



# **State of Oklahoma**

# **Incentive Evaluation Commission**

## **Draft Aerospace Employer & Employee Tax Credits Evaluation**

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# **Key Findings and Recommendations**



## Overview

In the early part of the 21<sup>st</sup> century, Oklahoma's aerospace industry increasingly encountered a lack of qualified applicants for engineering positions, posing a significant barrier to entry and an impediment to growth. In response to this issue, effective January 1, 2009, the State enacted a package of tax incentives designed to "address the critical shortage of engineering and technical talent facing the Oklahoma aerospace industry," including a tax credit for compensation paid to by aerospace employers as well as a tax credit for aerospace employees.<sup>1</sup>

**Recommendation: The project team recommends retaining the State's tax credits for aerospace engineering employers and employees.**

### Key Findings Pertaining to Employer and Employee Tax Credits

- **According to industry accounts, the State of Oklahoma still has a "skills gap"<sup>2</sup> when it comes to filling aerospace engineering positions – but data show an increase in related degrees conferred within the state.** Industry representatives indicated they must often look outside of Oklahoma to fill positions due to a continuing shortage of aerospace engineering graduates and employees in the state. There is some evidence that overall numbers are improving, as data shows that degrees conferred at the State's public institutions in aerospace-related fields of study trended upward by a compound annual growth rate (CAGR) of 4.7 percent between the 2014-2015 and 2017-2018 academic years (the most recent year for which data is available).
- **The introduction of the tax credits may have helped increase aerospace engineering employment in the state.** Between 1999 and 2008 (the year prior to when Oklahoma's incentives began to be offered), employment declined by a CAGR of -7.5 percent. Following the implementation of the credits in 2009 (in conjunction with the end of the Great Recession), employment has increased by a CAGR of 14.2 percent.

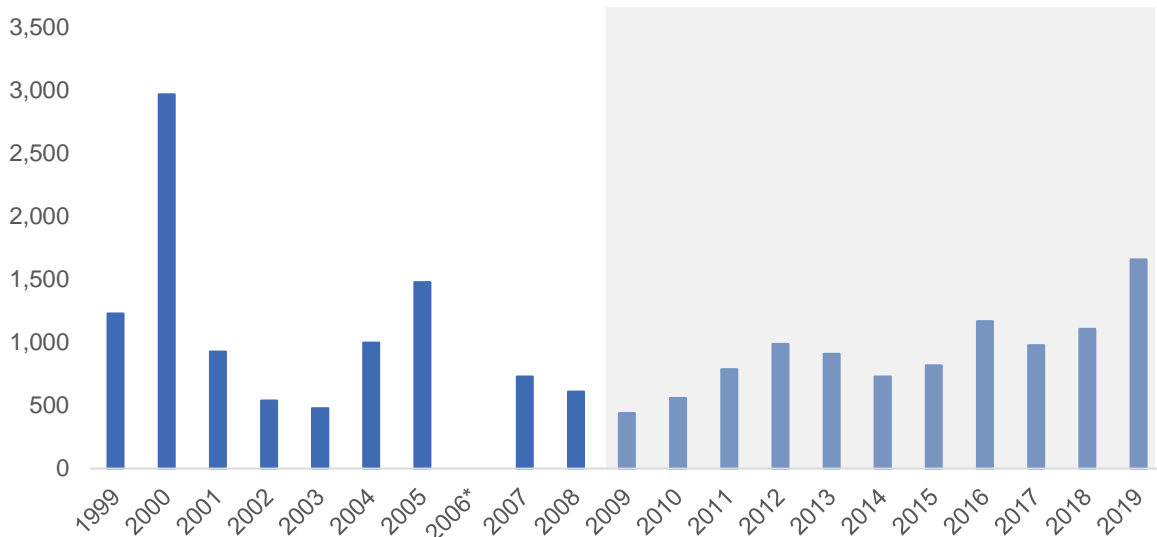
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<sup>1</sup> It is important to note that the focus of this evaluation is on (1) the credit for qualified employers for compensation paid to qualified employees and (2) the credit for qualified employees. During initial discussions with the Tax Commission, it was determined that a third credit, for tuition reimbursement for aerospace employers, is not in use. For that reason, the project team suggested – and the Commission approved – exempting it from the evaluation process so that the focus of the analysis can be on those programs which are actively in use by the state's aerospace engineers and employers.

<sup>2</sup> The "skills gap" defines a fundamental mismatch between the skills that employers rely upon in their employees, and the skills that job seekers possess.



**Figure 1: Aerospace Engineering Employees in Oklahoma, 1999-2019**



Source: BLS Occupational Employment Statistics data for Aerospace Engineers (SOC code 172011)

\* No data reported for 2006

Note: shaded area represents the existence of Oklahoma's incentives

- **Average annual growth in aerospace engineering pay lags national growth as well as all Oklahoma occupations, generally.** The average wage for aerospace engineers in Oklahoma is well above the state's average wage, yet it increased by a CAGR of 1.3 percent between 2010 and 2019 – a rate of growth that lags the national rate for the occupation (2.2 percent) and the rate of Oklahoma wages for all occupations (2.4 percent).
- **The total economic activity associated with the tax credits substantially exceeds the cost to the State each year.** For each \$1 paid by the State between 2013 and 2017, the economic output generated ranged from \$72 to \$89 annually. In 2017, the most recent year with available data, total economic activity associated with the 2,384 jobs for which claims were made reached \$1.6 billion. Indirect and induced activity supported an additional 2,567 jobs – more than one additional job for each job supported by the incentive. Total employment supported in 2017 reached 4,951 jobs.
- **Oklahoma's tax credits are unique among states.** No other state was found to have a directly comparable program, and the credits appear to be valuable to industry representatives who recruit aerospace engineers.

### Key Findings Pertaining to Employer Tax Credits

- **While the employer tax credit is being claimed by more employers, the cost to the State is declining.** Between 2013 and 2017, the number of employer returns claiming the credit increased by a CAGR of 21.5 percent, while the amount used to reduce tax liability (the foregone revenue to the State) trended downward by a CAGR of -27.4 percent. On a per-return basis, the average amount used to reduce tax liability is approximately \$50,000 over the time period.



**Table 1: Use of Aerospace Employer Tax Credits, 2013-2017**

Tax Year	Number of Returns	Total Amount Claimed	Estimated Employees Claimed*	Amount Used to Reduce Tax Liability	Average Amount Used to Reduce Tax Liability / Return
2013	22	\$2,595,665	280-560	\$1,133,449	\$51,520
2014	36	\$2,879,984	310-630	\$2,001,145	\$55,587
2015	33	\$3,783,321	430-850	\$2,908,642	\$88,141
2016	37	\$4,743,861	550-1,100	\$1,790,880	\$48,402
2017	48	\$484,984	50-110	\$314,861	\$6,560
Avg.	35	\$2,897,563	320-640	\$1,629,795	\$50,042

Source: Oklahoma Tax Commission; PFM analysis

\* Calculation uses the average wage per OES data referenced in the preceding chapter; ranges are based on 10% credit for in-state degree and 5% for out-of-state degree. Estimates have been rounded.

### Key Findings Pertaining to Employee Tax Credits

- **Use of the employee tax credit has increased – and the cost to the State has grown commensurately.** The incentive’s use grew between 2013 and 2017 – both in terms of the number of returns (by a CAGR of 15.3 percent) and the amount used to reduce tax liability (by a CAGR of 15.2 percent). The average amount used to reduce tax liability has generally remained constant, at just over \$3,100.

**Table 2: Use of Tax Credits for Aerospace Employees, 2013-2017**

Tax Year	Number of Returns	Unused Credit Carried Over	Credit Established, Current Tax Year	Total Claimed	Amount Used to Reduce Tax Liability	Amount Used to Reduce Tax Liability / Return
2013	1349	N/A	N/A	\$7,739,763	\$4,206,737	\$3,118
2014	1,501	\$3,820,064	\$6,550,532	\$10,866,070	\$5,067,377	\$3,376
2015	1,999	\$4,956,306	\$8,787,471	\$14,017,600	\$6,288,098	\$3,146
2016	2,283	\$6,324,653	\$9,665,287	\$16,185,075	\$7,164,341	\$3,138
2017	2,384	\$7,203,876	\$10,182,183	\$17,585,381	\$7,400,323	\$3,104
Avg.	1,903	\$5,576,225	\$8,796,368	\$13,278,778	\$6,025,375	\$3,166

Source: Oklahoma Tax Commission

- **The incentive’s Accreditation Board for Engineering and Technology (ABET) accreditation requirement has led to confusion among some employees claiming the credit.** In recent years, the employee tax credit has faced scrutiny, as some employees learned they do not qualify for the credit based on the ABET accreditation standards – even after their applications have been approved. This is because the Oklahoma Tax Commission (OTC) Compliance Division regularly conducts discovery projects related to the tax programs it audits, and through this process it has identified employees that it believes mistakenly claimed and received the credit.

### Recommendations Pertaining to Employer Tax Credits

- **Enhance employer reporting to show overlap with the State’s Quality Jobs incentives.** While this recommendation was made as part of the 2016 evaluation of this incentive, it has not been adopted by the OTC. There is possible overlap among the two incentives exists, but the current data does not support an analysis of this overlap. Based on discussions with industry representatives, the project team is aware that at least one major company – the Boeing Company – that participates in both programs, but detailed data for analysis is not available.



## Recommendations Pertaining to Employee Tax Credits

- **Consider broadening the employee tax credit incentive eligibility.** As currently defined in statute, the employee tax credit is limited to employees who have been awarded an undergraduate or graduate degree from a qualified program accredited by the Engineering Accreditation Commission of ABET. The employee must not have been employed in the aerospace sector in Oklahoma immediately preceding employment with the employer. The State should consider these restrictions in conjunction with statewide economic development goals, as well as the goals of the incentive itself. It may be reasonable to loosen the ABET accreditation requirements to allow graduates of non-ABET accredited programs to qualify. It may also be reasonable to extend the credit beyond recent graduates to draw more experienced candidates to the State. Both measures may broaden the pool of potential aerospace engineering candidates and, as a result, increase the State's ability to recruit and retain industry talent.
- **Clarify eligibility requirements in statute.** The State should seek to alleviate, in state law, the confusion associated with eligibility for this incentive, regardless of whether the preceding recommendations are implemented.



# Introduction





## Incentive Evaluation Commission Overview

In 2015, HB 2182 established the Oklahoma Incentive Evaluation Commission (the Commission). It requires the Commission to conduct evaluations of all qualified state incentives over a four-year timeframe. Between 2016 and 2019, the Commission conducted more than 40 evaluations.

The State's Tax Credits for Aerospace Engineers and Employers, first evaluated in 2016, are among nine programs scheduled for an updated review by the Commission in 2020. Based on this evaluation and their collective judgment, the Commission will make recommendations to the Governor and the Legislature related to these incentives.

## 2016 Evaluation: Key Findings and Recommendations

Significant findings from the 2016 evaluation of these programs are displayed in the following table:

**Table 3: Summary of Findings, 2016 Evaluation**

Fiscal and Economic Impact	<p>Fiscal Impact: Between 2010 and 2014, aerospace employers and employees claimed a total of \$18.4 million in credits – the amount of foregone revenue for to the State.</p> <p>Economic Impact: Between 2010 and 2014, the employer and employee tax credits resulted in \$4.2 billion in economic output; \$878.3 million in labor income, nearly 12,800 jobs and \$46.3 million in State tax revenue.</p>
Adequate Protections for Future Fiscal Impact?	The various benefit limitations, coupled with the fact that these credits are neither transferable nor refundable and have a limited (5 year) carry-forward provides adequate protection against significant, unanticipated fiscal impact.
Effective Administration?	Additional reporting by employers that shows the overlap with the Quality Jobs and Ad Valorem programs is required.
Achieving Its Goals?	Overall, the aerospace industry in the state is growing and the number of aerospace engineers employed outperforms other types of engineering jobs. While the data on decreasing engineering job openings is inconclusive (perhaps for technical reasons), overall, the employer and employee incentives seem to be an efficient part of growing a key Oklahoma industry.
Changes to Improve Future Evaluation	Enhance employer reporting to show the overlap with Quality Jobs incentives.

The project team recommended in 2016 that the program be retained. The Commission voted 5-0 to approve the project team's recommendation, and the incentive is still in place. Further, SB 120 (2017) extended the incentive's sunset date from January 1, 2018 to January 1, 2026.

## 2020 Criteria for Evaluation

The provisions of HB 2182 require that criteria specific to each incentive be used for the evaluation. A key factor in evaluating the effectiveness of incentive programs is to determine whether they are meeting the stated goals as established in state statute or legislation. In the case of this tax credit, the specific goal included in legislation



is to “address the critical shortage of engineering and technical talent facing the Oklahoma aerospace industry.”<sup>3</sup>

Additionally, to assist in a determination of program effectiveness, the Commission has adopted the following criteria:

- Number and dollar value of approved credits by year of program;
- Employment growth in state aerospace industry – comparison to period prior to the credit and comparable states;
- Payroll growth in state aerospace industry – comparison to period prior to the credit and comparable states;
- Change in measures of the ‘skills gap’ for engineering and technical skills in the aerospace industry;
- Use with other related State business incentives;
- Return on investment.

### **2020 Evaluation Approach**

To conduct its 2020 review of these tax credits, the project team conducted the following activities:

- Submitted a data request to the Oklahoma Tax Commission (OTC);
- Reviewed and analyzed OTC-provided data;
- Completed subject matter expert/internal stakeholder interviews with representatives from the OTC, Department of Commerce and Oklahoma Aeronautics Commission;
- In collaboration with the Oklahoma City, Tulsa and State Chambers of Commerce, conducted external stakeholder interviews with industry representatives;
- Benchmarked Oklahoma to other states.

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<sup>3</sup> Per HB 3239 of the 51<sup>st</sup> Oklahoma Legislature. Available at <http://okhouse.gov/Documents/2008SessionInReview.pdf>



# Industry Background



## Oklahoma Aerospace Background and History

Oklahoma's aerospace and aviation industries date back to the early 20<sup>th</sup> century, when Clyde Cessna began testing aircraft in the state. According to historians at the University of Tulsa, following World War I, two airlines were founded in the state (both of which were eventually purchased by American Airlines). During World War II, two large industrial facilities were built in the state to manufacture bombers for the U.S. Army Airforce. One of the facilities became Tinker Air Force Base, the largest aircraft maintenance complex and military-aviation logistics center in the world.<sup>4</sup>

Aerospace and aviation remain important to the State of Oklahoma's economy. According to a study conducted by the Oklahoma Aeronautics Commission in 2015-2017, the state's airports, off-airport aviation and aerospace businesses and military aviation collectively produce almost \$44 billion of annual economic activity and support 206,000 jobs, with annual payroll of nearly \$12 billion.<sup>5</sup>

## The Aerospace Engineering Skills Gap

The "skills gap" defines a fundamental mismatch between the skills that employers rely upon in their employees, and the skills that job seekers possess. This mismatch makes it difficult for individuals to find jobs and for employers to find appropriately trained workers.<sup>6</sup>

The skills gap related to science, technology, engineering and math (STEM) professions is well-documented. According to one report by Randstad U.S., as of 2016, the U.S. had roughly 3.0 million more STEM jobs than it had workers to fill them.<sup>7</sup> More recently, a study by Deloitte and the Manufacturing Institute found that there are an estimated 3.4 million STEM jobs to be filled from 2015 to 2025 – and only 1.4 million qualified workers to do so.<sup>8</sup> According to an analysis by the Oklahoma State Regents for Higher Education, "Oklahoma is still in need of more traditional STEM graduates." The study found that one-year retention rates of STEM degree holders at all degree levels are lower than those rates for all fields combined.<sup>9</sup>

The preceding findings relate generally to STEM professions, but the challenges apply specifically to the aerospace industry. According to the Aerospace Industries Association (AIA), "the one-two punch of recent graduates entering the workforce unprepared for current demands and the looming retirement of large numbers of baby boomers also undermines the ability of businesses to grow and compete. The AIA also cited a 2005 survey by the National Association of Manufacturers (NAM) in which 65 percent of respondents reported a shortage of scientists and engineers, with a more acute problem in industries such as aerospace and defense."<sup>10</sup>

The AIA also found that 39 percent of aerospace companies predict an "extreme" impact on their business growth caused by the STEM labor shortage. The skills gap is expected to increase further, as current aerospace employees retire. In 2015, 18 percent of all U.S. aerospace engineers and 24 percent of all aerospace manufacturing employees were eligible for retirement. It was predicted that 41 percent of skilled tradesmen in

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<sup>4</sup> The University of Tulsa Department of Special Collections and University Archives, "The Rise of the Aerospace and Aviation Industries in Oklahoma," (February 18, 2013). Available at <http://orgs.utulsa.edu/spcol/?p=2798>

<sup>5</sup> Oklahoma Aeronautics Commission, "Oklahoma Aviation and Aerospace Economic Impact Study: Executive Summary," (June 4, 2018). Available at <https://oac.ok.gov/resources/publications/oklahoma-aviation-aerospace-economic-impact-study-executive-summary>

<sup>6</sup> The Brookings Institution, "Understanding the Skills Gap – and What Employers Can Do About It," (December 6, 2019). Available at <https://www.brookings.edu/research/understanding-the-skills-gap-and-what-employers-can-do-about-it/>

<sup>7</sup> Randstad U.S., "Employers Must Redefine STEM to Attract Future Talent, According to New Randstad U.S. Data," (August 2017). Available at <https://rlc.randstadusa.com/press-room/press-releases/employers-must-redefine-stem-to-attract-future-talent-according-to-new-randstad-us-data>

<sup>8</sup> U.S. News and World Report, "Bridging the STEM Skills Gap Involves Both Education and Industry Commitments," (July 9, 2018). Available at <https://www.usnews.com/news/stem-solutions/articles/2018-07-09/commentary-industry-education-needed-to-bridge-stem-skills-gap>

<sup>9</sup> Oklahoma State Regents for Higher Education, "Employment Outcomes Report, 2018," (June 27, 2019). Available at <https://www.okhighered.org/studies-reports/employment-outcomes/employrpt2018.pdf>

<sup>10</sup> AIA, "What Every Candidate Should Know About the Aerospace Workforce and STEM," (June 2016). Available at [https://www.aia-aerospace.org/wp-content/uploads/2016/06/AIA\\_Campaign\\_Papers\\_Workforce.pdf](https://www.aia-aerospace.org/wp-content/uploads/2016/06/AIA_Campaign_Papers_Workforce.pdf)

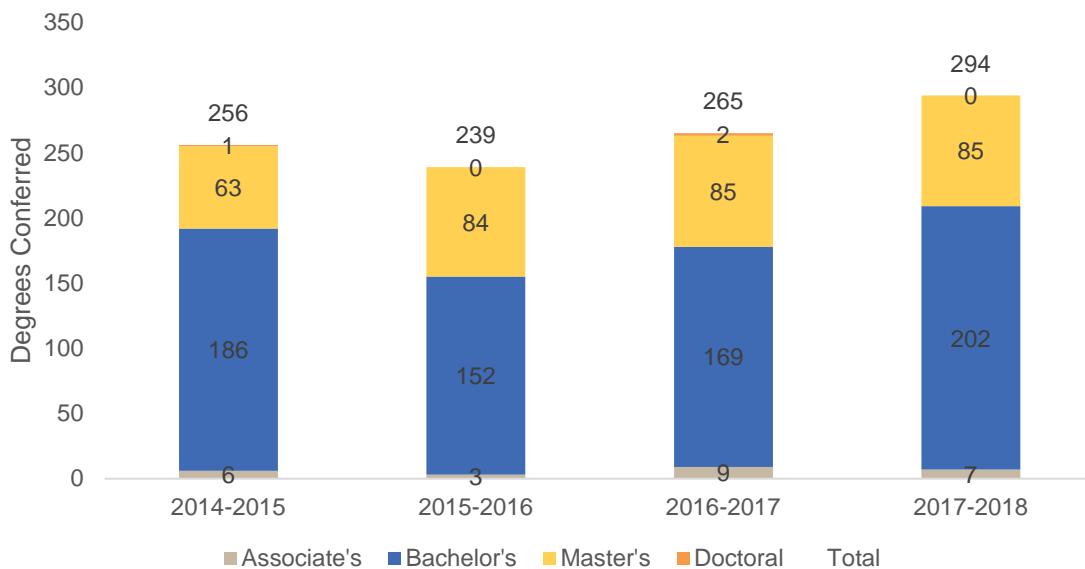


the aerospace industry would retire by 2017. At the same time, only 1.5 percent of the nation's 25- to 34-year-olds has a science degree, putting the U.S. in the bottom third of all Organization for Economic Cooperation and Development (OECD) countries.<sup>11</sup>

As a proxy for measuring how Oklahoma has fared with closing the skills gap, PwC releases annual aerospace manufacturing attractiveness rankings by state. One of the categories considered in the rankings is labor, including each state's labor force; basic, skilled and advanced education; and union flexibility (with skilled and advanced education accounting for 80 percent of the weighted total). Oklahoma's rank within the category in the 2017 study was 46th; in 2018 and 2019, it was 45th. While a slight improvement, Oklahoma remains near the bottom among states in this ranking.<sup>12</sup> This issue was echoed in interviews with industry representatives, who indicated there is still a shortage of aerospace engineering graduates and employees in the state. As a result, they must look outside of Oklahoma when offering internships and filling long-term positions.

Despite these observations and the Oklahoma State Regents for Higher Education finding that Oklahoma is still in need of more traditional STEM graduates, data shows that, at least in recent history, the number of degrees conferred at the state's public institutions in aerospace-related fields of study is trending upward. Across all degree levels, total degrees conferred have increased by a CAGR of 4.7 percent. Bachelor's degrees account for the majority, representing between 64 and 73 percent of all degrees conferred, depending on the year. Master's degrees account for an additional 25 to 35 percent of the total.

**Figure 2: Degrees Conferred at Oklahoma Public Institutions, Aerospace-Related Fields of Study\***



Source: Oklahoma State Regents for Higher Education

\* Fields of study include Aerospace, Aeronautical and Astronautical/Space Engineering; Aeronautics/Aviation/Aerospace Science and Technology, General; and Aeronautical/Aerospace Engineering Technology/Technician

<sup>11</sup> Ibid.

<sup>12</sup> PwC, "Aerospace Manufacturing Attractiveness Rankings," (2019). Available at <https://www.pwc.com/us/en/industrial-products/publications/assets/pwc-aerospace-manufacturing-attractiveness-rankings-2019.pdf>



## Aerospace Engineering Employment and Pay

According to the U.S. Department of Labor, Bureau of Labor Statistics (BLS),<sup>13</sup> aerospace engineers primarily design aircraft, spacecraft, satellites and missiles, and test prototypes to ensure they function according to design. Their duties typically include:

- Direct and coordinate the design, manufacture, and testing of aircraft and aerospace products;
- Assess proposals for projects to determine if they are technically and financially feasible;
- Determine if proposed projects will result in safe operations that meet the defined goals;
- Evaluate designs to see that the products meet engineering principles, customer requirements, and environmental regulations;
- Develop acceptance criteria for design methods, quality standards, sustainment after delivery, and completion dates;
- Ensure that projects meet quality standards;
- Inspect malfunctioning or damaged products to identify sources of problems and possible solutions.

There were an estimated 67,200 aerospace engineering jobs in the U.S. in 2018. Aerospace engineers are employed in industries where workers design or build aircraft, missiles, systems for national defense, or spacecraft. They work primarily for firms that engage in manufacturing, analysis and design, research and development, and for the federal government.

The largest employment sectors for aerospace engineers are aerospace product and parts manufacturing (35 percent); federal government, excluding postal service (15 percent); engineering services (15 percent); navigational, measuring, electromedical and control instruments manufacturing (10 percent); and research and development in the physical, engineering and life sciences (9 percent).

Employment of aerospace engineers is projected to grow two percent from 2018 to 2028, slower than the average for all occupations. According to the BLS, aircraft are being redesigned to cause less noise pollution and have better fuel efficiency, which will help sustain demand for research and development. Also, new developments in small satellites have greater commercial viability. Growing interest in unmanned aerial systems will also help drive growth of the occupation. However, growth in research and development activities will be tempered by a projected decline in employment of aerospace engineers in the manufacturing industry.

### *Aerospace Engineering Employment*

According to BLS estimates, Oklahoma had 1,660 aerospace engineers as of May 2019 (the most recent date for which data is available).<sup>14</sup> As shown in the following table, Oklahoma ranks 5<sup>th</sup> among all states for aerospace engineering employment per 1,000 jobs (1.026) and location quotient (2.38). Location quotients compare the concentration of an industry within a specific area to the concentration of that industry nationwide.<sup>15</sup> These statistics indicate that Oklahoma is favorably positioned relative to most other states regarding its employment of aerospace engineers.

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<sup>13</sup> BLS, "Occupational Outlook Handbook: Aerospace Engineers." Available at [https://www.bls.gov/ooh/architecture-and-engineering/aerospace-engineers.htm?view\\_full#tab-2](https://www.bls.gov/ooh/architecture-and-engineering/aerospace-engineers.htm?view_full#tab-2)

<sup>14</sup> BLS Occupational Employment Statistics data for Aerospace Engineers (Standard Occupational Classification code 172011). Estimates do not include self-employed workers.

<sup>15</sup> These ratios allow an area's distribution of employment by industry, ownership and size class to be compared to a reference area's distribution. If a location quotient is equal to 1, then the industry has the same share of its area employment as it does in the nation. A location quotient greater than 1 indicates an industry with a greater share of the local area employment than is the case nationwide.



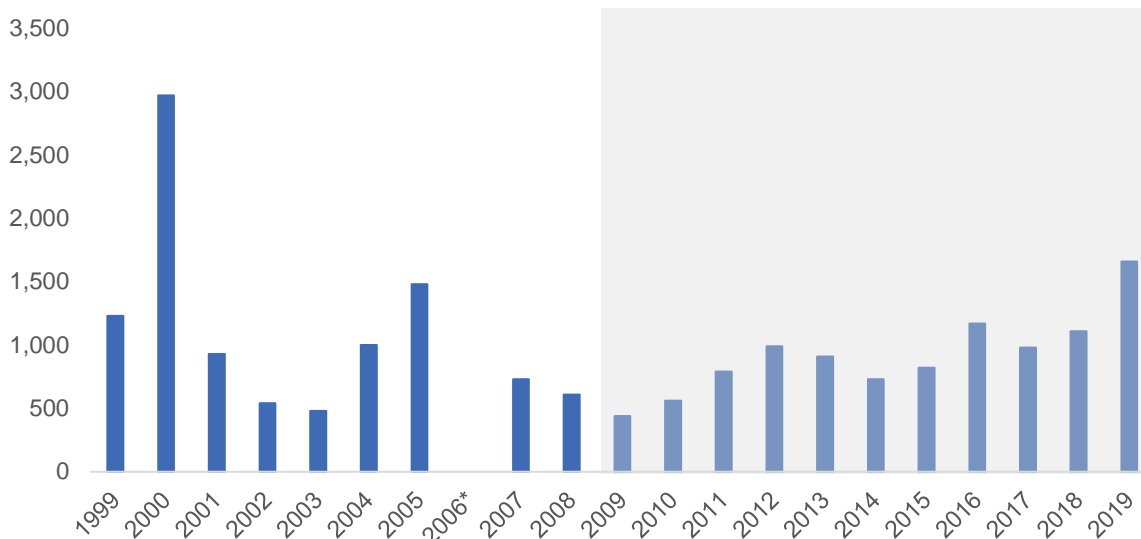
**Table 4: Top-Ranking States for Aerospace Engineer Employment**

Rank	State	Employment per 1,000 Jobs	Location Quotient
1	Alabama	2.061	4.79
2	Washington	2.013	4.68
3	Kansas	1.758	4.08
4	Maryland	1.039	2.41
5	<b>Oklahoma</b>	<b>1.026</b>	<b>2.38</b>

Source: BLS Occupational Employment Statistics data for Aerospace Engineers (SOC code 172011).

The BLS began reporting detailed data for aerospace engineers in 1999. Between 1999 and 2019, aerospace engineer employment in Oklahoma increased by a compound annual growth rate (CAGR) of 1.5 percent – equal to the annual growth experienced across the U.S. as a whole during the same time period.<sup>16</sup> Between 1999 and 2008 (the year prior to when Oklahoma’s incentives began to be offered), employment declined by a CAGR of -7.5 percent. Following the implementation of the credits in 2009 (in conjunction with the end of the Great Recession), employment has increased by a CAGR of 14.2 percent.

**Figure 3: Aerospace Engineering Employees in Oklahoma, 1999-2019**



Source: BLS Occupational Employment Statistics data for Aerospace Engineers (SOC code 172011)

\* No data reported for 2006

Note: shaded area represents the existence of Oklahoma’s incentives

Nationally, between 1999 and 2008, aerospace engineering employment increased by a CAGR of 3.0 percent; between 2009 and 2019, annual growth slowed to just 0.3 percent. This suggests that Oklahoma’s effort to recruit aerospace engineers has been successful in recent history relative to other states, perhaps due in some degree to the existence of its tax incentive programs.

#### *Aerospace Engineering Pay*

According to BLS estimates, the average wage of Oklahoma’s aerospace engineers was nearly \$100,000 as of 2019, though it varies by sector, as follows:

<sup>16</sup> BLS Occupational Employment Statistics data for Aerospace Engineers (Standard Occupational Classification code 172011). Estimates do not include self-employed workers.



- Professional, Scientific and Technical Services: \$110,050
- Manufacturing: \$98,910
- Federal, State and Local Government: \$95,710
- Transportation and Warehousing: \$77,880

While not an apples-to-apples comparison due to cost of living and other economic factors, Oklahoma’s cross-industry average wage for aerospace engineering (\$98,450) is low in comparison to other states. Among the 34 states for which BLS data was available, Oklahoma ranks 28<sup>th</sup> – higher only than Nevada, Kentucky, North Carolina, Tennessee, West Virginia and Wisconsin.

**Table 5: State Rankings, Aerospace Engineering Average Wage (2019)**

State	Average Wage	Rank	State	Average Wage	Rank	State	Average Wage	Rank
Maryland	\$135,400	1	Hawaii	\$116,370	13	Utah	\$103,930	25
Texas	\$126,740	2	Minnesota	\$113,590	14	New Mexico	\$102,430	26
Colorado	\$125,070	3	Pennsylvania	\$112,840	15	Indiana	\$102,190	27
California	\$125,000	4	Georgia	\$112,670	16	<b>Oklahoma</b>	<b>\$98,450</b>	<b>28</b>
Virginia	\$123,290	5	Arizona	\$112,140	17	Nevada	\$96,960	29
Arkansas	\$123,250	6	Missouri	\$110,560	18	Kentucky	\$96,020	30
New York	\$120,120	7	Connecticut	\$109,630	19	North Carolina	\$93,110	31
Alabama	\$119,890	8	Illinois	\$109,090	20	Tennessee	\$91,340	32
Nebraska	\$119,170	9	Louisiana	\$108,570	21	West Virginia	\$88,860	33
New Jersey	\$116,740	10	Florida	\$107,990	22	Wisconsin	\$86,200	34
Oregon	\$116,580	11	Mississippi	\$106,570	23			
Ohio	\$116,540	12	Kansas	\$106,300	24			

Source: BLS Occupational Employment Statistics data for Aerospace Engineers (SOC code 172011)

The average wage for aerospace engineers in Oklahoma was \$87,260 in 2010 (the earliest date during which data was consistently reported) and, as stated above, had increased to nearly \$100,000 (\$98,450) by 2019 – a CAGR of 1.3 percent. This annual growth is below that of the nation as a whole, which was 2.2 percent for aerospace engineers during the same time period. It is also below the growth in average Oklahoma wages for all occupations, which increased from \$36,940 in 2010 to \$45,620 in 2019 – a CAGR of 2.4 percent. This suggests that while Oklahoma firms have had success recruiting aerospace employees, they have not kept pace with the compensation increases seen in other occupations within Oklahoma as well as with national aerospace engineer compensation trends.

### Industry Background Summary

Despite the importance of aerospace and aviation to Oklahoma’s economy, the industry has struggled to recruit and retain aerospace engineering talent. Even today, industry representatives cite a continued shortage of qualified graduates and employees within the state. However, recent data suggests an upward trend of aerospace-related degrees conferred at the state’s public institutions. Additionally, Oklahoma ranks favorably relative to most other states regarding its concentration of aerospace engineer employment, and since the introduction of its incentives, such employment has increased meaningfully. However, while Oklahoma firms have had success recruiting aerospace employees, they have not kept pace with the compensation increases seen in other occupations within Oklahoma as well as with national aerospace engineer compensation trends.





# **Incentive Usage and Administration**



## Incentive Characteristics

In the beginning of the 21<sup>st</sup> century, Oklahoma’s aerospace industry increasingly encountered a lack of qualified applicants for engineering positions, posing a significant barrier to entry and an impediment to growth. In response to this issue, effective January 1, 2009, the State enacted a package of tax credits designed to “address the critical shortage of engineering and technical talent facing the Oklahoma aerospace industry,” including:<sup>17</sup>

**Table 6: Summary of Tax Credits for Aerospace Employers and Employees**

Incentive	Program Description*
Tax Credit for Compensation Paid by Aerospace Employers (“Employer Credit”)	Qualified employers can receive an income tax credit for compensation paid to a qualified employee. The credit is equal to 10% of the compensation paid for the first five years of employment in the aerospace sector if the employee graduated from an in-state institution or 5% if from an out-of-state institution. The credit is capped at \$12,500 per employee per year and is non-refundable, non-transferrable and cannot be carried forward.
Tax Credit for Aerospace Employees (“Employee Credit”)	Qualified employees in the aerospace sector can receive income tax credits of up to \$5,000 per year for up to five years. Unused credits can be carried forward for five years but are non-refundable.

Source: 68 O.S. §§ 2357.302-304

*It is important to note that the focus of this evaluation is on (1) the credit for qualified employers for compensation paid to qualified employees and (2) the credit for qualified employees. During initial discussions with the Tax Commission, it was determined that a third credit, for tuition reimbursement for aerospace employers, is not in use. For that reason, the project team suggested – and the Commission approved – exempting it from the evaluation process so that the focus of the analysis can be on those programs which are actively in use by the state’s aerospace engineers and employers.*

### Employer Qualifications

Qualified employers are private or public organizations<sup>18</sup> whose principal business activity involves the aerospace sector, which refers to those engaged in the manufacture of aerospace or defense hardware or software, aerospace maintenance, aerospace repair and overhaul, supply of parts to the aerospace industry, provision of services and support relating to the aerospace industry, research and development of aerospace technology and systems, and the education and training of aerospace personnel.

The compensation paid to qualified employees refers to wages and salaries, and does not include employer-provided retirement, medical or healthcare benefits, reimbursement for travel, meals, lodging or any other expenses.

### Employee Qualifications

A qualified employee must have been awarded an undergraduate or graduate degree from a qualified program by an institution. The program must be accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The employee must not have been employed in the aerospace sector in Oklahoma immediately preceding employment with the employer.

The statutory definition does not exclude any person who was employed in the aerospace sector, but not as a full-time engineer, prior to being awarded an undergraduate or graduate degree from a qualified program by an institution or any person who has been awarded an undergraduate or graduate degree from a qualified program

<sup>17</sup> Per HB 3229

<sup>18</sup> This includes sole proprietors, general partnerships, limited partnerships, limited liability companies, corporations, other legally recognized business entities or public entities



by an institution and is employed by a professional staffing company and assigned to work in the aerospace sector in Oklahoma.

In November 2017, SB 120 extended the sunset date of both programs from January 1, 2018 to January 1, 2026.

### Historic Use of the Tax Credits

#### Employer Credit

As shown in the following table, while the number of employer returns claiming the credit has increased (by a CAGR of 21.5 percent), the amount used to reduce tax liability (the foregone revenue to the State) trended downward by a CAGR of -27.4 percent. On a per-return basis, the average amount used to reduce tax liability is approximately \$50,000 over the time period.

**Table 7: Use of Tax Credits for Aerospace Employers, 2013-2017**

Tax Year	Number of Returns	Total Amount Claimed	Estimated Employees Claimed*	Amount Used to Reduce Tax Liability	Average Amount Used to Reduce Tax Liability / Return
2013	22	\$2,595,665	280-560	\$1,133,449	\$51,520
2014	36	\$2,879,984	310-630	\$2,001,145	\$55,587
2015	33	\$3,783,321	430-850	\$2,908,642	\$88,141
2016	37	\$4,743,861	550-1,100	\$1,790,880	\$48,402
2017	48	\$484,984	50-110	\$314,861	\$6,560
Avg.	35	\$2,897,563	320-640	\$1,629,795	\$50,042

Source: Oklahoma Tax Commission; PFM analysis

\* Calculation uses the average wage per OES data referenced in the preceding chapter; ranges are based on 10% credit for in-state degree and 5% for out-of-state degree. Estimates have been rounded.

The biggest users of the employer credit are typically companies with a large presence in Oklahoma, such as the Boeing Company and NORDAM (an aerospace component manufacturing and repair company). While the government sector accounts for much of the aerospace employment within the State (e.g., Tinker Air Force Base), these entities are not required to pay income tax and therefore do not apply for the credit.

The State does not track employee activity following the five-year credit period, so it is not possible to determine the extent to which the tax credits retain employees in the state long-term, or whether employees leave Oklahoma after claiming credits. However, while employee/talent retention is an important element of the effort to close the skills gap in Oklahoma, tracking this activity is not likely a feasible or good use of resources.

#### Employee Credit

As shown in the following table, the incentive's use has increased in recent years – both in terms of the number of returns (by a CAGR of 15.3 percent) and the amount used to reduce tax liability (by a CAGR of 15.2 percent). The average amount used to reduce tax liability has generally remained constant, at just over \$3,100.

**Table 8: Use of Tax Credits for Aerospace Employees, 2013-2017**

Tax Year	Number of Returns	Unused Credit Carried Over	Credit Established, Current Tax Year	Total Claimed	Amount Used to Reduce Tax Liability	Amount Used to Reduce Tax Liability / Return
2013	1349	N/A	N/A	\$7,739,763	\$4,206,737	\$3,118
2014	1,501	\$3,820,064	\$6,550,532	\$10,866,070	\$5,067,377	\$3,376
2015	1,999	\$4,956,306	\$8,787,471	\$14,017,600	\$6,288,098	\$3,146
2016	2,283	\$6,324,653	\$9,665,287	\$16,185,075	\$7,164,341	\$3,138



Tax Year	Number of Returns	Unused Credit Carried Over	Credit Established, Current Tax Year	Total Claimed	Amount Used to Reduce Tax Liability	Amount Used to Reduce Tax Liability / Return
2017	2,384	\$7,203,876	\$10,182,183	\$17,585,381	\$7,400,323	\$3,104
Avg.	1,903	\$5,576,225	\$8,796,368	\$13,278,778	\$6,025,375	\$3,166

Source: Oklahoma Tax Commission

Notably, the number of returns in the preceding table exceeds the estimated number of employees claimed by employers in Table 7. As referenced previously, employment of aerospace engineers by the government sector may account for some of the reason for this. Additionally, while the employee credits can be carried forward, the employer credits cannot.

Finally, the number of returns in the preceding table also exceeds the BLS data references in the Background chapter of this report regarding total aerospace engineering employees in the State. This is attributable to the fact that the BLS data was used as a proxy for employment totals and growth over time, and is based on a specific SOC code (172011, Aerospace Engineers). It is likely that those employees claiming the credits include additional SOC codes, but this information is not currently collected by the OTC.

### Incentive Administration

The OTC is responsible for the administration of these incentives, which is relatively straight-forward and entails two key components: employer/employee application for credit, and the OTC's verification and acceptance of claims. These are summarized in the following.

#### *Application for Credit*

To claim the credits, qualified employers must fill out and submit Form 565 (Credit for Employers in the Aerospace Sector); qualified employees must fill out and submit Form 564 (Credit for Employees in the Aerospace Sector). These forms collect the following information:

**Table 9: Tax Credit Application Requirements**

Credits for Employers in the Aerospace Sector (Form 565 Part 2)	Credit for Employees in the Aerospace Sector (Form 564)
<ul style="list-style-type: none"> <li>- Name of qualified employer and federal employer identification number;</li> <li>- Business type;</li> <li>- Itemized credit computation, including the name of qualified employee(s), social security number, date of employment in Oklahoma, name of institution, compensation paid and credit amount;</li> <li>- Total credit for compensation paid.</li> </ul>	<ul style="list-style-type: none"> <li>- Name;</li> <li>- Social Security Number;</li> <li>- Employer name and federal employer identification number;</li> <li>- Date of employment in Oklahoma;</li> <li>- College or university name and location; name of ABET-accredited program</li> <li>- Date of graduation;</li> <li>- Credit computation, including credit for employment during current tax year, unused carryover credit and total credit available.</li> </ul>

Source: OTC Forms 564 and 565

All claimants must also fill out the applicable fields of Form 511CR (Other Credits), including (1) unused credit carried over from prior year(s) (not applicable for employers), (2) credit established during the current tax year, and (3) total available credit (the sum of 1 and 2).



### *OTC Verification and Acceptance of Claims*

When the OTC receives the required forms, they review them for accuracy and completeness. According to OTC representatives, typically, if an employee's application is denied, it is due to having a degree but not the "right one." This is discussed in the ABET Accreditation Requirement section that follows.

## **Administrative Issues**

### *ABET Accreditation Requirement*

As mentioned previously, to qualify for the employee credit, an employee must have been awarded an undergraduate or graduate degree from a qualified program that is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). According to ABET data, there are 588 institutions worldwide that offer a total of 2,895 programs accredited by the EAC of ABET; there are 376 schools in the U.S. that offer 1,878 EAC-accredited programs. However, there are other programs offered that are not ABET accredited.

In recent years, the employee tax credit has faced scrutiny as some employees learned they do not qualify for the credit based on the ABET accreditation standards – even after their applications have been approved. This is because the OTC's Compliance Division regularly conducts discovery projects related to the tax programs it audits, and through this process it has identified employees that it believes mistakenly claimed and received the credit.

Though not enacted, SB 1461, introduced during the 2020 regular legislative session, sought to amend the definitions of "qualified employee" and "qualified program." The bill would have enabled employees who have been licensed as a Professional Engineer by the State Board of Licensure for Professional Engineers and Land Surveyors to qualify for the employee credit. It also would have clarified that a program is qualified even if only the undergraduate program is ABET accredited.

### *Data Collection and Availability Issues*

In order to aid in its analysis of these incentives in accordance with the Commission's approved criteria for evaluation, the project team requested the following information from the OTC but was informed it was not available:

- Total degrees conferred (broken down by in-state versus out of state institutions) over the last 5 fiscal years;<sup>19</sup>
- Total payroll and average wage data by year over the last 5 fiscal years.

Based on a review of Forms 564 and 565, the project team's understanding is that the OTC would have access to the requested information. Form 564 collects the name and location of the college or university, the name of the qualified program and the employee's graduation date. Form 565 collects the total compensation paid to employees for which an employer is claiming a credit.

Additionally, there is possible overlap between the employer incentive and the Quality Jobs Program. However, the OTC does not currently have a process to track businesses' use of the employer credit with other related state business incentives.

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<sup>19</sup> As described previously, the Oklahoma State Regents for Higher Education collect limited Oklahoma-specific data regarding degrees conferred in the state.



# **Economic and Fiscal Impact**



## Economic and Fiscal Impact

A description of the IMPLAN economic impact methodology is provided in **Appendix B**.

The total economic impacts are measured by the economic output activity associated with the employment benefitted and supported by the aerospace wage incentive. It is assumed the jobs for which claims are made represent jobs which otherwise, without the incentive, would not have been created or retained.

The total economic activity associated with the supported employment exceeds the total claimed incentive amounts by substantial orders of magnitude on an annual basis. The value to total economic activity ranges from \$72 to \$89 in total economic output annually, for each \$1 claimed, during the period 2013-2017. In 2017, the most recent year for which data is available, total economic activity, associated with the 2,384 jobs for which claims were made, reached \$1.6 billion. Indirect and induced activity supports an additional 2,567 jobs; more than one additional job for each job supported by the incentive. Total employment supported in 2017 reached 4,951 jobs.

The estimated tax revenues to the State of Oklahoma from this activity exceeded the amount claimed in each of the years 2013-2017. For each dollar claimed, more than \$1.44 in State tax revenue was generated, by the total economic activity. In 2017, an estimated \$1.65 in State taxes was generated for each \$1 in incentives claimed.

Tax revenue generated to the State of Oklahoma was estimated by applying the long-term ratio of Oklahoma's gross state tax collections to Gross State Product (GSP); additional detail is provided in **Appendix C**.

The Aerospace Employee and Employer Tax Credits provide substantial total economic benefits. From a fiscal perspective, State tax revenue from this activity exceeds the incentive credits claimed. The following table illustrates the economic impact benefits. For analysis purposes, the table compares total impacts with total estimated tax revenue and total claimed credit. These comparisons are provided only at the total impact level for each year and not the component elements, because there are no corresponding credits at the component levels.



**Table 10: Economic Impacts Per Year, FY2013-FY2017**

Year	Effect	Output	Value Added	Labor Income	Jobs	Estimated OK Tax Revenue	Total Claimed	Ratio: Output/ Claims	Ratio: Revenue/ Claims
2013	Direct Effect	\$651,595,580	\$191,406,016	\$138,990,197	1,349				
	Indirect Effect	\$99,044,964	\$45,666,487	\$29,068,642	528				
	Induced Effect	\$123,982,377	\$65,371,260	\$36,235,780	924				
	<b>Total Effect</b>	<b>\$874,622,920</b>	<b>\$302,443,764</b>	<b>\$204,294,619</b>	<b>2,801</b>	<b>\$15,950,884</b>	<b>\$10,335,428</b>	<b>\$84.62</b>	<b>\$1.54</b>
2014	Direct Effect	\$736,037,405	\$216,910,092	\$157,511,533	1,501				
	Indirect Effect	\$111,442,245	\$51,751,711	\$32,942,198	588				
	Induced Effect	\$140,620,692	\$74,082,389	\$41,064,424	1,028				
	<b>Total Effect</b>	<b>\$988,100,343</b>	<b>\$342,744,192</b>	<b>\$231,518,154</b>	<b>3,117</b>	<b>\$18,076,329</b>	<b>\$13,746,054</b>	<b>\$71.88</b>	<b>\$1.32</b>
2015	Direct Effect	\$992,194,531	\$291,872,130	\$211,950,334	1,999				
	Indirect Effect	\$147,626,418	\$69,637,644	\$44,327,527	783				
	Induced Effect	\$186,339,625	\$99,686,554	\$55,257,005	1,370				
	<b>Total Effect</b>	<b>\$1,326,160,573</b>	<b>\$461,196,328</b>	<b>\$311,534,865</b>	<b>4,151</b>	<b>\$24,323,494</b>	<b>\$17,800,921</b>	<b>\$74.50</b>	<b>\$1.37</b>
2016	Direct Effect	\$1,135,086,561	\$336,784,263	\$244,566,292	2,283				
	Indirect Effect	\$170,183,430	\$80,353,660	\$51,148,828	894				
	Induced Effect	\$214,737,050	\$115,026,796	\$63,760,217	1,564				
	<b>Total Effect</b>	<b>\$1,520,007,042</b>	<b>\$532,164,719</b>	<b>\$359,475,336</b>	<b>4,741</b>	<b>\$28,066,367</b>	<b>\$20,928,936</b>	<b>\$72.63</b>	<b>\$1.34</b>
2017	Direct Effect	\$1,202,869,883	\$358,270,502	\$260,183,231	2,384				
	Indirect Effect	\$181,447,849	\$85,483,452	\$54,414,699	933				
	Induced Effect	\$229,827,347	\$122,371,801	\$67,831,608	1,633				
	<b>Total Effect</b>	<b>\$1,614,145,079</b>	<b>\$566,125,755</b>	<b>\$382,429,538</b>	<b>4,951</b>	<b>\$29,857,472</b>	<b>\$18,070,365</b>	<b>\$89.33</b>	<b>\$1.65</b>

Source: PFM; IMPLAN Copyright 2020





# Incentive Benchmarking



## Benchmarking Peer State Programs

For evaluation purposes, benchmarking provides information related to how peer states use and evaluate similar incentives. At the outset, it should be understood that no states are ‘perfect peers’ – there will be multiple differences in economic, demographic and political factors that will have to be considered in any analysis; likewise, it is exceedingly rare that any two state incentive programs will be exactly the same.<sup>20</sup> These benchmarking realities must be taken into consideration when making comparisons – and, for the sake of brevity, the report will not continually re-make this point throughout the discussion.

The process of creating a comparison group for incentives typically begins with bordering states. This is generally the starting point, because proximity often leads states to compete for the same regional businesses or business/industry investments. Second, neighboring states often (but not always) have similar economic, demographic or political structures that lend themselves to comparison.

In the case of these tax credits, comparable state programs – incentives which focus on recruiting aerospace industry talent – or more generally, recruiting for hard-to-fill positions – are rare. Perhaps most comparable is North Dakota’s Workforce Recruitment Credit, which is available to businesses “for employing extraordinary recruitment methods to recruit and hire employees for hard-to-fill positions in the state.”<sup>21</sup> The following table compares the two state programs.

**Table 11: Comparison of Oklahoma Employer Credit and North Dakota Workforce Recruitment Credit**

	Oklahoma	North Dakota
Eligible Business Types	Sole proprietors, general partnerships, limited partnerships, limited liability companies, corporations, other legally recognized business entities or public entities.	An individual, estate, trust, partnership, corporation or limited liability company.
Credit Amount	10% of the compensation paid for the first five years of employment if employee graduated from an Oklahoma institution; 5% if from out-of-state institution; may not exceed \$12,500 annually for each qualified employee.	5% of the compensation paid during the first 12 consecutive months to an employee.
Carry Forward	None.	4 years.
Employee Qualifications	Employee must have been awarded degree from qualified program (i.e., ABET accredited) and not employed in sector in OK immediately preceding employment.	None.
Employer Qualifications	Business must be in the aerospace sector.	Must pay annual salary at least 125% of ND average wage;  Must have employed all the following recruitment methods to fill a position for which credit is claimed:

<sup>20</sup> The primary instances of exactly alike state incentive programs occur when states choose to ‘piggyback’ onto federal programs.

<sup>21</sup> North Dakota Office of State Tax Commissioner, “Workforce Recruitment Credit.” Available at <https://www.nd.gov/tax/user/businesses/exemptionsrefundscredits---businesses/income-tax-incentives/workforce-recruitment-credit>



	Oklahoma	North Dakota
		<ul style="list-style-type: none"> <li>- Contracted with a professional recruiter for a fee;</li> <li>- Advertised in a professional trade journal, magazine or other publication directed at a trade or profession;</li> <li>- Provided employment information on a website for a fee;</li> <li>- Paid a signing bonus, moving expenses or atypical fringe benefits.</li> </ul>

In addition to this incentive, other states were found to have incentives meant to encourage employee location decisions. Most have a focus on job creation in rural areas of the state, including the following:

**Table 12: State Incentives Related to Employee Location Decisions**

State	Program	Description
Florida	Rural Job Tax Credits <sup>22</sup>	Offers a tax incentive of \$1,000 to \$1,500 per qualified employee. For eligible businesses located within one of 36 designated “Qualified Rural Areas” to create meaningful employment opportunities that will improve the quality of life of those employed and to encourage economic expansion of new and existing businesses in rural areas of Florida.
Nebraska	Nebraska Advantage Rural Development Act Tax Credits <sup>23</sup>	Provides refundable tax credits of \$2,750 per \$50,000 of qualifying investment, rewarding investment and job creation in rural and impoverished communities.
Oregon	Rural Practitioner Tax Credit <sup>24</sup>	Provides tax credits of up to \$5,000 per year for certain types of medical providers practicing in rural areas of the state.
Utah	Rural Economic Development Incentive Grant Program <sup>25</sup>	Designed for businesses creating new, high-paying jobs in rural Utah counties. Businesses may qualify for up to \$250,000 in rural employment expansion grants each fiscal year.
Utah	Rural Jobs Program <sup>26</sup>	Enables an eligible business located in a rural county to expand and create high-wage jobs by providing flexible and affordable capital to small businesses in these areas.

<sup>22</sup> Florida Department of Economic Opportunity, “Rural and Urban Job Tax Credit Programs.” Available at <https://floridajobs.org/business-growth-and-partnerships-for-businesses-and-entrepreneurs/business-resource/rural-and-urban-job-tax-credit-programs>

<sup>23</sup> Nebraska Department of Revenue, “Rural Development Act Application Guide.” Available at <https://revenue.nebraska.gov/incentives/rural/application-guide>

<sup>24</sup> Rural Health Information Hub, “Oregon Rural Practitioner Tax Credit Program.” Available at <https://www.ruralhealthinfo.org/funding/3161>

<sup>25</sup> Utah Governor’s Office of Economic Development, “Rural Development.” Available at <https://business.utah.gov/rural/>

<sup>26</sup> Utah Governor’s Office of Economic Development, “Rural Development.” Available at <https://business.utah.gov/rural/>



Additionally, some states offer incentives meant to build a STEM pipeline within their borders. Notably, most state efforts entail comprehensive internship programs, including the following:

**Table 13: State Incentives Related to Building STEM Pipelines**

State	Program	Description
Iowa	STEM Internship Grant Program <sup>27</sup>	Provides grants to Iowa companies for internship programs with a goal of transitioning interns to full-time employment in Iowa upon graduation. For every \$2 of wages earned by the student, \$1 paid by the employer is matched by \$1. Maximum award to an employer shall not exceed \$50,000 per fiscal year.
Maryland	Technology Internship Grant Program <sup>28</sup>	Helps Maryland retain top tech talent by increasing the number of paid technical internships offered in the state. Can reimburse employers for up to 50 percent of an intern wage and up to \$3,000 annually per intern. Limited to a maximum of six awarded internships in a fiscal year.
Massachusetts	Advanced Analytics Data Science Internship Program <sup>29</sup>	Creates internship opportunities for qualified candidates by enabling research institutions and companies to hire paid interns for up to six months. Reimburses for pay rates up to: \$20 per hour for interns who have completed their Bachelor's degree for a total reimbursement of no more than \$20,800 per intern; \$25 per hour for interns who have completed their Master's degree for a total reimbursement of no more than \$26,000 per intern; and \$40 per hour for interns who have completed their Ph.D. for a total reimbursement of no more than \$41,600 per intern.
Minnesota	SciTechsperience Internship Grant Program <sup>30</sup>	Paid internship program that connects college students in STEM disciplines with rewarding hands-on opportunities at Minnesota companies that need their skills. Companies receive assistance finding qualified candidates and a dollar for dollar wage match to cover 50 percent of intern wages (capped at \$2,500).
Nebraska	Developing Youth Talent Initiative Grant Program <sup>31</sup>	Connects young Nebraskans in 7 <sup>th</sup> and 8 <sup>th</sup> grade to learning opportunities in the manufacturing and IT industries by creating collaboration between Nebraska businesses and public schools. Grants up to \$250,000 with minimum award to two projects.
Pennsylvania	Manufacturing PA Innovation Grant Program <sup>32</sup>	Leverages internationally acclaimed science and engineering talent and discovery capacity of all PA's institutions of higher education to help ensure that PA remains a national and international leader in

<sup>27</sup> Iowa Economic Development Authority, "STEM Internship Program." Available at <http://www.stateincentives.org/programs/report.asp?ProgramID=4519>

<sup>28</sup> University of Maryland Baltimore County, "Maryland Technology Internship Program." Available at <https://mtip.umbc.edu/>

<sup>29</sup> Massachusetts Life Sciences Center, "Advanced Analytics/Data Science Internship Program." Available at <https://www.masslifesciences.com/programs/advanced-analytics-data-science-internship-challenge/>

<sup>30</sup> Minnesota Department of Employment and Economic Development, "Internship Programs." Available at <https://mn.gov/deed/business/finding-workers/incentives/internship.jsp>

<sup>31</sup> Nebraska Department of Economic Development, "Developing Youth Talent Initiative." Available at <https://opportunity.nebraska.gov/program/nebraska-developing-youth-talent-initiative/>

<sup>32</sup> <https://www.manufacturingpa.org/>



State	Program	Description
		manufacturing and achieves the full economic potential for good, well-paying manufacturing jobs.

Finally, some states provide incentives which aim to fill targeted and/or hard to fill positions. Examples include the following:

**Table 14: State Incentives Related to Filling Targeted/Hard-to-Fill Positions**

State	Program	Description
Colorado	Aircraft Manufacturer New Employee Tax Credit <sup>33</sup>	\$1,200 per qualified new employee for aircraft manufacturers located in a Colorado aviation development zone. [Note: Expired December 31, 2016.]
North Dakota	Workforce Recruitment Tax Credit <sup>34</sup>	Provides an income tax credit for employing extraordinary recruitment methods to recruit and hire employees for hard-to-fill positions in the state. Credit is equal to 5 percent of the compensation paid during the first 12 consecutive months to an employee hired to fill a position.
Texas	Governor's University Research Initiative <sup>35</sup>	Helps Texas public institutions of higher education recruit distinguished researchers from around the world. Matching grants are paid on a cost-reimbursement basis; the state's grant contribution may not exceed \$5 million per distinguished researcher.

### Review of Peer State Program Evaluations

The North Dakota Legislature's Taxation Committee sought to evaluate the State's Workforce Recruitment Credit based on the following factors:

- The number of claimants and the fiscal impact of the incentive;
- Employment opportunities, business growth or diversity in the state's economy resulting from the availability of the incentive;
- Negative impacts created as a result of the incentive;
- Benefits that flow to out-of-state concerns resulting from the incentive;
- Testimony from interested parties.

The Committee found low/no program usage in most years and cited confidentiality restrictions in years where the credit was claimed as a reason why the program could not be properly evaluated. Further, the Economic Development Association of North Dakota testified in support of eliminating the credit.<sup>36</sup>

<sup>33</sup> Colorado Department of Revenue, "Aircraft Manufacturer New Employee Credit," (December 2012). Available at <https://www.colorado.gov/pacific/sites/default/files/Income62.pdf>

<sup>34</sup> North Dakota Office of State Tax Commissioner, "Workforce Recruitment Credit." Available at <https://www.nd.gov/tax/user/businesses/exemptionsrefundscredits--businesses/income-tax-incentives/workforce-recruitment-credit>

<sup>35</sup> Texas Economic Development, "Governor's University Research Initiative." Available at <https://gov.texas.gov/business/page/guri>

<sup>36</sup> North Dakota Legislative Council, "Economic Development Tax Incentive Study – Workforce Recruitment Credit," (September 2018). Available at [https://www.legis.nd.gov/files/resource/committee-memorandum/19\\_9170\\_04000.pdf](https://www.legis.nd.gov/files/resource/committee-memorandum/19_9170_04000.pdf)



# Appendices



## Appendix A: Incentive Statute

### §68-2357.301. Definitions.

As used in Sections 2357.301 through 2357.304 of this title:

1. "Aerospace sector" means a private or public organization engaged in the manufacture of aerospace or defense hardware or software, aerospace maintenance, aerospace repair and overhaul, supply of parts to the aerospace industry, provision of services and support relating to the aerospace industry, research and development of aerospace technology and systems, and the education and training of aerospace personnel;

2. "Compensation" means payments in the form of contract labor for which the payor is required to provide a Form 1099 to the person paid, wages subject to withholding tax paid to a part-time employee or full-time employee, or salary or other remuneration. Compensation shall not include employer-provided retirement, medical or health-care benefits, reimbursement for travel, meals, lodging or any other expense;

3. "Institution" means an institution within The Oklahoma State System of Higher Education or any other public or private college or university that is accredited by a national accrediting body;

4. "Qualified employer" means a sole proprietor, general partnership, limited partnership, limited liability company, corporation, other legally recognized business entity, or public entity whose principal business activity involves the aerospace sector;

5. "Qualified employee" means any person, regardless of the date of hire, employed in this state by or contracting in this state with a qualified employer on or after January 1, 2009, who has been awarded an undergraduate or graduate degree from a qualified program by an institution, and who was not employed in the aerospace sector in this state immediately preceding employment or contracting with a qualified employer. Provided, the definition shall not be interpreted to exclude any person who was employed in the aerospace sector, but not as a full-time engineer, prior to being awarded an undergraduate or graduate degree from a qualified program by an institution or any person who has been awarded an undergraduate or graduate degree from a qualified program by an institution and is employed by a professional staffing company and assigned to work in the aerospace sector in this state;

6. "Qualified program" means a program that has been accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) and that awards an undergraduate or graduate degree; and

7. "Tuition" means the average annual amount paid by a qualified employee for enrollment and instruction in a qualified program. Tuition shall not include the cost of books, fees or room and board.

Added by Laws 2008, c. 417, § 1, eff. Jan. 1, 2009. Amended by Laws 2014, c. 30, § 1, eff. Nov. 1, 2014.

### §68-2357.302. Credit for employee tuition reimbursement.

[Note: As discussed in the evaluation, this provision is not in use and was exempted by the Commission from review in 2020.]

A. Except as provided in subsection F of this section, for taxable years beginning after December 31, 2008, and ending before January 1, 2026, a qualified employer shall be allowed a credit against the tax imposed pursuant to Section 2355 of this title for tuition reimbursed to a qualified employee.

B. The credit authorized by subsection A of this section may be claimed only if the qualified employee has been awarded an undergraduate or graduate degree within one (1) year of commencing employment with the qualified employer.

C. The credit authorized by subsection A of this section shall be in the amount of fifty percent (50%) of the tuition reimbursed to a qualified employee for the first through fourth years of employment. In no event shall this credit exceed fifty percent (50%) of the average annual amount paid by a qualified employee for enrollment and instruction in a qualified program at a public institution in Oklahoma.

D. The credit authorized by subsection A of this section shall not be used to reduce the tax liability of the qualified employer to less than zero (0).

E. No credit authorized by this section shall be claimed after the fourth year of employment.

F. No credit otherwise authorized by the provisions of this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2010, for which the credit would otherwise be allowable. The provisions of this subsection shall cease to be operative on July 1, 2011.



Beginning July 1, 2011, the credit authorized by this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2011, according to the provisions of this section.

Added by Laws 2008, c. 417, § 2, eff. Jan. 1, 2009. Amended by Laws 2010, c. 327, § 26, eff. July 1, 2010; Laws 2011, c. 5, § 1; Laws 2014, c. 30, § 2, eff. Nov. 1, 2014; Laws 2017, c. 153, § 1, eff. Nov. 1, 2017.

**§68-2357.303. Credit for compensation paid to employees.**

A. Except as provided in subsection F of this section, for taxable years beginning after December 31, 2008, and ending before January 1, 2026, a qualified employer shall be allowed a credit against the tax imposed pursuant to Section 2355 of this title for compensation paid to a qualified employee.

B. The credit authorized by subsection A of this section shall be in the amount of:

1. Ten percent (10%) of the compensation paid for the first through fifth years of employment in the aerospace sector if the qualified employee graduated from an institution located in this state; or
2. Five percent (5%) of the compensation paid for the first through fifth years of employment in the aerospace sector if the qualified employee graduated from an institution located outside this state.

C. The credit authorized by this section shall not exceed Twelve Thousand Five Hundred Dollars (\$12,500.00) for each qualified employee annually.

D. The credit authorized by this section shall not be used to reduce the tax liability of the qualified employer to less than zero (0).

E. No credit authorized pursuant to this section shall be claimed after the fifth year of employment.

F. No credit otherwise authorized by the provisions of this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2010, for which the credit would otherwise be allowable. The provisions of this subsection shall cease to be operative on July 1, 2011. Beginning July 1, 2011, the credit authorized by this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2011, according to the provisions of this section.

Added by Laws 2008, c. 417, § 3, eff. Jan. 1, 2009. Amended by Laws 2010, c. 327, § 27, eff. July 1, 2010; Laws 2011, c. 5, § 2; Laws 2014, c. 30, § 3, eff. Nov. 1, 2014; Laws 2017, c. 153, § 2, eff. Nov. 1, 2017.

**§68-2357.304. Credit for employees.**

A. Except as provided in subsection D of this section, for taxable years beginning after December 31, 2008, and ending before January 1, 2026, a qualified employee shall be allowed a credit against the tax imposed pursuant to Section 2355 of this title of up to Five Thousand Dollars (\$5,000.00) per year for a period of time not to exceed five (5) years.

B. The credit authorized by this section shall not be used to reduce the tax liability of the taxpayer to less than zero (0).

C. Any credit claimed, but not used, may be carried over, in order, to each of the five (5) subsequent taxable years.

D. No credit otherwise authorized by the provisions of this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2010, for which the credit would otherwise be allowable. The provisions of this subsection shall cease to be operative on July 1, 2011. Beginning July 1, 2011, the credit authorized by this section may be claimed for any event, transaction, investment, expenditure or other act occurring on or after July 1, 2011, according to the provisions of this section.





## Appendix B: IMPLAN Economic Impact Methodology

The economic impact methodology utilized to determine the multiplier effects is IMPLAN (IMppact Analysis for PLANning).

IMPLAN's Social Accounting Matrices (SAMs) capture the actual dollar amounts of all business transactions taking place in a regional economy as reported each year by businesses and governmental agencies. SAM accounts are a better measure of economic flow than traditional input-output accounts because they include "non-market" transactions. Examples of these transactions would be taxes and unemployment benefits.

### Economic Indicators

#### *Employment*

Employment data in IMPLAN follows the same definition as Bureau of Economic Analysis Regional Economic Accounts (BEA REA) and Bureau of Labor Statistics Census of Employment and Wages (BLS CEW) data, which is full-time/part-time annual average. Thus, 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months each. A job can be either full-time or part-time. Similarly, a job that lasts one quarter of the year would be 0.25 jobs. Note that a person can hold more than one job, so the job count is not necessarily the same as the count of employed persons.

#### *Labor Income*

Labor Income represents the total value of all forms of employment income paid throughout a defined economy during a specified period. It reflects the combined cost of total payroll paid to employees (e.g. wages and salaries, benefits, payroll taxes) and payments received by self-employed individuals and/or unincorporated business owners (e.g. capital consumption allowance) across the defined economy. Labor Income (LI) encompasses two additional representative metrics called Proprietor Income (PI) and Employee Compensation (EC).

#### *Value Added*

Value Added represents the difference between *Output* and the cost of *Intermediate Inputs* throughout a defined economy during a specified period. It equals gross Output minus Intermediate Inputs (consumption of goods and services purchased from other industries or imported). Value Added is a measure of the contribution to GDP made by an individual producer, Industry, or Sector.

#### *Output*

All analysis in IMPLAN is based on Output, which is the value of production by industry in a calendar year. IMPLAN Output data largely come from the same sources as those used by the BEA in developing their Benchmark Input-Output tables. Since output is the total production value of a Sector, it includes all components of production value or output for a given Sector: Output = Employee Compensation + Proprietor Income + Intermediate Expenditures + Tax on Production and Imports + Other Property Income.

### Economic Effects

Input-Output (I-O) Analysis and IMPLAN (SAM) is designed to predict the ripple effect of an economic activity by using data about previous spending. Production in a given Sector in an economy supports demand for production in Sectors throughout the economy, both due to supply chain spending and spending by workers.

#### *Direct Effect*

A Direct effect is the initial exogenous change in final demand in terms of Industry Output, Employment, and Labor Income Dollars. When consumers purchase goods and services, they create final demand to the Industries producing the goods and services they consume. When you analyze final demand in IMPLAN, we call this a Direct Effect.



*Indirect Effect*

Indirect effects are the business to business purchases in the supply chain taking place in the region that stem from the initial industry input purchases. As the Industry specified in an Event spends their money in the region with their suppliers, this spending is shown through the Indirect Effect.

*Induced Effect*

The Induced Effects stem from income being spent throughout the Selected Region. Typically, the income being analyzed are the wages of employees working in the Direct/Indirect Industries.

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**Appendix C: State of Oklahoma Tax Collection / Gross State Product**

<b>Year</b>	<b>Oklahoma GSP</b>	<b>Oklahoma Tax Revenue</b>	<b>Ratio</b>
2005-06	\$136,363,200,000	\$8,435,214,025	6.2%
2006-07	\$143,042,900,000	\$8,685,842,682	6.1%
2007-08	\$163,616,400,000	\$9,008,981,280	5.5%
2008-09	\$144,015,000,000	\$8,783,165,581	6.1%
2009-10	\$152,043,000,000	\$7,774,910,000	5.1%
2010-11	\$164,150,600,000	\$8,367,871,162	5.1%
2011-12	\$172,865,600,000	\$8,998,362,975	5.2%
2012-13	\$180,665,000,000	\$9,175,334,979	5.1%
2013-14	\$195,249,800,000	\$9,550,183,790	4.9%
2014-15	\$185,986,800,000	\$9,778,654,182	5.3%
2015-16	\$179,023,400,000	\$8,963,894,053	5.0%
2016-17	\$187,677,500,000	\$8,789,362,844	4.7%
2017-18	\$201,870,700,000	\$9,837,247,035	4.9%
2018-19	\$206,139,300,000	\$11,091,161,884	5.4%
<b>Average</b>	<b>\$172,336,371,429</b>	<b>\$9,088,584,748</b>	<b>5.3%</b>

*Sources: U.S. Bureau of Economic Analysis Regional Economic Accounts; OTC Annual Reports*