

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

**APPENDIX I
INTELLECTUAL PROPERTY MANAGEMENT PLAN**

BioEnergy Science Center IP Management Plan

1. Introduction

The principal goals of this intellectual property management plan for the BioEnergy Science Center (BESC) include:

- Broad and rapid dissemination of information among the BESC team members to maximize productivity and progress;
- Timely and equitable distribution of the new technology to researchers in relevant fields including, but not necessarily limited to biofuels development; and
- Effective, coordinated commercialization of technologies through formation of promising start-up ventures as well as licensing to corporate entities pursuing biofuels development.

The BESC is comprised of researchers at the following member institutions which are universities, DOE National Laboratories, a non-profit research foundation, or industrial research partners.

DOE National Labs

- Oak Ridge National Laboratory
- National Renewable Energy Research Laboratory
- Brookhaven National Laboratory

Non-profit Research Foundation

- Samuel Roberts Noble Foundation

Universities

- The University of Tennessee:
- University of Georgia
- Georgia Institute of Technology
- Dartmouth College
- University of California at Riverside
- Washington State University
- University of Minnesota
- Virginia Polytechnic Institute and State University
- North Carolina State University
- Cornell University

Industrial Team Members

- ArborGen, LLC
- Mascoma Corporation
- Verenum Corporation

2. Definitions

- 2.1 The BioEnergy Science Center (“BESC”) is a program funded under BESC Funding. The research of BESC is performed by employees of BESC member institutions: Oak Ridge National Laboratory, National Renewable Energy Laboratory, Georgia Institute of Technology, University of Georgia, University of Tennessee, Dartmouth College, ArborGen LLC, Verenum Corporation, Mascoma Corporation, The Samuel Roberts Noble Foundation, Inc., Brookhaven National Laboratory, Cornell University, North Carolina State University, University of California-Riverside, University of Minnesota, Virginia Polytechnic Institute and State University, and Washington State University, and, such other industry and non-profit participants as may be added from time to time by BESC (collectively referred to as BESC members or member institutions.)
- 2.2 “BESC Funding” means the funding for BESC that was awarded by DOE to ORNL under Contract No. DE-AC02-00OR22725 in connection with Funding Opportunity Announcement number DE PS02-06ER64304.
- 2.3 “BESC Invention” means an invention conceived or first actually reduced to practice under BESC Funding. Title to BESC Inventions follows inventorship as per Federal law. The BESC member institution which employs the inventors will have the right to elect title to BESC Inventions.
- 2.4 “Core Technology” means the following application areas:
- a) Formation of biomass with reduced recalcitrance
 - b) New tools for biomass characterization
 - c) Microbial/enzymatic hydrolysis of lignocellulose

For the avoidance of doubt, these Core Technology areas do not include applications that are not related to biomass modification for biofuels production. For example, if an invention has applications both in biofuel production and in the pharmaceutical industry or in the non-biofuel specialty chemicals industry, those non-biofuel applications would be outside the core technical areas. Licensing in fields other than the Core Technologies shall be at the discretion of the party or parties owning the invention.

2.5 “BESC IP” means BESC Inventions, non-patentable materials (including biological materials), mask works, trademarks and copyrighted works that arise under BESC Funding.

3. BESC Commercialization Council

BESC will form a Commercialization Council to oversee rapid dissemination of invention disclosures as well as to consolidate licensing of BESC IP in the Core Technologies to a single, streamlined “one stop shop.” The Council will be comprised of one representative from each of the BESC member institutions for as long as that institution is an active member of the BESC, i.e., for the time that member continues to receive BESC Funding. In addition, the invention owner’s institution, regardless of its current status as a subcontractor, will be included on the BESC Commercialization Council for purposes of licensing the BESC IP that it owns, solely or jointly.

The function of this Council is to review and evaluate new BESC IP, and consider the technical merit and commercial potential of each. The Council is intended as a forum for discussion regarding further maturation of technologies and sharing of insights about market opportunities. It may also provide recommendations to the IP owners regarding filing of patent applications. This forum will serve as a communications means and a clearing house for distribution of information about BESC inventions

throughout the team. The decision to commit resources for patent filing will remain with the owning institution(s),

The progress of any patent application preparation and prosecution will be monitored by this Council. As IP strategies are developed and market analyses are conducted, this group will explore licensing leads and commercialization opportunities in the Core Technology areas. Licensing inquiries will be communicated to the Council by any BESC member who receives such expressions of interest.

ORNL will serve as coordinator for the Commercialization Council.

4. Ownership of inventions

The statutes governing disposition of title to new inventions under Government agreements will be followed:

- i. The Bayh-Dole Act, 35 U.S.C. 200 et seq., requires that Universities, Non-Profits and small business who are participating under a funding agreement (as defined in the Bayh-Dole Act) will have the option to retain title to their own employees' inventions.
- ii. The Federal Non Nuclear Energy Act of 1974, 42 U.S.C. 5908, will govern disposition of title for all other parties, regardless of whether they receive government funding, and it requires that the Government obtains title to new inventions unless a waiver is granted.
- iii. Inventions made by employees of ORNL, NREL and Brookhaven National Laboratory will be subject to the M&O contract terms and conditions with respect to ownership of inventions made by lab employees. The M&O contract generally provides that the lab has the right to elect to retain title to inventions made by their lab employees.

5. Filing of Patent Applications

Each owner institution will protect its BESC Inventions according to its standard practices and is responsible for the costs of any domestic and foreign protection. DOE will have the right to file patent applications if the owner institution does not wish to do so, and has indicated a willingness to use its waiver authority to allow others to file in such situations.

6. IP Management

BESC will provide a simplified means for industry to negotiate licenses and other agreements relating to BESC IP (e.g., CRADA, WFO, bailment, option) by centralizing these activities with a lead institution, (normally ORNL but another BESC member may be designated as the lead by the Commercialization Council, depending on the circumstances), so as to provide a "One Stop Shop." The University of Georgia Research Foundation will be the normal lead institution for negotiating sponsored research contracts with industrial sponsors on behalf of the BESC members and will distribute funds as appropriate using normal subcontracting mechanisms.

BESC members will enter into a separate inter-institutional (IIA) licensing/royalty-sharing / commercialization agreement with ORNL for the implementation of centralized licensing and subsequent royalty distributions. The IIA will allow ORNL, or another designated lead licensing institution, to negotiate commercial licenses or sublicenses to any/all BESC IP. The IIA will also address the details of royalty distribution from the licensing of bundled or jointly owned patents. Licensing and partnering shall be conducted in a manner that maximizes benefit to the US economy and

provides fairness of opportunity with respect to third party access to lab partnering and licensing opportunities. M&O (Management and Operating) contract provisions (e.g., fairness of opportunity, US manufacturing) continue to apply to inventions of NREL, ORNL and Brookhaven.

On behalf of the IP owners, the lead licensing institution will manage all licensing matters, including contract management, licensing income distribution within BESC (according to allocation decisions made by the BESC IP/Licensing Investment Committee) and to each IP owner, and reporting. The lead licensing institution shall not license BESC IP outside of the Core Technology areas, except with the concurrence of the IP owner(s), allowing those owners to license to third parties in fields other than Core Technologies at their sole discretion.

Other activities with third parties relating to access to BESC IP (e.g., NDAs, Material Transfer Agreements, etc.) will be coordinated through the BESC Commercialization Council which will designate a lead institution as needed.

For industrial team members who intend to utilize their own IP in their own commercial activities, such IP will be available for licensing to third parties by a BESC lead licensing institution if the industrial team member is not meeting a contractually agreed to business plan to commercialize such inventions.

7. Licensing in the Core Technology areas

BESC (through ORNL or another team member who may be designated by the Commercialization Council as the lead institution for licensing) will have the capability to license BESC IP and to bail tangible research products, including biological materials, in the Core Technology areas. The lead licensing institution shall not license BESC IP outside of the Core Technology areas, except with the concurrence of the IP owner(s), allowing those owners to license to third parties in fields other than Core Technology areas at their sole discretion.

For licensing of any BESC IP in these Core Technology areas the following licensing principles will apply:

- a) Credible business plans shall be required for all commercial licensing. Before executing any license agreement for a field of use within the Core Technologies, the lead licensing institution will evaluate the capabilities of the potential licensee, and the company must demonstrate that it has the expertise and capital needed to further the development of the technology and successfully bring the technology to market in the fields of use in which a license would be granted. BESC will obtain information about the potential licensee's plan for the commercialization of the BESC IP through BESC's independent research, discussions or meetings with the potential licensee, and/or a formal business plan. BESC IP in Core Technologies will be licensed on a non-exclusive basis when, in the reasonable judgment of the lead licensing institution, this allows the technology to be adopted most successfully by the market. BESC will license IP to companies only in the fields of use (FOU) in which the company is capable and committed to bringing the technology to market, saving other FOU's for additional licensees; alternatively, BESC may include a provision for mandatory sublicensing of BESC IP to reasonably ensure that various applications can be commercialized rather than remaining fallow.
- b) All potential licensees requesting any degree of exclusivity for BESC IP must demonstrate their capability to successfully bring the technology to market. For any license negotiated on behalf of BESC that grants exclusive rights in BESC IP in any field of use in a Core Technology area, the licensee must agree to and meet diligence (performance) requirements marking the development and successful market introduction of the technology. If a

company fails to meet diligence requirements, it will be given a reasonable opportunity to comply and the lead licensing institution will negotiate substitute diligence provisions and amend the license. If the licensee is not able to meet these requirements, the license will be reduced to a nonexclusive license or be terminated.

- c) For BESC IP which is within the Core Technologies, BESC members agree that they will not enter into or be subject to any future agreements with third parties which provide preferential licensing of BESC IP to any third party without prior approval by DOE.

8. Licensing Revenue Allocations

Each BESC member institution that is an IP owner of licensed BESC IP is entitled to a percentage of any royalties or other income from such licenses. BESC members agree that for licenses of BESC Inventions in the Core Technology areas a percentage of licensing income as set forth below, will be allocated by BESC for the support of scientific research or education to further the efforts of BESC at the BESC member institutions.

Licensing income from each license in Core Technology areas will be distributed annually as follows (“BESC Distribution”):

- a) A standard 15% administrative fee will go to the lead licensing institution to offset the cost of license administration.
- b) Next, licensing income is used to reimburse IP owners for patent expenses; Until the licensing income reaches \$200,000, the balance of licensing income after expenses will be distributed to IP owner(s). (if there are several co-owners of IP in a license this distribution will be made in a proportionate way as specified in the IIA)
- c) After licensing income reaches \$200,000, 60% of net licensing income received thereafter (after above expenses) is sent to BESC, per DOE requirement; allocation of these funds to BESC member institution for biofuels-related research is determined by the BESC IP Licensing/Investment Committee.
- d) The remaining 40% of net licensing income is distributed to the IP owner(s); and
- e) any royalty sharing with inventors is made from that remaining 40%.
- f) Any remaining net licensing income may be used by the BESC member institution in accordance with its own policies, subject to restrictions in its M&O contract, Bayh-Dole, etc.
- g) The disposition of royalties or other income, including liquidated equity, set forth in c), d) and e) above, remains in effect so long as BESC Funding continues. If the BESC no longer exists due to lack of DOE funding, or for any other termination of BESC, then the special allocation of funds in c), d) and e) is no longer applicable.

Licensing income includes fees (such as license issue fees, license maintenance or milestone fees), royalties, and liquidation of any equity received for the license grant, but for the purpose of clause c) above, does not include reimbursement of patent costs by licensees. Furthermore, for purposes of the BESC Distribution, if BESC grants two or more licenses to a specific company for members of the same patent family (i.e., an initial patent application and any subsequent application claiming priority to that application, such as conversions, continuations or divisionals, or any patents issuing thereon), the licensing income from those licenses will be aggregated for the purposes of the \$200,000 threshold set forth in clause c). Where the BESC member institution owning such equity has an official policy specifying the time for liquidation of such equity, that official policy shall apply to the timing of the liquidation of such equity. Negotiations for continued utilization of BESC will include a plan for the future management and disposition of any such remaining unliquidated equity.

The royalties described in paragraph a) which comprise the 60% utilized for the support of scientific research or education in support of BESC will be allocated to projects approved by a BESC IP/Licensing Investment Committee¹. BESC researchers will be invited to propose scientific research and education-related tasks to which these funds may be allocated by this Committee. Allocation decisions by this Committee will be made available for review and comment by BESC team members for at least ten days for review and comment before funds are distributed. The BESC Board of Directors² will monitor the allocation process to assure that research proposals from the researchers employed by the intellectual property owner(s) receive higher priority for this funding.

Royalties reserved for use in support of BESC research will be tracked so that at the end of the 5 years, remaining funds can be distributed to the IP owners if the BESC contract is not renewed or if other funds to continue BESC are not secured.

9. Information Sharing

It is the intention of the BESC that the fruits of its research be widely and promptly disseminated, with a goal of maximizing the impact of the research and its long-term benefit to the U.S. and to society. Even in those situations in which protection of inventions is desirable, e.g., to induce further commercial development, or is required under specific funding obligations, such inventions are also expected to be widely and promptly disseminated.

All BESC Team Members have executed a mutual NDA to be able to interact fully with each other. Technical data will also be shared appropriately with the other two Bioenergy Research Centers (JBEI and GLBRC) and with any DOE advisory committee assisting with the evaluation of BESC activities. Subject to DOE approval, a list will be mutually developed of the types of data first produced by the BESC that must be immediately released to the public.

To facilitate the mutual exchange of reagents and biological materials among BESC researchers, a master Materials Transfer Agreement will be implemented. Individual transactions for exchange of reagents and other biological materials will be documented electronically using secure information technology.

BESC team members agree to have safeguards in place to manage personal and organizational conflicts of interest that may arise from the licensing of BESC IP.

¹ The BESC IP/Licensing Investment Committee consists of the BESC Program Director, the leads in each of the Scientific Focus Areas, and a representative of each IP owner whose IP was licensed in the Core Technologies.

² The BESC Board of Directors (BOD) consists of representatives of the executive leadership of BESC institutional members plus a group of up to three internationally known R&D leaders with extraordinary entrepreneurial records of achievement, or biotechnology industry leaders. This BOD serves (1) to approve BESC strategic directions and annual project and budget plans, (2) to approve annual performance goals for the BESC leadership team and to evaluate the performance of the team, and (3) to support BESC leadership in managing effective interfaces with translational and applied R&D, technology transfer, and commercialization.


10. Reporting to DOE

Each BESC member institution shall require its researchers to report all inventions in a manner consistent with reporting of other intellectual property resulting from federally funded research. No later than sixty (60) days from receipt of disclosure, each BESC member institution shall disclose to BESC, through the BESC Commercialization Council, all BESC Inventions, software, and tangible research products resulting from BESC Funding.

ORNL will report all such invention disclosures to DOE promptly, along with information about any BESC technology transfer transactions that the team members may have had. IP management and technology transfer activities of the BESC in the Core Technology areas are subject to DOE appraisal.

Accepted by:

BESC Member Institution: University of Georgia Research Foundation, Inc.

By: 
Name: SHAIL MALIK
Title: DIRECTOR, TCO
Date: 10-18-07

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