



OCAST

Center for the Advancement
of Science & Technology

Business Plan | Fiscal Year 2023





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Approved by the OSTRaD Board of Directors on _____.



BOARD OF DIRECTORS

The Oklahoma Center for the Advancement of Science and Technology (OCAST) is a state agency governed by the Oklahoma Science and Technology Research and Development (OSTRaD) Board of Directors (Title 74, Section 5060.6 and Amended by Senate Bill 487). This nine-member board of directors consists of the Secretary of Science and Innovation who serves as the chair, four members appointed by the Governor, two members appointed by the President Pro Tempore of the Senate and two members appointed by the Speaker of the House of Representatives. Members generally serve four-year terms.

Elizabeth Hutt Pollard (chair)
Secretary of Science and Innovation

Blayne Arthur
Secretary
Oklahoma Department of Agriculture, Food and Forestry

Sean Bauman, Ph.D.
President and CEO
IMMY
Norman

David Ingram, Ph.D.
Director of Hydrogen & Sustainability Materials - Phillips 66 Research Center
Bartlesville

Tom Kupiec, Ph.D.
President and CEO
ARL Bio Pharma Inc. and DNA Solutions Inc. (The Kupiec Group)
Oklahoma City

Dan Marticello, Colonel, USAF (Ret.)
President and CEO
CymSTAR, LLC
Broken Arrow

Jeff McCormack, Ph.D.
Chief Academic Officer
Oklahoma Christian University
Edmond

Brenda Rolls, Ph.D.
President and CEO
Frontier Electronic Systems
Stillwater



OCAST

Center for the Advancement
of Science & Technology

Purpose

OCAST was established in 1987 as the state's agency for technology-based economic development. OCAST's mandate is to "grow and diversify Oklahoma's economy and provide new and higher quality jobs for Oklahomans" by encouraging "... the development of new products, new processes and whole new industries in Oklahoma." (O.S. 74, Sections 5060.1A and 5060.2A)

Mission

To foster innovation in existing and developing businesses by:

- Supporting applied research, technology development and market expansion
- Facilitating technology transfer between research institutions and industry
- Providing seed capital for innovative firms in the development of new products or services
- Helping Oklahoma's small and medium-sized manufacturing firms become more competitive through increased productivity and modernization (O.S. 74, Section 5060.3)

Vision

OCAST's vision is to inspire and increase the development of new science and support the growth of advanced technologies through its ecosystem of programs and services. Keeping Oklahoma at the forefront of innovation will aide in improved global competitiveness, increased STEM-related jobs leading to higher wages and overall economic diversification and growth for the state.



Performance and Impact of OCAST Internally Managed Programs

Program	Key Performance Measures	Impact	Pillars Supported
Applied Research	1. Funds leveraged	Increase in private funds raised for commercialization	All
	2. Business financials	Increase capital investment, sales, valuation, cost-avoidance, patents, licenses, royalty, jobs, payroll	All
Intern Partnership	1. Applied Development	Accelerate solutions to meet industry needs	All
	2. Interns hired in Oklahoma	Increase workforce numbers and quality	All
Health Research	1. Jobs created/new scientists attracted	Increase workforce numbers and quality, health care outcomes and research capacity	Biotechnology
	2. Funds leveraged	Increase in federal and private follow-on investments	Biotechnology
Plant Research	1. Funds leveraged	Increase in federal and private follow-on investments	Biotechnology/ Ag Tech
	2. Jobs Created	Increase workforce numbers and quality	Biotechnology/ Ag Tech



Performance and Impact of OCAST Contracted Programs

Program	Key Performance Measures	Impact	Pillars Supported
Technology Commercialization Center	1. Funds leveraged	Increase non-dilutive funding raised to support technology development	All
	2. Jobs created	Increase workforce numbers and quality	All
Technology Business Finance	1. Annual revenue	Increase revenue generated by companies as a result of TBFP financing to improve their product or service	All
	2. Jobs created	Increase workforce numbers and quality	All
Seed Capital	1. Seed capital investment	Increase the types and amount of seed capital funds invested in Oklahoma companies	All
	2. Number of companies in which seed capital funds are invested	Increase the number of Oklahoma-based companies receiving seed capital investment	All
Industrial Extension Service (OMA)	1. Jobs created/retained	Increase workforce numbers and quality	All
	2. Gross sales	Increase in gross sales and profitability annually	All
Small Business Research Assistance	1. Jobs created/retained	Increase workforce numbers and quality	All
	2. Federal and private funds	Increase the amount of federal funds including SBIR/STTR awards and private funds leveraged	All
Inventors Assistance Service	1. Clients served	Increase the number of inventors and clients served annually	All
	2. Engineering supported market feasibility	Increase the number of engineering-supported market feasibility activities completed annually	All



PROGRAMS

OCAST is responsible for 11 programs. Five (5) are managed and operated with agency staff and six (6) are operated through contractual arrangements with two (2) private 501(c)(3) companies and two (2) by the state's comprehensive research universities. These defined permanent programs include:

Programs managed and operated internally by OCAST staff

- The Oklahoma Applied Research Support program (OARS) – funds proof-of-concept and accelerated research and development. **The 35-year ROI: 32:1**
- The Oklahoma Internship program (OIP) – funds internships for undergraduate and graduate students in Oklahoma companies. **The 24-year ROI: 78:1**
- The Oklahoma Health Research program (OHR) – funds research and development targeted to human health and bioscience work. **The 35-year ROI: 22:1**
- The Oklahoma Health Fellowship program (OHF) – funds postdoctoral work at Oklahoma companies and nonprofit organizations focused on human health and bioscience work. **The 3-year ROI: 12:1**
- The Oklahoma Plant Science program (OPS) – funds research and development focused on plant-related work. **The 15-year ROI: 12:1**

Programs managed and operated through contractual arrangements

The two private nonprofit contractors – i2E, Inc. and The Oklahoma Alliance for Manufacturing Excellence, LLC - operate four of the OCAST programs. They were selected by the State of Oklahoma through an open bid process.

- The Oklahoma Seed Capital Fund (OSCF) – makes available investment capital to startup and small established companies, individual entrepreneurs and small to medium manufacturers. The program is operated for OCAST through a contract with i2E, Inc., a small non-profit company. OCAST is the only state agency with the constitutional authority to make equity investments on behalf of the state. **The 15-year overall ROI: 28:1**
- The OCAST Technology Business Finance Program (TBFP) – offers funds through a forgivable loan structure to startup and small established companies, individual entrepreneurs, and small manufacturers. This program is operated for OCAST through a contract with i2E, Inc., a small non-profit company. **The 23-year ROI: 53:1**
- The Oklahoma Technology Commercialization Center (OTCC) – provides services to aid startup companies in their growth and pursuit of investment capital. This program is operated for OCAST through a contract with i2E, Inc., a small non-profit company. **24-year ROI: 12:1**
- The Oklahoma Industrial Extension Service (IES) – works with manufacturers to help them grow through modernization and improved efficiency. This program is operated for OCAST through a contract with the Oklahoma Alliance for Manufacturing Excellence, LLC, a small non-profit company. **The 24-year ROI: 132:1**

Two of the state's comprehensive universities were selected via an open RFP process to operate the last two OCAST programs.

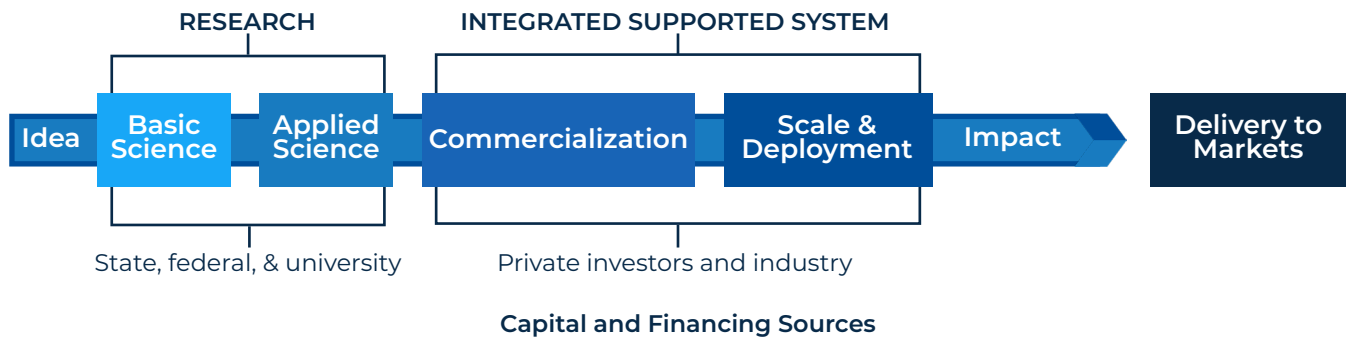
- The Inventors Assistance Service (IAS) – provides engineering and business development services for small companies and manufacturers working to incorporate new technology into their companies to help them grow and increase market share. This program is operated for OCAST through a contract with the New Product Development Center (NPDC) at Oklahoma State University. **The 30-year ROI: 16:1**
- The Small Business Research Assistance program (SBRA) – helps small for-profit companies in their pursuit of federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funding. This program is operated for OCAST by the Oklahoma Catalyst Programs (OKCatalyst) at the University of Oklahoma's Tom Love Innovation Hub (I-Hub). **The 3-year ROI: 44:1**



Program and Service Planning

The programs and services under the guidance of OCAST are designed to increase investment in the research, development and deployment of new technologies which will ultimately bring value to Oklahoma and help grow and diversify the state's economy.

Concept to Commercialization ➤ The Oklahoma Innovation Pipeline



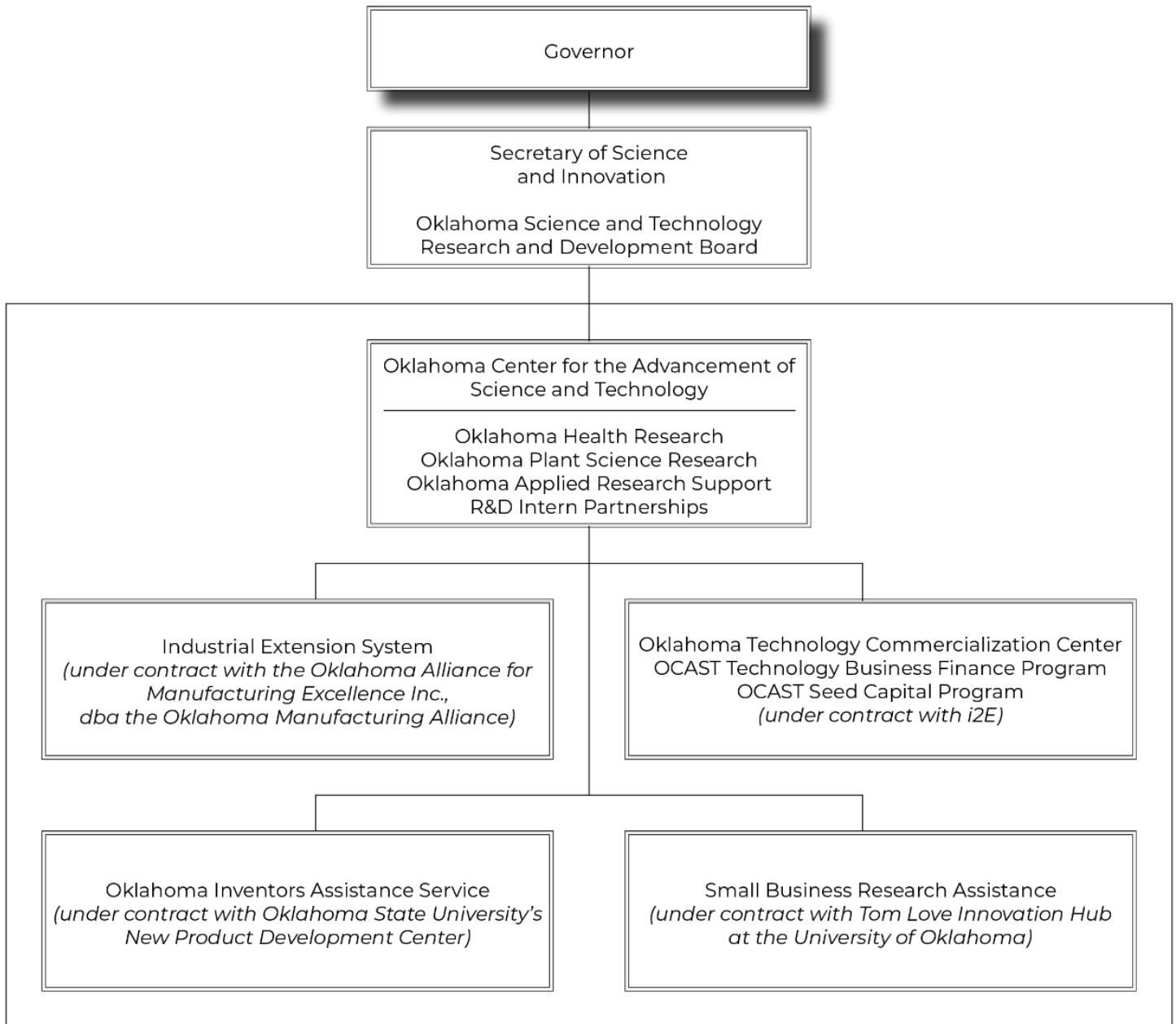
OCAST was established in 1987 as Oklahoma's technology-based economic development agency and is the only agency focused on the development, transfer and commercialization of innovation. OCAST is tasked with creating, managing and growing the innovation pipeline for Oklahoma. OCAST has the statutory requirement to fund eight programs and client services on a modest annual budget the lack of adequate and reliable funding have limited the agency's full impact to address the high demand for its programs. OCAST is positioned to lead the charge in creating large-scale high paying, high tech jobs for Oklahomans and in developing and commercializing research on a consistent and scalable basis. OCAST will continue its goal to be more strategic, focused and dynamic. To this end, OCAST is implementing actions that include but are not limited to:

- Introducing the updated OARS program that better addresses industry innovation needs in the key technology areas of aerospace and autonomous systems, biotechnology/life sciences, and energy diversification. The new program also requires that industry be in the fiduciary lead and applicant on every OARS project.
- Evaluating the potential benefit of moving award funds in the Health Research program further towards applied and developmental R&D to better support biotechnology/life sciences industry growth.
- Ensuring programs and services are well aligned with the recommendations and goals of the state's 2021-2026 Science and Innovation Strategic Plan.
- Continuing to build new industry partnerships while continuing to reinforce existing ones.
- Assisting small high-tech companies and research institutions to better collaborate with the goal of speeding to the marketplace products and services that create jobs and create a positive economic impact
- Working with the Legislature created the standalone Intern Partnership STEM Workforce Pipeline Program that will provide workforce support through internships on a year-round basis once funding becomes available.
- Working with the Legislature created the Oklahoma Research and Development Attraction Program which when funded is intended to foster research and development in key industry clusters, leading to the creation of new products and services that are brought to market by Oklahoma-based companies, or brought to market by relocating companies financially sponsored by an Oklahoma-based capital provider and which conduct a substantial portion of total business activity in Oklahoma.
- Launching an annual activity to, beginning in FY2023, ensure Seed Capital Revolving Fund appropriations receive a wider dispersal among eligible venture capital firms within the state through a competitive request for proposal process.



GOVERNANCE and OPERATIONS

OCAST Structure



Oklahoma Innovation Model (OIM)

OCAST and its partner organizations in the Oklahoma Innovation Model administer programs and services with proven resources and capabilities to address the needs of industry in Oklahoma while also enabling and accelerating the translation of ideas from the laboratory to the marketplace. As the lead organization, OCAST provides high visibility and statewide recognition to the OIM and allows all research institutions, economic development partners and private industry to contribute to accelerating innovation and growing and diversifying Oklahoma's economy.



Management Philosophy

OCAST's management functions as a team, the success of which depends heavily upon the knowledge, skills, cooperation, contribution, and commitment of each member. The teamwork philosophy extends to OCAST's interactions with other agencies, organizations and stakeholders.

OCAST works closely with the business and financial sector to stimulate innovation in existing and developing Oklahoma businesses. Therefore, in accordance with statute, all staff positions are unclassified, governed and compensated in a manner that compares to similar positions in the private sector and, as listed below, are exempt from the Oklahoma Personnel Act. Following is a list of approved positions:

Executive Director – Directs the administrative affairs and general management of OCAST. Develops and directs implementation of strategic plans and policy related to OCAST's mission. Presents and communicates with governor, legislative subcommittees and legislative leadership regarding OCAST's annual budget request and any pending statutory changes relevant to OCAST. Communicates regularly with local, state and national leaders and organizations about OCAST and the importance of scientific research and the growth of knowledge-based businesses to Oklahoma's economy. The executive director is accountable to the OSTRaD Board. Unclassified / Annual salary of \$ 155,000 effective July 11, 2022

Director, Administration and Finance – Responsible for the general administration of the administration and finance division including developing appropriation requests and operating budgets; developing, implementing and administering administrative procedures for accounting, purchasing and office administration; maintaining all official records of the board and agency. The director of administration and finance is accountable to the executive director in the handling of the agency's general administrative affairs and finances including the disposition of highly confidential proprietary material submitted by applicants. Unclassified / \$70,000 - \$99,000

Director, Programs – Responsible for the general administration of the programs division including the development, administration, evaluation and revision of research funding programs, technology development and transfer activities and management of confidential proprietary material submitted by applicants. Directs the staffing of program operations, advisory committees, development and revision of program specifications, rules, regulations and division budget and appropriation requests. The director of programs is accountable to the executive director. Unclassified / \$70,000 - \$99,000

Director, Government Relations and Strategic Initiatives – At the direction of the executive director, directs the design, development and implementation of agency legislative goals and strategies for securing desired legislative and executive action and coordinates legislative activities with all OCAST divisions. Proposes and drafts legislation relevant to new OCAST programs. Serves as key strategic advisor to executive director. Coordinates with OCAST staff to identify and document OCAST programs and services requiring assistance and support of the legislature and governor. Directs special projects assigned by the executive director. Directs research studies and reporting on various topics regarding technology-based economic development. Represents agency and organizes and facilitates OCAST communication with public officials including local, state and national organizations. Unclassified / \$70,000 - \$99,000

Associate Director – Responsible for designing, implementing, operating and evaluating division programs and activities, as assigned. Recommends new programs and activities related to the OCAST mission. A senior level technical strategist with a global perspective of all programs to build collaborative efforts across academia, industry and government. Supervises employees, as assigned. Responsible for the general administration of the division in the absence of the director. Associate directors are accountable to supervising directors and to the executive director for the correct disposition of highly confidential and proprietary material submitted by applicants for OCAST funding and assistance. Unclassified / \$55,000 - \$82,500

Finance and Business Manager – Responsible for performing accounting activities, purchasing, preparing analysis of expenditures and monthly reports of operations, financial statements, schedules and financial statistical data; ensuring purchasing complies with state law, OCAST procedures and best practices; recommending and implementing approved changes in purchasing practices. This position reports to the director, administration and finance. Unclassified / \$55,000 - \$82,500

Public Information and Rural Outreach Manager – Develops and disseminates agency newsletters, brochures, advertisements, commercials, graphic designs, copy layouts and other agency informational releases as required by law or as needed to meet statutory mission of informing the public. This position is responsible for maintaining a functional agency digital mailing list, library of agency related literature including media coverage, in-house publications, audio and video recordings, photographs and serves as an agency photojournalist. This position fields and directs responses to all media-related inquiries. This employee is in the key position to maintain a modern web site with fresh information to keep Oklahomans informed of science and technology that is underway in the state. Produces and maintains social media activity. This position reports to the director, government relations and strategic initiatives. May supervise employees, as assigned. Unclassified / \$55,000 - \$82,500

Programs Officer IV – Supervises the planning, coordination or direction of a component of the agency or program(s) established to accomplish a basic goal or mission of the agency. May supervise one or more employees and/or contractors. Represents OCAST at conferences, meetings and hearings related to OCAST's administrative operations. Unclassified / \$50,000 - \$77,000

Programs Officer III – Under minimal supervision, plans, coordinates or directs a component of the agency or program(s) established to accomplish a basic goal or mission of the agency. May supervise one or more employees and/or contractors. Represents OCAST at conferences, meetings and hearings related to OCAST's administrative operations. Unclassified / \$45,000 - \$71,500

Accountant I – Under direct supervision, processes invoices and payroll, tracks award payments in database, troubleshoots issues within the Oklahoma Grant Exchange (OGX grant software), enters time and leave in master spreadsheet and reconciles against PeopleSoft. Provides reports to programs division concerning contract status, expiration dates and issues with payments. De-obligates funds in awards tracking and maintains a spreadsheet with monthly contracts and purchase orders to de-obligate in PeopleSoft. Maintains accounting records and files documenting financial transactions. Prepares analyses of expenditures and monthly reports of operations. Works with private-sector clients and vendors in resolving invoicing and payment issues. This position is also the coordinator for health insurance and retirement. Unclassified / \$35,000 - \$60,500

Assistant to the Executive Director – Under minimal supervision, assists the executive director in managing the administrative affairs of OCAST. Serves as secretary to the board and agency liaison with the governor's office and the secretary of state. Organizes activities and information associated with OCAST's five-year and annual planning processes, assists with agency projects and organizes the executive director's time, confidential files and correspondence. The assistant to the executive director is accountable to the executive director in performing all duties. Unclassified / \$35,000 - \$60,500

Office Manager – Serves as information technology liaison upon request and in this role reports IT issues to the Office of Management and Enterprise Services and follows up with OMES on problem resolution. Fixed asset manager: tags new assets, tracks and reports on assets in inventory and sends assets to surplus property when no longer needed or useful. Prepares purchase orders from purchase requests and logs incoming purchase requisitions. Assists staff with phone issues and responsible for archiving. Processes end-of-month reports and checks for aging of warrants and contacts warrant holders when necessary. Serves as fleet management coordinator responsible for scheduling, maintaining and reporting on the agency's leased vehicles. Maintains vendor payee information, enters time and leave into PeopleSoft, responsible for maintenance issues of agency equipment such as copier, mailing machine, shredder, fax, and serves as backup to Executive Assistant to the executive director. Unclassified / \$35,000 - \$60,500



Professional Service Contracts

OCAST uses professional service contracts to supplement capabilities and maintain low administrative costs. Functions exist which, due to statutory or program requirements of highly specialized and diverse expertise or infrequency, are more effectively and efficiently performed by contract. Some, though not all, specific professional services contracts can be anticipated at the outset of the fiscal year. As of the date of submission of this business plan, the staff intends to execute the following professional services contracts in FY2023:

- Finley & Cook for annual audit services, in an amount not to exceed \$30,000 for audit year 2022
- Office of Attorney General for legal services, one-half time for one year, in an amount not to exceed \$65,661
- Contract with SHI and Agate Software Inc. for ongoing enhancements of the electronic application system, known as OGX, to support the Programs Division processes, award payment processes, data management and reporting needs in an amount not to exceed \$38,000
- Contract with Office of Management and Enterprise Services for information technology service including personal computer support, network support and support for electronic application system not to exceed \$45,000
- Continue contracting with the Oklahoma Alliance for Manufacturing Excellence Inc. to operate the Industrial Extension System program in an amount not to exceed a base amount of \$1,800,000 as stipulated in HB4468
- Continue contracting with Oklahoma State University to operate the Inventors Assistance Service in an amount not to exceed a base amount of \$450,000 as stipulated in HB4468
- Continue contracting with i2E Inc., to manage the active portfolio in the Technology Business Finance Program in an amount not to exceed the carryover funds in the amount of \$450,000 and repayments and reclaim funds in the program as of June 30, 2022. Any reclaims and repayments received between July 1, 2022 and June 30, 2023, will be available in FY 2023.
- Continue contracting with i2E Inc. to operate the Oklahoma Technology Commercialization Center in an amount not to exceed a base amount of \$1,300,000
- Continue contracting with University of Oklahoma, Oklahoma Catalyst Programs in the amount of \$282,000 as stipulated in HB4468 to manage the SBIR/STTR assistance portion of the OCAST SBRA program
- Contract with investment firm(s) to manage any newly appropriated dollars to the OCAST Seed Capital Revolving Fund for FY23
- Contract with an Oklahoma venture capital firm which through an open competition is selected to manage the remainder of the FY2023 Seed Capital appropriation once the Oklahoma Seed Capital Fund Series 2018-3 management fees are paid
- Contract with i2E Inc. to manage the Oklahoma Seed Capital Fund LLC (OSCF) without new state appropriations for new investments in FY2023. Effective July 1, 2018, the management fee for the 2018-3 Series is based on funds under management (adjusted cash balance plus total capital receivable plus the value of investments at cost) as of July 1 of each year. The management fee will be 2.5 percent of the first \$50 million under management, plus 2 percent of any amount over \$50 million under management. This is estimated to be approximately \$ for FY2023. These management fees will come from the FY 2023 Seed Capital Fund appropriation.
 - o Series 2007-1 of the Fund is closed to new investments with minimal activity consisting of monitoring existing portfolio companies and managing fund expenses. The total funds under management balance for Series 1 at July 1, 2022 is estimated to be \$2,321,049, however there is no management fee for Series 2007-1 and the funds under management are not included in the fee calculation for OSCF.
 - o Series 2008-2 of the Fund is also closed to new investments but has an active portfolio with a projected funds under management balance at July 1, 2022 of \$12,420,149. The management fee for Series 2008-2 in FY 2023 is estimated to be \$310,504.
 - o Based upon the projected 2018-3 funds under management balance at July 1, 2022 of \$36,473,116, the management fee for Series 2018-3 in FY2023 will be \$906,294.
 - o Total funds under management in the Oklahoma Seed Capital Fund as of May 31, 2022, excluding Series 1 funds under management, is projected to be \$48,893,266 with total OSCF FY2023 management fees of \$1,216,798.

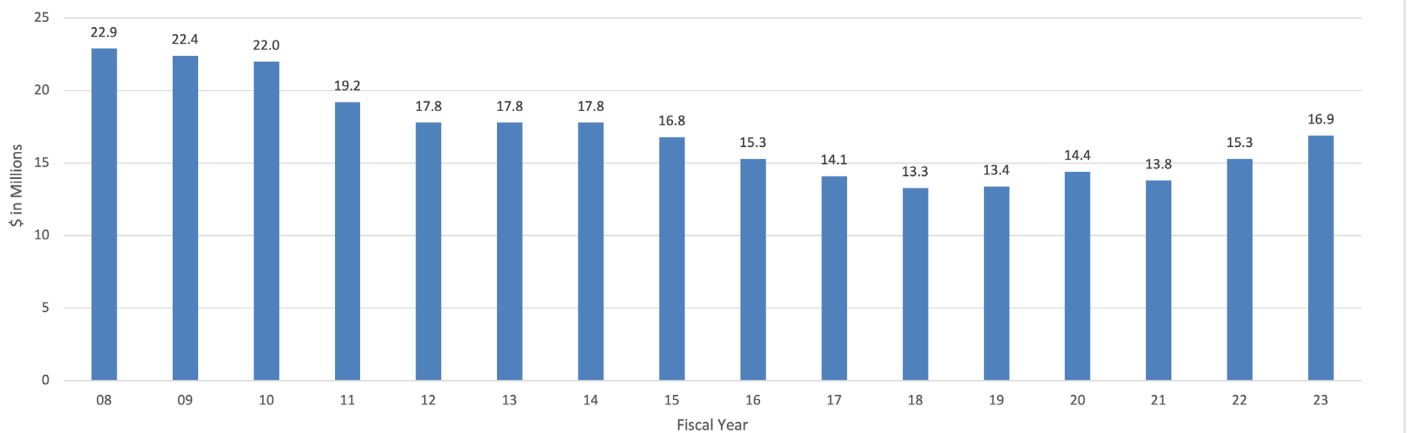
	OSCF#1	OSCF#2	OSCF#3	Totals
Net Cash (Est. 6/30)	387,372	516,959	27,848,130	28,752,461
Capital Receivable (FY23)				0
Portfolio at Cost (Est. 6/30)	1,933,677	11,903,190	8,624,986	22,461,853
Total Funds Under Management Values	2,231,049	12,420,149	36,473,116	51,214,314

Finance

OCAST's programs, activities and general operations are financed primarily through state general revenue appropriated funds. OCAST's enabling statute authorizes the use of three funds: the General Administration and Data Processing Fund, the Research Support Revolving Fund and the Seed Capital Revolving Fund. Each of the three funds is authorized to accept state general revenue appropriations, grants, gifts and donations. The Seed Capital Revolving Fund is authorized to accept loan repayments and investment proceeds. In addition, the Office of Management and Enterprise Services has approved the creation of the Technology Business Finance Program Fund to separately account for the funds available for the Technology Business Finance Program. Each fund is authorized to finance specific activities of the agency.

Senate Bill 1040 appropriated \$ 16,846,542 to OCAST. A portion of OCAST's annual state appropriation, \$ 7,618,617, is transferred to the Research Support Revolving Fund for operation of OCAST award programs with \$2,250,000 of this amount dedicated to Applied Research and Development for Industry Innovation, and \$2,759,308 is transferred to the Seed Capital Revolving Fund for FY 2023. The revolving funds have no fiscal year limitations. All of the agency's expenditures must be confirmed by Oklahoma's Office of Management and Enterprise Services to be consistent with an annual budget work program approved by that office.

OCAST Appropriation History





Regional Benchmarks and Comparisons

Programs under the guidance of the Oklahoma Center for the Advancement of Science and Technology are designed to increase investment in the research and development of new technologies that will ultimately bring value to the state of Oklahoma and help grow and diversify the state's economy.

Since 2015, Oklahoma has consistently ranked in the top 20 on total investment in research and development (R&D) activities by state. In that span, the state has invested an average of \$30.6 million per year in R&D (amount reflects OCAST and other state agencies such as Department of Transportation).

However, as a share of state GDP R&D performance, Oklahoma lags most states. At 0.81% of state GDP, Oklahoma ranked 41st nationally. Among its surrounding states, Oklahoma outperformed Arkansas and Louisiana, which ranked 45th and 50th respectively. This is an important indicator because it represents the extent to which R&D plays a role in a state's economy.

Utility patents (patents that cover the creation of a new or improved – and useful – product, process or machine which give its inventor exclusive commercial rights to it for 20 years) granted in the state of Oklahoma between 1963 and 2015 peaked in 1966 at 937 and have trended downward over time. A total of 608 utility patents were issued in the state in 2019. Relative to its surrounding states and the U.S., Oklahoma's patent activity is lagging; all other states analyzed experienced an increase in patents over the period and the nation as a whole saw an increase of 2.1% annually.

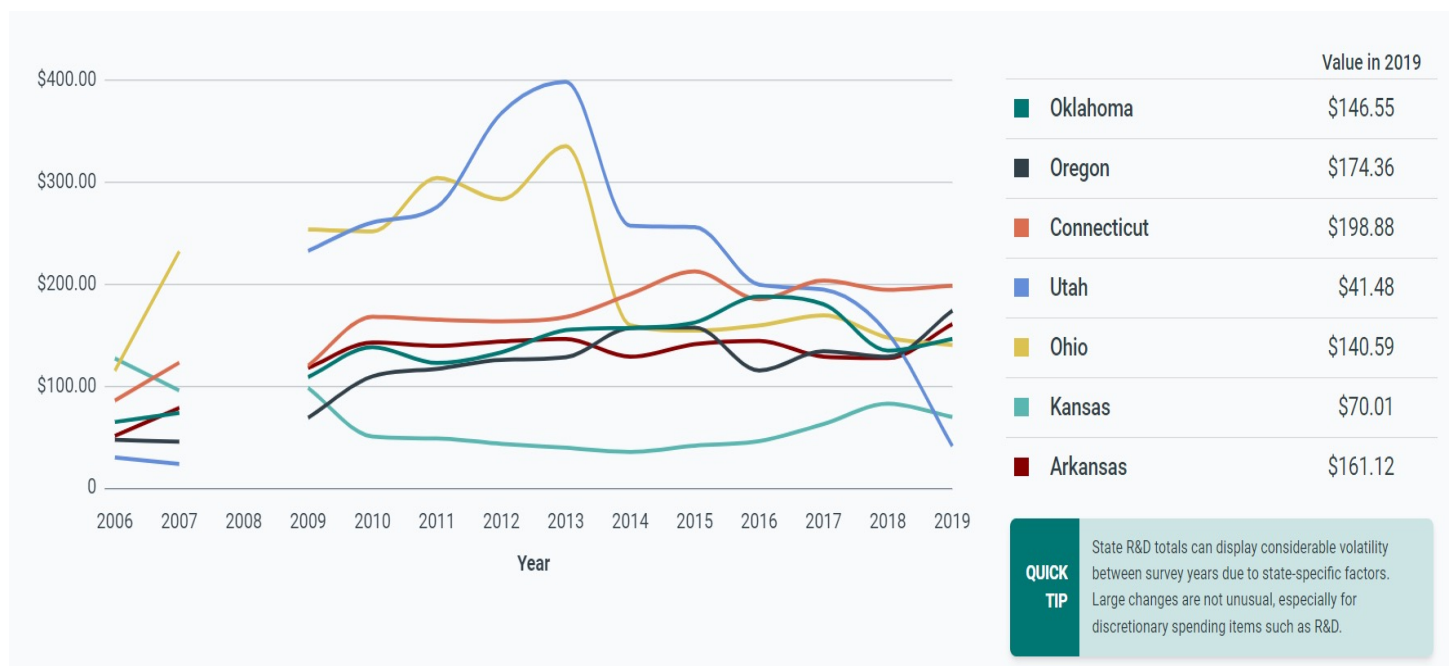
OCAST National and International Recognition

1. U.S. Department of Commerce Economic Development Administration Technology Transfer and Commercialization: Their Role in Economic Development recognizes OCAST as a best-practice model for technology transfer and commercialization.
2. NGA Center for Best Practices – A Governor's Guide to Strengthening State Entrepreneurship Policy: The National Governors Association identifies the OCAST-sponsored Oklahoma Technology Commercialization Center as a model for helping companies, inventors, researchers and entrepreneurs to turn technological innovations into business opportunities.
3. NGA Center for Best Practices Providing Ideas That Work: The National Governors Association recognizes OCAST as a best-practice model for developing its Technology Business Finance Program and the Intern Partnerships program.
4. SRI International Benchmarking OCAST and Identifying Strategic Implications for the Future: The Oklahoma legislature commissioned a joint interim study on OCAST performance in February 2000. A key finding from the SRI International report was: "OCAST's evaluation methods and indicators are state-of-the-art and are on par with the best evaluation methodologies used by other states."
5. Preliminary Recommendations Entrepreneurial Assistance Workshop: The OCAST-funded Oklahoma Technology Commercialization Center identified as a best-practice model and recognized by Arizona in their development of a roadmap for bioscience, research, commercialization and economic impact.
6. Australia's Northern Territory Government – in developing its economic strategy – identified OCAST as a model for advancing its economy through science and technology.
7. BusinessWeek Online and special publication of Forbes: a) Oklahoma identified nationally as "hotbed" in two sectors, biotechnology and nanotechnology; b) OCAST role is noted.

8. *The World is Flat, A Brief History of the Twenty-First Century* by Thomas L. Friedman: National best seller notes OCAST as a model for nurturing innovation in the global economy.
9. Office of Technology Policy Pacesetter: Oklahoma recognized for having a best-practice model for supporting science and technology.
10. Georgia Tech School of Public Policy: OCAST identified as a model for developing performance measures for its science and technology programs.
11. *Biotechnology Entrepreneurship Leading, Managing and Commercializing Innovative Technologies* edited by Craig Shimasaki, Ph.D.: OCAST provides the example for state government-supported grants and funding programs (pp 252-253)

State Agency R&D Expenditures per \$1 Million of Gross Domestic Product

This indicator represents the ratio of state agency R&D funding to the size of a state's economy. State R&D funding expenditures include state-administered funds from all sources, including the federal government, that support R&D performed by either a state agency or an external performer. Nationally, most R&D is performed by sources other than state agencies, which typically account for less than 1% of total R&D expenditures.



NA = not available.

NOTES: The national state agency R&D expenditure total reported here for the United States includes Puerto Rico.

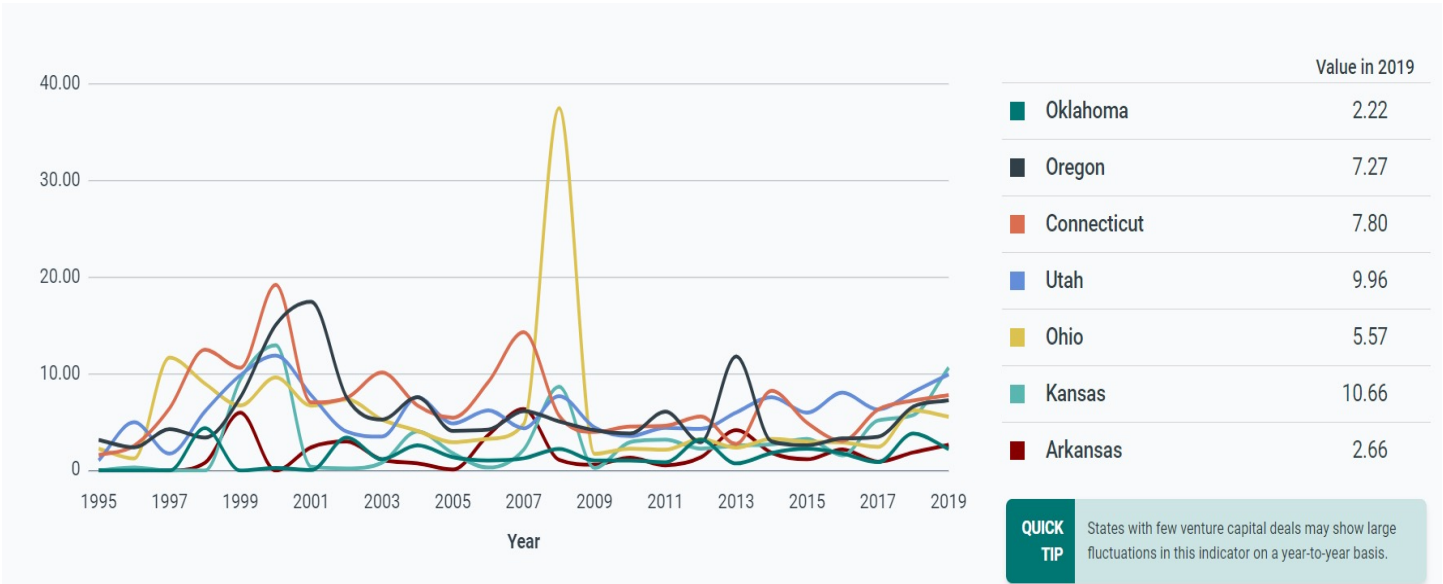
SOURCE: National Center for Science and Engineering Statistics, Survey of State Research and Development, data available as of December 2020; U.S. Bureau of Economic Analysis, Gross Domestic Product data (various years), data as of June 2021; Government of Puerto Rico, Office of the Governor, Gross Domestic Product data (various years), data available as of June 2021.

Recommended Citation: National Science Board. "State Agency R&D Expenditures per \$1 Million of Gross Domestic Product." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://ncses.nsf.gov/indicators/states/indicator/state-rd-expenditures-to-state-gdp>. Accessed on [date of user access].

Last updated: December 15, 2021

Venture Capital Disbursed Per Venture Capital Deal

This indicator represents the average size of the venture capital investments being made in a state. The indicator is expressed as the total dollars of venture capital invested in millions divided by the number of companies receiving venture capital. This indicator provides some measure of the magnitude of investment that developing companies in a state have attracted from venture capital sources, though does not necessarily reflect the level of overall venture investment or deals in a state.



NOTES: The national total for venture capital for the United States includes U.S. territories.

SOURCE: PitchBook, Venture capital and private equity database, data available as of February 2021; Pitch-Book, Venture capital and private equity database, data available as of January 2021.

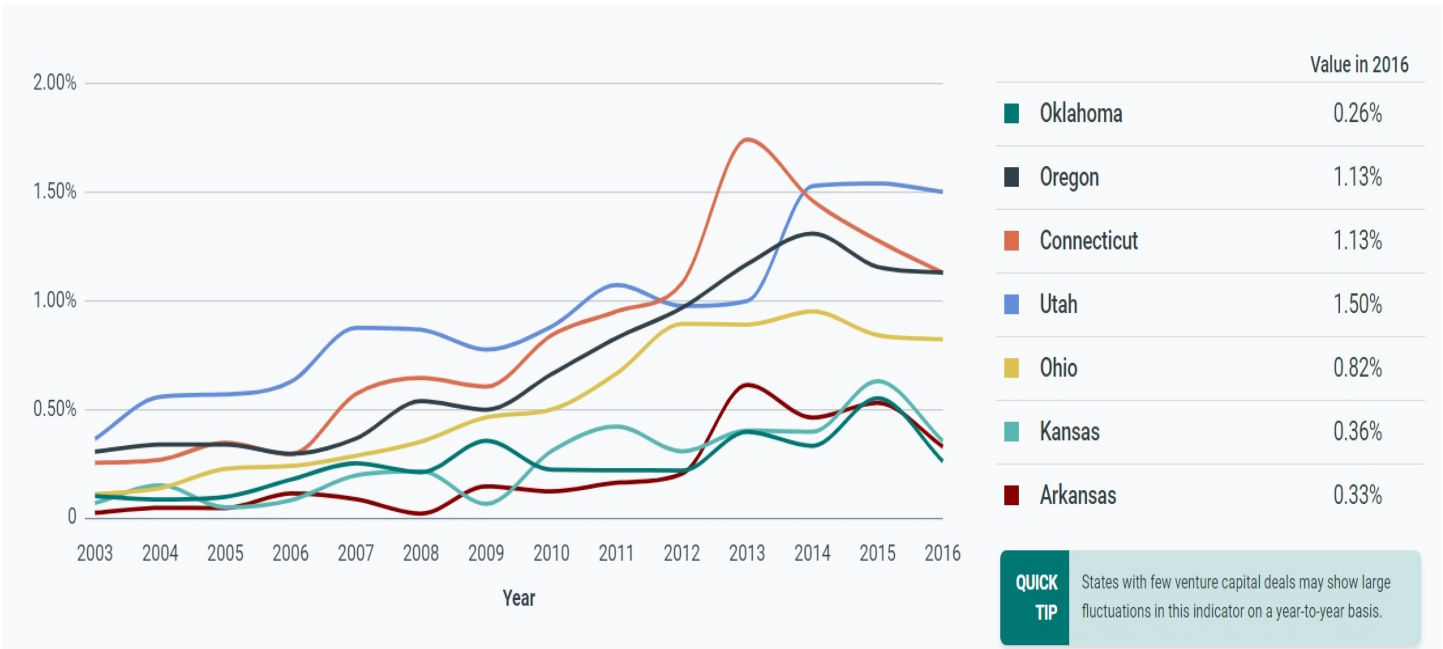
Recommended Citation: National Science Board. “Venture Capital Disbursed Per Venture Capital Deal.” Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://ncses.nsf.gov/indicators/states/indicator/venture-capital-per-deal>. Accessed on [date of user access].

Last updated: March 24, 2021



Venture Capital Deals as a Percentage of High Science, Engineering, and Technology Employment Establishments

This indicator represents the extent to which companies with high science, engineering, and technology (SET) employment in a state receive venture capital investments. The value of the indicator is calculated by dividing the number of venture capital deals by the number of companies operating in industries with high SET employment in that state. High values indicate that companies with high SET employment in a state are frequently using venture capital to facilitate their growth and development.



NOTES: The national total for venture capital for the United States includes U.S. territories. The national total for establishments in high-technology industries for the United States does not include U.S. territories.

SOURCE: PitchBook, Venture capital and private equity database, data available as of January 2021; U.S. Census Bureau, special tabulations of the Business Information Tracking Series (various years), data available as of April 2019.

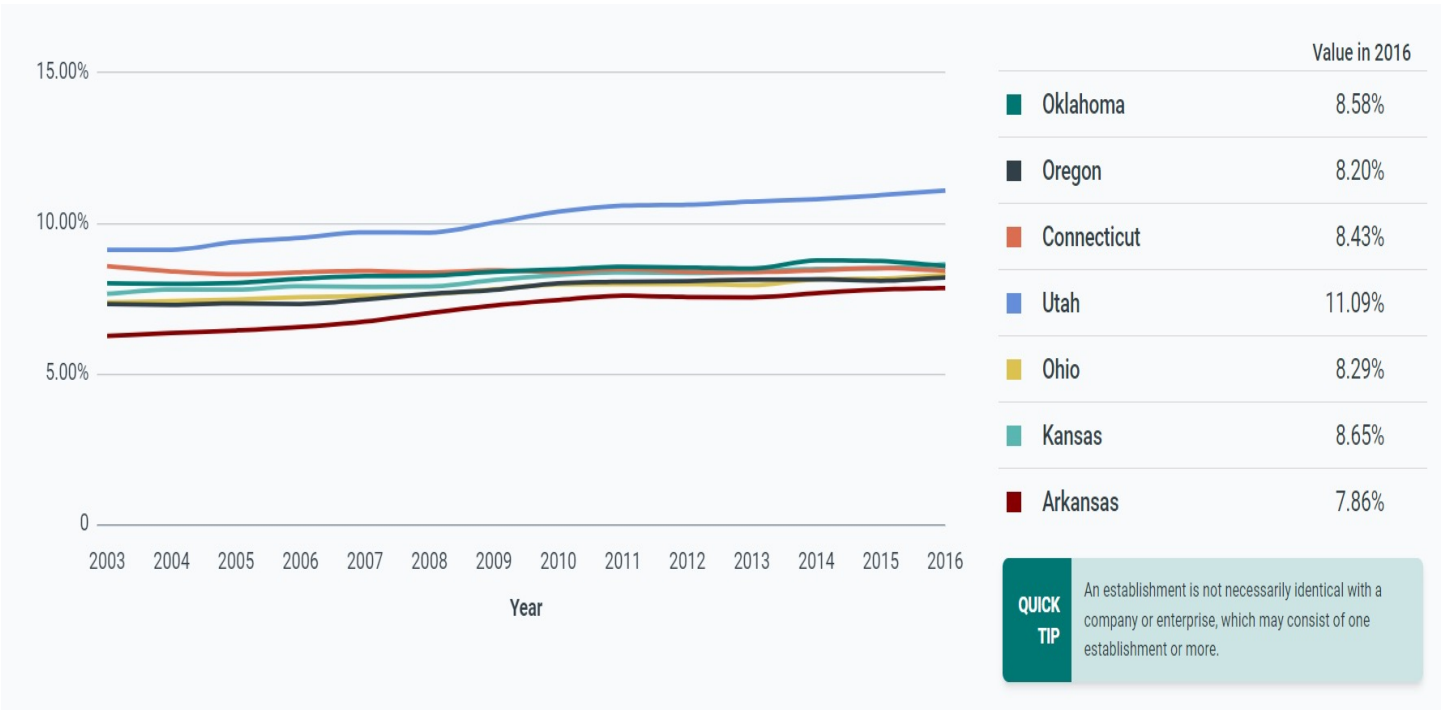
Recommended Citation: National Science Board. “Venture Capital Deals as a Percentage of High Science, Engineering, and Technology Employment Establishments.” Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://ncses.nsf.gov/indicators/states/indicator/venture-capital-deals-per-high-set-establishments>. Accessed on [date of user access].

Last updated: March 24, 2021



High Science, Engineering, and Technology Employment Establishments as a Percentage of All Business Establishments

This indicator represents the portion of a state's business establishments that are classified as being part of industries with high employment in science, engineering, and technology (SET) occupations. High SET employment industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. SET occupations include scientific, engineering, and technician occupations that employ workers who generally possess in-depth knowledge of the theories and principles of science, engineering, and mathematics at a postsecondary level.



NOTES: The national total for establishments in high-technology industries for the United States does not include U.S. territories. The national total for all establishments for the United States does not include U.S. territories.

SOURCE: U.S. Census Bureau, special tabulations of the Business Information Tracking Series (various years), data available as of April 2019.

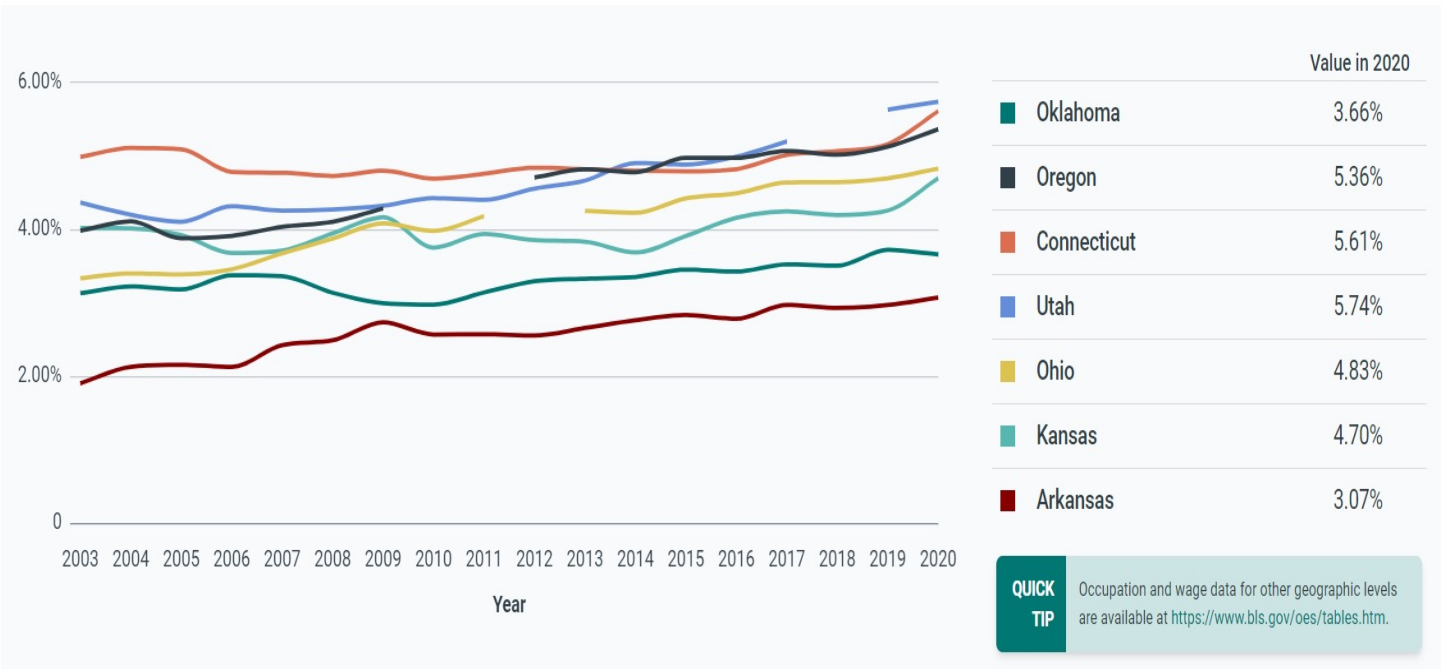
Recommended Citation: National Science Board. "High Science, Engineering, and Technology Employment Establishments as a Percentage of All Business Establishments." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://nces.nsf.gov/indicators/states/indicator/high-set-to-all-business-establishments>. Accessed on [date of user access].

Last updated: September 24, 2019



Individuals in Science and Engineering Occupations as a Percentage of All Occupations

This indicator represents the extent to which a state’s workforce is employed in S&E occupations. A high value indicates that a state’s economy has a high concentration of scientific and technical jobs relative to its total workforce.



NA = not available.

NOTES: Occupational Employment and Wage Statistics (OEWS) estimates for 2004 and earlier are based on November data; estimates for the remaining years are based on May data. The total for the United States includes states with suppressed data and does not include U.S. territories.

SOURCE: Bureau of Labor Statistics, special tabulations of the Occupational Employment and Wage Statistics Survey (various years), data available as of May 2021.

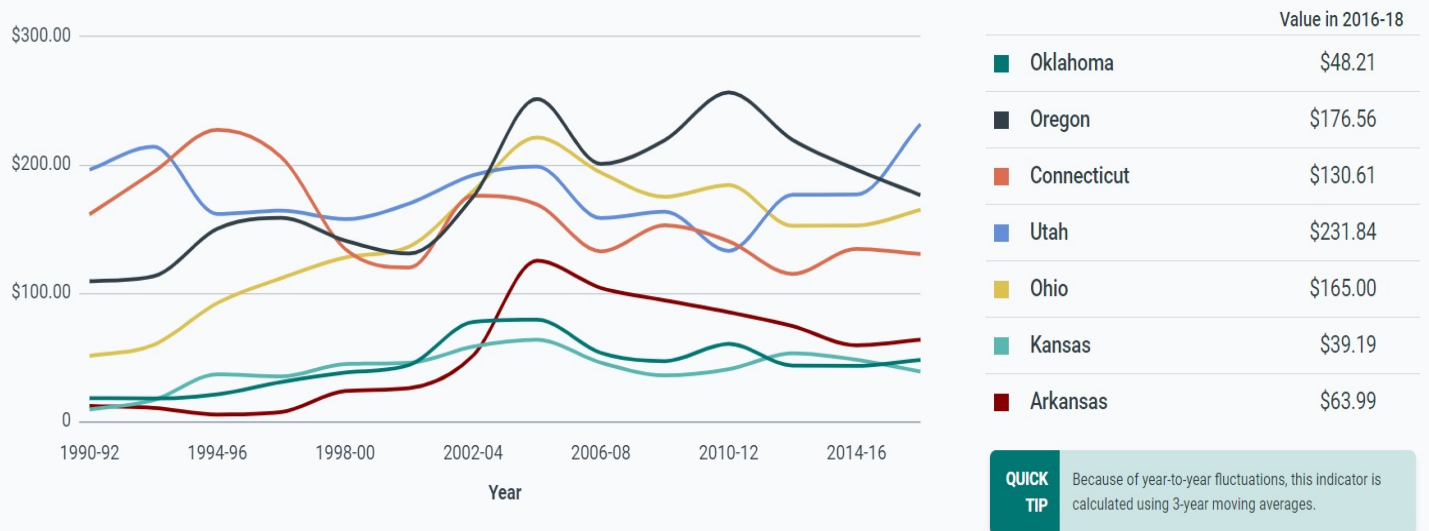
Recommended Citation: National Science Board. “Individuals in Science and Engineering Occupations as a Percentage of All Occupations.” Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://nces.nsf.gov/indicators/states/indicator/se-occupations-to-all-occupations>. Accessed on [date of user access].

Last updated: December 15, 2021



Average Annual Federal Small Business Innovation Research and Small Business Technology Transfer Funding per \$1 Million of Gross Domestic Product

Funds awarded through the federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs support R&D and technological innovation in companies with 500 or fewer employees. This indicator represents the extent to which small business firms in a state are pursuing re-search projects that meet federal R&D needs and attract federal support.



NOTES: The national SBIR and STTR funding total for the United States includes U.S. territories. The national GDP total for the United States includes Puerto Rico.

SOURCE: Small Business Administration, Office of Technology, Small Business Technology Transfer program and Small Business Innovation Research program statistics (various years), data available as of December 2020; U.S. Bureau of Economic Analysis, Gross Domestic Product data (various years), data as of June 2021; Government of Puerto Rico, Office of the Governor, Gross Domestic Product data (various years), data available as of June 2021.

Recommended Citation: National Science Board. "Average Annual Federal Small Business Innovation Research and Small Business Technology Transfer Funding per \$1 Million of Gross Domestic Product." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://ncses.nsf.gov/indicators/states/indicator/ave-sbir-and-sttr-funding-per-1-million-state-gdp>. Accessed on [date of user access].

Last updated: December 15, 2021





Five Year Appropriation History

ACTIVITIES	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
General Administration	\$670,151	\$689,939	\$649,229	\$651,628	\$777,120
Program Services + IT Support	1,354,799	1,019,189	900,487	996,410	1,027,212
Technology Information Services	278,329	287,645	340,821	771,086	761,158
Health Research/Health Fellowship	2,352,518	2,244,700	2,450,669	2,499,566	3,227,564
Applied Research (includes Industry Innov)	2,352,518	2,244,705	2,450,669	2,702,200	3,522,581
Intern Partnerships	430,000	568,081	400,448	616,346	444,003
Plant Science Research	0	648,526	733,494	1,048,817	495,596
Industrial Extension Services	942,862	942,862	905,148	1,184,000	1,800,000
Technology Commercialization	1,493,186	1,493,186	1,393,186	1,393,186	1,300,000
Small Business Research Assistance	250,000	—	250,000	282,000	282,000
Inventors Assistance	299,117	299,117	287,152	391,995	450,000
Technology Business Finance Program	0	1,000,000	0	0	0
Seed Capital Fund	2,933,448	2,933,448	3,035,239	2,759,308	2,759,308
TOTAL FUNDING	\$13,356,927	\$14,371,398	\$13,796,542	\$15,296,542	\$16,846,542
General Administration %	5.02%	4.80%	4.71%	4.26%	4.61%





Appropriation and Distribution

Sources and Uses of Funds FY 2023

SOURCES:

Revenue for OCAST Operations:

A) Projected FY 2022 Cash Balance	1,298,478	
B) Projected OTCC FY22 Contract Balance Carryover	50,000	
C) TBFP Restricted Funds from Paybacks	757,123	
D) FY2023 State Appropriation Revenues	16,846,542	
TOTAL SOURCES (A-D)		\$ 18,952,143

USES:

Projected Expenditures:

A) Administration	777,120	
B) Technology Information Services	761,158	
C) Program Services + IT	1,027,212	
D) Programs:		
Health Research	3,077,564	
Health Fellowship	150,000	
Applied Research	2,066,594	
Applied Research R&D Industry Innovation	2,250,000	
Intern Partnership Program	480,833	
Plant Science Research	495,596	
Inventors Assistance	450,000	
Small Business Research Assistance	282,000	
Industrial Extension Service	1,800,000	
Technology Commercialization	1,300,000	
Technology Business Finance Program Revolving Fund	757,123	<i>Restricted</i>
E) Seed Capital Revolving Fund	2,759,308	
TOTAL USES (A-E)		\$ 18,434,508

Estimated Cash Balance 6/30/2023	\$ 517,635
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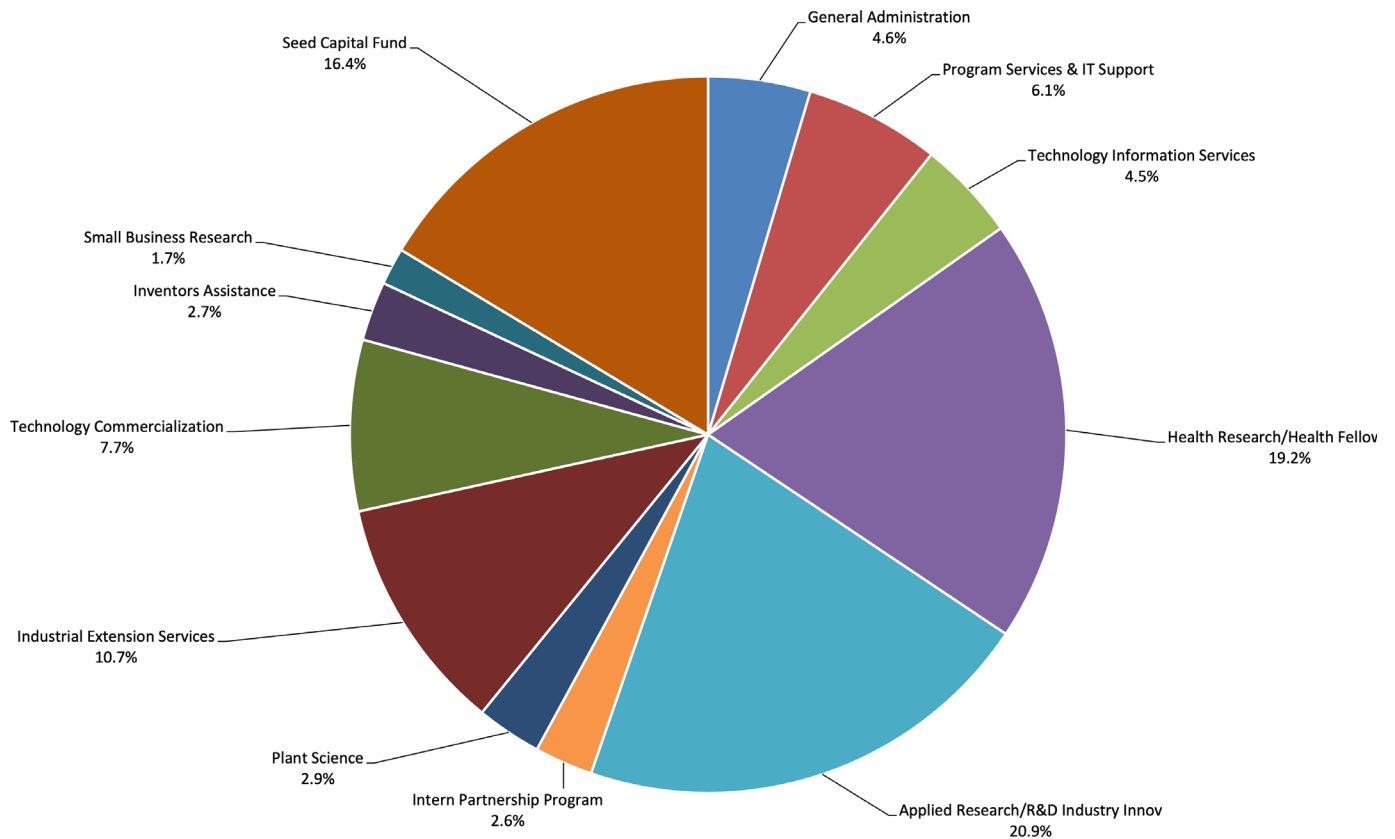
Out-year Program Obligations

FY 2024 estimate	1,270,721	*
FY 2025 estimate (TBD)	-	*
Total Out-Year Program Obligations		\$1,270,721
Covered by Cash Currently Available (Less \$500,000 Reserve)		\$17,635
Future Appropriated Funds Needed to Cover Out-Year Obligations*		\$1,253,086

This methodology is standard practice in the UCAS I award structure of first-year contracts plus two out-year contracts to complete research milestones and to comply with the State Purchasing requirements.

The out-year amounts for both FY2024 and FY2025 will increase after board approval of new awards in December 2022.

FY2023 Appropriation Allocation \$16,846,542



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