Government University Cooperation: SBIR/STTR at the Department of Energy

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SBIR/STTR and Commercialization of University Innovations
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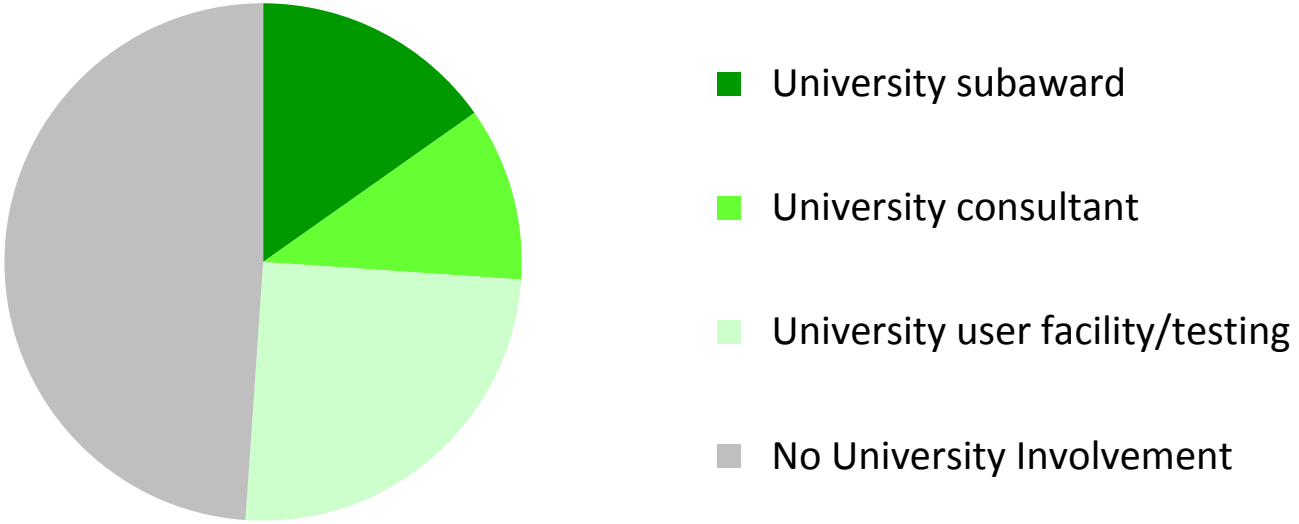
Outline

- Recent University Participation in the DOE SBIR/STTR Programs
- New Initiative: SBIR/STTR & University Technology Transfer

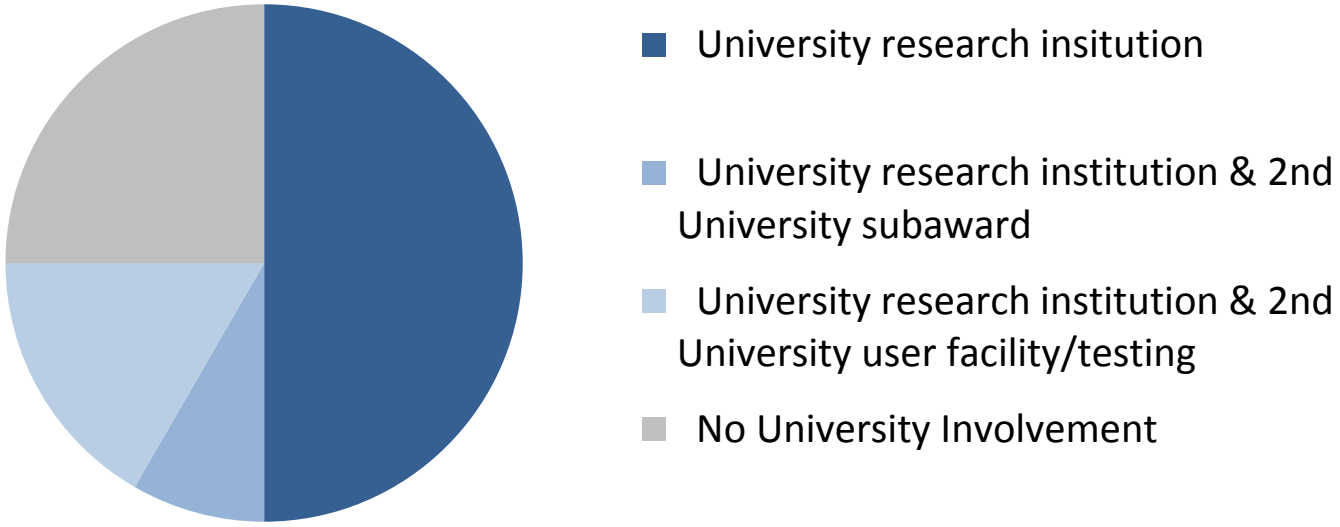
University Participation in SBIR

- NRC Assessment of the SBIR Program (2008)
  - Documented significant academic involvement as company founders, principal investigators and consultants, and through subawards.
- DOE FY 2013 Phase II, 92 Awards
  - University participation (51%) in the DOE SBIR program remains very active



University Participation in STTR

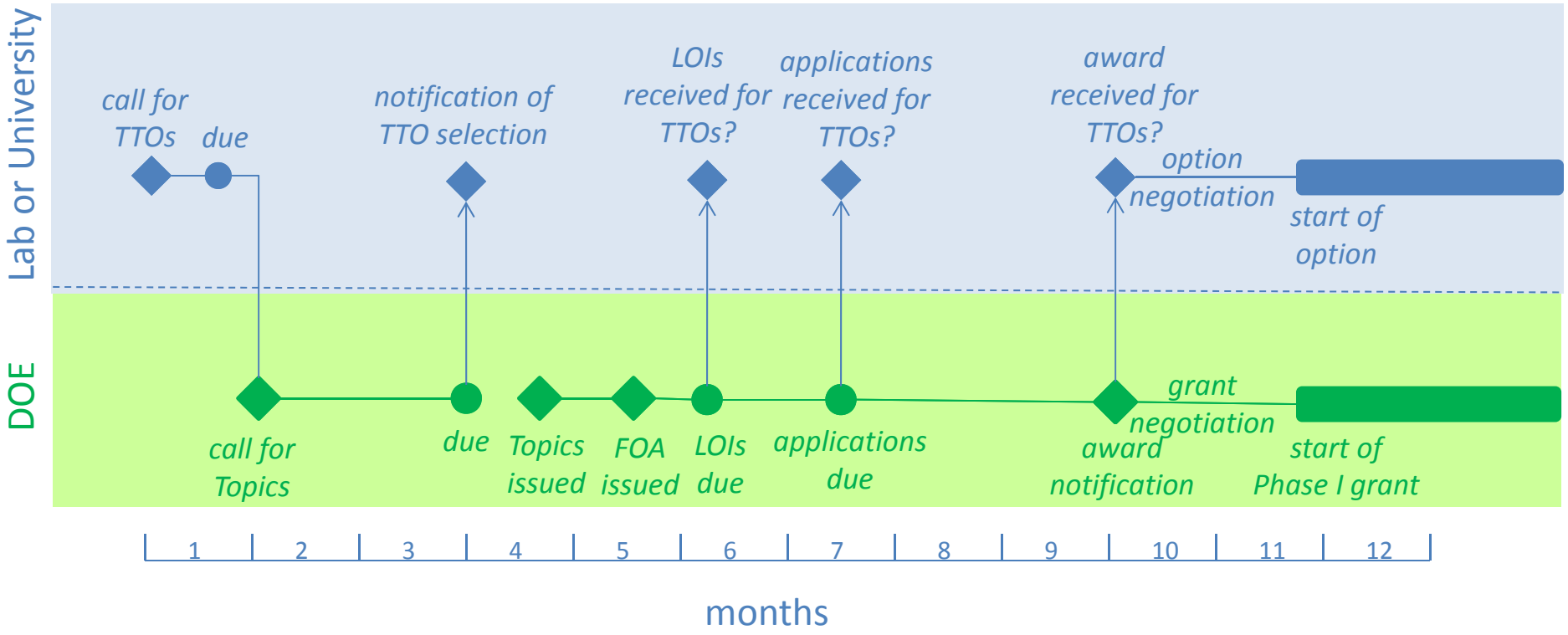
- DOE FY 2013 Phase II, 12 Awards
  - 75% of the Research Institutions are Universities (remaining are DOE National Labs)



SBIR/STTR & University Technology Transfer

- Leveraging Innovation from National Labs and Universities
  - In FY 2012 DOE began to explore how to leverage the SBIR/STTR programs to commercialize innovations resulting from its extramural R&D
    - DOE Basic & Applied R&D programs typically do not track resulting patents or fund further progress towards commercialization
    - Similar to NIST SBIR TT (and subsequently NASA and NIH) which focused on intramural R&D
- Developing a Collaborative Process
  - Required development of a process for including university technology transfer opportunities (TTOs) in SBIR/STTR solicitations and a Memorandum of Understanding (MOU) with external organizations
- Implementing in Phases
  - FY 2013: DOE National Labs
  - FY 2014: Universities under contract to DOE (Bioenergy Research Centers)
  - FY 2015: Universities receiving DOE grants

Collaborative Process



LOI: Letters of Intent
FOA: Funding Opportunity Announcement
TTO: Technology Transfer Opportunity

University Perspective

- Key elements of the MOU
  - University agrees not to market or license TTO while it is in a DOE solicitation and during the award selection process, if applicable.
  - University agrees to provide information about the TTO to small business applicants in a fair and impartial manner, including an option agreement template
  - University agrees to negotiate a no-cost six month option agreement with a small business selected for award
- Minimizing burden for participation
  - Call for TTOs requests readily available information
    - TTO name, description, patent or patent application numbers/links, funding organization, tracking number, point of contact

Example TTO Subtopic

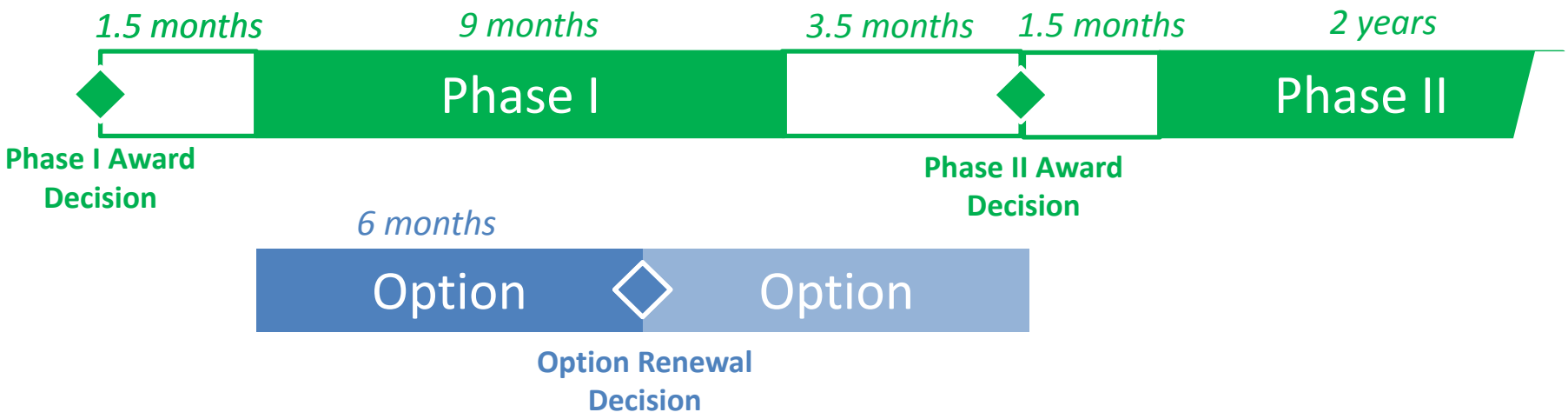
q. **Fatty Acid-Producing Microbes for Generating Medium- and Long-Chain Hydrocarbons**

UW–Madison GLBRC researchers have developed genetically modified E. coli that are capable of overproducing fatty acid precursors for medium- to long-chain hydrocarbons. The modified bacteria can be used to ferment biomass-derived sugars to fatty acids. These fatty acids can be separated from the fermentation media and subsequently used as feedstock for biofuels and biorenewable chemicals based on medium- and long-chain hydrocarbons. The modified bacteria were transformed with exogenous nucleic acids to increase the production of acyl-ACP or acyl-CoA, reduce the catabolism of fatty acid products and intermediates, and/or reduce feedback inhibition at specific points in the biosynthetic pathway.

University of Wisconsin – Madison Information:
TTO Tracking Number: P09329US02
Contact: Jennifer Gottwald - jennifer@warf.org (608)262-5941)
Patent Status: 12/984343; 61/292918
USPTO Link:
http://www.warf.org/documents/pubapps/P09329US02%20Published%20Application.PDF
Website: http://www.warf.org/home/technologies/clean-technology/biofuels-renewable-fuels/summary/fatty-acid-producing-microbes-for-generating-medium-and-long-chain-hydrocarbons-p09329us02.cmsx

Option Agreement

- Six month option period was designed to provide Labs & universities with a decision point separate from the SBIR/STTR award process



Conflicts of Interest

- Award Selection
  - University personnel cannot participate in the review and selection process for SBIR/STTR awards associated with their TTOs because of financial conflict of interest
- Applicants
  - Employees of the University may apply for SBIR/STTR awards associated with the University's TTO
  - The University must have policies in place to ensure that all applicants have equal access to TTO information

TTO Summary Statistics for FY 2013 & 2014

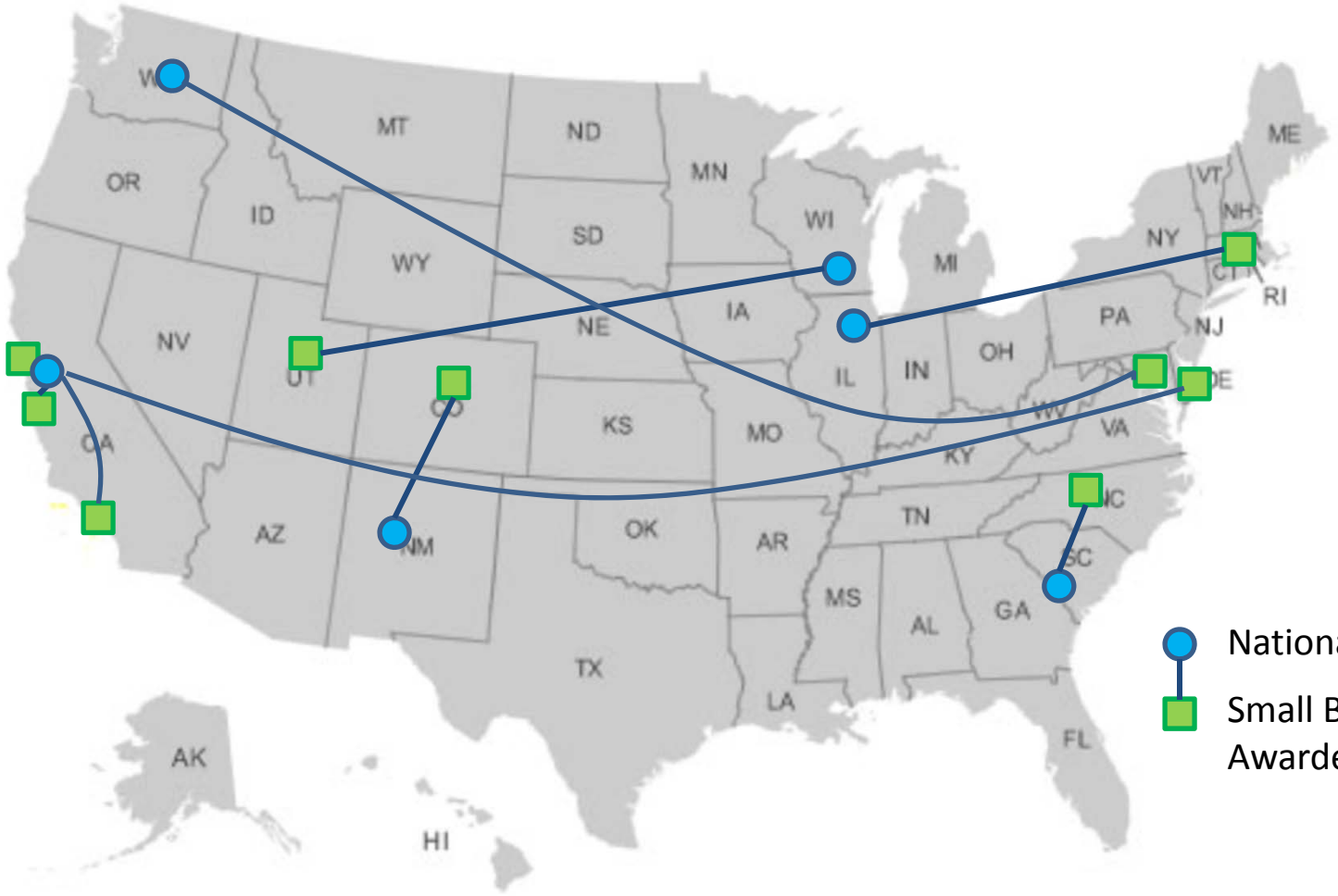
	Number of Participating Research Org.	TTOs Submitted	TTOs Selected	Applications Received	SBIR Phase I Awards	STTR Phase I Awards
FY 2013						
National Labs	***9***	***118***	***18***	***41***	***1***	***1***
FY 2014						
National Labs	***7***	***72***	***21***	***26****	***4****	***2****
Universities	***3***	***12***	***12***	***2***	***1***	***0***
FY 2014 TOTAL	**10**	**84**	**33**	**28***	**5***	**2***

**applications & awards from our Release 2 solicitation are pending*

To date all TTO SBIR/STTR awards have subawards to the research organization

TTO Awards

SBIR/STTR Programs are able to connect a national network of small businesses to technology transfer opportunities at National Labs and Universities



National Lab or University

Small Business TTO Awardee

SBIR & University Tech Transfer: Future Plans

- Evaluation
  - Plan to do a comparison of outcomes of TTO awards with conventional SBIR/STTR awards when they reach commercialization
- Expansion
  - We are currently expanding the number of participating universities in advance of FY 2015
- Opportunities Addressed
  - DOE
    - Primary: Increase commercialization of technologies derived from DOE extramural R&D funding
    - Secondary: Leverage university innovation to meet DOE mission needs (even if patents were not derived from DOE R&D funding)
  - Universities
    - Universities are in need of funding to address maturation of early stage innovations; the SBIR/STTR programs have sufficient flexibility to provide a portion of this funding today either through indirect or direct engagement with universities