



NSF ENGINEERING RESEARCH CENTER

Future Renewable Electric Energy Delivery and
Management (FREEDM) Systems CENTER

BYLAWS

Revision 3.0 Approved by the IAB on 3/29/2011

The **Future Renewable Electric Energy Delivery and Management (FREEDM) Systems CENTER** (“CENTER”) is established by the National Science Foundation (NSF) as an NSF Engineering Research CENTER (ERC) to pursue breakthrough research activities in **fundamental science, enabling technologies, and system demonstration of the FREEDM System** (the “Research Area”) and to promote research, education, outreach and training in the Research Area. Findings from the research activities will accelerate the deployment of renewable energy and facilitate the integration of distributed renewable resources into the utility grid. The CENTER has developed **core research, non-core research, education, and technology transfer** activities.

Universities (“UNIVERSITY”) in the CENTER include North Carolina State University (“LEAD UNIVERSITY”) as lead institution and partner institutions. Partner institutions (“PARTNER UNIVERSITY”) consist of Florida State University (FSU), Florida A&M University (FAMU), Arizona State University (ASU) and Missouri University of Science and Technology (MST), and two international collaborators – University of Aachen (RWTH, Germany) and Swiss Federal Research Institute (ETH, Switzerland).

Core Research Programs of the CENTER will be conducted by the CENTER faculty, students and staffs from LEAD UNIVERSITY and PARTNER UNIVERSITY, with collaboration and support from industry member companies. **Core** research programs focus on areas such as:

- The establishment of a one megawatt FREEDM System Green Energy Hub demonstration facility
- The design and development of Intelligent Energy Management (IEM), Intelligent Fault Management (IFM), and plug-in hybrid electric vehicle (PHEV) and plug-in electric vehicle (PEV) subsystems based on Enabling Technologies
- Research and development of Enabling Technologies related to Fault Isolation Devices (FID), Solid-State Transformers (SST), Distributed Energy Storage Devices (DESD)
- Distributed Grid Intelligence (DGI); and Reliable and Secure Communications (RSC)
- Research and Development of Fundamental Science supporting the enabling technologies in topics of Post-Silicon Devices (PSD), Advanced Storage (AS), and System Theory, Modeling and Control (SMC).

Core Research Programs are financially supported by funds from the National Science Foundation and fees from member companies. The policies governing publication and ownership of intellectual property are discussed under the Policies section below.

Members may choose to provide additional funding for certain projects already approved by the Industry Advisory Board. These projects are considered Enhancement projects and require signing a short Enhancement project Agreement between sponsoring member and LEAD UNIVERSITY (Appendix B). Scientific results of Enhancement projects are shared with all CENTER members.

Core and Enhancement projects supported by the industry membership fund are subject to LEAD UNIVERSITY approved reduced overhead rate.

Core research projects performed at PARTNER UNIVERSITY that are funded by LEAD UNIVERSITY from Membership pool are subject to LEAD UNIVERSITY reduced overhead rates and to Terms and Conditions of FREEDM Membership Agreement and these Bylaws.

The CENTER carries out an active program of **technology transfer** supported by funds from the **industrial members**. This program seeks to disseminate technology developed by the CENTER along with existing technology and “know-how”. Such programs may be provided in the form of:

- Technology licensing and transfer
- Training and assistance in the implementation of CENTER developed technology
- Courses taught at member sites
- Workshops and technical symposia at the CENTER
- Industrial internships and mentorships
- Industrial practitioner visits and research participation at the CENTER
- Focused seminars, symposia, and conferences
- One-on-one consulting

A. ORGANIZATIONAL STRUCTURE

The organizational structure of the CENTER consists of a CENTER Director who reports to the Council of Deans formed by engineering deans from LEAD UNIVERSITY and PARTNER UNIVERSITIES. The CENTER Director will be advised by an Industrial Advisory Board (IAB), a Scientific Advisory Board (SAB), and a Student Leadership Council (SLC). The CENTER Director will also be assisted by a number of CENTER staff appointed by the CENTER Director, including, but not limited to a CENTER Deputy Director, a CENTER Administrator, a Technical Coordinator, and Campus Directors from PARTNER UNIVERSITIES.

The Research Program of the CENTER are managed jointly by the Director, Deputy Director, Technical Coordinator, thrust and subthrust leaders and testbed leaders of each research area.

The CENTER will have an Industry Membership Program, managed by an Innovation & Industrial Collaboration Program Director. The IAB are formed by representatives from the member companies to advise the CENTER.

The CENTER will have a Pre-college Education Program, managed by a Pre-college Education program director.

The CENTER will have a College Education Program, managed by a College Education program director.

The CENTER will have a Diversity Program, managed by a Diversity program director.

The CENTER will have a CENTER Executive Committee formed by the CENTER Director, Deputy Director, Technical Coordinator, Campus Directors, Testbed Leaders, IAB Chair, IAB Vice-Chair and past IAB Chair.

Organizational Structure of the CENTER is illustrated in APPENDIX A.

1.0 - The Director

Prof. Alex Q. Huang of NC State University is the Director of the CENTER. The Director of the CENTER reports to the Council of Deans formed by engineering deans from LEAD UNIVERSITY and PARTNER UNIVERSITY.

The Director and Deputy Director work closely with the CENTER Faculty, the IAB, and the SAB to implement the long-range goals and missions of the CENTER. The Innovation and Industrial Collaboration Program Director, working under the leadership of the CENTER Director, and in collaboration with the IAB and UNIVERSITY's Office of Technology Transfer, will implement the technology transfer activities of the CENTER and coordinate the membership development.

Specific responsibilities of the Director and Deputy Director include:

- Coordination of the Core Research and Enhancement Projects.
- Selection and granting of research projects based on recommendations of the IAB and CENTER Executive Committee
- Budgeting and administration of the CENTER funds
- Reporting to the NSF and IAB
- Interaction with industry participants through IAB and other formal and informal mechanisms
- Promotion of the research and technology transfer mission of the CENTER
- Seeking new industry participants in the CENTER
- Making the necessary policy decisions with regard to operation of the CENTER and implementation of the CENTER-related university policies
- Coordinating the annual report and meetings supportive of the mission of the CENTER
- Coordinating information services related to the CENTER activities
- Overseeing the CENTER operation

The Director has administrative authority in the operation of the CENTER, including fiscal management, policy decisions, selection of research projects, and appointment of the technical and administrative staff. The Director receives recommendations and advice from the IAB and SAB. .

2.0 - The Membership

All companies, regardless of their geographical location/origin, engaged in Electrical Power and Energy Technologies, or who are raw material or resource suppliers to the Electrical Power and Energy industry, or U.S. government organizations which have an interest in Electrical Power and Energy, are entitled to be members of the CENTER. Three tiers of membership are available as defined in the Membership Agreement. The IAB will review the membership categories and associated privileges from time to time and advise judicious changes, in accordance with bylaws, when necessary.

a. Full Members

Companies meeting the criteria listed above who intend to become FULL MEMBERS, will become FULL MEMBERS after signing the standard FREEDM membership agreement and paying the 1st year annual dues.

Full MEMBERS of the CENTER pay an annual fee of \$50,000 to support core research carried out in the CENTER, CENTER operation, and technology transfer activities. \$5,000 of the membership fee will be used to support the CENTER's Intellectual Property Protection Fund (IPPF). The FULL MEMBERS have representation, with full voting rights (50 points), on the IAB, and are eligible to serve as the IAB chairman or vice-chairman. Full Members are entitled to participate in the patenting of any inventions conceived by the CENTER faculty, staff, and students during the conduct of Core Research of the CENTER, as set forth in section B.2. Their representatives are entitled to attend meetings of the CENTER where results of the Core Research and Non-Core Research Program are reported. They receive an annual report of the CENTER and other reports generated by the CENTER. Their staff is entitled to attend workshops, training seminars and research symposia organized by the CENTER at reduced rates.

They are entitled to use the research and production facilities of the CENTER for their R&D activities, based on availability, and at reduced fees mutually agreed upon by the IAB and the CENTER administration.

b. Associate Members

Companies meeting the criteria listed above who intend to become ASSOCIATE MEMBERS, will become ASSOCIATE MEMBERS after signing the FREEDM standard membership agreement and paying the 1st year annual dues.

ASSOCIATE MEMBERS of the CENTER pay an annual fee of \$15,000 to support CENTER core research, operation, and technology transfer activities. The ASSOCIATE MEMBERS have representation, with associate voting rights (15 points), on the IAB. Their representatives attend the CENTER meetings where research progress is reported and receive reports. They are entitled to participate in the patenting of inventions made by the CENTER in accordance with section B.2.(g). They are entitled to use the research and production facilities of the CENTER for their R&D activities, based on availability, at reduced fees mutually agreed upon by the IAB and the CENTER administration. Their staffs are entitled to attend workshops, training seminars and research symposia, organized by the CENTER, at reduced rates as determined by the IAB.

c. Affiliate Members

The AFFILIATE MEMBERS are typically non-commercial organizations, such as government laboratories, Research and Development organizations; small entrepreneurial commercial entities or venture financing firms, interested in being supportive of and associated with the CENTER. The AFFILIATE MEMBERS pay an annual fee of \$2,000 to support CENTER operation. Their representatives attend the CENTER meetings where research progress is reported and receive reports. They are not entitled to participate in the patenting of any inventions made by the CENTER nor in the licensing of such inventions for commercial purposes, other than in accordance with section B.2.(j).

The AFFILIATE MEMBERS do not have representation on the IAB. They are entitled to use the research and production facilities of the CENTER for their R&D activities, based on availability and at full current use rate. Their staff is entitled to attend workshops, training seminars and research symposia, organized by the CENTER, at reduced rates as determined by the IAB.

3.0 - Intellectual Property Protection Fund (IPPF)

FREEDM establishes the Intellectual Property Protection Fund (IPPF) as a resource to be used to secure protection associated with the most promising disclosure of Center Intellectual Property defined as inventions created by CENTER Core research supported with NSF funds (ERC Grant No. EEC-0812121) and Members fees. Annual contribution to IPPF is \$5,000 per FULL member. It comes out of membership fees paid to the LEAD UNIVERSITY. ASSOCIATE and AFFILIATE members do not contribute to the IPPF.

Contributions to IPPF will be held separately from the membership pool funds. Unused portions of IPPF may be reassigned periodically to provide support to CENTER research projects funded out of the membership pool.

4.0 - The Industrial Advisory Board

Each FULL MEMBER and ASSOCIATE MEMBER is represented on the IAB by one individual (together with a designated alternate). The IAB

- Receives annual reports of the CENTER
- Reviews operating and research budgets
- Makes policy recommendations
- Assures proper balance between Core and Non-Core Research programs in the CENTER
- Reviews all Core-Research proposals, recommends priorities to the Director/Co-Directors, and selects the projects of mutual interest to be funded from Membership fees in each Fiscal Year
- Attends the semi-annual meetings of the CENTER and receives progress reports
- Makes recommendations to LEAD and PARTNER UNIVERSITIES about patenting of inventions created by CENTER research funded with Membership fees and providing IPPF support for patenting such inventions
- Forms working groups to advise the CENTER
- Elects IAB Chair who will coordinate the IAB meetings. If there are more than twenty Members, the IAB can also elect an IAB Vice Chair
- The IAB Chair shall serve a one year term
- The IAB Vice Chair shall serve a one year term followed by a one year term as IAB Chair
- Elections shall occur at the Annual meeting or as required to fill vacancies

5.0 - The Industrial Practitioner Program

The CENTER has an Industrial Practitioner Program. All MEMBERS are encouraged to send their selected technical staff to the CENTER on sabbatical leaves to permit appropriate research, education, outreach and technology transfer activities of the CENTER.

6.0 - The Scientific Advisory Board (SAB)

The CENTER Director may select/appoint members of a Scientific Advisory Board (SAB). The purpose of the Scientific Advisory Board is to provide independent external peer evaluation and assessment of scientific research conducted by the CENTER core research program.

B. POLICIES

1. Amendment Policy

These Bylaws may be amended by a two-thirds vote of IAB voting members present. Amended Bylaws are subject to formal approval by the UNIVERSITY.

2. Patent Policy Regarding Core Research

(a) Title to any invention or discovery made or conceived in the performance of the Core Research program by an employee of the LEAD UNIVERSITY or a PARTNER UNIVERSITY shall remain with that university, provided, however, that the LEAD UNIVERSITY or PARTNER UNIVERSITY shall grant to CENTER FULL MEMBERS and ASSOCIATE MEMBERS (not AFFILIATES) a non-exclusive royalty-free irrevocable license for internal use of such invention or discovery. If an invention or discovery is made by an employee of a FULL, ASSOCIATE or AFFILIATE MEMBER'S ('MEMBER') organization as a direct result of such employee's participation in the Core Research of the CENTER, the title to the invention shall remain with the FULL, ASSOCIATE or AFFILIATE MEMBER. The MEMBER, however, will grant to the UNIVERSITY a non-exclusive royalty-free license for the use of

the invention or discovery, that is patented or otherwise made public and if it is relevant to the Core Research of the CENTER, for research purposes for as long as the CENTER is in existence. Any invention or discovery made or conceived in the performance of the CENTER Core Research program, jointly by employees of the LEAD UNIVERSITY, PARTNER UNIVERSITY, and employees of FULL, ASSOCIATE or AFFILIATE MEMBERS shall be deemed a joint invention with all parties sharing equally in the rights thereto.

(b) University inventions shall be promptly disclosed to FULL and ASSOCIATE MEMBERS by the CENTER pursuant to Section 3. Confidentiality Policy of these Center Bylaws.

(c) IAB shall hold a teleconference meeting within three (3) months after the date of disclosure described in 2(b) to make recommendation to the UNIVERSITY about providing IPPF support in patenting of the subject invention.

The CENTER may reimburse the patenting cost using IPPF up to \$10,000 per invention.

(d) FULL MEMBERS shall have an option to acquire a royalty-bearing license to make, use and sell products or processes for commercial purposes, said license to be exclusive among those FULL MEMBERS who exercise the option (hereinafter "Option Rights"). FULL MEMBERS have 90 days following disclosure of an Intellectual Property by the UNIVERSITY to exercise its Option Rights (the "Full Option Period"). The Sponsor must submit a written notice to the UNIVERSITY, within the Full Option Period, in order to exercise their Option Rights. If the Full Option Period expires before UNIVERSITY receives the Sponsor's written notice exercising the Full Option Period, or as provided below, the Sponsor shall have no further rights to the Intellectual Property. Those FULL MEMBERS exercising the option (hereinafter a "Full Optionee") shall share the patent cost beyond the amount paid from IPPF.

(e) If Full Optionee has not begun good faith, substantive negotiations with UNIVERSITY for a license within 60 days of the date of Full Optionee's exercising its option in accordance to section B.2.(d), the UNIVERSITY may, in its sole and unfettered discretion, terminate the Full Optionee's Option Rights.

(f) Further, if Full Optionee and UNIVERSITY have not negotiated a mutually agreeable license agreement on or before twelve months from the date of disclosure described in B.2.(b), then UNIVERSITY may, in its sole and unfettered discretion, terminate Full Optionee's Option Rights. Full Optionee is only obligated to pay expenses incurred and noncancelable obligations that have accrued up to the date that UNIVERSITY terminates Full Optionee's Option Rights.

(g) If no exclusive license agreement is granted to a FULL MEMBER, then UNIVERSITY shall notify the ASSOCIATE MEMBERS of the availability of the Intellectual Property and the ASSOCIATE MEMBERS shall have an option to acquire a royalty-bearing license to make, use and sell products or processes for commercial purposes, said license to be exclusive among those ASSOCIATE MEMBERS (hereinafter "Associate Option Rights"). ASSOCIATE MEMBERS have 90 days after being notified by the UNIVERSITY of available Intellectual Property to exercise the Associate Option Rights (the "Associate Option Period"). The Sponsor must submit a written notice to the UNIVERSITY, within the Associate Option Period, in order to exercise their Associate Option Rights. If the Associate Option Period expires before UNIVERSITY receives the Sponsor's written notice exercising the Associate Option Rights or as provided below, the Sponsor shall have no further rights to the Intellectual Property. Those ASSOCIATE MEMBERS exercising the Associate Option Rights (hereinafter an "Associate Optionee") shall share the patent cost beyond the amount paid from IPPF.

(h) If Associate Optionee has not begun good faith, substantive negotiations with UNIVERSITY for a license within 60 days of the date of Associate Optionee's exercising its option in accordance to section

B.2.(g), the UNIVERSITY may, in its sole and unfettered discretion, terminate the Associate Optionee's Option Rights.

(i) Further, if Associate Optionee and UNIVERSITY have not negotiated a mutually agreeable license agreement on or before twelve months from the date the UNIVERSITY makes the invention available to the ASSOCIATE MEMBERS as described in B.2.(g), then UNIVERSITY may, in its sole and unfettered discretion, terminate Associate Optionee's Option Rights. Associate Optionee is only obligated to pay expenses incurred and noncancelable obligations that have accrued up to the date that UNIVERSITY terminates Associate Optionee's Associate Option Rights.

(j) If no license agreement (as described above in section B.2.(d) and B.2.(g)) is granted to a FULL MEMBER or an ASSOCIATE MEMBER, the patenting university is free to make the technology available to any company for an exclusive, royalty-bearing, license to make, use and sell products for commercial purposes.

(k) All policies that apply to the filing, prosecution, maintenance and licensing of patents in USA also apply to filing, prosecution, maintenance and licensing of patents in any other country on a country by country basis.

(l) All CENTER Members acknowledge and agree that the UNIVERSITY shall grant the U.S. Government a non-exclusive, nontransferable, paid-up, worldwide license to practice or have practiced any CENTER Intellectual Property developed or resulting from federally funded research. (Bayh-Dole Act Compliance)

(m) All FULL and ASSOCIATE MEMBERS who were fully paid up for dues prior to the conception date for the invention shall have the right to make and use the products or ideas covered under the intellectual property for internal use, so long as they remain fully paid-up members in good standing of the CENTER and the CENTER remains in existence. Such research exemption shall be included in any exclusive or non-exclusive license agreement made subject to these Intellectual Property rights of section B.2.(a)-(l).

(n) For avoidance of doubt, the license and other invention rights described in sections B.2(d) through B.2(m) above apply only to UNIVERSITY rights in inventions, including UNIVERSITY rights in inventions jointly owned with FULL, ASSOCIATE or AFFILIATE MEMBERS, and not to rights, whether sole or joint, of Members; provided, however, that all inventions made with use of federal government funding shall be subject to grant of rights to the U.S. Government as provided in section B.2(l) above.

3. Confidentiality Policy

From time to time, the CENTER may develop Confidential Information. Accordingly, it is understood that such Confidential Information will be treated as follows:

(a) "Confidential Information" includes technical and/or business information disclosed by the CENTER to all members. Such information, if disclosed in writing shall be deemed confidential only if it is designated in writing as confidential to the members at the time of disclosure; if orally presented, it shall be deemed confidential only if it is identified as confidential at the time of disclosure. Confidential Information may be disclosed, as members deem necessary, to their employees and others under their control, all of whom will be directed and required to conform to the provision hereof.

(b) The members agree to use the same care and caution to avoid publication or dissemination of Confidential Information as they use with respect to their own proprietary information; provided, however, that members shall not be liable for disclosure of such Confidential Information which:

- i. is, or becomes, available to the public other than by breach of any obligation herein assumed by the members; or
- ii. is furnished to a third party by CENTER without restriction of the third party's right to disseminate the Confidential Information; or
- iii. is disclosed with the CENTER's written permission; or
- iv. is already known to the receiving member other than from any previous unexpired confidentiality obligation with CENTER as evidenced by tangible records; or
- v. is independently developed by the receiving member as evidenced by tangible records; or
- vi. is disclosed to the receiving member by a third party having the right to make such disclosure.

If members wish to use CENTER developed Confidential Information in filing their patent applications, the members will request permission from UNIVERSITY to allow the inclusion of such Confidential Information in such patent application(s), and such permission will not unreasonably be withheld.

(c) The obligations of this Section B.4. shall continue with respect to any Confidential Information disclosed hereunder for a period of one (1) year from the date of disclosure thereof, regardless of whether FULL MEMBER, ASSOCIATE and/or AFFILIATE remains a FULL MEMBER, ASSOCIATE and/or AFFILIATE of the CENTER during said period.

(d) In the course of carrying out the work of the CENTER, the CENTER does not expect to receive any confidential information from the FULL, ASSOCIATE, or AFFILIATE MEMBERS. If, to benefit the Core Research program of the CENTER, it becomes necessary for a FULL, ASSOCIATE, or AFFILIATE MEMBER to divulge proprietary information to any member of the staff of the CENTER (including students), such divulgence shall be made in writing, or if made orally, confirmed in written summary within thirty (30) days of disclosure. It will be the responsibility of the individual(s) involved in such transaction to keep the information confidential.

4. Publication Policy

For the purposes of this Article 4, "Publication" shall be deemed to mean any written, oral, or other public divulgence of research results, including the public use or sale of an invention based on the research results, to the extent that any such event could bar the availability of patent protection in foreign jurisdictions or trigger the one-year grace period in the U.S. within which a U.S. patent application must be filed.

Publication of research results in scientific journals is encouraged. In order to prevent untimely publication of patentable research, a publication-delay mechanism has been established. 30 days prior to publication, notification of intent to publish must be sent to each member of the Industrial Advisory Board. Any member of the board can request an additional 60 days delay in publication from the proposed publication date to determine whether the paper contains patentable material, or if the company making the request has a justifiable reason. If it is determined that patentable material is contained in the proposed publication, such material will be either deleted and publication will be allowed to proceed, or publication will be suspended until all necessary intellectual property rights have been secured through filing of patents. The IAB member must respond within thirty (30) days of receipt to request a publication delay. Failure to respond by a given IAB member shall be construed as approval of the publication by that member.

Under no circumstances will a student's thesis, for which funds are derived from the CENTER, be delayed in degree confirmation; provided, however, that student theses shall be subject to a six-month delay provision following their approval before they are made publicly available in UNIVERSITY libraries; and provided, further, that the UNIVERSITY may be released from this six-month delay period if the IAB members unanimously acknowledge that the thesis does not disclose patentable subject matter, or if a U.S. patent application is placed on file which covers the subject matter of the thesis.

5. Software Copyright Policy

Copyright to the software developed by the CENTER shall follow the same ownership pattern as defined for patents in B.2(a) above. During the term of their membership, the FULL MEMBERS and ASSOCIATES (not AFFILIATES) will be granted a non-exclusive, royalty-free, end-user license for internal use only to all software resulting from research funded by the FULL MEMBERS and ASSOCIATES. The FULL MEMBERS and ASSOCIATES will have the right to sub-license the software to their subsidiaries and affiliates also for internal use only. In case the software is used as part of a commercial product, the FULL MEMBER shall pay royalty to the University at a mutually negotiated rate, even if the software has been modified and/or augmented by the FULL MEMBER company personnel. The University may grant others a non-exclusive, end-user license for internal use only to such software upon payment of a fair and reasonable license fee.

6. Communications Policy

The CENTER will maintain a web presence so that knowledge generated can be provided to the public and to the industry members in the secured section of the web site. The CENTER publishes an Annual Report in which CENTER research, education and outreach accomplishments, financial status and prospects for the future are reviewed. This report will be distributed before the CENTER's annual conference or symposium. The CENTER will also publish a quarterly electronic newsletter to update member companies and public of the latest accomplishments of the CENTER. The CENTER will also use emails to contact member companies.

At least one full IAB meeting will be held each year in conjunction with the annual NSF review and CENTER symposium. Additional meetings will be held via teleconferences. IAB working groups will hold their meetings in conjunction with other national or international conferences, or through teleconferences. IPPF Evaluation Committee meeting will be held by teleconferences.

The annual NSF review and CENTER symposium will be hosted at the LEAD UNIVERSITY or PARTNER UNIVERSITY campus. This meeting will present an executive summary of the year's accomplishments. Scientific results from the CENTER are discussed in presentations, posters, testbeds and lab tours. Involvement of graduate students, postdoctoral fellows and research associates is utilized as appropriate.

7. Compliance with United States antitrust and competition laws

The CENTER includes among its members parties who are business competitors. It is the policy of the CENTER to comply with United States antitrust and competition laws that apply to each of its members and to encourage its members to do so as well. Accordingly, in connection with any meeting or activity sponsored by the CENTER, no members shall reach any agreement or exchange any information concerning cost or pricing information, sales or marketing strategies, terms and conditions of purchase or sale, the allocation of customers or territories. All members shall avoid even the appearance of such agreements or exchanges of information. If discussions prohibited by this rule take place in any such meeting or activity, all members should cease participation immediately. In order to minimize the

likelihood of such an occurrence, all meetings and activities sponsored by the CENTER shall be conducted in accordance with a published agenda and shall be documented in appropriate meeting minutes.

8. In-Kind Support Policy

On a one-time basis, the FREEDM Systems Center will accept in-kind contributions as payment of membership fees, subject to the following considerations:

In-kind contributions are valued at a rate of \$1.00 in-kind contribution is valued at no more than \$1.00 cash;

In-kind contributions in lieu of membership fee payments are on agreement with the FREEDM Systems Center management;

The value of in-kind contribution must be at the best commercial and/or government rate for sale of the product provided as an in-kind contribution;

All ownership of the in-kind product, service or information conveys to the FREEDM Systems Center, including all intellectual property derived using the in-kind contribution, in a manner identical to that as if the product were purchased from the contributor.

In-kind contribution in lieu of membership support must be pre-approved by the full IAB in writing, documented (in a letter from the contributor describing the in-kind contribution and its value in detail and signed by an authority thereof) and filed while processing the membership agreement.

9. "Phase-out" Policy

If the focus, performance or mission of a CENTER is no longer appropriate, the CENTER will be disestablished by the Chancellor of the LEAD University.

Subject to the availability of funds, the "phase-out" period for the research CENTER will be sufficient to permit an orderly termination or transfer of contractual obligations and will allow ample time to find alternate employment for full-time staff. Normally, the "phase-out" period will be no more than one year after the end of the academic year in which the decision is made to discontinue the unit.

C. INDUSTRY-UNIVERSITY INTERACTIONS

1. Non-Core Research Projects

Some members may also create (sponsor) new projects of their choice. These projects are called Non-Core Research projects, and carry indirect costs at the university-determined rates. The terms of these specific research contracts with UNIVERSITY will govern the intellectual property ownership and licensing rights in the intellectual property arising from these agreements. The results of these non-core projects will be available to the CENTER membership only on the same basis as to any non-member, unless the sponsoring company and the UNIVERSITY agree otherwise.

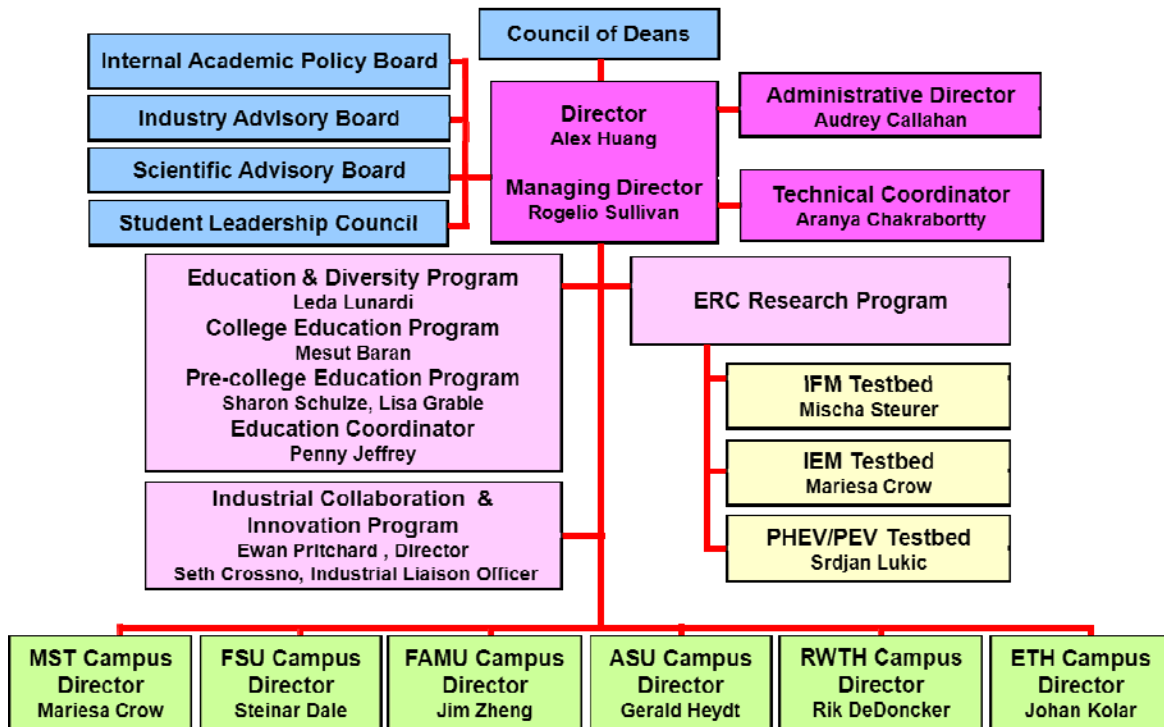
2. Industry Personnel as Visiting Scientists

Industry personnel from Members can have the opportunity to participate directly in CENTER research as visiting scientists. Lengths of assignments and responsibilities will be determined on an individual basis.

3. Industry Fellowship

Member companies and non-member companies can establish an industry fellowship within the CENTER by signing a Memorandum of Understanding (MOU) A sample MOU is shown in APPENDIX C. The fellowship is considered a gift to the university.

Appendix A. FREEDM Systems Center Organizational Structure



Appendix B

ENHANCEMENT PROJECT AGREEMENT (SAMPLE)

This Agreement is entered into by and between [North Carolina State University (UNIVERSITY)] and _____(SPONSOR).

Whereas SPONSOR is a FULL MEMBER of the FREEDM SYSTEMS CENTER at UNIVERSITY and the Enhancement Project contemplated by this Agreement is of mutual interest and benefit to the UNIVERSITY and SPONSOR, and will further the instructional, research, and public service objectives of the UNIVERSITY in a manner consistent with its status as a public educational institution.

The UNIVERSITY will use its best efforts to perform activities as described in its Enhancement Project entitled “_____” which is attached hereto as Appendix “B” and hereby made a part of Agreement.

The activities of this project shall be conducted during the period beginning ____201_ and ending _____201_.

Total **cost** of the project is \$_____. SPONSOR will pay _____ after signing the Agreement and the balance will be due at the time of Final technical report submission. **Payment shall be made upon receipt of the UNIVERSITY’s invoice.**

Performance under this Agreement may be terminated by SPONSOR at any time upon 60 days written notice to UNIVERSITY. Upon receipt of notification, UNIVERSITY must proceed in an orderly fashion to limit or terminate any outstanding commitments and/or to conclude the project. UNIVERSITY must be reimbursed by SPONSOR for all costs and non-cancelable commitments incurred in performance of the work prior to receipt of termination notice pro-rated based on the SPONSOR’s portion of the total costs. UNIVERSITY may terminate performance if circumstances beyond its control preclude the continuation of the Research. If UNIVERSITY terminates, UNIVERSITY must reimburse SPONSOR all unexpended funds pro-rated based on the SPONSOR’s portion of the total costs, except for those funds needed to pay for non-cancelable commitments.

The terms and conditions set forth in the FREEDM Systems CENTER Membership Agreement shall govern this project.

In witness whereof, the parties hereto have executed this Agreement effective as of the last hereinafter written.

SPONSOR

UNIVERSITY

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

APPENDIX C. Sample MOU of an Industrial Fellowship

Memorandum of Understanding on Establishing a FREEDM Industrial Fellowship

COMPANY NAME is pleased to establish an Industrial Fellowship at the Future Renewable Electric Energy Deliver and Management (FREEDM) Systems Center, North Carolina State University.

This FREEDM Industrial Fellowship will provide \$30,000 to FREEDM to support a fellowship student's time from Jan 1, 201__ to Dec 31, 201__. It will be used to pay fellowship recipient's stipend and tuition. The selection of the student and the work scope of the student will be determined after consultation with COMPANY NAME.

Payment Schedule & Delivery Address

This is an unrestricted gift to the NC State Engineering Foundation to support FREEDM by way of a fellowship. There are no deliverables associated with this gift.

Upon signature of this MOU, payment should be made in a lump sum with the amount of \$30,000 to the NC State Engineering Foundation, Inc. Payment should be forwarded to

Seth Crossno, Industry Program Liaison
NSF FREEDM Systems Center
North Carolina State University
1791 Varsity Drive Suite 100
Raleigh NC 27695-7571
Phone: 919-513-2996 Fax: 919-515-0405 http://www.freedom.ncsu.edu

Center Signature

DATE

Dr. Alex Huang
Director, FREEDM Systems Center
North Carolina State University

Sponsor Signature

DATE

Name
Title
Company Name
Company Address
Telephone:
Fax:
Email: