University Senate
TRANSMITTAL FORM

Senate Document #:	16-17-06
Title:	Restricted Research
Presenter:	Keith Marzullo, Chair, Restricted Research Subcommittee
Date of SEC Review:	January 30, 2017
Date of Senate Review:	February 9, 2017
Voting (highlight one):	1. On resolutions or recommendations one by one, or 2. In a single vote 3. To endorse entire report
Statement of Issue:	Restricted Research is currently conducted via an exception from the USM Policy. However, it is unclear what criteria are used to grant such exceptions. Without guidelines or criteria for researchers and administrators on how to proceed, there can be frustration, unwarranted delays, and a lack of transparency.
Relevant Policy # & URL:	USM Policy IV-2.20 on Classified and Proprietary Workhttp://www.usmd.edu/regents/bylaws/SectionIV/IV220.html
Recommendation:	We recommend that UMD continue to permit restricted research on a limited case-by-case basis after a careful analysis of the benefits, costs, risks, and impact on the UMD values of having an open academic environment. 1) We recommend that UMD adopt a transparent process by which PIs can apply for the waiver referenced in Paragraph 8 of the USM Policy on Classified and Proprietary Work. Section 3 presents our suggested guidelines. 2) The University should remain committed to disclosing as much information as legally permissible, to the extent permitted by statutory, regulatory, and contractual obligations. In light of these contractual obligations, the Division of Research should continue its practice of negotiating with research sponsors to obtain the least restrictive terms possible in research awards. 3) We recommend that the Division of Research adopt a checklist of terms and conditions to assist PIs in evaluating restricted research opportunities, and maintain a list of best practices based

	on the experiences of previous restricted research projects. 4) We recommend that training should be made available through the Division of Research and be mandatory before a researcher can be a PI on a restricted research project. 5) We recommend that costs of Restricted Research should, as much as possible, be built into the proposal budgets. If there is a significant growth in restricted research, then other solutions can be considered, such as converting space in an existing building into controlled space. 6) We also recommend that the Division of Research debrief PIs at the end of a restricted research project to capture their experiences and to develop best practices. 7) We recommend that the Division of Research create a quarterly report, for internal use, on the University's restricted research activity. 8) We recommend that unit heads should advise faculty considering engaging in restricted research, especially pre-tenure faculty, that the criteria for promotion and tenure do not account for unpublished or otherwise undisclosed research activity. 9) We recommend that if the VPR makes any changes to the guidelines proposed herein, these changes should be reported to the Research Council as soon as practicable. 10) We recommend an initial review of activity, practices, guidelines and reporting of Restricted Research by the Research Council one year after these new guidelines are implemented and every three years after. 11) We recommend that once a year, in a University Senate meeting, the Research Council should report the contents of the four quarterly reports generated over the last year.
Committee Work:	The Research Council developed a restricted research subcommittee to review the specific elements of the charge and make recommendations to the Council as a whole. The subcommittee met periodically throughout the course of the Fall 2016 and Winter 2017 semesters. The subcommittee reviewed the existing University System of Maryland Policy on Classified and Proprietary Work (IV- 2.20), and surveyed Big10 and peer institution best practices. The subcommittee also held a campus-

	wide open forum on September 7, 2017 to solicit input from the campus community and consulted with the Office of General Counsel before finalizing its recommendations and presenting them to the Research Council. The Research Council approved the recommendations on January 26, 2017.
Alternatives:	Continue with status quo of *ad hoc* approval of projects
Risks:	Risks: There are a variety of risks related to any change in University practice that are outlined in detail in Section 5 of the report but the committee recommendations provide guidance for mitigating these risks. Some of the potential risks include: 1) Significant reputational and legal risks that arise from major mishandling of sensitive data or results, including those that arise from export control issues. 2) Reputational risks from actual or perceived research bias that favors the agenda of sponsoring agencies. 3) The careers of individual students, pre-tenure professors, and research staff could be placed at a disadvantage if they are not allowed to publish their research results in a timely manner. 4) The sense of academic freedom, including the open exchange of ideas and open access to facilities and people could be negatively affected. 5) A potential loss of leverage in contract negotiations should UMD appear to be more open in allowing restricted research. 6) A risk to students who need to publish their work in the open literature.
Financial Implications:	Financial Implications: There will be increased costs associated with an increase in restricted research. These costs will be incurred by the Department performing the research, by the Division of Research, and by the UMD Office of General Counsel. Some potential costs include: • Staffing - both faculty and administrative - associated with restricted research proposal review, negotiation, and monitoring/auditing; • Required training for faculty, researchers, and administrators involved in restricted research; • Increased physical security and network security for

	performing restricted research It is anticipated that most new costs will be borne by the associated restricted research project. However, it is likely that some initial infrastructure investment would be required on the part of the University. A more detailed analysis of the potential costs is outlined in Sec. 5 and 6 of the report while specific approaches to covering additional costs are specified in Sec. 3.
Further Approvals Required:	Senate approval, Presidential approval

Table of contents

	Page
Section 1: Review the University System of Maryland Policy on Classified and Proprietary Work (IV- 2.20)	3
Section 2: Subcommittee Recommendations	5
Section 3: Suggested Guidelines	7
Section 4: Scope of Restrictions on Publication and Nationality	10
Section 5: Potential Costs, Benefits, and Risks	13
Section 6: Issues of Conducting Restricted Research On vs. Off Campus	16
Appendix 1: Restricted Research Charge	19
Appendix 2: Big 10 Academic Alliance Review	21
Appendix 3: Input and Recommendations from UMD Community	31

On August 5, 2016, Provost Mary Ann Rankin and The Senate Executive Committee asked the Research Council to conduct a review of the implications for conducting restricted research at the University of Maryland. The charge asked the Research Council to:

1. Review the University System of Maryland Policy on Classified and Proprietary Work (IV- 2.20).
2. Consider the scope of restrictions on publications and nationality that would ensue were this policy to be changed.
3. Identify potential costs, benefits, and risks (e.g., legal, reputational) to the university community associated with pursuing a more flexible policy to conduct research with publication and citizenship restrictions.
4. Identify potential risks and benefits to the various members of the university community (students, post-docs, junior and senior faculty) associated with conducting research with publication and citizenship restrictions (academic and career implications, legal risks, etc.).
5. Identify the costs and benefits of conducting restricted research on campus versus in University facilities off campus.
6. Review involvement in restricted research at peer and other Big Ten Academic Alliance institutions. If restricted research is conducted, investigate if limitations are imposed and in what context(s).
7. Actively seek input and recommendations from the broader University of Maryland community about whether, under what conditions, and through what processes the University should permit faculty to engage in restricted research.
8. Consult with the University's Office of General Counsel on any proposed recommendations.
9. If the recommendation is to proceed, produce a draft policy that is concise and clear (2-3 pages) and briefly recommend next steps toward the development of implementation procedures.

The Research Council created the following subcommittee to execute this charge. The subcommittee members were:

- Michael O. Ball, Smith School of Business / ISR (faculty)
- C. Scott Dempwolf, Urban Studies and Planning Program (faculty)
- Jen Gartner, Office of General Counsel (administrative staff)
- Adam Grant, Export Compliance Officer, Div. of Research (administrative staff)
- Reggie Harrell, Environmental Science and Technology (faculty)
- William Idsardi, Linguistics (faculty)
- Christian Johnson, Computer Science (student)
- Daniel P. Lathrop, Physics / Geology / IPST / IREAP (faculty)
- Keith Marzullo, iSchool (faculty, subcommittee chair)
- Donald Milton, Applied Environmental Health (faculty)
- Amy Mullin, Chemistry and Biochemistry (faculty)
- Thomas Murphy, ECE / IREAP (faculty, chair University Research Council)
- Deborah Nelson, Journalism (faculty)
- Ray Sedwick, Aerospace Engineering (faculty)
- Elizabeth Tennyson, Materials Science and Engineering / IREAP (student)
- Jonathan Wilkenfeld, Government and Politics (faculty)

Section 1: Review the University System of Maryland Policy on Classified and Proprietary Work (IV-2.20).

The USM policy on classified and proprietary work (IV-2.20, approved by the Board of Regents on 4/25/1991), states clearly that "Instruction, research, and services will be accomplished openly and without prohibitions on the publication and dissemination of the results of academic and research activities". There are eight main sections to the 1991 USM policy, summarized below:

1. Federal classified work cannot be done on campus nor can classified research be done using University facilities or resources;
2. USM will not enter any contractual agreement that restrains it from disclosing the existence of the agreement, the nature of the work, and the identity of the sponsor;
3. USM will enter into no agreement that bars investigators from publishing or otherwise disclosing findings publicly;
4. While research may make use of sponsor's proprietary information, and the University and investigators may agree to use reasonable efforts to protect such information or materials from disclosure, they cannot accept liability if such effort fail;
5. No graduate theses or dissertations can have restrictions on being made public;
6. Consulting and other off-campus activities are not covered by this policy;
7. This policy does not require disclosure of the identity of human-research subjects, confidential student, patient, or employee records protected by federal, state or university policies or information protected by professional ethics;
8. Under highly unusual circumstances, exceptions to **sections 1-4** may be granted by the Chancellor of the USM on the recommendation of the appropriate President or Director.

Exceptions under clause 8 have been granted for UMD, such as for the Center for Advanced Study on Language (CASL) and for the Unmanned Aircraft Systems Test Site (UAS). ***However, it is unclear what criteria are used to grant such exceptions. Without guidelines or criteria for researchers and administrators on how to proceed, there can be frustration, unwarranted delays, and a lack of transparency***.

The majority of Big 10 and other universities consulted by the Committee have policies or guidelines that contain processes by which the universities can accept restricted research when certain criteria are met. The Committee thus recommends a set of guidelines that will allow the appropriate offices within the university to make recommendations to the President and Chancellor in a fair and efficient matter. These guidelines should remain true to the general principles of IV-2.20:

- The research will be consistent with UMD's mission to generate and disseminate knowledge.

- The research will advance knowledge in a particular scholarly arena and/or it will lead to an enhancement in our national security.
- The faculty and students participating on restricted research teams will derive scholarly benefit from the research.
- Participating students are not adversely impacted in terms of opportunity, education, or graduation.

It should not be the case that an exemption would be granted solely because the project is likely to enhance university revenue.

Section 2: Subcommittee Observations and Recommendations

After reviewing the material discussed in this report, the Committee makes the following observations and recommendations:

1. Restricted research has value for UMD, including giving access to specialized equipment and data, and providing specialized training opportunities for students but carries risk. We recommend that UMD continue to permit restricted research on a limited case-by-case basis after a careful analysis of the benefits, costs, risks, and impact on the UMD values of having an open academic environment.
2. While waivers for restricted research have been granted, and the research has been valuable and impactful, PIs currently have no guidelines to follow when considering seeking restricted research funding, and the university community has no understanding of the process nor the reasons through which waivers have been granted in the past. We recommend that UMD adopt a transparent process by which PIs can apply for the waiver referenced in Paragraph 8 of the USM Policy on Classified and Proprietary Work. Section 3 presents our suggested guidelines.
3. In the course of engaging in research and scholarly activities, the University is committed to maintaining an open environment and retaining its independence and ability to publicly disclose research results. We recognize that in rare instances, such as when performing certain restricted research, legal obligations may require the University to limit access to such projects and may require that legally protected information and results not be publicly disclosed. The University should remain committed to disclosing as much information as legally permissible, to the extent permitted by statutory, regulatory, and contractual obligations. In light of these contractual obligations, the Division of Research should continue its practice of negotiating with research sponsors to obtain the least restrictive terms possible in research awards.
4. When restricted research is allowed, the PI, Office of Research Administration, and other applicable campus units must carefully review the terms of the solicitation before proposing and, if the proposal is successful, review the terms of the award before accepting a grant/contract/cooperative agreement. Carefully reviewed Technology Control Plans (detailed in Section 3: Draft Guidelines), and negotiation with research sponsors are all important to ensure that institutional standards are met and potential negative impacts are reduced or eliminated. We recommend that the Division of Research adopt a checklist of terms and conditions to assist PIs in evaluating restricted research opportunities, and maintain a list of best practices based on the experiences of previous restricted research projects.
5. Training is important for administrators, PIs, and researchers to reduce the risk incurred by restricted research. We recommend that training should be made available through the Division of Research and be mandatory before a researcher can be a PI on a restricted research project.
6. We expect that adopting guidelines like these may result in a modest growth in restricted research done at UMD. Based on the experiences of other Big

Ten Academic Alliance institutions, we expect that that the number of requests for restricted project waivers could eventually grow to 5-10 a year, and with very few at most in the classified space. We found from talking with other Big 10 Academic Alliance Universities that providing for the oversight and controls needed for a modest amount of restricted research is manageable.

7. There will be increased costs associated with an increase in restricted research. These costs will be incurred by the Department performing the research, by the Division of Research, and by the UMD Office of General Counsel. We anticipate these costs to be relatively small but they will be ongoing. Other costs will arise from implementing physical controls, separate data storage, and other similar isolation control. We recommend that such costs should, as much as possible, be built into the proposal budgets. If there is a significant growth in restricted research, then other solutions can be considered, such as converting space in an existing building into controlled space.
8. For purposes of evaluation, it will be important for the Division of Research to maintain information on the restricted research applications and grants/contracts/cooperative agreements made under new guidelines. We also recommend that the Division of Research debrief PIs at the end of a restricted research project to capture their experiences and to develop best practices.
9. We recommend that the Division of Research create a quarterly report, for internal use, on the University's restricted research activity. The report should be a spreadsheet that lists the funding amount, sponsor, project title, period of performance, name of the Principal Investigator, and the applicable restrictions (e.g., publication approval, restrictions on nationality) for each restricted research award to the extent permitted by the University's statutory, regulatory, and contractual obligations. Additionally, the Division should work with the Office of General Counsel to ensure that this quarterly report (1) is made available to members of the University senate, and (2) is available at no cost pursuant to a request submitted under the Maryland Public Information Act.
10. We recommend that unit heads should advise faculty considering engaging in restricted research, especially pre-tenure faculty, that the criteria for promotion and tenure do not account for unpublished or otherwise undisclosed research activity.
11. We recommend that if the VPR makes any changes to the guidelines proposed herein, these changes should be reported to the Research Council as soon as practicable. In addition, a review of the activity, practices, guidelines and reporting of restricted research should be undertaken periodically by the Research Council. We recommend an initial review one year after these new guidelines are implemented and every three years thereafter.
12. We recommend that once a year, in a University Senate meeting, the Research Council should report the contents of the four quarterly reports generated over the last year.

Section 3: Suggested Guidelines

Guidelines and Process for Requests for Restricted Research Projects

The majority of research projects on campus occur with the intent to publish in the open literature without review or approval by research sponsors[1]. USM Policy 106.0 IV-2.20, Policy on Classified and Proprietary Research, prohibits the University from accepting sponsored research with publication restrictions or restrictions on the University's ability to disclose the identity of the research sponsor, existence of agreement, or nature of work ("restricted research") unless a waiver is granted. These guidelines establish criteria for a waiver and the procedures for University of Maryland at College Park faculty and staff to request a waiver. These guidelines focus on federal and corporate funded research and service projects that involve publication restrictions. The guidelines apply where the restricted research sponsor requires review and approval to publish the results of restricted research. Waiver requests can be a part of the normal proposal routing process.

Under current USM Policy, a waiver must be approved by the USM Chancellor and UMD President. The guidelines here also require written approvals from the Department Chair/Unit Head, the Dean, and the Vice President for Research before the waiver request is sent to the President and Chancellor.

Additional requirements to the Restricted Research Project request include: (1) a written rationale for the research addressing the criteria below, (2) if needed, a proposed Technology Control Plan approved by the Export Compliance Officer (ECO), and (3) a narrative addressing the special considerations (section 3 below). Applicants are encouraged to consult the ECO early in the process. When necessary, the Vice President for Research will have the Restricted Research request reviewed by the campus Export Control Committee, IRB, or other relevant committees. These guidelines may be amended over time by the Office of the Vice President for Research after review of Restricted Research project outcomes and practices.

(1) Criteria for Restricted Research: Requests to perform restricted research require a rationale that describes benefit to the researchers and/or campus. In general, financial considerations alone are not an adequate rationale for accepting a restricted research award. A rationale may address one or more of the below reasons as well as other reasons to warrant accepting a restricted research project:

- Career / professional growth for students
- Career / professional growth for faculty
- Benefit to Campus
- Benefit to the State of Maryland
- Benefit to the Nation
- Opportunity to use a unique data set or unique research equipment or technologies that are not otherwise available

[1] Sponsors always have the right to request review to ensure that a publication doesn't contain any information confidential to the sponsor.

- Participation in a broader range of the business development cycle

The PI is responsible for articulating the rationale in writing as part of the approval process.

(2) Adequate security protocols: Restricted research projects involving sensitive technologies can be subject to export control laws (ITAR and EAR) or involve proprietary materials requiring special controls in order to protect from access by unauthorized individuals. The controls necessary for individual projects will vary based on factors including but not limited to: 1) sensitivity of the technology, 2) length of the project, 3) number of researchers involved, 4) location of the research, 5) equipment/materials used, and 6) use of proprietary materials or data sets. The PI, with the support of the Unit/Department, College, and Export Compliance Office, is responsible for ensuring that adequate controls are in place to protect the researchers and institution from the legal liability associated with a breach of export control laws or the release of sensitive or proprietary information. The proposed controls will be identified in a Technology Control Plan (TCP). Prior to approving a request for waiver, the Export Compliance Officer will review the draft TCP for adequacy. The following are items that should be addressed by the PI when preparing the draft TCP:

- What are the sensitive technologies or information and what laws are applicable (e.g. export control, HIPAA, FERPA, etc.)? The ECO can review and provide assistance identifying the applicable laws.
- Who will have access to the research? In addition to the researchers, will other faculty or staff need to handle the research data? Will any portion of the project require the use of a subcontractor, consultant, or other external party? Are nondisclosure or other protective agreements required and, if so, with whom?
- Where will the research be located and, if required, how will physical access be limited to researchers who are authorized under the TCP?
- Where will the research data be stored and what IT security controls will be used to prevent unauthorized access?
- Who will be responsible for monitoring and enforcing the controls in the TCP?
- What is the process for requesting sponsor approval for public release (i.e. publications)?
- What training will be required for individuals under the TCP? Faculty, staff, and students who plan to work on a restricted research project may require specialized training as determined by the Export Control Officer or the Department of Environmental Safety, Sustainability and Risk. This training must be completed prior to the start of the restricted research project.

(3) **Special considerations for Restricted Research projects:**

<u>The use of students in restricted research projects:</u> Special care must be undertaken that restricted research projects do not interfere with progress toward graduation. In particular, student research in support of their thesis or dissertation is limited to aspects

of the research projects that do not include publication restrictions except for up to a 90+90 day delay for review by the sponsor already imposed by existing USM policy.

Approaches to cover any added costs of Restricted Research projects: In general, all additional costs associated with restricted research projects will be borne by the project budget as a direct cost or otherwise supported by the Department/Institute or College where the research is conducted. Costs could include physical security, information technology in support of data security, and possible necessary staff. The PI is responsible for including these costs in the proposal budget.

Program assessment, benchmarking, and public access: In the course of engaging in research and scholarly activities, the University is committed to maintaining an open environment and retaining its independence and ability to publicly disclose research results. We recognize that in rare instances, such as when performing certain restricted research, legal obligations may require the University to limit access to such projects and may require that legally-protected information and results not be publicly disclosed. The University should remain committed to disclosing as much information as legally permissible, to the extent permitted by statutory, regulatory, and contractual obligations. In light of these contractual obligations, the Division of Research should continue its practice of negotiating with research sponsors to obtain the least restrictive terms possible in research awards.

In addition, information about Restricted Research awards will be collected for campus benchmarking and review in a report from ORA that will be released quarterly. Subject to the University's contractual, statutory, and other legal obligations, the report would include the funding amount and sponsor, the project title, the period of performance, and the name of the Principal Investigator. Consistent with current practice, when required by the award terms, campus will seek preapproval from the sponsors so this report can be made available to the public pursuant to the Maryland Public Information Act. Any Public Information Act request for this quarterly report should be responded to in a timely manner, as required by the Act, and at no cost to the requestor.

Sponsor review of publications: Many Restricted Research projects include review of publications by the sponsor, for instance to prevent release of proprietary information or data, sensitive technology, or other confidential information. In no case should the sponsors have the ability to prevent publication due to the outcomes and conclusions of the research unless required by law. Proposers should indicate why the sponsor is seeking restrictions.

(4) **Approval Process for Restricted Research Projects:**

Approval to engage in restricted research should be part of the routing process currently in use for sponsored research proposals and awards, when known at the proposal stage or completed prior to acceptance of an award. A letter addressing the criteria identified in these guidelines should be forwarded to the Director of the Office of Research Administration once it has been signed off by the approving parties (e.g. PI, Chair, Dean). Approvals are needed from the Unit Head, College Dean, Vice President for Research, and President. Once all required UMD approvals are obtained, the VPR and President can request a waiver of USM policy from the Chancellor.

Section 4: Scope of Restrictions on Publication and Nationality

Background:

The Committee reviewed the following kinds of research that can have publication restrictions: classified research, unclassified federal research with publication restrictions, corporate proprietary research, and service research/testing including examples of restricted clauses. The Committee also reviewed the associated Federal export laws (International Traffic in Arms Regulations – ITAR – and Export Administration Regulations – EAR) and newer Federal policies emerging in research (Dual Use Research of Concern, Gain of Function research) that impact research, including publication.

Some types of research contain restrictions, mandated by the funding agreement, prohibiting the release of information until the sponsor has provided approval. Such restrictions, referred to as "publication restrictions" or "restricted research," are the subjects of this Committee's review. Note that under current policy, sponsors can review to ensure no sponsor proprietary information is revealed; the publication restrictions considered here can restrict publishing any information pertaining to the contract or any program related to the contract funding the research.

For the most part, publication restrictions ask for a review from a representative of the sponsor's organization. This review is done to ensure that no proprietary or sensitive information is made public. An example of such a restriction is the following, from the Department of Defense Federal Acquisition Regulation (DFAR) Clause 252.204-7000 :

> *(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless—*
>
> *(1) The Contracting Officer has given prior written approval;*
>
> *(2) The information is otherwise in the public domain before the date of release; or*
>
> *(3) The information results from or arises during the performance of a project that has been scoped and negotiated by the contracting activity with the contractor and research performer and determined in writing by the contracting officer to be fundamental research in accordance with National Security Decision Directive 189, National Policy on the Transfer of Scientific, Technical and Engineering Information, in effect on the date of contract award and the USD (AT&L) memorandum on Fundamental Research, dated May 24, 2010, and on Contracted Fundamental Research, dated June 26, 2008, (available at DFARS PGI 204.4 (DFARS/PGI view)).*
>
> *(b) Requests for approval under paragraph (a)(1) shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 10 business days before the proposed date for release.*

> *(c) The Contractor agrees to include a similar requirement, including this paragraph (c), in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.*

Another is the following, from DARPA:

> *As of the date of publication of this BAA, the Government expects that program goals as described herein either cannot be met by proposers intending to perform fundamental research or the proposed research is anticipated to present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Therefore, the Government anticipates restrictions on the resultant research that will require the contractor to seek DARPA permission before publishing any information or results relative to the program.*

The following is an example of a clause from an agreement to use proprietary non-technical data:

> *Recipient shall retain all intellectual property rights, rights, title, and interest in Recipient's proprietary findings, and the Research and the Research Publication, provided however that first publication by Recipient of the Research Publication, and of substantive revisions thereto, shall be subject to review, comments, and written approval by Company.*

We have been told that in practice - in almost all cases - such reviews result in requests for no change, or for small and localized changes that do not affect the research results that are published.

Publication restriction can also restrict the nationalities of the involved researchers by virtue of nullifying the fundamental research exception and invoking export control laws. US export laws, intended to promote national security, govern the release of physical items and their associated technical information to non-US locations and persons. For example, a high powered infrared laser would require an export license from US Department of State to export out of the US. Similarly, the technical information that could show how the laser is designed, constructed, and operated would also require a license to release to a non-US person. Fortunately, most technical information generated during university research is exempt from export laws due to an exception written into the laws that allows for research intended for public release (i.e. via open conferences, scientific journals, etc.) to be considered "publicly available" even before it has been published. This "publicly available" status allows for universities to conduct technical research freely in open labs without having to restrict the data to US persons only. This exception is frequently referred to as the "fundamental research exception".

Only restricted research that falls under export control laws or regulation requires foreign national restrictions. The consequences of not complying with these rules are

severe, including serious accrual of fines, increased external audits, imprisonment, and serious damage to public reputation.

ITAR and EAR rules are complex, and so oversight by both the university and individual researcher requires training and legal support. For example, involvement of non-US persons in research is proscribed differently for persons of different countries depending on the nature of the reason of control: e.g., each of Australia, Austria, Aruba and Armenia has a distinct set of restrictions under EAR.

Section 5: Potential Costs, Benefits, and Risks

Items 3 and 4 in the Committee's charge specified that the committee should investigate benefits, costs and risks to the University community (item 3) and its community members (item 4). This section addresses both of these items.

Benefits

We anticipate benefits to the campus and state from enhanced research, student training, and prestige. Individual faculty should be able to enrich their own research portfolio, not just in terms of a specific restricted research project, but also in terms of strengthening the impact of related fundamental research and in generating new basic research ideas. It is also the case that by not taking on certain types of restricted research projects the University may put itself at a competitive disadvantage in certain disciplines such as the life sciences and aerospace engineering. Allowing restricted research would introduce the campus community to a richer set of real-world problems, advanced technology, and data for faculty, researchers, and students. It also would help the State of Maryland by providing additional kinds of real world training. Specifically, students and other research personnel, who are US persons (citizens or permanent residents) could gain access to a broader set of research experiences, which can lead to enhanced job prospects.

A major aspect of the committee's recommendation is to provide more clarity and transparency so that PIs may can become more efficient in deciding on which projects to pursue and on developing proposals and gaining approvals for projects with restrictions. It is hoped that it will be possible to more efficiently process requests.

Costs

There are several costs associated with performing more restricted research. There is staffing - both faculty and administrative - associated with restricted research proposal review, negotiation, and monitoring/auditing. There are costs associated with the required training for faculty, researchers, and administrators involved in restricted research. There will also be costs associated with the increased physical security and network security for performing restricted research. Finally, Google mail services are currently not authorized to transmit (i.e., neither send nor receive) export controlled technical data or controlled unclassified information. Other data transmittal services will need to be utilized for sharing sensitive data.

The set of committee recommendations discuss the extent of these costs and generally present ways to mitigate their direct burden to the University. For example, it is anticipated that most new costs will be borne by the associated restricted research project. However, it is likely that some initial infrastructure investment would be required on the part of the University, i.e. certain costs would likely not be chargeable to the grant or contract. The extent of the costs depends on the specific approach. However, opening new research revenue streams that were previously not accessible should generate overhead that would mitigate new expenses. A more detailed analysis of the necessary research volume to justify a capital investment could be conducted.

Risks

There are significant reputational and legal risks that arise from major mishandling of sensitive data or results, including those that arise from export control issues. Less tangible reputational risks are from actual or perceived research bias that favors the agenda of sponsoring agencies. Such legal and reputational risks are potentially borne both by the university and individual researchers. Certain kinds of (restricted) research sponsors could place individual researchers in ethical dilemmas and moral hazard related to balancing desires of sponsors and responsibility to truthfully report research results. The careers of individual students, pre-tenure professors, and research staff could be placed at a disadvantage if they are not allowed to publish their research results in a timely manner. To the extent that discussion of results and ideas associated with restricted research projects must be limited in certain ways the University could suffer an unspecific reduction in the sense of academic freedom, including the open exchange of ideas and open access to facilities and people. It is also possible there could be loss of leverage in contract negotiations should UMD appear to be more open in allowing restricted research.

These risks are real and any change in University practice should ensure they are adequately addressed. The Committee's recommendations as well as its report on the practices at other universities provide guidelines and ideas for mitigating these risks. Of particular importance is to protect students who need to publish their work in the open literature. Key elements for risk minimization are proper proposal review and contract negotiation, and also enhanced training of research personnel.

Specific UMD Examples

We give two examples of restricted research to make these issues more concrete. The first example is about an existing project where the scholarly benefits are clear and the risks and costs have been carefully managed. The second example highlights the diverse parts of campus that would benefit from the new process.

1. The University of Maryland Center for Advanced Study of Language (CASL) was established in 2003 in response to the 9/11/2001 terrorist attacks on the United States of America. CASL is one of 13 Department of Defense University Affiliated Research Centers (UARCs), and is a partnership between the University of Maryland, the Department of Defense, and the U.S. Intelligence Community. Although the majority of CASL's research is unclassified and has been published in peer-reviewed articles, CASL also conducts classified research under the waiver process of USM Policy IV-2.20. CASL has become a preeminent national research center for world languages and dialects, human-augmented cognition, accelerated learning, and workforce optimization. CASL's scientists conduct human-centered social science, computer science, and education research to advance national security and global understanding. The ability to access classified information has enabled CASL's researchers to work alongside government analysts in operational settings to bring innovative solutions to problems affecting language, cyber, intelligence, and information analytics, assisting individuals, teams, and organizations to maximize their strengths and accomplish their missions. More than 30 UMD professors from many

departments and schools are affiliated with CASL. Over a dozen graduate students have received support from CASL through mentored research assistantships and fellowships. In addition, over 40 undergraduate students have come through CASL over the last five years via their undergraduate summer program.

2. The University often sees agreements for data sets that have restrictions on publications resulting from use of the data. For example, a data use agreement from a multicenter health study may contain requirements for publication approval to ensure that the sample data is used in accordance with the terms and scope of the study. The Smith School of Business very often desires access to corporate data or financial data from Federal entities that require a data use agreement, which may contain terms requiring approval of publication to ensure no proprietary information, trade secrets, or other information is released that could negatively impact the company. In some cases such agreements are never signed, and in others they are signed after long negotiation periods. The University should rightly refuse certain of these agreements and should accept others, however, it is hoped that new policies can make the process of reaching a decision more efficient.

Observation

The University of Maryland's geographic location gives it a distinct competitive advantage. It is adjacent to the myriad Federal agencies located in the Washington, DC metropolitan area. It seems likely that a more thoughtful policy regarding restricted research would enable the University to better capitalize on its location. This could significantly enhance the job prospects of its students. Further, individual faculty, the University and the State of Maryland could play a very strong role in addressing critical challenges of national importance.

Section 6: Issues of Conducting Restricted Research On vs. Off Campus

Restricted research may place restrictions on public dissemination of knowledge and on allowing access to technology, hardware or information by non-US persons. The former is not a driver with regard to whether restricted research is carried out on or off the university campus. However, the access restriction to certain individuals has space implications. Should restricted research be conducted in controlled space on campus, or in University facilities off campus? Many universities have constructed centers off campus, such as the Georgia Tech Research Institute, John Hopkins Advanced Physics Laboratory, and MIT Lincoln Labs. At other universities, such as Purdue University and the University of Massachusetts Amherst, access restrictions are added to rooms in existing on-campus buildings.

On-campus: Benefits

The primary benefit of on-campus restricted research is access to existing facilities and infrastructure. This is particularly important in the case of experimental research, where a laboratory may contain specialized equipment (vacuum chambers, clean rooms) that might be prohibitively expensive to duplicate. To a lesser extent is the benefit of leveraging other existing infrastructure (physical and information technology) that is already maintained by the university. More intangible is the proximity of the space to the principle investigator, and in the event of student involvement, to their offices (if distinct from the restricted work space) and to other on-campus facilities, such as classrooms, dining and housing.

On-campus: Costs

The costs associated with establishing the capability to regularly conduct restricted research, whether on or off campus, will involve an initial cost to implement a Technology Control Plan and the necessary physical and information technology (IT) infrastructure. There will then be a recurring cost of maintaining the IT system and any additional personnel necessary to support the restriction of access to facilities or information. The specific costs will depend on the nature of the area in which the restricted research will take place, which may be best described by way of examples.

One example of a space that is already set up for restricted research is the Glenn L. Martin Wind Tunnel (GLMWT). While the main entrance and access to the second floor is currently unrestricted, access to the GLMWT personnel office space, control room and the tunnel itself is restricted by a single door via a keypad. The restricted access at GLMWT is due primarily to the proprietary technology that is tested for a variety of companies, but the process is the same as with access restriction for other purposes. All staff are US citizens or permanent residents. However, the Technology Control Plan only calls for restricting the space to US persons when a restricted project is underway or ITAR equipment is mounted in the wind tunnel. Since the test equipment that the tunnel can accommodate is relatively small, it can be secured in a locked space, allowing the lab to be open to a broader population between restricted projects.

A second example of a more common situation can be found in the same building on the second floor. The UMD Space Power and Propulsion Laboratory (SPPL) is composed of a single laboratory research space and two separate student office spaces. The lab space

is keycard accessed, the installation of which cost approximately $5k. This already restricts access, but only based on lab affiliation. If the entire lab was designated as an ITAR restricted area, this could be done at no financial cost, however it would come at the more intangible cost of not allowing non-US students to participate in research in the lab. If both restricted and unrestricted research were to be conducted within the lab (i.e. allowing regular foreign access), methods of safely storing test articles when not under test and procedures limiting the times during which non-US persons could access the lab would need to be put into place. Regarding the office space, since two separate student office spaces currently exist, separation of the spaces by US and non-US persons could be done, with the appropriate training and understanding for the students to regulate access to the space.

While the previous example imposes little financial cost, there is the cost of constant diligence to allow non-US persons to coexist within the space. This particular cost could over time drive any particular lab in question toward a state of choosing only to conduct unrestricted research, or only to employ US persons. While the latter may not be a direction that the University would choose to go in a general sense, the choice to do so on a lab by lab basis should be a decision left to the laboratory director or supervising faculty.

An alternative is to establish dedicated restricted research space on campus. Under this model, principle investigators (PIs) could have their own dedicated research space, or common space and facilities could be allocated. The cost of establishing such facilities up-front in a coordinated manner would require a significant capital investment. However, should such space be made available, the onus could be placed on the PIs to populate the space with the necessary equipment, either from their current labs or via new research contracts.

Off-Campus: Benefits

The primary benefits of choosing to establish restricted research off-campus are the availability of space, and the somewhat greater ease with which access to this space can be controlled. All else being equal, if a new laboratory space (single PI) with the express purpose of conducting restricted research were already planned, it would be equally easy to establish this lab in an off-campus building as it would on-campus – although some of the less tangible benefits of having the space on-campus would be lost.

Off-Campus: Costs

The cost of establishing a dedicated off-campus restricted research area is similar to establishing a dedicated on-campus area, under the assumption that a building space supporting the infrastructure needs of the research already exists. Such university-owned buildings do exist off-campus. For an individual PI to establish space off-campus, the cost would depend on the nature of the research, again making the distinction of requiring laboratory space versus office space and IT infrastructure.

Summary

Restricted research can be conducted in an on-campus space by securing the space. Depending on the nature of the research, securing the space may not cost much. If there

is a significant growth in the amount of restricted research, then economy of scale may be obtained by securing a larger space, such as the floor of an existing University building or an entire building. At large scale, a separate building could be the more economical approach or needed to provide stringent physical separation. An example of this is the off-campus CASL facility, which has a large amount of SCIF space. A prudent approach would be to use individually secured in-building space until scale makes it economical to secure a larger space.

Appendix 1: Restricted Research Charge

University Senate
CHARGE

Date:	August 5, 2016
To:	Thomas Murphy Chair, Research Council
From:	Mary Ann Rankin Senior Vice President & Provost Jordan Goodman Chair, University Senate
Subject:	Restricted Research
Senate Document #:	16-17-06
Deadline:	January 17, 2017

Provost Rankin and the Senate Executive Committee (SEC) request that the Research Council conduct a review of the implications for conducting restricted research at the University of Maryland.

For the Research Council's benefit, a "Restricted Research Discussion Document" is attached that contains an excerpt of the relevant policy, provides working definitions of pertinent terms, and will serve to seed conversation on the topic.

Specifically, the Research Council is being asked to address the following:

1) Review the University System of Maryland Policy on Classified and Proprietary Work (IV-2.20).

2) Consider the scope of restrictions on publications and nationality that would ensue were this policy to be changed.

3) Identify potential costs, benefits, and risks (e.g., legal, reputational) to the university community associated with pursuing a more flexible policy to conduct research with publication and citizenship restrictions.

4) Identify potential risks and benefits to the various members of the university community (students, post-docs, junior and senior faculty) associated with conducting research with publication and citizenship restrictions (academic and career implications, legal risks, etc.).

5) Identify the costs and benefits of conducting restricted research on campus versus in University facilities off campus.

6) Review involvement in restricted research at peer and other Big Ten Academic Alliance institutions. If restricted research is conducted, investigate if limitations are imposed and in what context(s).

7) Actively seek input and recommendations from the broader University of Maryland community about whether, under what conditions, and through what processes the University should permit faculty to engage in restricted research.

8) Consult with the University's Office of General Counsel on any proposed recommendations.

9) If the recommendation is to proceed, produce a draft policy that is concise and clear (2-3 pages) and briefly recommend next steps toward the development of implementation procedures.

We ask that you submit your report and recommendations to the Senate Office no later than January 17, 2017.

If you have questions or need assistance, please contact Reka Montfort in the Senate Office at reka@umd.edu or 5-5804.

Appendix 2: Big 10 Academic Alliance Review

The Big Ten Academic Alliance comprises 14 institutions: Illinois (UIUC), Indiana, Iowa, Maryland (College Park), Michigan, Michigan State, Minnesota, Nebraska, Northwestern, Ohio State, Penn State, Purdue, Rutgers, and Wisconsin.

Illinois: **Restricted research is allowed**. https://research.illinois.edu/regulatory-compliance-safety/export-control

> **Where can it be conducted?** A: Wherever possible, we try to use only dedicated spaces for conducting controlled research and storing controlled items. In some cases we may also allow shared labs to close off for certain hours dedicated to controlled work, while remaining open at other times. Some controlled spaces are located off campus.
>
> **How many requests are made to allow a project with restrictions, and how many are approved?** A: Requests proprietary type is ~10 per month, routinely approved. National security type ~24 Active projects over 2-3 years. ½ per month. All are approved.
>
> **What are the effects of publication restriction - how often are changes requested, and how severe? Is publication ever denied?** A: Works with project managers runs smoothly, DFARS 252.204-7000 clause causes some issues/complications/challenge – treated as a national security control. They have a waiver process for the sponsor to request a waiver from the 10-day publication review. We shared information from Ohio State on how to work with that waiver process.
>
> **What is the training provided to faculty, and to students?** A: Working to formulate that. One export-control officer (ECO), meets with the PI and research team. Discusses project, rules, law, and consequences. Annual training for departmental admins. Periodic training for the big departments.
>
> **What restrictions, if any, are placed on students being involved in restricted research? In untenured faculty? Other categories?** A: No additional restrictions, except which faculty titles can be PI. Normal US persons restriction on national security control projects.
>
> **Do requests for classified projects (TS, SCI) follow the same path? If not, what path is used, if such projects can be approved?** A: Classified handled by similar path but different office. Director of sponsored programs. Dedicated facility built around June 2016. Company in research park 10 years ago had SCIF that was move-in ready.
>
> **Who approves or denies projects?** A: Vice Chancellor for Research
>
> **What have been the stumbling blocks in your process?** A: National Energy Technology Lab (NETL DOE) querying about foreign nationals denying projects even when fundamental research. Occasional verbal additional terms from DOE program officer (no specific nationalities). Purchasing not on board in

checking export control. I understand from Adam we have the same issues here at UMD from NETL.

Does your campus provide physical and/or IT infrastructure that can restrict access to US citizens? (And if so, how?) A: ECO works with campus wide IT team to have a campus policy on high risk category and what types of resources and firewalls are needed. Later they will think about how to implement that. For now project by project handles that. Want more uniform process.

Indiana: Restricted research is allowed. http://researchcompliance.iu.edu/cs-exportcont.html

We don't typically accept restrictions. An investigator would have to go through a review committee to determine if the university is willing to accept those restrictions and at that time it would be determined what measures would need to be taken. To date **none** of our investigators have gone through the review process to request publication restrictions.

Foreign National participation: This process is similar to the publication restriction process and to date no one has put something in front of the review committee for foreign national restrictions.

Iowa: Restricted research is allowed. http://dsp.research.uiowa.edu/export-controls-home

The basic process: A process is in place which requires higher level review and approval for accepting publication restrictions. When accepted, there is review for export control issues, if the project is subject to export controls, a Technology Control Plan (TCP) must be in place before any contracts are signed with publication restrictions. In the case of a Grant (which I do not think has ever happened) we would at the least not award the money until a TCP was in place.

Foreign National participation: We accept these restrictions if we accept an export controlled project.

Michigan: Restricted research is allowed. http://research-compliance.umich.edu/export-controls

The basic process: Analyzed on a case by case basis, but publication restrictions (such as approval clauses) have to be signed off by the investigator's **Department Chair** and **Dean** before they are accepted. Export control implications are then analyzed and a TCP may be put in place to manage the project if needed.

Foreign National participation: These are analyzed on a case by case basis, but a TCP would be put in place. Across the board, we do not physically segregate restricted research into different spaces on campus.

How many requests are made to allow a project with restrictions, and how many are approved? Proposal Approval Form-Restricted (PAF-R, which is a supplementary Proposal Approval form for review of restrictions on

publication or dissemination of research requests in the last 5 years: 24. All PAF-R requests were approved. In several cases, the PI was asked to change participants or develop other research avenues for graduate students. Generally, graduate students did not participate in the restricted research unless there were clear 'carve-outs' for fundamental and/or publishable research, or the project was very short term. In all cases, there had to be clear benefits to the student in participating. Technology Control Plans (TCP): 96 (many are for equipment, software, and other items with export controls, not for export controlled research projects per se.) TCPs are tracked and stored in U-M eResearch as Unfunded Agreements (UFA). The Associate Dean for Research currently reviews and approves TCPs; many of these TCPs were grandfathered in when the U-M Office of Research and Sponsored Projects (ORSP) did not require college and department approvals. Active projects with export controls: 39 projects in 9 departments.

What are the effects of publication restriction - how often are changes requested, and how severe? Is publication ever denied? Good question, we have not tracked this. I will send out a quick survey to our PIs. Anecdotally, we have heard concerns about contracting officers who are considerably more restrictive than the terms of the contract, or a sponsor who states mid-project that a project is not fundamental research and is more restrictive in publication reviews that the terms of the contract. I have not been contacted by a PI about a sponsor who refused to allow publication. Best practice: For Department of Defense contracts, the PI/ORSP should receive a Distribution Statement A from the sponsor for full release.

http://www.dtic.mil/dtic/pdf/distribution_statements_and_reasons.pdf

What is the training provided to faculty, and to students? Faculty and students involved in export controlled research must complete the UMOR-required CITI training. We are currently working on training to increase faculty and student awareness about restricted research (including industry proprietary data/publication reviews).

What restrictions, if any, are placed on students being involved in restricted research? In untenured faculty? Other categories? Graduate students must have an option for other research opportunities if they do not wish to participate in restricted research. In general, graduate students may participate if they are protected from the publication restrictions: e.g., the project is short term and provides a valuable learning experience or training, or if there is a clear path for them to complete their dissertation without publication restrictions. We do not have a restriction on faculty. We have had one assistant professor, one assistant research scientist, and one staff scientist as PI on restricted research projects in the last 5 years. There have also been research scientists and postdoctoral research fellows on projects led by tenured faculty.

Do requests for classified projects (TS, SCI) follow the same path? If not, what path is used, if such projects can be approved? We do not accept classified research. U-M is not currently licensed to participate in

classified research, but has applied to be able to do so. Curt Smitka is in training to be the U-M Facilities Security Officer; I recommend that you contact him or Sharyn Sivyer for more information.

What benchmarking does your campus use in evaluating your process for approving restricted research? We have informal benchmarking, through discussions with peer institutions. We also participate in the Association of University Export Control Officers listserv and conferences. The U-M Export Controls office has set up processes and policy, and CoE participates in the Export Controls Review Committee to help develop, assess and evaluate these processes. Other resources are conferences by federal agencies (such as BIS), and other university consortiums (COGR, Educause).

Who approves or denies projects? The Associate Dean for Research.

What have been the stumbling blocks in your process? 1. General lack of awareness/need for outreach and training about federal requirements for restricted research (e.g., the campus switch to Google mail was made despite strenuously voiced concerns about security) Who handles what, and when? Partnering with UMOR, ORSP, and IIA as we develop awareness and processes has been fruitful overall but there have been missteps and confusion as we all negotiate how to tackle restricted research. 3. An increasingly restrictive Federal regulatory environment. 4. Reducing faculty administrative burden: while we are now coming to the faculty member's office door with one-on-one support to help her/him meet federal/sponsor requirements, there are still multiple assessments and processes (via ORSP/UMOR) before we get there. 5. Lack of resources/personnel

Does your campus provide physical and/or IT infrastructure that can restrict access to US citizens? (And if so, how?) To some degree…this is done on a project basis. There are several U-M CoE labs that are secure enclaves such as the Space Physics Research Laboratory. For new export controlled research, research with DFARS or FARS security clauses, and other sensitive data, I typically set up a meeting with key players (at the time of award) to understand the scope of the requirements and scale of work needed to meet them, and then work with the local units and IIA to develop the needed security. The team can include the PI, our CoE ITS executive team, the department IT lead, and Information and Infrastructure Assurance (IIA) in U-M ITS. We also work with the department administrator and facilities to review the physical infrastructure. If a project is export controlled, the U-M Export Control office will help the PI to develop a technology control plan. Planning and setting up infrastructures is costly both in time and funds, and we generally prefer to let the PI know about the requirements at the proposal stage, and then wait to the time of award to develop the security systems. IIA is developing secure enclaves at the University level, but we will still need to work with IIA and the PIs to develop secure means for faculty to interact across campuses/departments, and with external collaborators. I would be happy to meet with you to talk about general concerns and requirements. For an idea of the scope and current federal controls, here is the latest definitions:

https://www.federalregister.gov/documents/2016/09/14/2016-21665/controlled-unclassified-information.

The following is a Q & A to two graduate students (A1 and A2) who have participated / are currently participating in restricted research at the University of Michigan:

1. Did you know what you were getting involved in when you decided to start the restricted research project? i.e. was there some sort of waiver you had to sign?

> A1: I had previously done a 9 month internship program with GE aviation while I was an undergraduate so when I was talking to my advisor on my visit weekend about potentially coming onto this project I knew a little bit about what I was getting into. For our group we made a blanket NDA for the University of Michigan and the PI has to apply it to new people who join the project and then GE has to approve it. We also have to get approval before we do any new testing on the material (but this has never been a problem for me)
>
> A2: I was informed of the restrictions at the beginning. At the time, I did understand the impact that it might have on my publishing capability. It was something that was relatively new, and the entire team (3 faculty and 4 grad students) were told by the corporation that we would be encouraged to publish.

2. What types of training did you have to do before starting the research, if any?

> A1: I didn't really have to do any training other than just being briefed about the policy.
>
> A2: The only training that I received was training on some of the equipment. I received no training on how to work on a restricted project. This became an issue later when we found out we were not securing our data correctly and that we were using emails inappropriately.

3. What are the effects of publication restriction that you encountered?

> A1: I'm currently the 5th Ph.D. student to be working on this project and I think I can say that as the years (or in this case the students) have gone by, GE has become more understanding when it comes to publishing. I just started in January so I haven't published yet but I'm currently working on a paper and so far I haven't had too many restrictions. They will definitely review the paper and get it approved before being published but I think any company would do that. I do know that it was a problem for the first couple of students who were on this project. Also I think a big thing that changed when it came to publishing is that these CMCs had never been used on engines before and GE just put out a new fleet of engines (in January of this year) that had CMCs on it and so I think their mentality is

that yes we still want to keep our research a secret but now that the material is out there for the world to see/use it will eventually get into competitors hands and so they are less worried about it

A2: I, fortunately, did not run into any publication issues. The only boundary that I found was that the company required at minimum of 8 weeks to review the document before I was allowed to release to anyone outside of my committee. There were other students on my team that had much a much harder time as their projects had to do with failure mechanisms in the material.

4. What have been the stumbling blocks in your process?

A1: The stumbling blocks haven't been that bad in my process. There are some little things that I had to deal with in the beginning. Such as the university automatically gives every student here a gmail account but because gmail doesn't promise that all of their servers are in the U.S. I had to get a special outlook account set up. I also have to put all of my data on an encrypted hard drive with a passcode. I also have to be aware of where I'm doing work because foreign nationals are not supposed to be working with CMCs and I also have to keep all of my physical samples kept in a locked cabinet. (although honestly none of this is too difficult to deal with)

A2: My process was very painless. My advisor was very good at not letting the issues get to me and taking care of things.

5. What aspects did you find advantageous?

A1: The main advantage I find on this project is that I love working with CMCs and GE is definitely leading in the innovation of this technology.

A2: During my time working with this company, I was able to not only learn about the company sponsoring me, but also about the its competitors. I am actually working with a competitor now. It was great for networking to an industrial job, and it was very nice to see how research is done outside of a university.

6. Do you feel like there is some sort of segregation in your lab due to the fact that you involved in ITAR restricted research?

A1: My group is small and everyone is approved to be working on these materials so there really isn't any segregation. If there were a wider variety of us I still don't think it would be too segregated in the lab environment unless there were foreign nationals or non-US citizens in the group.

A2: I got lucky on this one. I was the last student for my advisor. I know that other students had to be more secure about things in their labs. We all had a locking cabinet in our labs where we kept restricted materials and data. It was not a big deal keep things separated.

7. Do you have a specific location away from other students in your group where you perform the research?

A1: I usually just work at my desk (which is in a room full of a variety of other graduate students). If I'm looking at something on the material (aka high resolution images, or specific data about the material) on my computer then I'll just make sure to lock my computer before I get up from my desk.

A2: I was able to use any equipment that I wanted even with ITAR, Export controlled, and proprietary restrictions. I had to perform the tests myself and make sure that the material was in my possession at all times, but as a grad student, I didn't find it cumbersome.

8. Really any overall feelings or things you'd like to add, things I might have missed. I am just getting started learning about the topic so any insight / suggestions from you would be great!

A1: Actually, you cover almost everything I would mention when it comes to restricted research haha. One thing I will definitely say is that if a professor is doing restricted research of any kind I do think it is important to stress the restrictions to an incoming student as they probably won't know too much about it. Like I said since I had previously worked for GE I knew what I was getting into but some of the earlier students who had problems publishing didn't know that was going to happen when they originally joined the group.

A2: The largest issue that we had was actually with the funding cycles. Corporates don't work on the same cycles as universities. We had a year or two where the funding became an issue. Other than that, I found it to be a great experience. The networking was better than any of my colleagues experienced, the real world experience was incredible, and being able to work with a diverse team across multiple disciplines was the best. I strongly support industry and academia working together even with restrictions in place.

Michigan State: Restricted research is allowed, but rarely
https://exportcontrols.msu.edu/

The basic process: PI's and Graduate students are advised and must agree to the restrictions. Those projects with export control concerns are administered thru MSU (not by an off-campus organization) but are conducted at an off-campus MSU controlled facility. In the case of one-of-a-kind, immobile research equipment, we sometimes control on-campus space access during utilization for these purposes.

Foreign National Participation: Same answer as (a) except these extra precautions are triggered by current citizenship, not national origin.

Minnesota: Does not allow restricted research except in extremely rare cases. http://www.ospa.umn.edu/export_controls.html

When a rare case arises, we take case-specific steps to ensure that controlled data are safeguarded while research can still happen. At a minimum, we implement a TCP that includes data storage, handling, and marking requirements, as well as semi-annual reviews from my office. We have an Openness in Research Policy that establishes a default of not accepting support for research if there are substantive publication restrictions (unrelated to sponsor IP) or personnel access/participation restrictions.

There is an exception process, but it is not for the faint of heart. We've only gone through it once since I started here in January 2013, and it took about six weeks. The players included my office, Legal, the AVP for Sponsored Research Administration, the Faculty Senate Research subcommittee, and our VP for Research.

Nebraska: Restricted research is allowed.

http://research.unl.edu/researchresponsibility/export-control/

The basic process: We segregate by utilizing controlled spaces via largely key card access. Any access to pass through doors (connected labs etc) are thoroughly reviewed for limiting access and appropriate Export Control training completed with employees. We also have a building with major renovations being completed with the intent to house the majority of our ITAR controlled research. Some restricted research is conducted off campus through our University Affiliated Research Center (UARC).

Foreign National participation: Same answer as (a), we segregate via the use of controlled spaces and limit who has access/screen each person appropriately through Visual Compliance/training.

Northwestern: **Restricted research is NOT allowed.**

Ohio State: Restricted research is allowed. http://orc.osu.edu/regulations-policies/exportcontrol/

The basic process: Onus is placed on researcher to prevent unauthorized access. For some areas, this may require controlled access to the space. For others, this is temporary controls (such as computer screens, etc.).

Penn State: **Restricted research is allowed.**

http://www.universityethics.psu.edu/UniversityEthics/Units/ExportControl/index.cfm

The basic process: All such projects result in a written TCP specifying access, security and data protection measures applicable to the project. All such project participants are required to complete online export compliance training and signoff on the project specific TCP. Some such research is performed in our classified facilities. All restricted research requires signoff from Director of OSP and, if graduate students are involved, approval of the Dean of the Graduate School. The ECO serves as final signatory of all TCPs and project awards cannot be accepted nor work commence until I execute the final TCP (previously signed

by all project staff, Department Representatives (Dean/IT Admin) and Associate Dean for Research for the impacted College).

Purdue: Restricted Research is allowed.
https://www.purdue.edu/research/research-compliance/export-control/overview.php

Among the big-10 peer Universities considered, Purdue University is notable because it is nearly identical in age, enrollment, tuition, and national ranking to UMD. Like UMD, Purdue is a state university that does not have a major off-campus affiliated research laboratory or institute that undertakes restricted or classified research.

The committee interviewed faculty members at Purdue who are engaged in restricted research, and also spoke with campus-level representatives in their office of export control who oversee compliance and manage training for students and faculty who are engaged in restricted research.

Restricted research is permitted at Purdue University, although it remains a small portion of their overall funded research program. Purdue can (and has) accepted and negotiated funded research projects that include restrictions on citizenship and publication, and has at times even permitted classified research on campus.

The basic process: The negotiation and management of restrictions is handled exclusively by the office of research compliance. When applying for funding that carries restrictions on citizenship, publication, or disclosure, PIs must apply for approval by completing a form explaining the nature of the restrictions, specifying the location of the proposed research and explaining how the work will be segregated:

http://www.purdue.edu/business/sps/pdf/restrictedprojectapproval_option2.pdf

http://www.purdue.edu/business/sps/pdf/restrictedprojectapproval_option3.pdf

The export control compliance officer consults with and advises the faculty on a case-by-case basis, negotiates the terms of the restrictions with the sponsor where necessary, and assists with composing and implementing a technology control plan. All students and faculty working on restricted projects must undergo online and in-person training. Care is taken to ensure that the work is not benefiting from tax-exempt financing.

Foreign National participants: Any projects with restrictions subject to export control are routed to our Export Control office and a plan is developed to manage each activity.

Rutgers: Restricted Research is allowed. http://ored.rutgers.edu/export

The basic process: Training, TCP, detailed security controls, without too much detail the TCP will define access which in most cases will include a controlled space. We currently run very few of these restricted contracts/grants programs at this time.

Wisconsin: **Restricted Research is allowed under very, very limited circumstances.** https://research.wisc.edu/respolcomp/exportcontrol/

The basic process: The Vice Chancellor for Research Policy may waive our open research policy and allow a publication restriction. These are very infrequent. When this occurs, the Export Control Office will get together with the PI, develop a TCP and make sure appropriate controls are in place for the research. I should emphasize, this answer is much more of a "no" than a "yes", but it is not 100% "no".

Foreign National Participants: Again, our institutional policy is to not restrict foreign persons from working on research. However, if we are presented with a restriction on use of foreign persons in a research project, our first step will be to contact the PI and ask if he/she will be using any foreign persons (as stipulated in the award) on the research. If they state they will only use US Persons, the research will likely be accepted. If they have foreign persons in their lab that they wish to have work on the project or could have access to the project and we cannot have the foreign person restriction removed from the award, then the award will be rejected. Of course, if we are working with ITAR or EAR controlled equipment, we may need to get a license to allow foreign persons to work with these items.

Appendix 3: Input and Recommendations from UMD Community

Once the subcommittee was charged, it made a presentation during the University Senate meeting held on September 7, 2016. In this presentation, the makeup of the subcommittee was shared with the meeting and attendees were encouraged to contact their college's representative – or, indeed, any representative – at their convenience. There were three comments made after the presentation:

1. There is a difference between restrictions on publication placed because of national security and those placed because the results might be embarrassing to the sponsors. The speaker raised the example of "Big Tobacco" funding research.

> *The conditions under which we should consider doing restricted research should exclude accepting such kinds of restrictions. The conditions on publication restriction will be included in the waiver request, which will be reviewed by the department, college, and VPR.*

2. In noting that we are starting with USM policy, we were asked if we were charged, or did we intend, to propose changes that should be adopted by all USM universities. We are looking at USM policy - are we proposing changes that should be adopted by all USM universities?

> *We were not charged, nor did we take on the task, of proposing changes that should be adopted by all USM universities.*

3. We should look at the policies of universities we aspire to be rather than just the universities in the Big 10 Academic Alliance. UC Berkeley was given as a potential exemplar.

> *While UC Berkeley, as the flagship of the UC System, is indeed a great public university, we did not include any UC system campus (or UCOP policy) in our discussions.*

On November 2, the subcommittee held a town hall meeting. This meeting, which immediately followed a University Senate meeting, was well attended. After a brief update on the charge and progress that the subcommittee had made, the floor was opened for questions and comments. For the most part, the (few) comments were supportive of the goals of the subcommittee and encouraged progress. Two commenters questioned the values behind the campus allowing restricted research to be done. One observed that one of our goals is making what we learn publicly available, and the other questioner asked whether we were a public institution seeking the truth or a consulting firm doing work for clients.

The following questions were asked:

1. Will projects that are restricted impose any difficulties on lab safety? For example, if a restricted project uses some equipment that has access restricted to it, how will its continued safety be ascertained.

> *We noted that any such issues would need to be addressed in the technology control plan.*

2. Will allowing restricted research have a negative impact on graduate students who have poor English skills and on International students who, because of ITAR/EAR/security issues, cannot be involved in the research?

> *We noted that this has not been a problem at our peer institutions because (1) restricted projects make up a very small percentage of the research efforts, and so having such projects has not reduced or otherwise limited the opportunities for all students, and (2) post-award structuring of the research can, in many cases, limit the impact on citizenship restrictions.*

3. Because there are publication restrictions, will allowing restricted research have a negative impact on promotion and tenure cases?

> *Despite the overwhelming experiences of our peer institutions (and our own experiences) that imposed publication restrictions are rare and even more rarely substantial, this is an issue that should be considered (as would having students unable to publish research central to their dissertation or thesis). In all cases, these are issues that should be considered when deciding whether to accept a restricted project. Under our proposed framework, this would need to be considered by the department chair, dean, and VPR.*

4. What if faculty member feel that their results must be published, even if told otherwise by the research sponsor, due to ethical reasons?

> *There could be serious legal ramifications. PIs would be informed of these consequences through the mandatory export control training.*

5. Has the committee also considered the issues Dual Usage Research of Concern and Gain of Function research, and the Federal regulations arising concerning them?

> *We had not, and have subsequently met with the Department of Environmental Sustainability, Safety and Risk (ESSR). These are areas of increasing concern and already having an impact on how some research is being done (or even if it is done) at the University of Maryland. We identified no immediate action for our committee to take up, but ESSR should work, with the Division of Research, in ensuring any policy and framework put in place will accommodate existing and possible new regulations.*

6. If we accept such funding, how can we ensure that there is not undue influence? For example, a very wealthy corporation or individual might wish to advance a political agenda, and wishes to use the university as a lobbying mouthpiece.

> *This would create substantial institutional risk. In all cases, the VPR would need to take such risks into account when deciding whether or not to accept a specific award.*

7. Will there be any evaluation process?

> *Yes, as described in the Suggested Guidelines in Section 3.*

8. What issues is the subcommittee considering with respect to IP?

> *We were not charged to consider issues related to Intellectual Property – this is the charge of another subcommittee.*

A senator sent the following comment via Slack:

> *I will be unable to attend the town hall meeting and welcome the chance to express my concerns about this topic in advance of the meeting. I see a difference between restricted publication of research in the aid national security and in the aid of a corporation, even though the national security matters at hand would need clarifying as to the parameters of how they were restricted. I also see a difference in embargoing the results of research for a corporation and being unable to publish it at all. In both of these cases, I support the former when necessary but not the latter. I believe our role as an academic institution should be paramount in the research we perform and that it should not bend to external pressures or have the appearance of doing so. I understand the financial pressures that could make a person consider doing restricted research but still think we need to carefully consider the prime function of a university.*

We received four comments after the meeting. Three argued for developing a path forward for conducting restricted research. The fourth, from International Student and Scholar Services, raised the following questions:

1. How will foreign nationals be screened on restricted research?

> *They will be screened during the development of the Technology Control Plan. Please see the suggested guidelines (Section 2), part (2): Adequate Security Protocols.*

2. Currently all prospective foreign nationals who will be hired on the H-1B employment visa are required to go through ORAA screening. Prospective foreign nationals who will participate in the University of Maryland J-1 exchange visitor

program and who will conduct research in a STEM field are also required to go through ORAA screening. Does the ORAA screening process include review of the project/grant to flag the research is restricted?

Yes, at the time of proposal submission.

3. If foreign nationals will not be able to work on a restricted research, who will be responsible for making sure foreign nationals have been screened properly at the department level? Our office works with visa point people who hold Coordinator title. Some of the Coordinators do not have access to PHR and have no access to details of a grant.

The PI will be responsible for knowing the visa status of the researchers. Access control will be developed as part of the technology control plan.

4. Will there be any circumstances that foreign nationals will be allowed to work on restricted research and how will that work?

If a project does not trigger export control restrictions, then a foreign national can work on a project with restricted publication restrictions. Understanding whether this is the case or not will be clarified in the development of the technology control plan and its review by the campus Export Control Board.

5. If a foreign national is currently employed by a department and if the PI is awarded a restricted research grant, how will this impact the foreign national?

This will depend on the details of the restrictions and how the research project is structured. We have been told that negotiations after the grant is awarded can result in minimal impact. In any case, any impact and mitigation of its effects will be part of the review done by the department, dean, and VPR.