TAX EXPENDITURE REVIEW

FINAL REPORT

Evaluation of the Research Expense Tax Credit (R&D Credit)

Report No. TE-RETC-20

a report to the
Government Oversight Committee
from the
Office of Program Evaluation & Government Accountability
of the Maine State Legislature

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I. Introduction

As directed by the 130th Legislature's Government Oversight Committee (GOC), OPEGA has completed a review of Maine's Research Expense Tax Credit (R&D credit) in accordance with 3 MRSA §999. The Legislature's tax expenditure review process provides for systematic evaluation of tax expenditures according to a schedule approved by the GOC (3 MRSA §998).

OPEGA conducted this evaluation project based on the evaluation parameters approved by the GOC on May 14, 2021. In accordance with law governing tax expenditure evaluation, the evaluation parameters set forth the goals, intended beneficiaries, evaluation objectives and performance measures for the R&D credit for the purpose of evaluation. A complete list of these parameters is provided in Appendix A.

Both the GOC and the Legislature's Joint Standing Committee on Taxation expressed interest in having this evaluation's results available for policymakers considering tax credit legislation and policies during the 2nd Regular Session of the 130th Legislature. In order to meet that deadline, and to accommodate other GOC priorities during the same timeframe that this review was conducted, OPEGA's work on this evaluation was limited. We relied on readily available data, which was also limited, to provide a high-level assessment of the credit.

The Maine R&D credit is established in statute under 36 MRSA §5219-K and is administered by Maine Revenue Services (MRS).[1] To complete the evaluation of the credit, OPEGA considered available data and guidance from MRS on the State credit, as well as guidance from the Internal Revenue Service (IRS) on the related federal credit. We also considered research literature on R&D tax credits nationally, reports on other states' R&D credits, perspectives from stakeholders and data on national and state-level R&D performance from the National Science Foundation (NSF). OPEGA did not request, nor receive, any confidential taxpayer information from MRS to support this evaluation. The complete scope and methods for this review can be found in Appendix A.

Overall Conclusions

In this evaluation OPEGA found that:

- Research supports the idea that increasing innovation is an economic driver, but the ability to understand the specific impacts of Maine's R&D credit on the State economy is limited by the lack of readily available data.
- Other data available on R&D in Maine generally demonstrates that the State has performed poorly over time on R&D even as Maine's credit has remained available.
- R&D credits are common in states (70%) and typically built on the structure of the federal R&D credit.

[1] A copy of 36 MRSA §5219-K is provided in Appendix B.

- While having an R&D Credit in the toolbox of options to support Maine businesses may make sense in light of similar credits in other states, research points to other factors that may be more important in attracting R&D to Maine.
- The incremental structure and limitations of Maine's credit exclude some businesses conducting R&D from participating in the credit, but there may be reasons for policymakers to support these limitations. Complexities in the federal credit, upon which the State credit is based, may also create uncertainty for businesses and hinder take-up of the credit.

Recommendations

OPEGA makes three recommendations for the Legislature's consideration. We recommend that the Legislature, in consultation with State agencies and other stakeholders where appropriate:

1. Review and memorialize the R&D credit's goals, intended beneficiaries, and how success is defined in terms of outcomes for the credit;
2. Amend the design of the R&D credit as needed to ensure that intended beneficiaries can access the credit; and
3. Determine what data is needed for effective oversight of the R&D credit and make changes to statute or practice, as needed, to ensure the necessary data is readily accessible.

II. Credit Background and Overview

The R&D credit, authorized by 36 MRSA §5219-K, provides an income tax credit to taxpayers who make certain qualified research expenditures in Maine.[2] The effect of the R&D credit it to reduce the cost, and hence the financial risk, of investments in research and development. The credit is built on top of the federal R&D credit and uses federal definitions of qualifying research expenses. It was enacted in 1995 and has no sunset date. State tax credits for research and development are common, and Maine is currently one of 35 states offering such a credit.

A. Credit Administration

MRS is responsible for administering the Maine R&D credit through the normal processing of income tax returns. Under the law governing the credit, MRS has no administrative responsibility for monitoring the use or effectiveness of the credit over time or for collecting data to support such monitoring. Because the State R&D credit is built on the federal credit, taxpayers who wish to claim the State credit must submit to MRS a copy of their IRS Form 6765, Credit for Increasing Research Activities, to support their Maine income tax filing.[3] In the review of tax filings, MRS verifies that the Maine Research Expense Tax Credit worksheet has been completed correctly based on the federal credit claimed.[4]

B. Credit Design and Structure

Maine's R&D credit builds on the federal R&D credit and requires that taxpayers claim the federal credit in order to access the State credit. The State credit is available to businesses that conduct qualified research in Maine.[5] The calculations and definitions underlying the credit are quite complex and rely on intricacies of the federal credit (discussed further in section III.A of the report). In this section, we describe key elements of the credit design and structure that are essential context for this evaluation. For readers interested in more detail, Appendix A includes citations and links to the State and federal worksheets and instructions, and associated State and federal laws.

[2] OPEGA notes that the R&D credit, which is the focus of this report, is commonly confused with the Super Credit for Substantially Increasing Research and Development (36 MRSA §5219-L). The Super Credit was established in 1997, implemented in 1998 and repealed in 2014.
[3] See IRS Form 6765 at https://www.irs.gov/pub/irs-pdf/f6765.pdf (link is to the December 2020 revision of the form, the most current revision as of the writing of this report).
[4] See Maine Research Expense Tax Credit 2021 worksheet at https://www.maine.gov/revenue/sites/maine.gov.revenue/files/inline-files/21_research_exp_tx_cr_ff.pdf.
[5] "Qualified research" is defined in IRC 41(d) as research undertaken for the purpose of discovering information which is technological in nature, and the application of which is intended to be useful in the development of a new or improved business component of the taxpayer, and substantially all of the activities of which constitute elements of a process of experimentation.

Credit amount: Maine's R&D credit is calculated as the sum of two parts:

(A) 5% of the excess, if any, of the qualified research expenses[6] for the taxable year over the base amount, where "base amount" means the average amount per year spent on qualified research expenses over the previous three taxable years by the taxpayer; and

(B) 7.5% of the basic research payments[7] determined under the IRC (Internal Revenue Code) Section 41.

Definitions of eligible expenses rely on the federal tax code (IRC Section 41), but apply only to expenditures in Maine.

Incremental expenses: Like the federal credit, the State R&D credit is only available on incremental expenses – that is, spending on research that represents an increase over prior years.

Limitations on claims: The State credit is limited to 100% of a corporation's first $25,000 of tax due, before the allowance of any credits, plus 75% of the corporation's tax due, in excess of $25,000. This limitation does not exist for individual taxpayers.[8]

Nonrefundability and carry forward provisions: The State credit is non-refundable, so it may not reduce the tax due to less than zero. Portions of the credit that exceed the tax due in any taxable year may be carried forward for up to 15 years.

C. Credit History and Pending Legislation

The R&D credit was enacted in 1995 (36 MRSA §5219-K). Since enactment, the State R&D credit's statute has remained unchanged, including key elements such as credit percentage and limitations. However, because Maine's credit is based on definitions of qualifying expenses for the underlying federal R&D credit, changes to those definitions in the Internal Revenue Code will have had a ripple effect on Maine's credit.

At the time of this report, there is a bill before the 130th Legislature that proposes changes to the Maine R&D credit. This bill, LD 308, proposes to increase the allowed credit by doubling the credit percentages from 5% to 10% for qualified research expenses and from 7.5% to 15% for basic research payments.[9] It would also change the limitation on the credit from 100% of the first $25,000 of a corporation's tax due, to 100% of the first $50,000. The bill also provides $100,000 per year,

6 "Qualified research expenses" include both in-house research expenses and contract research expenses as defined in IRC 41(b)(1).

7 "Basic research payments" are amounts that exceed a base amount and are paid to qualified organizations (such as educational institutions or certain scientific research organizations) per a written agreement for the performance of basic research (IRC 41(e)(1)(A) and (e)(2)(A)).

8 Limitations on credits apply only to corporate taxpayers under 36 MRSA §5219-K(3). Individuals may claim the credit via pass-through entities as described on the Maine Research Expense Tax Credit worksheet: "In the case of pass-through entities (such as partnerships, LLCs, S corporations, and trusts) making eligible expenditures, the partners, members, shareholders, beneficiaries, or other owners are allowed a credit in proportion to their respective interests in these entities."

9 LD 308 "An Act To Promote Research and Development in the State by Increasing and Marketing the Research Expense Tax Credit" was, as of the writing of this report, before the 2nd Session of the 130th Legislature after having been carried over from the 1st Regular Session.

beginning in fiscal year 2022, to the Department of Economic and Community Development to advertise and market the credit.

D. Credits Claimed and State Revenue Loss

Between tax years 2010 and 2019, a total of approximately $18 million in R&D credits were claimed by corporate and individual taxpayers combined. The credits were claimed by an average of about 125 taxpayers per year across the 10-year period. Table 1 shows the amount of credit claimed and the number of returns that claimed R&D credits per year for tax years 2010 through 2019.

Table 1. Maine R&D Credits Claimed, Tax Years 2010-2019

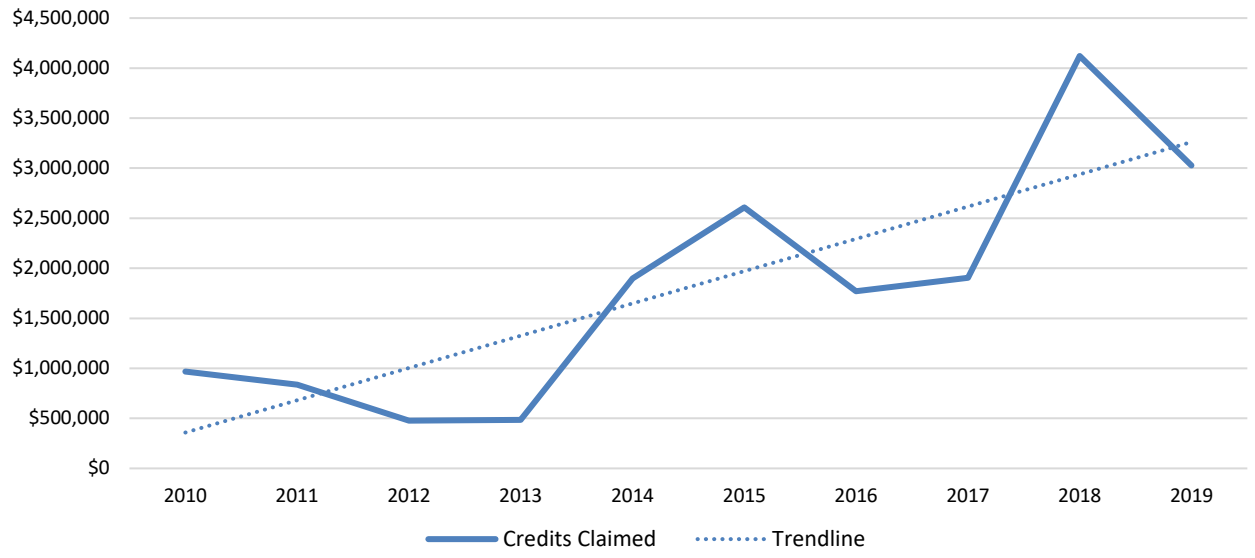
	Individual Income Tax		Corporate Income Tax		Combined Individual & Corporate	
Tax Year	Credit Claimed on Schedule A	# Returns with Credit Claimed on Schedule A	Credit Claimed on Schedule C	# Returns with Credit Claimed on Schedule C	Credit Claimed	# Returns with Credit Claimed
2010	$358,813	76	$609,441	26	$968,254	102
2011	$291,032	69	$546,274	34	$837,306	103
2012	$210,047	52	$267,386	14	$477,433	66
2013	$148,906	73	$334,937	23	$483,843	96
2014	$260,384	49	$1,638,966	27	$1,899,350	76
2015	$246,703	72	$2,362,735	29	$2,609,438	101
2016	$495,735	102	$1,273,738	41	$1,769,473	143
2017	$622,201	127	$1,283,184	41	$1,905,385	168
2018	$709,539	129	$3,411,637	47	$4,121,176	176
2019	$960,814	171	$2,064,941	46	$3,025,755	217
Total	**$4,304,174**	**920**	**$13,793,239**	**328**	**$18,097,413**	**1,248**

Source: OPEGA analysis of aggregate tax data provided by MRS.

In each tax year from 2010 through 2019, corporate taxpayers accounted for the majority of the total dollar value of R&D credits claimed. However, individual taxpayers accounted for 30% or more of the total dollar value of credits claimed in six out of the 10 years. This shows that individual R&D credits are a notable component of the total, even though they do not represent the majority of R&D credit dollars claimed.

Though there has not been constant year-over-year increase in total R&D credits claimed from 2010 to 2019, the total value of credits claimed has trended upward as shown in Figure 1.

Figure 1. R&D Credits Claimed, Tax Years 2010-2019



Source: OPEGA analysis of aggregate tax data provided by MRS.

E. Overall R&D Environment in Maine

The R&D credit exists within a broader group of State supports for R&D in Maine and for businesses in Maine generally. In the course of tax expenditure evaluations, OPEGA has heard consistently from stakeholders in the business community, including those interviewed for this review, that the whole package of incentives is often more important in their decisions about where to make investments than any one individual incentive. While this ability to access multiple types of support can be desirable from a business perspective, it also presents challenges for policymakers seeking to monitor and isolate the effects of individual incentives.

The broad group of State R&D supports includes funding for the University System, other tax credits or exemptions, such as the sales tax exemption for machinery and equipment for research (36 MRSA §1760(31)) and R&D programs, many of which are administered by the Maine Technology Institute (MTI). A list of the State programs and tax benefits that specifically support R&D is included in Table 2.

Table 2. State Programs and Tax Benefits Available to Support Business R&D	
Program / Credit	**Administrator**
Maine Technology Centers	DECD
Development Loans	MTI
Seed Grant Program	MTI
Equity Capital Fund	MTI
TechStart Program	MTI
Phase 0 and Phase II SBIR (Small Business Innovation Research) Application Awards plus Technical Assistance Program support	MTI
Cluster Initiative Program	MTI
Maine Technology Asset Fund	MTI
Marine Research Fund	MTI
Maine Biomedical Research Fund	MTI
Maine Patent Program (not currently active)	MTI
Sales Tax Exemptions for Machinery & Equipment for Research	MRS
Research Expense Tax Credit	MRS
Maine Economic Development Venture Capital Revolving Investment Program	FAME
Source: Independent Consulting Associates, for the Department of Economic and Community Development. 2018. "Comprehensive Evaluation of Maine's Research & Development and Economic Development Incentive and Investment Programs."	

In addition to programs and tax benefits specifically targeting R&D, Maine also has an array of general business incentives that may be used in combination with R&D incentives. Examples of these more broadly available incentives include the Pine Tree Development Zones (PTDZ) and Employment Tax Increment Financing (ETIF) programs.

III. Evaluation Results

The evaluation parameters approved by the GOC on May 14, 2021 provide the framework for OPEGA's evaluation of the R&D credit (see Appendix A for a full list of parameters). The evaluation parameters identify the intended beneficiaries of the credit as businesses conducting R&D and, indirectly, qualified organizations—such as educational or scientific research organizations—performing contracted R&D. The parameters further identify the following goals of the credit:

(1) To stimulate R&D investment;

(2) To create high-quality jobs by encouraging investments in R&D and to encourage the recruitment and training of employees; and

(3) To improve the overall economy of the State by expanding the number of businesses conducting and investing in R&D.

Within this framework, OPEGA's evaluation of the R&D credit addressed the following key areas

- Overall credit structure and design;
- Reaching intended beneficiaries; and
- Program performance toward goals:
  - Stimulation of R&D investment in Maine;
  - Creation of high-quality jobs; and
  - Impacts on the overall economy of the State.

This evaluation relied on existing, available data to address the evaluation objectives to the degree possible, providing a high-level assessment of the credit. OPEGA looked to MRS to understand what data is collected via the tax filing process that could support both this evaluation and ongoing oversight of the R&D credit. We found that there is a lack of readily available for these purposes, and in particular, for measuring the credit's performance (see Recommendation 3 for further discussion of data availability issues).[10]

MRS was able to provide OPEGA with aggregate data about the number of taxpayers claiming the R&D credit per year, and the total amounts claimed. A summary of these data is included in section II.D of this report for background. Data on Maine's overall R&D performance from the National Science Foundation (NSF) are included throughout this section to add context where credit-specific data was unavailable.

[10] Appendix C summarizes available data across the performance measures established for evaluation of the State R&D credit.

A. Assessment of Overall Credit Structure and Design

- **Maine's R&D credit is built upon the federal R&D credit.**

The calculations taxpayers make to claim the federal R&D credit form the basis of how Maine's R&D credit is determined. The federal credit's definitions for qualified research expense and basic research expenses also apply to the Maine credit, except that, for the Maine credit, those expenses must be associated with research conducted in Maine. The federal R&D credit is also calculated as a greater percentage of eligible expenses, as shown in Table 3.[11]

Table 3. Comparison of State and Federal R&D Credits

	Maine R&D Credit	Federal R&D Credit
Credit %	**7.5%** of Basic Research Expenses in Maine **5%** of Qualified Research Expenses in Maine	**20%** of Basic Research Expenses **20%** of Qualified Research Expenses (14% if the Alternative Simplified Credit is elected)
Qualifying expenses	Research expenses that meet federal definitions AND that are spent on research conducted in Maine	Qualified research expenses and basic research expenses as defined in IRC section 41

Source: MRS 2020 R&D credit worksheet (https://www.maine.gov/revenue/sites/maine.gov.revenue/files/inline-files/20_researchexptxcr_ff.pdf); IRS 2020 Form 6765 and instructions (https://www.irs.gov/pub/irs-pdf/f6765.pdf).

- **Complexities in federal definitions make it challenging to determine which business expenses qualify for both the federal and State R&D credits.**

A 2009 report from the federal Government Accountability Office (GAO) found that determining which expenses—and which wages in particular—qualify under the federal R&D credit, can be contentious. The GAO report noted that:

> *…taxpayers interviewed said that it is extremely difficult to get IRS to accept that higher level managers are often involved in research and the direct supervision of research. Many of their clients have flat organizational structures and the best researchers are often given higher titles so that they can be paid more. They say that IRS often rejects wage claims simply on the basis of job titles. IRS officials told us that wages of higher level managers could be eligible for the credit; however, the burden of proof is on the taxpayer to substantiate the amount of time that those managers actually spent directly supervising a qualified activity.*[12]

[11] The federal R&D credit also extends to "energy consortia expenses," which are not included in Maine's credit. IRC 41(f)(6) defines "energy research consortium" as "any organization which is described in section 501(c)(3) and is exempt under section 501(a) and is organized and operated primarily to conduct energy research, or organized and operated primarily to conduct energy research in the public interest (within the meaning of section 501(c)(3)), which is not a private foundation, to which at least 5 unrelated persons paid or incurred during the calendar year in which the taxable year of the organization begins amounts (including as contributions) to such organization for energy research, and to which no single person paid or incurred (including as contributions) during such calendar year an amount equal to more than 50 percent of the total amounts received by such organization during such calendar year for energy research."

[12] GAO. 2009. "Tax Policy: The Research Credit's Design and Administration Can Be Improved." GAO-10-136: pg. 35. https://www.gao.gov/assets/gao-10-136.pdf.

This sentiment was echoed by stakeholders interviewed by OPEGA for this review, who described payroll as an area where it can be challenging to prove which positions should qualify for the R&D credit. This lack of clarity about qualifying expenses can create uncertainty for businesses investing in R&D, as it makes it difficult for a business to accurately predict which expenses will qualify for the credit and the amount of credit the business can plan to receive. (See Recommendation 2 for further discussion of uncertainty for businesses.)

Although the determination of qualifying R&D expenses is primarily made at the federal level by the IRS, for the purposes of Maine's R&D credit, MRS assesses which expenses that qualify for the federal R&D credit were associated with R&D conducted in Maine. For MRS, much of this effort is focused on qualifying expenses in the form of wages. This assessment may become increasingly complex as remote positions become more common following the COVID-19 pandemic.

B. Reaching Intended Beneficiaries

Businesses conducting R&D and, indirectly, qualified organizations performing contracted R&D, have been identified as intended beneficiaries of the R&D credit for the purpose of this evaluation. The design of Maine's R&D credit ensures that only businesses actually performing, or contracting for, R&D in Maine can claim the credit. However, we find that some businesses conducting R&D may not be able to make use of the credit due to certain elements of the credit design.

- **Businesses taking the R&D credit are required to be performing or contracting for R&D.**

By law, the credit allowed is the sum of a percentage of qualified research expenses and a percentage of basic research payments for the taxable year (36 MRSA §5219-K). The meanings of "basic research payments" and "qualified research expenses" are defined in the IRC Section 41. Eligible expenses include, but are not limited to, items such as wages paid to those conducting qualifying research, the cost of supplies used in that research, and the cost of research performed under contract. For the purposes of the State credit, these expenses must support research conducted in Maine.

- **Some businesses may be excluded from taking the credit even if they are undertaking R&D.**

While the State R&D credit design ensures that only those conducting qualifying research in Maine can claim the credit, not all businesses conducting qualifying research in Maine may be able to make use of the credit. Given the design of the credit, the following scenarios are examples of how businesses conducting research in Maine may be excluded from claiming the credit:

- Businesses may be conducting qualifying R&D, but if they have not increased spending above their base spending on R&D, they will not be able to make use of the credit.

- Businesses may not have enough tax liability to claim the credit. The credit is not refundable, and, for corporate taxpayers, it is limited to 100% of the first $25,000 of tax due (before the allowance of any credits) plus 75% of the tax due, in excess of $25,000. As a result, businesses without sufficient tax liability, perhaps those early in R&D who haven't seen returns on their investment yet, may miss out on benefiting from the credit.

The exclusion of some businesses from accessing the credit is discussed further in Recommendation 2.

C. Program Performance toward Goals: Creating High-Quality Jobs in Maine

Identified goal: To create high-quality jobs by encouraging investments in R&D and encourage the recruitment and training of employees.

There is no statutory requirement for Maine R&D credit recipients to create jobs. However, OPEGA's research indicates that credit recipients are likely to be spending on wages for highly skilled positions, and the statute does require that all expenses qualifying for the State R&D credit must be expenditures for research conducted in this State.[13] No data is readily available to directly measure the degree to which R&D credit recipients are creating high-quality jobs in Maine, but data from the National Science Foundation suggests Maine continues to lag behind other states in measures related to highly skilled R&D workforce.

- **To the degree that businesses are taking the credit, they are likely spending on wages for highly skilled research positions in Maine.**

Given the design of the R&D credit and the federal definitions, it is reasonable to assume that most credit claims include qualifying wages. The definition of "qualified research expenses," applicable to both the federal and State credit, include wages, and the definition of allowable "contract research expenses" includes amounts paid to people outside of the business for research.[14]

In a 2017 evaluation of Minnesota's R&D credit, the Minnesota Office of the Legislative Auditor found that "wages accounted for 76% of C corporations' qualified research expenses in Minnesota from 2010 to 2014."[15] Although no direct data is available about wages connected with Maine R&D credit claims, we can assume wages account for at least a portion of qualified expenses. Furthermore, because the State credit requires that qualifying expenses be for research conducted in Maine, we can assume that any wages included in qualifying expenses should be for jobs

[13] 36 MRSA §5219-K(1) states that the terms "'qualified research expenses,' 'qualified organization base period amount,' 'basic research' and any other terms affecting the calculation of the credit have the same meanings as under the Code, Section 41, but apply only to expenditures for research conducted in this State."

[14] See Internal Revenue Service. 2005. "Audit Techniques Guide: Credit for Increasing Research Activities (i.e. Research Tax Credit) IRC §41-Qualified Research Expenses." irs.gov/businesses/audit-techniques-guide-credit-for-increasing-research-activities-ie-research-tax-credit-irc-ss-41-qualified-research-expenses.

[15] See page 5 of the State of Minnesota, Office of the Legislative Auditor, Program Evaluation Division. 2017. "Minnesota Research Tax Credit." https://www.auditor.leg.state.mn.us/ped/pedrep/researchcredit.pdf.

conducting research in Maine.[16] However, we have no information about the degree to which the credit is driving more job creation than would be happening otherwise (see section III.D for further discussion of how the R&D credit may influence business decisions).

Although "high-quality" jobs have not been defined for the R&D credit specifically, the types of jobs considered qualifying expenses under this credit would likely be considered "high-quality" by most standards. For state programs such as Pine Tree Development Zones (PTDZ), "high-quality" is defined generally as jobs with wages above the average for the area and which include benefits like health insurance and retirement packages.[17] Jobs associated with qualifying R&D expenses are likely to be research scientists undertaking skilled and specialized work and are likely to meet, or exceed, quality standards like those in the PTDZ program.

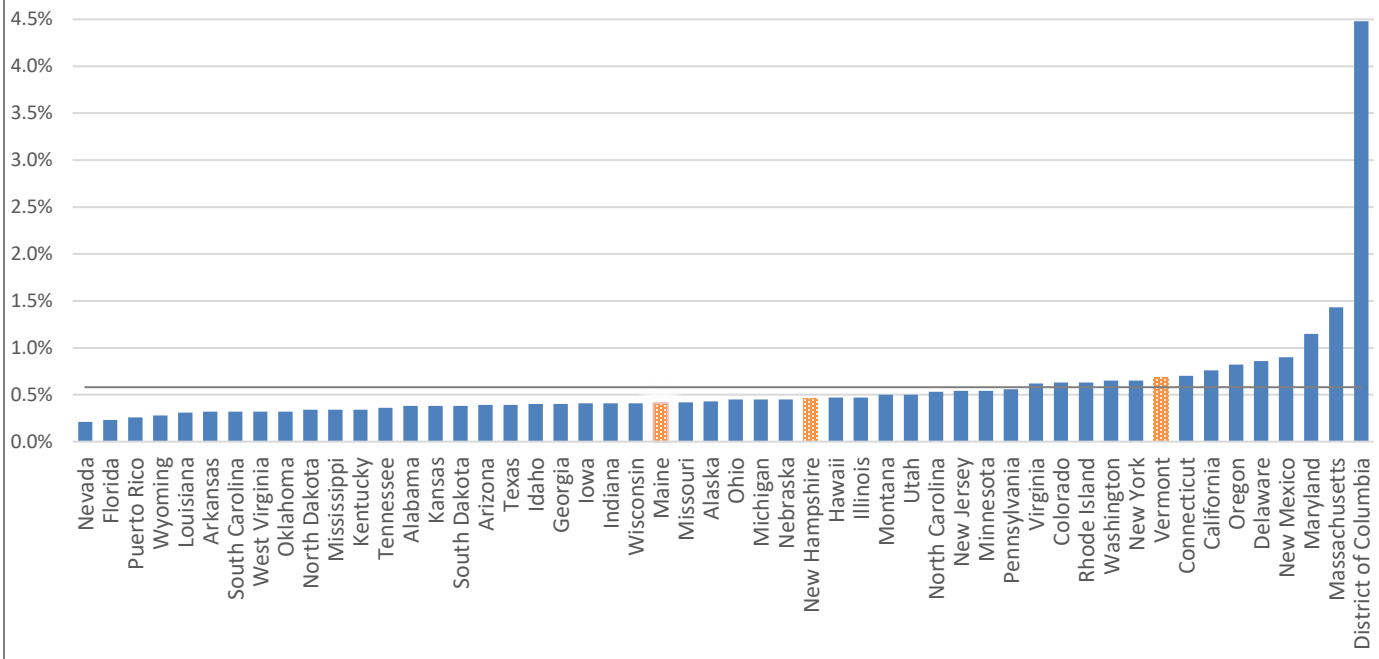
- **While no data is readily available regarding jobs directly connected to Maine's R&D credit, national data suggests Maine ranks lower than neighboring states on R&D jobs generally.**

In the absence of data specific to jobs associated with State R&D credit claimants, OPEGA turned to the National Science Foundation for contextual data regarding the State's performance in R&D workforce. (See Recommendation 3 regarding lack of data for monitoring performance.)

The NSF provides an indicator, *SEH Doctorates as Percentage of the Workforce,* that "measures the concentration of science, engineering, and health (SEH) doctorate holders among a state's workforce and represents a state's ability to attract and retain highly trained scientists and engineers."[18] The NSF states that these workers "often conduct R&D, manage R&D activities, or are otherwise engaged in knowledge-intensive activities. A high value for this indicator in a state suggests employment opportunities for individuals with highly advanced training in SEH fields."[19]

[16] OPEGA notes that determining the location of jobs may become more complicated as jobs become increasingly mobile following the COVID-19 pandemic.
[17] For example, under 30-A MRSA §5250-P(2), a public policy objective of the Pine Tree Development Zone program is to create and retain quality jobs. Qualifying employees for the PTDZ program are defined under 30-A MRSA §5250-I(18) to have access to retirement programs and group health insurance and wages greater than the most recent annual per capita personal income in the county in which the qualified employee is employed.
[18] National Science Board. "Employed Science, Engineering, and Health Doctorate Holders as a Percentage of the Workforce." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/indicators/states/indicator/seh-doctorate-holders-in-workforce. Accessed on 1/17/22.
[19] Ibid.

Figure 2. SEH Doctorates as a Percent of Total Workforce, by State, 2019



Source: National Science Board. "Employed Science, Engineering, and Health Doctorate Holders as a Percentage of the Workforce." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/indicators/states/indicator/seh-doctorate-holders-in-workforce.

The NSF data show that Maine ranks lower on science, engineering and health doctorates as a percentage of its total workforce than other northern New England states, Vermont and New Hampshire. Out of all 50 states and the District of Columbia and Puerto Rico, Maine ranked near the middle of the pack on this indicator – ranking 31st in 2019 and 35th in 2017.[20]

D. Program Performance toward Goals: Stimulating R&D Investment in Maine

Identified goal: To stimulate R&D investment.

To understand how the R&D credit is, or is not, stimulating R&D investment in the State, requires data about the amount of R&D spending that has qualified for Maine's R&D credit. Unfortunately, such data are not readily available (see Recommendation 3 for further discussion). Absent this data, OPEGA looked to other sources for information about the degree to which the credit might be expected to support Maine's competitive position, relative to other states, in attracting research investment. Below we discuss R&D credits offered by other states and the factors most strongly linked to states with high levels of research investment. For context, we also include National Science Foundation data on Maine's R&D performance over time in comparison to other states.

[20] Ibid.

- **Research tax credits are common among the states, and can vary significantly.**

Thirty-five states currently offer a tax credit for research expenses.[21] In a 2021 study, the Iowa Department of Revenue gathered information about R&D credits nationwide and reported that:

> - *Only seven states that previously offered a credit have ceased its implementation: Missouri in 2005, Montana in 2010, Michigan in 2012, West Virginia in 2013, Washington in 2014, North Carolina in 2015, and Oregon in 2018.*
> - *Program features of R&D credits vary significantly across the United States. State tax credit rates for qualified research expenditures varies from a low of three percent in Colorado to a high of 20 percent in Hawaii. Arkansas offers a 33 percent rate for certain qualifying expenditures…*
> - *16 states limit the amount of the tax credit in some capacity, either by limiting the dollar amount or reduction of tax liability. Seven programs impose a statewide cap on the amount of credits that can be earned and/or awarded. Iowa is among 19 states (54 percent) that do not limit the amount of the credit and does not have a statewide cap…*
> - *Most states do not offer a refundable credit. Of the 35 states with incremental research activities tax credits, eight states (23 percent), offer broadly refundable credits.*[22]

However, tax credits are just one factor in creating a desirable location for businesses to conduct R&D. The next section discusses other factors that may drive these decisions.

- **While the R&D credit may be a factor in business decisions about locating R&D in Maine versus other locations, research suggests that other factors may be more important.**

Although Maine's R&D credit is less generous than some other states, given that 35 other states offer R&D credits, it might still have a role in attracting research investment to Maine. In evaluations of tax expenditure programs, OPEGA has heard consistently from the business community that every little bit of incentive can make a difference when businesses are conducting financial feasibility studies comparing investing in Maine to investing in other locations. However, other factors may be more important.

A 2017 evaluation of Maryland's research tax credit by the Office of Policy Analysis of the Maryland General Assembly, Department of Legislative Services, included analysis of factors that influence innovation across states. That analysis found that taxes "can play a role in a business's decision-making process, especially at the margins. However, based on the state rankings of both the State Technology and Science Index and the State New Economy Index, there is no clear evidence that a state R&D tax credit will stimulate innovation and create long-term economic growth."[23]

[21] Information provided to OPEGA in 2021 by the National Conference of State Legislatures (NCSL).
[22] See page 7 of Iowa Department of Revenue. 2021. "Research Activities Tax Credit: Tax Credits Program Evaluation Study."
[23] See page 43 of Maryland Office of Policy Analysis. 2017. "Evaluation of the Research and Development Tax Credit."

Based on a review of indices ranking states' R&D performance, OPEGA noted that factors linked to strong state R&D performance include: academic, industry, and federal government R&D funding in states; National Science Foundation activity; measures of venture capital as well as patents, business formation, and initial public offerings; human capital in sciences with adequate skills and training; broadband infrastructure; and availability of researchers and university collaborative research settings.[24]

- **Maine is not performing well in R&D investment generally when compared to other states.**

NSF data shows that Maine has lagged behind other states, including comparable northern New England states, in R&D investment. Table 4 below demonstrates that, between 2015 and 2019, Maine consistently ranked among the lowest states for many measures of R&D performance (ranking between 41st and 52nd out of 52) with the exception of state government spending on R&D (ranking from 14th to 35th out of 52).[25]

Table 4. NSF Research Activity Data for Maine

Metric	2015		2016		2017		2018		2019	
($ in millions)	Total	Rank	Total	Rank	Total	Rank	Total	Rank	Total	Rank
GDP	$57,000	46	$59,000	45	$61,404	45	$64,351	45	$67,717	45
Total R&D Performance*	$508	45	$483	45	$520	47	$527	47	NA	NA
Business R&D Performance*	$298	42	$290	41	$292	45	$285	45	$417	43
Higher Ed R&D Performance*	$104	50	$98	52	$120	50	$126	49	$142	47
State Government R&D Expenditures	$13	30	$11	35	$23	22	$16	30	$33	14
Patents for Inventions Issued to State Residents (#)	201	42	161	42	196	42	208	42	236	43

Source: Compiled by OPEGA from National Science Board. Science and Engineering State Profiles. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/explore-data.

*Note: In this context "R&D Performance" is the cost of R&D performed. See https://ncses.nsf.gov/pubs/nsf22303.

[24] OPEGA considered the 2020 State Technology and Science Index (STSI) from the non-partisan Milken Institute (milkeninstitute.org) and the State New Economy Index from the non-partisan Information Technology and Innovation Foundation (ITIF) (itif.org/publications/2020/10/19/2020-state-new-economy-index). The STSI describes itself as "comparing each state's capacity for achieving prosperity through scientific discovery and technological innovation, by performing a cross-sectional analysis of their rankings on key indicators using the latest available data from US federal government and private-sector sources." According to the STSI, Maine was ranked 43rd out of 50 in 2020. It's 2018 ranking was higher, at 38 out of 50. On the 2020 ITIF Index, Maine was 37th.

[25] OPEGA notes that NSF data lags behind real world outcomes in Maine with the most recent available data for many of the indicators being from 2018 or 2019. It is possible that Maine has seen improvements since this time.

As shown in the preceding table, Maine's national ranking in the category of state government expenditures on R&D is markedly better than its ranking in other categories, particularly in 2019. However, Maine's national ranking on other measures of R&D performance has remained relatively poor despite the State's consistent offering of the R&D credit.

UMaine's recent designation in the category of "Doctoral Universities: Very High Research Activity" (also known as R1) in the Carnegie Classification of Institutes of Higher Education indicates growing R&D activity and expenditures in higher education in the State (consistent with the data in Table 4). Increased higher education R&D could be a step toward attracting greater R&D business investment in the future.

E. Program Performance toward Goals: Improving the Overall Economy of the State

Identified goal: To improve the overall economy of the State by expanding the number of businesses conducting and investing in R&D.

- **Although it is reasonable to expect increased R&D to have economic impacts, there is no readily available data about the specific investment, or economic impacts of the State R&D credit. Maine's overall R&D performance relative to GDP is lagging.**

R&D credits are often founded on the idea that technological innovation, as induced through R&D processes, is a key driver of economic growth. Economists have generally come to consensus around this idea. A 2016 paper on the federal R&D credit from Congressional Research Services notes that there is little, if any, disagreement around the idea technological innovation drives economic growth.[26] However, absent data about investment dollars or jobs related to State R&D credit claimants, it is difficult to estimate how much Maine's R&D credit may be contributing to the State's economy (see Recommendation 3 about data collection).[27]

Still, NSF metrics such as R&D performance as a percentage of GDP are readily available and suggest that Maine's R&D investment relative to GDP is outpaced by neighboring states. The 2021 Measures of Growth Report, prepared by Maine Development Foundation for the Maine Economic Growth Council, noted this as well. That report gave Maine a "red flag" for research and development expenditures, noting that "Maine trails badly in R&D investment" and that "Maine lags other states in private sector and university R&D investments relative to GDP."[28]

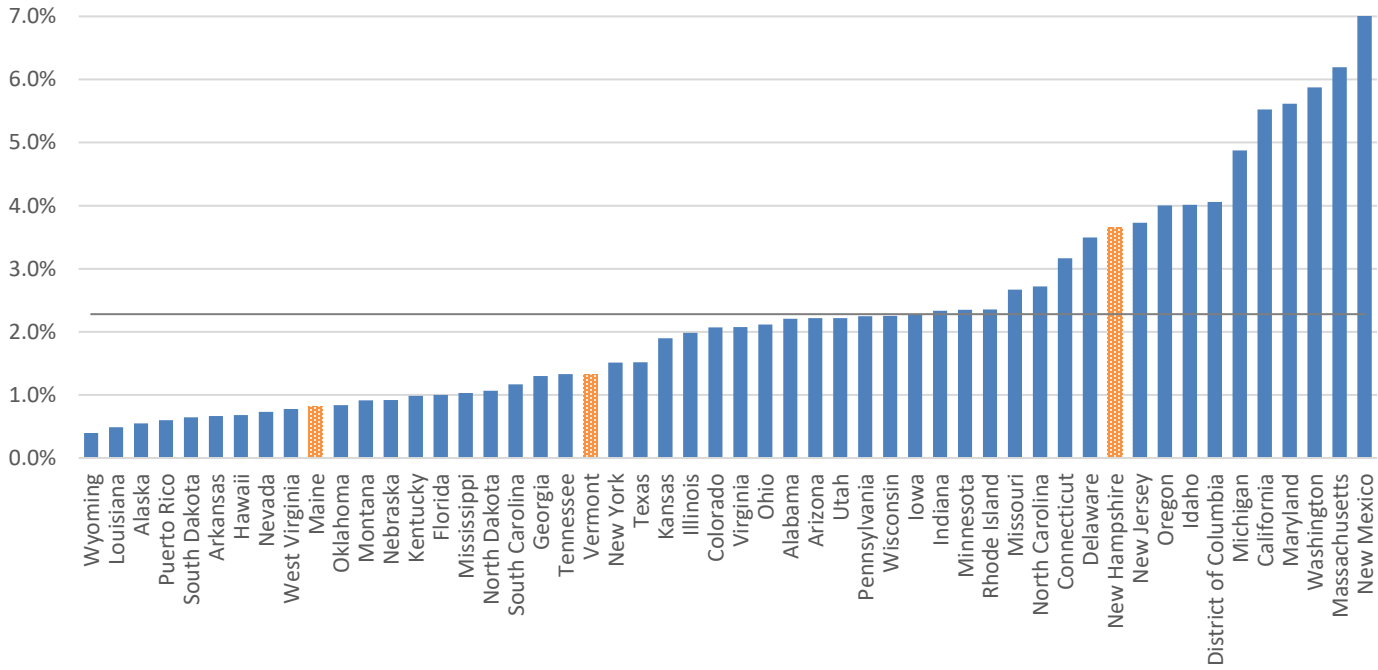
[26] Guenther, Gary. Congressional Research Service. 2016. "Research Tax Credit: Current Law and Policy Issues for the 114th Congress." RL31181. https://crsreports.congress.gov/product/pdf/RL/RL31181/70.

[27] Even with investment and jobs data, estimating the economic impact of the State R&D credit would still be challenging, because it would require attempting to distinguish the impact of that credit on business research, separate from all of the other State programs that may be supporting the same research. This attribution challenge is inherent part of estimating the impacts of any State tax incentive.

[28] See page 13 of Maine Economic Growth Council. 2021. "Measures of Growth: Performance Measures and Benchmarks to Achieve a Vibrant and Sustainable Economy for Maine."

The National Science Foundation also reports "R&D as a Percentage of Gross Domestic Product" to measure "the extent to which R&D plays a role in a state's economy."[29] Maine's performance on that NSF indicator in comparison to other states is 43rd out of 52, as shown in Figure 3. Like the indicators noted in section III.D, Maine's relatively low ranking on R&D as a percent of GDP suggests that, although the long-standing R&D credit may have an impact on some business's R&D decisions, it may not be enough to significantly move the needle on R&D in Maine.

Figure 3. R&D as a Percentage of Gross Domestic Product, by State, 2018



Source: National Science Board. "R&D as a Percentage of Gross Domestic Product." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/indicators/states/indicator/rd-performance-to-state-gdp.

[29] National Science Board. "R&D as a Percentage of Gross Domestic Product." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/indicators/states/indicator/rd-performance-to-state-gdp. Accessed on 1/17/22. This indicator includes R&D for all sectors (including businesses, universities, and nonprofit organizations and state and federal agencies) and funding sources.

IV. Overall Conclusions and Recommendations

A. Overall Conclusions

In this evaluation OPEGA found that:

- Research supports the idea that increasing innovation is an economic driver, but the ability to understand the actual impacts of Maine's R&D credit on the State economy is limited by the lack of readily available data.
- Other data available on R&D in Maine generally demonstrates that the State has performed poorly over time on R&D even as Maine's credit has remained available.
- R&D credits are common in states (70%) and typically built on the structure of the federal R&D credit.
- While having an R&D credit in the toolbox of options to support Maine businesses may make sense in light of similar credits in other states, research points to other factors that may be more important in attracting R&D to Maine.
- The incremental structure and limitations of Maine's credit exclude some businesses conducting R&D from participating in the credit, but there may be reasons for policymakers to support these limitations. Complexities in the federal credit, upon which the State credit is based, may also create uncertainty for businesses and hinder take-up of the credit.

B. Recommendations

1. OPEGA recommends that the Legislature, in consultation with MRS, DECD, and other stakeholders as appropriate, review and memorialize the R&D credit's goals, intended beneficiaries, and how success is defined in terms of outcomes for the credit.[30]

The R&D tax credit was established in 1995 and has never had goals, intended beneficiaries, or performance measures specified for it in statute. Absent these, the GOC, in consultation with the Taxation Committee, and supported by OPEGA's research, set retrospective goals, intended beneficiaries, and measures for the credit to serve as the basis for this evaluation of its performance.[31] These goals, beneficiaries, and measures were based on draft language that recently came before the Legislature for another related R&D tax provision and on the Congressional Research Service's characterization of the intent of the federal R&D credit.[32]

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[30] This recommendation aligns with recommendations D1 and D2 of the Legislature's recent Tax Expenditure Review Working Group that would establish processes to review existing, and proposed, tax expenditure statutes to ensure the elements needed for evaluation, including stated legislative purposes, intent or goals, intended outcomes and provisions for data collection, are specified. State of Maine, 130th Legislature. 2021. "Tax Expenditure Working Group Report." https://legislature.maine.gov/doc/7659.

[31] Such retrospective assignment of goals, while necessary in this case, applies the goals of today to past performance and is not the most effective basis for evaluation and oversight. Hence, memorialization of goals and performance measures to be applied to the credit in future is desirable.

[32] OPEGA looked to LD 977 "An Act to Restore the Super Credit for Substantially Increased Research and Development" which contained goals for a reinstated Super Credit, which would have been built upon the R&D Credit. LD 977 was

With legislation under current consideration by the Maine Legislature to increase the credit and authorize a marketing budget for it, this is an opportune time to take a strategic look at the credit's goals, intended beneficiaries, desired outcomes, and performance measures to ensure they reflect the Legislature's expectations for the credit's future contribution to Maine's economy.[33] In this process, OPEGA recommends specific consideration be given to how the credit is intended to fit within the overall State R&D environment and the innovation focus area of the State's 10-Year Strategic Economic Development Plan.[34] Clearly identifying goals, target beneficiaries, and desired outcomes provides a framework within which to consider amending the R&D credit and a basis for future oversight and evaluation of the credit's performance.

2. ***OPEGA recommends that the Legislature, in consultation with MRS and DECD as appropriate, amend the design of the R&D credit as needed to ensure that intended beneficiaries can access the credit.***

For the purposes of this evaluation, the intended beneficiaries of the R&D credit were identified as businesses conducting R&D and, indirectly, qualified organizations performing contracted R&D. At present, some businesses conducting R&D in Maine may be unable to access the benefits of the R&D credit due to the incremental nature of the credit and limitations on the amounts that can be claimed. Other taxpayers who could potentially qualify may not be using the credit because lack of clarity about qualifying expenses can make the actual value of the credit difficult for businesses to predict. These conditions represent opportunities to expand access to the credit if the intended beneficiaries remain all businesses conducting R&D. However, OPEGA acknowledges that limiting participation can be a deliberate strategy to cap the cost of a tax expenditure. Determining whether amendments are needed to the credit's design may be more straightforward once intended beneficiaries are clearly identified and memorialized, as discussed in Recommendation 1.

Incremental design limits access to credit: The incremental design of the R&D credit means that the credit is calculated as a percentage of R&D expenses made in the current tax year above a base amount of R&D expenses from prior years. Business investments in R&D only qualify for the credit to the degree that they exceed the base amount. This incremental structure of the State credit mirrors the federal R&D credit. Due to this structure, a business with consistent R&D investment levels, but no year over year increase, cannot benefit from the credit. Additionally, a year or two of high R&D investment could raise a business's base amount beyond what it can exceed in subsequent years, putting the credit out of reach until enough time has passed for the business's base to drop.

introduced in the First Regular Session of the 129th Legislature and in June 2019, the bill (as amended by Committee Amendment "A" (H-621)) was carried over on the Special Appropriations Table. LD 977 died upon conclusion of the 129th Legislature in November 2020. OPEGA also considered the intent of the federal credit, upon which Maine's credit piggybacks, based on the characterization of the Congressional Research Service. See Guenther, Gary. Congressional Research Service. 2016. "Research Tax Credit: Current Law and Policy Issues for the 114th Congress." RL31181. https://crsreports.congress.gov/product/pdf/RL/RL31181/70.

33 LD 308 "An Act To Promote Research and Development in the State by Increasing and Marketing the Research Expense Tax Credit" was, as of the writing of this report, before the 2nd Session of the 130th Legislature after having been carried over from the 1st Regular Session.

34 Maine Department of Economic and Community Development. "Maine Economic Development Strategy 2020-2029. A Focus on Talent and Innovation."

In these ways, the credit currently rewards increasing investment, but does not support companies with ongoing and consistent R&D.[35]

Non-refundability, and other limits, impact benefits for businesses: Several limits embedded in the structure of the R&D credit present additional barriers to accessing it. First, the credit is not refundable, meaning it can only reduce the taxpayer's liability to zero. Second, the credit is limited to 100% of a corporation's first $25,000 of tax due (as determined before the allowance of any credits) plus 75% of the corporation's tax due, as determined in excess of $25,000. While these limits help manage the State's revenue loss associated with the credit, they also mean that a business without sufficient tax liability will be unable to access the value of the credit even if they have qualifying R&D investments. For example, businesses that may be investing heavily in R&D, but are not yet profitable, may not be able to take the credit (at all or in its full amount) because their tax liability is limited.

Uncertainty may hinder take-up of the credit: Complexities surrounding determination of which expenses qualify for the R&D credit can be a source of uncertainty for businesses, and may hinder take-up of the credit. Much of the uncertainty in Maine's R&D credit stems from the complexity of the federal R&D credit on which the State credit is built. Issues relating to lack of clarity around the definition of qualified research expenses for the federal R&D credit were identified and reported by the Government Accountability Office in a 2009 report.[36] These issues carry over to the Maine credit as it relies on the same definitions for qualifying expenses, with the exception that expenses qualifying for the State credit must be for research conducted in Maine. (See additional discussion of these issues on page 9 of the report.)

Stakeholders connected with the Maine R&D credit whom OPEGA interviewed for this review noted that there remains a lack of clarity around qualifying expenses. They noted that some businesses hire consultants to help them attempt to be sure, before making R&D investments, about which expenses will qualify for the federal credit, and in turn, the State credit. Tax credits with increased uncertainty are inherently less desirable for businesses, as they make it more difficult for businesses to assess whether an investment will be financially advantageous. This uncertainty can lead to situations where a business makes an R&D investment that depends on receipt of the R&D credit to be financially advantageous, and after the investment has already been made, is unable to access the credit.

3. ***OPEGA recommends that the Legislature, in consultation with MRS and DECD as appropriate, determine what data is needed for effective oversight of the R&D credit and make changes to statute or practice, as needed, to ensure the necessary data is readily accessible.***

[35] In addition to rewarding increasing investment, the credit also rewards inconsistent but not increasing investment. For instance, consistent research expenses of $100,000 each year will not result in a credit, but expenses of $400,000 one year out of every 4 years will.

[36] GAO. 2009. "Tax Policy: The Research Tax Credit's Design and Administration Can Be Improved." GAO-10-136.

OPEGA found that there is little readily available data about use of the R&D credit beyond the estimated State revenue loss figures and estimated counts of affected taxpayers reported biennially in the Maine State Tax Expenditure Report (MSTER). This lack of data limits the ability of policymakers to measure and evaluate performance of the credit. Collecting additional direct data from credit recipients, however, may trigger business concerns about confidentiality. Still, there may be other ways for legislators to implement data-informed oversight of the credit. After memorializing the R&D credit's goals, as discussed in Recommendation 1, policymakers should consider what types of data are needed for effective oversight—balancing the value of transparency with business confidentiality concerns—and how that data should be gathered and managed.

Data retrieval challenges & confidentiality: Currently, there is some data reported to MRS on the State R&D credit worksheets filed by businesses claiming the credit that could be useful for oversight of the credit. For example, the worksheets include the names of businesses taking the credit as well as the amounts they are claiming in qualifying research expenses. However, because this data is confidential taxpayer information, it may not be shared publicly unless it has been sufficiently aggregated to avoid disclosure, or potential disclosure, of individually identifying taxpayer information. While aggregated data has its limits, it could be useful in monitoring the credit's overall performance. However, the current data storage system presents challenges. Specifically, the credit worksheets, which would be needed for aggregation, are currently stored in MRS's system as PDF image files, and these must be looked up by individual taxpayer. This image format makes requests to query or aggregate data from the worksheets very time-consuming and resource-intensive for MRS. If data from R&D credit worksheets is determined to be valuable and necessary for future oversight of the credit, adjustments to the data storage system may be needed to make data from those worksheets more readily accessible.

Uncollected data: Some data relevant to measuring performance of the R&D credit are not currently being collected (see Appendix C more additional information). For example, the "number, location and income of employees added or retained" was identified as a performance measure for the R&D credit in the context of this evaluation. However, no data elements relative to the number of jobs created or retained in connection with R&D credit, the geographic locations of those jobs, or information about the income of employees of credit claimants is currently collected by MRS or any other State agency. Once the Legislature has identified and established performance measures for the credit, as discussed in Recommendation 1, new data collection may need to be instituted.

Business concerns about data collection: Although business-specific data provided by credit claimants can provide policymakers with valuable information about a credit's usage and associated impacts, there can be potential downsides to requiring businesses to report such data. Stakeholders interviewed by OPEGA noted that businesses may consider data about their R&D investments to be highly confidential, with the potential to expose their R&D plans to competitors and put them at a competitive disadvantage, and noted that such data collection requirements could discourage businesses from using the credit.

Alternate data sources: If collection of business-specific data from R&D credit claimants is untenable, ongoing collection and assessment of aggregate data on R&D activity could assist the State in its oversight and evaluation of the R&D credit as part of Maine's overall R&D strategy.[37] For example, performance indicators from the National Science Foundation – such as those included in the body of this report – are readily available and present no confidentiality issues. At the same time, there are limitations to using NSF data. First, the data speaks to Maine's R&D activity generally, rather than specifically to the R&D credit's specific participation and impacts. Second, there is a lag in NSF data. For example, the most recent Maine R&D data from NSF reflects calendar year 2020, and some indicators are less recent. This lag does not diminish the data's value for monitoring trends over time, but does make it less useful for checking the real-time status of R&D in Maine.

Acknowledgements

OPEGA would like to thank Maine Revenue Service for their cooperation throughout this review. OPEGA would also like to thank the staff of the Department of Economic and Community Development, and other stakeholders who were interviewed, for this sharing their time and expertise.

Agency Response

In accordance with 3 MRSA §997(1), OPEGA provided Maine Revenue Service an opportunity to submit additional comments after reviewing the report draft. Maine Revenue Service declined to provide comment.

[37] OPEGA notes that there may be opportunities to integrate monitoring of the R&D credit's performance, and associated data, with oversight of the State's overall R&D strategy.

Appendix A. Evaluation Scope and Methods

Evaluation Scope

On May 14, 2021 the GOC voted to approve the following evaluation parameters, pursuant to 3 MRSA §999(1)(A), which set forth the scope of the evaluation.

Purposes, Intent or Goals of the Credit
(1) To stimulate R&D investment;
(2) To create high-quality jobs by encouraging investments in R&D and to encourage the recruitment and training of employees; and
(3) To improve the overall economy of the State by expanding the number of businesses conducting and investing in R&D.
Intended Beneficiaries of the Credit
(1) Businesses conducting/investing in R&D; and
(2) Indirectly, qualified organizations performing contracted R&D.
Evaluation Objectives*
(a) The fiscal impact of the tax expenditure, including past and estimated future impacts;
(b) The extent to which the design of the tax expenditure is effective in accomplishing the tax expenditure's purposes, intent or goals and consistent with best practices;
(c) The extent to which the tax expenditure is achieving its purposes, intent or goals, taking into consideration the economic context, market conditions and indirect benefits;
(d) The extent to which those actually benefiting from the tax expenditure are the intended beneficiaries;
(e) The extent to which it is likely that the desired behavior might have occurred without the tax expenditure, taking into consideration similar tax expenditures offered by other states;
(f) The extent to which the State's administration of the tax expenditure, including enforcement efforts, is efficient and effective;
(g) The extent to which there are other state or federal tax expenditures, direct expenditures or other programs that have similar purposes, intent or goals as the tax expenditure, and the extent to which such similar initiatives are coordinated, complementary or duplicative;
(h) The extent to which the tax expenditure is a cost-effective use of resources compared to other options for using the same resources or addressing the same purposes, intent or goals; and
(i) Any opportunities to improve the effectiveness of the tax expenditure in meeting its purposes, intent or goal.
Performance Measures
(1) Tax credits claimed ($);
(2) State budget impact (revenue loss and net impacts) ($);
(3) Number, location and income of employees added or retained;
(4) Number and amount of R&D investments made by credit recipients; and
(5) Measures of direct and indirect improvement in the state economy.

*Evaluation Objectives: Each objective will be addressed to the extent that is warranted and practical based on our assessment of: the availability of the necessary data; the level of resources required/available; and the relevance of the particular objective to the tax credit.

Evaluation Methods

To complete the evaluation of the credit, OPEGA considered available credit data and guidance from MRS and guidance from the Internal Revenue Service on the related federal credit. We also considered research literature on R&D tax credits nationally, reports on other states' R&D credits, perspectives from stakeholders and data on national and state-level R&D performance from the National Science Foundation.

Data collection and analysis methods included:

- Review of relevant State statute and rules, including the history of changes made since the program was enacted, along with testimony;
- Consideration of all forms and guidance for both the state and federal R&D credits;
- Consideration of published research about the impacts research expense tax credits nationally and in other states;
- Interviews with stakeholders familiar with the R&D credit;
- Review of other contextual materials such as the Statewide Strategic Economic Development Plan 2020-2029 and the 2021 Maine Development Foundation Measures of Growth report;
- Review of program administrative costs, and other administrative information, provided by MRS;
- Review of MRS's Maine State Tax Expenditure Reports for 2020-2021 and 2022-2023;
- Review and analysis of National Science Foundation data.[38]

OPEGA did not request, nor receive, any confidential taxpayer information from MRS to support this evaluation. MRS reported that all data collected on the State R&D credit worksheet is considered confidential taxpayer information and therefore not generally accessible to support oversight or monitoring of the credit. Although OPEGA is generally able to access confidential taxpayer data to support evaluation to tax expenditures under 3 MRSA §1001(1), MRS explained that providing R&D credit worksheet data for all taxpayers would be very time intensive, because the data is not captured to their tax data warehouse, and is instead stored as PDF image files that must be looked up by individual taxpayer. See Recommendation 3 on this point.

MRS was able to provide OPEGA with data about aggregate amounts reported for the R&D credit for years 2010-2019. OPEGA's analysis of that data is included in this report where applicable.

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[38] OPEGA accessed data available from the National Science Foundation on research performance in states. See National Science Board. Science and Engineering State Profiles. Alexandria, VA: National Science Foundation. https://ncses.nsf.gov/explore-data. Also OPEGA notes that NSF data lags behind real world outcomes in Maine, with the most recent available data for many of the indicators being from 2018. While it is possible that Maine has seen improvements since this time do to an increased state focus on R&D, there is no readily available data to support this and it is worth looking at what is available in terms of Maine's performance.

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Appendix B. Research Expense Credit (R&D Credit) Authorizing Statute

36 MRSA §5219-K. Research expense tax credit

1. Credit allowed. A taxpayer is allowed a credit against the tax due under this Part equal to the sum of 5% of the excess, if any, of the qualified research expenses for the taxable year over the base amount and 7.5% of the basic research payments determined under the Code, Section 41(e)(1)(A). The term "base amount" means the average amount per year spent on qualified research expenses over the previous 3 taxable years by the taxpayer. As used in this section, unless the context otherwise indicates, the terms "qualified research expenses," "qualified organization base period amount," "basic research" and any other terms affecting the calculation of the credit have the same meanings as under the Code, Section 41, but apply only to expenditures for research conducted in this State. In determining the amount of the credit allowable under this section, the State Tax Assessor may aggregate the activities of all corporations that are members of a controlled group of corporations, as defined by the Code, Section 41(f)(1)(A) and in addition may aggregate the activities of all entities, whether or not incorporated, that are under common control, as defined by the Code, Section 41(f)(1)(B).

2. Reduction not less than zero. The credit allowed under this section for any taxable year may not reduce the tax due to less than zero.

3. Limitation on credit allowed. The credit allowed under this section is limited to 100% of a corporation's first $25,000 of tax due, as determined before the allowance of any credits, plus 75% of the corporation's tax due, as determined in excess of $25,000. The assessor shall adopt rules similar to those authorized under the Code, Section 38(c)(5)(B) for purposes of apportioning the $25,000 among members of a controlled group.

4. Corporations filing combined return. In the case of corporations filing a combined return, a credit generated by an individual member corporation under the provisions of this section must first be applied against the tax due attributable to that company under this Part. A member corporation with an excess research and development credit may apply its excess credit against the tax due of another group member to the extent that that other member corporation can use additional credits under the limitations of subsection 3. Unused, unexpired credits generated by a member corporation may be carried over from year to year by the individual corporation that generated the credit, subject to the limitation in subsection 5.

5. Carryover to succeeding years. A taxpayer entitled to a credit under this section for any taxable year may carry over and apply to the tax due for any one or more of the next succeeding 15 taxable years the portion, as reduced from year to year, of the credit that exceeds the tax due for the taxable year. A taxpayer may carry over and apply to the tax due for any subsequent taxable year the portion of those credits, as reduced from year to year, not allowed by subsection 3.

6. Additional rules. The State Tax Assessor shall adopt such rules as are necessary to implement this section.

7. Application. This section applies to any tax year beginning on or after January 1, 1996.

Appendix C. Performance Metrics

Although there are no performance measures for the R&D credit specified in statute, the GOC approved several performance measures for the purposes of this evaluation. For most of the approved performance measures, specific data was not readily available to OPEGA. We have noted this in the table below, where applicable. Recommendation 3 discusses the lack of data to support oversight of the R&D credit.

Table 5. Performance Metrics Approved by GOC for Evaluation of the R&D Credit

Metric	Results & Related Information
a) Tax credits claimed ($)	Past Estimated Claims [a] Approximately $18 million in aggregate R&D credits for **tax years** 2010-2019 Approximately $4.1 million in **tax year** 2018; $3 million in **tax year** 2019 Projected Future Claims [b] Approximately $1.7 million for **fiscal year** 2022
b) State budget impact (revenue loss and net impact) ($)	Revenue Loss: see above (Tax credits claimed) Net Impact Estimating net impact would require, at a minimum, data on actual qualifying investment amounts and jobs associated with qualifying costs, which was not readily available.
c) Number, location and income of employees added or retained	Data relevant to this metric is either not currently collected, or not readily available.
d) Number and amount of R&D investments made by credit recipients	Number of Investments [a] 1,248 tax filings included the R&D credit across **tax years** 2010-2019 176 tax filings included R&D credits in **tax year** 2018 217 tax filings included R&D credits in **tax year** 2019 No additional data is readily available to more closely estimate a count of individual investments by R&D credit claimants. $ Amount of Investments No data specific to the amounts invested by credit recipients is readily available.
e) Direct and indirect improvement in the economy of the State attributable to activities entitled to a credit under this section	Estimated Economic Impacts No economic impacts were estimated as data to support reasonable estimates is not readily available. Estimating economic impacts, such as jobs and GDP growth, would require, at a minimum, data on actual qualifying investment amounts and jobs associated with qualifying costs.

[a] Based on OPEGA analysis of data provided by MRS. Includes individual and corporate filers. MRS noted that "Individual credit claims on amended returns filed several years after the tax year have been especially important in recent years. The 2018 and 2019 figures could change significantly." MRS did not have additional information about what has caused taxpayers to file these amended returns as opposed to reporting the amounts on their original return in recent years.

[b] Maine Revenue Services. 2021. "Maine State Tax Expenditure Report 2022 - 2023."