

DEMYSTIFYING THE ACRONYMS: OHIO'S COMMERCIAL ACTIVITY TAX ("CAT") AND THE TAX CREDIT FOR QUALIFIED RESEARCH EXPENSES ("QRE")

*Anna E. Rowland**

INTRODUCTION

It is easy to understand the importance of tax credits for taxpayers, especially when those tax credits are intertwined with the taxpayer's business and operations. In Ohio, all businesses may be subject to Ohio's Commercial Activity Tax ("CAT").¹ Ohio provides for several credits, allowing taxpayers to reduce the amount of CAT they must pay.² One of those credits is the credit for Qualified Research Expenses ("QRE").³ There are multiple tests to determine if a taxpayer has "qualified research expenses."⁴ These are tests within tests, all which a taxpayer must satisfy to qualify for the QRE credit.⁵ Neither Ohio case law nor administrative guidance provide great clarity on how the tests should be applied and what activities constitute "qualified research." In addition, in an ever-growing world of technology and software development, the application of the QRE credit to internal use software is becoming more prevalent while the test to claim the credit remains unclear. This Note will address these unclear judicial and administrative tests, resolve uncertainties, and provide guidance for the QRE credit for Ohio's CAT.

* J.D. Candidate, University of Toledo College of Law, May 2025. I would like to thank my faculty advisor, Christopher Bourell, and my Note and Comment Editor, Skyler Wickert, for all their feedback and assistance throughout this process. I would also like thank Christopher Dolsen, my friends, and family, as this Note would not have been possible without them.

1. *Commercial Activity Tax (CAT): Table of Contents*, OHIO DEP'T OF TAX'N, <https://tax.ohio.gov/business/ohio-business-taxes/commercial-activities/commercial-activities> (last visited July 21, 2024).

2. *CAT 2007-03 - Commercial Activity Tax: Commercial Activity Tax Credits, Explained - Issued December 2007; Revised March 2008; Revised June 2008 (Archived)*, OHIO DEP'T OF TAX'N, <https://tax.ohio.gov/business/ohio-business-taxes/commercial-activities/information-releases/cat200703-archive3> (June 2008).

3. *Id.*

4. *Union Carbide Corp. & Subsidiaries v. Comm'r*, 97 T.C.M. (CCH) 1207 (2009), *aff'd* 697 F.3d 104, 107 (2d Cir. 2012).

5. *Id.*

Ohio's CAT, previously Ohio's Corporations Tax, is a gross receipts tax on businesses for the privilege of doing business in the State of Ohio.⁶ Liability for CAT purposes is calculated annually using the businesses taxable gross receipts.⁷ CAT is also a broad tax and applies to all businesses and business types, regardless of whether the business is located within or outside of Ohio.⁸ Retailers, large manufacturers, service providers, and many other types of businesses may be subject to the CAT.⁹ In Ohio's CAT statute,

“Person” means, but is not limited to, individuals, combinations of individuals of any form, receivers, assignees, trustees in bankruptcy, firms, companies, joint-stock companies, business trusts, estates, partnerships, limited liability partnerships, limited liability companies, associations, joint ventures, clubs, societies, for-profit corporations, S corporations, trusts, and entities disregarded for federal income tax purposes....¹⁰

There are few entities and businesses excluded from CAT. Excluded entities include financial institutions, public utilities, domestic or foreign insurance companies, nonprofit organizations, the state and its agencies, instrumentalities, and political divisions.¹¹ A taxpayer can request a refund of the CAT for qualified research expenses already paid, but the request for a refund must be filed within four years of the overpayment.¹²

For the CAT to be imposed, a taxpayer must have substantial nexus with the State of Ohio.¹³ Pursuant to R.C. 5751.01(H), a person has substantial nexus with Ohio if the person meets any of the following conditions:

- (1) Owns or uses part or all of its capital in Ohio;
- (2) Holds a certificate of compliance with the laws of Ohio authorizing the person to do business in Ohio;
- (3) Has bright-line presence in Ohio; or
- (4) Otherwise has nexus with Ohio to an extent that the person can be required to remit the tax imposed under this chapter under the Constitution of the United States.¹⁴

6. *Commercial Activity Tax (CAT) - General Information*, OHIO DEP'T OF TAX'N, <https://tax.ohio.gov/business/ohio-business-taxes/commercial-activities/cat-general-information> (last visited July 21, 2024).

7. *Id.*

8. *Id.*; Elizabeth M. Bosek et al., *Nonrefundable Tax Credit for Qualified Research*, 87 OHIO JURIS. 3D TAX'N § 945 (2024).

9. *Commercial Activity Tax (CAT) - General Information*, *supra* note 6.

10. OHIO REV. CODE ANN. § 5751.01 (West 2023); Giles Sutton et al., *Ohio's New Commercial Activity Tax: What It Means for Business*, 15-FEB J. MULTISTATE TAX'N 8, 10 (2006).

11. § 5751.01.

12. Scotts Co., Final Determination, 2 (Ohio Dep't of Tax'n Apr. 28, 2023).

13. § 5751.01.

14. OHIO REV. CODE ANN. § 5751.01(H) (West 2023).

“Bright-line presence” for the purpose of tax reporting in Ohio is met when a taxpayer has taxable gross receipts of at least \$500,000 during the calendar year.¹⁵ The presence of a physical business location is not required for the Ohio Department of Taxation or the Ohio Supreme Court to find that a taxpayer has substantial nexus and a “bright-line presence” in Ohio.¹⁶ In addition, a taxpayer cannot claim the Commerce Clause prevents the CAT from being imposed because the Ohio Supreme Court has held, “the statutory threshold of \$500,000 of Ohio sales constitutes a sufficient guarantee of the substantiality of an Ohio nexus for purposes of the dormant Commerce Clause.”¹⁷

In July 2023, Ohio’s Congress voted to change the CAT and which businesses would be subject to the CAT based on the business’s amount of taxable gross receipts, and who would be considered a taxpayer.¹⁸ A higher exemption rate affects smaller businesses with less than \$3 million in 2024 and \$6 million in 2025, as those businesses will no longer be subject to CAT.¹⁹

This change is effective as of October 3, 2023, and the changes are as follows.²⁰ Beginning on January 1, 2024, the CAT annual minimum tax was eliminated and the exclusion amount for tax periods in the 2024 calendar year was increased from \$1 million to \$3 million.²¹ Beginning in calendar year 2025, the exclusion amount will increase from \$3 million to \$6 million, and those with taxable gross receipts less than \$3 million in 2024, and \$6 million in 2025, will no longer be required to file a CAT return with the Ohio Department of Taxation.²² In addition, annual filing for the CAT will no longer be utilized, and taxpayers required to file CAT returns must file quarterly returns for tax periods beginning on and after January 1, 2024.²³ The tax rate of 0.26% remains unchanged.²⁴ Below is a breakdown for calendar years 2024 and 2025.

2024 Calendar Year	2025 Calendar Year
<ul style="list-style-type: none"> ● No Annual Minimum Tax ● Exclusion Amount is \$3 Million ● Taxpayers are required to file quarterly returns 	<ul style="list-style-type: none"> ● No Annual Minimum Tax ● Exclusion Amount is \$6 Million ● Taxpayers are required to file quarterly return

15. *Crutchfield Corp. v. Testa*, 88 N.E.3d 900, 903 (Ohio 2016) (establishing definition of bright-line presence).

16. *Id.* at 910.

17. *Id.* at 902.

18. See H.R. 33, 135th Gen. Assemb. (Ohio 2023); *Changes to Ohio’s Commercial Activity Tax*, OHIO DEP’T OF TAX’N, https://tax.ohio.gov/business/ohio-business-taxes/commercial-activities/changes_to_ohios_commercial_activity_tax (last visited July 21, 2024).

19. *Id.*

20. OHIO REV. CODE ANN. § 5751.01 (West 2023).

21. H.R. 33, 135th Gen. Assemb. (Ohio 2023).

22. *Id.*

23. *Id.*

24. *Changes to Ohio’s Commercial Activity Tax*, *supra* note 18.

The 2024 and 2025 changes to the CAT could bring about substantial changes in revenue for the state of Ohio, but it is uncertain how much the changes will affect revenue. The 2022 Annual Report for the fiscal year 2022 for the Ohio Department of Taxation said the collections from the CAT were approximately \$2.4 billion.²⁵ This revenue was then distributed to various funds, including 65% to the Revenue Enhancement Fund, the General Revenue Fund, the School District Tangible Property Tax Replacement Fund, the Local Government Tangible Property Tax Replacement Fund, and the Commercial Activity Tax Motor Fuel Fund.²⁶ Over the next few years, the amounts attributed to these funds could fluctuate, which impacts more than just businesses claiming the credits, but also the citizens of Ohio.

The state of Ohio is not the only state to impose a tax on the privilege of doing business in the state.²⁷ Pennsylvania imposes a gross receipts tax on businesses for the privilege of doing business in Pennsylvania, Tennessee imposes a gross receipts tax on businesses, and West Virginia has a similar privilege of doing business tax on certain businesses.²⁸ While the rates vary by state, the tax on the privilege of doing business nonetheless remains an important tax that funds programs similar to those in Ohio. On the contrary, there are many states that do not impose a tax on the privilege of doing business: Georgia, Indiana, Kentucky, Michigan, North Carolina, and Texas.²⁹ Whether a company is based in a state that imposes a tax on the privilege of doing business or not, Ohio remains a central point of business interactions, and thus the CAT has many implications for companies in every corner of the United States.

BACKGROUND

The United States leads the world in research and development performance with a share of 28%, 6% higher than China at 22% of the world share.³⁰ Not only does the United States lead in research and development; the business sector in the United States is responsible for 75% of research and development efforts.³¹ This was not always the case, however. Congress did not think the private sector was engaging in research and development at a high enough rate, so Congress created a multitude of tax incentives and credits.³² Even though Congress may have been well intentioned in their effort to increase research and development, the reality is the tax credit statutes and the tests for determining research and development

25. Jeff McClain, *2022 Annual Report*, OHIO DEP'T OF TAX'N 28, https://dam.assets.ohio.gov/image/upload/tax.ohio.gov/communications/publications/annual_reports/2022annualreport.pdf (last visited July 21, 2024).

26. *Id.*

27. *Id.*

28. *Id.*

29. *Id.*

30. Mark Boroush & Ledia Guci, *Research and Development: U.S. Trends and International Comparisons*, U.S. NAT'L SCI. FOUND. 7 (April 28, 2022), <https://ncses.nsf.gov/pubs/nsb20225>.

31. *Id.*

32. Belinda L. Heath, *The Importance of Research and Development Tax Incentives in the World Market*, 11 MICH. ST. U. DET. C. L. J. INT'L L. 351, 352 (2002).

credits are unclear.³³ Qualifying for the QRE credit may feel like a moving target for businesses, and therefore the lack of clarity in meeting the QRE tests forces businesses to evaluate whether it is worthwhile to try to claim the tax credit.³⁴ This, in turn, affects the amount of businesses who conduct business in Ohio and additionally will decrease research and development. The moving target of the QRE credit is no different when it comes to claiming the QRE credit in Ohio.

I. DEFINITIONS

Ohio's credit for QRE follows the definition of "qualified research expenses" as outlined in Section 41 of the Internal Revenue Code ("I.R.C.").³⁵ I.R.C. § 41 defines qualified research expenses as the sum of in-house research expenses and contract research expenses.³⁶ The statute further defines in-house expenses and contract research expenses. In-house expenses include wages paid and supplies used for qualified research.³⁷ "Wages" include, "wages paid or incurred to an employee for qualified services."³⁸ "Qualified services" is defined as "services consisting of engaging in qualified research or engaging in the direct supervision or direct support of research activities which constitute qualified research."³⁹ Furthermore, wages include all remuneration, whether in cash or other forms of payment, for services performed by the employee engaging in qualified research.⁴⁰ "Supplies" include, "any amount paid or incurred for supplies used in the conduct of qualified research."⁴¹ Subsection (b)(2)(C) states that "supplies" includes, "any tangible property other than land or improvements to land, and property of a character subject to the allowance for depreciation."⁴² To claim the credit for supplies, the supplies must be used directly in qualified research.⁴³ While supplies must be directly used for qualified research, it is difficult to distinguish between supplies being used directly and indirectly.⁴⁴ Courts have accepted the interpretation that indirect research expenses are any expenses that "would have been incurred regardless of any research activities."⁴⁵

"Contract research expenses" are defined as:

33. *Id.* at 354.

34. Sandra R. Brown et al., *Use, but Don't Abuse Those R&D Tax Credits*, L.A. LAW., May 2022, at 28, 30.

35. OHIO REV. CODE ANN. § 5751.51(A) (West 2023).

36. I.R.C. § 41(b)(1) (West 2022).

37. I.R.C. § 41(b)(2)(A)(i)-(ii) (West 2022).

38. I.R.C. § 41(b)(2)(A)(i) (West 2022).

39. I.R.C. § 41(b)(2)(B)(i)-(ii) (West 2022).

40. *Apple Comput. Inc. v. Comm'r*, 98 T.C. 232, 236 (1992).

41. I.R.C. § 41(b)(2)(A)(ii) (West 2022).

42. I.R.C. § 41(b)(2)(C) (West 2022).

43. *Union Carbide Corp. & Subsidiaries v. Comm'r*, 97 T.C.M. (CCH) 1207 (2009), *aff'd* 697 F.3d 104, 107 (2d Cir. 2012).

44. *Id.* at 108.

45. *Id.* at 109.

65 percent of any expense paid or incurred in carrying on a trade or business to any person, other than an employee of the taxpayer, for the performance on behalf of the taxpayer of—

- (i) Qualified research, ... or
- (ii) Services which, if performed by employees of the taxpayer, would constitute qualified services within the meaning of 41(b)(2)(B).⁴⁶

The QRE credit may be claimed for contract research expenses if two conditions are met. The first condition is whether the payment for the research is contingent on success of the research, and second is whether the contractor retains substantial rights in the research.⁴⁷ Beginning with the first condition, courts will examine the specific terms of the parties' contracts, such as payment procedures, quality and performance standards, termination clauses, and warranty and default provisions, to determine which party bears the risk of loss for the research.⁴⁸ The second condition is met if the taxpayer has the right to use the research without paying the other party to use it.⁴⁹ However, ownership of the research is not dispositive of substantial rights to *use* the product.⁵⁰

While the statute does not make it clear what activities constitute qualified research, the case law is clear on which activities do *not* constitute qualified research. Activities that do not qualify for the QRE credit include (1) research after commercial production, (2) routine data collection, (3) foreign research, and (4) funded research by grant, contract, or otherwise by another person or governmental agency.⁵¹ Typical examples of activities conducted after commercial production include pre-production planning for a finished business components, tooling-up for production, trial production runs, troubleshooting involving the detection of faults in production equipment or processes, accumulation of data relating to production processes, and debugging product flaws.⁵²

II. FOUR-PART QUALIFIED RESEARCH TEST PROMULGATED IN I.R.C. § 41(D)(1)

A taxpayer must meet four tests, and all the tests' sub-parts, to successfully claim the QRE credit. The four tests a taxpayer *must* meet are the Section 174 Uncertainty Test, the Business Component Test, the Process of Experimentation Test, and the Technological Information Test.⁵³ A taxpayer also has the burden of proving it meets all four tests, and a taxpayer is required to keep and provide sufficient records that substantially detail that the expenses claimed are eligible for

46. Treas. Reg. § 1.41-2(e)(1) (as amended in 2001).

47. *Populous Holdings, Inc. v. Comm'r*, 2019 WL 13032526, at *1 (T.C. 2019).

48. *Id.* at *2; *Geosyntec Consultants, Inc. v. United States*, 776 F.3d 1330, 1334 (11th Cir. 2015).

49. *Populous Holdings*, 2019 WL 13032526, at *3; *Lockheed Martin Corp. v. United States*, 210 F.3d 1366, 1375 (Fed. Cir. 2000).

50. *Populous Holdings*, 2019 WL 13032526, at *3.

51. *Union Carbide Corp. & Subsidiaries v. Comm'r*, 97 T.C.M. (CCH) 1207, ¶ 494 (2009), *aff'd* 697 F.3d 104 (2d Cir. 2012).

52. *Id.* ¶ 495.

53. *Norwest Corp. & Subsidiaries v. Comm'r*, 110 T.C. 454, 488-90 (1998).

the credit.⁵⁴ Another important caveat specific to Ohio is the Ohio Department of Taxation (“Department”), while they may agree with the interpretations of the federal courts and find them to be persuasive, has leeway to look at the circumstances and facts of each case and do not have to follow precedent set by the federal courts, and the Commissioner’s factual findings are presumptively valid.⁵⁵ If the QRE credit is denied, a taxpayer can appeal a denial of the Department to the Ohio Board of Tax Appeals; however, the findings of the Department will be presumed valid, and the taxpayer has the burden of proving otherwise.⁵⁶

A. Section 174 Uncertainty Test

The first test, the Section 174 Uncertainty Test, comes from, as the name suggests, I.R.C. Section 174. It defines research and experimental expenditures as, “expenditures incurred in connection with the taxpayer’s trade or business which represent research and development costs in the experimental or laboratory sense.”⁵⁷ This is an objective test, and there are three things a taxpayer must prove to show it meets the uncertainty requirement.⁵⁸ First, the taxpayer must prove it does not already have the information that can address a capability or method for improving the product or product design.⁵⁹ Second, that taxpayer must prove that its activities were meant to eliminate those uncertainties.⁶⁰ Third, expenditures will only be considered qualified to “the extent that the amount thereof is reasonable under the circumstances.”⁶¹

While Section 174 states the requirements for a taxpayer to prove uncertainty, it does not define uncertainty. Uncertainty is present in almost every process of developing and creating a product, “[b]ut ‘uncertainty’ in Section 174 means something more.”⁶² Instead, there must be uncertainty in the *concept* of the *development* of the product.⁶³ Therefore, the correct type of uncertainty is the uncertainty as to the development or improvement of the product.⁶⁴ Development also refers to something more than its general meaning.⁶⁵ Development as used in Section 174 refers to the action or process of bringing a product to a more advanced condition.⁶⁶ While other courts have not analyzed the meaning of the words “uncertainty” and “development,” they seem to impose these same definitions by

54. Bayer Corp. & Subsidiaries v. United States, 850 F. Supp. 2d 522, 524 (W.D. Pa. 2012).

55. Alcan Aluminum Corp. v. Limbach, 537 N.E.2d 1302, 1304 (Ohio 1989).

56. Granger Plastics Co. v. Testa, Comm’r Ohio Dep’t of Tax., (Ohio Bd. of Tax Appeals July 15, 2015).

57. Siemer Milling Co. v. Comm’r, 117 T.C.M. (CCH) 1196, ¶ 40 (2019).

58. *Id.* ¶ 42.

59. Little Sandy Coal Co. v. Comm’r, 62 F.4th 287, 297 (7th Cir. 2023), *aff’g* 121 T.C.M. (CCH) 1113 (2021).

60. *Id.*

61. *Siemer*, 117 T.C.M. (CCH) ¶ 44.

62. *Little Sandy Coal*, 62 F.4th at 298.

63. *Id.*

64. *Id.*

65. *Id.*

66. *Id.*

requiring development be related to the concept of the product.⁶⁷ While the cases are unclear as to what activities constitute uncertainty, the cases are clear as to what “uncertainty” does not include. The uncertainty test does not include expenditures for the ordinary testing or inspection of materials or products for quality control, especially when the testing is for conformity to specific parameters.⁶⁸ An example of this is a business merely adjusting the product to meet a client’s desired specifications, without any indication that the expenses were incurred to improve or develop the concept of the product.⁶⁹ “The presence of uncertainty concerning the development or improvement of certain components of a product” is not dispositive of “uncertainty concerning the development or improvement of other components of the product or the product as a whole.”⁷⁰ In addition, the manufacturer cannot simply add a few new bells or whistles on a pre-existing product and claim uncertainty on the whole.

1. *Ohio’s Cases*

Due to the number of uncertainties in the QRE credit, and the complexities of claiming the credit, final determinations issued by the Department help illustrate the rules and illustrate when a taxpayer *did not* meet the Section 174 Test. While it would be helpful to taxpayers to describe cases where the taxpayer did meet the test, there just simply are not any available. This is because when the Department agrees with the taxpayer, an explanation of why the Department agreed with the taxpayer is absent.⁷¹ This reinforces the notion it is easier to explain what does not qualify for qualified research, rather than what would qualify for the credit.

Beginning with an Ohio-based marketing company, Fathom SEO, LLC (“Fathom”) failed to meet the Section 174 Uncertainty Test because it only engaged in ordinary testing and inspection of its software.⁷² Fathom provides a number of different marketing services, including search engine optimization, paid search and display, social media services, marketing automation, content creation, and analytics and technology services.⁷³ When Fathom claimed a credit for qualified research for the second quarter of 2015 through the fourth quarter of 2017, a refund amount resulted, which after an audit, the Department denied the refund request.⁷⁴ At the Department’s hearing on the matter, Fathom provided the Department with a sample project for a client that involved projects in information

67. *See generally* Union Carbide Corp. & Subsidiaries v. Comm’r, 97 T.C.M. (CCH) 1207 (2009), *aff’d* 697 F.3d 104 (2d. Cir. 2012) (describing that uncertainty can exist even if the taxpayer knows the end product can be created but the taxpayer is uncertain as to the methods that must be used to create the end product).

68. *Little Sandy Coal*, 62 F.4th at 298; Treas. Reg. § 1.174-2(a)(6)(i), (7) (as amended in 2014).

69. *Little Sandy Coal*, 62 F.4th at 298.

70. Treas. Reg. § 1.174-2(a)(5) (as amended in 2014).

71. Meyer Tool, Inc., Final Determination, 1 (Ohio Dep’t of Tax’n July 26, 2023).

72. Fathom SEO, LLC, Final Determination, 3-4 (Ohio Dep’t of Tax’n Sept. 29, 2023).

73. *We’re Deeply Rooted in Digital*, FATHOM, <https://www.fathomdelivers.com/us/> (last visited July 21, 2024).

74. Fathom SEO, LLC, Final Determination, at 1.

technology and software.⁷⁵ However, the evidence did not indicate that Fathom engaged in qualified research because Fathom was simply following standard testing procedures in the software field which has been excluded by courts as qualifying as qualified research.⁷⁶ In addition, “the developments by [Fathom] were standardized, regular, and conducted to ensure the information technology solutions conformed to specific metrics and industry standards.”⁷⁷ Therefore, the Department denied Fathom’s refund claim for qualified research credits.⁷⁸

Another example of where uncertainty was not met is in the final determination for MasTec North America, Inc. (“MasTec”).⁷⁹ MasTec, a large North American infrastructure construction company and general contractor, provides services to, “telecom vendors, wireless providers, cable TV operators, and energy and utility companies.”⁸⁰ The Department assessed MasTec for over \$5 million in CAT liability, and MasTec also filed a refund claim for qualified research for around \$140,000 for tax periods 2015 to 2018.⁸¹ The Department upheld its assessments against MasTec for CAT liability and denied the refund claim because MasTec failed to establish it met the Section 174 Uncertainty Test.⁸² MasTec asserted it satisfied the uncertainty portion of the Section 174 Test because it was unsure whether its current construction methods would be able to comply with new installation regulatory standards.⁸³ The Department stressed, however, these uncertainties do not qualify as the uncertainty required to meet the Section 174 Test because of the commonality of these problems.⁸⁴ The Department held “this project was not undertaken to combat uncertainty, but instead to ensure the project met the proposed deadline, complied with federal and state regulations, and stayed within cost restrictions.”⁸⁵ In effect, MasTec was simply having to comply with regulations set by the Ohio Environmental Protection Agency and the Federal Energy Regulatory Commission to meet the established governmental standards.⁸⁶ In essence, where a company has uncertainty as to whether business procedures will comply with new regulatory standards is not the type of uncertainty needed to overcome the Section 174 Uncertainty Test.⁸⁷

In addition to the regulatory standards, MasTec claimed it was uncertain how to work in difficult terrain and extreme weather conditions, how to cross a river in the construction of a pipeline, and what the appropriate welding process was for oversized pipes in steep terrain.⁸⁸ However, working in difficult terrain and

75. *Id.* at 5.

76. *Id.* at 4.

77. *Id.*

78. *Id.* at 7.

79. MasTec North America, Inc., Final Determination, 6 (Ohio Dep’t of Tax’n Nov. 20, 2023).

80. *Id.* at 1; *Who We Are*, MASTEC, <https://www.mastec.com/about/> (last visited July 21, 2024).

81. MasTec North America, Inc., Final Determination, at 1.

82. *Id.* at 8.

83. *Id.* at 4.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

88. *Id.*

extreme weather is a common problem faced by a construction company working in the pipeline industry.⁸⁹ In fact, it is so common that the taxpayer's claimed uncertainties were using a variety of known techniques to deal with the terrain and weather.⁹⁰ In regard to crossing the river, MasTec claimed it was the largest river it has ever had to cross, but it ended up using a technique it had used before crossing smaller rivers.⁹¹ Thus, MasTec did not undertake these activities to determine and resolve uncertainties, but rather had to undertake these tasks as a normal and necessary practice of installing a pipeline, and used known techniques to accomplish the installation.⁹² Therefore, the Uncertainty Test will not be met when a taxpayer uses common, established techniques of that business project or type.⁹³

2. Federal Cases

While this note focuses on Ohio's CAT and qualified research credits in Ohio, federal cases can be illustrative in how the tests have been applied. In addition, the Department often cites federal cases in its final determinations as support for denying qualified research credits.⁹⁴

Siemer Milling Company v. Commissioner of Internal Revenue ("Siemer") describes which activities do not pass the Section 174 Uncertainty Test. One of Siemer's projects that it submitted as qualified research was its "Pulsewave Project."⁹⁵ This project had the goal of determining if Siemer could increase the speed at which the Pulsewave machine operated.⁹⁶ The Pulsewave machine "reduces the particle size of various materials by the application of the physics of resonance, shock waves and vortex-generated shearing forces, as opposed to the crushing and grinding processes of conventional milling methods."⁹⁷ Siemer claimed it had uncertainty as to the effect of the machine and its ability to process different grains and flours that had already been milled.⁹⁸ Siemer also wanted to increase the speed of the machine, and data showed the machine could run at 5,000 rotations per minute as opposed to its standard ability of 3,600 rotations per minute.⁹⁹ The court reasoned this did not amount to uncertainty because it was mechanical maintenance of the machine, and not research and experimentation.¹⁰⁰ Siemer's argument it had uncertainty as to the speed the machine was not well

89. *Id.* at 5.

90. *Id.*

91. *Id.*

92. *Id.*

93. *Id.*

94. *Id.*

95. *Siemer Milling Co. v. Comm'r*, 117 T.C.M. (CCH) 1196, ¶ 12 (2019).

96. *Id.* ¶¶ 13-16.

97. *Id.* ¶ 12.

98. *Id.* ¶ 14.

99. *Id.*

100. *Id.* ¶ 69.

taken by the court because Siemer did not explain how its improvements to the machine would lead to development or improvement of products.¹⁰¹

A rare example of a case where the court *did* find there was uncertainty present, and thus the Section 174 Test was met, was in *Suder v. C.I.R.* In *Suder*, the research the company submitted for QRE credit was the process for developing products related to improving other companies internal processes.¹⁰² The next steps in the process were to decide the concept of the product and then move into the hardware and software development of the product.¹⁰³ It is important to note this was not analyzed under the internal software requirements because the software was being developed for other companies.¹⁰⁴ The development process involved creating different designs and prototypes, developing hypotheses, and testing those hypotheses.¹⁰⁵ *Suder* provided twelve projects following this development process.¹⁰⁶ The court concluded the projects contained uncertainties that satisfied the test because, “[e]ach of the 12 projects began as an idea to develop a new hardware product, software product, or both [and then] [s]enior management vetted the ideas...[and then] product manager, engineers, technicians, and other employees then transformed the products into commercially ready products.”¹⁰⁷ The court listed the specific uncertainties in this chart which helps to illustrate the types of uncertainties that courts look for in determining if the Section 174 Uncertainty Test is met:

Projects	Uncertainties
Arcadia	Adding ACD reporting to ESI’s phone systems
Chameleon	Incorporating a third-party skinning tool
Clark Kent	Extracting statistical information from Pink Panther
Rio Grande	Creating an application in Microsoft’s .NET framework to program an ESI phone system
Mad Max	Transferring phone calls through hotel routers and firewalls

101. *Id.*

102. *Suder v. Comm’r*, 108 T.C.M. (CCH) 354, ¶ 2 (2014).

103. *Id.* ¶¶ 14-19.

104. *Id.* ¶ 2.

105. *Id.* ¶¶ 14-25.

106. *Id.* ¶ 2.

107. *Id.* ¶ 92.

Express FSII	Adding new features such as live ring call waiting and ACD auto wrap
Suzuki	Creating wireless telephone interface cards
Phoenix	Connecting two cabinets; adding a backplane; integrating a ColdFire 5407 processor
Pony	Developing a 50-port phone system running Linux
DLC0	Isolating power, terminating traces
DLC82	Maintaining signal integrity on a small circuit board
IVC1212	Switching to 3.3-volt parts; surface mounting parts ¹⁰⁸

B. Business Component Test

The second test a taxpayer must meet is the Business Component Test. When a taxpayer claims the QRE credit, it must identify the business components that qualify for the credit.¹⁰⁹ A business component is a product the taxpayer either holds for sale, lease, license, or uses in its trade or business.¹¹⁰ This test requires the taxpayer to intend the information to be discovered is useful in the development of a new or improved business component of the taxpayer.¹¹¹ Adapting an existing business component does not constitute developing an improved business component.¹¹² The research only needs to provide some level of functional improvement to the taxpayer.¹¹³ Production processes to make a business component have its own special caveat. Production processes, such as plant processes, machinery, or technique for commercial production of a business component shall be treated as a separate business component, and not part of the business component being produced.¹¹⁴ In determining if the business component is met,

108. *Id.*; *Skinning*, PCMAG, <https://www.pcmag.com/encyclopedia/term/skinning> (last visited July 21, 2024). For the first project, Arcadia, ACD means automatic call distribution; third-party skinning tool is used to create a new appearance on a graphical interface.

109. *Bayer Corp. & Subsidiaries v. United States*, 850 F. Supp. 2d 522, 524 (W.D. Pa. 2012).

110. I.R.C. § 41(d)(2)(B) (West 2014); *Trinity Indus., Inc. v. United States*, 691 F. Supp. 2d 688, 691 (N.D. Tex. 2010).

111. *Siemer Milling Co. v. Comm’r*, 117 T.C.M. (CCH) 1196, ¶ 49 (2019).

112. *ROE Dental Lab’y Inc.*, Final Determination, 5 (Ohio Dep’t of Tax’n Feb. 28, 2023).

113. *Siemer Milling Co.*, 117 T.C.M. (CCH) ¶ 49.

114. I.R.C. § 41(d)(2)(C) (West 2022).

[u]nder section 41(d)(2)(A), the proper analysis is first to determine whether the taxpayer's activities with respect to a business component, such as a new product or production process, satisfy the definition of qualified research. If so, it must then be determined which employees of the taxpayer and which third parties performed qualified services in connection with the research, i.e., by engaging in qualified research, directly supervising the qualified research, or directly supporting the qualified research.¹¹⁵

I. *Ohio's Cases*

An illustrative case emphasizing the importance of developing or improving a new or existing business product is *MasTec North America, Inc.*¹¹⁶ MasTec, as described above, is a large North American infrastructure construction company and general contractor providing services to “telecom vendors, wireless providers, cable TV operators, and energy and utility companies.”¹¹⁷ MasTec appealed the assessments of the CAT imposed by the Department and the denial of a refund for projects involving its work on the Rover Pipeline Project.¹¹⁸ MasTec provided the Department with “credit studies for the tax year 2017, Federal Form 6765 for 2015 and 2016, and credit calculations.”¹¹⁹ However, this evidence was insufficient to support that MasTec met all four tests required for qualified research.¹²⁰ In particular, MasTec failed to demonstrate it met the Business Component Test because it only adapted existing business products to accommodate the changing weather conditions and different terrain involved in laying pipeline.¹²¹ Thus, the adaptations made were not an improved business component, but rather accommodating changing project conditions.¹²²

The principle of developing or improving a new or existing business component is reiterated in the *A-1 Sprinkler Company, Inc.* final determination. A-1 Sprinkler Company, Inc., an Ohio based company, provides fire safety systems and fire protections for a variety of different buildings and structures.¹²³ The Department conducted a field audit and assessed A-1 Sprinkler over \$50,000 in tax liability for CAT after A-1 Sprinkler's qualified research credit refund claim was denied.¹²⁴ At the appeal hearing, A-1 Sprinkler Company, Inc. provided the Department “with project summaries and a credit study covering projects for the period at issue, CAD modeling, credit calculations, employee rosters, and federal

115. ALEX SADLER & DOUG NORTON, LEGAL GUIDE TO RESEARCH CREDIT § 3.33 (2024).

116. *MasTec North America, Inc.*, Final Determination, 1 (Ohio Dep't of Tax'n Nov. 30, 2023).

117. *Id.*; *Who We Are*, *supra* note 80.

118. *MasTec North America, Inc.*, Final Determination at 1.

119. *Id.* at 3.

120. *Id.*

121. *Id.* at 7.

122. *Id.*

123. *A-1 Sprinkler Co.*, Final Determination, 1 (Ohio Dep't of Tax'n Nov. 30, 2023); *About Us*, A-1 SPRINKLER & SYS. INTEGRATION, <https://www.a1ssi.com/aboutus.html> (last visited July 21, 2024).

124. *A-1 Sprinkler Co.*, Final Determination, at 1.

tax returns.”¹²⁵ However, similar to the reasoning the Department used in MasTec above, the sprinkler system design and installation process claimed by A-1 Sprinkler Company, Inc. was simply tailoring the sprinkler system to fit different building layouts and structural needs.¹²⁶ In addition, fire protection systems are extremely regulated as to processes and design concepts.¹²⁷

The most widely used sets of standards covering fire sprinkler requirements for commercial buildings are the National Fire Protection Association (“NFPA”) 13, Standard for the Installation of Sprinkler Systems. These regulations give the industry a benchmark for design and installation of automatic fire sprinkler systems, addressing sprinkler system design approaches, system installation, and component options to prevent fire deaths and property loss. Further, Ohio Adm.Code 4101:1- 9-01 provides the Ohio state regulations for fire protection system installation, repair, operation, and maintenance. These regulations create restrictions for the entire industry of sprinkler design and installation. The restrictions do not require any new or improved business components or processes to comply.¹²⁸

Therefore, complying with regulatory standards using modified business components does not satisfy the Business Component Test.

Another example of the Business Component Test is described in the Department’s final determination for *ROE Dental Laboratory Inc.* The Department conducted an audit against the taxpayer which resulted in an assessment of around \$23,000, which ROE Dental Laboratory appealed.¹²⁹ At the appeal hearing, ROE Dental Laboratory claimed the QRE credit for research and development studies it conducted by Mueller Prost.¹³⁰ ROE Dental Laboratory specialized in developing and manufacturing a multitude of dental equipment and dental software for dentists and other laboratories.¹³¹ The studies by Mueller Prost were done to adapt an “upper full arch implant system, to meet a specific customer’s needs....”¹³² The Department found those studies did not meet the Business Component Test because the research was not intended to develop a new or improved business component, rather the activities were to adapt an existing business component.¹³³ In addition, the project was adapting the existing business component to a specific client’s needs and therefore does not qualify as developing a new or improved business component.¹³⁴

A federal case that further illustrates the Business Component Test is *Siemer Milling Company v. Commissioner of Internal Revenue*. As described above,

125. *Id.*

126. *Id.* at 7.

127. *Id.* at 8.

128. *Id.* at 5.

129. ROE Dental Lab’y Inc., Final Determination, 1 (Ohio Dep’t of Tax’n Feb. 28, 2023).

130. *Id.*

131. *About ROE Dental Laboratory*, ROE DENTAL LAB’Y, <https://www.roedentallab.com/about-roe/> (last visited July 21, 2024).

132. ROE Dental Lab’y Inc., Final Determination, at 5.

133. *Id.* at 6.

134. *Id.*

Siemer, a wheat milling company, submitted multiple projects as qualified research.¹³⁵ Many of Siemer's projects failed the Section 174 Test, but other projects also failed the Business Component Test. Siemer's Wheat Hybrids Project failed the Business Component Test because it did not attempt to develop or improve an existing product or process.¹³⁶ Siemer's work on this project was to determine what was available from wheat breeders and growers, and therefore did not satisfy the Business Component Test.¹³⁷ Identifying what product or process a taxpayer is attempting to improve or develop is crucial to satisfying the Business Component Test.¹³⁸ This was Siemer's flaw in claiming qualified research expenses because Siemer did not identify what product or process it was attempting to develop or improve, Siemer failed "the business component test with respect to its wheat hybrids project."¹³⁹ Therefore, it is important for taxpayers claiming the credit to engage in research that is not highly regulated and controlled by external regulations that describe how a business component must be developed and installed.

C. *Technological Information Test*

The third test a taxpayer must meet is the Technological Information Test. The Technological Information Test requires that research was done for the purpose of discovering information that is "technological in nature."¹⁴⁰ "Technological in nature" refers to information that fundamentally relies on principles of the physical or biological sciences, engineering, or computer science.¹⁴¹ Reliance on the physical or biological sciences is a crucial point of this test.¹⁴² Technological has a similar meaning to the standard used when determining if a witness is an expert under the Federal Rules of Evidence. Federal Rule of Evidence 702(a) says that a witness will be considered an expert if the person's testimony relies on scientific, technological, or special knowledge.¹⁴³ Discovering information related to the social sciences, art, or humanities does not satisfy this test.¹⁴⁴

However, the taxpayer is not required to reinvent the wheel. In fact, the courts have made clear, "that section 41(d)(1) does not require the taxpayer to expand or refine principles of science or engineering in order to qualify for the tax credit."¹⁴⁵ It follows that the information discovered does not require making a revolutionary discovery in the science or engineering field.¹⁴⁶ While this test must be met in order to successfully claim qualified research expenses, this test is not one of contention

135. *Siemer Milling Co. v. Comm'r*, 117 T.C.M. (CCH) 1196, ¶ 8 (2019).

136. *Id.* ¶ 74.

137. *Id.*

138. *Id.* ¶ 46.

139. *Id.* ¶ 76.

140. *Norwest Corp. v. Comm'r*, 110 T.C. 454, 491-92 (1998).

141. *Id.* at 492.

142. *Id.* at 494.

143. FED. R. EVID. 702(a).

144. *Norwest*, 110 T.C. at 492.

145. *Tax and Acct. Software Corp. v. United States*, 301 F.3d 1254, 1259 (10th Cir. 2002).

146. *Id.*

or difficult to meet. Of all the final determinations discussed in this note, not a single one discusses or finds issue in a taxpayer meeting the Technological Information Test.¹⁴⁷ The cases also explain what does and does not satisfy this test, but does not discuss the test in relation to specific facts of a case, except for *Siemer Milling*. Siemer did not meet the Technological Information Test because it did not provide what principles it used in its project to conduct research.¹⁴⁸ However, the court did not provide specifics or go into detail regarding all the circumstances, and thus offers little help in determining what activities will satisfy the test.¹⁴⁹ Therefore, a taxpayer must rely on the principles of physical or biological sciences in its research, and cannot claim research that was meant to discover information related to the social science, art, or humanities.¹⁵⁰

D. *Process of Experimentation Test*

The fourth test a taxpayer must meet is the Process of Experimentation Test. The Process of Experimentation Test consists of three elements which includes the “substantially all” element; the process is designed to evaluate one or more alternatives element, and the research must be undertaken for a qualified purpose element.¹⁵¹ The first is the “substantially all” element.¹⁵² This element requires that 80% or more of the taxpayer’s research activities for each business component constitute a process of experimentation for a qualified purpose.¹⁵³ This is usually measured on a cost basis, or some other consistently applied reasonable basis.¹⁵⁴ Importantly, a taxpayer will not fail this element if the remainder of the research activities related to the business component are not processes of experimentation.¹⁵⁵ A process of experimentation, the second element, is a process designed to evaluate one or more alternatives to achieve a result when the taxpayer is uncertain at the beginning of its research activities of the capability or method of achieving the result or appropriate design.¹⁵⁶ This element is generally satisfied when the taxpayer uses the scientific method such as developing hypotheses, testing and analyzing those hypotheses, and refining and discarding the hypothesis as part of a sequential design process to develop the overall component.¹⁵⁷ This also requires the methods used by the taxpayer to be more in-depth because a simple method of trial and error will not constitute a process of experimentation.¹⁵⁸

147. Fathom SEO, LLC, Final Determination, 4 (Ohio Dep’t of Tax’n Sept. 29, 2023); ROE Dental Lab’y, Inc., Final Determination, 4 (Ohio Dep’t of Tax’n Feb. 28, 2023).

148. *Siemer Milling Co. v. Comm’r*, 117 T.C.M. (CCH) 1196, ¶ 58 (2019).

149. *Id.* ¶¶ 57-58.

150. *Norwest Corp. v. Comm’r*, 110 T.C. 454, 492-94 (1998).

151. *Union Carbide Corp. & Subsidiaries v. Comm’r*, 97 T.C.M. (CCH) 1207, ¶ 482 (2009), *aff’d* 697 F.3d 104 (2d. Cir. 2012).

152. *Id.* ¶ 483.

153. *Id.* ¶ 484.

154. *Id.*

155. *Id.*

156. *Id.* ¶ 485.

157. *Id.* ¶ 490.

158. *Id.* ¶ 491.

The last element of this test is the research undertaken must be for a qualified purpose.¹⁵⁹ Research for a qualified purpose is research related to a new or improved function, performance, reliability, or quality of the business component.¹⁶⁰ Research for style, taste, cosmetic, or seasonal design changes are not qualified purposes.¹⁶¹

I. Ohio's Cases

It is important the taxpayer do more than just a trial-and-error method. Fathom, a marketing company described above, provides a number of different marketing services, including search engine optimization, paid search and display, social media services, marketing automation, content creation, and analytics and technology services for its clients.¹⁶² Fathom appealed the Department's rejection of their refund claim for qualified research expenses, claiming its two provided sample projects that involved two separate technology systems satisfied the Process of Experimentation Test.¹⁶³ Fathom argued it met the test because, "to overcome its uncertainties it engaged in a systematic trial and error process."¹⁶⁴ But the courts have made clear, and the Department followed this interpretation, that a simple process of trial and error will not suffice.¹⁶⁵ The Department focused on the fact that Fathom's activities were not based on the hard sciences or it was not "true experimentation" as Fathom was taking existing technology and altering it to the specific needs of its clients.¹⁶⁶ Tailoring standard procedures and software widely utilized in a certain field to client's needs is not a process of experimentation because it is using standardized procedures and design concepts.¹⁶⁷

The Department takes this position in another final determination issued for Mainline Information Systems, Inc, a Florida-based company. Mainline Information Systems, Inc. is a large company providing a variety of technology and information products and services to companies all over the United States.¹⁶⁸ Some of the services and products Mainline Information Systems, Inc. provides is cybersecurity, data and analytics, and management services.¹⁶⁹ The Department conducted an audit of Mainline Information Systems, Inc. and denied Mainline its claimed QRE credit.¹⁷⁰ The Department then assessed Mainline with \$34,692.67 in tax owed for the Ohio CAT.¹⁷¹ Mainline objected to the assessment and

159. I.R.C. § 41(d)(3)(A) (West 2022).

160. *Siemer Milling Co. v. Comm'r*, 117 T.C.M. (CCH) 1196, ¶ 50 (2019).

161. *Union Carbide Corp.*, 97 T.C.M. (CCH) ¶ 493.

162. *We're Deeply Rooted in Digital*, *supra* note 73.

163. *Fathom SEO, LLC*, Final Determination, 5 (Ohio Dep't of Tax'n Sept. 29, 2023).

164. *Id.*

165. *Id.*

166. *Id.*

167. *Id.*

168. *Mainline Community Involvement*, MAINLINE INFO. SYS., <https://mainline.com/about/community-involvement/> (last visited July 21, 2024).

169. *Solutions*, MAINLINE INFO. SYS., <https://mainline.com/solutions/> (last visited Aug. 3, 2024).

170. *Mainline Info. Sys., Inc.*, Final Determination, 7 (Ohio Dep't of Tax'n Sept. 29, 2023).

171. *Id.* at 1.

increased tax liability, and argued it satisfied the Process of Experimentation Test because it engaged in a systematic trial and error process to develop its products.¹⁷² However, Mainline used industry standard practices to alter existing products for a specific client's needs.¹⁷³ In addition, Mainline's argument failed for similar reasons expressed by the Department in the final determination for Fathom: the taxpayer was following a trial and error process to validate the results, rather than scientifically evaluating hypotheses about how the technology would work.¹⁷⁴

As established by the cases discussed so far, many taxpayers who have attempted to claim the QRE credit have not been science- or technology-based companies. However, being in the science or technology field is not a requirement to claim the credit. For example, a flower and garden company, August Corso Sons, Inc., known as Corso's Flower & Garden Center, claimed the QRE credit in Ohio.¹⁷⁵ August Corso Sons, Inc. is a greenhouse and gardening company providing gardening and greenhouse plants and supplies, florist services, and landscaping services.¹⁷⁶ August Corso Sons, Inc. engaged a research group to conduct research and development studies, and then claimed the credit based on those studies.¹⁷⁷ However, the taxpayer was not able to successfully claim the credit, not because they are a flower and gardening company, but because it failed to establish its activities met the Process of Experimentation Test.¹⁷⁸ The taxpayer did not meet the "substantially all" requirement meaning that 80% of its research projects were not processes of experimentation.¹⁷⁹ "In this case, the [taxpayer] did not design the chemical trials project or soil trials/resolution project from scratch; rather, it made standard modifications to existing chemical and soil products."¹⁸⁰ The taxpayer simply used market available chemicals on its plants.¹⁸¹ A taxpayer must engage in research that involves more than practices and products already developed in the respective field.

Brennan Industries, Inc. is another illustrative case of activities that do not qualify as a process of experimentation. Brennan Industries, Inc., a Solon, Ohio, based company with locations all over the world, specializes in manufacturing flow components, including hydraulic and pneumatic fitting sources.¹⁸² Brennan Industries claimed it engaged in a process of experimentation when its projects involved process improvement, production efficiency, and developing an online catalog.¹⁸³ However, these projects were a process improvement and not a process

172. *Id.* at 6.

173. *Id.*

174. *Id.*

175. August Corso Sons, Inc., Final Determination, 1 (Ohio Dep't of Tax'n Feb. 28, 2023); *Corso's Flower & Garden Center*, CORSO'S FLOWER & GARDEN CTR., <https://www.corsos.com/> (last visited July 21, 2024).

176. *Corso's Flower & Garden Center*, *supra* note 175.

177. August Corso Sons, Inc., Final Determination at 1.

178. *Id.* at 8.

179. *Id.* at 5.

180. *Id.* at 5-6.

181. *Id.* at 6.

182. *About Us*, BRENNAN INDUST., <https://brennaninc.com/history/> (last visited July 21, 2024).

183. Brennan Indus. Inc., Final Determination, 5 (Ohio Dep't of Tax'n Nov. 30, 2023).

of experimentation because the taxpayer was trying to meet more stringent specifications and made standard modifications to an existing third-party software.¹⁸⁴ In addition, Brennan Industries did not engage in a process of experimentation because the trial-and-error method used was not based in hard sciences or experimentation in a laboratory sense.¹⁸⁵ As with many other cases where the QRE credit has been denied, Brennan Industries activities were ordinary activities associated with the manufacturing of flow systems, and the projects were conducted using ordinary production processes.¹⁸⁶ Reiterating the rule as described above in *August Corso Sons* and *Brennan Industries, Inc.*, to satisfy the process of experimentation test, a taxpayer must do more than use the standard and ordinary practices already established within the business and industry.¹⁸⁷

The final determination for *Marucci & Gaffney Excavating, Co.* (“Marucci”) further establishes the Process of Experimentation Test cannot be met by using technology and methodology commonly used and already established in the business. Marucci is an Ohio-based construction company, specializing in public and private sector infrastructure.¹⁸⁸ Marucci claimed its development of an aerial surveying system using drones constituted a process of experimentation.¹⁸⁹ However, the technology and methodology used to develop the system were already available in the marketplace, and not developed by Marucci.¹⁹⁰ In addition, Marucci claimed it engaged in a process of experimentation during its bridge building project. However, Marucci had much experience in building bridges, so “substantially all” of the research was not a process of experimentation.¹⁹¹ Substantial experience of a taxpayer in working with certain projects, like in this case, building bridges, can defeat the “substantially all” requirement for a process of experimentation because the taxpayer must be uncertain at the *beginning* of its research activities as to the methods needed.¹⁹² Therefore, experience in the methods needed to conduct the research to achieve the end goal defeat the uncertainty required for the Process of Experimentation Test.¹⁹³

Another important requirement of the Process of Experimentation Test is the activities cannot be related to style, taste, cosmetic, or seasonal design changes as they are not qualified purposes.¹⁹⁴ In *Leon Max v. C.I.R.*, the taxpayer, Leon Max, Inc., was a fashion designer and clothing manufacturer.¹⁹⁵ Mr. Leon Max, the owner, followed a clothing development process that included broad conceptual

184. *Id.*

185. *Id.*

186. *Id.*

187. *Id.*; *August Corso Sons, Inc.*, Final Determination, 6-7 (Ohio Dep’t of Tax’n Feb. 28, 2024).

188. *Marucci & Gaffney Excavating Co.*, Final Determination, 1 (Ohio Dep’t of Tax’n Sept. 13, 2022).

189. *Id.* at 4.

190. *Id.*

191. *Id.* at 5.

192. *Id.*

193. *Id.*

194. *Union Carbide Corp. & Subsidiaries v. Comm’r*, 97 T.C.M. (CCH) 1207, ¶ 492 (2009), *aff’d* 697 F.3d 104 (2d. Cir. 2012).

195. *Max v. Comm’r*, 121 T.C.M. (CCH) 1250, ¶ 1 (2021).

planning, design concept and sketching those designs, making the pattern, and then fitting the garment to the model.¹⁹⁶ Leon Max, Inc. claimed the QRE credit, arguing the “process of designing garments, fit testing, and fabric testing constituted research and experimentation under section 41....”¹⁹⁷ However, the court concluded this did not qualify as a process of experimentation because the production of the garments were driven by the tastes and preferences of Leon Max’s clients, merely cosmetic decisions.¹⁹⁸ The cosmetic purposes controlled the pre-production process and therefore were not done for a qualified purpose.¹⁹⁹ In addition, Leon Max, Inc. did not satisfy the uncertainty element of the Process of Experimentation Test because it was not uncertain how to alter the garments and fabric to create the desired look of the garment.²⁰⁰ Even further, Leon Max, Inc. did not engage in a process of experimentation because it did not rely on hard sciences to alter or create the garments in the pre-production process.²⁰¹

As seen in the cases described above, the Process of Experimentation Test has two important principles. The first principle is taxpayers must engage in research and development using a process of experimentation that does not involve products or processes that have already been developed and are commonly and widely used in the respective field.²⁰² The second principle is the research cannot be related to style, taste, cosmetic, or seasonal design.²⁰³

E. Conclusion to the Four-Part Test

In light of the final determinations issued by the Department and the persuasive federal cases, it is easier to establish what activities do not count as qualified research than what activities will satisfy each part of the four-part test. This stems from when claims for qualified research are denied, the Department describes the analysis used to deny the claim; however, when the Department agrees with a taxpayer’s claim of qualified research, there is no discussion of why the claim of the QRE credit was successful.²⁰⁴ In fact, when looking at recent final determinations where the Department agreed with the taxpayer, the analysis is a short paragraph of what the taxpayer provided, and then a short statement where the Department allows the taxpayer to claim the credit. For example, in the one-page final determination for Rhinestahl Corporation, the Department wrote:

196. *Id.*

197. *Id.* ¶ 55.

198. *Id.* ¶ 99.

199. *Id.* ¶ 100.

200. *Id.* ¶ 104.

201. *Id.* ¶ 109.

202. See Fathom SEO, LLC, Final Determination, 3 (Ohio Dep’t of Tax’n Sept. 29, 2023); see also Mainline Info. Sys., Inc., Final Determination, 2 (Ohio Dep’t of Tax’n Sept. 29, 2023); ROE Dental Lab’y, Inc., Final Determination, 2 (Ohio Dep’t of Tax’n Feb. 28, 2023).

203. Union Carbide Corp. & Subsidiaries v. Comm’r, 97 T.C.M. (CCH) 1207, ¶ 493 (2009), *aff’d* 697 F.3d 104 (2d. Cir. 2012).

204. Rhinestahl Corp., Final Determination, 1 (Ohio Dep’t of Tax’n Jan. 19, 2023) (granting the claimed QRE credit).

Rhinestahl Corporation (the “petitioner”) offers complex tooling of aviation products, machining and fabrication of build-to-print and proprietary designs, and engineering solutions. The petitioner engaged Barnes Denning to conduct research and development studies during the periods at issue. Based on the results of the study, the petitioner claimed the Ohio qualified research expenses (QRE) tax credit on its CAT returns. After conducting an audit, the Department disallowed the petitioner’s 2014 QRE credit. Due to the denial of the credit, and other issues identified in the audit, the Department issued the above assessment. The petitioner objects only to the denial of the 2014 QRE credit and requested a hearing, which was held via video call. This matter is now decided based upon the evidence available to the Commissioner and the information supplied with the petition for reassessment.²⁰⁵

While this may be helpful for taxpayers to see what other taxpayers have submitted in successfully claiming the credit, it is unclear *how* the tests were met. In addition, when an analysis is provided with a denial of the credit, the analysis is focused on the Section 174 Test and the Process of Experimentation Test.²⁰⁶ The Business Component Test and the Technological Information Test are briefly mentioned in most cases, and are not the main points of contention in the denial of the QRE credit.²⁰⁷ The complexities inherent in the tests for QRE, coupled with the absence of clarity or detailed analysis provided with final determinations allowing the QRE credit to be claimed, highlight the pressing need for greater transparency and explanation of how taxpayers must apply the QRE tests.

II. INTERNAL USE SOFTWARE CAVEAT

Technology has impacted the way businesses are run, and businesses are developing internal systems to make business more efficient.²⁰⁸ With this, businesses began experimenting and developing new internal software systems, or Internal Use Software.²⁰⁹ Internal Use Software is software supporting general and administrative functions such as payroll, bookkeeping, or personnel management.²¹⁰ It can also include non-computer services such as accounting, consulting, or banking services.²¹¹ As a general rule, internal use software is excluded unless it satisfies the four qualified research tests discussed above *and* a three-part higher threshold test.²¹² This higher threshold was seen as necessary by the legislature

205. *Id.*

206. *See also* Fathom SEO, LLC, Final Determination; Mainline Info. Sys., Inc., Final Determination at 3; Kaufman Container Co., Final Determination, 2 (Ohio Dep’t of Tax’n June 30, 2023); August Corso Sons, Inc., Final Determination, 4 (Ohio Dep’t of Tax’n Feb. 28, 2023).

207. *See also* Fathom SEO, LLC, Final Determination; Mainline Info. Sys., Inc., Final Determination at 3; Kaufman Container Co., Final Determination, at 2; August Corso Sons, Inc., Final Determination, at 4.

208. Jessica Nedderson, *Impact of Technology on Business*, HERZING UNIV., <https://www.herzing.edu/blog/impact-technology-business> (last visited July 21, 2024).

209. *Id.*

210. *Norwest Corp. v. Comm’r*, 110 T.C. 454, 489 (1998).

211. *Id.*

212. *Id.* at 488-89.

because the legislature wanted to exclude Internal Use Software unless it ventured into qualified research territory.²¹³ However, courts have held this higher threshold test should be applied reasonably and practically, so the standards are not impossible to meet.²¹⁴ The seminal case on the Internal Use Software caveat is *Norwest Corp. and Subsidiaries v. C.I.R.* (“Norwest Corp.”). In proving the higher threshold tests, experts can be useful to courts in understanding the internal software and if it meets the tests.²¹⁵

In *Norwest Corp.*, Norwest Corp. developed numerous projects involving Internal Use Software.²¹⁶ Norwest Corp. used a nine-step process to develop its internal software: (1) Request, (2) Project Initiation, (3) Definition, (4) Logical Design, (5) Physical Design, (6) Development, (7) Testing, (8) Implementation, (9) Postimplementation.²¹⁷ This was a substantial research process because it involved returning to different steps of the process, depending on how the software performed at each step.²¹⁸ Norwest Corp. used this nine-step process for eight different internal use software developments it presented to the court for review.²¹⁹ The *Norwest Corp.* court also discussed the Illinois District Court’s interpretation in *United Stationers, Inc. v. United States*, which will be discussed in relation to each additional element below, however the *Norwest Corp.* court only looked to this case as another example on the tests being applied, not as persuasive authority due to lack of facts for comparison.²²⁰ Therefore, *United Stationers, Inc. v. United States* is helpful in establishing principles for the exception to Internal Use Software, but the lack of facts discussed by the court increases uncertainty in how taxpayers should apply the exception.

A. First Part: Is the Software Innovative?

The first part of this test requires that the software be innovative “as where the software results in a reduction in cost, or improvement in speed, that is substantial and economically significant.”²²¹ This is a measurable, objective standard, however, courts have been reluctant to state parameters for measurement of “substantial” or “significant.” The United States Tax Court has only held, “a high threshold of innovativeness will satisfy this requirement.”²²² This is a higher threshold than the requirement under the Business Component Test with respect to a new or improved business product, and instead it carries a requirement of

213. *Proposed Regulations Under Section 41 on the Eligibility of Internal-Use Software for the Credit for Increasing Research Activities*, 49 TAX EXEC. 328, 329 (1997).

214. *Id.*

215. *Norwest Corp.*, 110 T.C. at 503-04, 512 (1998).

216. *Id.* at 458.

217. *Id.* at 458-61.

218. *Id.* at 461.

219. *Id.* at 462.

220. *Id.* at 501-02.

221. *Id.* at 487; *United Stationers, Inc. v. United States*, 982 F. Supp. 1279, 1287 (N.D. Ill. 1997), *aff’d*, 163 F.3d 440 (7th Cir. 2001).

222. *Norwest Corp.*, 110 T.C. at 499.

substantial or significant improvement and innovation.²²³ In *United Stationers, Inc. v. United States*, the court held Stationers met the first part of the internal use exception.²²⁴ While, “Stationer’s projects simply increased efficiency and revenues... all [projects] fall under the plain meaning of the definition included in the legislative history” for innovative.²²⁵ Thus, because the projects increased efficiency and revenues which resulted in an economically significant reduction in cost for the taxpayer, the software was innovative.²²⁶

B. Second Part: Does the Software Development Involve Significant Economic Risk?

The second part of the Internal Software Test requires the development and research of the software that involves significant economic risk. This means that taxpayers must commit substantial resources to the development.²²⁷ In addition, there must also be substantial uncertainty as to the technical risk of the development of the software that such resources would not be recovered within a reasonable period.²²⁸ Again, courts are reluctant to define “significant” or “substantial.” The United States Tax Court has held “the significant economic risk test requires a higher threshold of technological advancement in the development of internal use software than in other fields.”²²⁹ This standard does not require technical uncertainty regarding whether the final result can ever be achieved, but rather whether the final result can be achieved within a timeframe that will allow the substantial resources committed to the development to be recovered within a reasonable period.²³⁰ This is essentially an additional step the taxpayer must take in developing Internal Use Software that is required under the Section 174 Uncertainty Test or in other fields where research and development occur.²³¹ In *United Stationers, Inc. v. United States*, Stationers did not satisfy this test because it did not have uncertainty as to if the product could be developed and only had uncertainty as to if the software could run at the efficiency Stationers needed.²³² Economic risk does not turn on how much money a taxpayer spent on developing the software, and the court in *United Stationers, Inc.* held the amount of money spent is not dispositive on whether something involves economic risk.²³³ Even though Stationers spent over \$1,000,000 in developing its Internal Use Software,

223. *Id.*

224. *United Stationers, Inc.*, 982 F. Supp. at 1287.

225. *Id.*

226. *Id.*

227. *Norwest Corp.*, 110 T.C. at 499.

228. *Id.*

229. *Id.* at 500.

230. *Id.*

231. *Id.*

232. *United Stationers, Inc. v. United States*, 982 F. Supp. 1279, 1288 (N.D. Ill. 1997), *aff’d* 163 F.3d 440 (7th Cir. 2001).

233. *Id.*

it did not involve economic risk for the purposes of the exception because Stationers knew the software could be developed from the start of the project.²³⁴

C. Third Part: Is the Software Commercially Available to the Taxpayer?

The last part of this test requires the software be commercially unavailable for use by the taxpayer. If the software can be purchased, leased, or licensed, and used for its intended purpose without modifications, the internal use software cannot be claimed as qualified research because the first two parts of the internal use software test would not be satisfied.²³⁵ However, this part of the test will be applied on a case-by-case basis, and the courts will not create a bright-line rule regarding modifications to commercially available software.²³⁶ While there are still many unknowns with successfully claiming Internal Use Software as a credit for research and development, it nevertheless remains an important tool that businesses will continue to create, and thus tax credits will be claimed for its development.

CONCLUSION

The privilege of doing business in Ohio is a great one. Tax credits serve a pivotal role in fostering that privilege because it encourages business activity in Ohio as it facilitates economic and financial advantages for businesses of any type. In particular, the credit for qualified research remains vital in this ever-changing and ever-growing world of development. Despite uncertainties in the qualifications for the qualified research credit, key principles emerge from the Department's final determinations and federal cases. Most notably, the Section 174 Uncertainty Test and the Process of Experimentation Test are crucial and are the tests with the most contention as they are the hardest of the four tests to meet and are the most unclear as to their requirements.

The main principles of each test remain important as a starting point for taxpayers claiming the tax credit for qualified research, and the cases discussing qualified research can be used as an additional tool in making a successful claim for the credit. Understanding these tests reveals that business activities must have real uncertainty as to product concept and development; however, this uncertainty does not extend to include routine maintenance, upgrades, or complying with government regulations. Additionally, under the Business Component Test, a taxpayer must undertake activities that involve developing or improving a business product or process and does not include adaptation of existing business components that are aimed at accommodating environmental conditions or regulatory standards. Furthermore, a taxpayer does not have to reinvent the wheel or make a revolutionary discovery, but that taxpayer must rely on hard sciences in conducting their research and be technological in nature. Finally, three main principles arise from the Process of Experimentation Test. A taxpayer must have "substantially

234. *Id.*

235. *Norwest Corp.*, 110 T.C. at 500.

236. *Id.*

all,” or 80%, of the research be a process of experimentation, the process of experimentation is a process of evaluating alternatives to achieve a result not just a simple trial and error process, and the process is for a qualified purpose. A qualified purpose does not include tailoring standard procedures, using industry standards, or using market-available products and processes. By adhering to these principles, taxpayers can navigate the complexities of claiming credit for QRE, thus promoting innovation and economic growth in Ohio.

