches; the gaps, unmet need, limitations of existing approaches, weaknesses in previous research, or unanswered research questions relevant to your proposed project; your solution, technology, product, or service to be commercialized; your team's relevant prior studies, work in progress, and current stage of development (including disclosures, patent applications, issued patents, licensing, etc.); and the significance of your solution, technology, product, or service.

Project Description (30 points)

Thoroughly describe your plan of work and the design of the activities to be undertaken during the grant period; roles of collaborators; expected progress in the development of your solution, technology, product, or service to be commercialized (referencing the timelines detailed below). This description should clearly show the alignment between the size, scale, or complexity of the project and the requested length of the grant period and total cost (requested amount plus match).

Economic Impact (10 points)

Briefly describe your discussion(s) with representative(s) of the relevant GO Virginia Regional Council(s). Describe the connection your proposed project has, if any, to the Regional Council plans for diversifying the economy. Using the timelines below, please estimate the number of jobs that your project and eventual commercialization will create (for example, number of jobs in 1 to 3 years, 4 to 6 years, 6 to 10 years). State whether the workforce in your region has the skills needed to fill those jobs and, if not, describe your plan to ensure your timeline won't be delayed by inability to recruit skilled workers. In this section, also consider describing economic impact in terms of the market size (dollars) for your product, number of customers or patients in Virginia, the US, and abroad, current cost of the disease or problem and cost-savings or efficiencies generated by your solution, etc.

Overall Impact (8 points)

Describe the impact that your successfully completed project will have, such as the competitive advantage over competing solutions under development by other research teams, impact on human health, patient outcomes, the current standard of care, or healthcare costs; impact on or displacement of earlier technology; etc. Include your plans for dissemination of results.

Milestones, Timelines, and Costs (5 points)

- List the milestones and timeline for the project proposed in this application; estimate the cost of achieving each milestone. Upon grant award, SCHEV will release the funds needed to achieve the first milestone; during the grant period, as milestones are achieved, additional funds will be released sufficient to achieve the next milestone, continuing throughout the grant period. Include milestones related to the progress of commercialization during the grant period (intellectual property protection milestones [patent applications and approvals], market need & proof-of-relevance analysis,

business development, licensing, clinical trials, regulatory filings and approvals, reimbursement strategy, marketing, sales, customer support, manufacturing and distribution, etc.).

- List the milestones and timeline for continued commercialization of your solution after the grant period ends.
- Provide amount raised to date; amount expended to date.
- List examples of the funding sources for prior stages of research and development
- Provide an estimate of total cost to get your solution to market, including amount expended to date, the requested amount and match described in this application, and future costs.

Potential Sources of Follow-On Funding (5 points)

Briefly describe your plan to secure the follow-on funding required to get your solution to market in relation to the timelines above.

Collaboration and Project Management (5 points)

Briefly describe the management structure, communication plan, and accountabilities of each of the collaborators; the collaborative synergies and relevant background/experience of the management and scientific team members, including any experience commercializing technology, products, or services; the current and future collaboration between the team and the involved institutions' technology transfer offices; and any other relevant collaboration and project management practices.

Conclusion (unscored)

Key reasons why your proposal should be funded. State your case in a few sentences.

10. References Cited (unscored)

Each reference must include the names of all authors, the article and journal title, book title, volume number, page numbers, and year of publication. Inclusion of a website address is optional.

11. Biographical Sketch(es) (10 points)

A biographical sketch is required for the Principal Investigator, Co-Principal Investigator(s), and Co-Investigator(s). Biosketches are welcome for other senior or key personnel, including partner-company management personnel. Researchers can choose to use either NIH-style or NSF-style biosketch format. Non-scientist key personnel can submit a resume. Documents are limited to five pages each.

Do not submit any personal information in the biographical sketch. This includes items such as: home address; home telephone, or cell phone numbers; home e-mail address; marital status; personal hobbies; etc. Biosketches are subject to release through a FOIA request, even if the proposal is not funded.

12. Facilities, Equipment, and Other Resources (if requesting funds for equipment or facilities) (Score = Yes, No, or Need More Information)

If applicants are requesting funds for equipment and/or facilities, a description of the current state of the resources available to the project should be provided. Identify gaps and describe the proposed equipment purchases or facilities renovations. If the space or equipment will not be used by the proposed project 100% of the time, briefly describe the other projects that will share these resources and state affirmatively that the VRIF-funded project will have first priority for access.

13. Budget and Budget Justification (10 points)

Budget and justification must include line items for both VRIF funds and matching funds. Please consider using the template Excel budget spreadsheet posted on the VRIF website [here](#).

14. Current and Pending Support (unscored)

Current and pending support information is required for the Principal Investigator, Co-Principal Investigator(s), and Co-Investigator(s). Applicants can choose to use either NIH-style (PHS 398 Other Support) or NSF-style (Current and Pending Support) format.

Appendix B: Scoring – Applied Research, Development, and Commercialization

Scientific Summary (1 point)

Reviewers will score based on whether the summary, which will be posted on the VRIF website if the project is funded, accurately describes the project and its intended impact.

General Audience Summary (1 point)

Reviewers will score based on whether the summary, which will be used to craft the Governor's press release if the project is funded, renders the project comprehensible to a general audience and contains information of interest to tax payers and General Assembly members as they form opinions about the project, the impact of VRIF as a whole, and the wisdom of continuing appropriations in future budget cycles.

Results from Prior State Funding (unscored, but considered by VRIC)

Pursuant to Va. Code §23.1-3133 B.1., VRIC will consider this information when determining the merits of continuing to use state funding to further the progress of the project.

Description of Pending Proposals for State Funding (unscored, but considered by VRIC)

Pursuant to Va. Code §23.1-3133 B.2., VRIC will consider this information when determining the merits of continuing to use state funding to further the progress of the project.

Proposal Narrative (78 points total)

Background and Significance (15 points)

Reviewers will consider the following factors:

- Where Virginia currently ranks in this field of research and whether the applicant institution(s) are uniquely qualified or in a unique position to attain national recognition in this area of focus
- Whether the project addresses an important problem or a critical barrier to progress in the field
- Scientific premise and rigor of the research that is used to form the basis for the proposed project
- Applicant's description of the gap or need and the likelihood that, if successful, the proposed solution, technology, product, or service will meet the unmet need

Project Description (30 points)

Reviewers will consider the following factors:

- Whether overall strategy is well-reasoned and appropriate to accomplish the goals and objectives of the project
- Scientific rigor (robust and unbiased experimental design, methodology, analysis, interpretation, and reporting of results)
- Technical feasibility
- Activities are aligned appropriately across collaborators
- Significant progress toward commercialization will be made during the grant period
- Size, scale, or complexity of the project is aligned with the requested length of the grant period
- Size, scale, or complexity of the project is aligned with the total amount to be expended
- The commercialization value proposition is clear, robust, and compelling
- The technical solution is significantly scalable to achieve the commercialization objectives

Economic Impact (10 points)

Reviewers will consider the following factors:

- Whether the proposal demonstrates a clear understanding of who is the targeted customer and the size of the market (i.e., patients, dollars)
- Current cost of the disease or problem and cost-savings or efficiencies generated by applicant's solution
- Economic impact and job creation for Virginia

Overall Impact (8 points)

Reviewers will consider the following factors:

- Whether the project's solution, technology, product, or service is likely to achieve the impact described in the proposal
- Whether the project's solution, technology, product, or service is superior to competing approaches
- Whether the successful completion of the project will exert a sustained, powerful influence in Virginia and nationally (i.e., contribute to national recognition for Virginia; improve scientific knowledge, technical capability, and/or clinical practice; change the field of research, etc.)

Milestones, Timelines, and Costs (5 points)

Reviewers will consider the following factors:

- Scientific and product development milestones and timelines are clearly defined over the entire requested grant period
- Both timelines are realistic given the current stage of research and development
- There is a clear understanding of what the pathway to commercialization is or a feasible plan to develop the pathway
- There is a clear collaborative pathway or plan to develop the pathway to transfer know-how and technology from inventors to the commercialization or industry partner
- Whether the project has progressed appropriately given the amount raised and amount spent to date
- Total estimated cost to get solution to market is realistic

Potential Sources of Follow-On Funding (5 points)

Reviewers will consider the following factor:

- The project is well positioned to attract follow-on funding for the next stage of development and ultimately funding for commercialization

Collaboration and Project Management (5 points)

Reviewers will score based on their confidence that your proposed collaboration:

- Is substantive, with true synergies that will ensure creative debate and innovation
- Includes investigators with complementary and integrated expertise
- Includes the skill sets needed for successful commercialization
- If there is a gap in the business management or scientific team, there is a milestone and plan to recruit the talent needed
- Includes a defined process to manage the collaboration including clear accountabilities, an internal communication plan, and a methodology to declare and solve breakdowns
- Includes appropriate written agreements between partner organizations
- Includes appropriate distribution of funds and resources across partners

Conclusion (unscored)

References Cited (unscored)

Biographical Sketch(es) (10 points)

Reviewers will consider the following factors:

- Scientific and technical expertise/credibility
- Whether the management and scientific team have the expertise to achieve the goals

Facilities, Equipment, and Other Resources (if requesting funds for equipment or facilities) (Score = Yes, No, or Need More Information)

Reviewers will consider the following factors:

- Whether the current scientific environment in which the work will be done is inadequate or presents an impediment to the probability of success
- Whether the project will benefit directly from the facilities and equipment purchased with grant funds
- If the facilities and/or equipment will not be used 100% for this project, whether there is a plan to ensure that full use is made of the investment by other projects
- If the facilities and/or equipment will not be used 100% for this project, whether there are mechanisms in place to ensure that the VRIF-funded project will have first priority for access

Budget and Budget Justification (10 points)

Reviewers will consider the following factors:

- Investigators will allocate the necessary time to achieve the goals
- Costs are reasonable and allocable to this project (except equipment and facilities, which can be used by other projects)
- Applicant commits a 1:1 match
- If E&G funds are committed in the out-years of the project as a placeholder, with expectation of future funding becoming available, the plan for securing additional funding to replace that commitment has a realistic chance of succeeding.

Current and Pending Support (unscored)

Appendix C: Measures and Indicators of Progress Toward Statutory Goals

1. Attract and effectively recruit and retain eminent researchers to enhance research superiority at public institutions of higher education

Deferred to future rounds.

2. Encourage cooperation and collaboration among public institutions of higher education and with the private sector, in areas and with activities that foster economic development and job creation in the Commonwealth

VRIF Grant-Specific Metrics

- Number of awards to collaborative projects
- Total funding awarded to collaborative projects
- Total number of institutions funded
- Average number of institutions funded per project
- Number of private sector entities partnering on funded projects
- Comparison of metrics listed under #3 between collaborative-institution and individual-institution projects

3. Foster innovative and collaborative research, development, and commercialization efforts in the Commonwealth in projects and programs with a high potential for economic development and job creation opportunities

VRIF Grant-Specific Metrics

- Trademarks and copyrights registered by VRIF grantees
- FDA filings by investigators on VRIF projects
- FDA approvals to investigators on VRIF projects
- Additional funding leveraged by grantees (matching during the grant period; follow-on)
- Number of private sector entities partnering on funded projects
- Jobs created by grantees and partner entities
- Salary of jobs created, reported by grantees (to be averaged by VRIC staff)
- Sectors or occupations of created jobs, reported by grantees
- Publications in peer-reviewed journals by investigators on VRIF projects; impact factor of journal
- Number of times publications are “Cited By” other researchers
- Presentations at national conferences, both peer-reviewed and invited, by investigators on VRIF projects
- Number of interdisciplinary, cross-institute, cross-center VRIF projects
- Amount invested in facilities, infrastructure, and equipment

Statewide and VRIF Grant-Specific Metrics

- Invention disclosures (Association of University Technology Managers (AUTM) ranking and reporting by VRIF grantees)
- Patents filed (AUTM ranking and reporting by VRIF grantees)
- Patents awarded (IEMS and reporting by VRIF grantees)
- University licenses (IEMS and reporting by VRIF grantees)
- University start-ups (IEMS and reporting by VRIF grantees regarding formation or spin-off of bioscience, biotechnology, cybersecurity, genomics, or similar companies)

4. Position the Commonwealth as a national leader in science-based and technology-based research, development, and commercialization

Statewide Metrics

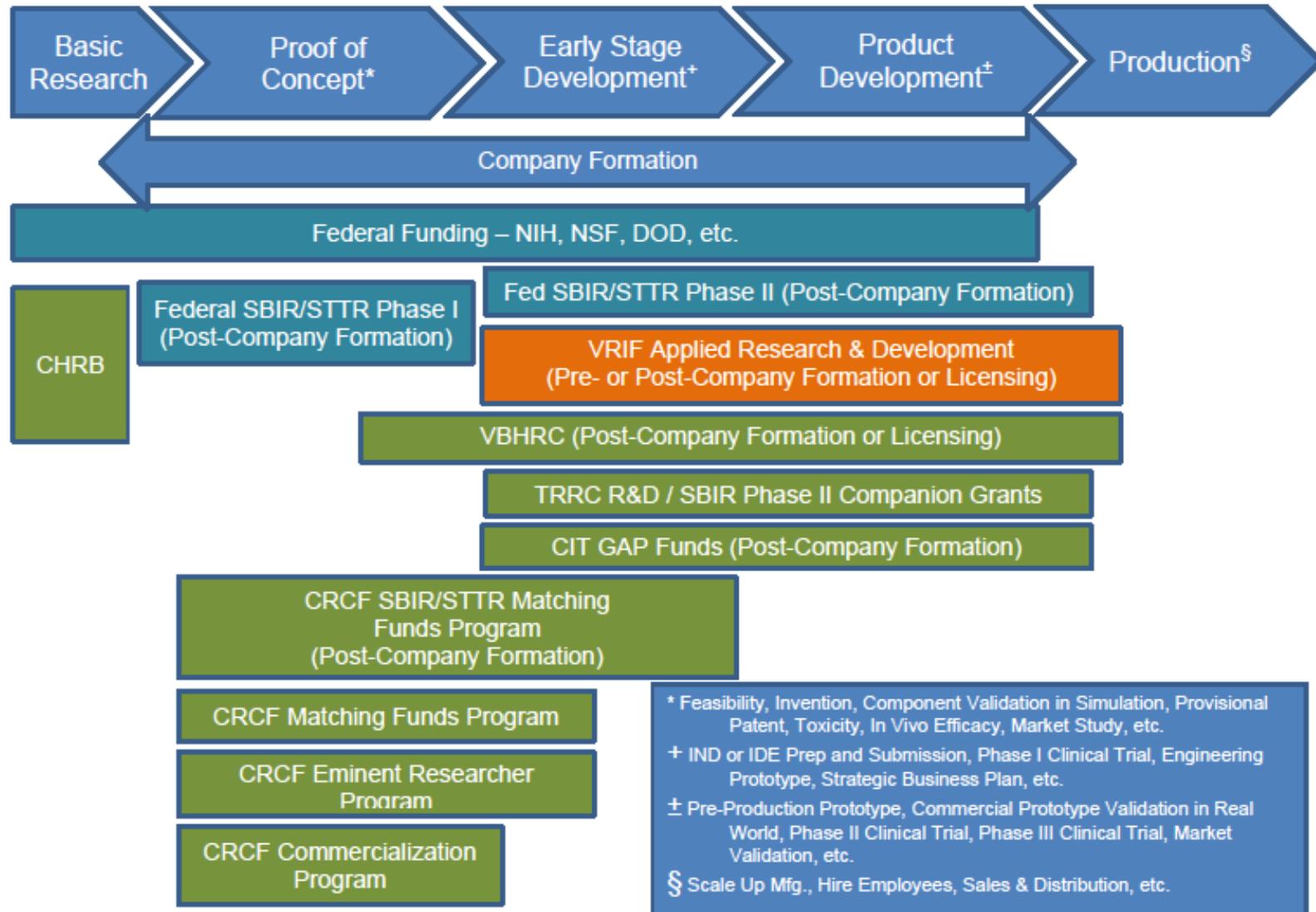
- Overall State R&D Intensity (IEMS; measures spending attributable to federal and state government, businesses, higher education institutions, non-profit organizations, and other entities as a percentage of state gross domestic product (GDP)).
- Virginia Plan for Higher Education initiative to “Promote economic development through research” with a goal to increase institutional research expenditures as a percent of national totals by 30 percent by 2030 (SCHEV)
- University Academic Science and Engineering R&D Expenditures (IEMS)
- Federal R&D Spending (IEMS, using NSF data tool)
- Federal Small Business Innovation Research (SBIR) awards (IEMS)
- Federal Small Business Technology Transfer (STTR) awards (IEMS)
- Corporate R&D Intensity (IEMS; measures research and development activities conducted by private businesses, including corporate R&D expenses and expenditures as a percentage of private industry output)
- Private Investment (IEMS; angel and venture capital investment)
- State Government Investment (IEMS tracks public sector investment in CIT’s Growth Acceleration Program (GAP) Funds, the Commonwealth Research Commercialization Fund (CRCF), and the Virginia Tobacco Region Revitalization Commission R&D grants; VRIC will add investment by CHRB, VBHRC, and VRIF to this measure)
- R&D Tax Credits (IEMS)
- Ranking of Public American Research Universities (as reported by Measuring University Performance (MUP))
- Rank and Score on State Tech and Science index (Milken Institute)
- Rank on State New Economy Index (Information Technology and Innovation Foundation; uses 25 indicators to measure the extent to which state economies are knowledge-based, globalized, entrepreneurial, IT-driven and innovation-based)

Grant Administration Metrics

VRIC will also include in annual reports to the General Assembly metrics related to administration of the VRIF program, including the grant application and award process and post-award monitoring and compliance, such as:

- Number of applications
- Number of awards
- Success ratio (of applicants)
- Total funding requested
- Total funding awarded
- Average award amount
- Total amount invested in facilities, infrastructure, and equipment
- Total amount of matching funds
- Geographic distribution of awarded funds across GO Virginia regions
- Distribution of funds across areas of focus in the R&T Roadmap
- Distribution of funds between researcher recruitment/retention and research projects
- Distribution of funds across eligible institutions
- Number of grantees who received support from other state-funded research competitions (both pre- and post-VRIF funding)
- Post-award no cost extensions
- Post-award budget revisions
- Post-award changes in scope

Appendix D: Research and Innovation Continuum and Public Funding Sources



Source: U.S. Department of Commerce, CIT, VBHRC and TRRC & CHRB websites

Appendix E: Technology Readiness Levels

Technical Readiness Level (TRL)

Developed by NASA

Basic principles observed and reported	TRL-1	BASIC	TECHNOLOGY MATURITY ↓
Technology concept and/or application formulated	TRL-2		
Analytical and experimental critical function and/or characteristic	TRL-3		
Component and/or breadboard validation in laboratory environment	TRL-4	ADVANCED	
Component and/or breadboard validation in relevant environment	TRL-5		
System/subsystem model or prototype demonstration in a relevant environment	TRL-6	APPLIED	
System prototype demonstration in a operational environment	TRL-7		
Actual system completed and 'flight qualified' through test and demonstration	TRL-8		
Actual system 'flight proven' through successful mission operations	TRL-9		

TRLs are used extensively by Homeland Security, DoE, FAA, and DoD (DARPA, Naval Research Laboratory, AFRL).

Technology Readiness Levels in the Department of Defense (DoD)		
Technology Readiness Level	Description	Supporting Information
1. Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development (R&D). Examples might include paper studies of a technology's basic properties.	Published research that identifies the principles that underlie this technology. References to who, where, when.
2. Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.	Publications or other references that outline the application being considered and that provide analysis to support the concept.
3. Analytical and experimental critical function and/or characteristic proof of concept	Active R&D is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.	Results of laboratory tests performed to measure parameters of interest and comparison to analytical predictions for critical subsystems. References to who, where, and when these tests and comparisons were performed.
4. Component and/or breadboard validation in laboratory environment	Basic technological components are integrated to establish that they will work together. This is relatively “low fidelity” compared with the eventual system. Examples include integration of “ad hoc” hardware in the laboratory.	System concepts that have been considered and results from testing laboratory-scale breadboard(s). References to who did this work and when. Provide an estimate of how breadboard hardware and test results differ from the expected system goals.
5. Component and/or breadboard validation in relevant environment	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment. Examples include “high-fidelity” laboratory integration of components.	Results from testing laboratory breadboard system are integrated with other supporting elements in a simulated operational environment. How does the “relevant environment” differ from the expected operational environment? How do the test results compare with expectations? What problems, if any, were encountered? Was the breadboard system refined to more nearly match the expected system goals?

Technology Readiness Levels in the Department of Defense (DoD)		
Technology Readiness Level	Description	Supporting Information
6. System/subsystem model or prototype demonstration in a relevant environment	Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in a simulated operational environment.	Results from laboratory testing of a prototype system that is near the desired configuration in terms of performance, weight, and volume. How did the test environment differ from the operational environment? Who performed the tests? How did the test compare with expectations? What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before moving to the next level?
7. System prototype demonstration in an operational environment.	Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment (e.g., in an aircraft, in a vehicle, or in space).	Results from testing a prototype system in an operational environment. Who performed the tests? How did the test compare with expectations? What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before moving to the next level?
8. Actual system completed and qualified through test and demonstration.	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation (DT&E) of the system in its intended weapon system to determine if it meets design specifications.	Results of testing the system in its final configuration under the expected range of environmental conditions in which it will be expected to operate. Assessment of whether it will meet its operational requirements. What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before finalizing the design?
9. Actual system proven through successful mission operations.	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation (OT&E). Examples include using the system under operational mission conditions.	OT&E (operational test and evaluation) reports.

Appendix F: Assurances and Certifications – Terms and Conditions of Award

Assurances and Certifications

The Authorized Organizational Representative (AOR) signing the signature page is assuring and certifying the following:

Assurance Regarding Freedom of Information Act Exclusion: The Virginia Freedom of Information Act does NOT completely protect unfunded or funded grant proposals from exposure. The AOR is assuring that the applicant institution has consulted with the project team and the attorney general representative, if necessary, regarding whether a written request for protection is being made to the Virginia Research Investment Committee in accordance with Va. Code §2.2-3705.6, item 28. If the applicant is invoking the exclusion contained in item 28, the AOR is assuring that a redacted version of the application packet is being submitted that identifies with specificity the data, information, or other materials for which protection is sought and states the reason why protection is necessary. The Committee shall determine whether the requested exclusions from disclosure are necessary to protect the trade secrets, financial information, or research-related information of the applicant. The Committee shall make a written determination of the nature and scope of the protection to be afforded by it under the Va. Code.

Certification Regarding Organizational Support: The AOR is certifying that there is organizational support for this proposal, that this proposal was nominated for submission as a result of an internal selection process, that matching funds will be secured as described in the proposal, and that the Vice President for Research (or equivalent, or designee) has conducted due diligence to ensure the offered match complies with the guidelines in the Call for Proposals. Further, if the proposed plan for matching funds does not materialize, the AOR is certifying that the institution will submit a revised plan to comply with the required 1:1 match.

Certification Regarding Collaborating Entity AOR Approval: The applicant AOR is certifying that the AORs (or equivalent) of all collaborating entities have made the same assurances and certifications and that documentation of such exists.

Certification Regarding State Funds: The AOR is certifying that the organization understands that VRIF is awarding state funds. The organization will comply with all rules and regulations regarding state funds, including but not limited to the Commonwealth Accounting Policies and Procedures Manual, the Virginia Public Procurement Act (when applicable), and the Library of Virginia's Virginia Public Records Management Manual.

Certification Regarding Involvement of University Technology Transfer Offices (or equivalent): The AOR is certifying that the organization's office of technology transfer (or equivalent) is advising the research team about the market potential, target customers, commercialization strategy, etc., and otherwise supporting the commercialization of the technology or service being proposed.

Certification Regarding Conflict of Interest: The AOR is certifying that the organization has implemented and is enforcing a written policy on conflicts of interest in research and that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy.

Certification Regarding Compliance with the Animal Welfare Act. The AOR is certifying that proposed projects involving use of any vertebrate animal for research or education will be approved by the submitting organization's Institutional Animal Care and Use Committee (IACUC) before or substantially concurrent with an award. If the involvement of animals is indefinite at the time of award, the AOR is certifying that, prior to conducting any animal activities, and prior to expending any grant funds for those animal activities, IACUC approval will be obtained. It is an institutional responsibility to ensure that the research described in the application is congruent with any corresponding protocols approved by the IACUC.

Certification Regarding Compliance with the Common Rule. The AOR is certifying that proposed projects involving research with human subjects will ensure that subjects are protected from research risks in conformance with the relevant federal policy known as the Common Rule (Federal Policy for the Protection of Human Subjects). All projects involving human subjects must either (1) have approval from the organization's Institutional Review Board (IRB) before or substantially concurrent with issuance of a VRIF award or (2) maintain documentation that the IRB has declared the research exempt from IRB review, in accordance with the applicable subsection, as established in section 101(b) of the Common Rule.

If human subjects research is anticipated within the period of the award but definite plans for involvement of human subjects cannot be described in the application, then the AOR is certifying that, prior to the involvement of human subjects, the project will obtain IRB approval or exemption. It is an institutional responsibility to ensure that the human subjects research described in the application is congruent with any corresponding protocols approved by the IRB.

Certification Regarding Education in the Protection of Human Research Participants. The AOR is certifying that, if the proposed project involves research with human subjects, all senior/key personnel involved in human subjects research have received training in the protection of human subjects. Senior/key personnel include all individuals responsible for the design or conduct of the study, including senior/key personnel of collaborating partner entities or alternate performance sites if they are participating in research that involves human subjects.

Certification Regarding Responsible Conduct of Research: The AOR is certifying that the institution has a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students, and postdoctoral researchers who will be supported by VRIF to conduct research.

Terms and Conditions

DO NOT SIGN AND SUBMIT AT TIME OF APPLICATION

Grantor and grantee agree that this MOU will be performed in accordance with the following:

1. The statement of work and budget for this award are as specified in the grantee's proposal submitted _____ (date) _____ and incorporated herein by reference. In its performance of the statement of work, grantee shall be an independent entity and not an employee or agent of grantor.
2. Matters concerning the performance of this award should be directed to the appropriate party's contact, as shown in Attachments 3A & 3B.
3. Matters concerning the request or negotiation of any changes in the terms, conditions, or amounts cited in this award agreement, and any changes requiring prior approval, should be directed to the appropriate party's Contact, as shown in Attachments 3A & 3B. Any such changes made to this MOU require the written approval of each party's Authorized Official as shown in Attachments 3A & 3B.
4. Incorporated into this MOU by reference are the VRIF Call for Proposals, the entirety of the grantee's application packet including the assurances and certifications, the special terms and conditions in Attachment 1, and the general terms and conditions in Attachment 2.

By an Authorized Official of Grantor

By an Authorized Official of Grantee

(To be signed only if award is made)

(To be signed only if award is made)

Signature

Signature

Printed Name

Printed Name

Title

Title

Date: _____

Date: _____

Attachment 1: Special Terms and Conditions

Applicability

The terms and conditions in the MOU and all attachments apply directly to the grantee and also apply to collaborating entities, subrecipients, and contractors. The grantee is accountable for the performance of the project, program, or activity; the appropriate expenditure of funds under the award by all parties; and all other obligations of the grantee, as cited in the MOU and all attachments.

Site Visits

VRIC members and/or staff may conduct site visits during the course of the grant period.

Changes

Funds may not be transferred between the budget detailing the planned expenditure of general fund amounts and the budget detailing the planned expenditure of bond funds.

The changes listed below require the prior approval of the grantor. Requests should be directed to the grantor's Contact, as shown in Attachments 3A & 3B.

- Changes to the scope of the project
- Changes to milestones and timelines that impact the schedule for disbursement of funds
- Changes to collaborating entities
- Changes to key personnel named in the approved proposal
- Reduction of effort of PI or any Co-PI of 10% or more from the level in the approved proposal
- Plans for continued progress during extended absence of PI or any Co-PI
- Changes to the budget detailing the planned expenditure of general fund amounts resulting in a deviation of 20% or more in any budget category; the request must include the current allocation of resources along with specific detail and justification for the reallocation

No-cost extensions require the approval of the grantor. Requests for a no-cost extension should be addressed to and received by the Contact, as shown in Attachments 3A & 3B, not less than sixty (60) days prior to the desired effective date of the requested change. See "Reporting Requirements" section of the Call for Proposals.

Disbursement of Funds, Accounting, and Audit

After receiving a written request from the Virginia Research Investment Committee, grantor will authorize the State Comptroller and the Virginia Department of Planning and Budget to release the first payment to the grantee. The first payment will be sufficient for the grantee to achieve the first milestone on the timeline included in the grantee's proposal.

After initial disbursement, subsequent payments will be contingent upon successful performance against key milestones and other performance standards outlined in the proposal. Non-compliance with the terms and conditions of this award, including reporting requirements, and/or failure to achieve milestones on the approved timeline could result in a hold on disbursement of additional funds until the grantee is in compliance.

All payments shall be considered provisional and subject to adjustment within the total estimated cost in the event such adjustment is necessary as a result of an adverse audit finding against the grantee.

Award monies not expended by the end of the period of performance must be returned.

The grantee will oversee the expenditure of all grant funds by all parties and ensure that all funds are expended in strict compliance with state rules, regulations, and guidelines, the terms and conditions of this MOU, professional accounting standards, and all applicable state laws and requirements.

The grantee will maintain systematic accounting records of all expenditures relating to this award, including the supporting source documentation. Records will be retained by the grantee in accordance with Library of Virginia Record Retention Policy.

Records will be available for inspection and/or audit by SCHEV, the Virginia Auditor of Public Accounts, or other appropriate entity.

Transfer of Award or Change of Principal Investigator

If the Principal Investigator leaves the grantee institution during the grant period, the grant will not be transferred to a new institution. The grantee institution will have the opportunity to propose a new Principal Investigator, subject to approval of SCHEV staff and the Chair of the VRIC. If an agreement cannot be reached regarding assignment of a new Principal Investigator, a collaborating institution, if any, could propose to become the lead grantee. If no agreement can be reached, the award will be terminated and unexpended and unobligated funds must be returned.

Reporting

Report type and due dates are required as detailed in the Call for Proposals.

Future Applications to VRIF

Award recipients and their partners who are delinquent in any VRIF obligation are not eligible to apply for or receive future VRIF funding until obligations are resolved.

Termination of Award

SCHEV may terminate this award in the event of non-compliance with the terms and conditions of this MOU, significant lack of progress including failure to achieve milestones on the timeline set forth in the proposal, or other extenuating conditions. In the case of termination, the grantee will return any unexpended and unobligated funds.

Acknowledgments

Professional publications or presentations resulting from activities supported by this award must acknowledge the Virginia Research Investment Fund.

Acknowledgments of the Virginia Research Investment Fund are appreciated on poster presentations, printed programs, news releases, web news, e-mail alerts, or announcements regarding grant-funded activities.

Attachment 2: General Terms and Conditions

- A. **VENDORS MANUAL**: NA
- B. **APPLICABLE LAWS AND COURTS**: This contract shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation with respect thereto shall be brought in the courts of the Commonwealth. The agency and the grantee are encouraged to resolve any issues in controversy arising from the award of the contract or any contractual dispute using Alternative Dispute Resolution (ADR) procedures (Code of Virginia, §2.2-4366). ADR procedures are described in Chapter 9 of the Vendors Manual. The grantee shall comply with all applicable federal, state and local laws, rules and regulations.
- C. **ANTI-DISCRIMINATION**: By signing this contract, the grantee certifies to the State Council of Higher Education for Virginia that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and §2.2-4311 of the Virginia Public Procurement Act (VPPA). The grantee shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (Code of Virginia, §2.2-4343 1.E.).
1. During the performance of this contract, the grantee agrees as follows:
 - a. The grantee will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the grantee. The grantee agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The grantee, in all solicitations or advertisements for employees placed by or on behalf of the grantee, will state that such grantee is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting these requirements.
 2. The grantee will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
- D. **ETHICS IN PUBLIC CONTRACTING**: By signing this contract with the State Council of Higher Education for Virginia, the grantee certifies that their offer is made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other contractor, supplier, manufacturer or subcontractor in connection with their offer and that they have not conferred on any public employee having official responsibility for this transaction any payment, loan, subscription, advance, deposit of money, services or

anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

- E. **IMMIGRATION REFORM AND CONTROL ACT OF 1986**: By signing this contract with the State Council of Higher Education for Virginia, the grantee certifies that the grantee does not, and shall not during the performance of the contract, knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.
- F. **DEBARMENT STATUS**: By signing this contract, grantee shall certify that they are not currently debarred by the Commonwealth of Virginia from contracts for the type of activities covered by the Scope of Work/proposal, nor are they an agent of any person or entity that is currently so debarred.
- G. **ANTITRUST**: By entering into this contract, the grantee conveys, sells, assigns, and transfers to the State Council of Higher Education for Virginia all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the State Council of Higher Education for Virginia under said contract.
- H. **MANDATORY USE OF STATE FORM AND TERMS AND CONDITIONS FOR IFBs AND RFPs**: NA
- I. **CLARIFICATION OF TERMS**: NA
- J. **PAYMENT**: NA
- I. **TESTING AND INSPECTION**: The State Council of Higher Education for Virginia reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications in the Scope of Work.
- J. **ASSIGNMENT OF CONTRACT**: A contract shall not be assignable by the grantee in whole or in part without the written consent of the State Council of Higher Education for Virginia.
- K. **PRECEDENCE OF TERMS**: The following General Terms and Conditions VENDORS MANUAL (NA), APPLICABLE LAWS AND COURTS, ANTI-DISCRIMINATION, ETHICS IN PUBLIC CONTRACTING, IMMIGRATION REFORM AND CONTRAL ACT OF 1986, DEBARMENT STATUS, ANTITRUST, MANDATORY USE OF STATE FORM AND TERMS AND CONDITIONS (NA), CLARIFICATION OF TERMS (NA), PAYMENT (NA) shall apply in all instances. In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions, the Special Terms and Conditions shall apply.
- L. **QUALIFICATIONS OF (BIDDERS/OFFERORS)**: NA
- M. **TESTING AND INSPECTION**: NA (duplicate of I. above)
- N. **ASSIGNMENT OF CONTRACT**: NA (duplicate of J. above)
- O. **CHANGES TO THE CONTRACT**: See Attachment 1: Special Terms and Conditions.
- P. **DEFAULT**: See Attachment 1: Special Terms and Conditions.

- Q. **TAXES:** Sales to the Commonwealth of Virginia are normally exempt from state sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request.
- R. **USE OF BRAND NAMES:** NA
- S. **TRANSPORTATION AND PACKAGING:** NA
- T. **INSURANCE:** NA
- U. **ANNOUNCEMENT OF AWARD:** NA
- V. **DRUG-FREE WORKPLACE:** During the performance of this contract, the grantee and subcontractors agree to provide a drug-free workplace for the grantee's employees. Grantee will inform employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the grantee's workplace.
- W. **NONDISCRIMINATION OF GRANTEES:** Grantee shall not be discriminated against because of race, religion, color, sex, national origin, age, disability, faith-based organizational status, any other basis prohibited by state law relating to discrimination in employment or because grantee employs ex-offenders unless the State Council of Higher Education for Virginia has made a written determination that employing ex-offenders on the specific contract is not in its best interest. If the award of this contract is made to a faith-based organization and an individual, who applies for or receives goods, services, or disbursements provided pursuant to this contract, objects to the religious character of the faith-based organization from which the individual receives or would receive the goods, services, or disbursements, the public body shall offer the individual, within a reasonable period of time after the date of his objection, access to equivalent goods, services, or disbursements from an alternative provider.
- X. **eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION, CONTRACTS, AND ORDERS:** NA
- Y. **AVAILABILITY OF FUNDS:** The parties herein understand and agree that the agency shall be bound hereunder only to the extent of the funds available or which may hereafter become available for the purpose of this agreement.
- Z. **SET-ASIDES:** NA
- AA. **BID PRICE CURRENCY:** NA
- BB. **AUTHORIZATION TO CONDUCT BUSINESS IN THE COMMONWEALTH:** NA

Additional Terms and Conditions

- A. **RENEWAL OF CONTRACT:** NA
- B. **ADDITIONAL INFORMATION:** NA
- C. **DELIVERY POINT:** N/A
- D. **eVA Business-To-Government Contracts and Orders:** NA

- E. PRIME GRANTEE RESPONSIBILITIES:** The grantee shall be responsible for completely supervising and directing the work under this contract and all subcontractors that he may utilize, using his best skill and attention.

Subcontractors who perform work under this contract shall be responsible to the prime grantee. The grantee agrees that he is as fully responsible for the acts and omissions of his subcontractors and of persons employed by them as he is for the acts and omissions of his own employees.

- F. PROPOSAL ACCEPTANCE PERIOD:** NA

- G. WARRANTY:** NA

- H. SUBCONTRACTS:** No portion of the work shall be subcontracted without prior written consent of the purchasing agency. In the event that the grantee desires to subcontract some part of the work specified herein, the grantee shall furnish the purchasing agency the names, qualifications and experience of their proposed subcontractors. The grantee shall, however, remain fully liable and responsible for the work to be done by its subcontractor(s) and shall assure compliance with all requirements of the contract.