

# Considerations on Phase II Application and Commercialization Outcomes

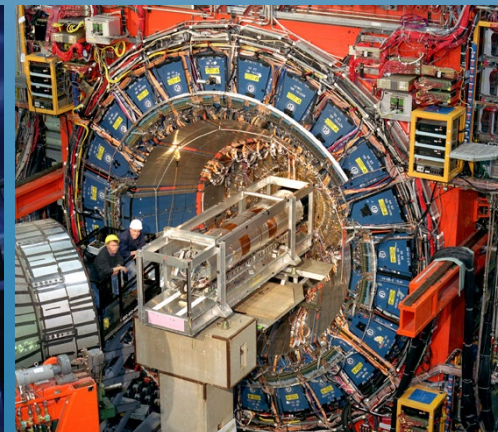
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U.S. DEPARTMENT OF  
**ENERGY**

SBIR/STTR  
Programs Office



# Commercialization is a statutory goal of the SBIR/STTR programs

- *“Increase private sector commercialization of innovations derived from Federal R-R&D, thereby increasing competition, productivity and economic growth.”*
- Agencies are required to evaluate the commercial potential of R&D conducted under SBIR/STTR.
- “Commercialization” encompasses different aspects of early commercial activity: product launch, licensing, patenting, raising non-SBIR funds.



# Phase II Proposal Review

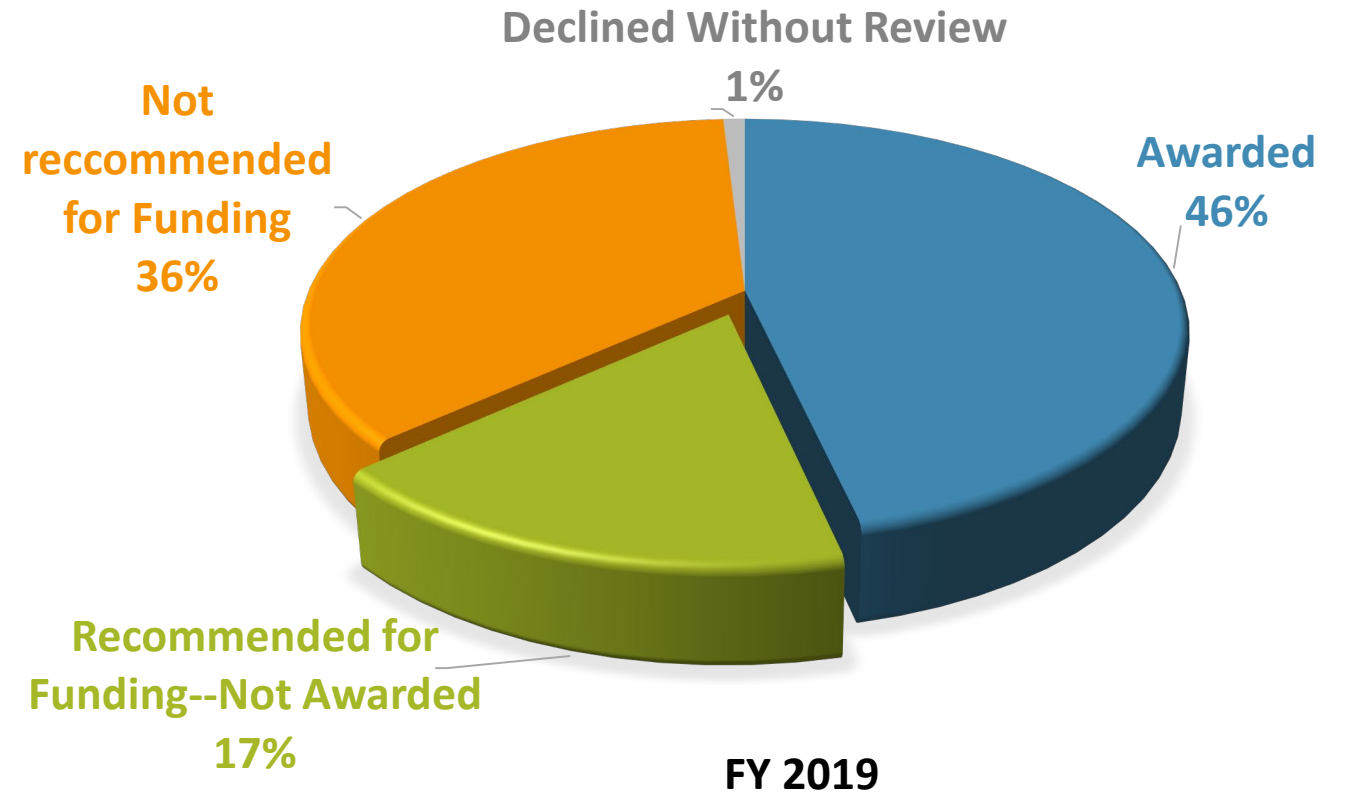
## Criteria

Technical Merit

Ability to Carry out the Project

Commercialization Potential

## Selection



# CP needs to show a plan for moving from concept to the marketplace

- **Show how Phase I demonstrated “Proof of Concept”** so Phase II can move towards commercialization.
- **Show how you will fund progress:** e.g., additional R&D to refine the prototype, capital infrastructure to expand production, support for marketing & sales, new personnel.
- **Secure strong letter of support.** Statements about potential partnerships, customers, and/or raising capital should be backed up with letters of support or commitment.
- **Show Referenced sources** for any market assumption for size, pricing, etc.
- **Be Quantitative** in comparing performance among existing technology, your proposed technology, and any other potential competing technologies.
- **No magic number for your financials.** CP can expand on markets and revenues that will open up later on as your technology further develops.



# Technical and Business Assistance (TABA)

- DOE has fully implemented statutory changes for technical and business assistance that were passed by Congress in August 2018.
- Phase I support is \$6,500, 30% more. Phase II support is \$50,000, 5 x larger than last year.
- TABA funds are for third party vendors or a federal entity issuing patents, certifications or regulatory approvals.
- TABA amounts are in addition to the award amount. TABA funds can be used for:
  - product sales
  - IP protections
  - market research
  - market validation
  - development of certifications and regulatory plans
  - development of manufacturing plans



# Commercialization Assistance Program (CAP)

designed to help entrepreneurs to build a winning go-to-market strategy



Access to PAs, commercialization professionals who have experience with awardee industry and target markets. Connections with Larta's network of senior executives.



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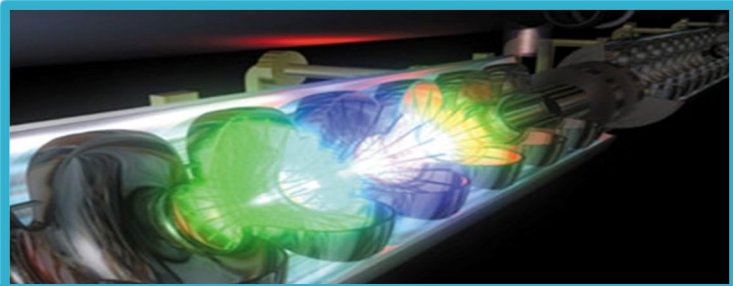
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# Successful SBIR/STTR commercialization strategies

<https://science.osti.gov/sbir/SBIR-STTR-Success-Stories>



# Commercialization paths vary



**Research focus**  
 Support of scientific facilities  
 > 10 SBIR Phase II mainly from DOE

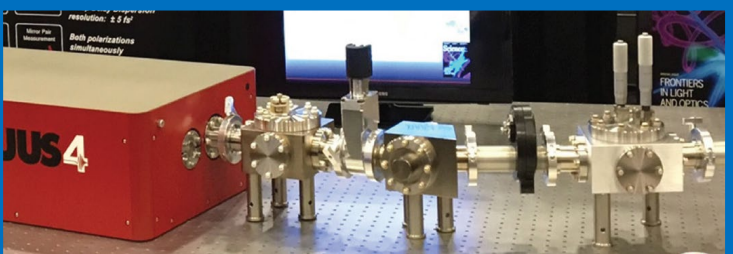


**Multi-Agency focus**  
 Government use & partnerships with primes  
 >10 SBIR awards mainly from other agencies



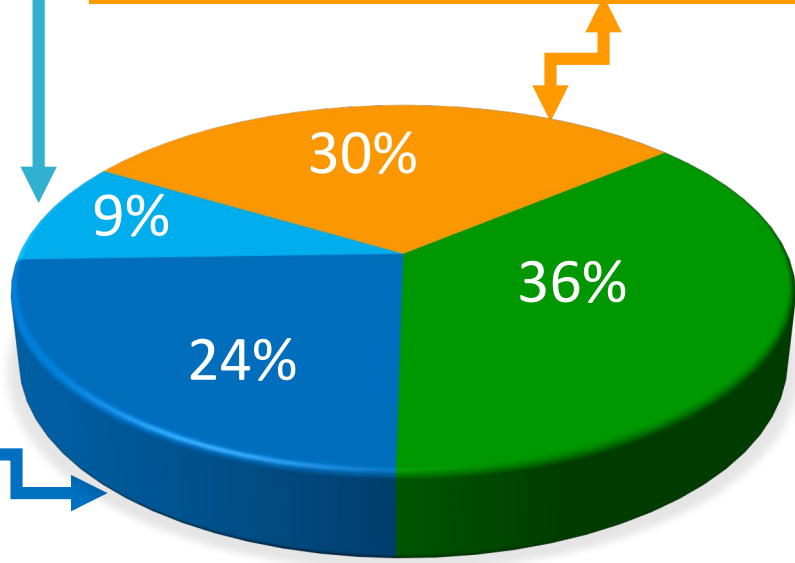
**Startup Model**

- Private investments or sales follow 1<sup>st</sup> Phase I or Phase II
- Focus on energy applied programs
- 1-3 DOE Phase II awards



**Deep Tech Model**

- Strong Lab/Academia base
- Significant investments/sales occur 8-10 years from first SBIR support
- 5 DOE Phase II awards





# CLINICAL MICRO SENSORS



## IMPACT

Multiplex molecular diagnostic system invented at Caltech and developed with DOE SBIR support. Currently sold in hospitals and clinical laboratories worldwide.

**DOE OFFICE:** Biological and Environmental Research (BER).

**INNOVATION:** Electronic sensor technology for DNA invented at Caltech in 1993. Gold electrodes with preassembled DNA capture probes, deposited onto a circuit board chip equipped with a microfluidic chamber.

**COMMERCIALIZATION TIMELINE:** DOE SBIR Phase I in 1995 followed by Phase II enabled substantial VC funds. Follow-up funds through DARPA and ATP. Acquired for \$320M by the Life Science Division of Motorola in 2000. Named GenMark Diagnostics and listed on NASDAQ in 2010.



**IMPACT**  
Each 4,000 m<sup>3</sup>/day plant that displaces an equivalently sized diesel-powered plant will cut CO<sub>2</sub> emissions by 4,300 tons per year, the equivalent of taking 936 cars off the road.



# Resolute Marine

**DOE OFFICES:** Energy Efficiency and Renewable Energy (EERE), Water Power Technologies Office.

**INNOVATION:** Wave<sub>2</sub>O™ is a cost-effective alternative to the diesel-driven desalination systems that are currently in wide use worldwide.

**COMMERCIALIZATION TIMELINE:** DOE SBIR Phase II ended in 2013 enabled \$3M in two rounds of investments. Additional grants since then includes MIT's Solve Challenge. Pilot-scale system in Cape Verde will be financed by \$9.0 M Series A preferred stock investment. Final stage of negotiation with lead investor. Deployment scheduled for 2022.



## IMPACT

Ground-breaking characterization tool enabling 3D, element sensitive, high resolution imaging for next-generation energy-efficient and nanotechnology devices



**DOE PROGRAMS:** Basic Energy Sciences (BES), High Energy Physics (HEP).

**TECHNOLOGY:** table-top, femtosecond pulsed x-ray lasers for imaging and time-resolved spectroscopy with applications in semiconductor industry, bio-imaging and neuroscience.

**COMMERCIALIZATION TIMELINE:** SBIR support starting in 2002 with a DOD grant and 6 DOE SBIR Phase II since 2007. \$14M in product sales; >\$13M in two rounds of investments by Intel Capital, Kairos Ventures and Colorado Impact Fund.



SiNode's core technology was developed at the Center for Electrical Energy Storage (CEES) at Argonne National Laboratory in partnership with Northwestern University



**DOE OFFICES:** Energy Efficiency and Renewable Energy (EERE), Vehicle Technologies Office (VTO).

**TECHNOLOGY:** “graphene-wrapped” silicon anode for Li-ion batteries with 50% higher performance.

**COMMERCIALIZATION TIMELINE:** Private investment from Energy Foundry after DOE Phase I. DOE Phase II in 2014. Immediately after, \$4M contract from automotive consortium with DOE share.

In 2018, formation of Nanograph, joint venture with Tokyo-based company. In 2019, additional Series A Angel investment for a total of \$5.5M.



# Logistics

- Day 1 vs. Day 2
- New this year: Agency Briefings & Networking Meetings
- Larta professionals onsite
- Sign up onsite for tomorrow 1:1s at the Registration Desk (Julie Webber and Jody Crisp) & Larta Desk.
- Presentations will be posted a week after the meeting on:  
<https://www.ora.gov/2019SBIRpimeeting/>
- Complete the post-meeting survey



# Thank you!

We value your feedback to help us improve the SBIR/STTR Programs

Contact me for questions or to share your opinion at  
[claudia.cantoni@science.doe.gov](mailto:claudia.cantoni@science.doe.gov)

