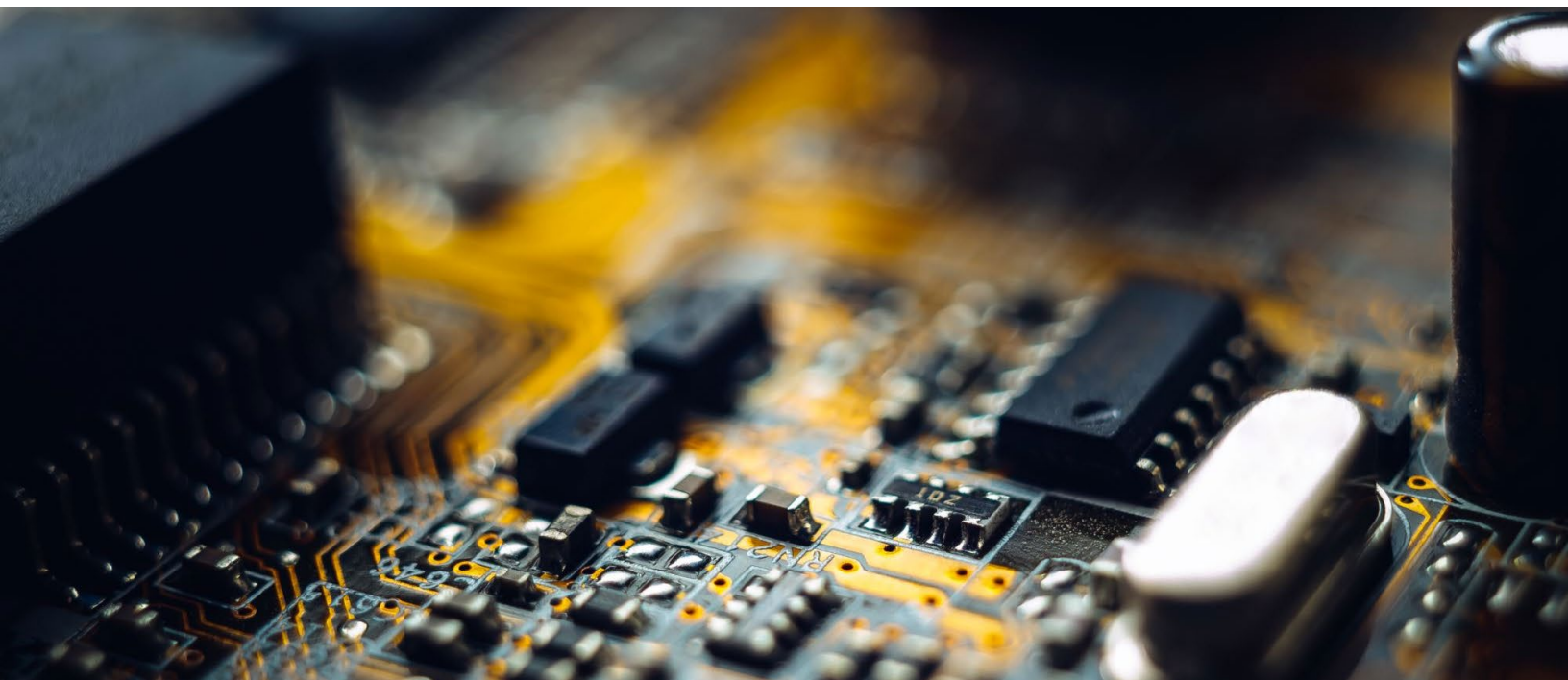


Nebraska Advantage Research and Development Act: Performance on Selected Metrics

Performance Audit Committee
Nebraska Legislature

December 2022



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I. Audit Summary & Committee Recommendations

Audit Summary and Committee Recommendation

This section contains a brief summary of Nebraska Advantage Research and Development Act program participation, the audit findings and results, and the Legislative Performance Audit Committee's recommendation.

Nebraska Advantage Research and Development Act Program Participation

The Nebraska Advantage Research and Development Act, passed in 2005, is a tax incentive program that provides tax credits for corporate research and development activities in the state. The Nebraska Research and Development (R&D) program is tied to the federal Research and Experimentation credit program, which provides tax credits for a percentage of a company's increase in qualifying expenditures.

For research activity between 2006 and 2020, 460 companies were awarded \$72.3 million in tax credits under the Nebraska R&D program. Companies had used over \$67.7 million in credits for activity through the end of the 2020 tax year. By law, the Nebraska R&D program will sunset December 31, 2022, after which no first-year claims for subsequent tax years will be allowed.

Audit Findings and Results

The report contains two types of outcomes from our analyses of metrics: findings and results. When there is a standard to compare the product of the analysis against, we present a finding; when there is no standard, we instead present results. For eight of the nine metrics used to assess the R&D program, there were no findings because there was no standard for which to compare the program data in order to judge whether the program meets policymakers' expectations.

Fiscal Protections: What are the fiscal protections in the Act? (pp. 39-40)

Result: The Nebraska Research and Development Act contains some fiscal protections including performance-based incentives, monitoring, and information sharing. However, the program does not contain more substantive protections such as regularly forecasting costs or program caps which puts the program at risk of unexpected expense. The amount of R&D program credits used exceeded the Legislature's \$5 million annual estimated cost for the last four years reviewed. In 2020, over \$10 million in program credits were used.

Finding: Because the Research and Development Act does not contain more stringent fiscal protections, the program exceeded expected costs from 2016 to 2020.

Recommendation: If the Legislature is concerned with the program exceeding expected costs, it should consider adding more stringent fiscal protections to the Act.

New to Nebraska & Sustained Companies: How many incentivized companies were new to Nebraska? How many incentivized companies maintained a presence in the state? (pp. 11-14)

Result: Out of 460 companies that were awarded Research and Development (R&D) credits, we identified 69 that met the statutory definition of a company that was new to the state. These 69 companies were awarded \$2.8 million in credits under the program.

We also looked at the number of companies that remained in Nebraska after being awarded credits under the R&D program, defining a “sustained” company as one that had activity in the state five years or more after their first year for which they earned credits. We were able to look at 341 companies who claimed the credits for activity beginning in 2016 or earlier. Of those, 89% were considered sustained companies.

Competitiveness: Is Nebraska’s program competitive with other states’ research & development efforts? (pp. 15-18)

Result: The effective tax benefit of Nebraska’s R&D tax credit is lower than programs in Iowa, Kansas, and Missouri but provides more benefits than the Colorado program. When Nebraska and its six neighboring states are compared using a broader assessment of overall tax climates and not just the R&D credit, however, Nebraska was rated by the Tax Foundation as the most competitive for new R&D companies. For mature R&D companies, Nebraska’s tax climate was 3rd out of the seven states.

Private R&D Spending: How does private research & development spending in Nebraska compare to other states? (pp. 19-22)

Result: While private R&D spending in Nebraska has increased since 2006, Nebraska ranks 5th out of the seven regional states in comparisons relevant to private R&D spending.

Compliance Costs: What is the cost for businesses to comply with the program? (pp. 23-24)

Result: For a company to receive R&D credits from the state, they must first earn benefits on qualified expenditures through the federal Research and Experimentation credit. The federal program has high compliance costs for companies, which may have a negative effect on credit effectiveness and participation. Once federal credits have been earned, claiming Nebraska benefits is much less burdensome. By relying on the federal qualification process, the state avoids the difficulties and costs that may come with administration.

High-tech Sector: Is the Act stimulating high-tech companies in the state? (pp. 25-30)

Result: We identified 109 companies, or 24% of Nebraska R&D program participants, from the high-tech sector. From 2006 to 2020, these companies were awarded a total of \$14.8 million in program credits.

During this time, both the number of high-tech employees and the relative size of the sector within the state increased slightly. However, high-tech employment growth in the state has not kept pace with the sector's growth nationally.

Renewable Energy Sector: Is the Act stimulating renewable energy companies in the state? (pp. 31-36)

Result: We identified 19 companies, or 4% of Nebraska R&D program participants, from the renewable energy sector. From 2006 to 2020, these companies were awarded \$4.2 million in program credits.

During this time, both the number of renewable energy employees and the relative size of the sector within the state increase slightly. However, renewable energy employment in the state has not kept pace with the sector nationally.

Additional Public Funding: Did companies participating in the Research & Development program receive other state funding? (p. 37)

Result: Of the 460 companies that claimed credit under the R&D Act, 166 (36%) received another state benefit from programs administered by the Department of Revenue. These companies received more than \$3 billion, most of which was from the Employment and Investment Growth Act.

Administrative Cost: What is the cost to administer and promote all tax incentive programs? (p. 38)

Result: For 2016 to 2021, the Department of Revenue spent \$9.6 million to administer all tax incentive programs. For 2019 through 2021, there were no costs to the Department of Economic Development related to the Nebraska R&D program.

II. Legislative Audit Office Report

Legislative Audit Office Report
**Nebraska Advantage Research and
Development Act: Performance on Selected
Metrics**

December 2022

Prepared by
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Anthony Circo**



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INTRODUCTION

The Legislative Audit Office (Office) is required to review each business tax incentive program at least once every five years. In 2017, we released the first performance audit of the Nebraska Advantage Research and Development Act. This report contains the results of our second audit of the program.

Measuring Effectiveness

As the Office has noted in previous reports, it is difficult to determine whether Nebraska’s tax incentive programs are effective because there are not clear goals and specific measures of success in the programs’ statutes. To address this issue, the Tax Incentive Evaluation Committee, created by the Performance Audit Committee’s LR 444 (2014), identified metrics for tax incentive performance audits. LB 538 (2015) placed many of these metrics in the Legislative Performance Audit Act and required the Office to perform ongoing tax incentive audits using the metrics.

The Office identified the following metrics to assess the Nebraska Advantage Research and Development Act. These metrics are from LR 444, the Legislative Performance Audit Act, and the Nebraska Advantage Research and Development Act’s legislative history. The following table lists the metrics used in this audit and their source.

Metrics for Nebraska Advantage Research and Development Act Audit	
Source	Description
SECTION I	
Audit Act	Awarded & Used Credits
SECTION II	
Audit Act	New to Nebraska
LR 444	Sustained Companies
R&D Act Legislative History	Competitiveness
Audit Act	Private R&D Spending Comparison
LR 444	Compliance Cost
Audit Act	High-tech Sector
Audit Act	Renewable Energy Sector
LR 444	Additional Public Funding
LR 444	Administrative Cost
Audit Act	Fiscal Protections

Report Organization & Acknowledgements

Section I describes the Research and Development program and provides data regarding the use of the program to date. Section II contains our analysis of the metrics.

The Legislative Audit Office extends special thanks to Tax Commissioner Tony Fulton. We also appreciate the assistance of Mary Hugo, Kate Knapp, and Mike Walsh at the Department of Revenue.

Auditing Standards Compliance Statement

We conducted this performance audit in accordance with generally accepted government auditing standards, with two statutory exceptions regarding continuing education hours and peer review frequency.¹ As required by auditing standards, we assessed the significance of noncompliance on the objectives for this audit and determined there was no impact. The exceptions do not change the standards requiring that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on the audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives. The methodologies used are described briefly in each section.

¹ Neb. Rev. Stat. § 50-1205.01.

SECTION I: Nebraska Advantage Research and Development Program

The Nebraska Advantage Research and Development (R&D) program provides tax benefits for companies that increase research and development expenditures. The program is administered by the Nebraska Department of Revenue (Department or Revenue). In this section, we describe the program: its history, how it works, and participation.

Nebraska Advantage Research and Development Program

The Nebraska Advantage Research and Development Act was adopted in 2005 as a part of a package of bills designed to update Nebraska's business tax incentive programs. While the language of the bill had no clear standards or expectations for the program, the legislative history suggests the primary goal of was to reward businesses for staying and engaging in research and development in Nebraska.

The Nebraska R&D program is tied to the federal Research and Experimentation credit program, which provides tax credits for a percentage of a company's increase in qualifying expenditures. Companies that have qualified expenses under the federal requirements do not apply to the Nebraska program, instead they submit a claim form with their Nebraska tax return. Under the Nebraska program, companies may claim 15% of the federal credit for qualifying activity that took place in Nebraska or 35% if the activity occurred on the campus of a college or university.²

While companies can use credits in two ways—to reduce income tax liability or to obtain a refund of state sales and use tax—during the period reviewed for this audit, no company used their benefits for sales and use tax refunds. All used their credits to reduce their income tax liability. These credits are refundable, which means that a participant can receive payment for the full value of earned credits even if that amount is more than the income tax owed.³

Under the R&D program, participants must use their credits for the tax year in which they are earned.⁴ As long as a company maintains its participation in the federal research credit program, it may claim credits each year for up to 21 years. By law, the Nebraska R&D program will sunset December 31, 2022, after which no first-year claims for subsequent tax years will be allowed.⁵

² Neb. Rev. Stat. § 77-5803. For multistate companies, the federal credit is apportioned based on expenditures in the state versus total expenditures, then the Nebraska credit calculation occurs.

³ Neb. Rev. Stat. § 77-5804. If the credit has been distributed, it is no longer refundable.

⁴ The amount of credits awarded can be adjusted under a general tax law that allows returns to be amended for up to three years after the initial filing. In rare instances, the Department may approve an extension beyond three years.

⁵ Neb. Rev. Stat. § 77-5806.

Program Stages

As noted, in order to receive benefits under the Nebraska R&D program, a company must file a form with Revenue. In the form, the company calculates an expected credit amount based on the amount of credit they received under the federal R&D program. When the form is filed with Revenue, a company has **claimed** a Nebraska R&D tax credit.

Revenue then checks the company's eligibility and calculations based on the provided documentation. Additional documentation may be requested. If Revenue approves the claimed credit, the company is then **awarded** credits under the R&D program.

Once a credit has been awarded, the company can apply it to its tax liability. The credit used may exceed the tax liability, making it refundable at this stage. For some companies this may be a direct application, which means the company will claim it on their own tax return. For others, the credit is distributed across shareholders or partners before it can be used. A **used** credit has been claimed on a tax return to offset a tax liability.

Program Participation

The Audit Office examined Revenue records to identify the number of companies that claimed credits under the program, the number of companies that were awarded credits, the dollar amount of credits awarded, and the dollar amount of credits used. All years reported refer to the year the R&D activity occurred—that is, the year the company engaged in R&D activity that qualified them for the federal program—rather than the year the credits were awarded by Revenue or used by the company.⁶ We refer to this as the “activity year.”

Between 2007 and 2020, 535 companies filed claims for R&D credit. Of those, 460 were awarded about \$72.3 million in tax credits. Companies had used over \$67.7 million in R&D credits for activity through the end of the 2020 tax year.

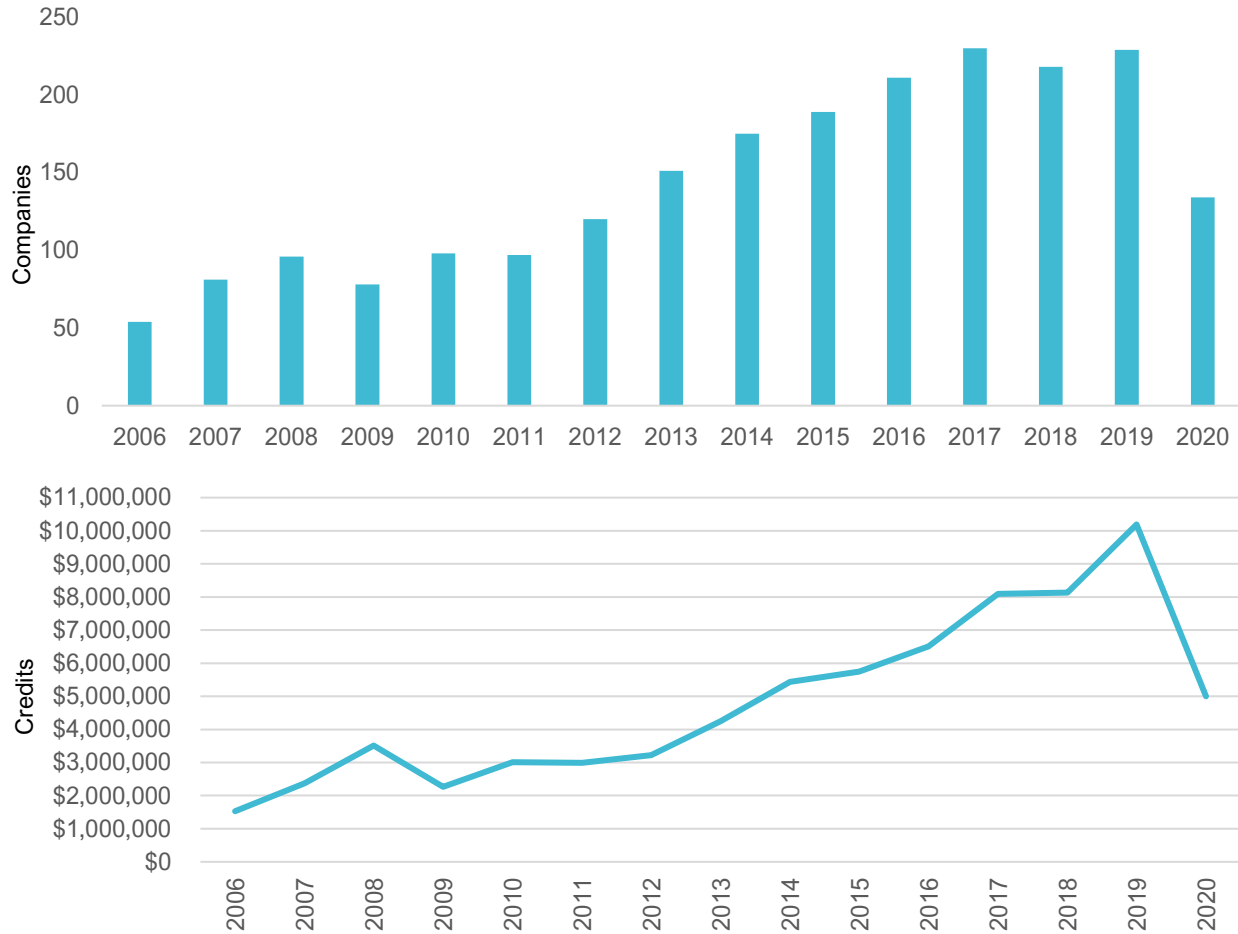
Credits Awarded

Figure 1.1 shows the number of companies and the dollar amount of credits awarded under the program for each year. Generally, both the number of companies and the amount of credits increased between 2006 and 2019, then dropped in 2020. The steep decrease in 2020 may be a reflection of the economic shocks related to the COVID-19 pandemic beginning that year.

⁶ As required by statute, the Department of Revenue reports credits in their annual report on the program to the Legislature by when the credits were used, not the year the R&D activity occurred or when the credits were awarded. Neb. Rev. Stat. § 77-5807.

Several companies are included in multiple years as participants are eligible to file claims for 21 total years. For example, 10 of the 54 companies that were awarded credits for 2006 activity—the first year of the program—have been awarded credits for every year the program has been available.

Figure 1.1. Both the number of companies and the amount of R&D credits awarded generally increased until 2020.

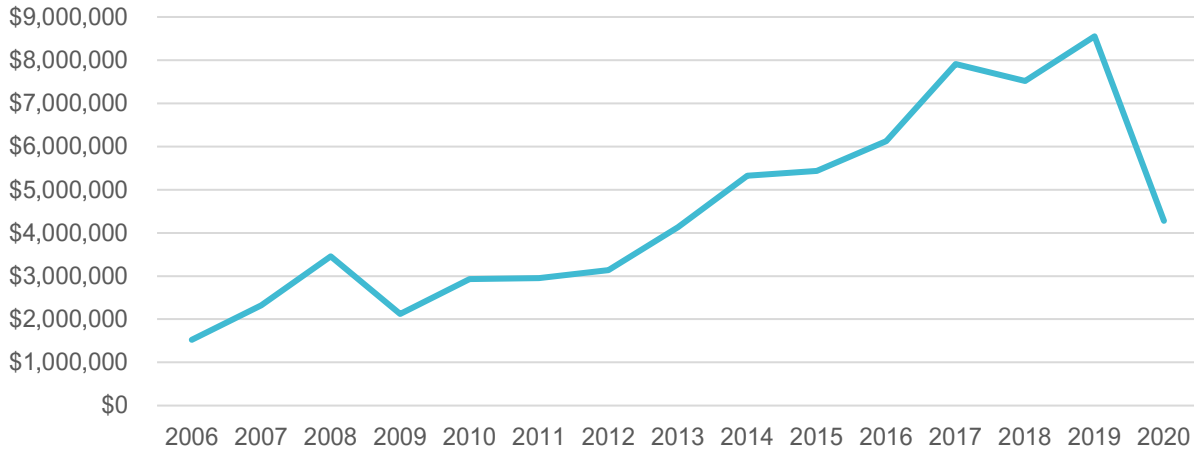


Source: Audit Office analysis of Department of Revenue data.

Credits Used

Figure 1.2 shows the total credit amounts used by program participants each year. In 2019, \$8.6 million in credits were used before dropping in 2020.

Figure 1.2. The amount of R&D credits used by companies hit a program high in 2019.



Source: Audit Office analysis of Department of Revenue data.

Credits Awarded vs. Credits Used

Participating companies used a total of about \$67.7 million in program credits from 2006 to 2020. In most activity years, over 90% of awarded credits were used; however, in 2019 and 2020, participants only used about 84% and 86% of awarded credits (Figure 1.3).

Figure 1.3. R&D program participants typically used over 90% of awarded credits.

Activity Year	Total Credits (in millions)		Percentage Used
	Awarded	Used	
2006	\$1.53	\$1.52	99.6%
2007	\$2.4	\$2.3	98%
2008	\$3.5	\$3.45	98%
2009	\$2.3	\$2.1	94%
2010	\$3	\$2.9	97%
2011	\$2.99	\$2.95	99%
2012	\$3.2	\$3.1	97%
2013	\$4.3	\$4.1	97%
2014	\$5.4	\$5.3	98%
2015	\$5.7	\$5.4	95%
2016	\$6.5	\$6.1	94%
2017	\$8.1	\$7.9	98%
2018	\$8.1	\$7.5	92%
2019	\$10.2	\$8.6	84%
2020	\$4.99	\$4.3	86%
TOTAL	\$72.3	\$67.7	93.7%

Source: Audit Office analysis of Department of Revenue data.

Enhanced Credit

As discussed earlier in this section, companies that engage in R&D activity on the campus of a college or university are eligible for an enhanced credit of 35%. The first year the enhanced credit could be claimed was for activity in 2010. Between 2010 and 2020, 19 companies qualified for the enhanced credit, receiving a total of about \$581,000 credits (Figure 1.4). Enhanced credits amounted to less than 2% of credits awarded in any single year and less than 1% of all credits awarded from 2010 to 2020.

Figure 1.4. Both the number of companies and the amount of awarded R&D enhanced credits peaked in 2017.

	2010-2014*	2015	2016	2017	2018	2019	2020	Totals
Number of Companies	6	7	9	10	7	7	6	19**
Amount Awarded	\$55,876	\$35,658	\$100,957	\$121,644	\$109,944	\$85,546	\$71,535	\$581,160

Source: Audit Office analysis of Department of Revenue data.

*Combined to protect taxpayer confidentiality.

**Total reflects number of individual companies that received enhanced credits under the program—some companies were awarded enhanced credits in more than one year (and appear in the figure under each year they were awarded credits).

SECTION II: Analysis of Metrics

The Performance Audit Committee asked the Legislative Audit Office to answer four broad questions regarding the Research and Development Act, utilizing the metrics listed below each question.

1. Is the Research and Development Act meeting the goal of strengthening the state's economy overall by attracting new business to the state, expanding existing businesses, increasing employment, creating high-quality jobs, and increasing business investment?
 - **New to Nebraska & Sustained Companies:** How many incentivized companies were new to Nebraska? How many incentivized companies maintained a presence in the state?
 - **Competitiveness:** Is Nebraska's program competitive with other states' research & development efforts?
 - **Private R&D Spending:** How does private research & development spending in Nebraska compare to other states?
 - **Compliance Costs:** What is the cost for businesses to comply with the program?
2. Is the Act meeting the goal of diversifying the state's economy and positioning Nebraska for the future by stimulating entrepreneurial firms, high-tech firms, and renewable energy firms?
 - **High-tech Sector:** Is the Act stimulating high-tech companies in the state?
 - **Renewable Energy Sector:** Is the Act stimulating renewable energy companies in the state?
3. What are the economic and fiscal impacts of the Act?
 - **Additional Public Funding:** Did companies participating in the Research & Development program receive other state funding?
 - **Administrative Cost:** What is the cost to administer and promote all tax incentive programs?
4. Are adequate protections in place to ensure the fiscal impact of the Act does not increase substantially beyond the state's expectations?
 - **Fiscal Protections:** What are the fiscal protections in the Act?

The "But-for" Question

A question common to all tax incentive programs is: did the tax incentive program cause the taxpayer to undertake a project or would the project have happened even without the credit? This is usually called the "but-for" question. In other words, would the project or activity not have occurred but-for the incentive? General information on the but-for question follows.

For the R&D tax credit, we do not make but-for determinations or estimates because the program is not structured like a traditional investment and job creation incentive and there is not enough information available to derive our own methodology. It may be helpful to keep in mind that incentive size could affect company decisions.

Description of the But-for Question

Academics who study tax incentives as well as professionals within the Nebraska Department of Revenue and the Legislative Fiscal Office agree that tax incentives cannot be assumed to have caused all the economic activity associated with them. So, the question is not “would some of the activity have happened anyway?” but “how much of the activity would have happened anyway?”

Research by economist Tim Bartik of the Upjohn Institute suggests that a reasonable range of assumptions would allow investment and job creation tax incentives to take credit for about 12-25% of increased economic activity.⁷ That is, about 12-25% of economic activity would not have happened without the incentive.

In previous tax incentive performance audits, we have used those percentages to provide a range of estimates regarding the likelihood that the economic activity associated with the audited program could be said to have been caused by the program.

The tax incentive literature also indicates that for an incentive to be a deciding factor in influencing company decisions, the credit must cover a significant part of the planned activity. The larger and more immediate the incentive is, the more credit the program may be able to take for a company’s location choice or decision to expand.⁸

⁷ Timothy J. Bartik, W.E. Upjohn Institute for Employment Research, “*But For*” Percentages for Economic Development Incentives: What Percentage Estimates are Plausible Based on the Research Literature?, July 1, 2018.

⁸ Center for Regional Economic Competitiveness, Smart Incentives, *Estimating the Influence of Incentives on Investment Decisions: A New Approach to the But-For Question*, November 2020.

New to Nebraska and Sustained Companies

How many incentivized companies were new to Nebraska? How many incentivized companies maintained a presence in the state?

Results

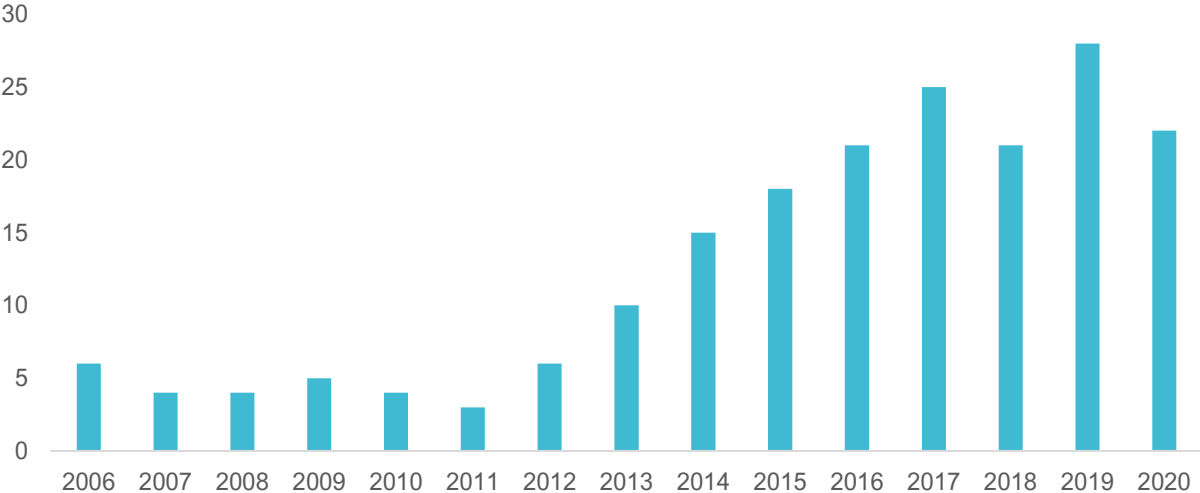
Out of 460 companies that were awarded Research and Development (R&D) credits, we identified 69 that met the statutory definition of a company that was new to the state. These 69 companies were awarded \$2.8 million in credits under the program.

We also looked at the number of companies that remained in Nebraska after being awarded credits under the R&D program, defining a “sustained” company as one that had activity in the state five years or more after their first year for which they earned credits. We were able to look at 341 companies who claimed the credits for activity beginning in 2016 or earlier. Of those, 89% were considered sustained companies.

New to Nebraska

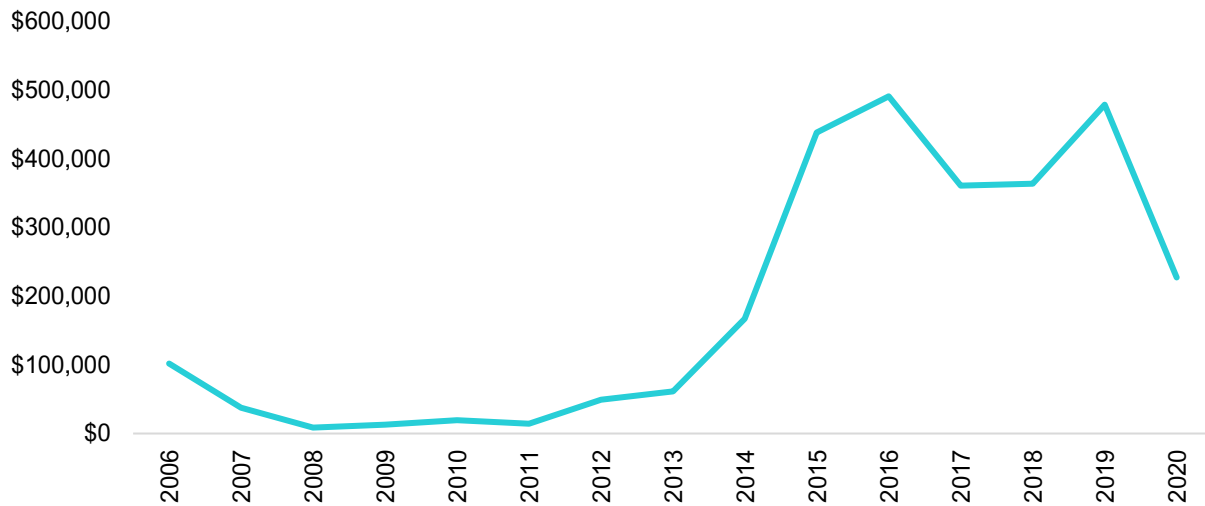
We identified 69 companies, or 15% of R&D program participants, that fit the statutory definition of new to Nebraska. In the first several years of the program, the number of awards to new companies were somewhat low, before beginning to steadily increase in 2013 (Figure 2.1). These companies were awarded \$2.8 million in R&D program credits, with the most credits awarded for activity in 2016 (Figure 2.2).

Figure 2.1. The number of R&D program participants that were new to Nebraska was highest in 2019.



Source: Audit Office analysis of Department of Revenue data.

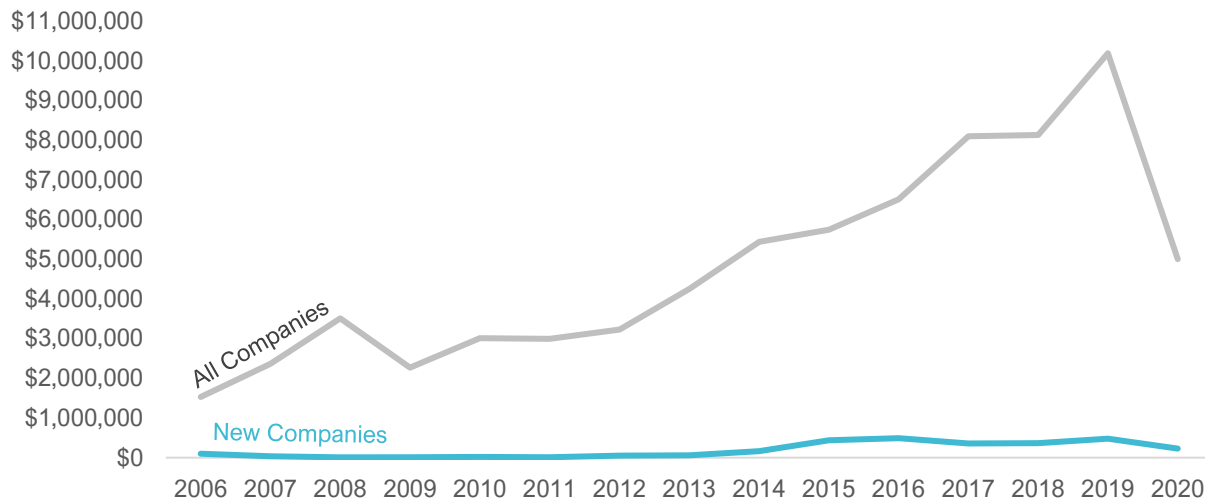
Figure 2.2. The amount of R&D program credits awarded to new to Nebraska companies increased beginning in 2013.



Source: Audit Office analysis of Department of Revenue data.

From 2006 to 2020, new to Nebraska companies received only 4% of all R&D program credits awarded. Figure 2.3 shows the credits awarded to new companies each year in comparison to the credits awarded to all companies.

Figure 2.3. New to Nebraska companies represented a small amount of total R&D program awards.

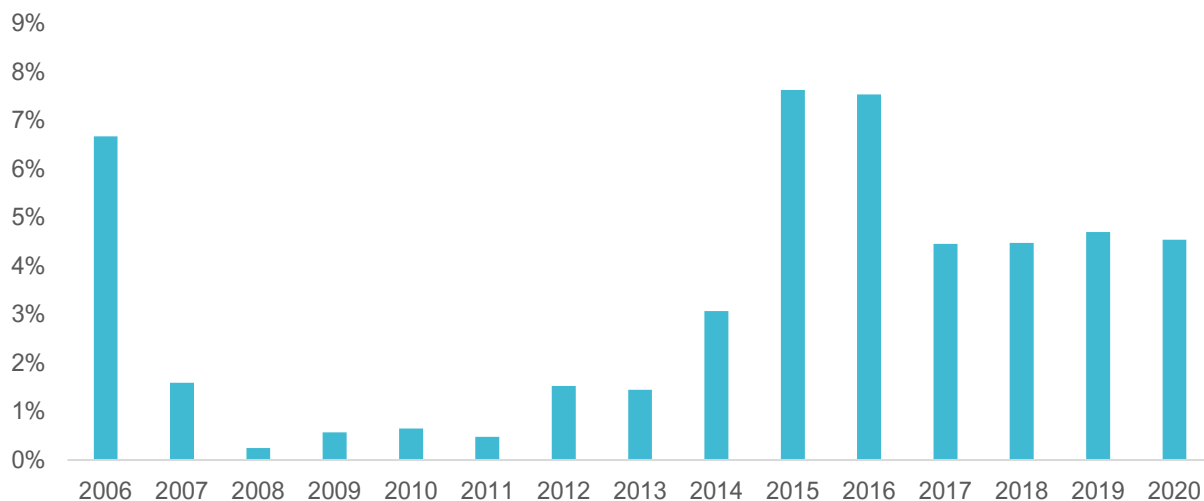


Source: Audit Office analysis of Department of Revenue data.

Note: All companies includes new companies

The percentage of program participants that were new to Nebraska more than doubled from 2014 to 2015, going from 3% to 7.6% (Figure 2.4). One factor in the increase may be changes made to the federal program with which Nebraska’s incentive is tied. Originally, the federal credit program favored established companies but it was amended in 2015 to make it easier for new companies to participate.

Figure 2.4. The percentage of R&D program participants that were new to Nebraska more than doubled in 2015.



Source: Audit Office analysis of Department of Revenue data.

High-tech and Renewable Energy Companies

Statute requires the examination of impact of incentive programs on the high-tech and renewable energy sectors of Nebraska’s economy. We identified 28 new companies, or 41% of all new to Nebraska companies, that were also high-tech (see pages 25-30 for additional discussion on Nebraska’s high-tech sector). There were too few new to Nebraska renewable energy companies participating in the credit to disclose while maintaining taxpayer confidentiality (see pages 31-36 for additional discussion on Nebraska’s renewable energy sector).

Methodology

Using the statutory definition of new to Nebraska, only companies whose activities in the state began after January 1, 2004 could potentially be considered “new” for the Nebraska R&D program. After isolating individual claimants, we collected the reported date business began in Nebraska from claimant tax returns. In cases where this was not available, information was collected from the Nebraska Secretary of State online registry of businesses or Department of Revenue databases to determine the earliest record of employment or owing taxes.

Sustained Companies

We defined a sustained company as one with activity in the state five years or more after the tax year of their first credit award. As an example, a 2006 R&D program award fit the definition of a sustained company if there was activity in 2011 or beyond. Using this methodology, we found a total of 341 first-time claims through tax year 2016 (which was the last year of first-time claims included in this analysis as five years of activity was needed to meet the definition). Of this group, 304 companies, or 89% of program participants, had activity in Nebraska five years or more later and 37 companies, or 11%, did not.

The Audit Office also looked at the date business began in Nebraska for companies participating in the R&D program (Figure 2.5). While 46% of participants established themselves in Nebraska in 2000 or later, the program also benefitted older businesses.

Figure 2.5. The Nebraska R&D program has benefitted both older and newer companies.

Start Date	Pre-1940	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Post-2010
Number of Companies	12	14	13	31	46	59	69	118	93
Percentage of R&D Program	3%	3%	3%	7%	10%	13%	15%	26%	20%

Source: Audit Office analysis of Department of Revenue data.

Note: Five companies are not included because we did not have a reliable date business began.

Competitiveness

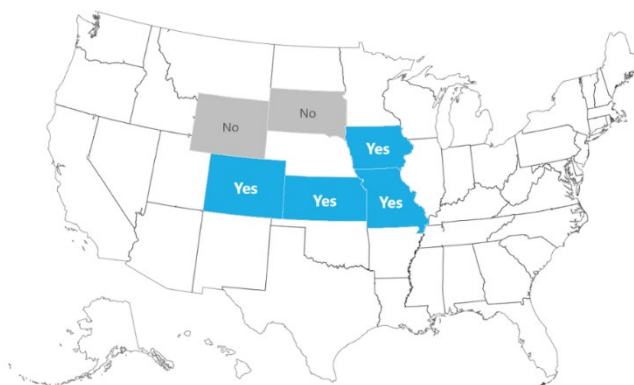
Is Nebraska's program competitive with other states' R&D efforts?

Results

The effective tax benefit of Nebraska's R&D tax credit is lower than programs in Iowa, Kansas, and Missouri but provides more benefits than the Colorado program. When Nebraska and its six neighboring states are compared using a broader assessment of overall tax climates and not just the R&D credit, however, Nebraska was rated by the Tax Foundation as the most competitive for new R&D companies. For mature R&D companies, Nebraska's tax climate was 3rd out of the seven states.

State Research and Development Tax Credit Program Comparison

Of our six border states, Colorado, Iowa, Kansas, and Missouri have similar research and development credit programs to Nebraska. Much like Nebraska's program, these states provide credit on a percentage of certain R&D expenditures and the credit can be used to offset income taxes. South Dakota and Wyoming do not have corporate or personal income tax and do not offer a state-level R&D tax credit.



While the programs in four surrounding states have similar goals to Nebraska's program, each state has a unique design for its credit program (Figure 2.6). Similar to Nebraska, Iowa relies on claimant participation in the federal program for awarding state credits rather than using a separate state application process. Nebraska and Iowa both have refundable credits, while the Colorado, Kansas, and Missouri credits are non-refundable.

Among the four states, credit rates range considerably. Colorado's program has the lowest rate (3%) for calculating the credit and limits claims against the credit to expenditures in specific geographic areas designated as enterprise zones. In contrast, Missouri's new program, set to begin in 2023, will award 15% of incremental research expenditures for activity anywhere in the state or 20% for research activity conducted in conjunction with a public or private college or university.

Figure 2.6. Surrounding state R&D tax credit programs vary in design and credit amount.

State	Program	Amount of Credit
Iowa	Research Activities Credit	6.5% of incremental research expenditures. Refundable. No application.
Kansas	Research and Development Tax Credit	6.5% of incremental research expenditures. Non-refundable. Application.
Nebraska	Nebraska Advantage Research and Development Credit	15% or 35% of federal R&D credits. Refundable. No application.
Colorado	Enterprise Zone Research and Experimental Credit	3% of incremental research expenditures in an Enterprise Zone. Non-refundable. Application.
Missouri*	Qualified Research Expense Tax Credit	15% or 20% of incremental research expenditures. Non-refundable. Application.

Source: Audit Office analysis of state research and development tax credits.

* This program begins in 2023.

While Figure 2.6 suggests that the Nebraska R&D tax credit program has somewhat higher rates compared to surrounding states, the design of Nebraska’s program leads to different results in practice. Nebraska’s credit is tied to the federal credit amount, rather than directly to qualified R&D expenditures. The federal credit amount is a percentage of the total qualifying expenditures and Nebraska program participants get a percentage of the federal credit. Consequently, Nebraska’s effective rate for calculating the credit is lower than if the rate were applied directly to the qualified expenditure amount.

The effective rate of the Nebraska R&D program can be shown by looking at how both the federal program and the Nebraska program award credits for R&D activity. Under the federal program, using their regular calculation method, a company would be awarded a credit of 20% of a company’s qualified R&D expenditures. Then, under the Nebraska R&D program, the company would be eligible for 15% of the federal credit. The amount of the Nebraska credit would be 15% of the 20% they received from the federal program, making Nebraska’s effective R&D credit 3% of qualified expenditures, as shown in the following example.

Example:

Company X has qualified R&D expenditures of **\$100,000**

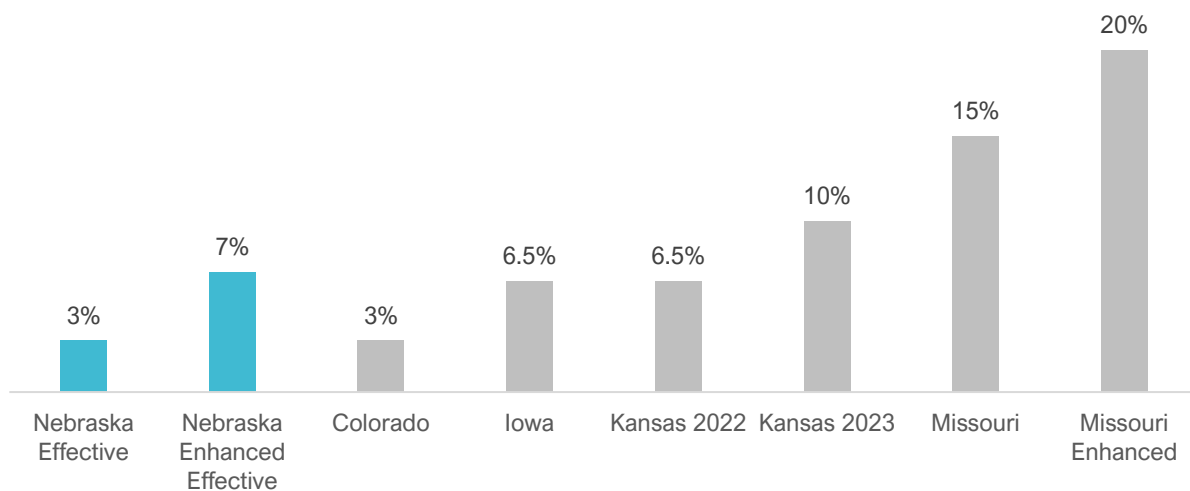
Federal R&D program credit:
(20% of qualified expenditure)
\$20,000

Nebraska R&D program credit:
(15% of the federal credit)
\$3,000

Effective tax rate of the Nebraska R&D program: 3%
\$3,000 = 3% of \$100,000

With an effective rate of 3% rather than 15%, Nebraska’s rate is closer to Colorado’s program, which has the lowest rate of regional states (Figure 2.7). The design of the Nebraska program also affects the enhanced credit, which has an effective tax rate of 7%. While this rate is higher than the 6.5% of the Iowa and Kansas programs, the Nebraska R&D enhanced credit is available only for R&D activities that take place at a college or university. The Nebraska enhanced credit is also less frequently used compared to the standard credit: as stated in Section I of this report, less than 1% of companies received the enhanced credit from 2006 to 2020.

Figure 2.7. Nebraska’s effective R&D tax credit rate is tied with Colorado for the lowest in the surrounding states.



Source: Audit Office analysis of state research and development tax credits.

State Tax Climate Comparison

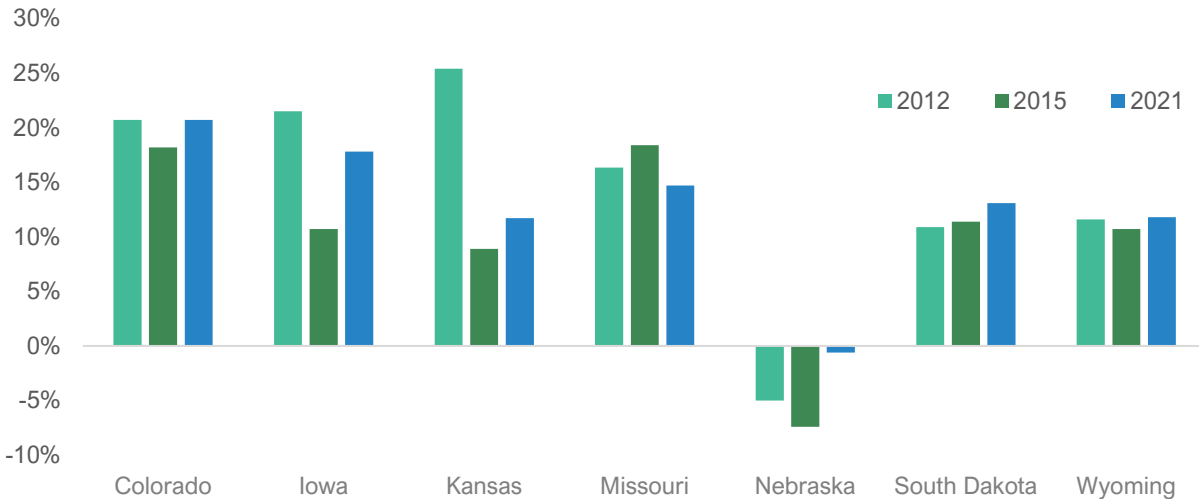
To establish a broader comparison of tax climates, we looked at state tax climate reports from the Tax Foundation, an independent tax policy think tank. In these reports, the Tax Foundation analyzed the total effective tax rate (TETR) for a variety of business types.⁹

To test the potential impact on R&D programs of different state programs, the Tax Foundation assumed a pharmaceutical R&D facility with 50 employees, \$4 million of capital investment, and \$14 million in earnings as their test company. Testing the hypothetical company against the tax climate of Nebraska and its surrounding states showed that, based solely on effective tax rates, for 2021, Nebraska was the best choice for this company if it is a new firm. Additionally, Nebraska’s overall tax climate was

⁹ For their reports, the Tax Foundation’s TETR analysis included corporate income taxes, gross receipts and franchise taxes, property taxes, unemployment insurance taxes, and sales taxes on business equipment or inputs. They also considered tax incentives, including the Nebraska Advantage R&D credit. Each business type is given a certain set of characteristic assumptions that allow for comparison across states and time. Where rankings are used, a ranking of first indicates the lowest tax rates while 50th indicates the highest tax rates. We reviewed the 2012, 2015, and 2021 state tax climate reports.

ranked 3rd nationally for a new R&D firm and was one of three states that had a *negative* effective tax rate—meaning participants received the full credit even when it was more than their taxes (Figure 2.8).

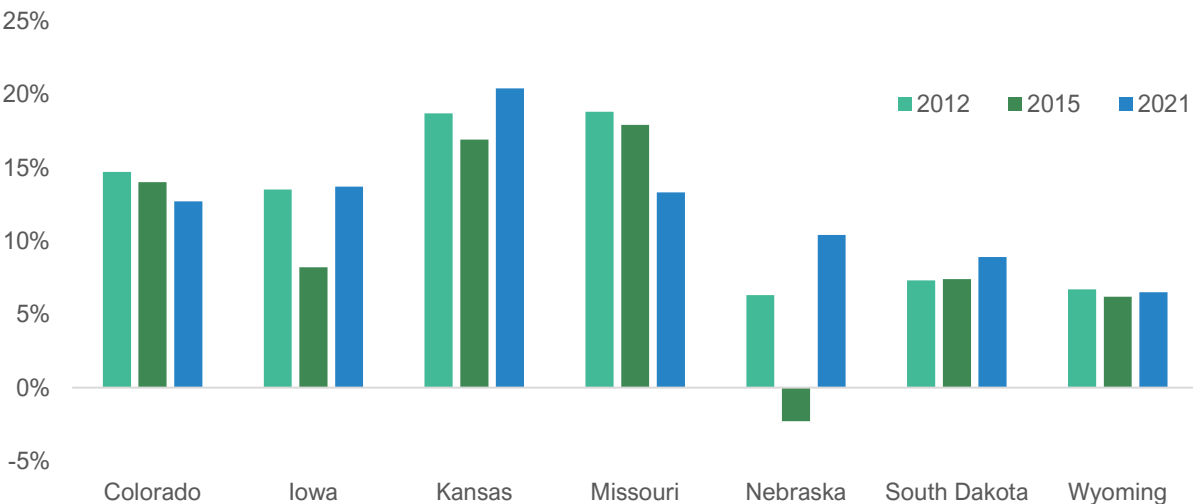
Figure 2.8. Nebraska’s total effective tax rate for new R&D firms is negative, because participants can receive more than their actual tax liability.



Source: Audit Office analysis of Tax Foundation data.

For a mature R&D firm, which the Tax Foundation defines as having been in the state for 10 years, for 2021, Nebraska’s effective rate ranks 3rd compared to surrounding states and 18th nationally. The total effective tax rate for mature firms has fluctuated across the region (Figure 2.9).

Figure 2.9. Nebraska’s total effective tax rate for mature R&D firms has fluctuated, but remains lower than surrounding states with an R&D tax credit.



Source: Audit Office analysis of Tax Foundation data.

Private R&D Spending

How does private R&D spending in Nebraska compare to other states?

Results

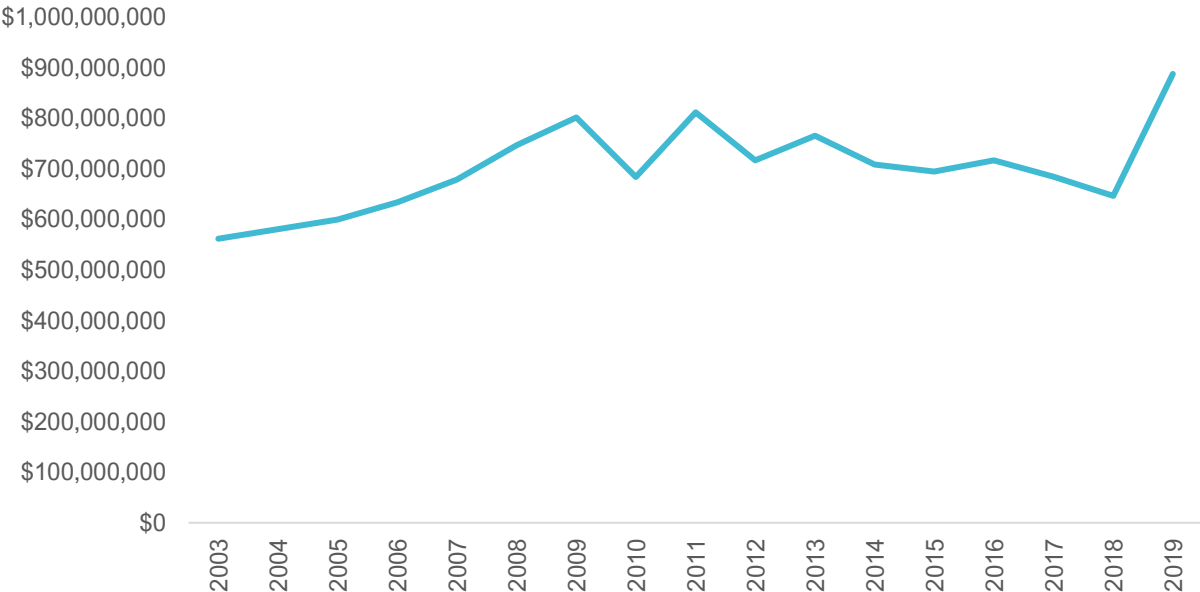
While private R&D spending in Nebraska has increased since 2006, Nebraska ranks 5th out of the seven regional states in comparisons relevant to private R&D spending.

Discussion

Proponents of Nebraska’s Research and Development Act believed that the Act would increase R&D expenditures in Nebraska. The Audit Office used Science & Engineering Indicators, developed by the National Science Foundation and National Science Board, to review private research and development spending from 2003 and to 2019 to examine trends in business R&D spending in Nebraska and the United States.

Adjusting for inflation, business R&D spending in Nebraska increased from \$562 million in 2003 to \$888 million in 2019 (Figure 2.10).¹⁰ Total business R&D spending in the U.S. also increased over the same time period, despite a slight decline from 2008 to 2010 (Figure 2.11).

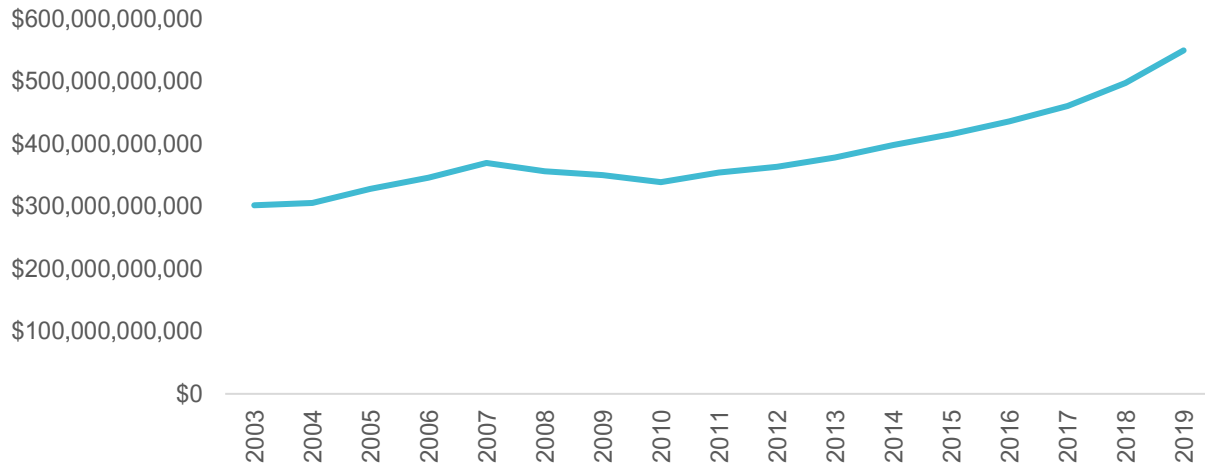
Figure 2.10. Nebraska private R&D spending has increased since the R&D program began in 2006.



Source: Audit Office Analysis of Science and Engineering Indicators (NSF & NSB), adjusted for inflation.

¹⁰ Using the U.S. Bureau of Labor Statistics Consumer Price Index Inflation Calculator, January to January calculation.

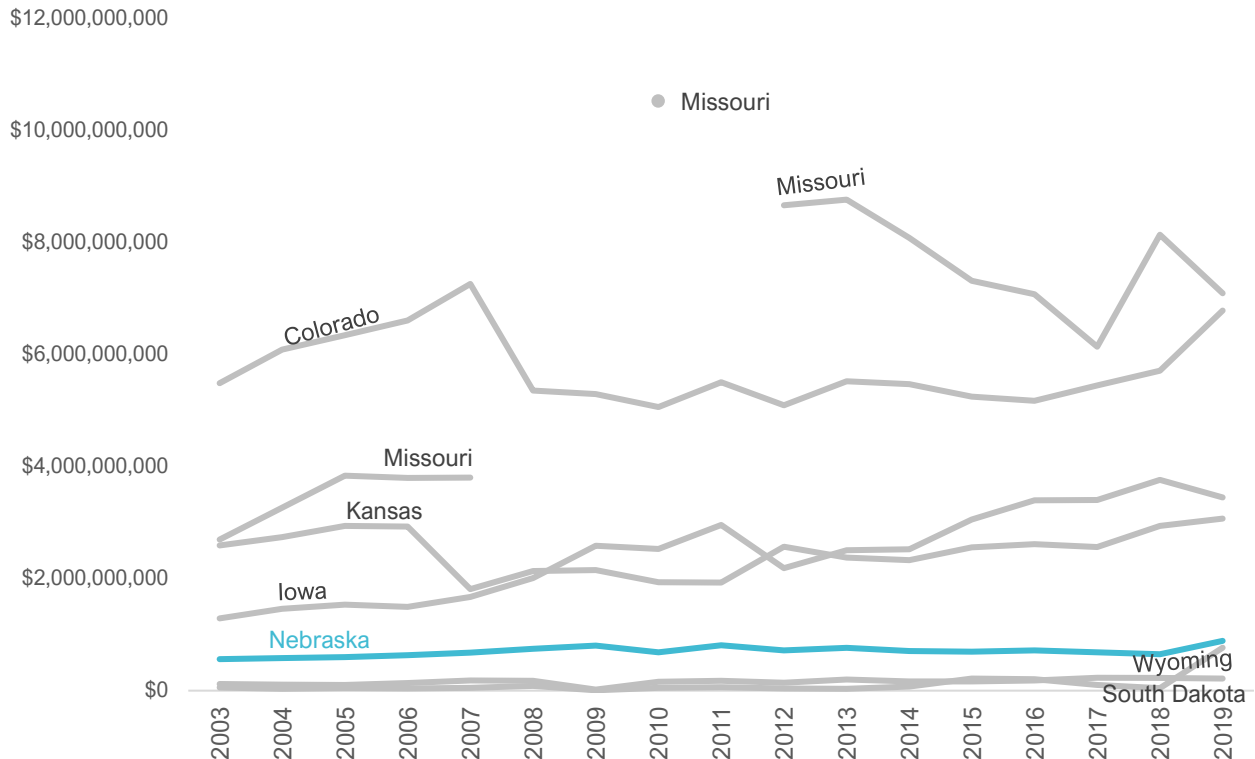
Figure 2.11. National private R&D spending has increased since 2003.



Source: Audit Office Analysis of Science and Engineering Indicators (NSF & NSB), adjusted for inflation.

Compared to surrounding states, Nebraska’s private R&D spending ranked 5th out of seven, ahead only of South Dakota and Wyoming (Figure 2.12).¹¹

Figure 2.12. Nebraska’s R&D spending has remained relatively stagnant compared to other states with R&D tax credits.



Source: Audit Office Analysis of Science and Engineering Indicators (NSF & NSB), adjusted for inflation.

Note: Data missing for Missouri 2008, 2009, and 2011.

¹¹ The Tax Foundation, *Location Matters 2021: The State Tax Costs of Doing Business*, May 5, 2021.

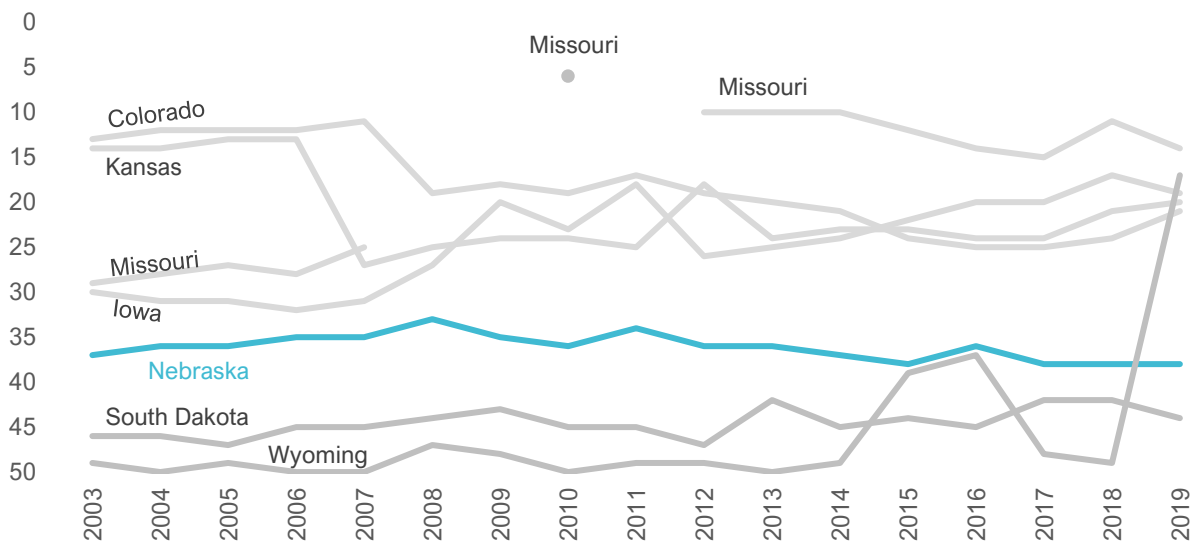
Spending Intensity

R&D spending intensity is another way of assessing whether Nebraska's R&D performance has improved since the establishment of the R&D credit. Intensity is measured using R&D spending compared to output, meaning production value reinvested in R&D. Intensity data was averaged and ranked for the period that the Nebraska R&D tax credit has been in effect.

R&D Spending Intensity: The ratio of R&D expenditures compared to Gross Domestic Product. The United States as a whole had an R&D Spending Intensity of 2.19% in 2019. Nebraska's was 0.69%.

The results of this analysis show somewhat similar rankings to the previous analysis of private R&D spending alone (Figure 2.13). Nebraska's R&D spending intensity was 5th out of the seven states, except in 2019 when Wyoming's spending intensity ranked 2nd in the region, moving Nebraska to 6th.

Figure 2.13. When compared to surrounding states, Nebraska's R&D spending intensity ranked 5th from 2003 to 2018.



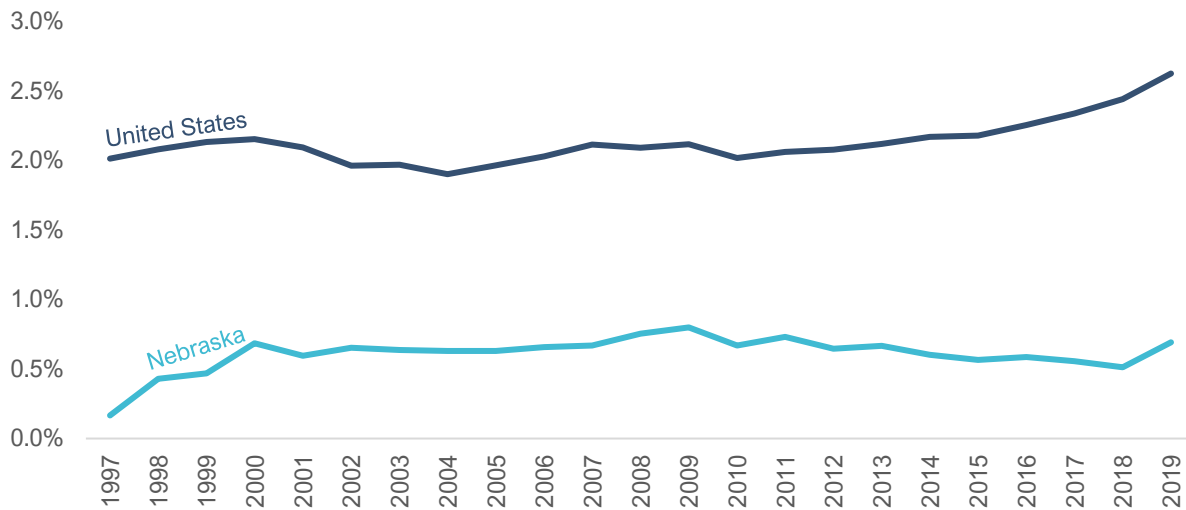
Source: Audit Office Analysis of Science and Engineering Indicators (NSF & NSB).

Looking at when the Nebraska R&D Act was in effect from 2006 to 2019, Nebraska ranked 37th in the nation with an average spending intensity of 0.65%, compared to the national average of 2.19%.¹²

We looked at the R&D spending intensity for the U.S. and Nebraska from 1997 (before the Nebraska R&D program began in 2006) to 2019 to provide a greater context for change that may have occurred in the state (Figure 2.14). During the entire time period, Nebraska's intensity was consistently less than half the U.S. average, both before and after the R&D Act was in place.

¹² Nebraska's position and intensity were the same in our 2017 report. Nebraska Legislature, Legislative Audit Office, *Nebraska Advantage Research and Development Act: Performance on Selected Metrics*, November 2017.

Figure 2.14. Nebraska’s R&D spending intensity was less than half of the national average.



Source: Audit Office Analysis of Science and Engineering Indicators (NSF & NSB).

Methodology

The Science & Engineering Indicators are developed by the National Science Foundation and National Science Board from government data. These indicators allow for state comparisons in outcomes in such things like education, the workforce, and business investments. Using these indicators, we reviewed private research and development spending from 2003 (to predate the Nebraska R&D program) to 2019 (the most recent data available) to examine trends in business R&D spending in Nebraska and the United States.

For our 2017 audit report of the R&D program, the Audit Office consulted a University of Nebraska-Lincoln statistics professor to see if it was possible to determine if changes in data from before and after the passage of the Nebraska R&D Act were statistically significant. However, given the available data, the professor was unable to make such a determination. Due to this, we did not attempt to draw any conclusions about the statistical similarity of the national and state trend for this report.

Compliance Costs

What is the cost for businesses to comply with the program?

Results

For a company to receive R&D credits from the state, they must first earn benefits on qualified expenditures through the federal Research and Experimentation credit. The federal program has high compliance costs for companies, which may have a negative effect on credit effectiveness and participation. Once federal credits have been earned, claiming Nebraska benefits is much less burdensome. By relying on the federal qualification process, the state avoids the difficulties and costs that may come with administration.

Qualification Compliance Issues for Federal Program

In order to earn Research and Experimentation (R&E) credit, federal law requires that a company must prove to the IRS that the expenditures in question qualify by passing a detailed four-part test and by meeting additional standards. Additionally, it involves four potential methods for calculating credits. Both the U.S. Treasury Department and the Government Accountability Office have documented problems arising from the complexity of the program.

In a 2016 report on the federal R&E credit, the U.S. Treasury Department stated:
The compliance burden arises from the need to compute the complicated credit and to maintain documentation dating back years (and even decades in some cases). In addition, the R&E credit has been the source of many disputes between taxpayers and the IRS. Some of these difficulties are unavoidable, such as determining and verifying qualifying research, but others stem from the design of the credit.¹³

A 2009 Government Accountability Office study stated:
There are numerous areas of disagreement between IRS and taxpayers concerning what types of spending qualify for the research credit. These disputes raise the cost of the credit to both taxpayers and IRS and diminish the credit's incentive effect by making the ultimate benefit to taxpayers less certain.¹⁴

¹³ U.S. Treasury, Office of Tax Analysis, *Research and Experimentation (R&E) Credit*, 2016.

¹⁴ General Accountability Office, Report to the Committee on Finance, U.S. Senate, *The Research Tax Credit's Design and Administration Can Be Improved*, 2009.

Additionally, in a 2015 study of the credit, the Mercatus Center at George Mason University stated:

This broad statement speaks to several costs of the R&D credit, most notably, the cost associated with the tax consultants and lawyers who are necessary to navigate what Martin Sullivan calls one of the most complex areas in tax law. Complexity means more resources must be spent on administrative support and on interpreting and following the law.¹⁵

Claiming Nebraska Credit

Once a company receives federal credit, it need only complete and file forms with the Nebraska Department of Revenue for review and processing. There may be an added compliance cost in the state requirement for electronic employment verification, or e-verify. Although the e-verify process is a free service provided by the federal government, businesses incur costs related to complying with e-verify procedures. E-verify is currently voluntary at the national level. As of September 30, 2022, around 9,400 companies operating at over 23,000 locations in Nebraska have enrolled in e-verify.¹⁶ Although e-verify is a requirement for the Nebraska R&D program, there are other reasons a company may enroll in e-verify. Even with the e-verify expenses, compliance costs at this stage are minimal in comparison to those for the federal credit.

Effectiveness

The effectiveness of the federal tax credit, and therefore the Nebraska credit, is likely reduced by high compliance costs. However, the advantage to the state in tying Nebraska's R&D credit to the federal credit is that the IRS assumes the administrative burden of verifying expenditures, parsing vague definitions, and handling lawsuits. For more information on the administrative costs of the program, see page 38.

¹⁵ George Mason University, Mercatus Center, *Can a Research and Development Tax Credit Be Properly Designed for Economic Efficiency?*, 2015.

¹⁶ US Department of Homeland Security, *E-Verify Usage Statistics*, <https://www.e-verify.gov/about-e-verify/e-verify-data/e-verify-usage-statistics>, accessed December 2, 2022.

High-tech Sector

Is the Act stimulating high-tech companies in the state?

Results

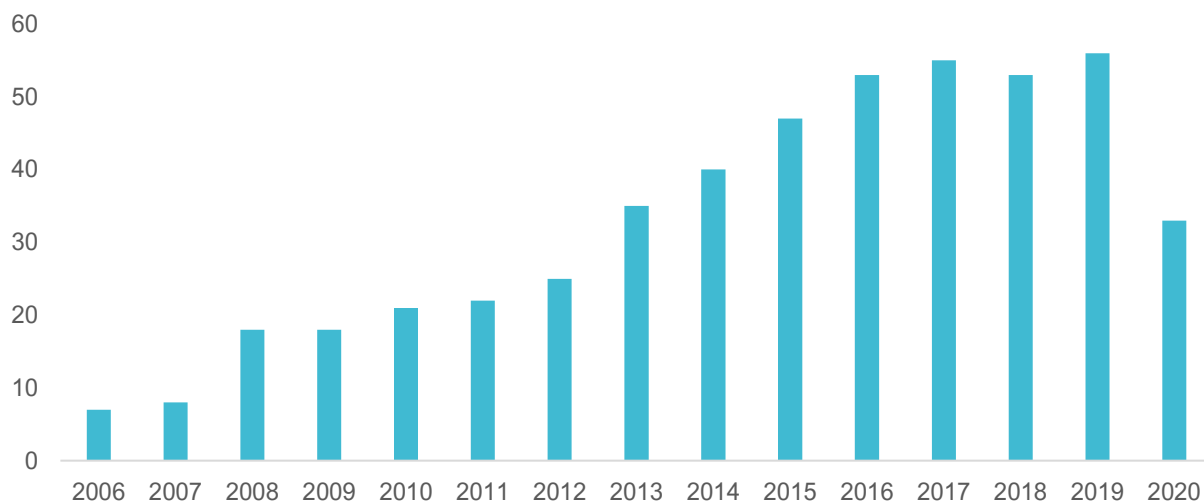
We identified 109 companies, or 24% of Nebraska R&D program participants, from the high-tech sector. From 2006 to 2020, these companies were awarded a total of \$14.8 million in program credits.

During this time, both the number of high-tech employees and the relative size of the sector within the state increased slightly. However, high-tech employment growth in the state has not kept pace with the sector's growth nationally.

Program Participation

Using company-reported standardized industry designations (NAICS codes), we identified 109 high-tech companies participating in the R&D program.¹⁷ The number of high-tech companies awarded credits under the program generally increased each year until 2020 (Figure 2.15). The steep decrease in 2020 may be a reflection of the economic shocks related to the COVID-19 pandemic beginning that year.

Figure 2.15. The number of R&D high-tech companies with qualified activity generally increased each year until 2020.

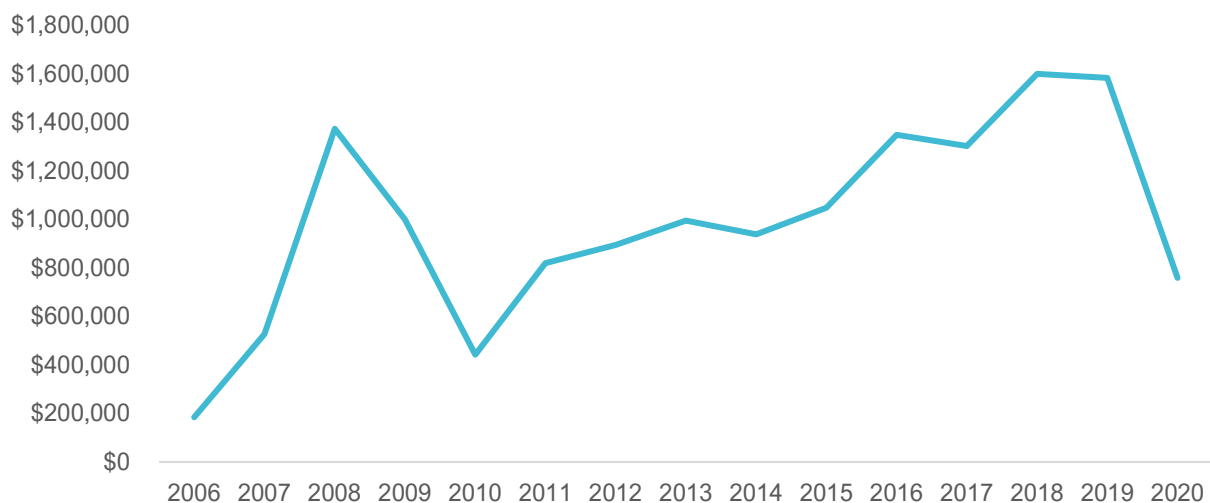


Source: Audit Office analysis of Department of Revenue data.

¹⁷ Although the Nebraska R&D Act does not define a “high-tech” company, the Legislature has provided a definition for analysis in the Legislative Performance Audit Act. Neb. Rev. Stat. § 50-1209(4)(d). See Appendix A for a list of all NAICS codes used in this analysis.

The credit amounts awarded to high-tech companies dropped at two points that coincide with national economic shocks: the Great Recession and the COVID-19 pandemic (Figure 2.16). Between 2008 and 2010, the amounts awarded annually dropped from almost \$1.4 million to just over \$400,000. Similarly, the amount awarded in 2019 dropped from almost \$1.6 million to about \$700,000 in 2020.

Figure 2.16 R&D program credits awarded to high-tech companies dropped significantly between 2008 and 2010 and between 2019 and 2020.



Source: Audit Office analysis of Department of Revenue data.

Nebraska’s High-tech Environment

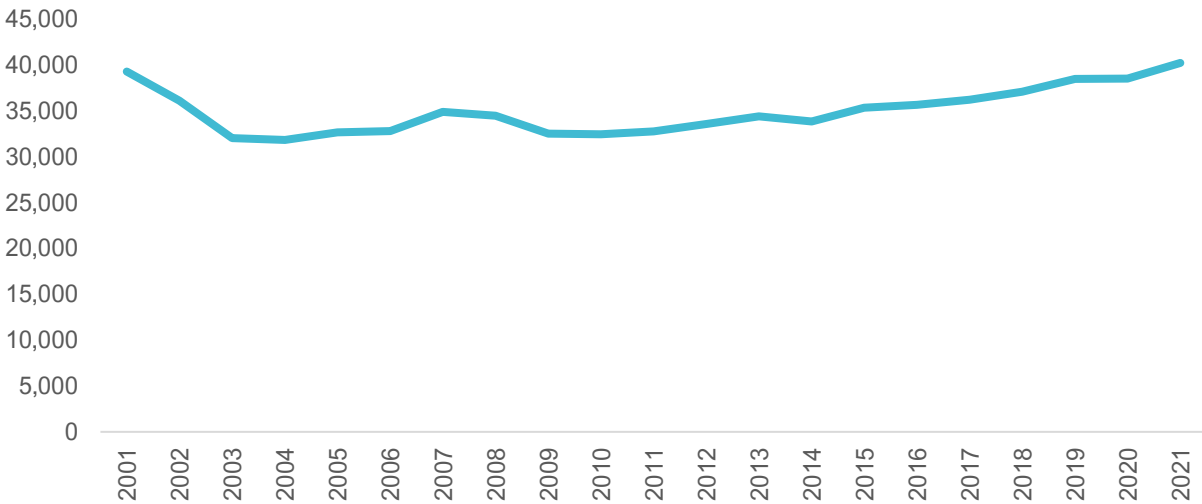
Taking into account state high-tech employment numbers and the sector size relative to the Nebraska economy as a whole, Nebraska’s high-tech employment was strongest in 2001, the first year for which complete data was available. From 2001 to 2021,¹⁸ both the number of high-tech employees and the relative size of the sector within the state increased slightly. However, high-tech employment growth in the state has not kept pace with the sector’s growth nationally. Following is a discussion of the results of the Audit Office’s analysis of Nebraska’s high-tech environment.

¹⁸ We used 2001 to 2021 because there is complete employment data for that time period (there is only complete program data for activity in 2006 to 2020). By looking both before and after available program data, we can look for existing trends before program enactment and whether trends might be carried forward.

Number of Employees and Sector Size Relative to State Economy

The number of Nebraska employees in the high-tech sector dipped from 2001 to 2003, then increased fairly steadily, ultimately rising above the 2001 level in 2021 (Figure 2.17).

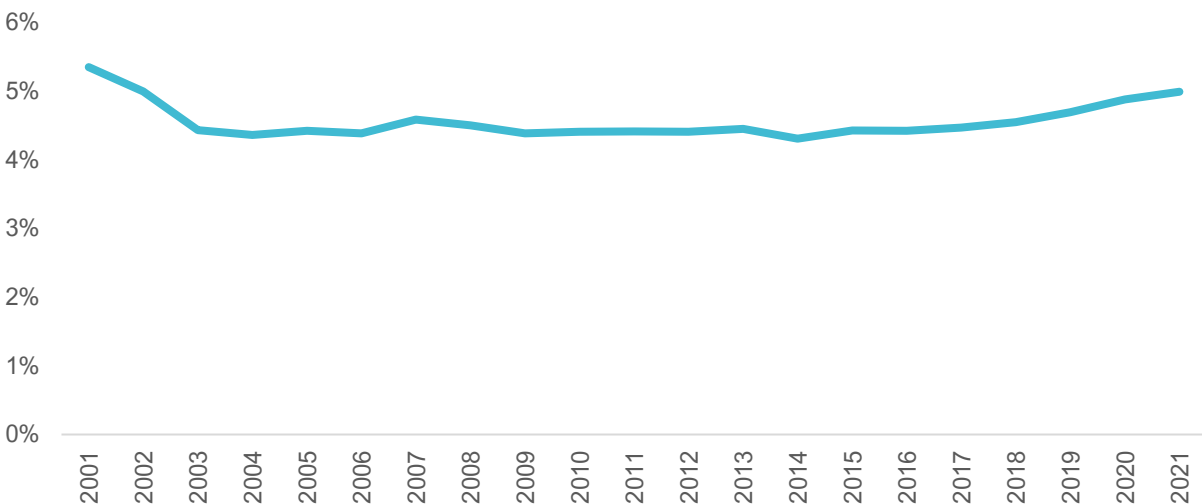
Figure 2.17. Nebraska's high-tech employment only recently recovered to 2001 levels.



Source: Audit Office analysis of Bureau of Labor Statistics data.

Similarly, the percentage of Nebraska's total employment in the high-tech sector decreased from 2001 to 2003 (Figure 2.18). The high-tech employment sector percentage remained steady from 2003 through 2018. In the most recent years, that percentage has started to increase. Although the level increased in 2021 to 5%, it remains below the 5.3% seen in 2001.

Figure 2.18. The percentage of Nebraskans employed in the high-tech sector has not recovered to 2001 levels.



Source: Audit Office analysis of Bureau of Labor Statistics data.

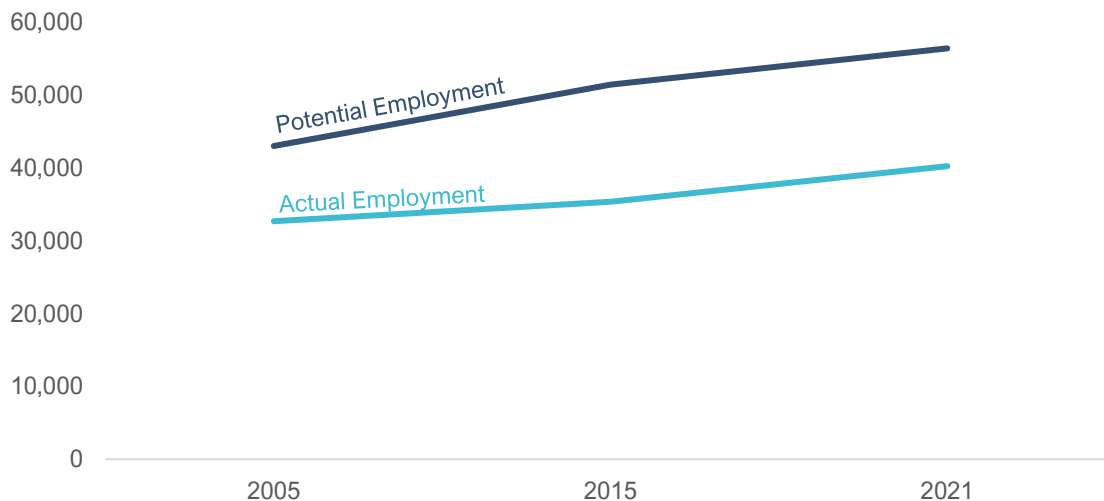
Nebraska's High-tech Sector Size Comparisons

A location quotient is a measurement that compares a segment of the economy in a smaller geography—in this case, the state of Nebraska—with the same segment in the United States as a whole. It is used to determine if that part of the state's economy is weaker, equivalent to, or stronger than would be expected as compared to the national economy.

While the percentage of high-tech employment has remained generally steady in Nebraska (shown above in Figure 2.18, a location quotient analysis indicates that Nebraska's high-tech sector growth is not maintaining pace with the overall U.S. sector growth. We analyzed three points in time and found that Nebraska's high-tech employment rate was less than the national rate in each of the three years: 76% in 2005, 69% in 2015, and 71% in 2021.¹⁹

Translated into number of jobs, those percentages mean that in order for Nebraska's high-tech sector to have been on par with the U.S. as a whole, it would have needed 10,340 additional high-tech jobs in 2005, 16,099 in 2015, and 16,187 in 2021 (Figure 2.19).

Figure 2.19. The gap between Nebraska's actual high-tech job sector employment and the potential employment if Nebraska were keeping up with the U.S. rate has increased over time.



Source: Audit Office analysis of Bureau of Labor Statistics data.

¹⁹ These years coincide with the year prior to the start of the program, the year analyzed for this metric in our 2017 report, and the most recent year with complete data available. We provide all three to show change over time.

National, Industry, and Local Employment Analysis

Shift-share analyses are used to determine how much employment change in a given time period is due to overall national employment changes, national industry specific employment changes, and regional employment changes.

Using this method of analysis, we estimated that the high-tech sector in Nebraska grew by 7,284 jobs between 2005 and 2021. Of those jobs, an estimated 1,219 (16.7%) were attributed to the general growth of the national economy, 2,963 (40.7%) were attributed to the national growth in the high-tech sector, and 3,102 (42.6%) were attributed to local conditions, including state government incentive programs. This suggests that local conditions in Nebraska's economy are likely to have accounted for less than half of its job growth in the sector between 2005 and 2021.

Within the high-tech sector, results varied among individual industry groups. For example, Nebraska's largest positive regional shift in the high-tech sector was in Software Publishing (NAICS 5112), in which 4,890 additional jobs were attributed to local conditions. From 2006 to 2020, 12 Software Publishing companies participated in the R&D program and received about \$300,000 in credits.

The largest negative regional shift occurred in Data Processing, Hosting, and Related Services (5182), in which local conditions accounted for 5,841 *fewer* jobs than would be expected based on national and industry trends. This subsector includes activities like data storage, non-financial data processing, streaming services, and web hosting. From 2006 to 2020, three Data Processing, Hosting, and Related Services companies participated in the R&D program and received about \$800,000 in credits.

Comparing the two largest regional shifts in the high-tech sector—the sub-sector with the largest *increase* in employment received less than half of the R&D program credits awarded to the subsection with the largest *decrease* in employment—suggests that local conditions that influenced employment changes in the high-tech sector as a whole were likely not due to the R&D credit.²⁰

Methodology

Using database information derived from company tax returns, we found companies with NAICS codes that met the statutory definition of high-tech. Average annual employment data on high-tech sectors for 2001 to 2021 was assembled from the Quarterly Census of Employment and Wages (QCEW) database. Only private sector data was analyzed. Federal, state, and local government employment was not included.

A location quotient is used to find a concentration of employment. It's calculated by first dividing local industry employment by the all-industry local employment. Second, the national industry employment is divided by the all-industry national employment. The

²⁰ See the introduction to Section II for a discussion regarding the difficulty in determining the impact of incentive programs.

local concentration is then divided by the national concentration to find a location quotient. A result of 1 means that the segment is the same relative size in the state as it is in the U.S. as a whole. A result of 2 would mean that the state has twice as much relative employment in the segment than the U.S, and a result of .2 would mean that the state has 20% of the amount of employment relative to the U.S. These are stated as their percentages in the report.

For the shift-share analysis, each industry's employment is compared to national and regional trends with three standardized formulas that find the amount that can be attributed to federal, industry, and regional trends.

Supporting documentation for the analyses in this section are available in Appendix A.

Renewable Energy Sector

Is the Act stimulating renewable energy companies in the state?

Results

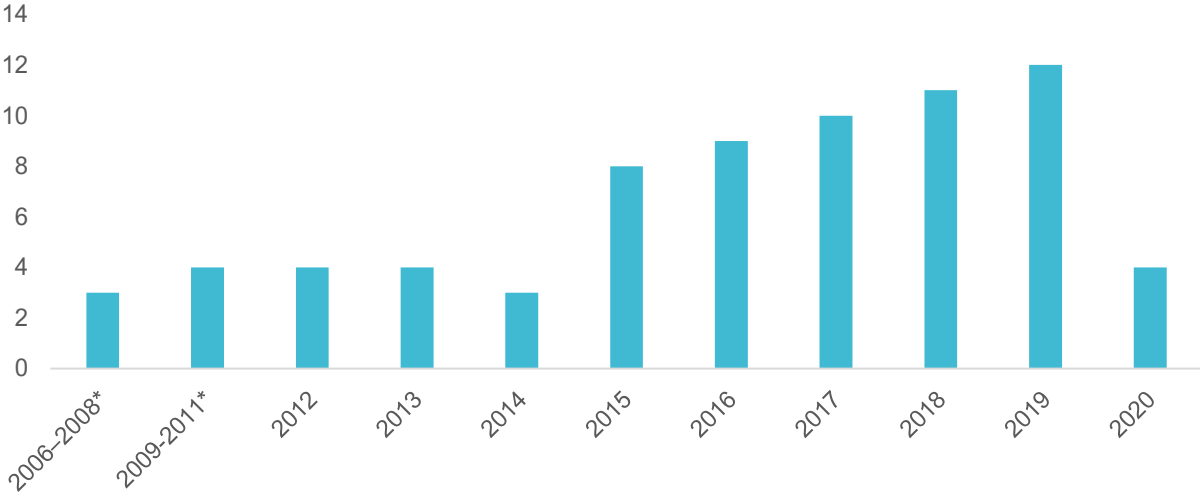
We identified 19 companies, or 4% of Nebraska R&D program participants, from the renewable energy sector. From 2006 to 2020, these companies were awarded \$4.2 million in program credits.

During this time, both the number of renewable energy employees and the relative size of the sector within the state increase slightly. However, renewable energy employment in the state has not kept pace with the sector nationally.

Discussion

Using company-reported standardized industry designations (NAICS codes), we identified 19 renewable energy companies participating in the R&D program.²¹ The number of renewable energy companies awarded credits under the program rose significantly in 2015 and continued to increase until 2020 (Figure 2.20). The steep decrease in 2020 is likely a reflection of the economic shocks related to the COVID-19 pandemic beginning that year.

Figure 2.20. The number of renewable energy companies awarded credits rose sharply in 2015 and continued to increase each year until 2020.

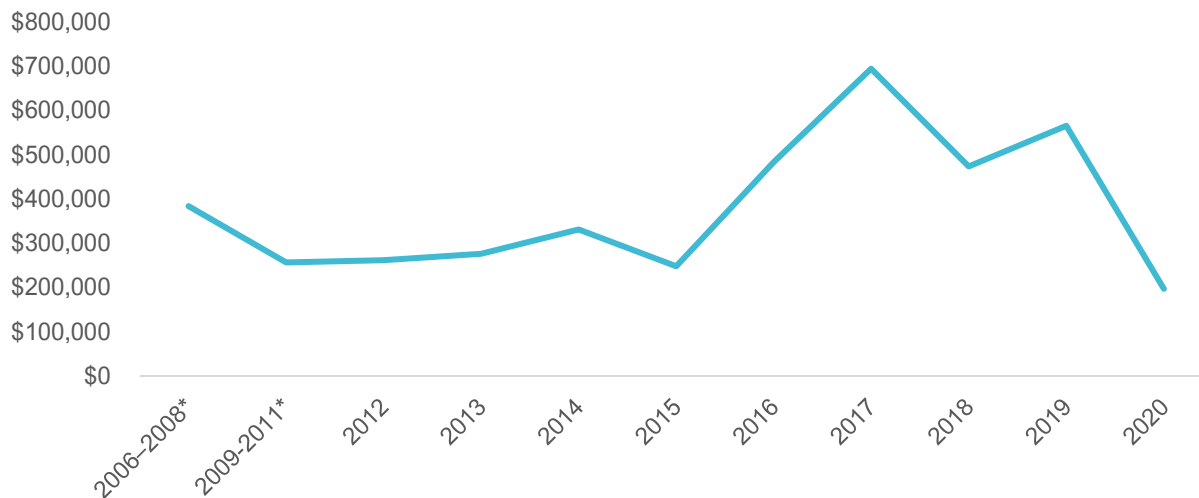


Source: Audit Office analysis of Department of Revenue data.
*Combined to protect taxpayer confidentiality.

²¹ Although the Nebraska R&D Act does not define a renewable energy company, the legislature has provided a definition for analysis in the Legislative Performance Audit Act. Neb. Rev. Stat. § 50-1209(4)(g). See Appendix B for a list of all NAICS codes used in this analysis.

Renewable energy companies were awarded R&D program credits of over \$4.2 million for activity between 2006 and 2020 (Figure 2.21). The annual amount awarded was highest in 2017 at almost \$700,000, but dropped to about one-third of that in 2020.

Figure 2.21. Renewable energy companies were awarded a high of almost \$700,000 in R&D program credits in 2017.



Source: Audit Office analysis of Department of Revenue data.

*Combined to protect taxpayer confidentiality

Nebraska’s Renewable Energy Environment

The Audit Office used a series of analyses to develop a picture of Nebraska’s renewable energy sector. Nebraska’s renewable energy sector grew in both companies participating and credit amounts awarded in the most recent five years reviewed for this audit. However, Nebraska’s renewable energy sector has not kept pace with the sector’s growth nationally. Following is a discussion of the results of the Audit Office’s analysis of Nebraska’s renewable energy environment.

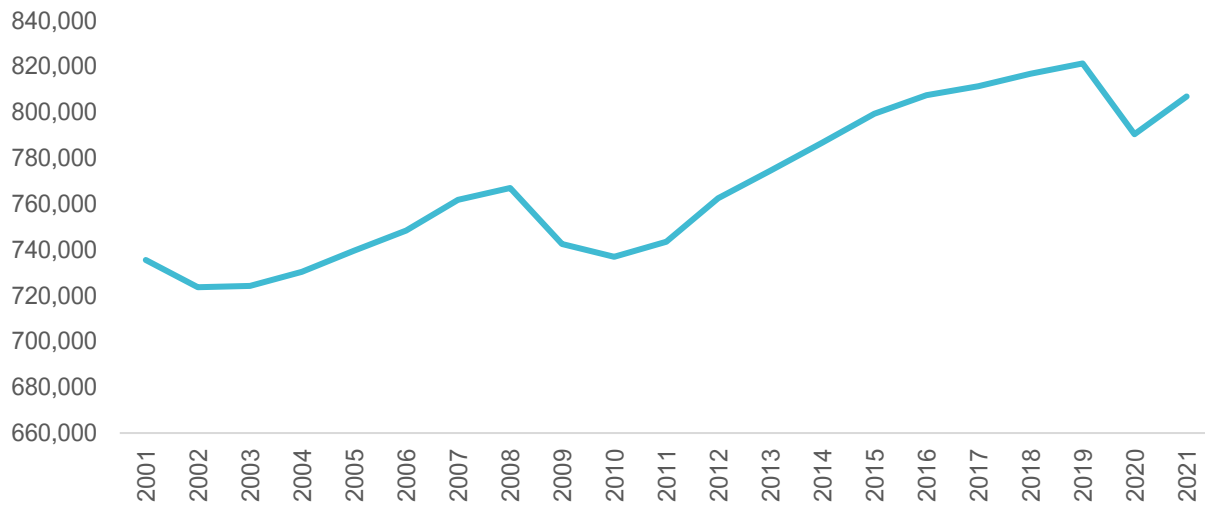
Number of Employees and Sector Size Relative to State Economy

The number of Nebraska employees in the renewable energy sector, increased from 2001 to 2021 (Figure 2.22).²² This increase was driven by growth in three sectors: 3,054 more jobs in Landscaping Services; 2,431 in Oilseed and Grain Combination Farming; and 1,520 in Ethyl Alcohol Manufacturing.²³

²² We used 2001 to 2021 because there is complete employment data for that time period (there is only complete program data for activity in 2006 to 2020). By looking both before and after available program data, we can look for existing trends before program enactment and whether trends might be carried forward.

²³ NAICS codes 561730, 1111, and 325193, respectively. All NAICS codes starting with 1111 fit the definition of renewable energy sectors and were combined together for ease of analysis.

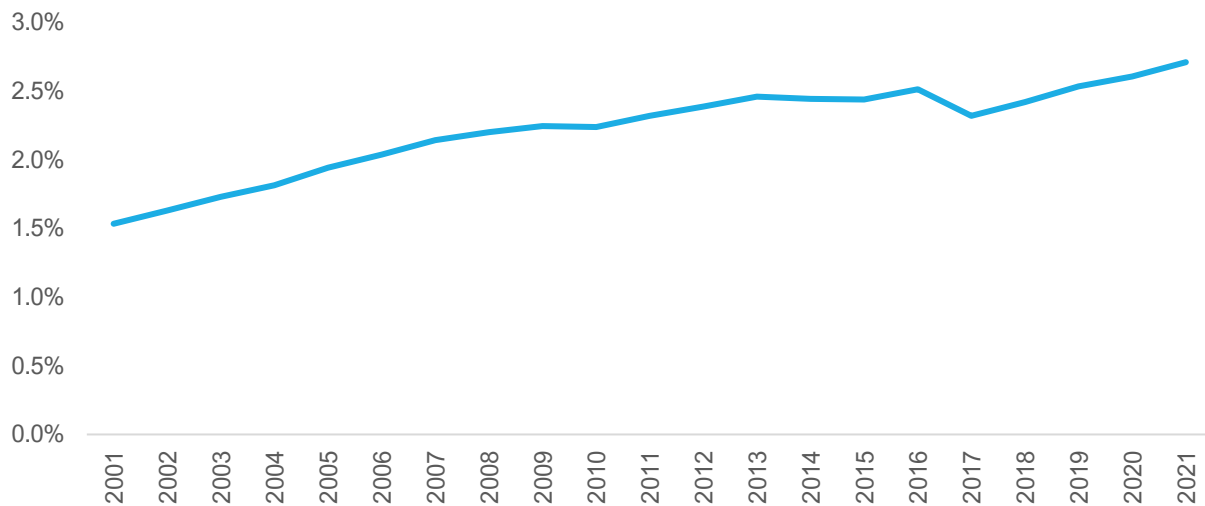
Figure 2.22. Nebraska’s renewable energy sector employment increased from 2001 to 2021.



Source: Audit Office analysis of Bureau of Labor Statistics data.

When renewable energy employment is looked at as a percentage of the Nebraska economy, an increase is also seen (Figure 2.23).²⁴

Figure 2.23. Renewable energy employment has generally increased as a percentage of Nebraska’s total employment.



Source: Audit Office analysis of Bureau of Labor Statistics data.

²⁴ The dip seen from 2016 to 2017 is likely due to disclosure issues in a handful of individual sectors preventing some jobs from being reported.

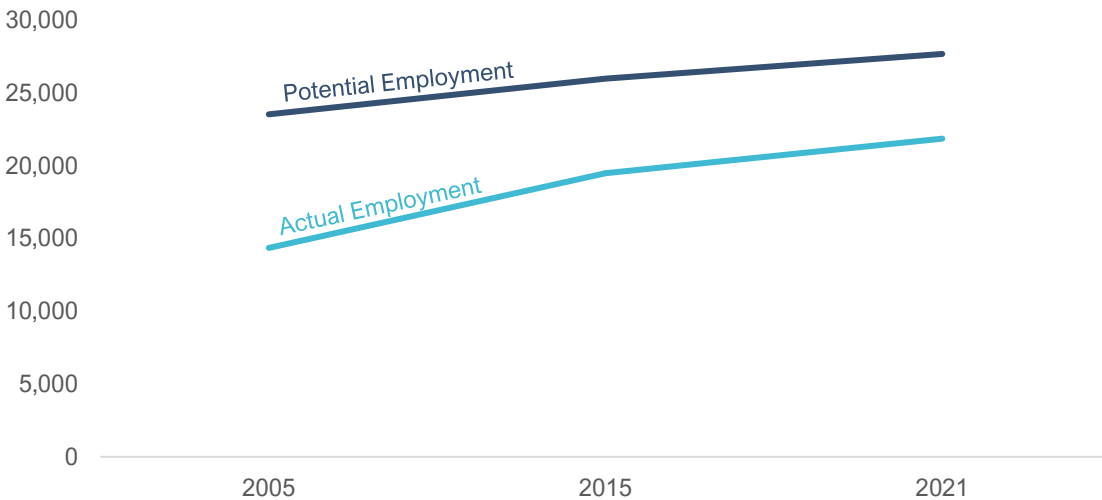
Nebraska’s Renewable Energy Sector Size Comparisons

A location quotient is a measurement that compares a segment of the economy in a smaller geography—in this case, the state of Nebraska—with the same segment for the United States as a whole. It is used to determine if that part of the state’s economy is weaker, equivalent to, or stronger than would be expected by looking at the national economy.

While the percentage of renewable energy employment increased for Nebraska (shown above in Figure 2.23), a location quotient analysis indicates that Nebraska’s sector growth is not maintaining pace with the overall U.S. sector. WE analyzed three points in time and found that Nebraska’s renewable energy employment rate was less than the national rate: 63% in 2005, 77% in 2015, and 81% in 2021.²⁵

Translated into number of jobs, those percentages mean that in order for Nebraska’s renewable energy sector to have been on par with the U.S. as a whole, it would have needed 9,181 additional jobs in 2005, 6,499 in 2015, and 5,821 in 2021 (Figure 2.24).

Figure 2.24. The gap between Nebraska’s actual renewable energy sector employment and the potential employment if Nebraska were keeping up with the U.S. rate has decreased over time.



Source: Audit Office analysis of Bureau of Labor Statistics data.

²⁵ These years coincide with the year prior to the start of the program, the year analyzed for this metric in our 2017 report, and the most recent year with complete data available. We provide all three to show change over time.

National, Industry, and Local Employment Analysis

Shift-share analyses are used to determine how much employment change in a given time period is attributable to overall national employment changes, national industry specific employment changes, and regional employment changes.

Using this method of analysis, we estimated that the renewable energy sector in Nebraska grew by 7,138 jobs between 2005 and 2021. Of those jobs, an estimated 999 (14%) were attributed to growth in the national economy as a whole, 2,694 (38%) were attributed to growth in the national renewable energy sector, and 3,445 (48%) were attributed to local conditions, including state government incentives. This means that local conditions in Nebraska's economy accounted for less than half of its job growth in the sector between 2005 and 2021.

Within the renewable energy sector, results varied among individual industry groups. For example, Nebraska's largest positive regional shift—and what largely accounted for the state's overall employment increase—in the renewable energy sector was in Oilseed and Grain Farming²⁶ and Landscaping Services. No companies in this sub-sector received R&D credits. On the other hand, although Engineering Services accounted for a large number of new jobs, the shift-share analysis suggests most of that is due to growth of the industry and only some is due to economic conditions in Nebraska. Five companies in this sub-sector received about \$400,000.

The largest negative regional shift occurred in the Physical, Engineering, and Life Science which includes R&D in biotechnology and nanotechnology.²⁷ There were no companies in these industries participating in the Nebraska R&D credit. Nebraska saw 876 *fewer* jobs in this sub-sector than would have been anticipated if the state had kept up with national and industry trends. There were not enough companies participating in this sub-sector to be able to report credit information due to confidentiality restrictions.

That the subsector with the largest increase in employment received no R&D credits and the credit was less influential than industry employment trends in a separate employment increase suggests that local conditions that influenced employment changes in the renewable sector as a whole were not likely due to the R&D credit.²⁸

Methodology

Using database information derived from company tax returns, we found companies with NAICS codes that met the statutory definition of renewable energy. Average annual employment data on renewable energy sectors for 2001 to 2021 was assembled from the Quarterly Census of Employment and Wages (QCEW) database. Only private sector data was analyzed. Federal, state, and local government employment was not included.

²⁶ The NAICS codes for industries in the paragraph are: Oilseed and Grain Farming (111191), Landscaping Services (561730), and Engineering Services (541330).

²⁷ NAICS codes 541713, 541714, and 541715 respectively.

²⁸ See the introduction to Section II for a discussion regarding the difficulty in determining the impact of incentive programs.

A location quotient is used to find a concentration of employment. It's calculated by first dividing local industry employment by the all-industry local employment. Second, the national industry employment is divided by the all-industry national employment. The local concentration is then divided by the national concentration to find a location quotient. A result of 1 means that the segment is the same relative size in the state as it is in the U.S. as a whole. A result of 2 would mean that the state has twice as much relative employment in the segment than the U.S, and a result of 0.2 would mean that the state has 20% of the amount of employment relative to the U.S. These are stated as their percentages in the report.

For the shift-share analysis, each industry's employment is compared to national and regional trends with three standardized formulas that find the amount that can be attributed to federal, industry, and regional trends.

Supporting documentation for the analyses in this section are available in Appendix B.

Additional Public Funding

Did companies participating in the R&D program receive other state funding?

Results

Of the 460 companies that claimed credit under the R&D Act, 166 (36%) received another state benefit from programs administered by the Department of Revenue. These companies received more than \$3 billion, most of which was from the Employment and Investment Growth Act.

Discussion

Of the 460 companies that were awarded R&D tax credits, we identified 166 participants that received over \$3 billion in additional state funding from other state tax incentive programs, including the Employment and Investment Growth Act (LB 775), the Nebraska Advantage Act, the Employment Expansion and Investment Incentive Act (LB 270), and the Nebraska Advantage Rural Development Act (Figure 2.25). The largest source of additional state funding for R&D program participants is LB 775, which began in 1987. Although LB 775 program applications ended in 2005, some companies are still receiving benefits.

Figure 2.25. R&D program participants received the most additional funding from LB 775.

Program	Number of R&D Program Participants Receiving Funds	Amount Received	Percent of Total Additional Funds
LB 775	91	\$2,118,296,511	70.2%
Nebraska Advantage	99	\$897,334,026	29.7%
LB 270	31	\$1,701,553	0.1%
Rural Development	9	\$1,819,255	0.06%
Total	166*	\$3,019,151,345**	100%

Source: Audit Office analysis of Department of Revenue data.

*Total reflects number of individual R&D program participants that received funds from other state programs—some participants received funds from more than one other program so may be included under multiple programs.

**Credits used through 2021

Methodology

R&D participant companies were matched to program participant lists for Employment and Investment Growth Act (LB 775), the Nebraska Advantage Act (LB 312), and the Employment Expansion and Investment Incentive Act (LB 270), the Nebraska Advantage Rural Development Act, the Nebraska Advantage Microenterprise Act, the Ethanol Production Investment Credit, the New Markets Tax Credit, and ImagiNE Nebraska. To protect taxpayer confidentiality, participation information from the Microenterprise Act, Ethanol Production Investment Credit, New Markets Tax Credit, and ImagiNE Nebraska is not disclosed.

Administrative Cost

What is the cost to administer and promote all tax incentive programs?

Results

For 2016 to 2021, the Department of Revenue spent \$9.6 million to administer all tax incentive programs. For 2019 through 2021, there were no costs to the Department of Economic Development related to the Nebraska R&D program.

Discussion

The R&D program is one of several tax incentive programs administered by the Department of Revenue. The Department does not track expenditures specific to the Nebraska R&D incentive because administration of the program is done in conjunction with all of the other tax incentive programs. The Department of Revenue spent an average of \$1.6 million each year for the administration of all tax incentive programs from 2016 to 2021, for a total of \$9.6 million.

As the Nebraska R&D program is simpler than other programs administered by Revenue, it is responsible for a proportionally smaller part of the cost. There is no application process for the R&D program, so the majority of program administration is processing the forms and tax returns of participating companies.

In previous years, the Department of Economic Development had incurred costs related to the Nebraska R&D program because it was included as a part of a package of incentives that were promoted together. An official from the Department of Economic Development stated that there were minimal, if any, administrative or promotional costs for the R&D incentive in the 2019 to 2021 time period. The Department of Economic Development used their resources on incentives for which they have administrative responsibility, and have recently focused efforts on the new ImagiNE Act.

Methodology

The Department of Revenue and the Department of Economic Development provided information pertaining to budgeting and policy decisions affecting program administration.

Fiscal Protections

What are the fiscal protections in the Act?

Results

The Nebraska Research and Development Act contains some fiscal protections including performance-based incentives, monitoring, and information sharing. However, the program does not contain more substantive protections such as regularly forecasting costs or program caps which puts the program at risk of unexpected expense. The amount of R&D program credits used exceeded the Legislature's \$5 million annual estimated cost for the last four years reviewed. In 2020, over \$10 million in program credits were used.

Finding: Because the Research and Development Act does not contain more stringent fiscal protections, the program exceeded expected costs from 2016 to 2020.

Discussion

A Pew Charitable Trusts 2015 report described the difficult position state policymakers are placed in when an unexpected decrease in state revenue occurs, noting that tax incentives programs can exacerbate such situations if fiscal controls are not in place.²⁹

The Nebraska R&D program does not contain an annual cap on the maximum amount of credits that can be awarded. The Pew report characterized such a cap as “one of the strongest protections against surprise increases in tax incentive costs.”³⁰ The Legislature estimated that the Act would cost somewhere between \$2 million and \$5 million per year.³¹ In the Audit Office's 2017 R&D program audit, which reviewed program data from 2007 to 2015, the amount of credits used had not surpassed \$5 million in any year. Since 2016, however, the amount of R&D program credits used each year has not been *below* \$5 million (Figure 2.26).³² In fact, credits used in 2020 were double the Legislature's expectations at over \$10 million.

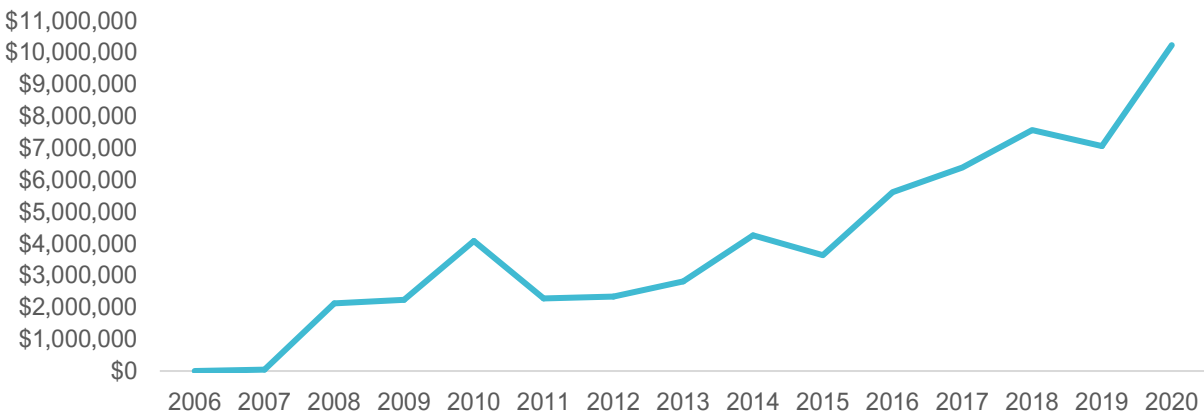
²⁹ The Pew Charitable Trusts, *Reducing Budget Risks: Using Data and Design to Make State Tax Incentives More Predictable*, December 2015.

³⁰ *Ibid.* p. 12.

³¹ Nebraska Legislature, *LB 672 (2005) Fiscal Note*, Legislative Fiscal Office. The bill was amended into LB 312 (2005).

³² The data in Figure 2.26 is presented by year of credit use (instead of by year of credit-earning activity in other audit expenditure figures in this report) which is how it is presented in the Department of Revenue's Tax Incentives Annual Report.

Figure 2.26. Since 2016, R&D credits used each year has exceeded \$5 million.



Source: Audit Office analysis of Revenue data.

The Pew Charitable Trusts report made nine recommendations for ensuring tax incentive programs do not cause fiscal problems. The Nebraska R&D program meets four of these recommendations (Figure 2.27).

Figure 2.27. The R&D Act meets four of nine Pew Center fiscal protection measures.

Recommendations	R&D Act	Audit Office Remarks
Gather and share high-quality data on the costs of incentives by:		
Regularly forecast the cost	No	Costs are not forecasted
Monitor costs and commitments of large and high-risk programs	N/A	The program is relatively small and sufficiently tracked
Share timely information on incentives across relevant agencies	Yes	Annual reports, statute allows Audit Office access to information
Design incentives in ways that reduce fiscal risk:		
Capping how much programs can cost each year	No	
Controlling the timing of incentive redemptions	Yes	Program credits must be used for the tax year they are earned
Requiring lawmakers to pay for incentives through budget appropriations	No	Funding for this program does not go through the appropriations process
Restricting the ability of companies to redeem more in credits than they owe in taxes	No	Program credits are refundable
Linking incentives to company performance	Yes	Credits are not awarded until companies meet statutory requirements
Requiring businesses to provide advance notice of program participation	No	No application process, participants submit tax form and supporting federal documents

Source: Audit Office analysis of information from The Pew Charitable Trusts, *Reducing Budget Risks: Using Data and Design to Make State Tax Incentives More Predictable*, December 2015.

APPENDIX A

High-tech NAICS Codes and Titles

2111	Oil and gas extraction
3254	Pharmaceutical and medicine manufacturing
3341	Computer and peripheral equipment manufacturing
3342	Communications equipment manufacturing
3344	Semiconductor and other electronic component manufacturing
3345	Navigational, measuring, electromedical, and control instruments manufacturing
3364	Aerospace product and parts manufacturing
5112	Software publishers
5173	Wired and wireless telecommunications (except satellite)
5179	All other Telecommunications
5182	Computing infrastructure providers, data processing, web hosting, and related services
5191	Web search portals, libraries, archives, and other information services
5413	Architectural, engineering, and related services
5415	Computer systems design and related services
5417	Scientific research and development services

Average Yearly Employment in Nebraska's High-tech Sector: 2001-2011

NAICS Code	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2111	135	98	99	97	100	93	93	93	89	68	61
3254	1,706	1,683	2,053	2,005	1,976	1,911	1,882	1,819	1,659	1,646	1,697
3341	291	341	308	498	529	524	0	0	0	0	0
3342	4,582	3,164	2,481	2,209	1,963	1,637	1,051	953	739	668	424
3344	2,334	1,992	1,918	1,686	1,718	1,949	2,022	1,945	1,673	1,823	1,981
3345	1,669	1,714	1,370	1,375	1,376	1,376	1,673	1,811	1,668	1,646	1,802
3364	0	0	0	0	333	362	390	413	411	421	448
5112	357	298	341	350	383	340	565	512	323	324	314
5173*	3,903	3,628	3,324	2,890	2,738	2,611	3,550	3,383	3,355	2,758	2,690
5179	0	0	13	0	0	0	515	442	417	460	517
5182	10,006	9,387	6,408	6,438	6,279	5,511	5,505	5,043	4,667	4,596	4,789
5191	75	86	121	70	49	48	177	235	243	596	599
5413	5,264	5,269	5,278	5,499	5,770	6,192	6,618	6,625	6,215	6,008	6,036
5415	7,775	7,268	7,086	7,291	7,868	8,584	9,129	9,689	9,544	9,954	9,959
5417	1,232	1,211	1,276	1,455	1,619	1,684	1,748	1,538	1,550	1,517	1,489
Total	39,329	36,139	32,076	31,863	32,699	32,822	34,918	34,501	32,553	32,485	32,806

*Sectors 5171 and 5172 were reclassified as 5173 starting in 2017

Average Yearly Employment in Nebraska's High-tech Sector: 2012-2021

NAICS Code	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
2111	68	60	58	47	43	66	71	72	66	59
3254	1,772	1,773	1,725	1,687	1,692	1,707	1,911	1,937	2,046	2,149
3341	0	0	0	0	0	0	0	0	0	0
3342	290	246	0	229	216	0	189	176	0	0
3344	2,008	1,988	2,084	2,137	2,088	2,044	2,078	2,128	1,741	1,719
3345	1,766	1,716	1,665	1,636	1,574	1,503	1,489	1,640	1,504	1,399
3364	455	460	465	477	456	468	499	579	521	489
5112	358	786	792	817	1,331	1,255	1,413	1,880	2,591	5,529
5173*	2,436	2,399	2,211	2,352	3,004	3,259	3,152	2,915	2,854	2,813
5179	600	589	500	472	481	480	419	401	329	287
5182	4,860	4,727	4,617	4,832	4,860	4,682	4,455	4,142	3,528	2,387
5191	686	666	735	1,056	1,060	1,122	1,325	1,534	1,614	1,626
5413	6,205	6,387	6,129	6,221	6,333	6,416	6,827	7,589	7,020	7,232
5415	10,518	11,091	11,339	11,882	10,935	11,776	12,073	12,265	13,307	13,026
5417	1,582	1,555	1,561	1,540	1,617	1,466	1,226	1,272	1,431	1,555
Total	33,604	34,443	33,881	35,385	35,690	36,244	37,127	38,530	38,552	40,270

*Sectors 5171 and 5172 were reclassified as 5173 starting in 2017

Percentage of Nebraska's Employment in High-tech Sector

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total High-tech Employment	39,329	36,139	32,076	31,863	32,699	32,822	34,918	34,501	32,553	32,485	32,806
Total Employment	735,492	723,673	724,281	730,413	739,567	748,399	761,877	766,991	742,613	736,906	743,476
Percentage of Total Employment	5.3%	5.0%	4.4%	4.4%	4.4%	4.4%	4.6%	4.5%	4.4%	4.4%	4.4%
Total High-tech Employment	33,604	34,443	33,881	35,385	35,690	36,244	37,127	38,530	38,552	40,270	
Total Employment	762,468	774,598	786,807	799,388	807,525	811,496	816,876	821,384	790,415	806,993	
Percentage of Total Employment	4.4%	4.4%	4.3%	4.4%	4.4%	4.5%	4.5%	4.7%	4.9%	5.0%	

Nebraska's High-tech Sector Location Quotients

	2005	2015	2021	
Nebraska	Total High-tech Private Employment	32,699	35,385	40,270
	Total Private Employment	739,567	799,388	806,993
	High-tech as a Percentage of Total Employment	4.42%	4.43%	4.99%
National	High-tech Employment	6,436,989	7,619,576	8,585,282
	Total Employment	110,611,016	118,307,717	122,716,652
	High-tech as a Percentage of Total Employment	5.82%	6.44%	7.00%
	Location Quotient of Employment	0.76	0.69	0.71
	2005	2015	2021	
	Total Employment in Nebraska	739,567	799,388	806,993
	High-tech Percentage of US Employment	5.82%	6.44%	7.00%
	Potential NE High-tech Total Employment	43,039	51,484	56,457
	Actual NE High-tech Total Employment	32,699	35,385	40,270
	Difference Between Actual High-tech Employment & Potential High-tech Employment	10,340	16,099	16,187

In the tables below, highlighted industry sectors had a year with insufficient activity to allow reporting of Nebraska employment. The final calculations are displayed with all sectors (the combined row) as well as with only sectors with complete information (the limited combined row).

Shift-share Analysis: Total Employment by Sector, United States

NAICS Code	2005		2021		Employment Change	Percent Change
	Employment	Percent of Total	Employment	Percent of Total		
2111	192,537	0.16%	112,604	0.09%	-79,933	-42%
3254	280,131	0.24%	331,848	0.27%	51,717	18%
3341	161,347	0.14%	155,613	0.13%	-5,734	-4%
3342	88,296	0.07%	85,497	0.07%	-2,799	-3%
3344	367,283	0.31%	367,174	0.30%	-109	0%
3345	398,548	0.34%	415,072	0.34%	16,524	4%
3364	489,521	0.41%	478,591	0.39%	-10,930	-2%
5112	332,271	0.28%	554,655	0.45%	222,384	67%
5173*	718,960	0.61%	578,014	0.47%	-140,946	-20%
5179	80,161	0.07%	81,720	0.07%	1,559	2%
5182	296,697	0.25%	388,805	0.32%	92,108	31%
5191	242,727	0.21%	380,025	0.31%	137,298	57%
5413	140,2609	1.19%	1,528,777	1.25%	126,168	9%
5415	1,908,010	1.61%	2,304,608	1.88%	396,598	21%
5417	660,478	0.56%	822,279	0.67%	161,801	24%
Total, All Industries	118,307,717	100.00%	122,716,652	100.00%	4,408,935	4%
Combined Sector	7,619,576	6.44%	8,585,282	7.00%	965,706	13%
Limited Combined Sector	7,539,415	6.37%	8,503,562	6.93%	964,147	13%

*Sectors 5171 and 5172 were reclassified as 5173 starting in 2017.

Shift-share Analysis: Total Employment by Sector, Nebraska

NAICS Code	2005		2021		Employment Change	Percent Change
	Employment	Percent of Total	Employment	Percent of Total		
2111	100	0.01%	59	0.01%	-41	-41%
3341	529	0.07%	0	0.00%	-529	-100%
3342	1,963	0.27%	0	0.00%	-1,963	-100%
3344	1,718	0.23%	1,719	0.21%	1	0%
3345	1,376	0.19%	1,399	0.17%	23	2%
3364	333	0.05%	489	0.06%	156	47%
5112	383	0.05%	5,529	0.69%	5,146	1,344%
5173*	2,736	0.37%	2,813	0.35%	77	3%
5179	0	0.00%	287	0.04%	287	0
5182	6,279	0.85%	2,387	0.30%	-3,892	-62%
5191	49	0.01%	1,626	0.20%	1,577	3,218%
5413	5,770	0.78%	7,232	0.90%	1,462	25%
5415	7,868	1.06%	13,026	1.61%	5,158	66%
5417	1,619	0.22%	1,555	0.19%	-64	-4%
Total, All Industries	739,567	100.00%	806,993	100.00%	67,426	9%
Combined Sector	32,699	4.42%	40,270	4.99%	7,571	23%
Limited Combined Sector	32,699	4.42%	39,983	4.95%	7,284	22%

*Sectors 5171 and 5172 were reclassified as 5173 starting in 2017.

Shift-share Analysis: Final Calculation, High-tech Sector

NAICS Code	National Share	Industry Mix	Regional Shift	Change in Employment
2111	4	-45	1	-41
3254	74	291	-192	173
3341	20	-39	-510	-529
3342	73	-135	-1,901	-1,963
3344	64	-65	2	1
3345	51	6	-34	23
3364	12	-20	163	156
5112	14	242	4,890	5,146
5173*	102	-638	613	77
5179	0	0	0	0
5182	234	1,715	-5,841	-3,892
5191	2	26	1,549	1,577
5413	215	304	943	1,462
5415	293	1,342	3,523	5,158
5417	60	336	-461	-64
Total, All Industries	27,561	0	39,865	67,426
Combined Sector	1,219	2,926	3,427	7,571
Limited Combined Sector	1,219	2,963	3,102	7,284

* Indicates an industry sector that was combined.

APPENDIX B

Renewable Energy NAICS Codes and Titles

111110 Soybean farming	331513 Steel foundries, except investment
111120 Oilseed, except soybean, farming	331523 Nonferrous metal die-casting foundries
111130 Dry pea and bean farming	331524 Aluminum foundries, except die-casting
111140 Wheat farming	331529 Other nonferrous foundries, except die-casting
111150 Corn farming	332111 Iron and steel forging
111160 Rice farming	332112 Nonferrous forging
111191 Oilseed and grain combination farming	333414 Heating equipment, except warm air furnaces, manufacturing
111199 All other grain farming	333415 Air-conditioning and warm air heating equipment and commercial and industrial refrigeration equipment manufacturing
111211 Potato farming	333511 Industrial mold manufacturing
111219 Other vegetable, except potato, and melon farming	333611 Turbine and turbine generator set units manufacturing
111310 Orange groves	333612 Speed changer, industrial high-speed drive, and gear manufacturing
111320 Citrus, except orange, groves	333613 Mechanical power transmission equipment manufacturing
111331 Apple orchards	334519 Other measuring and controlling device manufacturing
111332 Grape vineyards	485510 Charter bus industry
111333 Strawberry farming	541330 Engineering services
111334 Berry, except strawberry, farming	541360 Geophysical surveying and mapping services
111335 Tree nut farming	541370 Surveying and mapping (except geophysical) services
111336 Fruit and tree nut combination farming	541620 Environmental consulting services
111339 Other noncitrus fruit farming	541690 Other scientific and technical consulting services
111411 Mushroom production	541713 Research and development in nanotechnology
111419 Other food crops grown under cover	541714 Research and development in biotechnology (except nanobiotechnology)
111930 Sugarcane farming	541715 Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)
111991 Sugar beet farming	
113310 Logging	
221111 Hydroelectric power generation	
221113 Nuclear Electric Power Generation	
221114 Solar electric power generation	
221115 Wind electric power generation	
221116 Geothermal electric power generation	
221117 Biomass electric power generation	
221118 Other electric power generation	
221330 Steam and air-conditioning supply	
237130 Power and communication system construction	
237210 Land subdivision	
237990 Other heavy and civil engineering construction	
325193 Ethyl alcohol manufacturing	
325199 All other basic organic chemical manufacturing	
331512 Steel investment foundries	

Average Yearly Employment in Nebraska's Renewable Energy Sector: 2001-2011

NAICS Code	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1111	980	1,020	1,141	1,291	1,364	1,346	1,524	1,596	1,818	2,083	2,377
1112	0	0	341	301	311	329	283	270	280	266	286
1113	0	0	79	80	87	76	69	74	78	0	82
1114											
11141	31	97	139	141	148	143	95	88	92	101	142
111419											
111991	21	32	35	44	48	36	37	25	28	33	31
113310	13	0	0	18	19	14	7	0	0	0	0
2211											
22111											
221114											
221115											0
221117											
221330	0	0	0	0	0	0	0	0	0	0	0
237130	809	768	665	828	991	1,192	1,265	1,001	993	967	1,000
237210	250	233	261	274	284	297	212	196	180	153	142
237990	859	741	803	700	720	892	969	1,137	1,078	654	621
32519	277	315	384	564	956	1,046	1,424		2,097	2,127	2,177
325193									1,770		
325199									301		
331513	0	0	0	0	0	0	0	0	0	0	0
33152	241	228	149	159	173	0	173	167	120	117	133
332111		0	0	0	0	0	0	0	0	0	0
33341											
333413											
333414	0	128	123	131	164	194	122	127	116	92	80
333415	0	0	0	0	0	0	0	0	0	0	0
333511	279	261	269	186	84	88	87	86	76	73	76
33361	231	204	182	188	190	188	194	301			
333611										0	0
333612									0	0	0
333613									166	162	186
334519	0	0	0	0	0	0	0	0	0	0	0
485510	131	212	207	194	202	154	153	151	152	251	239
541330	3,125	3,156	3,195	3,477	3,707	4,075	4,337	4,324	4,050	3,995	4,060
541360	52	37	25	23	16	19	29	37	35	29	33
541370	114	209	223	124	114	112	113	109	93	88	80
541620	162	166	149	150	137	144	170	186	217	262	308
541690	268	542	523	365	396	522	468	463	493	618	715
54171	1,188	1,159	1,192	1,383	1,528	1,599	1,647	1,459	1,453	1,420	1,357
561730	2,247	2,281	2,439	2,620	2,715	2,774	2,942	3,014	3,059	3,003	3,120
Total	11,278	11,789	12,524	13,241	14,354	15,240	16,320	16,882	16,674	16,494	17,245

Note: The blue highlight is a subsector that is not on the Renewable Energy sector list. It is subtracted from a higher level of aggregation in order to get an accurate number for renewable energy employment.

Average Yearly Employment in Nebraska's Renewable Energy Sector: 2012-2021

NAICS Code	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1111	2,646	2,912	3,173	3,221	3,292	3,245	3,317	3,361	3,461	3,411
1112	337	340	338	321	343	387	439	400	429	418
1113	70	70	74	86	78	0	77	0	0	0
1114										
11141	127	113	85	95	99	95	88	89	50	36
111419										
111991	34	36	36	39	40	0	38	0	0	0
113310	0	0	0	8	13	14	13	13	12	9
2211										263
22111									82	
221114								0		
221115	0	0	0	0	0	0	0	65		
221117					0	0				
221330	0	0	0	0	0	0	0	0	0	0
237130	1,120	1,235	1,208	1,052	1,142	1,023	1,132	1,151	1,550	1,466
237210	181	182	266	203	187	177	135	108	114	114
237990	754	673	864	906	674	824	755	713	707	801
32519	2,252	2,193	2,302	2,386	2,426					
325193						1,424	1,414	1,305	1,242	1,243
325199						0	0	0	0	0
331513	0	0	0	0	0	0	0	0	0	0
33152	133	143	151	144	131	131	137	143	151	0
332111	0	0	0	0	0	0	0	0	0	0
33341		439			522		536	588		568
333413		85			77		73	76		107
333414	0		0	0	0	0			0	
333415	0		0	0	0	0			0	
333511	81	80	79	79	86	90	91	94	86	89
33361	213	205	206	196	182	172	183	193	205	
333611										0
333612										0
333613										157
334519	0	0	0	0	0	0	0	0	0	0
485510	286	290	280	309	328	338	362	370	226	270
541330	4,138	4,301	4,045	4,025	4,150	4,181	4,528	4,612	4,672	4,841
541360	37	36	26	26	0	19	11	13	11	14
541370	99	90	99	102	0	98	112	812	151	177
541620	270	253	233	246	202	211	201	223	235	221
541690	782	777	820	873	917	999	948	981	1,014	1,057
54171	1,477	1,428	1,448	1,439	1,512	1,356	1,122	1,144	1,302	1,406
561730	3,154	3,252	3,475	3,732	3,955	4,039	4,121	4,422	4,900	5,301
Total	18,191	19,409	19,208	19,488	20,193	18,823	19,760	20,800	20,600	21,862

Note: The blue highlight is a subsector that is not on the Renewable Energy sector list. It is subtracted from a higher level of aggregation in order to get an accurate number for renewable energy employment.

Percentage of Nebraska's Employment in Renewable Energy Sector

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total Renewable Energy Employment	11,278	11,789	12,524	13,241	14,354	15,240	16,320	16,882	16,674	16,494	17,245
Total Employment	735,492	723,673	724,281	730,413	739,567	748,399	761,877	766,991	742,613	736,906	743,476
Percentage of Total Employment	1.53%	1.63%	1.73%	1.81%	1.94%	2.04%	2.14%	2.20%	2.25%	2.24%	2.32%

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Renewable Energy Employment	18,191	19,409	19,208	19,488	20,193	18,823	19,760	20,800	20,600	21,862
Total Employment	762,468	774,598	786,807	799,388	807,525	811,496	816,876	821,384	790,415	806,993
Percentage of Total Employment	2.39%	2.46%	2.44%	2.44%	2.51%	2.32%	2.42%	2.53%	2.61%	2.71%

Nebraska's Renewable Energy Sector Location Quotients

		2005	2015	2021
Nebraska	Total Renewable Energy Private Employment	14,354	19,488	21,862
	Total Private Employment	739,567	799,388	806,993
	Renewable Energy as Percentage of Total Private Employment	1.94%	2.44%	2.71%
National	Total Renewable Energy Private Employment	3,426,431	3,767,339	4,116,527
	Total Private Employment	110,611,016	118,307,717	122,716,652
	Renewable Energy as Percentage of Total Employment	3.18%	3.25%	3.43%
Location Quotient of Employment		0.63	0.77	0.81

		2005	2015	2021
Total Employment in Nebraska		739,567	799,388	806,993
Renewable Energy Percentage of US Employment		3.18%	3.25%	3.43%
Potential NE Renewable Energy Total Employment		23,535	25,987	27,683
Actual NE Renewable Energy Total Employment		14,354	19,488	21,862
Difference Between Actual Renewable Energy Employment & Potential Renewable Energy Employment		9,181	6,499	5,821

In the tables below, highlighted industry sectors had a year with insufficient activity to allow reporting of Nebraska employment. The final calculations are displayed with all sectors (the combined row) as well as with only sectors with complete information (the limited combined row).

Shift-share Analysis: Total Employment by Sector, United States

NAICS Code	2005		2021		Employment Change	Percent Change
	Employment	Percent of Total	Employment	Percent of Total		
1111	30,507	0.03%	54,380	0.05%	23,873	78%
1112	98,475	0.09%	84,214	0.07%	-14,261	-14%
1113	164,332	0.15%	163,895	0.14%	-437	0%
11141	21,390	0.02%	44,241	0.04%	22,851	107%
33152	72,128	0.07%	48,965	0.04%	-23,163	-32%
54171	508,529	0.46%	759,594	0.64%	251,065	49%
1119*	7,489	0.01%	5,089	0.00%	-2,400	-32%
113310	64,870	0.06%	46,572	0.04%	-18,298	-28%
2211*	157,182	0.14%	63,394	0.05%	-93,788	-60%
221330	1,913	0.00%	1,481	0.00%	-432	-23%
237130	125,346	0.11%	221,241	0.19%	95,895	77%
237210	92,229	0.08%	35,816	0.03%	-56,413	-61%
237990	105,095	0.10%	118,883	0.10%	13,788	13%
325193	5,024	0.00%	9,695	0.01%	4,671	93%
325199	32,169	0.03%	39,837	0.03%	7,668	24%
331512	12,690	0.01%	10,269	0.01%	-2,421	-19%
331513	20,242	0.02%	11,099	0.01%	-9,143	-45%
332111	26,186	0.02%	19,155	0.02%	-7,031	-27%
332112	7,482	0.01%	6,602	0.01%	-880	-12%
333414	20,737	0.02%	15,603	0.01%	-5,134	-25%
333415	103,769	0.09%	91,216	0.08%	-12,553	-12%
333511	42,060	0.04%	33,831	0.03%	-8,229	-20%
33361*	49,388	0.04%	43,806	0.04%	-5,582	-11%
334519	29,865	0.03%	34,211	0.03%	4,346	15%
485510	31,958	0.03%	16,891	0.01%	-15,067	-47%
541330	829,640	0.75%	1030,970	0.87%	201,330	24%
541360	15,505	0.01%	13,079	0.01%	-2,426	-16%
541370	63,489	0.06%	53,231	0.04%	-10,258	-16%
541620	68,611	0.06%	92,056	0.08%	23,445	34%
541690	87,720	0.08%	199,565	0.17%	111,845	128%
561730	619,486	0.56%	836,041	0.71%	216,555	35%
562213	4,443	0.00%	4,811	0.00%	368	8%
Total, All Industries	110,611,016	100.00%	118,307,717	100.00%	7,696,701	7%
Combined Sector	3,519,949	3.18%	4,209,733	3.56%	689,784	20%
Limited Combined Sector	3,124,008	2.82%	3,927,658	3.32%	803,650	26%

* Indicates an industry sector that was combined.

Shift-share Analysis: Total Employment by Sector, Nebraska

NAICS Code	2005		2021		Employment Change	Percent Change
	Employment	Percent of Total	Employment	Percent of Total		
1111	1,364	0.18%	3,411	0.43%	2,047	150%
1112	311	0.04%	418	0.05%	107	34%
1113	87	0.01%	0	0.00%	-87	-100%
11141	148	0.02%	36	0.00%	-112	-76%
33152	173	0.02%	0	0.00%	-173	-100%
54171	1,528	0.21%	1,406	0.18%	-122	-8%
1119*	48	0.01%	0	0.00%	-48	-100%
113310	19	0.00%	9	0.00%	-10	-53%
2211*		0.00%	263	0.03%	263	
221330	0	0.00%	0	0.00%	0	
237130	991	0.13%	1,466	0.18%	475	48%
237210	284	0.04%	114	0.01%	-170	-60%
237990	720	0.10%	801	0.10%	81	11%
325193	956	0.13%	1,243	0.16%	287	30%
325199		0.00%	0	0.00%	0	
331512		0.00%		0.00%	0	
331513	0	0.00%	0	0.00%	0	
332111	0	0.00%	0	0.00%	0	
332112		0.00%		0.00%	0	
333414	164	0.02%	461	0.06%	297	181%
333415	0	0.00%		0.00%	0	
333511	84	0.01%	89	0.01%	0	6%
33361*	190	0.03%	157	0.02%	-33	-17%
334519	0	0.00%	0	0.00%	0	
485510	202	0.03%	270	0.03%	68	34%
541330	3,707	0.50%	4,841	0.61%	1,134	31%
541360	16	0.00%	14	0.00%	-2	-13%
541370	114	0.02%	177	0.02%	63	55%
541620	137	0.02%	221	0.03%	84	61%
541690	396	0.05%	1,057	0.13%	661	167%
561730	2,715	0.37%	5,301	0.66%	2,586	95%
562213		0.00%		0.00%	0	
Total, All Industries	739,567	100.00%	799,388	100.00%	59,821	8%
Combined Sector	14,354	1.94%	21,755	2.72%	7,401	52%
Limited Combined Sector	14,354	1.94%	21,492	2.69%	7,138	50%

* Indicates an industry sector that was combined.

Shift-share Analysis: Final Calculation, Renewable Energy Sector

NAICS Code	National Share	Industry Mix	Regional Shift	Change in Employment
1111	95	972	980	2,047
1112	22	-67	152	107
1113	6	-6	-87	-87
11141	10	148	-270	-112
33152	12	-68	-117	-173
54171	106	648	-876	-122
1119*	3	-19	-33	-48
113310	1	-7	-5	-10
2211*	0	0	0	0
221330	0	0	0	0
237130	69	689	-283	475
237210	20	-193	4	-170
237990	50	44	-13	81
325193	67	822	-602	287
325199	0	0	0	0
331512	0	0	0	0
331513	0	0	0	0
332111	0	0	0	0
332112	0	0	0	0
333414	11	-52	338	297
333415	0	0	0	0
333511	6	-22	21	5
33361*	13	-35	-12	-33
334519	0	0	0	0
485510	14	-109	163	68
541330	258	642	234	1,134
541360	1	-4	1	-2
541370	8	-26	81	63
541620	10	37	37	84
541690	28	477	156	661
561730	189	760	1,637	2,586
562213	0	0	0	0
Total, All Industries	51,462	0	8,359	59,821
Combined Sector	999	1,814	4,588	7,401
Limited Combined Sector	999	2,694	3,445	7,138

* Indicates an industry sector that was combined.

III. Agency Response

Legislative Auditor's Summary of Agency Response

This summary meets the requirement of Neb. Rev. Stat. § 50-1210 that the Legislative Auditor briefly summarize the agency's response to the draft performance audit report and describe any significant disagreements the agency has with the report or recommendations.

The Department of Revenue provided no comments about the draft report.

