

# FY 2021 Business Plan



**OKLAHOMA**  
Center for the  
Advancement of  
Science and Technology



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Approved by the OSTRaD Board of Directors on June 16, 2020.

## Board of directors

OCAST is a state agency governed by the Oklahoma Science and Technology Research and Development (OSTRaD) Board of Directors (Title 74, Section 5060.6). This 21-member board of directors consists of the executive director of the Oklahoma Department of Commerce, the chancellor of the Oklahoma State Regents for Higher Education, the secretary of agriculture, the presidents of Oklahoma's three research universities, the president of a regional university, twelve members appointed by the governor and two nonvoting legislators representing the Oklahoma House and Senate. Members appointed by the governor serve with the consent of the Senate and generally serve four-year terms.

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## Purpose

The Oklahoma Center for the Advancement of Science and Technology (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 basic and applied research
- Facilitating technology transfer between research laboratories and businesses
- 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 continued growth and vitality through facilitating collaboration between state government, universities, start-up companies and established large-scale firms to develop an entrepreneurial environment that supports technology-based economic development. In pursuit of this vision and in carrying out its mission, the agency funds cutting-edge science and technology through processes that are recognized nationally and internationally for excellence, objectivity and economic impact. OCAST's strategy includes science and technology areas such as biosciences, information technology, sensors and electronics, advanced materials and energy sources and systems. Achieving this vision will result in continued growth of advanced technology companies in the state thereby increasing Oklahoma's global competitiveness, job growth, per capita income and an improved quality of life for Oklahomans.



## FY 2021 goals and objectives

### Goal 1: Increase the impact of OCAST's programs and services

#### Objectives

1. Increase the impact of OCAST's Applied Research Support programs by improving the number of industry partner applications awarded. This goal represents the best chance for new market penetration, increased opportunities for science and technology commercialization and venture capital investments.
2. Review existing programs and services to ensure alignment with other state science and technology plans.
3. Expand and improve the efficiency of statewide program outreach activities by conducting events focused on regional innovation and collaboration to grow rural and regional economies.
4. Conduct the annual Oklahoma Health Research Conference. The conference provides Oklahoma's health research community with an opportunity to gain access to financial and business support they might not otherwise be able to access and to provide the legislature and public a showcase of OCAST-funded human health research.
5. Support OCAST partner organizations in meeting their goals and objectives as stated in their respective business plans as approved by the OSTRaD Board of Directors, defined in their individual contracts with OCAST and within the structure of the Oklahoma Innovation Model (OIM).
6. Complete replacement of the OKGrants online application and award management process to better capture feedback and suggestions from end-users, external peer reviewers and developers. The current system has become outdated both in terms of client/OCAST use and information security.
7. Implement lessons learned from OCAST's continuous Lean Office efforts into the end-to-end management of competitive award contracts to streamline and improve the efficiency of all aspects of contract development, management, payment processing and monitoring.
8. Support regional economic development organizations in building collaborative support for industry in their respective areas by hosting industry innovation learning and networking events funded by involved stakeholders.
9. Pursue investment opportunities and grants with the private sector, tribal nations, philanthropic groups and federal programs to increase the agency's efforts to grow and diversify Oklahoma's economy.

### Goal 2: Increase public awareness of OCAST's impact on Oklahoma

#### Objectives

1. Educate stakeholders about the benefits of investing in science and technology to the growth and diversification of the state's economy.
2. Throughout FY 2021, twelve tours of innovative businesses will be conducted for key legislators and stakeholders to educate and help them gain a more in-depth knowledge of client operations and successes.
3. By the third quarter, the annual impact survey will be conducted and the resulting performance measures will be disseminated to legislators and stakeholders across the state.
4. By the end of the 58th Legislature OCAST will identify and develop potential advocates and champions from education subcommittee and legislative leadership.
5. OCAST and its strategic partners will host a legislative reception to educate elected officials on the critical value and importance of the Oklahoma Innovation Model and the work being done across the state by the end of the first session of the 58th Legislature.
6. OCAST will identify emerging technology clusters such as the automotive supply chain industry and improve programmatic communication and provide outreach, guidance and support to potential stakeholders.



7. Convey OCAST's collaborative successes associated with the Oklahoma Innovation Model to state and national multimedia channels to improve branding exposure to highlight Oklahoma as a national leader for technology-based economic development.
8. Sponsor and conduct Oklahoma Science and Technology month for April in cooperation with the state's middle- and high-school STEM teachers by providing electronic downloadable certificates of achievement in STEM studies.
9. Expand communication to rural media outlets and disseminate success stories about science, technology and innovation throughout Fiscal Year 2021.
10. By June 30, 2021, OCAST will go live with a new updated website.
11. In FY 2021, OCAST will work with Lt. Governor Matt Pinnell to launch a podcast featuring innovative businesses, technologies and entrepreneurs from across the state.
12. By the end of the second quarter, an OCAST Application Writing Seminar will be conducted for potential applicants.

### Goal 3: Identify process improvement opportunities to increase the efficiency of OCAST programs, accounting routines and policies and procedures

#### Objectives

1. Conduct a planning session with OIM partners and staff to gather information and provide data to the OSTRaD board of directors so they may develop a three year plan for FY 2022 – FY 2025.
2. Annual review of the staff performance evaluation process in keeping with requirements of the state human capital management division of the Office of Management and Enterprise Services with the goal of more effectively supporting employee development and promoting a work environment that fosters a high performance team.
3. Using Lean Office principles, continuously review processes and procedures to identify and implement efficiencies throughout the organization.
4. Benchmark current best practices in technology-based economic development through staff participation in national, state and local meetings and training.
5. Leverage outreach efforts through collaboration with OIM partners, other government agencies and private-sector organizations.
6. Comply with external audits and achieve the goal of “no audit findings.”
7. Continuously review OCAST information technology resources and upgrade as necessary to provide staff with the tools and most efficient means to serve clients.
8. Conduct at least annually a customer satisfaction survey of the ease of use and value of OCAST programs and services.

## Strategy

For Oklahoma to increase its competitive advantage and relevance in the 21st century, it is imperative to support the process of discovery and development of new ideas, new technologies and technology transfer that result in commercialization, new market opportunities, new jobs and significant economic impact for our state and nation. OCAST's strategy is to advance research and development that help Oklahoma and its industries compete in the global economy.

#### Build on public and private sector strengths

- Provide leadership, information and assistance through OCAST and the larger Oklahoma Innovation Model to enhance the ability of Oklahoma technology companies and researchers to compete in the global marketplace.
- Offer short-term financial incentives and startup funding vehicles requiring external public and private sector co-investment, including the Technology Business Finance Program (TBFP) and seed capital funding, to better position Oklahoma companies for success.
- Advance economic development by conducting and publicizing studies that call attention to improvements in technology policies and practices.



- Offer OCAST's Oklahoma Sponsored Targeted Research (OSTaR) initiative to help private industry, non-profit foundations and higher education apply for federal and state funding to support the development and application of science, technology and innovation.

#### Provide funding based on merit

- Evaluate funding applications according to published procedures and criteria to ensure funds are awarded to applications with the greatest technical and commercial value.
- Utilize external peer review by recognized experts to make award determinations to promote objectivity and avoid conflicts of interest to the greatest extent possible.
- Work with standing advisory committees, external reviewers and customers to continue to refine and improve OCAST's programs and external peer-review process.
- Monitor and evaluate program performance on an annual basis to ensure tax dollars are spent as intended and produce measurable outcomes that maximize return on the state's investment.

#### Leverage resources for greater results

- Work with partner organizations and stakeholders to leverage their resources to extend the benefit of the state's investments.
- Build collaborations with private and public organizations to pursue federal and private foundation funding to benefit existing programs and fund new initiatives.
- Involve standing or ad hoc advisory committees in all planning efforts.
- Seek input from stakeholders and customers on changes and modifications to OCAST funding programs, policies and procedures to add to input provided by standing advisory committees.

#### Promote public and private partnerships and networks

- Explore opportunities to establish agreements with other government organizations to encourage collaboration with Oklahoma's research institutions and private industry with the goal of improving technology transfer and increasing new market opportunities.
- Work with the Oklahoma Manufacturing Alliance to identify new technology in the research and development pipeline to establish linkages between Oklahoma's research institutions and industry for new and/or improved commercialization opportunities.
- Re-establish an updated OCAST Centers of Excellence program through the Oklahoma Innovation Model with the intent of moving more industry into new larger and more viable markets, particularly additional markets for the traditional oil and natural gas supply chain industry.
- Build on the ever-growing network of collaborative partners to help deliver better client services and customer solutions.

## Programs

OCAST programs and services are designed to encourage and enable Oklahoma researchers, entrepreneurs and small businesses to accomplish research and development, technology commercialization and technology application. Ideally, clients return to OCAST programs as often as necessary for assistance. The programs in the OCAST technology portfolio include:

#### Intern Partnerships – cumulative ROI 78:1

##### Goal and strategic objectives

The Intern Partnerships program (74 O.S., 5060.28) provides support for qualified research and development partnership projects that involve Oklahoma industry and Oklahoma institutions of higher education. The program increases the pool of scientists, engineers, faculty and business entrepreneurs who can contribute to economic development in Oklahoma while encouraging graduates to remain in the state.

## Description

The Intern program helps retain Oklahoma's best and brightest students by connecting undergraduate and graduate students with Oklahoma companies to complete an innovative project together that benefits the career path of the student and at the same time addresses a real innovation need for the company. OCAST provides funding that is matched by the company for a STEM student to support the pursuit of an innovative solution to the company's technology needs. The Intern program:

- Allows businesses to gain access to funding for a skilled intern to help accomplish research and development.
- Provides students with hands-on experience outside of the classroom.
- Helps develop Oklahoma's next generation of scientists and engineers.
- Encourages industry-university collaboration.
- Encourages students to prepare for STEM careers in Oklahoma.
- Encourages undergraduates to pursue graduate education and training.

## Performance measures

The program produces commercially viable R&D. In addition, the student and faculty intern experience helps to keep the top talent in Oklahoma, increases the desire for continuing education and provides measurable economic progress for the state.

**Oklahoma Applied Research Support – cumulative ROI 22:1**

## Goal and strategic objectives

The Oklahoma Applied Research Support (OARS) program (74 O.S., Section 5060.19) addresses the statutory mandate of supporting applied research and technology development with significant commercial potential by allocating resources according to merit, promoting collaborations and leveraging federal and private resources.

## Description

OARS awards fund projects for one to three years from any technology area based upon technical merit, potential for market success and commitment of resources. Funding is available for both proof-of-concept and accelerated projects. The program requires a minimum of one-dollar matching support for each state dollar awarded. Eligible applicants are Oklahoma businesses and universities, colleges or nonprofit research organizations that have industrial partners. The program gives preference to projects involving collaboration between private industry and research institutions.

## Performance measures

Proof-of-concept performance measures include the amount of private and federal funding leveraged, the amount of intellectual property initiated and the anticipated value of patents, licenses and royalties resulting from these basic research projects to demonstrate program success.

Performance measures also include a final determination of taking the project forward through some form of development. Development may take any of several tracks including a follow-on accelerated research project, incorporation into a new or other existing project, licensing to another person or organization, etc.

Accelerated projects – federal and private funding attributed to OARS projects and the ratio of OARS awards to private and federal support demonstrate the program's effectiveness at securing capital.

Performance measures such as the value of intellectual property, license royalties, jobs added, payroll of jobs added, actual and projected gross sales and actual sales distribution and projected cost-avoidance indicate the program's effectiveness at technology transfer and the commercial value of Oklahoma R&D projects.

## Oklahoma Health Research – cumulative ROI 22:1

### Goal and strategic objectives

The Health Research program (74 O.S., 5046-5055) addresses OCAST's statutory mandate of supporting basic human health-related research by allocating resources according to scientific merit and the potential to leverage private and federal resources while fostering public and private sector collaboration.

### Description

The Health Research program competitively awards research funding for one- to three-year basic research projects related to human health. Eligible applicants are Oklahoma commercial enterprises, nonprofit research organizations, universities and colleges. These awards enable researchers to gain expertise and produce data needed to obtain larger grants from other sources, including federal agencies and public and private funding organizations, and to develop patents, which in the long-term can lead to commercialization. Researchers also benefit from OCAST's annual Health Research Conference, which focuses on ways to assist the commercial development of new products and services resulting from health research projects.

**Health Research Fellowship (HRF)** – an initiative within the Health Research program to help increase the number and quality of postdoctoral researchers in Oklahoma. The HRF was created within existing program statutes at the direction of the Health Research Advisory Committee as a response to the increasing demand for postdoctoral researchers. This need was identified by Oklahoma research institutions and the bioscience industry who urged the advisory committee to provide some assistance in resolving the shortage of these early-stage researchers in the state.

### Performance measures

This program produces nationally competitive health science research. Private, public and federal funding attributed to health projects and the ratio of OCAST support compared to private, public and federal support indicate the program's effectiveness at securing capital for competitive research. The amount of intellectual property generated, licenses established and royalties received are an indication of the program's impact on the state's health sciences industry.

## Oklahoma Plant Science Research – cumulative ROI 12:1

### Goal and strategic objectives

The Plant Science program (74 O.S., 5060.53 and 5060.54) addresses the statutory mandate of supporting basic and applied research in the field of plant sciences by allocating resources according to scientific merit, promoting collaborations and leveraging federal and private resources.

### Description

The Plant Science program competitively awards funds for basic, proof-of-concept and accelerated research related to plant science for one- to two-year periods based on scientific merit, commitment of resources and, in the case of applied research, the potential for market success. Eligible applicants are Oklahoma commercial enterprises, nonprofit research organizations, universities and colleges, nonprofit research organizations and commercial enterprises. The applied and proof-of-concept research awards require a minimum of one dollar matching support for each dollar awarded.

### Performance measures

For basic research projects, performance measures such as the amount of private and federal funding leveraged by plant science projects, the amount of intellectual property initiated and the anticipated value of patents, licenses and royalties resulting from these basic research projects measure program success.

Proof-of-concept performance measures are the same as basic projects with the addition of a final determination of taking the project forward through some form of development. Development may include

any number of forms including a follow-on accelerated research project, incorporation into a new project, licensing to another person or organization, etc.

Accelerated applied research performance measures include private and federal follow-on funding attributed to plant science projects, intellectual property, license royalties, jobs created, payroll growth, increased sales, sales distribution and cost reductions resulting from these projects.

### **Small Business Research Assistance – cumulative ROI 44:1**

#### Goal and strategic objectives

The Small Business Research Assistance (SBRA) program (74 O.S., 5060.19) addresses the statutory mandate of supporting applied research and facilitating technology transfer involving small private for-profit businesses by leveraging federal and private resources and promoting action, encouraging strategic partnerships between firms and research institutions and promoting commercialization of new technologies.

#### Description

Through the federal Small Business Innovation Research (SBIR) program, federal agencies provide seed support for product feasibility studies and prototype development that is lacking in the private investment community. The federal Small Business Technology Transfer (STTR) program accomplishes this purpose and forges research collaborations between small firms and universities or nonprofit research institutions. Both the SBIR and STTR programs encourage transfer of technology into federal agency programs and private sector applications. OCAST's program offers technical assistance through the University of Oklahoma's Oklahoma Catalyst Programs to improve the quality of proposals through proposal development workshops, external expert proposal reviews, client referrals, collaboration building and partnership with i2E's commercialization support services. The program offers companies guidance in accessing additional OCAST support and other resources as appropriate to their respective stage of development.

#### Performance measures

This program produces nationally competitive applied research, development and technology commercialization. Federal and private funding attributed to projects and the ratio of OCAST support to private and federal support indicate OCAST's effectiveness at securing capital for applied research and development. Performance measures such as the increase in federal contracts, jobs added and payroll of jobs added indicate the successful commercialization of technology by firms participating in the SBRA program.

### **Inventors Assistance Service – cumulative ROI 16:1**

#### Goal and strategic objectives

OCAST contracts with Oklahoma State University to operate the Inventors Assistance Service (IAS) (74 O.S., 5064.4) through the university's New Product Development Center (NPDC). The service addresses the statutory mandate to provide Oklahoma inventors with information and training on developing their invention and on issues related to patenting/licensing, marketing and manufacturing. The service offers workshops, a website, referrals and on-site business and technical consultations.

#### Description

The program assists the independent inventor in navigating the process from idea to marketplace. IAS helps inventors move toward the manufacturing, marketing and distribution of their products by providing assistance and information or referring inventors to appropriate service providers who will help them deal with specific steps in the invention process. The program provides inventors with a streamlined process to help move their innovation forward. Qualified inventors nearly ready for commercialization receive help with activities such as materials testing, market assessment, engineering resources and prototype development.



### Performance measures

Performance measures are specified in statute and include the number of clients, participants in workshops, value of patents, licensed royalties, jobs created and number of clients progressing into other OCAST and federal programs.

### Technology Business Finance – cumulative ROI 53:1

#### Goal and strategic objectives

The Technology Business Finance Program (TBFP) (74 O.S., 5060.20a) was authorized in the Technology Transfer Act of 1998 to address the mandate of providing early stage capital to innovative firms and manufacturers and for stimulating private investment capital.

#### Description

This program is designed to promote promising innovation and to support efforts to commercialize in Oklahoma by providing early stage financing to start-up companies, well-established firms and manufacturers. The program requires a match and includes payback provisions which helps sustain the program and provide financing to additional companies. OCAST contracts with i2E to operate this program.

### Performance measures

Performance measures include the number of start-up firms and/or manufacturers assisted, survival rate of those organizations, amount of repayments and leveraging of other private and federal dollars. In addition, the program manager submits an economic impact analysis of the program, including such items as jobs and average annual salaries of jobs created.

### Seed Capital – cumulative ROI 28:1

#### Goal and strategic objectives

The Seed Capital program (74 O.S., 5060.21) has been crafted to be an economic development tool with a goal of making investments in early stage companies engaged in the commercialization of promising new technologies in Oklahoma. The ultimate goal is to use the state's investment as the incentive to attract additional private sector investments for these companies as they work to commercialize their products and services.

#### Description

Through its Seed Capital program, OCAST provides funding to innovative Oklahoma companies to incentivize co-investment. The statute and the related constitutional amendment allow the state to take an equity or debt position with firms – an authority that is unique to OCAST as a state agency. Required co-investment with the private sector, as the majority investor, leverages the agency's investment.

OCAST invests through the Oklahoma Seed Capital Fund LLC, a for-profit subsidiary of i2E Inc.

The Seed Capital program also includes a concept component intended to address the needs of companies requiring a smaller seed capital investment for earlier-stage projects which may develop into larger seed capital investment opportunities if necessary as the company continues to grow in Oklahoma.

### Performance measures

Performance measures include the leveraging of private investment funds, business finance impacts resulting from OCAST investment (including job growth and economic impact on the state) and expanding availability of investment capital for technology business development.

## Oklahoma Technology Commercialization Center – cumulative ROI 12:1

### Goal and strategic objectives

The Oklahoma Technology Commercialization Center (OTCC) (74 O.S., 5060.20b) addresses the statutory mandate of facilitating technology transfer and commercialization and providing pre-seed and seed capital for new innovative firms. The program operates under contract with OCAST and is the product of OCAST's strategy of promoting collaborations, allocating resources according to merit, stimulating action and leveraging private resources.

### Description

OCAST currently contracts with i2E, a private nonprofit organization, to operate the OTCC program that assists entrepreneurs, early-stage technology companies and firms seeking to commercialize new technologies. The program focuses on assessing needs, guiding clients through the commercialization process and linking them to a comprehensive network of technology sources (including Oklahoma universities) and commercialization services. The program also provides specialized business development services, access to early-stage risk financing and help in transferring technology.

### Performance measures

Performance measures include number and type of project clients, activities with all clients, amount and type of financing obtained for clients, jobs created and average wage/salary of new technology-based companies.

## Industrial Extension System – cumulative ROI 132:1

### Goal and strategic objectives

The Industrial Extension System (IES) (74 O.S. 5060.26) addresses the statutory mandate of stimulating manufacturing productivity and efficiency through modernization and innovation. The IES program is nationally recognized by NIST, National Institute for Standards and Technology, for excellence in terms of its ability to respond quickly, encourage action and leverage federal and private resources in support of Oklahoma manufacturers.

### Description

The Oklahoma Alliance for Manufacturing Excellence Inc., dba the Oklahoma Manufacturing Alliance, is a private, nonprofit organization that manages the IES program by contract with OCAST and the Manufacturing Extension Program (MEP) for the U.S. Department of Commerce, National Institutes of Standards and Technology (NIST). Together these programs provide leadership and assistance to Oklahoma's small- and medium-sized manufacturers to help them become progressively more successful in their marketplace and more efficient and innovative in their operation. Through a network of manufacturing extension agents and applications engineers, the IES and NIST MEP provides real, hands-on resources for improving productivity, increasing sales and reducing costs. Using federal, state, local and private funds, the Oklahoma Manufacturing Alliance contracts with local organizations to field regional manufacturing extension agents who deliver to Oklahoma manufacturers services in technology application, workforce training, financing, market assessment and business principles. Applications engineers, sponsored also in part by Oklahoma State University, provide technical assistance to manufacturers in rural and urban areas where engineering resources may be limited. These locally accessible applications engineers assist with mechanical designs, plant layouts and a variety of other technical issues.

The IES includes an OCAST-funded position to provide innovation engineering project management. This position works with manufacturers, research organizations, education and training programs and partner organizations to coordinate efforts to assist with the integration of all aspects of innovation into manufacturing operations. The role of the project manager is to plan, execute and finalize innovation projects according to strict deadlines and within budget. This includes acquiring resources and coordinating the efforts of team members and third-party contractors or consultants in order to deliver

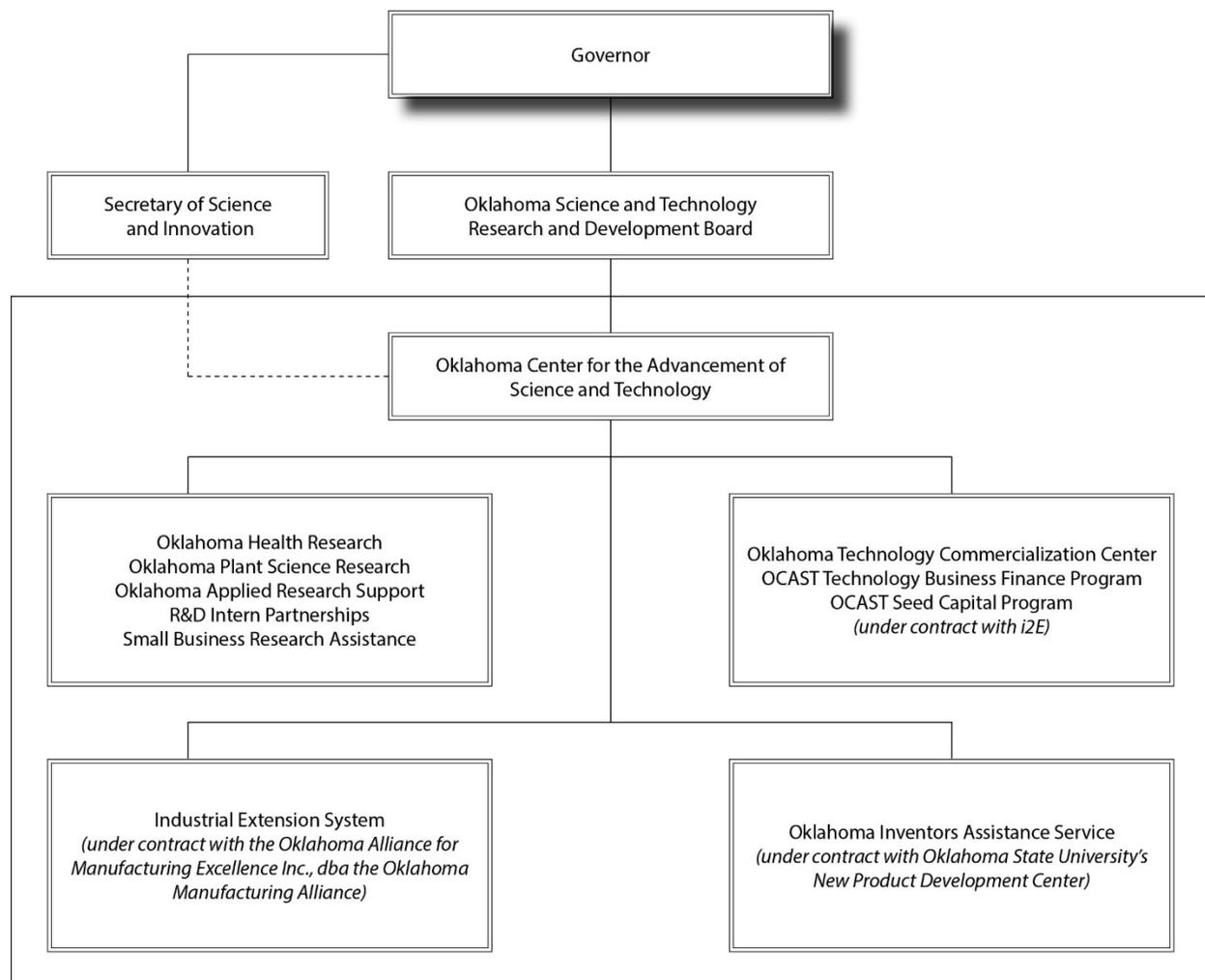
projects according to plan. In addition to defining project objectives, the project manager will also oversee quality control throughout its life cycle.

### Performance measures

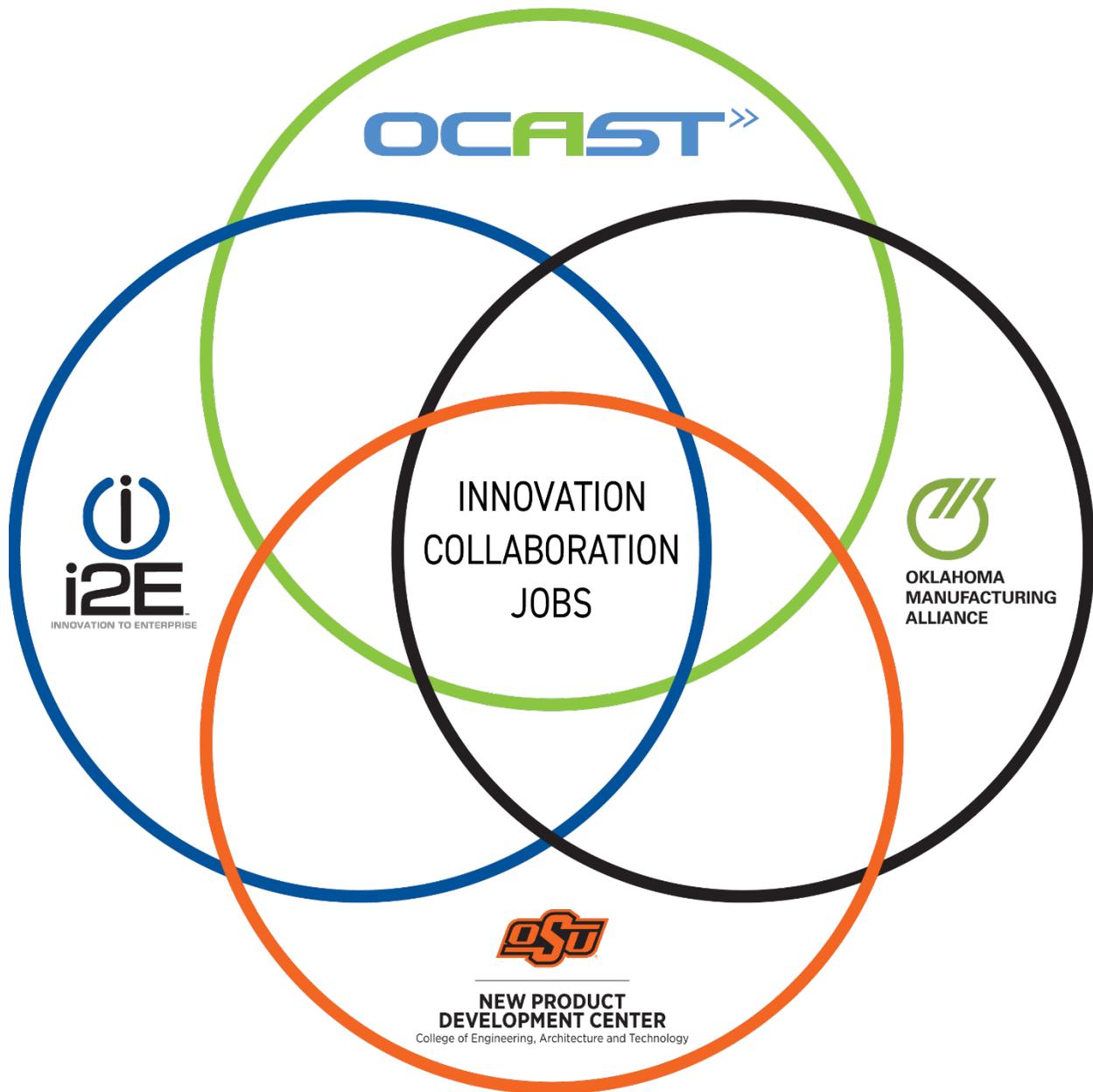
This program's measures include jobs created, cost savings, efficiency improvements, cost avoidance and capital investment.

## Governance and operations

### OCAST structure



Through its network of strategic partners, OCAST leads a continuum of services known as the Oklahoma Innovation Model (OIM) that enables and accelerates the translation of ideas from the laboratory to the marketplace. It is through the OIM that OCAST is able to accelerate innovation and grow and diversify Oklahoma's economy.



### Management philosophy and structure

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 concept 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 \$130,000 effective December 1, 2013

**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 - \$90,000

**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 - \$90,000

**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 - \$90,000

**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 - \$75,000

**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 - \$75,000

**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 photo-journalist. 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 - \$75,000

**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 - \$70,000

**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 - \$65,000

**Accountant I** – Under direct supervision, processes invoices and payroll, tracks award payments in database, troubleshoots issues within OKGrants, 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. Unclassified / \$35,000 - \$55,000

**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 - \$55,000

**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. 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 Administrative Assistant I and assistant to the executive director. Unclassified / \$35,000 - \$55,000

**Administrative assistant I (part-time)** – Shares assigned duties with office manager. Publicly greets incoming visitors and handles incoming communications and routes to the appropriate staff person. Assists staff with conference room equipment. Performs document imaging of vouchers and purchase orders, records all incoming invoices and requests for payment in the OCAST logs database. Unclassified / \$12 - \$22 per hour

Additional positions approved but not currently populated include:

Administrative assistant II	Program manager
Accountant II, III and IV	Programs officer II
Assistant director	Programs officer I
Client services manager	Senior outreach liaison
Deputy director	Senior program manager
Program coordinator I, II and III	

### 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 FY 2021:

- Office of the State Auditor and Inspector for annual audit services, in an amount not to exceed \$40,000
- Office of Attorney General for legal services, one-half time for one year, in an amount not to exceed \$62,625
- Contract with SHI and Agate Software Inc. for ongoing enhancements of the electronic application system, known as OKGrants, to support the Programs Division processes, award payment processes, data management and reporting needs in an amount not to exceed \$26,547
- Contract with Office of Management and Enterprise Services for information technology services including personal computer support, network support and support for electronic application system not to exceed \$80,000
- 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 \$905,148
- Continue contracting with Oklahoma State University to operate the Inventors Assistance Service in an amount not to exceed a base amount of \$287,152
- Continue contracting with i2E Inc. to operate the Technology Business Finance Program in an amount not to exceed the appropriated carryover funds in the amount of \$610,000, repayments, reclaims and carryover funds currently in the program as of June 30, 2020. Any reclaims and repayments received between July 1, 2019 and June 30, 2020 will be available in FY 2021
- Continue contracting with i2E Inc. to operate the Oklahoma Technology Commercialization Center in an amount not to exceed \$1,393,186
- Contract with i2E Inc. to manage the Oklahoma Seed Capital Fund. Effective July 1, 2018, the management fee for the 2018-3 Series is based on funds under management (total capital commitment plus retained earnings) 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 \$833,967 for FY 2021. These management fees will come from the FY 20201 Seed Capital Fund appropriation of \$ 3,035,239
  - Series 2007-1 of the fund is closed to new investments with its only activity consisting of monitoring existing portfolio companies and managing fund expenses. There is no management fee for Series 2007-1. The management fee for Series 2008-2 and Series 2018-3 of the fund shall be set at 2.5% of the fund balance, up to \$50 million. At the point when the fund balance exceeds \$50 million, the management fee percentage shall be reduced to 2.0% on any balances over \$50 million. As used herein, "fund balance" is defined as the sum of the following: (i) the cash balance pursuant to the Series 2008-2 and Series 2018-3 balance sheets as of each July 1st of the calendar year ("Series 2008-2 and 2018-3 Balance Sheets"), plus (ii) the value of the Series 2008-2 and Series 2018-3 investment portfolio at cost pursuant to the Series 2008-2 and 2018-3 balance sheets; plus (iii) the amount of fund receivables pursuant to the Series 2008-2 and 2018-3 balance sheets. The final dollar amount of the management fee shall be mutually agreed to by the managing member and OCAST and documented in the annual OCAST fiscal year agreement. Based upon the projected fund balance at July 1, 2018, of \$14,958,996.74 the management fee for Series 2008-2 in FY 2020 will be \$373,974.92 and the management fee for Series 2018-3 in FY 2020 will be \$547,788.52. The total management fees for the fund in FY 2021 will be \$921,763.

### Standing advisory committees

OCAST receives support and assistance from the Oklahoma Health Research, Oklahoma Plant Science Research, Oklahoma Applied Research and Small Business Research Assistance advisory committees for research-related programs. Research-related standing committees must consist of representatives of the "business, higher education and research communities" (74 O.S., Section 5060.9[a]) and at least one-third of the members of each committee must be researchers. Committees are approved annually by the board. The Seed Capital Investment advisory committee is created to assist OCAST in evaluating potential investments with the Seed Capital Revolving Fund (74 O.S., Section 5060.21).



### Oklahoma Health Research Committee

Tyrrell Conway, Ph.D.  
University of Oklahoma  
Norman

Anna Csiszar, Ph.D.  
OU Health Science Center  
Oklahoma City

Mary Beth Humphrey, M.D., Ph.D. (chair)  
OU Health Science Center  
Oklahoma City

Jerry Malayer, Ph.D.  
Oklahoma State University  
Stillwater

Gabriel Pardo, M.D.  
Oklahoma Medical Research Foundation  
Oklahoma City

H. Anne Pereira, Ph.D.  
OU Health Science Center  
Oklahoma City

Jamie Rhudy, Ph.D.  
University of Tulsa  
Tulsa

Lijun Xia, M.D., Ph.D.  
Oklahoma Medical Research Foundation  
Oklahoma City

### Oklahoma Plant Science Research Advisory Committee

Gloria Caddell, Ph.D.  
University of Central Oklahoma  
Edmond

Richard Nelson, Ph.D. (chair)  
Noble Research Institute  
Ardmore

### Oklahoma Applied Research Advisory Committee

Kenneth E. Bartels, D.V.M., M.S.  
Oklahoma State University  
Stillwater

Martha Ogilvie, Ph.D.  
OU Health Science Center  
Oklahoma City

Cornell Cross  
Apprentice Information Systems Inc.  
Tulsa

Dale Teeters, Ph.D.  
University of Tulsa  
Tulsa

David Humphrey (chair)  
Industry Consultant  
Broken Arrow

Monte Tull, Ph.D.  
University of Oklahoma (ret.)  
Norman

E. Ann Nalley, Ph.D.  
Cameron University  
Lawton

### Small Business Research Assistance Committee

Mike Callaway  
CalTech Global LLC  
Sapulpa

Dorothy Overal  
U.S. Small Business Administration  
Oklahoma City

Rafal Farjo, Ph.D.  
Charlesson LLC  
Oklahoma City

Trevor Snyder, Ph.D.  
VADovations Inc.  
Oklahoma City

Terry Golding, Ph.D. (chair)  
Amethyst Research Inc.  
Ardmore

Brien Thorstenberg  
Tulsa Regional Chamber  
Tulsa

Chuck Gray  
Frontier Electronic Systems Inc.  
Stillwater



## Seed Capital Investment Committee

Jeff Moen, J.D.  
Noble Research Institute  
Ardmore

Sherri Wise (chair)  
Osteopathic Founders Foundation  
Tulsa

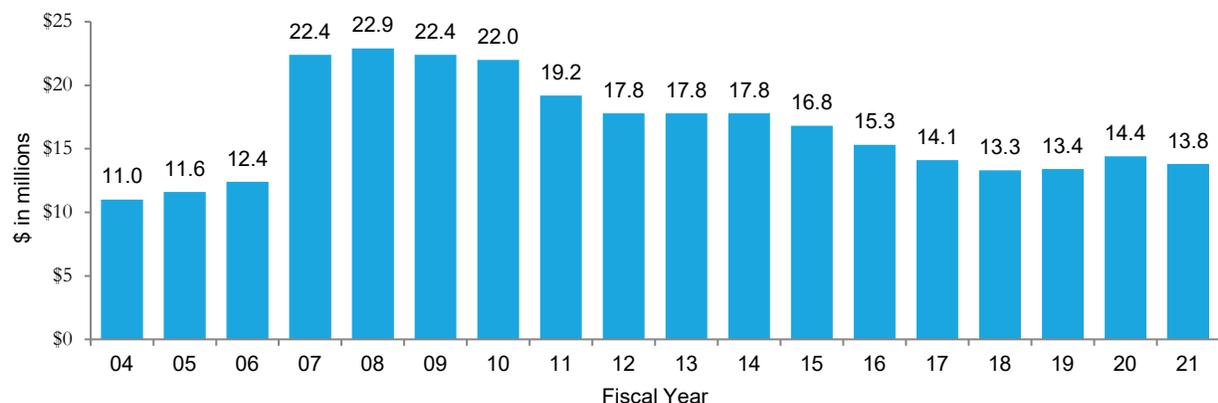
James Wheeler, Ph.D.  
University of Oklahoma  
Norman

### 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 1922 appropriates \$13,796,542 to OCAST. A portion of OCAST's annual state appropriation, \$5,518,617, is transferred to the Research Support Revolving Fund for operation of OCAST award programs, and \$3,035,239 is transferred to the Seed Capital Revolving Fund for FY 2021. 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.

### Appropriation history



## Planning

### 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.

Oklahoma surpasses most states on total investment in research and development (R&D) activities, investing \$33.5 million in R&D for FY 2016 (amount reflects OCAST and other state agencies such as Department of Transportation). Oklahoma ranked 11th among all states and Washington D.C., both in total R&D expenditures and on a per capita basis (\$8.63). The National Science Foundation (NSF)

reported the only High Science, Engineering and High Technology venture deals were secured by i2E including those funded by the Seed Capital Fund.

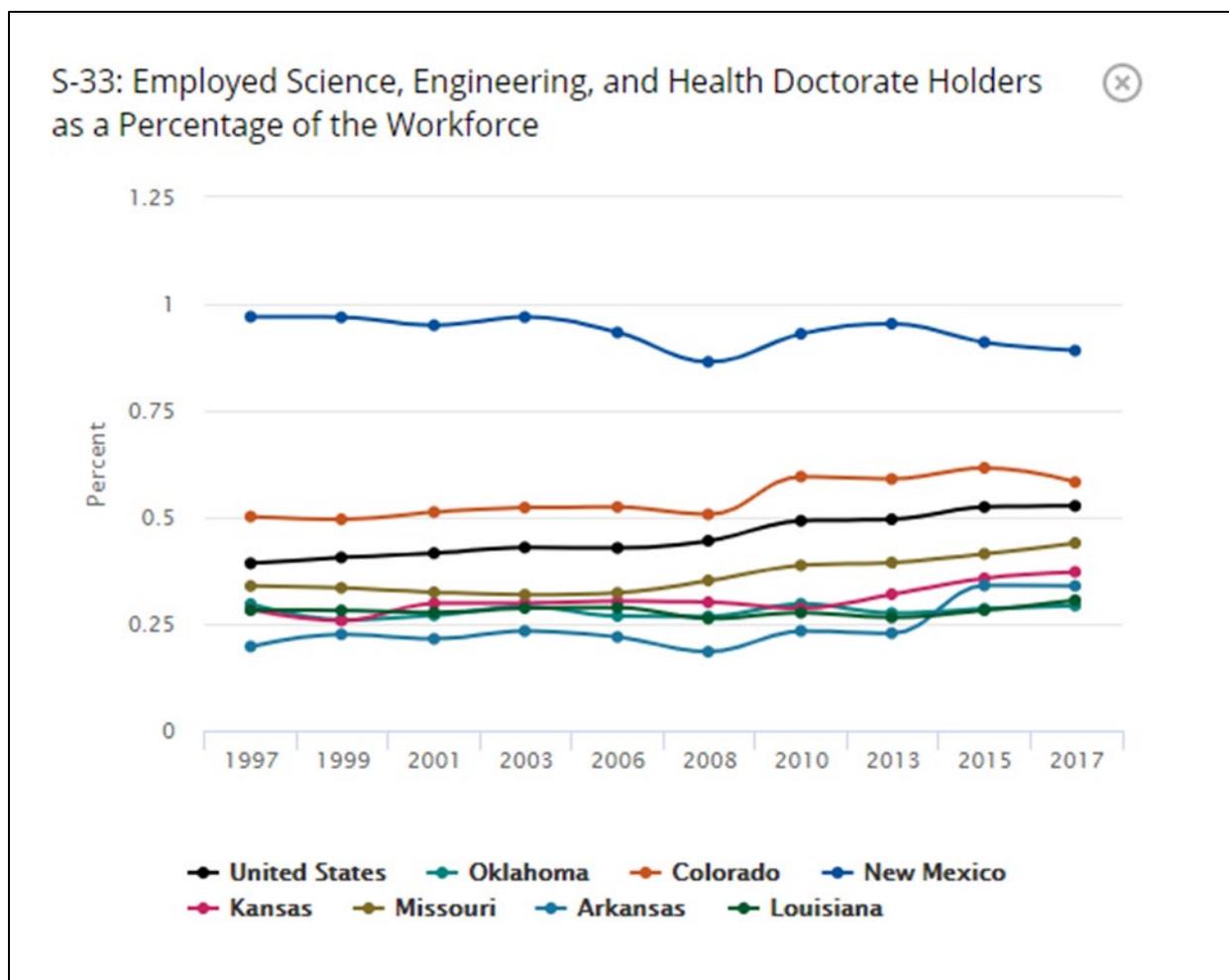
Oklahoma R&D performance, as a share of state GDP, lags most states. At 0.62% of state GDP, Oklahoma ranked 46th nationally, higher only than Wyoming, Louisiana, Alaska and Arkansas (and tied with South Dakota). Among its surrounding states, Oklahoma out performed only Arkansas which ranked 48th.

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 532 utility patents were issued in the state in 2015. Relative to its surrounding states and the U.S. as a whole, Oklahoma's patent activity is lagging; all other states analyzed experienced an increase in patents over the time 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 Partnership 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](#): OCAST provides the example for state government-supported grants and funding programs (pp 252-253)





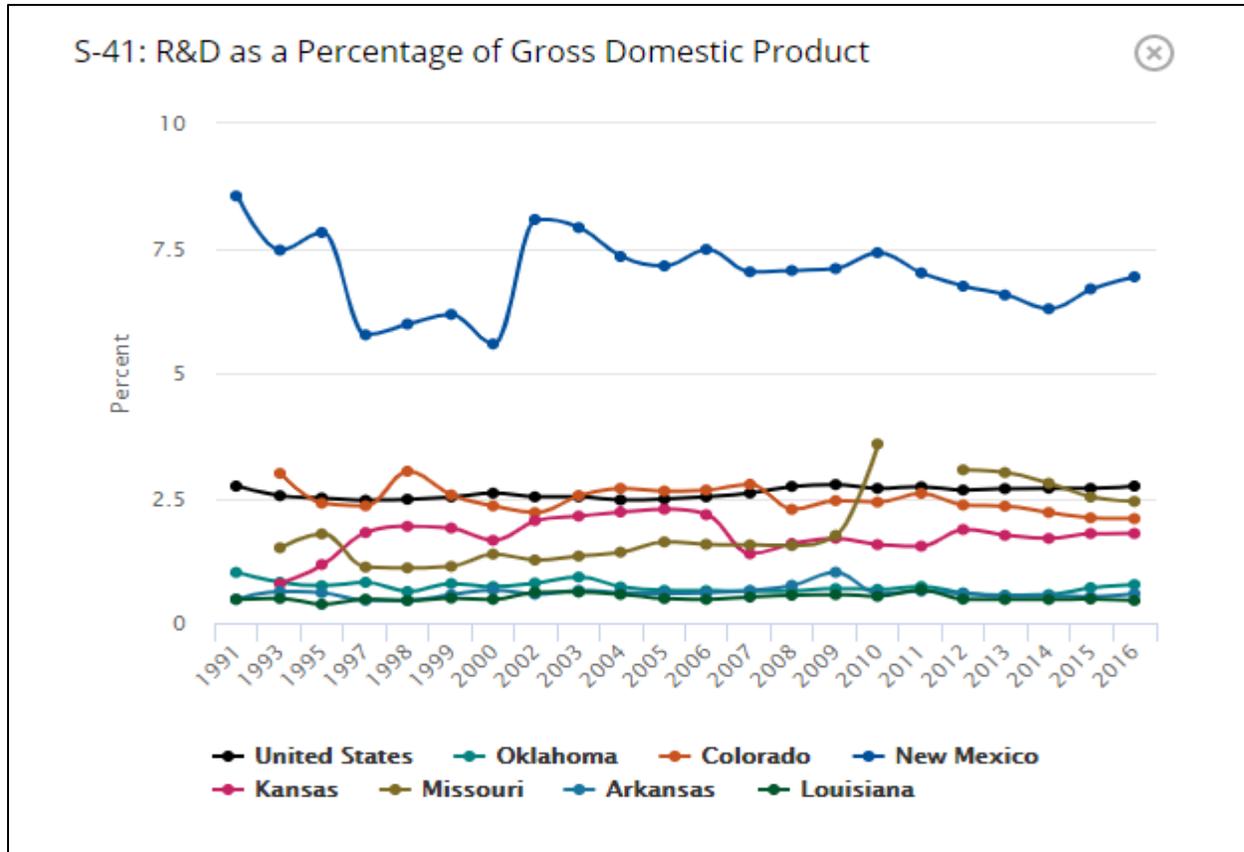
2016:

- United States: 0.53%
- Oklahoma: 0.29%
- Colorado: 0.58%
- New Mexico: 0.89%
- Kansas: 0.37%
- Missouri: 0.44%
- Arkansas: 0.34%
- Louisiana: 0.31%

Notes: Employed Science, Engineering and Health doctorate holders are classified by employment location. Workforce represents the employed component of the civilian labor force and is reported as annual data not seasonally adjusted. The national workforce total reported for the United States includes Puerto Rico.

Source: National Center for Science and Engineering Statistics, National Science Foundation, Survey of Doctorate Recipients (various years), data as of February 2019; U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics (various years), data as of March 2019.



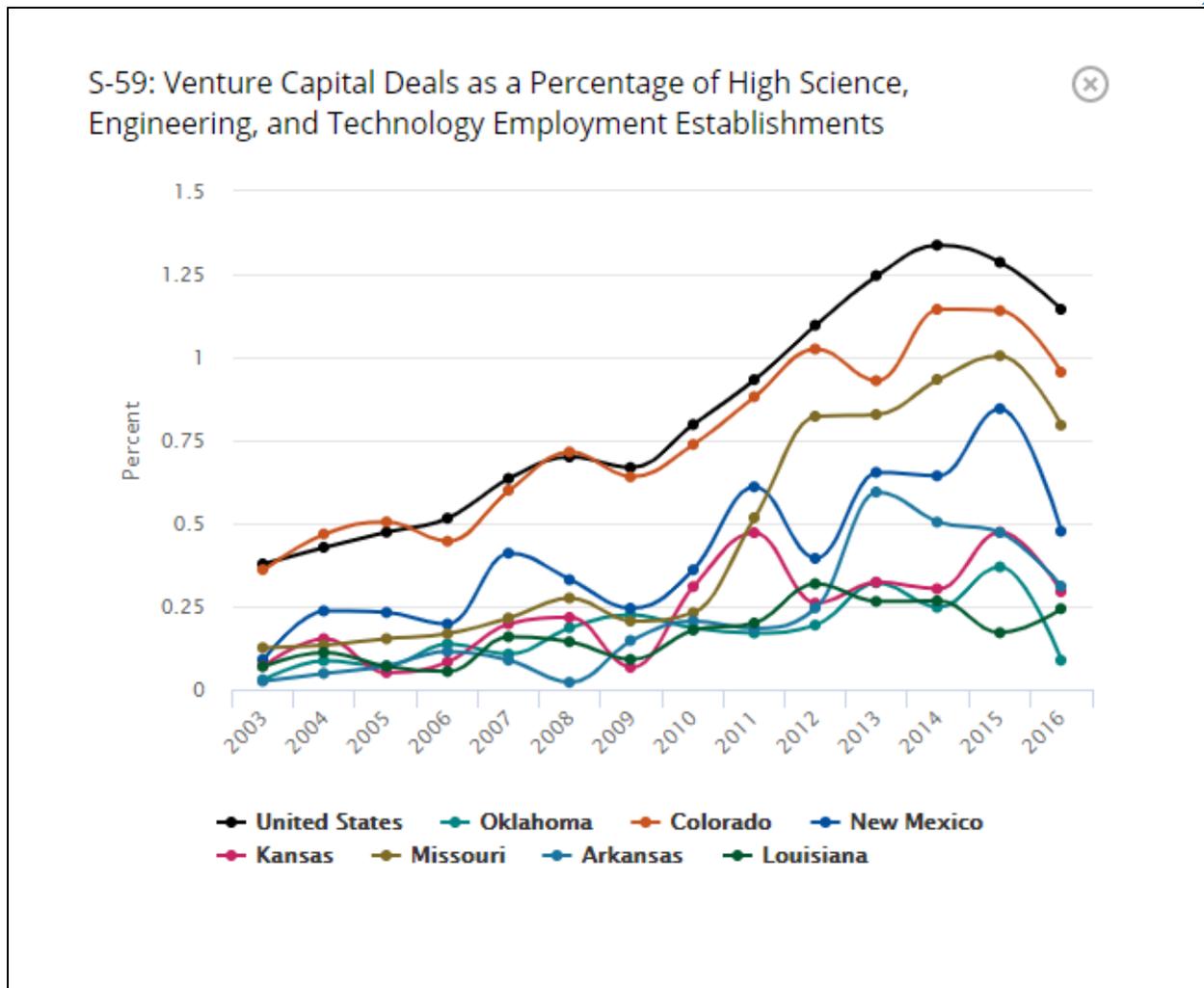


2016:

- United States: 2.74%
- Oklahoma: 0.77%
- Colorado: 2.09%
- New Mexico: 6.93%
- Kansas: 1.79%
- Missouri: 2.43%
- Arkansas: 0.58%
- Louisiana: 0.45%

Notes: R&D includes research and development performed by federal agencies, businesses, universities, other nonprofit organizations, federally funded research and development centers, and state agencies. U.S. total R&D reported here includes U.S. territories, as well as R&D for which the location could not be determined. The national GDP total for the United States includes Puerto Rico for all years in which data are available.

Source: National Center for Science and Engineering Statistics, National Science Foundation, National Patterns of R&D Resources (various years), data as of March 2019; U.S. Bureau of Economic Analysis, Gross Domestic Product data (various years), data as of May 2019; Government of Puerto Rico, Office of the Governor, Gross Domestic Product data (various years), data as of May 2019.



2016:

- United States: 1.14%
- Oklahoma: 0.09%
- Colorado: 0.96%
- New Mexico: 0.48%
- Kansas: 0.29%
- Missouri: 0.80%
- Arkansas: 0.31%
- Louisiana: 0.24%

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 as of October 2018; U.S. Census Bureau, special tabulations of the Business Information Tracking Series (various years), data as of April 2019.

### Financial planning

OCAST is required by statute to “recommend an appropriate level (of funding for OCAST’s programs) . . . that will make these programs nationally competitive with those of other states and to adopt . . . a

threshold funding level for each of the programs . . . that is great enough to have a significant impact and carry out the intent of this act.” (74 O.S., Section 5060.22)

After the governor and legislature approve the OCAST appropriation, staff and board members develop a business plan for the application of available resources, abiding by the directives and constraints on spending articulated in the signed appropriation bills. Unless established otherwise by the board, the threshold funding levels are the FY 2021 appropriation levels shown in this plan (see Five-Year Appropriation History by Program below).

### Program and service planning

OCAST develops and initiates new programs and services by building consensus among constituents and stakeholders, which may include standing and ad hoc program advisory committees, higher education and Career-Tech representatives, nonprofit organizations, businesses, other agencies and state leaders. Any new initiatives are approved by the relevant standing advisory committee and the OSTRaD Board of Directors, when appropriate, prior to implementation. OCAST programs are mandated through legislation and in response to legislative intent.

When there is evidence of a need or opportunity for a new OCAST program consistent with OCAST’s mission, staff reviews relevant statutes and rules and subsequently consults with the state Office of the Attorney General to determine whether OCAST’s general authorization addresses the need/opportunity. If so, a recommendation is submitted to the OSTRaD board for consideration and approval.

Program specifications and funding opportunity solicitations for each new program and modification to those documents for existing programs are designed by OCAST staff working in consultation with standing and/or ad hoc advisory committees and the Office of the Attorney General. Appropriate state and national experts are frequently consulted in this phase of program design or modification. Proposed new program specifications and any proposed modifications to existing program specifications along with any proposed changes to funding opportunity solicitations are forwarded to a number of stakeholders and clients for review and input and are posted on the OCAST website for public comment. Any feedback received is addressed prior to making changes to solicitations or taking proposed new program specifications or any modifications to existing specifications to the OSTRaD Board of Directors for consideration and approval.

## Five-year appropriation history

Activities	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
General Administration	\$725,000	\$718,500	\$670,151	\$689,939	\$649,229
Program Services + IT Support	1,243,305	1,214,564	1,354,799	1,019,189	900,487
Health Research	2,751,312	2,502,809	2,352,517	2,244,700	2,450,669
Applied Research	2,629,902	2,502,810	2,352,518	2,244,705	2,450,669
Intern Partnerships	403,985	403,985	430,000	568,081	400,448
Plant Science Research	0	0	0	648,526	733,494
Industrial Extension Services	997,745	942,862	942,862	942,862	905,148
Technology Commercialization	1,527,543	1,493,186	1,493,186	1,493,186	1,393,186
Small Business Research Assistance	100,000	80,000	250,000	—	250,000
Inventors Assistance	331,528	299,117	299,117	299,117	287,152
Technology Information Services	295,589	242,574	278,329	287,645	340,821
Technology Business Finance Program	0	0	0	1,000,000	0
Seed Capital Fund	3,104,231	2,933,448	2,933,448	2,933,448	3,035,239
<b>Total funding</b>	<b>\$14,110,140</b>	<b>\$13,333,855</b>	<b>\$13,356,927</b>	<b>\$14,371,398</b>	<b>\$13,796,542</b>
General Administration %	5.14%	5.39%	5.02%	4.80%	4.71%

## Appropriation and distribution

### Sources:

Revenue for OCAST obligations:		
A) Projected FY 2020 cash balance	\$	1,748,317
B) OTCC contract balance	\$	100,000
C) FY 2021 state appropriated revenues		13,796,542
<b>Total sources (A-D)</b>		<b>\$15,644,859</b>

### Uses:

Projected expenditures:		
A) Administration		649,229
B) Technology Information Services		340,821
C) Program Services + IT		900,487
D) Programs:		
Health Research		3,160,500
Applied Research		1,740,838
Intern Partnership Program		400,448
Plant Science Research		733,494
Inventors Assistance		287,152
Small Business Research Assistance		250,000
Industrial Extension Service		905,148
Technology Commercialization		1,393,186
Technology Business Finance Program		505,410
Seed Capital Fund		3,035,239
<b>Total uses (A-D)</b>		<b>\$14,301,952</b>
<b>Estimated cash balance 6/30/2021</b>		<b>\$1,342,907</b>

### Out-year program obligations

<b>For FY 2022</b>	3,254,321	
<b>For FY 2023</b>	1,029,084	
Total out-year program obligations		\$4,283,405
Covered by cash currently available (excluding \$500,000 contingency funds)		\$842,907
Future appropriated funds needed to cover out-year obligations*		\$3,440,498

*\*This methodology is standard practice in OCAST award structure of first-year contracts plus two out-year contracts to complete research milestones and to comply with the state purchasing requirements.*



**OKLAHOMA**  
Center for the  
Advancement of  
Science and Technology

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