

OCTOBER 1, 2023



**THE RESEARCH & DEVELOPMENT
TAX CREDIT REPORT to the
PENNSYLVANIA GENERAL ASSEMBLY**

Josh Shapiro, Governor

Patrick M. Browne, Secretary of Revenue

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PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

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Other reports and publications available from the Bureau of Research include the Statistical Supplement, Personal Income Tax Statistics, Property Tax/Rent Rebate Program Statistical Reports, the Monthly Revenue Report, and various tax credit reports. These publications are available on the Department's website.

For questions related to information contained in this publication, please contact the Bureau of Research at RA-RVFSL-BOR-INQUIRY@pa.gov.

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

INTRODUCTION

AUTHORIZATION

Act 7 of 1997 created the Pennsylvania Research & Development (R&D) tax credit. The R&D tax credit provision became Article XVII-B of the Tax Reform Code of 1971 (TRC). The intent of the R&D tax credit was to encourage taxpayers to increase R&D expenditures within the Commonwealth in order to enhance economic growth. The terms and concepts used in the calculation of the Commonwealth's R&D tax credit are based on the federal government's R&D tax credit definitions for qualified research expenses.

Act 7 of 1997 authorized the Department of Revenue (Department) to approve up to \$15 million in total tax credits per fiscal year. \$3 million of the \$15 million was set aside for "small businesses," which are defined as a "for-profit corporation, limited liability company, partnership or proprietorship with net book value of assets totaling...less than five million dollars (\$5,000,000)."

APPLICATION

Taxpayers must submit an application to the Department by December 1st to apply for the R&D tax credit. The credit is for qualified Pennsylvania research expenditures made in the taxable year ending in the prior calendar year. The Department has until May 1st of the following year to notify taxpayers of their approved tax credit amount.

TAX CREDIT CAP

Starting with fiscal year 2022-23, the R&D tax credit cap is \$60 million, of which \$12 million is set aside for "small" businesses. The cap was increased from \$55 million, in effect since December 2011. For a history of changes in the cap, see the Legislative Changes page.

TAX CREDIT CALCULATION

The tax credit is calculated using the increase over the taxpayer's base year research expenses for qualified R&D conducted within Pennsylvania. For "not small" businesses, the tentative credit is equal to 10% of the increase in expenses. Since Act 116 of 2006, the tentative credit for "small" businesses is 20% of the increase in expenses.

TAX TYPES

The R&D tax credit may be claimed against the following taxes: the Capital Stock and Franchise Tax (CSFT), the Corporate Net Income Tax (CNIT), and the Personal Income Tax (PIT).

SALE OR ASSIGNMENT

Tax credits awarded in 2003 and later may be sold or assigned. In order to sell an unused credit, the taxpayer must file an application with DCED. The application identifies the seller and the R&D tax credit that it intends to sell, along with the buyer and the amount for which the credit is being sold or assigned. (See Legislative Changes page for more information.)

APPEALS

Act 25 of 2021 enacted an appeals process for taxpayers, brokers, and the Department concerning administration of tax credits and benefits. This includes a taxpayer's right to appeal determinations by the department. Application year 2021 is the first year in which appeals are allowed. The effects of the appeals are included in the current year's report.

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LEGISLATIVE CHANGES

TAX CREDIT CAP LEGISLATION

LEGISLATION	AWARD YEARS	TOTAL CREDIT CAP	SMALL BUSINESS SET ASIDE
ACT 7 OF 1997	1997 - 2003	\$15.0 Million	\$3.0 Million
ACT 46 OF 2003	2004 - 2005	\$30.0 Million	\$6.0 Million
ACT 116 OF 2006	2006 - 2008	\$40.0 Million	\$8.0 Million
ACT 48 OF 2009	2009	\$20.0 Million	\$4.0 Million
ACT 48 OF 2009	2010	\$18.0 Million	\$3.6 Million
ACT 26 OF 2011	2011 - 2021	\$55.0 Million	\$11.0 Million
ACT 53 OF 2022	2022 FORWARD	\$60.0 Million	\$12.0 Million

OTHER LEGISLATIVE CHANGES

ACT 46 - 2003 This act allowed R&D tax credit recipients to apply to the Department of Community and Economic Development (DCED) to sell or assign an R&D tax credit if there has been no claim for allowance filed within one year from the date that the Department approved the credit. The purchaser or assignee must use the newly obtained R&D tax credit in the taxable year in which the purchase or assignment of the credit is made. The purchased or assigned R&D credit cannot be used to offset more than 75% of a tax liability for a taxable year. The purchased or assigned credit cannot be carried over, carried back, resold, or refunded. The provision to sell or assign unused R&D tax credits applies to credits awarded in December 2003 and forward, but the initial sale or assignment could not take place until at least December 2004.

Additionally, this act mandated that the Department report to the General Assembly the names of all taxpayers awarded R&D tax credits in each year starting in 2004.

ACT 48 - 2009 This act removed the one year holding period established by Act 46 of 2003. Credits awarded in 2009 and later can be sold immediately.

ACT 85 - 2012 This act repealed the sunset date for the R&D tax credit in Section 1712-B of the law, but left the reference to the sunset date in Section 1707-B unchanged.

ACT 85 - 2016 This act repealed the reference to the sunset date in Section 1707-B.

ACT 43 - 2017 This act authorizes the Department of Revenue to perform tax clearances on taxpayers prior to the awarding of a tax credit to ensure all taxpayers are compliant with tax payment and filing obligations.

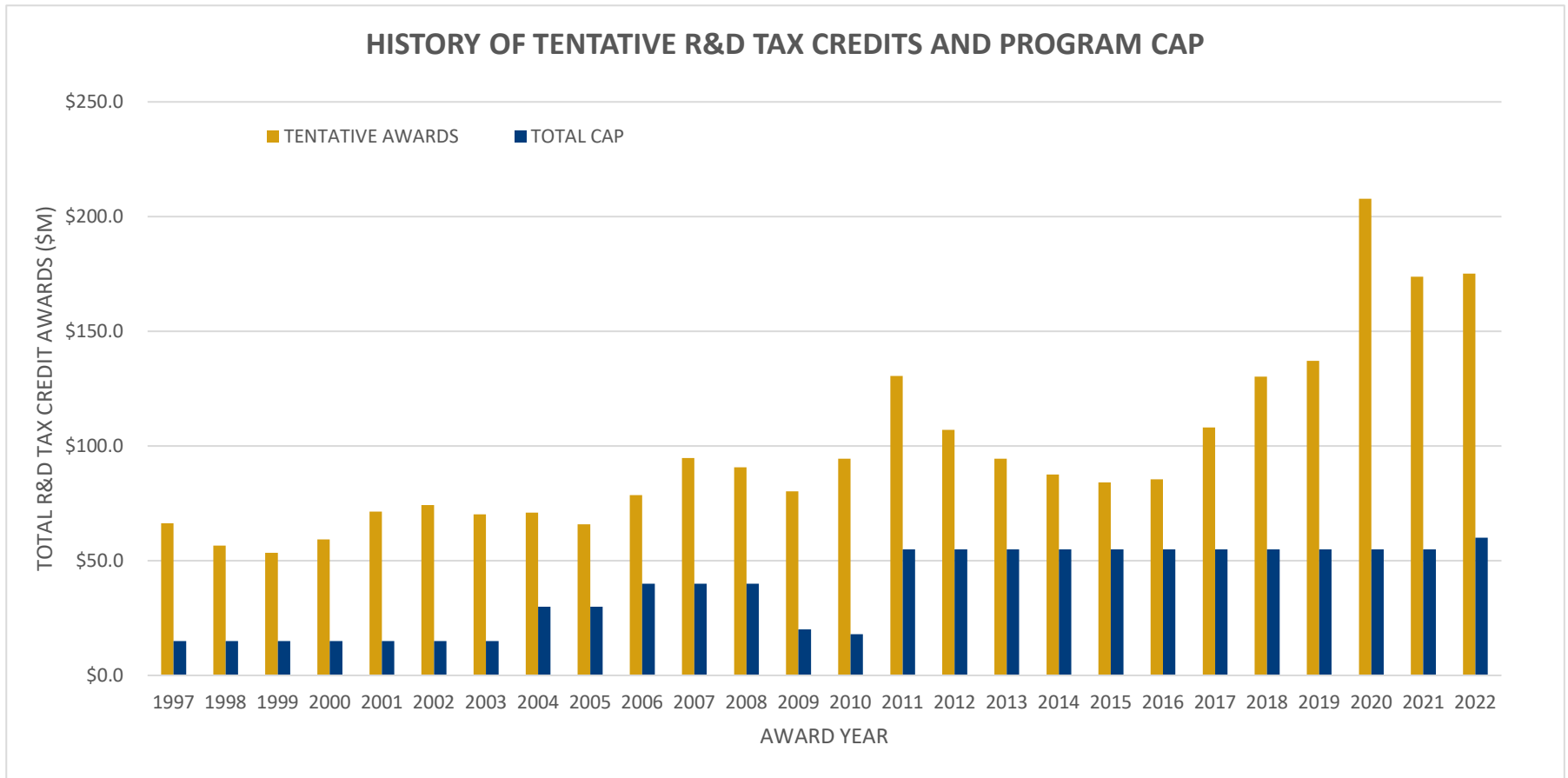
ACT 25 - 2021 This act moves several deadlines for the R&D tax credit, and creates an appeals process for tax credits. The application deadline is moved from September 15 to December 1. The act moves the deadline for departmental approval from December 15 of the calendar year following to May 1 of the second calendar year following the close of the taxable year during which the expense was incurred. The deadline for the annual report has also been moved, from March 15 of the following calendar year to October 1, starting with the 2022 report. Additional reporting requirements regarding the sale and transfer of credits were also added, available in appendices B through E.

This act also puts in place an appeals process for taxpayers, brokers, and the Department of Revenue concerning the administration of tax credits and tax benefits.

ACT 53 - 2022 This act increases the credit cap from \$55 million to \$60 million, effective for fiscal year 2022-23. Small businesses are earmarked \$12 million, continuing to receive 20% of the total credit awarded. The act further provides that the program cap may not be changed by the legislature before June 30, 2025.

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TENTATIVE VS. ACTUAL



Without caps on annual awards, \$2,548.2 million in R&D tax credits would have been awarded from the tax credit's inception through May 2023 (award year 2022). Actual R&D tax credit awards have totaled \$988.0 million over that timeframe. Over the years, the varying annual credit caps have reduced the amount of R&D tax credit that would have been awarded to 38.8% of what was requested.

Since the start of the program, "small" businesses have received \$168.5 million of the \$225.2 million in tentative R&D tax credits (74.8%). In the credit's 25 years of existence, "small" businesses have requested more than the small business set aside 12 times, including each of the past eight years.

Since the credit's inception, "not small" businesses have received \$819.5 million of \$2,323.0 million in tentative R&D tax credits (35.3%).

The table below shows tentative vs. actual credits for May 2023 awards (\$K):

ACTUAL CREDIT RANGE	APPLICANTS	TENTATIVE	ACTUAL	% OF ACTUAL	% OF TENTATIVE
\$0 - \$4.9	237	\$1,422.6	\$558.3	0.9%	39.2%
\$5.0 - \$19.9	344	\$9,457.9	\$3,830.5	6.4%	40.5%
\$20.0 - \$49.9	207	\$15,415.3	\$6,768.1	11.3%	43.9%
\$50.0 - \$99.9	93	\$16,095.3	\$6,171.6	10.3%	38.3%
\$100.0 - \$499.9	76	\$42,160.5	\$15,143.8	25.2%	35.9%
\$500.0 - \$999.9	7	\$17,723.6	\$5,342.9	8.9%	30.1%
\$1,000.0 OR GREATER	7	\$72,867.3	\$22,184.8	37.0%	30.4%
	971	\$175,142.4	\$60,000.0	100.0%	34.3%

Overall, taxpayers received 34.3% of the tentative R&D tax credit awards in the most recent program year.

The vast majority of taxpayers (98.6%) received less than \$500,000 in R&D tax credits. These businesses received 54.1% of total R&D tax credit awards. Taxpayers receiving \$500,000 or more in R&D credits for this program year (1.4% of total applicants) received 45.9% of total R&D awards.

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2023 RECIPIENTS

R&D CREDITS - MAY 2023 (\$M)

BUSINESS TYPE	APPLICANTS	% OF APPLICANTS	TENTATIVE	ACTUAL	% OF ACTUAL
SMALL	394	40.6%	\$16.9	\$12.0	20.0%
NOT SMALL	577	59.4%	\$158.2	\$48.0	80.0%
TOTAL	971	100.0%	\$175.1	\$60.0	100.0%

BUSINESS TYPE	APPLICANTS	% OF APPLICANTS	ACTUAL	% OF ACTUAL
MANUFACTURING	358	36.9%	\$15.2	25.3%
INFORMATION	40	4.1%	\$12.4	20.7%
SERVICES	292	30.1%	\$12.8	21.3%
MISCELLANEOUS	281	28.9%	\$19.7	32.8%
TOTAL	971	100.0%	\$60.0	100.0%

BUSINESS TYPE	2020 CNIT LIABILITY (\$M)
MANUFACTURING	\$105.3
INFORMATION	\$36.0
SERVICES	\$76.0
MISCELLANEOUS	\$27.3
TOTAL	\$244.5

For application years 2022 and after, the cap on R&D tax credits was raised to \$60 million. However, appeals for application year 2021 resulted in the department awarding credits over the previous \$55 million cap. As a result, \$2.1 million in credits have been taken off the top of the amount available for 2022, meaning the total credits available for this year was \$57.9 million.

"Small" taxpayers received \$12 million in R&D tax credits in May 2023 for the 2022 application year. This is the eighth straight year that "small" taxpayers have requested more than the "small" business set-aside (\$12.0 million). "Small" taxpayers received 70.8% of their tentative award amount.

"Not small" taxpayers received 30.3% of their tentative award amount.

Manufacturers received \$15.2 million of the total \$60.0 million awarded in May 2023. The largest amount of awards in the manufacturing sector was given to the 17 pharmaceutical and medicine manufacturers, which received \$10 million combined.

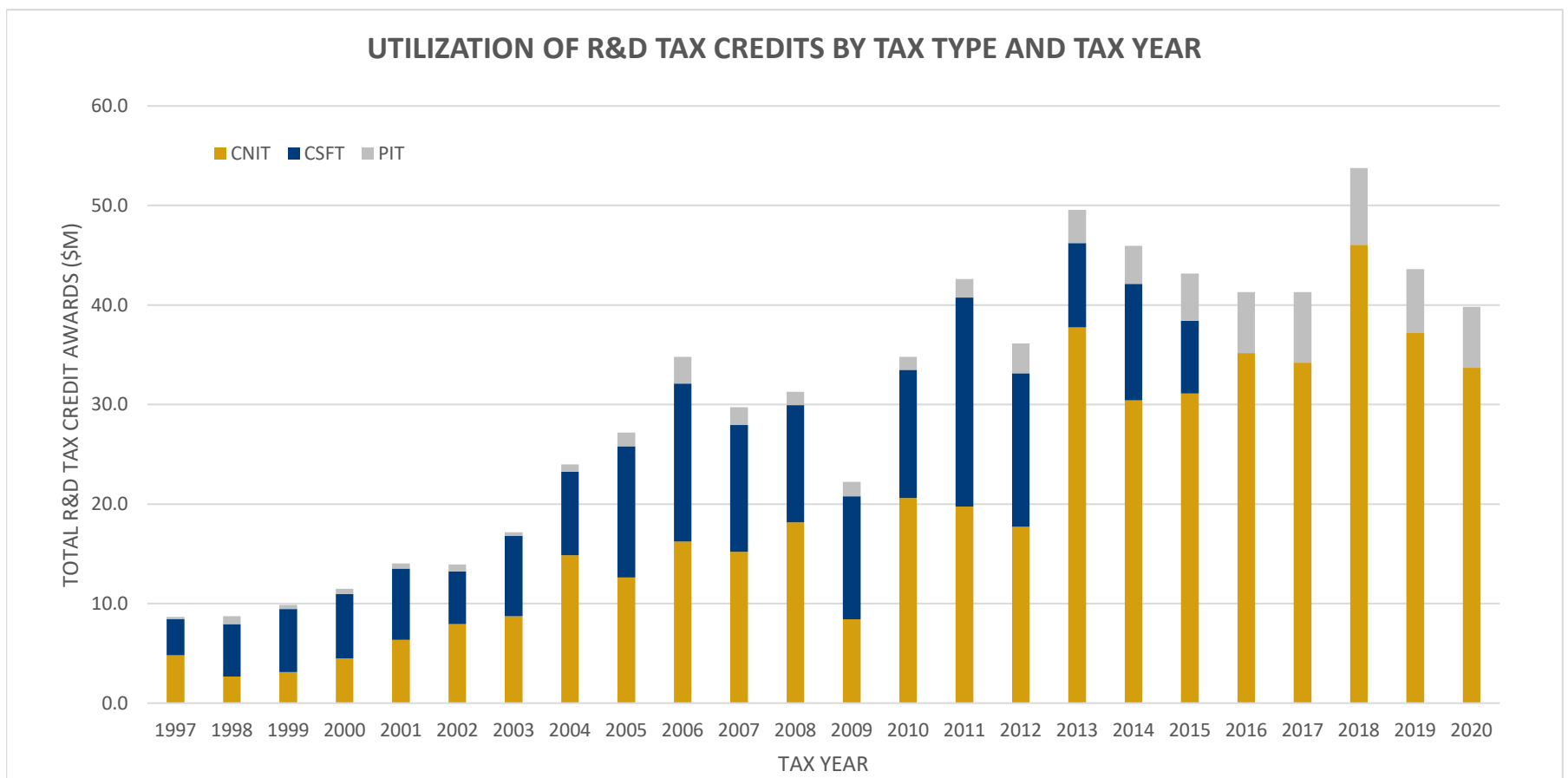
The Information sector received the largest amount of R&D tax credit per recipient - approximately \$310,000.

In the Service sector, the largest group of recipients were the 77 computer system design firms, which received \$3.1 million.

In order to provide an idea of the relative value of the R&D tax credit to recipients, an analysis was conducted comparing the R&D tax credit awarded in application year 2022 to the total tax year 2020 self-assessed CNIT, the latest year for which reports are available for all taxpayers. Of the 971 taxpayers receiving the R&D tax credit, 215 had positive CNIT liabilities, with a total self-assessed 2020 tax year liability of \$244.5 million.

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UTILIZATION



The chart above shows the amount of R&D tax credit that has been applied against the Corporate Net Income Tax (CNIT), Capital Stock/Foreign Franchise Tax (CSFT), and the Personal Income Tax (PIT). The figures shown are from taxpayers that have directly received the tax credit from the Department, as well as those taxpayers that have purchased unused R&D tax credits. For PIT, individuals who received the credit directly are included, as are any individual owners of S corporations or limited liability companies (LLCs) who received the pass-through benefit. All credit amounts are as of September 2023.

R&D tax credit utilizations by tax type for tax years 1997-2020 (\$M):

TAX TYPE	UTILIZATION	SHARE OF UTILIZATION
CNIT	467.4	64.5%
CSFT	193.3	26.7%
PIT	64.5	8.9%
	725.2	100.0%

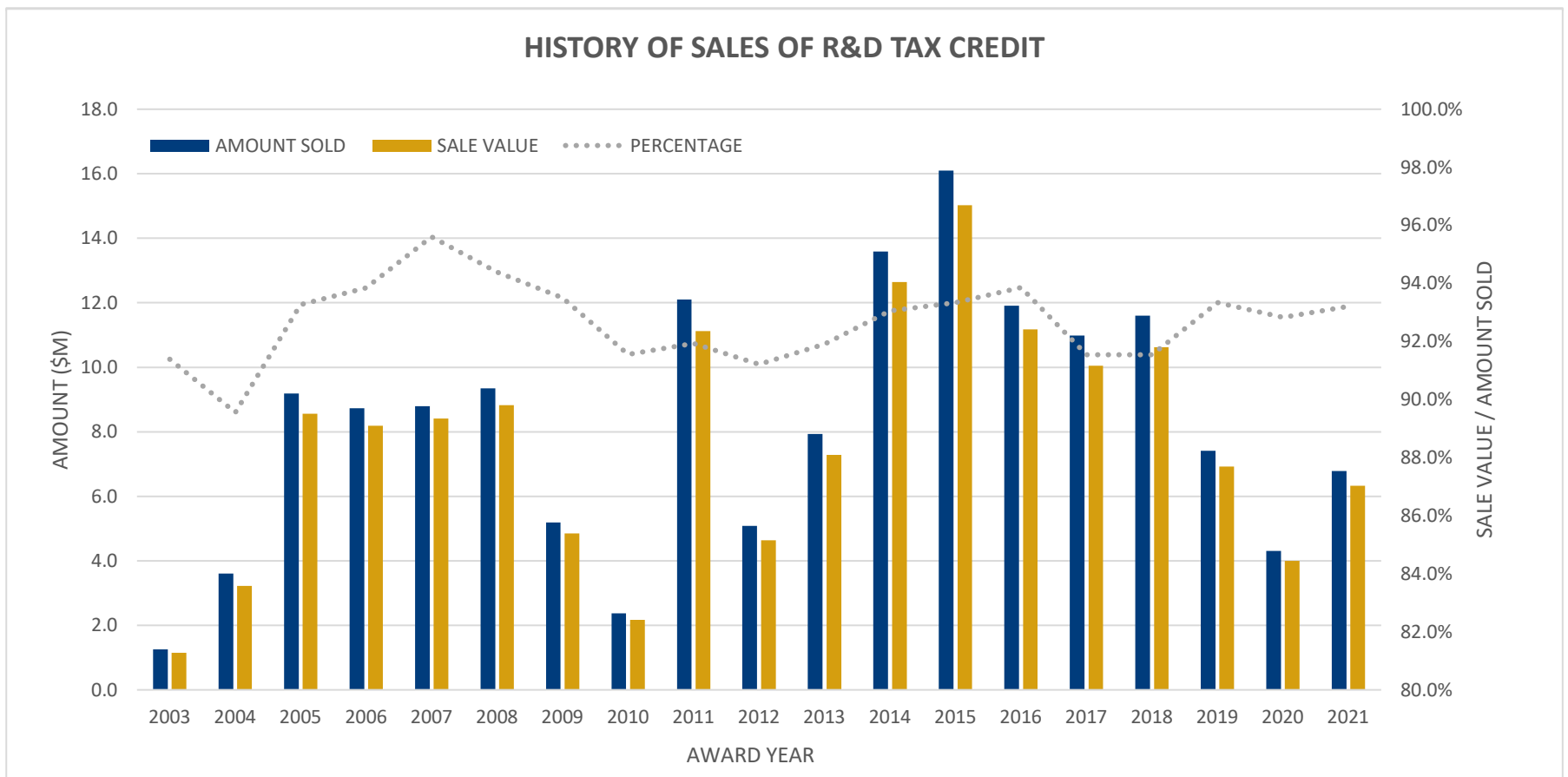
Utilizations of \$725.2M represents 83.1% of the total amount awarded between 1997 and 2020.

In the chart above, utilizations of the R&D tax credit against CSFT stop after tax year 2015 because CSFT was repealed for tax year 2016.

Also, it is important to note that the amount of tax credit applied to a particular taxable year can vary over time as a taxpayer's taxable year liability may change due to an assessment or the application of other credits.

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SALES & ASSIGNMENTS



As noted on the Legislative Changes page, Act 46 of 2003 permits taxpayers with unused R&D tax credits to sell them for cash to other taxpayers who can use them. The earliest that unused R&D tax credits could be sold was December 2004, for credits awarded by the Department in December 2003. Taxpayers can only sell unused amounts of tax credits that exceed any collectible tax liability against which the credit may be offset. S Corporations may not apply to sell or assign any credit that has been passed-through to its shareholders. In order to sell an unused credit, the taxpayer must file an application with DCED. The application identifies the seller and the R&D tax credit that it intends to sell, along with the buyer and the amount for which the credit is being sold or assigned.

The buyer of the unused R&D tax credit can use it to offset up to 75% of a qualified tax liability. The buyer cannot carry forward, carry back, get a refund, or reassign the purchased credit. Further, the buyer must use the purchased tax credit against a qualified tax liability in the taxable year in which it was transferred. Lastly, the buyer must identify to the Department the taxpayer from which they bought the unused tax R&D tax credit.

By mid-2023, \$156.3 million of the \$838 million in R&D tax credits awarded between 2003 and 2021 had been sold (18.6%). Taxpayers purchasing the tax credits paid \$145.2 million (92.9% of the value of the credits).

The chart above shows the value of the tax credits sold and the sales price for each award year between 2003 and 2021. The dotted line shows the amount paid for the tax credits divided by the value of the tax credit.

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STATE COMPARISONS

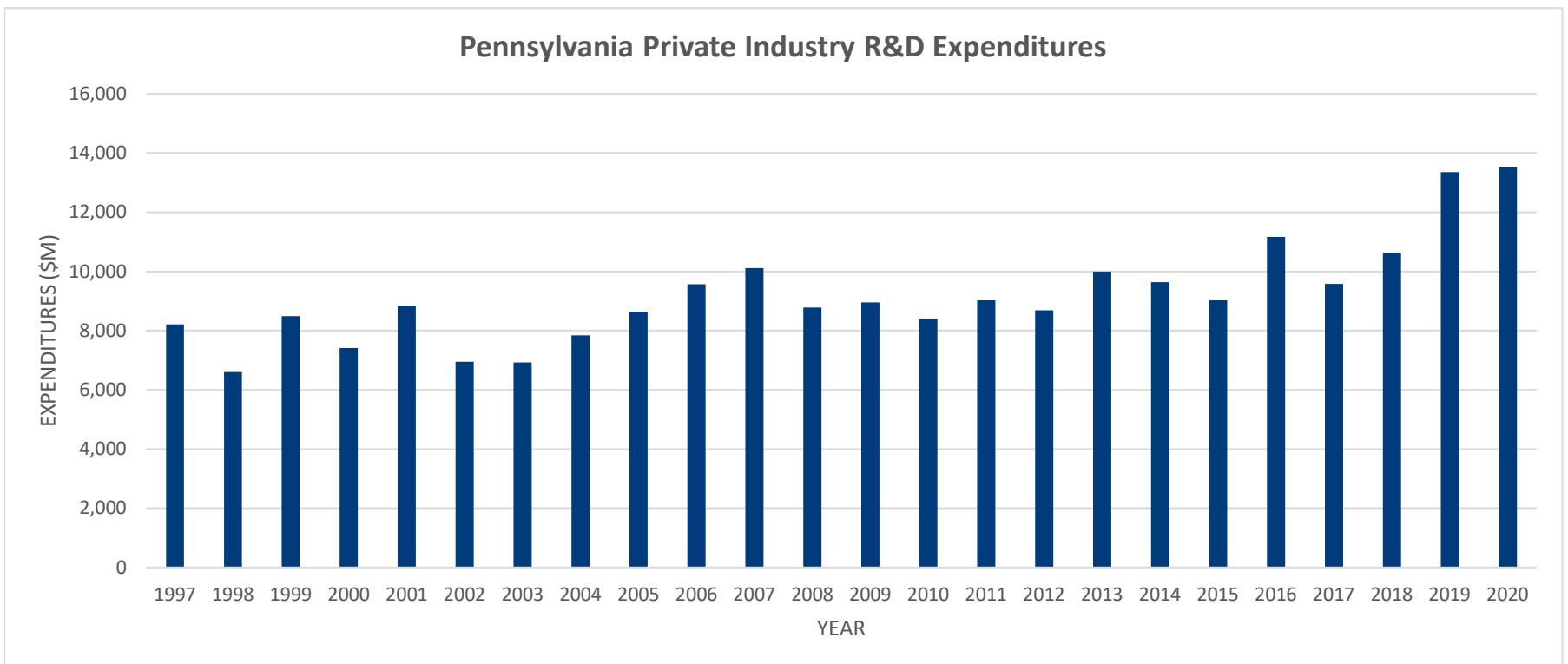
A majority of states have sought to capture the potential benefits of encouraging R&D within their state by enacting an R&D tax credit. There are 40 states, including Pennsylvania, that have provided for R&D tax credits in recent law. Credits are usually applied against either corporate net income (CNIT) tax or the personal income tax (PIT) liabilities, depending on the existing business tax structure of the state. The table below details the R&D tax credit structure of bordering states.

STATE	TAX TYPES	CREDIT CAP
DELAWARE	CNIT & PIT	None
MARYLAND	CNIT & PIT	Total R&D credits are capped at \$12 million, with \$3.5 million reserved for qualified small businesses.
NEW JERSEY	CNIT	None
NEW YORK	CNIT & PIT	Excelsior R&D credits are limited to Excelsior Jobs Program participants and contain multiple credit components. Credit components in the aggregate shall not exceed \$83 million in TY 2022; caps in other tax years vary.
		The Life Sciences R&D tax credit is capped at \$10 million per year. If the tax credits applied for exceed the cap, then the excess credits will be treated as having been applied for in the subsequent year.
OHIO	Commercial Activities Tax & PIT	None
WEST VIRGINIA	No Credit	N/A

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EFFECTIVENESS OF THE PENNSYLVANIA TAX CREDIT PROGRAM

The timeframe for R&D projects in the private sector can be lengthy. It is not uncommon for businesses to have R&D projects extend for 10 to 15 years or more. The Pennsylvania R&D tax credit has thus far had a potential impact on increasing research expenses over the course of 25 years, 1997 through 2021. The chart below illustrates Pennsylvania private industry R&D expenditures by year.



Source: 1997 through 2020 from National Science Foundation

Recent studies can help point to the potential impact of R&D credits on statewide research expenditure. On the high side, a study released by the Milken Institute in December 2015 estimated that a proposal to expand the California R&D tax credit could generate an additional amount of private expenditure six times the credit increase, and over a ten-year period contribute a 0.4% increase in the state's gross domestic product. A survey of available research done by the U.S. Treasury in 2016, paints a less enthusiastic picture. They found "recent estimates suggest that an elasticity of one is still a good benchmark", meaning that for each dollar in R&D tax credit, research expenditures increased by one dollar. The report notes several studies which found R&D expenditures increased by more than the amount of the credit, and that "smaller financially constrained firms" were more likely to respond in this way.

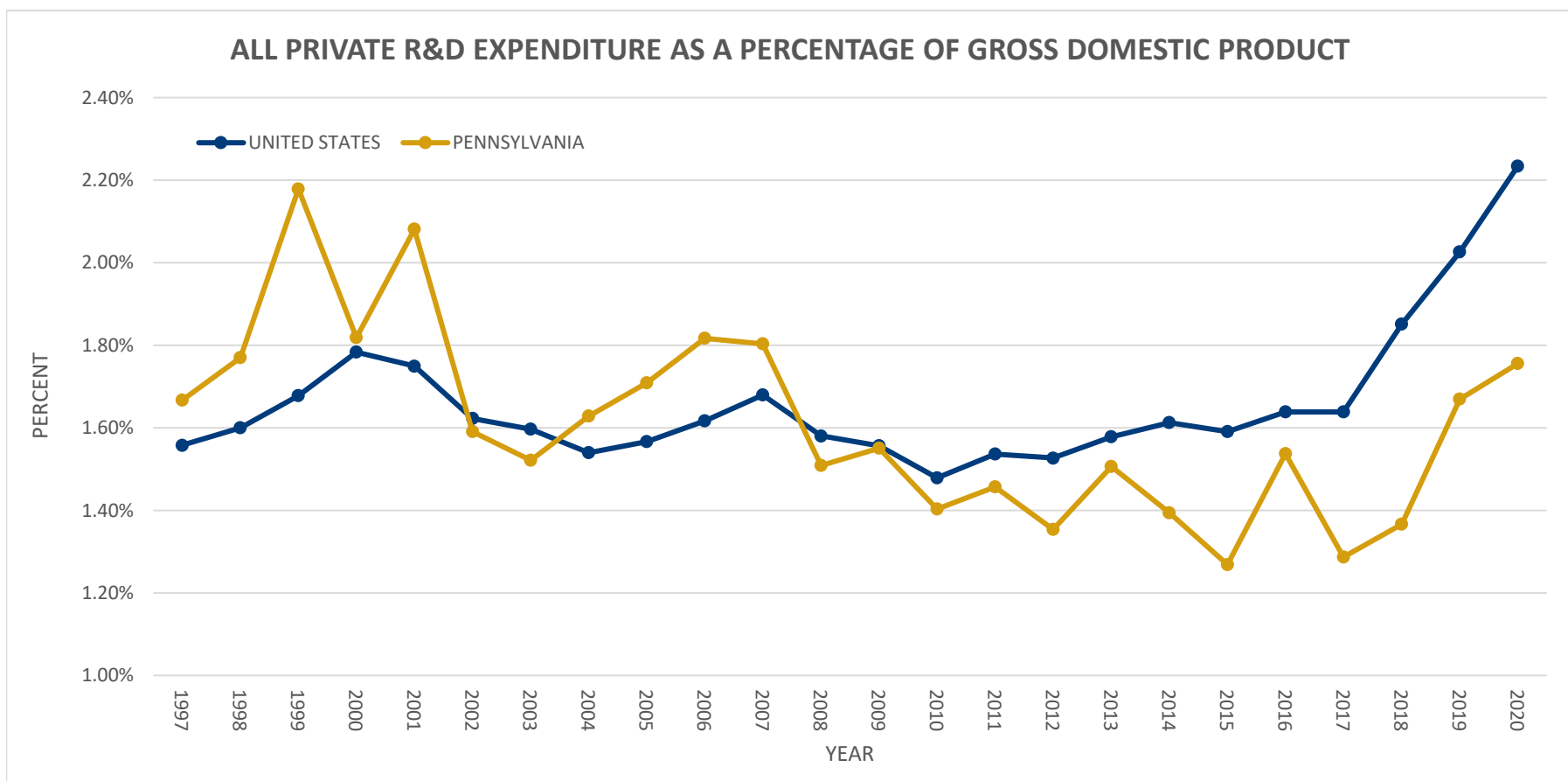
Pennsylvania has a very different mix of economic activity from California, so it is unclear that the same conclusions could be drawn relative to the Commonwealth. In fact, in 2020 California was home to \$175.5 billion in private R&D spending, over 37% of the US total, and issued between \$1.6 and \$1.8 billion in R&D tax credits. Given that massive difference in R&D infrastructure, it is likely that Pennsylvania firms are affected differently by tax incentives, with small to moderate increases in overall expenditures.

State and even country level statistical analysis is greatly complicated by small sample size, idiosyncratic behaviors amongst a few firms, and accurately comparing various taxing regimes. While a higher level analysis may not provide lessons directly applicable to Pennsylvania, a 2017 study by Russel Thomson at MIT does seek to address some of the aforementioned statistical issues. Looking at a panel data from 29 industries in 26 OECD countries over 20 years, the study found that in the long-run, incentivizing R&D through tax credits does produce increased R&D expenditures. Reducing the tax price of R&D (the breakeven benefit-cost ratio where incremental R&D investment is profitable after tax) by 10% produced a corresponding 5% increase in R&D spending. While this effect is unlikely to be exactly the same in Pennsylvania, the MIT study does suggest that R&D spending could have been positively affected over the more than two decades the R&D credit has been part of the tax code.

The R&D tax credit does generate additional economic activity, which can be seen by the tax revenue attributable to the credit. The Independent Fiscal Office found that for every dollar of R&D tax credit there was 16 cents in corresponding revenue, indicating the program partially pays for itself.

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EFFECTIVENESS OF THE PENNSYLVANIA TAX CREDIT PROGRAM (CONTINUED)



Source: 1997 through 2020 from National Science Foundation

As shown in the chart above, the pattern of total R&D expenditure as a percentage of GDP does not conform to the one seen in recent years on the national level. The drop in GDP during the 2007-9 recession does initially inflate the R&D share of the US economy, but once the recovery began after 2009, the R&D share is largely flat and resumes an upward trend after 2015. By contrast the R&D share of the Pennsylvania economy is much more volatile, particularly from 2013 onward. An analysis of this deviation would require more data points, but the expansion of the natural gas industry and related manufacturing in Pennsylvania specifically may be related.

This year's chart also gives us our first look at the effect of COVID-19 restrictions on R&D spending. While R&D continued to grow as a share of Pennsylvania's GDP through 2020, it is too early to say that private R&D expenditure ran counter to a typical recessionary cycle. The national trend, however, looks hopeful.

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ADMINISTRATION AND EVALUATION

In order to fairly and equitably award credits to businesses within the Commonwealth of Pennsylvania, the Department has taken steps to establish an on-line application process that creates transparency in the application itself, assists with the evaluation of those applicants, and provides insight into the economic benefits of the R&D Credits awarded to those businesses.

Beginning with the 2018 R&D Application, the department created the online application system with each applicant creating a unique User ID and Password. Implementing the R&D Credit online application provided the opportunity to add valuable business rules. These rules can require data entry in certain key fields that if in the past left blank would have resulted in a denial or mail correspondence. The rules also create the opportunity to present only relevant fields to the applicant based on the entry of information, such as after selecting an entity type. Once completed, the applicant receives a unique confirmation number to reference when accessing the application in the future and to identify related correspondence.

The electronic application process provided a mechanism to create a workflow that tracked the status of the application for the taxpayer, indicating whether the application was received, pending, reviewed, approved, or rejected. Once verification of the initial application was complete, the approval process continued confirming that the applicant and/or 20 percent owner was in compliance filing and paying all appropriate tax returns.

As the Department is tasked with the integrity of the application process and credits awarded, the department moved toward a system designed to further substantiate the applicant's PA-Qualified Expenditures, Total Expenditures, Direct Wages, and 3rd Party/Subcontracted Labor. Data analytics were developed and incorporated to group selected applicants based on information from the application and applicant history. Selected applicants were asked to provide records to substantiate areas including that wages were incurred for an employee conducting qualified research and development activities in Pennsylvania.

This review process provides greater assurance that the claimed research and development activities met the statutory qualifications for a tax credit.

Act 43-2017 authorizes the Department of Revenue to perform tax clearances on taxpayers prior to the awarding of a tax credit to ensure all taxpayers are compliant with tax payment and filing obligations.

The two issues for determination are entity tax compliance and ownership tax compliance for entity owners with a 20% or greater share of ownership.

On May 1, the statutory deadline for the Department to notify R&D applicants of their awards, 5.0% of applicants were deemed noncompliant and therefore not immediately eligible to receive the credit. However, a number of applicants have filed appeals, so the final noncompliant percentage is still pending.

The Department recommends that the General Assembly consider the following changes:

Move the period in which sales and assignments may be processed by the Department to June 1 following the immediate tax year in which the credit was awarded.

Require taxpayers to claim a federal income tax credit to qualify for the state credit.

Reduce the carryforward from 15 years to 5 years. This would ease the Department's administrative burden.

Many of the Department's recommendations from prior reports have become law due to Act 25 of 2021. Specifically, Act 25 instituted the following recommendations:

Created an appeals process for taxpayers, brokers, and the Department of Revenue concerning the administration of tax credits and tax benefits.

Moved the application deadline from September 1 to December 1.

Moved the deadline for Departmental approval from December 15 of the calendar year to May 1 of the second calendar year following the close of the taxable year during which the expense was incurred.

Authorized the Department to require a taxpayer to hire an independent CPA to perform agreed upon procedures.

Allowed the Department to recapture credits in applicable cases.

Required tax credits brokers to be registered with the Department.

APPENDIX INTRODUCTION

Act 25 of 2021 mandated reporting requirements regarding the sale and transfer of R&D tax credits, in addition to the awardee information already reported as Appendix A. The newly required information on sales and transfers, including names, amounts, and purchase price, can be found in Appendices B through E. Act 25 also stipulated that the names of individuals be excluded from the report if they received a tax credit from a pass-through entity for no consideration. These assignments and transfers are reported as combined figures in Appendix C and E, respectively.

APPENDIX A

All awardees and the total credit awarded in the three preceding program years, along with the utilization of available R&D tax credits in the two preceding years. Awards for program year 2022 include the "off the top" amounts from 2021, see pg. 4 for more information.

APPENDIX B

All awardees who have sold or assigned credits in the previous full calendar year are listed with the total amount sold/assigned, and total compensation for those credits. Assignments are classified as a transfer between unrelated entities for no compensation.

APPENDIX C

All taxpayers who bought or received an assignment of R&D tax credits are listed with the total credits received, and the total paid in the program year. Individual taxpayers and trusts are summed together as "Individuals and Fiduciaries".

APPENDIX D

All awardees who transferred R&D tax credits to subsidiaries, shareholders, members, and partners, along with the total amount transferred.

APPENDIX E

All pass-through entities receiving R&D tax credits from an awardee, along with the total amount transferred. The total amount transferred to shareholders, members, and partners who are individuals or trusts is summed together separately.

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APPENDIX A - TAXPAYERS RECEIVING CREDIT FOR APPLICATIONS IN 2020, 2021, OR 2022

NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
COMCAST HOLDINGS CORPORATION	4,857.3	3,687.3	4,785.2	4,857.3	3,687.3
GOOGLE LLC		2,217.0	4,084.9		
VANGUARD GROUP INC	595.5	2,833.7	4,030.2	595.5	
JANSSEN RESEARCH & DEVELOPMENT LLC	6,332.6	7,844.6	3,613.0	6,332.6	
MERCK SHARP & DOHME CORP	1,759.3		3,374.4		
DUOLINGO INC	129.9	269.3	1,224.0	129.9	
ARGO AI, LLC	740.7	1,334.5	1,073.2		
JANSSEN BIOTECH INC	644.1	1,148.7	938.0	644.1	
META PLATFORMS, INC.	268.6	541.0	906.0	268.6	
AMAZON.COM SERVICES LLC		563.0	811.3		
GILEAD SCIENCES, INC	212.3		802.2	212.3	
PFIZER INC & SUBS			694.6		
MICROSOFT CORPORATION		404.1	673.2		
INTERNET PIPELINE INC	26.2		517.5	26.2	
ELI LILLY & COMPANY	96.1	303.0	498.6	96.1	216.9
PHILLY SHIPYARD INC			453.7		
COTERRA ENERGY INC.	1,098.3	11.3	408.0		
ANSYS, INC.	456.9	813.9	378.8	456.9	16.6
LOCKHEED MARTIN CORPORATION			370.6		
CENTURY THERAPEUTICS INC		191.9	363.8		
ZOLL MANUFACTURING CORP	111.3		354.7	111.3	
WAVEFRONT RESEARCH INC			337.8		
ASTROBOTIC TECHNOLOGY INC	171.2	231.6	334.8	39.6	
CISCO SYSTEMS INC		210.0	318.2		
ORGANON & CO			305.8		
FARMERS PRIDE INC		113.5	304.1		113.5
HUBERT C JASINSKI DENTAL LABORATORY INC	77.6	15.2	297.3	77.6	15.2
UNITY TECHNOLOGIES SF	10.9		278.2		
KRAMER-MARKS, PC	52.6		271.1		
FEDEX CORPORATE SERVICES INC			263.1		
AURORA INNOVATION INC	159.4		250.0	159.4	
MICRO MOLD CO INC	143.4	24.8	249.2	143.4	
ARMSTRONG WORLD INDUSTRIES INC	91.0		247.9	91.0	
OMNICELL INC		150.6	244.3		12.7
DICKS SPORTING GOODS INC	98.9	168.4	242.6	98.9	
FEDEX GROUND PACKAGE SYSTEM INC			229.0		
ADVENT DESIGN CORPORATION		105.8	227.1		
INOVALON INC	59.6	160.0	215.6	51.2	160.0
EISAI INC	106.1	228.7	213.8	106.1	
SEEGRID OPERATING CORPORATION	38.7		208.2	1.2	
CABALETTA BIO INC.		133.6	206.9		
ABRIDGE AI INC	74.6	120.9	205.5		
LOXO ONCOLOGY, INC.			203.7		
BILL ME LATER, INC	111.4	137.2	201.8		
PENN ENTERTAINMENT INC		140.8	201.6		
RE2 INC	111.5	305.0	197.8	10.9	
LEVANTE BREWING INC	47.3		194.5		
PASSAGE BIO INC.		504.4	194.4		
PRODUCTION SYSTEMS ACQUISITION CO LLC	159.9	132.8	192.0		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
VICTAULIC COMPANY	70.6	261.1	191.4	70.6	261.1
OSISOFT LLC			187.9		
GLOBUS MEDICAL INC	16.5		187.5	3.6	
GHOST ROBOTICS CORPORATION	42.3	86.7	179.4		
HARMAN DEUTSCH CORP	5.7		173.1	5.7	
MAC SAFETY INC		74.0	172.4		
NOVARTIS PHARMACEUTICALS CORPORATION			170.0		
TMUNITY THERAPEUTICS INCORPORATED	168.7	145.6	167.7		
IMMUNOME, INC.			152.4		
BLUESPHERE BIO, INC.			151.1		
COLDEDGE TECHNOLOGIES INC	127.9	168.4	151.0	75.9	16.6
ASPINITY, INC	43.1	73.9	148.3		
KRYSTAL BIOTECH INC	96.7	135.4	147.2		
SHARP EDGE LABS INC	57.2	104.0	143.5	57.2	104.0
GLOBAL PAYMENT HOLDING COMPANY		116.4	141.9		
PPG ARCHITECTURAL FINISHES INC		122.3	140.5		
FUJIREBIO DIAGNOSTICS INC	150.7	107.1	140.4	2.3	
IDELIC INC			139.4		
CERTAINTED HOLDING CORPORATION			138.2		
NVIDIA CORPORATION	73.7	19.7	138.1	28.8	
PPL ELECTRIC UTILITIES CORPORATION			137.9		
DHUY ENGINEERING INC		123.7	122.5		
PHASEBIO PHARMACEUTICALS INC	53.8	109.6	121.8		
COMMUNICATIONS TEST DESIGN INC	94.7	124.4	117.7	94.7	
GSM INDUSTRIAL INC			114.4		
MAVEN MACHINES, INC.	11.9	119.7	113.5		
PHILANTHROPOS LLC			112.4		
MARINUS PHARMACEUTICALS, INC	105.2	78.2	111.9	105.2	78.2
CSLB HOLDINGS, INC.	772.6	509.1	110.7	431.6	
BENTLEY SYSTEMS, INC.		127.7	110.5		
WESCO DISTRIBUTION INC			108.5		
OCUGEN OPCO INC	23.4		105.7		
LOCOMATION	25.7		105.6		
GURU TECHNOLOGIES INC	63.6	80.0	105.1	63.6	
SITIO ARCHETECTURE & URBANISM			105.0		
WEBSTAIRANT STORE INC	1.4	36.2	103.5	1.4	36.2
ADVAITE INC			102.8		
BLACK KNIGHT INFOSERV, LLC			102.8		
DOUGLAS PHARMA US INC.	122.0	160.8	102.2	45.8	
HEAT EXCHANGE AND TRANSFER, INC.			102.1		
AUTODESK INC	34.7		101.2	34.7	
PULFLEX TECHNOLOGIES LLC		56.2	97.2		
DASSAULT SYSTEMES AMERICAS CORP	65.6		96.4	65.6	
AMAZON WEB SERVICES INC		83.7	95.5		
LEIDOS, INC.	24.1		95.3	24.1	
SELECT MEDICAL CORPORATION	13.9	63.1	92.7	13.9	
PROFI-VISION, INC	53.5	63.3	92.5		
J B POINDEXTER & CO INC		70.0	88.8		
ATI OPERATING HOLDINGS LLC	1.3	17.8	88.2		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
CARRIAGE MACHINE SHOP LLC			87.9		
INTERIUS BIOTHERAPEUTICS, INC.			87.6		
PRINTFLY CORPORATION	38.6		86.4	38.6	
BMTX, INC			86.3		
LISTRAK INC	36.8		86.1	36.8	33.3
EFE LABORATORIES		29.0	85.9		29.0
MULHERN AND KULP STRUCTURAL ENGINEERING			85.4		
TYBER MEDICAL LLC	26.8	6.8	85.2	26.8	
ABBOTT ACQUISITION COMPANY, LLC	36.2	59.4	85.1	36.2	59.4
ORASURE TECHNOLOGIES INC			84.2		
ENERGY MANAGEMENT SYSTEMS INC	47.9	36.7	83.7	19.7	36.1
INNOVATIVE SYSTEMS INC	55.5		82.6		
GOODHART SONS INC			79.6		
COGNISTIC LLC	55.1	17.3	77.2	55.1	17.3
ADT INC.			76.4		
GRAHAM PACKAGING COMPANY INC.			74.9		
PAYPAL INC	29.4	17.6	74.4	29.4	17.6
SAVANA INC			73.8		
ELSEVIER INC.	90.4	143.8	73.7	90.4	143.8
GALERA THERAPEUTICS INC	30.4	61.6	73.6	30.4	
GENERAL DYNAMICS INFORMATION TECHNOLOGY,	26.0	52.7	72.8	26.0	52.7
MEDCRYPT INC		59.5	72.8		
STRUCTURAL ENGINEERING CORPORATION OF			72.2		
BENCHMARK CONSTRUCTION COMPANY INC	18.7	20.8	71.2	18.7	
BRASKEM AMERICA, INC.	47.3	52.0	69.7	47.3	
LIFEBRAND INC			69.1		
HYDRO EXTRUSION USA LLC	74.0		67.7	74.0	67.7
COOK MYOSITE INCORPORATED	43.1	44.2	67.3		
GUIDING LIGHT VENTURES, INC.			66.6		
OVERLY DOOR COMPANY			66.2		
STREAMLIGHT INC	20.1	56.1	66.2	20.1	56.1
PROTOINNOVATIONS LLC			65.8		
BUCKLEY FUTURES LLC			64.1		
CHEWY INC.			63.7		
PFNONWOVENS US INC		134.3	63.0		134.3
ABC YORK, INC			62.0		
DESIGN MANAGEMENT GROUP	31.5	9.9	61.5		
MSA SAFETY INCORPORATED	37.8	92.9	61.4	37.8	
CODY COMPUTER SERVICES, INC.	22.8	63.3	61.0		
NUIX NORTH AMERICA INC	82.3	58.0	61.0	7.3	
ADOBE INC.	25.7		60.9	25.7	
B BRAUN MEDICAL INC		90.0	60.4		
ACCIPITER SYSTEMS INC	10.9	25.3	60.3	10.9	8.3
MITSUBISHI ELECTRIC POWER PRODUCTS INC		31.8	60.2		
THE OTT GROUP, INC.	28.1	33.6	60.1		
B & H INDUSTRIES INC	51.9	9.5	59.8	51.9	9.5
RETURN LOGIC, INC	15.2	56.0	59.8	15.2	56.0
JAZZ PHARMACEUTICALS INC	115.0	80.2	58.7	115.0	
GAP HOLDING COMPANY INC	13.7	20.1	58.2	9.6	

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
MOBILION SYSTEMS INC		39.1	58.1		39.1
NALCO COMPANY LLC			58.0	13.1	
SETEX TECHNOLOGIES INC	14.3	50.2	57.8	14.3	50.2
J.M. HUNT ASSOCIATES, INC.	22.8		57.6	22.8	
PHOENIX CONTACT DEVELOPMENT & TELETRACKING TECHNOLOGIES INC	23.1	43.4	57.4		
CONTAINER RESEARCH CORPORATION	22.5	82.6	57.3	22.5	18.3
BIMBO BAKERIES USA, INC.	27.5	13.5	57.3		
CAMPUS ESP INC	76.4	45.0	56.9	76.4	45.0
COMPU CRAFT FABRICATORS INC	18.4	33.2	56.4	18.4	
DRAEGER MEDICAL SYSTEMS INC	28.0	16.1	55.8		
ULTRAGENYX PHARMACEUTICAL INC		41.7	55.6		
MAYVUE LLC	34.7	53.1	55.3		
X-NAV TECHNOLOGIES LLC			55.0		
MEI INC	7.1	29.9	54.8		
HATZEL&BUEHLER INC	36.1	36.4	54.6	5.4	26.1
GECKO ROBOTICS INC	12.2	25.5	53.8	12.2	25.5
ARCCA INCORPORATED	62.0	87.9	53.5	62.0	
VIZINEX LLC	29.4	10.5	53.2	29.4	10.5
BRIO DESIGNS PARTNERS LLC			52.8		
GENERAL DYNAMICS LAND SYSTEMS INC		40.3	52.6		
MENASHA CORPORATION		69.7	52.4		53.2
AEC GROUP LLC	16.3		52.2	16.3	
GOLDEN BROTHERS INC		46.6	52.1		
IQVIA INC	4.4	2.2	52.1	4.4	
NETBEEZ, INC.	179.6	175.7	51.9	179.6	
ARCHER & BUCHANAN ARCHITECTURE LTD	22.8	38.9	51.6		
AKAS TEX LLC			51.4		
QUIRE LLC	28.2	9.3	51.0		
GWYNEDD MANUFACTURING INC.	36.1	49.4	51.0		49.4
SAPIENS USA INC	15.7	26.4	50.6		
BLASTPOINT INC	28.6	15.2	50.4	16.4	15.2
GRIDWISE INC	11.0		50.3		
CARLISLE INTERCONNECT TECHNOLOGIES, INC.	18.8	43.0	50.2		18.8
LIQUID FILLING SOLUTIONS LLC			50.2		
T-MOBILE USA, INC.	17.4	26.6	50.1	17.4	
BORE TECH INC		5.0	50.1		
ASCENSUS HOLDINGS INC	7.9		49.6	7.9	31.5
NUTRISYSTEM INC		19.8	49.2		
GENEOS THERAPEUTICS, INC.	12.7		49.2	12.7	
ALPHATHERA LLC	67.4	97.1	49.0		
ENERSYS DELAWARE INC	23.8	27.4	48.9	23.8	
PPG INDUSTRIES INC	92.8	124.0	48.5		
FOX CHASE MANAGEMENT, INC.	2.6	73.3	48.0		
US SPECIALTY FORMULATIONS LLC	30.8	27.9	48.0		
MESHNET, INC.	38.4		48.0	11.8	
D.GILLETTE INDUSTRIAL SERVICE INC.	18.5	27.3	47.8	18.5	27.3
GREYGHT, INC. DBA MOBINITI	24.2	39.7	47.7		
RUBY RENEWABLE RESOURCES LLC	42.1	47.3	47.3		
		46.3	47.3		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
ECOTECH, INC.	7.5	7.3	46.9		
QINTEL LLC	270.6		46.5		
AUGUSTINE PLASTICS INC		83.1	46.2		32.6
SUVODA LLC	16.6	33.1	46.0		
MK FIRE PROTECTION & SUPPLY LLC		31.7	45.7		
RENCOMGROUP LLC			45.4		
FORMCRAFT INTERIORS INC			45.3		45.3
EMDESCO INC		29.9	45.2		
LUNGPACER MEDICAL USA INC	34.4	60.3	45.1		
NOVOCURE INC.			44.4		
SYNERGY MEDIA GROUP LLC	53.1	79.2	44.3		
LANNETT COMPANY INC			44.3		
I B ABEL INC	27.8	10.1	43.4	27.8	10.1
REGULATORY DATACORP INC C/O MOODYS COR			43.1		
JOHNSTON MECHANICAL, LLC	27.2	34.7	42.7		
ADRIANN HOOKS			42.7		
GREAT ESTATES INC		14.3	42.7		
ADVANCED NETWORK PRODUCTS, INC.		56.5	42.6		
PNEU DART INC	37.2	47.7	42.6	37.2	47.7
EDTELL LLC	19.5		42.3	19.5	
PRECISION SPRINKLER SERVICES INC		29.7	42.0		
BLOOMFIELD ROBOTICS, INC.			41.8		
NIMBUS ROBOTICS INC	23.0		41.7		
CAMELOT US ACQ. LLC		96.4	41.7		
DUCK DUCK GO INC	11.6	18.7	41.6	11.6	18.7
CHARLES RIVER LABORATORIES, INC.			41.6		
VERTICAL SCREEN, INC.	3.5	8.2	41.3		
STRADOS LABS LLC		22.1	41.3		
AGGREGATES EQUIPMENT INC	38.0	64.3	41.2	37.3	
CONTROL ASSOCIATES AND MFG LLC			41.1		
EMINENCE ENTERTAINMENT ENTERPRISES LLC			41.0		
ALP SUPPLY INC	5.2	11.0	40.6		
ALLAN MYERS, INC		7.2	40.6		
REALYZE INTELLIGENCE, INC.			40.3		
BERKADIA COMMERCIAL MORTGAGE LLC	59.2	51.0	40.2	59.2	51.0
OTTERTUNE INC			40.2		
JETPACK WORKFLOW INC		74.2	40.2		74.2
MICROCHIP TECHNOLOGY INCORPORATED		31.4	40.2		
DIETZ & WATSON INC	6.4		39.9	6.4	
ASSET MAP HOLDINGS INC		13.7	39.6		
PROCESS COMBUSTION CORP		56.3	39.5		
PERPAY, INC	15.6	27.8	39.4		
GREENPHIRE LLC		51.5	39.1		
CORE BUSINESS SOLUTIONS INC	30.1	41.5	39.1	22.1	4.5
DATAFORMA INCORPORATED	6.3	8.8	39.0		
GUIDEWIRE SOFTWARE, INC.	57.5	52.7	38.9		
UTZ BRANDS HOLDINGS LLC			38.8		
EUREKA METAL & GLASS SERVICES			38.7		
OAT FOUNDRY LLC			38.6		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
RAJANT CORPORATION	18.6		38.6	18.6	6.9
INTEGRAL MOLECULAR INC	7.2	8.6	38.5	7.2	8.6
PROXICAST, LLC	20.5	27.0	38.3		
SUNTEX INTERNATIONAL, INC.			37.8		
PROGENICS PHARMACEUTICALS INC			37.8		
TAVOTEK LAB INC			37.6		
INTEGRATED DEVELOPMENT PARTNERS,LLC		41.8	37.5		
P J DICK INCORPORATED	19.0	46.0	37.4	19.0	46.0
JARUS TECHNOLOGIES INCORPORATED		29.9	37.4		2.8
HANOVER FOODS CORPORATION	14.3	8.5	37.2		
ROADBOTICS INC		113.7	36.9		
LODESTAR SOFTWARE SOLUTIONS INC			36.4		
OCEAN GENOMICS INC			36.0		
COLORCON INC	30.5	7.5	35.9	30.5	7.5
SCHILLER & HERSH ASSOCIATES INC			35.1		
FAZIO MECHANICAL SERVICES INC		26.1	34.9		
CURIO HOLDING COMPANY DBA MOBILE OUTFIT	81.1	56.1	34.8	81.1	
AEROTECH INC	35.1	56.9	34.8	35.1	56.9
B & B DESIGNED SYSTEMS, INC.	48.1		34.7		
BOEING CO	740.0	818.4	34.6		
WEIS MARKETS INC	19.9	28.1	34.6	19.9	28.1
BREEO, LLC			34.6		
AES CLEAN TECHNOLOGY INC	15.8	18.0	34.6	15.8	18.0
ANTHONY FOLINO CONSTRUCTION, INC	29.2	40.0	34.3		
DIAMOND KINETICS, INC.	19.7	14.3	34.1	19.7	
LABCORP DRUG DEVELOPMENT, INC.			34.0		
HORIZON SIGNAL TECHNOLOGIES INC		1.7	33.8		
AAYUNA INC	29.2	39.8	33.8	29.2	
AVID RADIOPHARMACEUTICALS INC	9.0	28.3	33.7	1.8	21.6
WEBBER SMITH ASSOCIATES INC			33.4		
JOBBO INVESTMENTS, INC	10.6	8.0	33.0	10.6	
GOLDEN PROPORTIONS MARKETING INC		23.5	32.9		
NSV INC	15.5	16.0	32.9	15.5	
ADVANCED COOLING TECHNOLOGIES, INC.	52.0	45.1	32.7	52.0	45.1
SAGE TECHNOLOGY SOLUTIONS INC	7.3	34.4	32.5	7.3	34.4
NOVASENTA INC.	27.4	22.4	32.5		
KOVLAR PRECISION MANUFACTURING INC			32.3		
MESH INC	34.6	49.2	32.2		
MARONDA INC			32.1		
EBAY INC	7.9		32.0	7.9	
PEARL STREET TECHNOLOGIES, INC		17.8	31.9		
RIGHT AIR, INC.			31.5		
LAKE REGION MEDICAL INC.		27.8	31.4		
FQT HOLDING COMPANY LLC		70.0	31.3		
BSEG, LLC	7.7	18.3	31.2		
UNITED STATES STEEL CORPORATION			30.9		
TRINITY AUTOMATED SOLUTIONS, INC.		28.1	30.6		
TAVANTA THERAPEUTICS INC			30.5		
WEST CHESTER DESIGN BUILD, LLC			30.5		

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	2020	2021	2022	2020	2021
ENERGY TRANSFER SOLUTIONS, LLC			30.4		
HIGH INDUSTRIES INC		56.1	30.2		56.1
LIBERTY CC BEVERAGES PARENT LLC		23.5	30.2		
LEONIDAS HOLDCO INC			30.2		
BARTON PARTNERS ARCHITECTS			30.1		
SNOWDON INTERNATIONAL LIMITED	8.3	6.7	29.9	8.3	
DUANE MORRIS LLP			29.7		
DURAPODS, LLC	4.6	23.6	29.7		23.6
SKIBO ENERGY SYSTEMS LLC			29.6		
KIBOW BIOTECH INC		0.7	29.5		
METSO OUTOTEC USA, INC.			29.4		
HYTECH TOOL & DESIGN CO	11.7	18.7	29.3	11.7	18.7
VIIV HEALTHCARE COMPANY		7.9	29.2		
EPISTEMIX, INC.			29.2		
VENATORX PHARMACEUTICALS, INC.	57.7	21.6	29.2		
APOSTROPHE TECHNOLOGIES INCORPORATED		22.6	28.9		
KEMPER EQUIPMENT INC	6.2		28.8	6.2	
BARRY CALLEBAUT USA HOLDING INC			28.7		
PENN STATE CONSTRUCTION, J&D, LLC	22.2	40.1	28.5		40.1
BRENTMARK SOFTWARE INC		23.6	28.4		
BAYER HEALTHCARE LLC	36.0	242.5	28.2		
SOCIAL MEDIA INFORMATION LLC	20.2	24.0	28.1		
CARNEGIE ROBOTICS LLC		51.0	28.1		
EXLSERVICE HOLDINGS, INC			27.8		
ZYNERBA PHARMACEUTICALS INC		91.1	27.8		91.1
MEDICAL PRODUCTS LABORATORIES, INC.	8.6		27.6		
SENTIENT INVESTMENT CORPORATION	1.5	29.6	27.5	1.5	
MCCARTHY ENGINEERING ASSOCIATES, INC.			27.4		
STELLAR TECHNOLOGY SOLUTIONS, LLC			27.2		
COMTECH INDUSTRIES, INC			27.1		
HYDAC TECHNOLOGY CORPORATION	3.7		27.0	3.7	
TREATSPACE, INC			26.9		
JUST PLAY PRODUCTS LLC	43.7	14.4	26.9		
FOREST DEVICES, INC.	16.7	7.1	26.9	16.7	7.1
ALLTURNA LLC		20.0	26.9		
SAA ARCHITECTS INC	18.8	37.6	26.8	18.8	37.6
G E M MECHANICAL SERVICES INC	16.2	26.8	26.6	16.2	26.8
NAMSCO PLASTIC INDUSTRIES INC		30.2	26.4		
IDEAL SEMICONDUCTOR DEVICES, INC.			26.0		
ECOLAB INC		24.2	25.9		
GLOBAL FIRE PROTECTION GROUP, LLC.		17.4	25.9		
VENANGO STEEL INC	3.0		25.8	3.0	
PENN WELD INC	6.3	16.8	25.8		
ACUTECH PRECISION AEROSPACE, INC	13.8	25.3	25.6		
REHAT, LLC D/B/A NOCTEM HEALTH			25.4		
TROY GROUP INC		3.4	25.1		
GRAVIC INC	43.9	39.0	25.1		
STARN TOOL & MANUFACTURING COMPANY	14.9	5.5	24.9		
JBS SCIENCE INC		1.6	24.7		

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	2020	2021	2022	2020	2021
CONCURRENT ELECTRONIC DESIGN AUTOMATION	3.9	20.8	24.7	3.9	5.7
CAPTECH VENTURES			24.5		
MARLAN TOOL, INC.			24.3		
K&L GATES LLP		20.9	24.0		
INSTRUMENTATION INDUSTRIES INC		21.1	24.0		21.1
WAZOODLE FABRICS LLC	5.6	15.0	24.0		
NSI NEAL SYSTEMS INC			23.9		
LINDY PAVING INC	27.3	32.6	23.7	27.3	32.6
SIGNALLAMP HEALTH LLC	19.7	21.4	23.7		
PRECISION PROFILES, LLC	8.6	8.6	23.7		
INNOVATIVE FINANCING SOLUTIONS			23.5		
BLADE DIAGNOSTICS CORPORATION			23.4		
NURSING ABC, INC.		21.1	23.2		
INDOVINA ASSOCIATES ARCHITECTS	29.0	64.3	23.2		
LAGOS INC	9.7	3.3	23.1		
GREENWICH TERMINALS LLC	7.4	13.8	23.0	7.4	13.8
TELEDYNE SCIENTIFIC & IMAGING LLC			23.0		
DENTAL IMAGING TECHNOLOGIES CORPORATION			23.0		
HARBOR BUSINESS COMPLIANCE CORPORATION	82.6	44.9	22.9	82.6	44.9
CRC INDUSTRIES INC		5.0	22.8		5.0
FAIRYGENE INC.			22.3		
INGMAR MEDICAL LLC	35.6	35.6	22.2		
SECURITY RISK ADVISORS INTERNATIONAL LLC			22.2		
SITE DESIGN CONCEPTS INC	10.9		22.1	10.9	
CRODA INC			22.1		
HARRY J. LAWALL & SON INC	5.7		22.1	5.7	
SHEETZ INC	2.3	25.6	22.0	2.3	
XYNTEK INCORPORATED	3.0		22.0		
DELCO INNOVATIONS	68.8	59.8	21.9		
AMUNEAL MANUFACTURING CORP		19.7	21.5		
ADRIK INC	12.3		21.5	12.3	
CMW HOLDCO INC.	47.9		21.4	4.0	
THOMAS H CLIGAN ELECTRICAL SERVICE			21.3		
MORTGAGE CONNECT, LP	31.0		21.2		
J B KINTNER & SONS INC	1.1	6.4	21.2	1.1	6.4
PENN AIR & HYDRAULICS CORP	3.1	10.0	21.1	3.1	
CLAIR GLOBAL CORPORATION			21.0		
SAMTEC INC	19.8	35.0	20.8		
SHADOWFAX INC	15.9	14.3	20.8	15.9	
BRD NOISE & VIBRATION CONTROL INC			20.8		
SPICES INC	9.2	9.6	20.5		
ELSNER ENGINEERING WORKS INC			20.4		
BOARDBOOKIT INC	6.4	8.8	20.3	6.4	8.8
ARIECA INC	8.9	4.7	20.2	8.9	4.7
AMPHENOL THEMOMETRICS, INC.	14.1	8.3	20.2	14.1	8.3
VEGAN TREATS INC	9.1	22.1	20.1	9.1	22.1
ADC THERAPEUTICS AMERICA INC	61.0	92.3	20.1		
FLEXICON INC	2.6	10.3	19.8		10.3
LIVE WELL CHIROPRACTIC, PC			19.8		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
IRALOGIX LLC		77.4	19.6		77.4
REYNOLDS & REYNOLDS ELECTRONICS INC	10.3		19.6	10.3	
PHRASE HEALTH INC		15.9	19.6		
PACKAGING CORPORATION OF AMERICA	2.1		19.3	2.1	
SIMONA AMERICA GROUP INC			18.9		
CONTROLS SERVICE & ENGINEERING CO.			18.9		
CUSTOM METAL FABRICATING, INC.	21.4	15.2	18.9		
MILNES ENGINEERING INC	31.2	37.4	18.9		
PLEDGEPLATFORM, INC		16.3	18.8		
ENERSYS ADVANCED SYSTEMS INC	4.5	4.8	18.7		
BUCKLEY FUTURES LLC	47.3		18.5	18.9	
FYNYDD LLC		14.3	18.5		
ERIE CUSTOM COMPUTER APPLICATIONS INC	17.2	17.7	18.5	17.2	17.7
VELTEK ASSOCIATES INC		43.9	18.5		
TRI-STATE TECHNOLOGY PROFESSIONALS INC			18.5		
SWEET NOTE BAKERY INC	6.8	16.6	18.4	6.8	
INTERTEK USA INC			18.4		
K S A & D, INC.			18.3		
AMERICAN MADE LLC			18.3		
GARDNERS CANDIES INC	1.8	4.9	18.2	1.8	
FINISH TECH CORP	7.6	13.1	18.2	7.6	13.1
ADVANCED GLASS & METAL, LLC	21.2	9.9	18.2	21.2	9.9
GNOME ARCHITECTS LLC			18.2		
KERITON INC	22.0	25.8	18.2	22.0	
KMM GROUP LTD.		4.9	18.1		
KEYSTONE MACHINERY CORPORATION	13.9	5.9	18.1	13.9	
PACTIV PACKAGING INC			18.0		
CHRISTOPHER D CERA	34.9	12.5	17.9		
IPEG, INC.	2.6		17.9	2.6	
THE CLOUSER GROUP		21.1	17.5		
READING PRECAST INC	11.5	6.1	17.4	11.5	
MATERION BRUSH INC.	2.4	8.7	17.1		
CRIMEWATCH TECHNOLOGIES INC	6.4	12.7	17.1	6.4	12.7
INNOVATIVE SOLUTIONS COMPANY USA			17.0		
SONOCO PROTECTIVE SOLUTIONS INC		17.7	16.9		
APEXDROP, LLC	19.1	15.5	16.7		
DAVID WEBER CO. INC.	5.0	0.3	16.7		
TITANIUM METALS CORPORATION			16.6		
AKRION TECHNOLOGIES INC FORMERLY NAURA		10.9	16.4		0.3
CENERO LLC	16.5	10.6	16.4	16.5	10.6
BASEBALL INFO SOLUTIONS INC		16.6	16.3		
ECTOBOX, INC.			16.3		
HEBI ROBOTICS INC	16.8	28.4	16.3	16.8	
MAINSTREAM SWIMSUITS, INC.	1.8	7.4	16.3	1.8	
COBHAM ADVANCED ELECTRONIC SOLUTIONS INC		187.7	16.3		
APPLIED SYSTEMS ASSOCS INC	78.3	45.4	16.2	78.3	31.6
PAMLICO COATINGS INC.			16.0		
FLUITRON INC	2.8	2.7	16.0	2.8	2.7
THE SHEWARD PARTNERSHIP LLC		67.9	16.0		

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	2020	2021	2022	2020	2021
BETTS INDUSTRIES INC	5.4	18.4	15.9	5.4	18.4
ALLEGHENY PERFORMANCE PLASTICS LLC	3.1	3.9	15.9	3.1	3.9
GRAYBILL MACHINES INC	55.3	41.3	15.8		
L R COSTANZO CO INC		12.7	15.8		
MID ATLANTIC CAPITAL GROUP, INC.			15.5		
SCHELL GAMES LLC	15.9	130.6	15.5	15.9	130.6
PATHWAY ACCESSIBILITY SOLUTIONS INC		4.8	15.4		
GRUE & BLEEN LLC	0.5		15.4		
CERTARA USA INC			15.3		
SUSQUEHANNA CIVIL INC	32.3	73.5	15.3	32.3	
NEAR EARTH AUTONOMY INC	2.0	6.0	15.2	2.0	
HERSHEY ENTERTAINMENT & RESORTS COMPANY	13.5	9.6	15.2	13.5	9.6
UNITED PARCEL SERVICE INC	17.9	16.4	15.2		
1SEO TECHNOLOGIES, INC			15.1		
SOUDERS INDUSTRIES INC	12.0	21.3	15.1	12.0	18.7
DATA MACHINE LLC		8.7	15.1		
AMERICAN PRECISION INDUSTRIES INC		3.8	15.0		
PHYTOGENX INC	21.5	12.8	15.0	21.5	12.8
QUALITY BRIDGE & FAB INC	8.7	15.3	15.0	8.7	15.3
ESH COMPUTER CENTER INC			15.0		
DAGOSTINO ELECTRONIC SERVICES INC	2.8		14.9	2.8	
SENSOR NETWORKS INC		115.5	14.9		115.5
TRAFFIC PLANNING AND DESIGN, INC.		24.1	14.9		
SHOEMAKER MFG SOLUTIONS INC.	11.3	6.6	14.8		
PROCESS APPLICATIONS LIMITED	1.2	10.0	14.8		10.0
ASTARTE MEDICAL PARTNERS, INC.		30.3	14.7		
JOHN R BROMILEY COMPANY INC	64.3	25.2	14.7		
FS-AMERICA, INC. & SUBSIDIARIES			14.7		
NET HEALTH SYSTEMS INC	14.7	24.0	14.7		
NUVISION ENGINEERING, INC.	3.7		14.7	3.7	
ALLEGHENY SOFTWARE PUBLISHERS INC		7.7	14.6		
MARTINS FAMOUS PASTRY SHOPPE INC		16.4	14.6		16.4
OPENFORGE LLC	12.0	6.7	14.6		
FLEXIBLE COMPENSATORS, INC.			14.5		
PENN ENGINEERING & MANUFACTURING CORP	11.3	7.5	14.5	11.3	2.5
II-VI AEROSPACE & DEFENSE, INC.		12.1	14.5		
EMEH, INC.	22.3		14.5		
APTAGEN, LLC	13.9	21.1	14.5		
INVISIBLE SENTINEL, INC.	1.5	14.0	14.4		
STONER INCORPORATED	1.6	5.0	14.4	1.6	5.0
MISFITS MARKET, INC.			14.3		
ULTRA POLY CORPORATION	2.2		14.2	2.2	
PREMIER AUTOMATION HOLDINGS INC	30.4	17.0	14.2	30.4	17.0
SPARKCURES LLC	2.5	5.4	14.1		
BERRY SOLUTIONS GROUP LLC		8.1	14.1		8.1
KINGSBURY INC		2.5	14.1		2.5
THE CERAMIC SHOP, LLC		2.4	14.0		
PRINT MAIL SOLUTIONS INC	20.5	25.5	14.0	20.5	25.5
TRAC FABRICATION INC			14.0		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
C & J INDUSTRIES INC		0.5	14.0		
FRENCHCREEK PRODUCTION INC		16.7	13.8		
NB VENTURES INC.			13.8		
TUDI HOLDINGS, INC.	1.0	3.0	13.6		
SPOTME FITNESS CORPORATION	21.6	23.3	13.6		
RASER ACQUISITIONS LLC		25.5	13.5		
HALLER ENTERPRISES		12.1	13.5		
DYNAMIC ENERGY SOLUTIONS LLC	0.4	17.5	13.5	0.4	17.5
BARVISION LLC			13.5		
CURRY SUPPLY HOLDINGS, INC.	24.1	45.0	13.5	24.1	
ONEXIA, INC.			13.5		
LYGENESIS INC	64.7	7.3	13.5		
BRUNNER INDUSTRIAL GROUP	3.2	11.5	13.4		
MYSTIC ASSEMBLY & DECORATING CO., INC.		30.1	13.4		
PANACEA TECHNOLOGIES INC.	10.7	47.1	13.3		
THE RAILROAD ASSOCIATES CORPORATION		13.3	13.3		
LAFRANCE CORPORATION			13.2		
APOLLO NEUROSCIENCE INC	51.5	68.5	13.2	51.5	
PERFIDO WEISKOPF WAGSTAFF & GOETTEL	20.0		13.1		
FORMCRAFT INTERIORS INC	50.4		13.1		
OZ COLLABORATIVE LLC		14.6	13.0		
CONSOL ENERGY INC			12.9		
BECKMAN COULTER INC		13.4	12.8		13.4
OMEGA SYSTEMS CONSULTANTS INC	16.1	32.6	12.8		
KARAS ENTERPRISES INC		7.8	12.8		
SARRIS CANDIES, INC.	8.3	58.9	12.7	8.3	
MSG HOLDING LLC		14.0	12.7		
TAYLOR STRUCTURAL ENGINEERS			12.6		
INDEPENDENCE FIRE SPRINKLER COMPANY LLC		10.3	12.5		
JANDM FLUIDICS INC	9.5	9.2	12.3	9.5	9.2
4FRONT SOLUTIONS, LLC			12.3		
RADIUS HOLDINGS LLC		3.5	12.3		
TALKMEUP INC.		12.2	12.2		
THE SPEARHEAD GROUP, INC			12.2		
SWANK ASSOCIATED COMPANIES			12.2		
ECOPAX LLC	3.5		12.1		
DOBIL LABORATORIES INC	11.7	9.5	12.0		
SUPERIOR PLASTIC PRODUCTS INC	5.0	7.6	12.0	5.0	7.6
GAMRY INSTRUMENTS INC	8.0	19.5	11.9	8.0	
COMPLIANCE SERVICES, LLC			11.9		
PRIZER PAINTER STOVE WORKS			11.9		
D'ANGELO TECHNOLOGIES, LLC			11.8		
BEACON HEALTH SOLUTIONS, INC.			11.8		
SIGNATURE CUSTOM CABINETS INC	4.7		11.8		
BLUESTONE COMMUNICATIONS INC	3.7	5.6	11.7	3.7	5.6
MIWD HOLDING COMPANY LLC		20.4	11.7		
OLIVER SPRINKLER CO., INC		7.1	11.6		
BORTON LAWSON HOLDING CO INC	8.6	9.2	11.6	8.6	9.2
MRO CORPORATION	20.2		11.6	20.2	

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
RED ROVER TECHNOLOGIES, LLC			11.5		
WHITETHORN DIGITAL, LLC	2.0	6.3	11.5		6.3
ERESEARCHTECHNOLOGY INC			11.4		
AOG HOLDINGS, INC			11.3		
ICETEC ENERGY SERVICES INC			11.2		
S & W RACE CARS & COMPONENTS INC	2.9		11.2	2.9	
CAPITAL RX INC			11.2		
O'NEAL	17.7	12.7	11.2	17.7	12.7
FLINCHBAUGH COMPANY INC	12.0	4.2	11.2	12.0	
NIELSEN KELLERMAN CO			11.2		
BLATEK INDUSTRIES INC		7.0	11.1		7.0
GRUDI ASSOCIATES	1.6		11.1	1.6	
ITR LLC	4.9	21.5	11.1		
PHRQL INC			11.0		
VIPER NETWORK SYSTEMS LLC	29.9	24.4	10.9		24.4
CARGAS SYSTEMS INC	2.5	9.4	10.9	2.5	9.4
DURA METAL PRODUCTS CORP		56.8	10.9		
REACTION BIOLOGY CORPORATION	3.4		10.8	3.4	
FCI USA LLC			10.8		
ALTAIR INTEGRATED SERVICES LLC	45.7	40.7	10.8	23.4	17.9
AFP ADVANCED FOOD PRODUCTS LLC	9.3	11.6	10.7	9.3	
AGR INTERNATIONAL INC	0.6		10.7	0.6	
GENERAL TRANSERVICE INC	2.8		10.5	0.1	
ARCH MASONRY, INC			10.4		
SJ CONSULTING GROUP INC	22.6		10.4	22.6	
HPT PHARMA LLC	51.4		10.3	51.4	
PANTHER LEARNING SYSTEMS INC	5.7	6.4	10.3	5.7	
PENCOYD IRON WORKS INC		21.4	10.3		
HENDRICK MANUFACTURING COMPANY	12.7	1.0	10.3	12.7	1.0
DOCUMENT SOLUTIONS GROUP INC			10.2		
CRESCENT INDUSTRIES INC			10.2		
YORK BUILDING PRODUCTS CO INC	16.9	20.1	10.2		20.1
BOHLER ENGINEERING PA LLC	29.5	43.6	10.2		
FAIRMOUNT FOUNDRY INC	32.1	0.1	10.2	32.1	
POLYK TECHNOLOGIES LLC	14.3	15.3	10.1		
TURN 14 DISTRIBUTION, INC.	11.3		10.1		
SOLAR TECHNOLOGY INC	1.2	2.1	10.1		
PENDU MANUFACTURING INC			10.0		
STERO THERAPEUTICS LLC			10.0		
CAMCO MANUFACTURING INC	76.4	11.3	10.0		
SP ACQUISITION COMPANY, LLC	6.8	8.5	9.9		
EHMKE MANUFACTURING CO INC		2.4	9.9		
FXI INC		35.2	9.8		35.2
NEU DYNAMICS CORP		5.1	9.8		5.1
SMOOTH-ON, INC.	13.3		9.7	13.3	
VWR FUNDING INC		44.3	9.6		
PINE HILL MANUFACTURING LLC			9.6		
FETTEROLF CORPORATION		14.3	9.5		
HACCP ASSURANCE SERVICES INC	2.9	5.2	9.5		

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	2020	2021	2022	2020	2021
GIORGI GLOBAL HOLDINGS		27.1	9.4		
DUTCH CLIPS LLC			9.3		
CADENCE DEVICE INC		8.3	9.3		1.2
TOSOH BIOSCIENCE LLC			9.3		
HOLBROOK TOOL & MOLDING, INC.	54.9	4.4	9.3	54.9	
TRY TEK MACHINE WORKS INC		13.1	9.3		
DORMONT MANUFACTURING COMPANY			9.2		
ARROW ELECTRIC INC	13.6	11.1	9.2		
CENTURION CONSTRUCTION GROUP LLC	10.0	8.2	9.2	10.0	
ARMOUR TECHNOLOGIES INC.	3.8	4.2	9.2		
CRABTREE, ROHRBAUGH & ASSOCIATES, INC.	13.3		9.2		
WAMPOLE MILLER INC		6.2	9.1		6.2
UNITED PARCEL SERVICE GENERAL SERVICES	13.3	15.7	9.1		
CHROMATAN INC		31.7	9.1		31.7
EA FISCHIONE INSTRUMENTS INC			9.1		
INDEPENDENCE STEEL INC		35.3	9.1		
AIIR CONSULTING, LLC			9.0		
BAINBRIDGE HEALTH INC	31.9		9.0	31.9	
THE YORK GROUP INC			9.0		
SB GLOBAL FOODS INC	3.0	6.2	9.0	3.0	6.2
ONCORA MEDICAL INC			8.9		
PETER MARGITTAI ARCHITECTS LLC	6.7	5.2	8.9	6.7	
SUPERIOR WALLS OF AMERICA, LTD.			8.8		
FRANKLIN FARMS EAST INC		25.0	8.8		
CONSTRUCTURAL DYNAMICS, INC.	5.1	6.3	8.8		
ARTSKILLS, INC.		11.8	8.7		
JAREX ENTERPRISES, LLC	11.1		8.7		
SENSE TECHNOLOGY, INC	8.0		8.7		
DHRPRO,LLC	2.2		8.7		
VECTOR SYSTEMS		24.6	8.6		
EUROFINS ABRAXIS, INC		4.9	8.6		
PHASE SHIFT CONSULTING LLC			8.6		
ENTASIS, INC.	6.9	7.9	8.6	6.9	7.9
FED REPORTING LLC			8.6		
RIMSYS, INC.		22.4	8.6		22.4
ANHOLT TECHNOLOGIES, INC.	12.6	13.4	8.6	12.6	13.4
ACCUDYN PRODUCTS, INC.	4.8		8.5		
NORMA PENNSYLVANIA	1.6	0.7	8.4		
THUBRIKAR AORTIC VALVE, INC	5.7		8.4		
IMWAVE INC			8.4		
CANNON INSTRUMENT COMPANY			8.4		
CIMA NETWORK INC	47.3	16.7	8.3	47.3	16.7
LCR EMBEDDED SYSTEMS, INC	4.7		8.3		
MODERN CABINET AND CONSTRUCTION INC	10.2	5.8	8.3		
FOUR GROWERS INC		18.3	8.2		
CRYSTAL INC PMC	4.8	9.7	8.2	4.8	9.7
PRODUCT EVALUATION SYSTEMS INC			8.2		
METAPHASE TECHNOLOGIES INC			8.2		
E B ENDRES, INC.	22.5	18.8	8.1		

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	2020	2021	2022	2020	2021
TRICE MEDICAL INC	3.9	7.7	8.1		
BERK INTERNATIONAL LLC	0.5	19.1	8.1	0.5	19.1
TRACEY MECHANICAL INC	10.2		8.0	10.2	
FRONT STREET REFRIGERATED SERVICES LLC	3.5	0.8	8.0	3.5	0.8
REMCOM INC	66.7	58.1	8.0	30.4	3.1
PRESCIENT WEATHER LTD	4.9	4.9	7.9		
GENERAL DYNAMICS MISSION SYSTEMS INC	30.0	19.7	7.9	30.0	19.7
CLINONE, INC.			7.9		
SMS GROUP INC	39.9		7.8	39.9	
ELECTRON ENERGY CORP	2.1		7.8	2.1	
DISCOVERY MACHINE, INC.			7.8		
TATE ACCESS FLOORS, INC.			7.7		
H B FRAZER COMPANY - PENNSYLVANIA			7.7		
LABCORP ENDPOINT CLINICAL, INC.			7.5		
IDL WORLDWIDE INC		8.2	7.5		
B & D BUILDERS LLC		11.2	7.5		
ODESSA TECHNOLOGIES, INC.			7.5		
AVANCEON LP	5.7	9.3	7.5		
SILVERTIP INC	9.0	14.7	7.4	4.8	7.8
GT GLOBAL HOLDINGS INC		183.3	7.4		
LIFE CYCLE ENGINEERING INC		2.9	7.4		
OCTECH LLC		12.1	7.4		
ADVANCE MANAGEMENT SERVICES LLC		20.9	7.3		
MANIFESTO LLC			7.3		
SOFTERWARE INC			7.3		
LAPP MILLWRIGHT LLC			7.2		
PAK-IT DISPLAYS LLC		45.3	7.2		
STRAIGHT ARROW PRODUCTS, INC.	9.8	4.4	7.1		
RJC MANUFACTURING SERVICES LLC	5.3	10.7	7.1		
SIGNATURE DOOR INC	7.6	11.0	7.1	7.6	11.0
THERM OMEGA TECH INC	2.6		7.1		
DUTCHLAND INC		1.5	7.0		1.5
BOULDEN COMPANY INC		6.6	7.0		
BIOCLINICA INC			7.0		
DYCO INC	2.9		7.0	2.9	
PYROTEK INCORPORATED	1.9	1.8	7.0	1.9	
C360 TECHNOLOGIES INC	6.2	28.3	6.9		
CLOUDSHADOW, LLC			6.9		
JOHN ROCK, INC			6.9		
CUSTOM LAMINATING CORPORATION	1.8	4.2	6.9	1.8	
DIVERSIFIED MACHINE INC		2.2	6.8		
PVE LLC		3.9	6.8		
M H EBY INC			6.7		
NATIONAL REFRIGERATION & AIR	6.5	11.6	6.7	6.5	11.6
LABORATORY CORPORATION OF AMERICA HOLDIN			6.6		
NEW PRODUCT TECHNOLOGIES, INC		4.1	6.6		
BENEFIT ALLOCATION SYSTEMS, LLC	6.7	9.2	6.5		
ARMSTRONG UTILITIES, INC.	3.5		6.5	3.5	
1SEO.COM			6.5		

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	2020	2021	2022	2020	2021
HANOVER IRON WORKS INC	6.5	5.0	6.3	6.5	5.0
PYROTECHNICS MANAGEMENT INC	20.6	6.4	6.3	20.6	
EDU LINK INCORPORATED	0.9	5.6	6.3		5.6
HINDLE POWER INC	2.7		6.3		
STERMAN MASSER INC			6.2		
C U E INC	0.6	0.7	6.2		0.7
MODERN INDUSTRIES INC	3.1	1.8	6.1	3.1	1.8
HAMPTON HOURLY ADMINISTRATION LLC	1.0		6.1		
STORMLOOP TECHNOLOGIES LLC		2.3	6.1		
KEYSTONE BIOANALYTICAL, INC.	3.0		6.1		
SIMPLE ORIGIN	6.3	1.1	6.0		
SPECIALTY SEAL GROUP, INC.	2.3		6.0		
CHANNELAPE INC	31.6	32.3	6.0	31.6	
MESSICK FARM EQUIPMENT INC			6.0		
OPTAMO LLC		4.6	5.9		
EUROFINS LANCASTER LABORATORIES INC		27.0	5.9		
NEWMAN & COMPANY INC	0.4	1.4	5.9		
RHI US LTD.			5.9		
KERCHER ENTERPRISES INC			5.8		
WRIGHT LABS LLC	12.1	10.0	5.8		
BASELINE CONTRACTING INC		4.3	5.7		4.3
THE OFFICE OF JAMES BURNETT, INC.		5.6	5.7		
TURN 5 INC	8.8		5.7		
BEAVER STEEL SERVICES INCORPORATED	1.9	0.9	5.7		
NEW HEIGHTS LLC	31.0	4.0	5.6	31.0	
DURAWOOD PRODUCTS INC	3.4		5.5		
MARATHON STUDIOS, INC.		7.5	5.5		
GLOBAL METAL POWDERS LLC	11.4	6.4	5.5	11.4	0.8
YUASA BATTERY INC		1.4	5.5		
B & G MANUFACTURING CO INC	2.2	5.0	5.4	2.2	5.0
D. G. YUENGLING & SON, INC.		8.5	5.4		
J.A.C.K. WOOD PRODUCTS LLC	0.7	2.2	5.4	0.7	2.2
LA CASA NARCISI, INC.			5.3		
LIVANOVA USA INC	0.7	6.3	5.3		
RACESENG INC	4.4	6.6	5.2		
AERONICS INC.			5.2		
SHUMAKER INDUSTRIES INC	2.3	3.2	5.2		
FINISH THOMPSON INC	4.9	8.7	5.1	4.9	
VALUE FLOW GROUP INC			5.1		
L & H SIGNS INC	7.8	14.3	5.1	7.8	14.3
INNOTECH LASER	1.5	16.3	5.1		
AMPHENOL INTERCON SYSTEMS INC	3.8	12.1	5.1	3.8	9.0
GEMINI PLASTICS INC			5.1		
WIKA MOBILE CONTROL, LP			5.1		
GEORGE KO INDUSTRIES INC			5.0		
EAFAB CORPORATION	8.6	26.4	5.0	8.6	14.3
JAMES CRAFT & SON INC			5.0		
ESI ACQUISITION & SUBSIDIARY			5.0		
DIGITAL COLOR GRAPHICS, INC		4.2	5.0		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
OPTIMUS TECHNOLOGIES INC		6.3	5.0		6.3
OPTIXTAL INC.		0.1	5.0		
EASTWOOD HOLDCO LLC		4.7	4.9		
PENN MANUFACTURING INDUSTRIES INC			4.9		
E-TECH INDUSTRIAL CORP			4.9		
BLAIR MEAD DESIGNS, LLC			4.9		
BLAIR STRIP STEEL COMPANY	2.0		4.9		
CEPHALON INC			4.9		
SUPERIOR TIRE & RUBBER CORP	2.3	3.8	4.9	2.3	
BIGBEE STEEL & TANK CO.	2.8	1.0	4.8		
TIW TECHNOLOGY INC	1.8	4.1	4.7	1.8	
ARVOS SCHMIDTSCHKE SCHACK LLC		1.4	4.7		
TOUCHPOINT INDUSTRIES		9.2	4.7		
SAY PLASTICS, INC.	11.7	12.6	4.7	11.7	12.6
4DH, LLC			4.6		
BLAIR IMAGE ELEMENTS			4.6		
PECORA CORPORATION INC.			4.6		
EADS GROUP INC		3.1	4.6		
KERMITOOL ACQUISITION COMPANY INC	13.5	7.4	4.6	13.5	
COLUMNTEK LLC	3.0	12.5	4.6		
PHILLY AUTO LABOR SERVICES LLC			4.6		
AMRING PHARMACEUTICALS INC.	7.8	14.4	4.5	7.8	14.4
CONESTOGA WOOD SPECIALTIES CORPORATION			4.5		
PRECISION CUT INDUSTRIES INC	2.6	10.4	4.5	2.6	
PEACOCK LABORATORIES		1.4	4.5		
V. T. GRAPHICS, INC.	11.9		4.5		
GLENN O. HAWBAKER, INC			4.5		
LOOP SOFTWARE LLC			4.4		
R A WALTON & CO INC		2.8	4.4		2.8
ALLEGHENY PETROLEUM PRODUCTS COMPANY	3.7	11.0	4.4	3.7	11.0
PORTER CONSULTING ENGINEERS, PC	2.0		4.3		
EKTO VR INC	4.5	3.3	4.3	4.5	
ABITARE DESIGN STUDIO LLC		6.3	4.3		
GOEPPERT LLC		6.9	4.3		
HOSLER CORP	4.8	6.9	4.2		6.9
DELTA INFORMATION SYSTEMS INC	6.7	9.4	4.2		
BLEND PRO INC	2.1	0.7	4.2	2.1	
ADVANCED POWDER PRODUCTS, INC.	24.0		4.2	24.0	
NANOSPEC INSTRUMENTS, LLC DBA MAGNITUDE			4.1		
SLATE PDO LLC DBA LIGHT TOOL & MACHINE			4.1		
B J TERRONI CO INC	5.1		4.1		
TOWERSTAR PETS LLC	12.5	7.1	4.1	12.5	
LANCASTER SWINE HEALTH SERVICES	6.9		4.1		
BEN PEOPLES INDUSTRIES LLC	2.5	7.1	4.1		
SK TOOL AND DIE INC	1.6	2.6	4.0		
IMPACT PROTEOMICS, LLC		2.9	4.0		
GREYSIGNAL INC	8.6		3.8	8.6	
NUVENTIVE LLC	16.4	16.6	3.8		
J.D. ECKMAN, INC.	22.4	25.4	3.8	22.4	25.4

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	2020	2021	2022	2020	2021
REFLEXION INTERACTIVE TECHNOLOGIES, INC.	23.2	6.4	3.8		
HETRAN B INC			3.8		
PEQUEA MACHINE INC	2.7	2.7	3.7		
RGS PRODUCTS INC		2.2	3.7		
MID ATLANTIC TIMBERFRAMES LLC		22.9	3.6		
TIMBERLANE INC	0.7	3.1	3.5	0.7	3.1
SOMERSET PLANNING & ENGINEERING SERVICES	4.0		3.5		
SPIRALGEN INC		14.1	3.5		
DELSERRO ENGINEERING SOLUTIONS INC			3.4		
PSC BIOTECH CORPORATION			3.4		
ADEPT GROUP HOLDINGS LLC	48.7	40.1	3.4		
H. F. LENZ CO.	13.5	12.2	3.4	13.5	12.2
STARKIST CO	1.6	8.1	3.4	1.6	8.1
PASCO TOOL & PLASTICS INC		18.9	3.4		
LOST TAVERN BREWING			3.3		
HANNA TRANSFER COMPANY NORTH	1.5		3.3	1.5	
WOLFGANG OPERATIONS LLC	6.3		3.3		
ACTION MEDICAL TECHNOLOGIES, LLC			3.3		
GENTEX CORPORATION & SUBSIDIARIES			3.3		
VANZYVERDEN INC	9.4	15.4	3.3	9.4	
DYNAMET INCORPORATED	3.4	4.1	3.2		
VSI OF DELAWARE INC	4.7	1.7	3.2	4.7	1.7
ALPINE SALES & RENTAL CORP		9.9	3.2		9.9
WEST SHORE HOME HOLDINGS LLC			3.1		
PDQ INDUSTRIES INC	4.3	4.0	3.0	4.3	
TECHKNOWSERV CORPORATION			3.0		
AVERY DENNISON RETAIL INFORMATION	1.1		3.0	1.1	
AVERY DENNISON CORPORATION	47.6		2.9	47.6	
AMERICAN MILLWORK & CABINETS INC	57.7	26.1	2.9	50.8	
SNAKE CREEK LASERS LLC	4.0	1.6	2.9		
YARDS BREWING COMPANY LLC			2.9		
FOUR SEASONS PRODUCE INC	4.1	22.7	2.9	4.1	22.7
ARIN TECHNOLOGIES	5.6	5.0	2.9	5.6	
SAPPHIRE K12	5.4	6.6	2.8		
CLIMATECH HOLDING CO.	5.5	9.4	2.8		
CONFIRMED LLC			2.7		
NCA TECHNOLOGIES INC	0.3		2.7	0.3	
GET WIRELESS, INC.		2.2	2.7		
DYNAMIC MANUFACTURING LLC			2.7		
INDUSTRIAL VISION SYSTEMS, INC.		1.5	2.7		
LUMIS CORP			2.7		
SHUBREW, LLC			2.7		
LORNE G. SEIFERT, LLC	5.1	4.4	2.7		
ALTRA INDUSTRIAL MOTION CORP.	18.8	24.3	2.7	18.8	8.7
HENDERSON BROTHERS, INC.			2.7		
ACOUSTICSHEEP LLC		10.0	2.7		10.0
CLEARLY CLEAN PRODUCTS LLC	10.0		2.6		
NEW STANDARD CORPORATION	1.1	0.5	2.6	1.1	
MCC INTERNATIONAL INC	3.0	8.9	2.6		

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
KANE INNOVATIONS INC	11.4	5.6	2.6	10.0	
BOOSE AT CORNWALL INC		2.4	2.6		
GRANT STREET GROUP INC	15.4	17.7	2.5	15.4	17.7
PROUD DEVELOPMENT	2.5	3.3	2.5		
JAMES J ANDERSON CONSTRUCTION COMPANY			2.5		
SIEMENS MEDICAL SOLUTIONS USA INC		21.5	2.5		
ALPHA TECHNOLOGIES SERVICES INC		2.5	2.5		
MOLECULAR DEVICES LLC	17.7	7.5	2.5		
SPECIALTY FABRICATION & POWDER COATING		2.2	2.4		
REED MANUFACTURING COMPANY	0.1	2.6	2.4	0.1	
CKJK, LLC	0.9	1.0	2.4	0.9	1.0
HRANEC SHEET METAL INC	1.3		2.4	1.3	
MITSUBISHI ELECTRIC US, INC		2.4	2.4		
AVERTRA CORP			2.3		
BRANDING BRAND INC			2.2		
COCALICO DISTRIBUTION LLC			2.2		
AMERICAN TEXTILE COMPANY INCORPORATED			2.2		
SIGNODE INDUSTRIAL GROUP US INC		2.7	2.2		
JEGLINSKI GROUP INC		6.2	2.2		
J BAUR MACHINING INC	6.1	2.3	2.1	6.1	
FIVE ELEVEN PHARMA INC	14.3		2.1	14.3	
BARRY ISETT & ASSOCIATES INC	78.2	7.7	2.1	57.7	7.7
ASTLEY PRECISION MACHINE COMPANY INC		3.9	2.1		
KOOP TECHNOLOGIES INC			2.1		
MCADOO & ALLEN INC		1.6	2.1		1.6
BULK CHEMICALS INC		1.6	2.1		1.6
SEALSTRIP CORPORATION	5.3		2.0		
POLYMER PRODUCTS COMPANY INC		0.0	2.0		0.0
PENN WOOD PRODUCTS INC	1.9		2.0	1.9	
K & H TECHNOLOGIES INC		3.9	2.0		3.9
GENERAL ECOLOGY INC			2.0		
TRINITY PLASTICS INC.			2.0		
GUY CHEMICAL COMPANY, INC.		4.2	2.0		
WELD TOOLING CORPORATION	1.5	0.0	1.9	1.5	0.0
CONTROLLED MOLDING INC	18.6		1.9	18.6	
STARGAZER CAST IRON LLC		1.7	1.9		
GARMAN BUILDERS INC	1.2	1.9	1.9	1.2	
GREEN LAWN FERTILIZING LLC			1.8		
MAKERPLACE INC	10.2	3.2	1.8	10.2	3.2
RJ LEE GROUP, INC.		12.7	1.8		
APTER INDUSTRIES INC	8.6	6.7	1.8	3.7	
SSM GROUP INC			1.8		
TILO INDUSTRIES			1.8		
INCLINATOR COMPANY OF AMERICA	1.6	2.4	1.8		
KALINOWSKI MACHINE LLC	2.6	1.4	1.8	2.6	1.4
SLOAN BROTHERS COMPANY	8.6		1.7	8.6	
PRIMBIO RESEARCH INSTITUTE LLC	10.5		1.7	10.5	
S & S PROCESSING INC		1.2	1.6		
NORTHEAST INDUSTRIAL MANUFACTURING INC	1.8	2.4	1.6		

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	2020	2021	2022	2020	2021
THE CLEMENS FAMILY CORPORATION		94.5	1.6		
JERSEY SHORE STEEL CO	2.1	0.9	1.6	2.1	
NIGHT VISION DEVICES INC			1.6		
OROURKE & SONS INC	0.9		1.6	0.9	
TRANS UNION LLC		10.0	1.5		
MILA INTERNATIONAL		1.8	1.5		
COLORFIN, LLC	3.5	2.5	1.5		
WEPCO INC.	1.5	0.7	1.5	1.5	
POLYMER MOLDING INC	1.1	0.7	1.4	1.1	
NEVILLE CHEMICAL COMPANY	1.1	3.3	1.4		
RENERVA, LLC			1.4		
CDG ENVIRONMENTAL LLC	3.5		1.4		
INNOVU LLC	41.3		1.4	41.3	
PLASTIKOS INC	6.3	1.8	1.4	6.3	
C & R DIRECTIONAL BORING LLC		7.9	1.4		
NEXTEVO, INC			1.4		
SINTERFIRE INC		3.8	1.3		3.8
PINMED INC		2.4	1.3		
DYER QUARRY INC	2.0	2.2	1.3	2.0	
BERNER INTERNATIONAL LLC			1.3		
LOBAR SITE DEVELOPMENT CORPORATION	21.2	17.4	1.3	21.2	17.4
MISCO PRODUCTS CORPORATION		5.3	1.3		
FOX SPECIALTIES, INC.			1.3		
HENWIL CORPORATION		0.6	1.3		
ROSENBERGER USA CORP & SUBSIDIARIES		0.8	1.3		0.8
PENNLAKE CORPORATION	1.0		1.3	1.0	
LOWE ENGINEERING COMPANY, INC.	2.8	1.8	1.3		
TURNKEY TAXES INC		0.4	1.3		0.4
COME READY FOODS LLC		2.5	1.2		
POLYMERSHAPES HOLDINGS, INC.			1.2		
CARRIER CLASS GREEN INFRASTRUCTURE LLC	5.3	3.1	1.2		
ELIKSA THERAPEUTICS INC			1.2		
JUST BORN INC			1.2		
AMERICAN MADE NUTRITION LLC			1.2		
KRAEMER TEXTILES INC	14.2	7.4	1.2		7.3
HAMMEL COMPANIES, INC.		4.8	1.1		
WOLF TECHNOLOGIES LLC	2.9	1.7	1.1		
IMPILO, INC.			1.1		
CRYOCONCEPTS LP	65.5	35.1	1.1		
HAVIS INC		9.9	1.1		
BURKHARDT SHEET METAL COMPANY INC			1.0		
EASTERN BUSINESS SOFTWARE INC			1.0		
JOSEPH BARBATO ASSOCIATES LLC			1.0		
ARRO CONSULTING INC			1.0		
LAKE ERIE RUBBER & MANUFACTURING LLC			1.0		
ALCOM PRINTING GROUP, INC.	2.1		1.0		
HILLSIDE ACQUISITIONS GROUP LLC	0.3	0.4	0.9	0.3	0.4
ELITE ALLOY CONCEPTS, LLC	0.2	0.4	0.9		
DEMCO ENTERPRISES INC			0.9		

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	2020	2021	2022	2020	2021
COLUMBIA NORTHWEST INC	0.0		0.9	0.0	
ERIE ALE WORKS, LLC			0.9		
ACME CORRUGATED BOX CO	1.0	2.7	0.9	1.0	
SYANDUS INC	3.8	5.5	0.8	3.8	5.5
ARDEX LABORATORIES INC			0.8		
LIFEWARE LABS LLC			0.8		
PROCONEX ACQUISITION, INC.		1.8	0.8		
AMERICAN MANUFACTURING & ENGINEERING CO	2.9	3.6	0.8		
STATE OF THE ART INC	1.6	1.8	0.8	1.6	
GETTLE INCORPORATED	17.0		0.8	17.0	
KINGSPAN INSULATED PANELS INC			0.7		
BURNS ENGINEERING INC		1.8	0.7		1.8
RIVERSIDE MATERIALS INC	0.7		0.7	0.7	
DNP IMAGINGCOMM AMERICA CORP			0.6		
TEAMOLOGY, LLC			0.6		
OHM-LABS INCORPORATED			0.6		
BRADLEY PULVERIZER ENTERPRISES INC			0.6		
WALSH CONSTRUCTION COMPANY II LLC	5.1	6.6	0.5		
WCJ PILGRIM WIRE LLC			0.5		
PMC ORGANOMETALLIX, INC.	0.8	1.4	0.5	0.8	1.4
C.J. ROBINSON COMPANY			0.5		
ONEUP APP LLC		0.6	0.4		
KADCO CERAMICS LLC	6.6		0.4		
EMBASSY POWDERED METALS, INC.			0.4		
ERNST CONSERVATION SEEDS, INC.	1.3		0.3		
SOLO LABORATORIES, INC.	21.4	14.0	0.3		
ROTOR BEARING TECHNOLOGY & SOFT WARE INC			0.3		
ROBERT MAZZA INC	0.3	0.2	0.3	0.3	0.2
STOLTZ MFG LLC	0.1	0.1	0.2	0.1	
SPRING CITY ELECTRICAL MANUFACTURING	2.3	0.4	0.2	2.3	0.4
INRCORE LLC	5.0	5.9	0.2		
WIMER FUEL INJECTION & TURBO LLC	9.7	12.3	0.1		
PITTSBURGH TECHNOLOGIES GROUP INC			0.1		
S J A CONSTRUCTION INC	2.6	1.8	0.1	2.6	
DEASEY MACHINE TOOL & DIE WORKS INC	0.4	0.2	0.1	0.4	0.2
RUSSELL STANDARD CORPORATION	5.9	0.8	0.1	5.9	
LOZIER CORPORATION	0.8	0.4	0.0		
DAMIN PRINTING COMPANY LLC		1.3	0.0		
INTERSTATE BUILDING MATERIALS INC			0.0		
CANTO TOOL CORPORATION	0.7	0.7	0.0		
UATC LLC	1,688.3	3,590.8			
BAE SYSTEMS LAND & ARMAMENTS INC	680.5	1,352.0			289.6
SAP AMERICA INC		640.0			640.0
CERNER CORPORATION	265.8	378.3		265.8	
SHIRE HUMAN GENETIC THERAPIES INC	121.3	294.4		121.3	
APPLE INC	16.4	255.1		16.4	
TITAN ROBOTICS INC		246.2			
SEI GLOBAL SERVICES INC	75.2	237.0			13.0
THERAPYNOTES LLC	171.8	205.9		171.8	205.9

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CARPENTER TECHNOLOGY CORPORATION	267.7	196.7		267.7	
PRECISION PIPELINE LLC		184.2			
BLACK KNIGHT FINANCIAL SERVICES INC	105.4	145.2		105.4	
PROVIDENCE ENGINEERING CORPORATION		130.8			
AMERICAN HYDRO CORPORATION	217.3	124.0			
ATHENA GLOBAL ADVISORS, INC.	126.6	117.3		126.6	
ERIE INDEMNITY COMPANY AS AIF FOR ERIE I	67.9	115.9		67.9	115.9
RELIANCE STANDARD LIFE INS CO		84.5			
INCYTE CORPORATION		83.7			
KUHN TOOL & DIE CO	67.8	81.0		23.4	
MACHINED METALS MANUFACTURING GROUP, INC		80.3			
HADFIELD ELEVATOR LLC		77.8			
RHOADS INDUSTRIES, INC.	25.5	77.2			
DEACOM INC	28.3	73.1		14.7	
TASTEPOINT INC	53.2	73.0			
FENIX GROUP INTERNATIONAL LLC	28.7	70.9			
BANKMOBILE TECHNOLOGIES INC.		68.5			
ARBUTUS BIOPHARMA INC	62.0	67.2		37.5	
IKOS HOLDINGS INC	61.9	65.7		61.9	65.7
LUTRON ELECTRONICS CO INC		65.1			65.1
SCRUB DADDY INC	38.7	65.0		38.7	65.0
TITUS COMPANY	32.8	62.2		32.8	5.9
STP INVESTMENT SERVICES LLC	63.9	61.0		21.7	
ENTERIN INC		61.0			
PROMPTWORKS, LLC	69.6	60.8			
IMVAX INC	15.4	60.5			
DIGSAU ARCHITECTURE PC		59.9			
KROLL BOND RATING AGENCY LLC	78.8	59.4			
DOSSIER SYSTEMS INC	20.9	57.6		20.9	
KAARTA, INC	61.8	57.4		61.8	57.4
GP ENERGY PRODUCTS		56.3			
ENTECH ENGINEERING, INC.		56.2			
GENERAL DYNAMICS ORDNANCE AND TACTICAL		55.9			55.9
CYTOAGENTS, INC.		55.3			55.3
MCCARL'S SERVICES INC.	22.2	53.9			
FIRST QUALITY BABY PRODUCTS, LLC		53.9			
STEEM MONSTERS CORPORATION	24.7	51.3		22.1	
VESPER MEDICAL INC	11.6	49.1			
OBERG HOLDING COMPANY, LLC	37.0	48.4			
LAMINAR FLOW INC	15.2	47.9		15.2	
KCF TECHNOLOGIES, INC.	28.3	46.9			
RLB VENTURES INC D/B/A BENCH DOGS		46.0			
ORCHESTRA BIOMED, INC	25.7	45.9		10.4	
POCKET EXPERT LLC	38.5	44.7			
PINNACLE 21 LLC	24.1	44.5		24.1	44.5
INTERACTIVE LIQUID LLC	86.9	44.2		86.9	32.0
XYLOCOR THERAPEUTICS INC	1.8	43.8			
DIGITAL DREAM LABS		43.4			
LARIMAR THERAPEUTICS INC		43.2			

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KENNAMETAL INC		41.9			
PHRG HOLDING, INC.	26.4	41.5		26.4	
PARAGON ENGINEERING SERVICES INC	34.6	40.6		34.6	40.6
SENTINEL PROCESS SYSTEMS INC	8.5	39.9			
ARROW INTERNATIONAL LLC		39.1			14.2
AREA TOOL & MANUFACTURING INC	16.6	39.0			
PRO SHOPKEEPER COMPUTER SOFTWARE COMPANY	22.9	38.7		22.9	
WEST PHARMACEUTICAL SERVICES INC	31.5	38.7		31.5	
KINSLEY CONSTRUCTION INC	32.1	37.9		32.1	37.9
ENVIRONMENTAL CONTROL SERVICES II INC		37.7			
SNIPI INC	52.2	37.4			
RIEKER INSTRUMENT COMPANY INC	71.6	36.5			36.5
ONE HEALTH SOLUTIONS, LLC		36.4			
COBBS CREEK HEALTHCARE, LLC		36.3			
INSTINCT SCIENCE LLC	26.0	36.1		26.0	
HAMILL MANUFACTURING COMPANY		34.9			19.6
ENERGYCAP INC.	33.8	33.0		33.8	
ADVERTISING SPECIALTY INSTITUTE INC	26.3	32.8		26.3	32.8
UNITED METAL FABRICATORS INC	13.3	32.3			
RIVER POINT TECHNOLOGY		32.0			
MKSD, LLC	71.1	31.7			
SERIES U OF UM PARTNERS LLC	7.4	31.7			
GENERIAN PHARMACEUTICALS INC		31.6			
INVESTEDGE INC	3.8	31.6		3.8	31.6
KEF ROBOTICS INC	17.9	31.5		17.9	
INNOVATIVE SUPPLY SOLUTIONS LLC		31.1			
PIXELLE SPECIALTY SOLUTIONS LLC	32.2	30.2			
MATERIALS RESEARCH & DESIGN INC	55.2	29.8		55.2	29.8
PROCHEMTECH INTERNATIONAL INC		29.4			
BERNARDON PC	5.2	29.3			29.3
THREE10 SOLUTIONS	11.0	28.8			
NEUEXCELL THERAPEUTICS INC	15.2	28.5		15.2	
INTEGRESS INC	1.8	28.1		1.8	28.1
MULTI COLOR CORPORATION	23.4	27.7		23.4	
LLI ENGINEERING LLC		27.5			
NOVO NORDISK INC.		27.1			
LEHIGH DEFENSE LLC	20.8	26.7		20.8	26.7
ONEX INC	18.4	26.4			26.4
HERBERT ROWLAND & GRUBIC INC	7.8	26.1		7.8	26.1
JOHNSON MATTHEY INC		24.5			
YORK PRECISION MACHING AND HYDRAULICS LL		24.3			
FIRST QUALITY PRODUCTS, INC.		24.3			
BURKENTINE & SONS BUILDERS INC		24.3			
LEAGUESIDE	40.8	24.0		40.8	0.3
AMERIHEALTH INC		23.4			
RAPID FLOW TECHNOLOGIES INC	19.5	23.3		19.5	23.3
FOCUS FORWARD LLC	11.7	23.0			
HUMANISTIC ROBOTICS INC		22.3			
REFRIGERATION DESIGN & SERVICE, INC.		22.3			

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
DRUG PLASTICS & GLASS CO INC	7.5	22.2		7.5	22.2
SOCO, INC.	12.2	22.1			
AMERICAN DENTAL DESIGNS INC	23.5	22.0		23.5	22.0
MBT PRODUCT DESIGN & MANUFACTURING INC		21.9			
PARAGON CONSULTING SERVICES INC		21.7			
GOODVILLE MUTUAL CASUALTY CO		21.5			
OHR PHARMACEUTICAL, INC.		21.5			
TESSY PLASTICS CORP.	53.7	21.1			
MISSION SURGICAL INNOVATIONS		21.0			
ANALYTICAL GRAPHICS INC	77.5	21.0		33.6	21.0
ROBOTWITS LLC	42.6	20.8			
MEPUSH INC	23.9	20.6		6.9	
LUCAS SYSTEMS INC	25.1	20.6		25.1	20.6
ROBERT BOSCH LLC		20.5			20.5
BIOEX CONSULTING LLC		20.5			
DRAYNOW LLC	14.9	20.1			
CHAMPION HOME BUILDERS INC		19.9			
VINCENT PAYMENT SOLUTIONS, INC		19.4			
GILBERT ARCHITECTS INC		19.3			19.3
ENGINUITY LLC		19.2			
TMNA SERVICES LLC	19.0	19.1			
WECREATE LLC	17.6	19.1			14.1
OLIN PARTNERSHIP LTD		19.1			
NEUROFLOW, LLC	10.3	18.9			
PETCO ANIMAL SUPPLIES STORES INC	1.3	18.8		1.3	
SOUTHCO INC	46.7	18.7		28.9	
SHEFFLER & CO INC		18.3			
PRECISION MEDICAL INC	6.0	17.8		6.0	17.8
MORGAN, LEWIS & BOCKIUS LLP	52.0	17.8			
APPLIED ENERGY SYSTEMS, INC.		17.7			
CLARIENCE TECHNOLOGIES	24.1	17.5			
CLARK ASSOCIATES INC	5.9	17.3		5.9	17.3
STEIN SEAL COMPANY	1.6	17.1		1.6	17.1
JUDCO MANAGEMENT INC		17.0			
TRUMBULL CORPORATION	16.1	16.5		16.1	16.5
REDSHIFT SPORTS LLC		16.4			
AMERICAN PROCESS LETTERING INC	16.8	16.4		16.8	
DIVERSIFIED TRAFFIC PRODUCTS INC	5.4	16.4		5.4	16.4
TECHNOTECTS INC		16.3			16.3
SONOCO PRODUCTS COMPANY		16.1			
PHILADELPHIA D & M INC	13.2	16.1		13.2	16.1
EPIC WEB STUDIOS		16.0			16.0
GLAXOSMITHKLINE CONSUMER HEALTHCARE HOLD		15.9			
NCC AUTOMATED SYSTEMS INC	16.7	15.9		16.7	
STATE OF THE ARC WELDING AND FABRICATING	10.4	15.6			
CAPTIS DIAGNOSTICS LLC	8.7	15.4		8.7	0.4
ENDEAVOR CONSULTING GROUP, LLC		15.4			
PHILADELPHIA PROTECTION BUREAU INC	14.1	15.3			
AMERICAN INTERNATIONAL RELOCATION SOLUTI	14.5	14.8			

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
SIEMENS MOBILITY, INC	18.2	14.7		18.2	
GATEWAY TICKETING SYSTEMS INC	10.3	14.5			
GATTER & DIEHL INC		14.5			14.5
MATRIX PDM ENGINEERING INC	34.2	14.5			
NAVARRO & WRIGHT CONSULTING ENGINEERS		14.4			
KAIER ENGINEERING INCORPORATED		14.2			
ANSALDO STS USA INC		13.9			
NIAGARA BOTTLING LLC		13.6			
BUDGE INDUSTRIES LLC	10.2	13.5			
PREDICTIVE SOLUTIONS CORPORATION		13.4			
LANDSTUDIES, INC.	11.3	13.2			
NIC USA INC	3.7	13.2		3.7	13.2
IRA G. STEFFY & SON, INC.		13.2			
TISSUE TOOLS LLC		13.1			
VERRICA PHARMACEUTICALS INC	13.2	13.0			
NEAR MISS MANAGEMENT LLC	15.0	12.9			
BORDERWISE INCORPORATED	5.2	12.9			
TUSICK & ASSOCIATES ARCHITECTS INC		12.5			
PRIDE MOBILITY PRODUCTS CORPORATION	18.0	12.2		18.0	12.2
XPER, INC.	4.0	12.0			
WAVE LIFE SCIENCES USA INC	91.0	11.9			
PRITCHARD BIELER GRUVER & WILLISON P C		11.9			
SFS GROUP USA INC.	7.8	11.7		7.8	
NUTEC FACILITIES CORP		11.5			11.5
PSENERGY, LLC	24.2	11.4		8.2	
SIEMENS INDUSTRY INC	32.0	11.4		32.0	
PRECISION MECHANICAL SERVICES LLC		11.2			
AUDIA INTERNATIONAL, INC.	37.2	11.2			
THE BTB GROUP, LLC	48.8	11.0		9.2	
FINITE RESOURCES INC		11.0			0.1
CDC SOFTWARE LLC		10.9			
LUNCHTIME SOFTWARE LLC	6.8	10.7		6.8	10.7
BOSCH REXROTH CORPORATION		10.6			10.6
MANAGED CARE ADVISORS, INC		10.5			
PRIMAXX ACQUISITION CORP	2.8	10.4		2.8	0.1
PHOSPHOLUTIONS LLC	4.8	10.4		4.8	
CUSTOM PROCESSING SERVICES INC	9.0	10.3		9.0	
SKF USA INC	5.6	10.2		5.6	10.2
MECCO PARTNERS LLC	10.3	10.2			
GATEKEEPER INC	45.3	10.1			
DENTECH INC		10.1			
WILSON LEGAL SOLUTIONS INC	4.7	10.0			
PROVENTIONBIOINC		9.9			
EPIPHANY ENVIRONMENTAL, LLC	10.9	9.8			
ARMADA PARTNERS LP	5.8	9.7			
PETUUM HOLDINGS LTD	118.7	9.7			9.7
THE DVCC GROUP, INC	9.1	9.6		9.1	9.6
BIOHYBRID SOLUTIONS LLC	3.1	9.5		3.1	
PRIMEPAY LLC	17.6	9.5		17.6	9.5

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
IMMUNOCORE LLC	66.0	9.3			
AEGIS INDUSTRIAL SOFTWARE CORPORATION	4.7	9.3			
CONEWAGO HOLDINGS INC	4.1	9.1			
CARDIAC ASSIST INC	4.4	9.1		4.4	9.1
PHARMALYTIQ LLC		9.1			
GREENFIELD ARCHITECTS, LTD.		9.0			9.0
ROCKET CLOUD INC	6.7	9.0			
SHO TECHNOLOGY SOLUTIONS LLC		8.9			
MBIC HOLDINGS INC	3.8	8.8		3.8	
EQUIPMENT TECHNOLOGY INC		8.8			
CRYSTAL STEEL FABRICATORS, INC.		8.7			
SOVEREIGN COMMERCIAL SERVICES INC		8.7			
NORTHPORT DISTRIBUTION LLC	6.5	8.7		6.5	8.7
PARKER HANNIFIN CORPORATION		8.7			
PERSONNEL DATA SYSTEMS INC		8.6			
THRIVE COMMERCE LLC	22.4	8.5		22.4	
HOMELAND MANUFACTURING SERVICES INC	5.8	8.4			
O Z ENTERPRISES LLC	25.6	8.4			
CRRC MA CORPORATION		8.4			
OLIVER HEALTHCARE PACKAGING COMPANY		8.3			8.3
LOAD RITE CORP		8.2			
KLOVER SEPA INC		8.2			
TRAVELWITS LLC		8.1			
PSYCHOLOGY SOFTWARE TOOLS INC	1.8	8.1		1.8	8.1
PROTECTIVE INDUSTRIES INC	9.2	8.0		9.2	8.0
IEI ARCHITECTS INC		8.0			
NEXGEN AUTOMATION INC		8.0			
HX COILS		7.9			
FOOT LOCKER CORPORATE SERVICES INC	29.9	7.9			
ZEIGLER BROS INC	2.3	7.9		2.3	7.9
COMBUSTION SERVICE & EQUIPMENT COMPANY		7.8			
MEDIUS AG, LLC	4.2	7.6			
HERMANCE & STROUSE INC	3.8	7.6		3.8	7.6
WFE HOLDINGS LLC		7.5			
DIGITAL GRAPES LLC	11.9	7.5			
EPICOR SOFTWARE CORPORATION	15.2	7.3		15.2	
KRANDO METAL PRODUCTS INC	3.3	7.2		3.3	7.2
HIGHPOINT TOOL & MACHINE INC		7.2			
KS TOOLING, INC	31.9	7.1			
ADVANCED MANUFACTURING TECHNOLOGIES INC	6.2	7.1		6.2	7.1
CMT LABORATORIES INC	38.6	7.1		38.6	7.1
MBF THERAPEUTICS INC	17.8	7.0		17.8	
CONTROL ANALYTICS INC	3.6	6.8			6.8
RIVER SALVAGE COMPANY INC		6.7			6.7
RELX INC	5.3	6.6			
CHIRAL TECHNOLOGIES INC	10.2	6.4		10.2	
TURNER CONSTRUCTION COMPANY		6.4			
IEI GROUP LTD		6.4			6.4
TINIUS OLSEN TESTING MAC		6.4			6.4

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
TRIDIUM INC	10.8	6.3			
PITTSBURGH PLASTICS MANUFACTURING INC	6.4	6.3		6.4	6.3
BOYD STATION LLC		6.3			
SANDQUIST CORPORATION		6.2			6.2
HELIUS MEDICAL INC	14.5	6.2			
CORRY MANUFACTURING COMPANY	10.0	6.1			
LIFE SUPPORT INTERNATIONAL INC		6.0			
ZIPCORP INC AND (QSSS)		5.9			5.9
AOG, LLC D/B/A TRUFOOD MFG., LLC		5.9			
SEKISUI AMERICA CORPORATION		5.8			
BALLY RIBBON MILLS INC		5.8			
ELBECO INCORPORATED		5.7			
INSTECH LABORATORIES INC.	5.0	5.7			
LIGHTWEIGHT MANUFACTURING INC	1.6	5.6		1.6	
INTUIDEX INC	23.9	5.6		4.3	
JOAO & BRADLEY CONSTRUCTION COMPANY INC		5.5			
EXPRESSCELLS, INC		5.3			
REED BUSINESS INFORMATION INC		5.3			
BOSCH SECURITY SYSTEMS INC		5.3			
NEWCASTLE CO INC	4.6	5.2		4.6	
KEYSTONE COMPLIANCE LLC	7.7	5.2		7.7	
NEW EQUATION LLC		5.2			
U.S. PIPELINE, INC.		5.1			
ZILLOW INC	1.0	4.9			
FINISAR CORPORATION		4.9			
MST ASSOCIATED COS INC	3.7	4.8			
ALLVISION IO INC	8.1	4.8			
ALLOY 5 LLC		4.7			
FORNEY LP	16.0	4.7			
CONSEGNA PHARMA INC		4.7			4.7
TOASTERPARTY	1.5	4.7		1.5	4.7
JONES PERFORMANCE PRODUCTS INC		4.6			
YAZOO MILLS INCORPORATED	4.4	4.6			
VISNETA LLC	10.2	4.5			
TRS CERAMICS INC		4.5			4.5
STELLER INNOVATIONS		4.5			4.5
BRACALENTES MANUFACTURING CO INC	3.3	4.4		3.3	
QLIKTECH INC		4.4			
HAROLD BECK & SONS INC	11.5	4.3		0.5	
SPECTRAGENETICS INC		4.3			
ALL FILL CORP	5.5	4.2			
DIEHL CO LLC		4.2			
ROCON INC	6.5	4.1		6.5	
METER READINGS HOLDING I CORP	2.7	4.1		2.7	
FORTRESS POWER, LLC	7.1	4.1			
THE LACKNER GROUP, INC.	5.1	4.1		5.1	4.1
SCHOOL GATE GUARDIAN INC	3.7	4.0		3.7	4.0
EAGLE METALS INC	0.8	3.9		0.8	
NURSE NAVIGATOR SOLUTIONS LLC	5.4	3.8			

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
SUNNY DELL FOODS	0.4	3.7		0.4	
MCS INDUSTRIES INC	3.0	3.6		3.0	3.6
IHEARTCOMMUNICATIONS INC	2.0	3.6			
MICHAEL F RONCA & SONS INC	14.1	3.6		14.1	
TARGET PRECISION, LLC		3.6			
PREMIER CUSTOM BUILT INC	4.0	3.5			
EDON COMPOSITES		3.3			
GREINER INDUSTRIES INC	1.4	3.2			3.2
AMERICAN TURNED PRODUCTS INC	4.7	3.2			
VIDEO DIRECTIVES LLC	5.9	3.1			
EAST PENN MANUFACTURING CO	115.9	2.9		115.9	
HERKULES USA CORPORATION	0.8	2.9		0.8	
PHB INC	2.3	2.9		2.3	0.0
REGUPOL AMERICA LLC		2.9			2.9
QMAC-QUALITY MACHINING INC	11.2	2.9			
GREAT COASTERS INTERNATIONAL INC	1.2	2.8			
ROYSE GREEN TECHNOLOGIES INC	2.3	2.8			
POLARIS SALES INC		2.8			
GO2POWER LLC	27.9	2.8			
HUNTER MECHANICAL INC	4.4	2.7			2.7
CAREL USA LLC	4.5	2.7		4.5	2.7
SYNATEK, LP		2.6			
OHIO RIVER SALVAGE INC		2.6			
PORT ERIE PLASTICS INC	2.6	2.5		2.6	
EXH INC.	8.4	2.4			
RKI APPS INC	9.9	2.4			
GARTNER BURDICK BAUER NILSEN INC		2.4			
M3 MEDIA GROUP INC.	1.2	2.3			
GODSHALLS QUALITY MEATS INC	5.2	2.3		5.2	
METROPOLITAN ACOUSTICS LLC	18.9	2.3		18.9	
LANCONNECT INC	8.4	2.3		8.4	2.3
NATL GLASS METAL CO INC		2.3			
FOOD MANAGEMENT SERVICES INC		2.2			
NOVOTECH CONSTRUCTION INC		2.2			
PREMIER DENTAL PRODUCTS COMPANY	13.1	2.2			
LEE INDUSTRIES INC	1.6	2.2		1.6	
JDAVIS ARCHITECTS, PLLC	2.7	2.1			
SCISWIFT LLC	10.0	2.1			
MGS INC	2.2	2.0		2.2	2.0
SHERIDAN DOSE INVESTMENT COMPANY, LLC		2.0			
CIMA TECHNOLOGY INC	1.1	2.0			2.0
DIVERSIFIED COATINGS INC	0.6	1.8		0.6	
CERTES NETWORKS INC		1.7			
PROMINENT FLUID CONTROLS INC	17.0	1.7		17.0	1.7
CIVIC MAPPER, LLC		1.5			1.5
WEAVER COMPANIES INC	1.9	1.5		1.9	1.5
SETRA SYSTEMS INC		1.4			
IHEARTMEDIA ENTERTAINMENT, INC.		1.4			1.4
BIRDBRAIN TECHNOLOGIES LLC	18.0	1.4		17.7	

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	2020	2021	2022	2020	2021
GGG INFORMATION SERVICES INC	1.7	1.4		1.7	1.4
AMERICAN BEVERAGE CORPORATION		1.4			
AMETEK INC		1.4			
CIRCADIANCE LLC		1.2			
DURA BOND INDUSTRIES INC		1.2			1.2
MERSEN USA GS CORP		1.1			
KEYSTONE MANUFACTURING INC	0.5	1.1		0.5	
MISSION CRITICAL PARTNERS INC	5.9	1.1			
FIRST ADVANTAGE BACKGROUND SERVICES INC		1.0			1.0
PENN COLOR INC	6.3	1.0		6.3	1.0
HR PHARMACEUTICALS INC		1.0			
JETNET CORPORATION	1.7	1.0		1.7	
WORLD ELECTRONICS SALES & SERVICE INC	1.2	1.0		1.2	
WILSON ENGINEERING SERVICES PC	2.4	0.9			
ARGOLYTICS, LLC	1.5	0.9			
T & M ASSOCIATES INC	5.8	0.9		5.8	0.9
HIGHLAND TANK & MFG. CO.	0.9	0.8			
LTL WHOLESALE INC		0.8			
MILTON STEEL COMPANY	1.7	0.8		1.4	
ARIEL PRECISION MEDICINE, INC	10.9	0.8			
DRUMMOND SCIENTIFIC COMPANY	2.8	0.7		2.8	0.7
REAXIS INC		0.7			
MCCOURT LABEL CABINET COMPANY	0.4	0.7			
IHEARTMEDIA MANAGEMENT SERVICES, INC.	1.0	0.7		1.0	0.7
GAI TRONCIS CORPORATION	20.6	0.7			
MAJESTIC FIRE APPAREL INC		0.7			
PENN STATE MECHANICAL CONTRACTORS INC	3.1	0.7		3.1	
YCG, INC		0.6			
APPLIED NUTRITIONALS LLC		0.5			
SMARTRR SOLUTIONS, LLC		0.5			
HYMED GROUP CORPORATION		0.5			
CASUAL LIVING UNLIMITED LLC		0.4			
PSI PACKAGING SERVICES INC		0.4			
LANG'S CHOCOLATES, LLC		0.3			0.3
D & E MACHINING LTD	1.7	0.3		1.7	0.3
ACME MACHINE & WELDING CO LLC	1.1	0.3			
PSI CONTAINER INC		0.2			
SPOTLESS MATERIALS INC	8.3	0.2			
RICHARDSAPEX INC	0.6	0.2		0.6	
ALWARD TOOL	0.7	0.1			
TRIGON PLASTICS LLC		0.1			
UBER TECHNOLOGIES INC	4,788.9				
GLAXOSMITHKLINE LLC	3,388.9			1,052.9	
SPARK THERAPEUTICS, LLC	1,687.3				
ARAMARK SERVICES INC	356.7				
INTEL AMERICAS INC	324.6			324.6	
KIMBERLY CLARK CORPORATION	217.9			217.9	
EQT PRODUCTION COMPANY	178.6			178.6	
ARRIS GLOBAL SERVICES, INC	172.0			136.2	

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	2020	2021	2022	2020	2021
WEBPAGEFX INC	169.3			169.3	
QORTEK INC	161.7			161.7	
EASTMAN CHEMICAL RESINS INC	151.5			121.1	
VELICEPT THERAPEUTICS INC	149.5			149.5	
CARLISLE FLUID TECHNOLOGIES INC	131.7			131.7	
SUSQUEHANNA INTERNATIONAL GROUP LLP	130.9				
VEEDER ROOT COMPANY	126.6			111.7	
EXELON CORPORATION	122.8			122.8	
CLASSIC INDUSTRIES INC	120.4			120.4	
CJL ENGINEERING INC	116.6			116.6	
EXCEL HEALTH LLC	108.8				
TRI R SALES INC	107.8				
CGI TECHNOLOGIES & SOLUTIONS INC	94.5			94.5	
YORK INTERNATIONAL CORPORATION	91.5			91.5	
JOHNSRUD & ASSOCIATES ARCHITECTS, LLC	87.5				
ALLEGHENY PAPER SHREDDERS CORPORATION	85.3				
MADAME RX, LLC	81.5				
MEBIAS DISCOVERY INCORPORATED	80.2			80.2	
HOUWZER LLC	74.1			74.1	
METSO MINERALS INDUSTRIES INC	71.4			71.4	
ELMAGIN CAPITAL, LLC	66.4				
PTC INC	64.6			64.6	
COVESTRO LLC	62.6				
CLEAVERSOFIT	61.4				
NXGN MANAGEMENT LLC	60.9				
BMH LLC	60.8			60.8	
WIZEHIVE INC	60.1			60.1	
HEALTH UNION	59.5				
SERVICELINK HOLDINGS, LLC	55.6				
SUBURBAN TOOL & DIE CO INC	55.5			55.5	
JOHN BEAN TECHNOLOGIES CORP	54.7				
INFRASCAN INC	52.5				
TORCHLIGHT TECHNOLOGY GROUP LLC	50.3				
CITIZENDEVELOPER COM LLC	46.8			46.8	
ELLUCIAN COMPANY LP	46.8				
BLUE AVIONICS INC	46.0			46.0	
COMPLEXA INCORPORATED	45.5				
SOLID STATE CERAMICS INC	44.2				
FLOWMETRIC DIAGNOSTICS, INC.	42.7				
RS ENERGY GROUP, INC.	42.7			21.1	
FINPAY HOLDINGS, LLC	41.1				
X CARD HOLDINGS LLC	40.9			40.9	
MYOTA, INC	39.5			39.5	
CORIELL LIFE SCIENCES, INC.	38.9				
NABRIVA THERAPEUTICS US, INC.	37.7			1.5	
INTERSTATE HOLDING INC	36.8			36.8	
STRONGBRIDGE U.S. INC	36.1			4.4	
BIOMEME INC	35.1			35.1	
ALLEVI INC.	34.3			34.3	

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	2020	2021	2022	2020	2021
UNIVERSAL STAINLESS & ALLOY PRODUCTS INC	34.2				
TRANSDUCERWORKS LLC	32.7			32.7	
REUTHER & BOWEN PC	32.6			32.6	
MANLEY HOLDINGS INC	32.5			32.5	
KNOPP BIOSCIENCES LLC	32.0				
IVIEW THERAPEUTICS, INC.	31.8			31.8	
SICOM SYSTEMS, INC.	31.5			8.7	
SHORTS TOOL & MFG INC	31.3			31.3	
ST MARYS TOOL & DIE CO INC	31.2			12.5	
XACT METAL, INC.	30.7			30.7	
CHEMIMAGE CORPORATION	30.4			16.3	
MATTHEWS INTERNATIONAL CORPORATION	30.2				
SOLVAY USA, INC.	29.1				
SKINJECT, INC.	28.7			28.7	
D.L. HOWELL & ASSOCIATES, INC.	27.9				
MORGAN STANLEY SERVICES GROUP INC	27.8				
ADVANCED SIMULATION TECHNOLOGY INC	26.7			26.7	
KELLER GROUP, INC.	26.6				
APPLIED CONTROL ENGINEERING, INC	26.1				
LIBERTY CC HOLDINGS LLC	26.0				
CVS PHARMACY INC	25.9			25.9	
APPLIED EDUCATIONAL SYSTEMS INC	25.9			25.9	
ONCOURSE SYSTEMS FOR EDUCATION LLC	24.8				
JETSPRING LLC	24.5				
CHONDRIAL THERAPEUTICS INC	23.9			23.9	
MINE VISION SYSTEMS INC	23.2			23.2	
MASCARO CONSTRUCTION COMPANY L P	23.2				
EASTMAN CHEMICAL COMPANY	23.2			5.9	
CUSTOMERS BANCORP INC	23.0				
FPOLISOLUTIONS, LLC	22.8				
TX3 SERVICES, LLC	22.8				
VOODOO BREWING COMPANY INC.	22.3			22.3	
ARCHITECTURAL POLYMERS INC	22.2				
VOCI TECHNOLOGIES INCORPORATED	22.1				
AIRVIZ INC	21.9				
ALUMISOURCE CORPORATION	21.9				
ADVANCED CARBIDE GRINDING INC	21.8			21.8	
M & S CENTERLESS GRINDING INC	21.3				
LAKE TOOL INC	20.8			20.8	
JWF HOLDINGS INC	20.6				
BRA-VOR TOOL & DIE CO INC	20.2			3.6	
ACTCO TOOL & MFG CO	20.1				
LOGISTICS PLUS INC.	19.2				
SPS TECHNOLOGIES LLC	18.6			18.6	
MASTER MACHINE CO INC	18.6			18.6	
FOLLETT CORPORATION	18.5			18.5	
LEHIGH CEMENT COMPANY LLC	18.3				
CORRY MICRONICS INC	18.1			18.1	
SIEMENS PRODUCT LIFECYCLE MANAGEMENT	17.8			17.8	

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX A - TAXPAYERS RECEIVING CREDIT FOR APPLICATIONS IN 2020, 2021, OR 2022

NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
PHILADELPHIA MEDICAL MANAGEMENT COMPANY	17.7				
WAGMAN, INC & SUBSIDIARIES	17.7			1.5	
II VI INCORPORATED	17.4				
TUBE METHODS, INC.	17.3				
PDC MACHINES INC	17.2				
CARMELL THERAPEUTICS CORPORATION	17.2			17.2	
METHOD AUTOMATION SERVICES INC	17.1				
YORK STEEL RULE DIES, INC	17.0				
21ST CENTURY SOFTWARE TECHNOLOGIES INC	16.9			2.4	
CORAZON INC	16.8				
VERSUM MATERIALS INC	16.5			16.5	
MAVERICK DENTAL SOLUTIONS	16.4				
GEMINI MACHINING COMPANY INC	16.0			16.0	
LEARNING SCIENCES INTERNATIONAL LLC	15.9			6.9	
TRC COMPANIES, INC.	15.7				
MASON JARS COMPANY	15.7			15.7	
DEIBLER MACHINING LLC	15.4			15.4	
UNIVERSAL MACHINE CO OF POTTSTOWN INC	15.3				
ECOREMEDY, LLC	15.1				
COMMERCIAL MANAGEMENT SYSTEMS, LLC	15.0				
PARKER WHITE METAL COMPANY	14.9			14.9	
THE EXONE COMPANY	14.6			14.6	
WESTLAKE PLASTICS COMPANY	14.5			1.0	
LOANSTAR TECHNOLOGIES LLC	14.3				
TYNDALE ENTERPRISES INC	14.3			14.3	
MYERS DRUGSTORE INC	14.2			14.2	
REX MEDICAL, LP	14.0				
KIEWIT POWER CONSTRUCTORS CO	13.6				
GLEN ROAD SYSTEMS INC	13.4				
ARCO ENTERPRISES, INC.	13.3				
CREATIVE MULTIMEDIA SOLUTIONS LLC	13.2				
ANDRITZ INC	13.2			13.2	
NALCO COMPANY LLC	13.1			12.8	
R N D SERVICES INC	12.0			12.0	
ROAR FOR GOOD, LLC	11.8				
ADVANSIX INC	11.8			11.8	
BCL MANUFACTURING INC	11.8			11.8	
INTERVALA, LLC	11.8				
PEARL STREET TECHNOLOGIES, LLC	11.7				
SKC INC	11.3			11.3	
HUCKESTEIN MECHANICAL SERVICES, INC.	11.2				
PRECISION MACHINERY SYSTEMS, INC	11.2				
DASH SOLUTIONS INC	11.0			11.0	
PARA COAT TECHNOLOGIES INC	11.0				
TRILION QUALITY SYSTEMS LLC	11.0				
PROACTIVE SENSING, INC	10.9				
SPCR ACQUISITION, INC.	10.9				
E K L MACHINE INC	10.8				
LEGAL SIFTER, INC.	10.8			10.8	

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
H QUEST VANGUARD INC	10.7			10.7	
PHONETICS INC. (DBA SENSAPHONE)	10.7			10.7	
HABITAT LOGISTICS INC.	10.1				
SYNERGETIC SOUNDS INC	10.1				
PAVONE MARKETING GROUP, INC.	9.8				
CONFLUENCE TECHNOLOGIES INC	9.7			9.7	
JELD WEN INC	9.6				
CENTROID CORPORATION	9.3				
PERSONALIZED GENETICS	9.3				
SPECTRUM CONTROL INC	9.3			9.3	
VILIMIA, INC	9.1				
TELEDYNE INSTRUMENTS INC	9.1			9.1	
SEAT ENGINE TICKETING LLC	9.0				
BLUE MOUNTAIN QUALITY RESOURCES INC	9.0			9.0	
SUBURBAN PRECISION MOLD CO INC	8.9			8.9	
LAMINATORS INCORPORATED	8.9			8.9	
GASBARRE PRODUCTS INC	8.9				
FARM JENNY LLC	8.8			8.8	
DATA CAP SYSTEMS INC	8.7			8.7	
VERTEX INC	8.6				
BROOKVILLE GLOBAL HOLDINGS INC	8.4				
RALPH S ALBERTS CO INC	8.3			8.3	
PERSEA NATURALS, LLC	8.3				
EXYN TECHNOLOGIES INC	8.2				
AE DESIGN INC	8.1			8.1	
TRIGON INCORPORATED	8.1				
K'NEX BRANDS LP	8.0			8.0	
HOWDEN NORTH AMERICA INC.	7.9				
PROTECS LLC	7.8				
B & C TRANSIT, INC.	7.5				
GLOBAL PACKAGING INC	7.4			7.4	
DIGIN TECHNOLOGIES LLC	7.4				
VISTACOM INC	7.3			7.3	
ENCLARA PHARMACIA	7.3			7.3	
SAMUEL, SON & CO USA INC	7.2			7.2	
REXMET CORPORATION	7.0				
ARRAY ARCHITECTS, INC.	7.0				
TB WOODS INCORPORATED	6.9			6.9	
ORTHOS ENTERPRISES INC	6.9			6.9	
ATKIN OLSHIN SCHADE ARCHITECTS INC.	6.8				
ERDMAN ANTHONY ASSOCIATES INC	6.8			6.8	
PB HEAT LLC	6.7				
CALUMET SPECIALTY PRODUCTS PARTNERS LP	6.7				
ANDRITZ ASKO INC	6.6				
416 JOHNSON PROPERTIES, LTD	6.6				
VEKA INC	6.6			6.6	
VICTORY NUTRITION INTERNATIONAL INC	6.5			5.9	
SPOTLESS MATERIALS LLC	6.4				
ELECTRO-TECH SYSTEMS INC	6.4			6.4	

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APPENDIX A - TAXPAYERS RECEIVING CREDIT FOR APPLICATIONS IN 2020, 2021, OR 2022

NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
MATERIALS CONSERVATION COLLABRATIVE	6.4				
DESMONE & ASSOCIATES INC	6.4				
SOLENOID SOLUTIONS, INC.	6.4				
ACS INTERNATIONAL RESOURCES INC	6.3				
VASCULARSTRATEGIES, LLC	6.2				
HOUGHTON INTERNATIONAL INC	6.2			6.2	
IMS TECHNOLOGY SERVICES INC	6.2				
CANARY COMPLIANCE	6.1				
SOFT GENETICS LLC	6.0				
DISCOVERY ROBOTICS CORPORATION	6.0			6.0	
INTERNATIONAL CHEMICAL COMPANY	6.0			1.3	
SHERPA SOFTWARE LLC	6.0				
OLIVER TOLAS HEALTHCARE PACKAGING INC	5.9				
YELP INC	5.9			5.9	
WELLINGTON POWER CORPORATION	5.8				
PROGENYHEALTH HOLDINGS, LLC	5.8				
DMLOGIC, LLC	5.7				
KENSON PLASTICS, INC.	5.6				
TECH TUBE, INC.	5.6				
COZEN OCONNOR	5.6			5.6	
ZOOMI, INC.	5.5			5.5	
CLINICAL RESEARCH ASSOCIATES OF CENTRAL	5.5				
MB CASTINGS LLC	5.5				
SS INDUSTRIES LLC	5.4			5.4	
AMERICAN MANUFACTURING CORPORATION	5.2			5.2	
CADENCE INC	5.2				
MICRO COAX INC	5.2				
DFT INC	5.1			5.1	
ROCKLAND, INC.	5.1				
VASTEX INTERNATIONAL INC	4.9				
ATLANTIS TECHNOLOGIES LLC	4.9				
HUGHES ENTERPRISES OF NEW JERSEY INC	4.8			4.8	
SEASONS EVOO HOLDINGS LLC	4.8			4.8	
WALSH GRANITE JV	4.6				
WEAVER INDUSTRIES INC	4.6			4.6	
K2 KINETICS LLC	4.6				
GUARDIAN PROTECTION SERVICES INC	4.4			4.4	
OGONTZ CORPORATION	4.4			4.4	
PRECISION CUSTOM COMPONENTS, LLC	4.3				
R S MOWERY SONS INC	4.2				
VENTANA USA	4.2				
ARCHITECTURAL PRECAST INNOVATIONS INC	4.1				
VALLEY INSTRUMENT CO INC	4.1			4.1	
CERTAINTED CORPORATION	3.9			3.9	
PCA CORRUGATED AND DISPLAY LLC	3.9			3.9	
SCHEERER BEARING CORPORATION	3.8			3.8	
HIREKU INC	3.8			0.6	
MICHELMAN STEEL ENTERPRISES LLC	3.7				
F & S TOOL INC	3.7			3.7	

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
PARAGON HOLDING CORP	3.7				
TEKGARD INC	3.6			3.6	
RLC ELECTRONIC SYSTEMS INC	3.5				
CLIMECO CORPORATION	3.5				
SHAW INDUSTRIES INC	3.5				
METCO INDUSTRIES INC	3.5			3.5	
SWAIN AUSTRALIAN TOURS (2003), INC.	3.4				
SHANKS EXTRACTS INC	3.4				
WILD MEADOW FARMS LLC	3.4				
CHICK WORKHOLDING SOLUTIONS INC	3.3				
RESCO PRODUCTS INC	3.2			3.2	
ARRAY ANALYTICS INCORPORATED	3.1				
RACKSPACE US INC	3.1				
TRI-M GROUP, LLC	3.0				
WHIRLEY INDUSTRIES INC	2.9				
1DA CORPORATION	2.9				
KOGNITION, LLC	2.9				
MAGNATECH INTERNATIONAL INC	2.9			2.9	
LAMTEC CORPORATION	2.9			2.9	
SILA HEATING & AIR CONDITIONING, INC	2.9				
FORMS & SURFACES INC	2.9			1.0	
CAPSEN ROBOTICS INC	2.9			2.9	
JACOB A WEAVER COMPANY	2.8				
CAGENT VASCULAR LLC	2.7				
INTEGRATED FABRICATION & MACHINE INC	2.7				
CASTLE MOLD & TOOL INC	2.7			2.7	
REARICK TOOLING INC	2.7				
BOXPLOT ANALYTICS	2.7				
NORTH AMERICAN TICKET ORGANIZATION	2.7				
WIEGEL MACHINE INC	2.6				
SPECTRUM CONTROL TECHNOLOGY INC	2.6				
INDUSTRY WEAPON INC	2.5			2.5	
SRVD INC	2.5				
ROAD-CON, INC.	2.4				
MILFORD ENTERPRISES INC	2.4			2.4	
SPECIALTY TIRES OF AMERICA(PENNSYLVANIA)	2.4				
JAKULIE LLC	2.4				
GRIFF & ASSOCIATES LP	2.3				
SOMERSET WELDING & STEEL INC	2.3			2.3	
WHITE OAK MILLS INC	2.2			2.2	
INTEL CORPORATION	2.2				
ASH TEC INC	2.2			2.2	
CUHACI & PETERSON ARCHITECTS INC	2.2			0.9	
COMPETITION TIRE EAST INC	2.2				
SOLUTION TREE INC	2.2				
ARKEMA INC	2.2			2.2	
W.L SNOOK & ASSOCIATES, INC	2.2				
INNAMED, INC	2.1				
LABELPACK AUTOMATION INC	2.1				

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
CORLE BUILDING SYSTEMS INC	2.1			2.1	
AP THERMOFORMING LLC	2.1				
UNITED GILSONITE LAB	2.0			2.0	
LUXTECH LLC	2.0				
RUCKUS WIRELESS INC	1.9			1.9	
COMPOSITE PANELS INNOVATIONS, LLC	1.9				
D F STAUFFER BISCUIT CO INC	1.9			1.9	
FRAMKAT LP	1.9				
LSC DESIGN INC	1.9			1.9	
KEYSTONE SPORTING ARMS LLC	1.8				
BASIC CARBIDE CORPORATION	1.8				
ATOPTIX, INC.	1.8				
LINCOLN CONTRACTING & EQUIPMENT CO INC	1.8			1.8	
MICHELS BAKERY INC	1.7				
GRANUM AI LLC	1.7				
HAMILTON PRECISION METALS INC	1.7			1.7	
FREW MILL DIE CRAFTS INC	1.7			1.7	
RUSHABH INSTRUMENTS LLC	1.7				
PROJECT EXECUTION NETWORK	1.6				
MD ALLY, INC	1.6				
ABERDEEN ROAD COMPANY	1.6			1.6	
LITTLESTOWN FOUNDRY INC	1.5			1.5	
BACKFLIPS INC	1.5			1.5	
LANCASTERERC HOLDINGS LLC	1.5				
BOSTOCK COMPANY INC	1.5			1.5	
HENRY MOLDED PRODUCTS INC	1.5				
MODULE DESIGN INC	1.5				
INNOVATIVE SINTERED METALS, INC.	1.4				
LIQUID BIOTECH USA INC	1.4				
GREENLEAF CORPORATION	1.4			1.4	
LBN INC	1.4			1.4	
RICHTER PRECISION INC	1.3			1.3	
CLEVELAND PRICE INC	1.3			1.3	
PANDO INTERNATIONAL LLC	1.3				
DEPIRO ENTERTAINMENT LLC	1.3				
BASHLIN INDUSTRIES, INC.	1.2				
ATRIN PHARMACEUTICALS	1.2				
PENNSYLVANIA PAPER & SUPPLY CO	1.2			1.2	
TENEX TECHNOLOGIES, LLC	1.2				
PAUL B ZIMMERMAN INC	1.1			1.1	
THE DOYLE GROUP, INC.	1.1			1.1	
KARINS ENGINEERING, INC. & SUBSIDIARY	1.1				
NORTHWAY INDUSTRIES INC	1.1			1.1	
COMMONWEALTH FIRE PROTECTION CO	1.0				
SPECTRUM MICROWAVE INC	1.0				
ARDEX LP	1.0			1.0	
INFINITE INVENTION, INC	0.9				
VPI ACQUISITION LLC	0.8				
EVOLUTION MOLDING SOLUTIONS INC	0.8			0.8	

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NAME	AWARDS (\$K)			UTILIZATIONS (\$K)	
	2020	2021	2022	2020	2021
NATIONAL MAGNETICS GROUP INC	0.8			0.8	
KROFF INC	0.7				
KIERAN TIMBERLAKE	0.7				
UNIVERSAL INDUSTRIAL GASES INC	0.7				
J & A TOOL COMPANY INC	0.7			0.7	
CHOITEK, LLC	0.7				
ERP ESSENTIALS LLC	0.6				
UPCONTENT LLC	0.6				
RADIUS CORPORATION	0.6			0.6	
SNYDER DISTRIBUTORS INC	0.6			0.6	
AMERICAN ADDITIVE MANUFACTURING, LLC	0.6				
FEDERAL CARBIDE COMPANY	0.6				
HIGHWOOD USA LLC	0.5			0.5	
THE MID-STATE SOLUTIONS GROUP, LLC	0.5				
PULSE TECHNOLOGIES, INC.	0.5				
VIKING TOOL & GAGE INCORPORATED	0.4				
ARDOR & FORGE	0.3				
VAXFORM LLC	0.3				
PLASTECH CONTAINER SYSTEMS INC	0.3				
THE MILNES CO., INC.	0.2				
MEDICO INDUSTRIES INC	0.2				
HEFNER MACHINE & TOOL, INC.	0.1				
SMITH PROVISION CO INC	0.1			0.1	
QRONO INC	0.1				
TOTAL	55,000.0	55,000.0	60,000.0	27,833.2	10,863.9

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APPENDIX B - CREDITS SOLD OR ASSIGNED IN 2022, BY AWARDEE

NAME	SALES & ASSIGNMENTS	PRICE
INNOTECH LASER	620,000	542,500
PRIMEPAY LLC	488,976	454,749
MARINUS PHARMACEUTICALS INC	427,338	397,423
PARAGON ENGINEERING SERVICES INC	267,730	251,666
RJC MANUFACTURING SERVICES LLC	184,945	170,149
NOVOTECH CONSTRUCTION INC	183,730	172,706
CHROMATAN INC	183,383	170,546
CARPENTER TECHNOLOGY CORPORATION	163,577	153,763
MODERN CABINET AND CONSTRUCTION INC	125,903	117,090
BIGBEE STEEL & TANK CO.	104,023	95,701
MILNES ENGINEERING INC	94,250	86,710
JOHN R BROMILEY COMPANY INC	74,200	68,264
SILVERTIP INC	65,689	60,434
SAY PLASTICS INC	57,413	52,820
SAA ARCHITECTS INC	55,969	51,491
GRANT STREET GROUP INC	55,284	50,861
CMT LABORATORIES INC	51,366	48,284
HIGHLAND TANK & MFG CO.	50,197	46,181
TRUMBULL CORPORATION	46,032	0
ONEX INC	42,782	39,360
PROCESS COMBUSTION CORP	40,605	38,169
II-VI INCORPORATED	40,060	36,855
MASTER MACHINE CO INC	39,139	35,225
PJ DICK INCORPORATED	37,602	35,346
DEASEY MACHINE TOOL & DIE WORKS INC	37,352	34,364
EB ENDRES INC	34,719	31,941
AQUATECH INTERNATIONAL LLC	31,735	29,831
PITTSBURGH PLASTICS MANUFACTURING INC	26,421	24,307
KOPPERS INC	25,209	23,696
PYROTECHNICS MANAGEMENT INC	24,364	22,415
ALPINE SALES & RENTAL CORP	24,305	22,847
LOWE ENGINEERING COMPANY INC	23,982	22,063
ERIE INDEMNITY COMPANY	23,933	22,018
SYANDUS INC	23,205	22,045
ZYNERBA PHARMACEUTICALS INC	22,437	20,642
C&R DIRECTIONAL BORING	22,431	21,085
PENN STATE CONSTRUCTION J&D LLC	22,011	20,690
EPIC WEB STUDIOS	18,837	17,142
HOSLER CORP	18,836	17,329
SHARP EDGE LABS INC	18,558	17,073
CRIMEWATCH TECHNOLOGIES INC	18,309	16,844
PETUUM HOLDINGS LTD	17,694	0
DATAFORMA INCORPORATED	17,335	16,122
UBER TECHNOLOGIES INC	16,491	0
VIPER NETWORK SYSTEMS LLC	16,255	15,280
DUOLINGO INC	15,972	14,535
SOCIAL MEDIA INFORMATION LLC	15,412	14,025
LEVANTE BREWING INC	14,851	13,663
LANG'S CHOCOLATES LLC	14,196	0
SETEX TECHNOLOGIES INC FKA NANOGRIPTech INC	14,135	12,863

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APPENDIX B - CREDITS SOLD OR ASSIGNED IN 2022, BY AWARDEE

NAME	SALES & ASSIGNMENTS	PRICE
TURNKEY TAXES INC	13,609	12,384
ALLEGHENY PERFORMANCE PLASTICS LLC	12,697	11,554
BOARDBOOKIT INC	12,205	12,205
TRAVELWITS LLC	10,941	10,285
ENTASIS INC	10,702	10,060
COLUMNTEK LLC	9,937	8,943
SPARK CURES LLC	9,832	8,849
JETPACK WORKFLOW INC	9,681	8,810
RETURN LOGIC INC	9,464	8,896
CKJK LLC	9,390	8,545
WECREATE LLC	8,837	8,307
PATHWAY ACCESSIBILITY SOLUTIONS INC	8,833	7,950
MESHNET INC	8,106	7,295
JOHNSTON MECHANICAL LLC	7,924	7,211
J.A.CK. WOOD PRODUCTS LLC	7,109	6,398
THRIVE COMMERCE LLC	7,077	6,369
CDC SOFTWARE LLC	6,905	6,215
KAARTA INC	6,842	0
FOREST DEVICES INC	6,423	5,781
PROJECT VIVE LLC	6,378	5,740
CIVIC MAPPER LLC	6,343	5,709
COGNISTIC LLC	6,269	5,642
DIEHL CO LLC	6,253	5,628
EPIPHANY ENVIRONMENTAL LLC	5,837	5,253
NURSE NAVIGATOR SOLUTIONS LLC	5,477	5,148
OPTIMUS TECHNOLOGIES INC	5,391	4,852
MOBILION SYSTEMS INC	4,850	4,462
ADVANCED COOLING TECHNOLOGIES INC	4,807	4,422
REFLEXION INTERACTIVE TECHNOLOGIES	4,664	4,291
RAPID FLOW TECHNOLOGIES INC	4,661	4,195
DAMIN PRINTING COMPANY LLC	4,451	4,006
EXH INC	4,198	3,778
BEN PEOPLES INDUSTRIES	3,901	3,511
SENSOR NETWORKS INC	3,769	3,430
KERITON INC	3,247	2,987
WHITETHORN DIGITAL LLC	3,086	2,777
VIDEO DIRECTIVES LLC	2,865	2,579
AURORA INNOVATION INC	2,526	2,273
STELLER INNOVATIONS	2,406	2,165
TOASTER PARTY INC	2,199	1,979
IKOS HOLDINGS INC	1,924	1,732
GRIDWISE INC	1,805	0
CONSEGNA PHARMA INC	1,750	1,750
CAPTIS DIAGNOSTICS LLC	1,542	1,387
MAKERPLACE INC	1,253	1,128
FOUR GROWERS INC	963	0
CYTOAGENTS INC	849	0
BERRY SOLUTIONS GROUP LLC	359	323
ARIECA INC	341	307
RIMSYS INC	207	186

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APPENDIX C - CREDITS SOLD OR ASSIGNED IN 2022, BY RECIPIENT

NAME	SALES & ASSIGNMENTS	PRICE
ARMSTRONG UTILITIES, INC	1,187,436	1,094,025
BOSCOV'S INC	829,465	779,697
DUQUESNE LIGHT COMPANY	818,359	757,954
BIG LOTS STORES, INC.	520,000	455,000
COOPERFRIEDMAN ELECTRIC SUPPLY CO., INC.	184,945	170,149
TRACTOR SUPPLY COMPANY	183,383	170,546
PIERCE MANUFACTURING INC.	104,023	95,701
LAMAR TRS HOLDINGS, LLC	102,512	96,362
CONSOLIDATED PROPERTY HOLDINGS, INC.	100,000	87,500
LEXISNEXIS RISK SOLUTIONS INC.	94,250	86,710
PJTC HOLDINGS, INC.	62,523	0
EISAI INC.	39,139	35,225
NATURE'S WAY PUREWATER SYSTEMS, INC.	34,719	31,941
ARKEMA INC.	23,205	22,045
KOPPERS PERFORMANCE CHEMICALS INC	12,205	12,205
II-VI ADVANCED MATERIALS INCOPORATED	1,000	1,000
HIGHYAG LASER TECHNOLOGIES INC.	750	750
INDIVIDUALS AND FIDUCIARIES	42,349	0

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APPENDIX D - CREDITS TRANSFERRED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
GLAXOSMITHKLINE LLC	1,052,868
DHUY ENGINEERING INC	278,286
THERAPYNOTES LLC	205,861
INFOMC INC	203,718
PROVIDENCE ENGINEERING CORPORATION	130,838
SCHELL GAMES LLC	130,639
HARBOR BUSINESS COMPLIANCE CORPORATION	127,512
QUIRE LLC	121,832
AGGREGATES EQUIPMENT, INC	116,543
ADVENT DESIGN CORPORATION	105,846
SCRUB DADDY INC	103,640
MKSD, LLC	102,818
LISTRAK	98,080
LEHIGH DEFENSE	97,805
FORMCRAFT INTERIORS, INC.	95,689
INDOVINA ASSOCIATES ARCHITECTS	93,350
BORE TECH, INC	84,400
TESSY PLASTICS CORP.	74,855
STRONG INDUSTRIES, INC.	73,786
SUSQUEHANNA CIVIL INC	73,465
MORGAN, LEWIS & BOCKIUS LLP	71,838
GEM MECHANICAL SERVICES INC	69,888
SHEWARD PARTNERSHIP LLC	67,874
SAPA EXTRUSIONS, INC	67,693
ADVANCED TECHNOLOGY SERVICES GROUP LLC	67,003
LINDY PAVING INC AND SUBSIDIARIES	62,350
HARMAN DEUTSCH CORP	61,905
FENIX GROUP INTERNATIONAL, LLC	60,663
DIGSAU ARCHITECTURE PC	59,924
ABBOTT ACQUISITION COMPANY LLC	59,426
SARRIS CANDLES INC	58,866
STREAMLIGHT INC	56,083
GENERAL DYNAMICS LAND SYSTEMS INC	53,213
KRAMER-MARKS, PC	52,615
RUBY RENEWABLE RESOURCES LLC	52,269
ROBERT BOSCH LLC	51,405
CARNEGIE ROBOTICS, LLC	51,004
BERKADIA COMMERCIAL MORTGAGE LLC	50,954
AUTOSOFT, INC	48,658
ENERGYCAP INC	48,162
PNEU DART INC	47,742
GREYGHT, INC. DBA MOBINITI	47,311
AMUNEAL MANUFACTURING CORP	47,275
PANACEA TECHNOLOGIES INC.	47,108
AEC GROUP LLC	46,579
PRINTMAIL SYSTEMS, INC.	45,938
E.K.L. MACHINE, INC	45,526
AMERICAN DENTAL DESIGNS INC	45,507
PAK-IT DISPLAYS LLC	45,277
CURRY SUPPLY HOLDINGS, INC.	44,970

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
SYNERGY MEDIA GROUP LLC	44,793
PINNACLE 21 LLC	44,549
BOHLER ENGINEERING PA LLC	43,587
SAGE TECHNOLOGY SOLUTIONS INC	41,659
SUBURBAN TOOL & DIE CO INC	39,391
M&S CENTERLESS GRINDING	39,366
ERIE CUSTOM COMPUTER APPLICATIONS	39,265
KINSLEY CONSTRUCTION	37,921
WEBSTAIRANT STORE INC	37,617
PRINTFLY CORPORATION	36,800
RIEKER, INC	36,469
ENERGY MANAGEMENT SYSTEMS INC	36,149
INDEPENDENCE STEEL INC	35,307
DURAWOOD PRODUCTS, INC.	34,072
AMERICAN INTERNATIONAL RELOCATION SOLUTI	33,634
THE OTT GROUP INC FKA POLYSCIENCES INC	33,624
COATING & CONVERTING TECHNOLOGIES CORP.	32,520
INTERACTIVE LIQUID LLC	32,000
RIVER POINT TECHNOLOGY	31,989
NEW HEIGHTS LLC	31,918
APPLIED SYSTEMS ASSOCIATES, INC.	31,564
V.T. GRAPHICS	31,501
DIGITAL GRAPES LLC	31,328
NAMSCO PLASTICS INDUSTRIES, INC.	30,243
INTEGRESS INC	29,932
X-NAV TECHNOLOGIES LLC	29,868
EMDESCO INC	29,855
TRINITY AUTOMATED SOLUTIONS, INC.	29,837
MATERIALS RESEARCH AND DESIGN, INC.	29,798
BERNARDON PC	29,299
HYTECH TOOL & DESIGN CO	28,639
WILLIAM L LOCKETT	28,370
FOX CHASE MANAGEMENT, INC.	27,890
PROXICAST, LLC	26,975
ROBOTWITS LLC	26,457
GWYNEDD MANUFACTURING INC.	26,371
FAZIO MECHANICAL SERVICES INC	26,142
CLIMATECH HOLDING CO	25,797
PHONETICS, INC. DBA SENSAPHONE	25,711
RASER ACQUISITIONS LLC	25,461
JD ECKMAN INC	25,375
MICRO MOLD CO INC	24,784
MAVERICK DENTAL SOLUTIONS	24,618
YORK PRECISION MACHING AND HYDRAULICS LL	24,338
K S TOOLING INC	24,000
ADVANCED POWDER PRODUCTS INC	23,995
BENCHMARK CONSTRUCTION COMPANY INC	23,906
SOULDERS INDUSTRIES INC	23,891
GAP HOLDING COMPANY, INC.	23,649
PDM CONSTRUCTORS LLC	23,566

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
CLARK ASSOCIATES	23,175
MID ATLANTIC TIMBERFRAMES LLC	22,887
FOUR SEASONS PRODUCE INC	22,709
REFRIGERATION DESIGN & SERVICE	22,307
DRUG PLASTICS & GLASS CO. INC.	22,208
MCCARL'S SERVICES INC.	22,155
VEGAN TREATS INC	22,063
AP THERMOFORMING LLC	22,049
SITE DESIGN CONCEPTS INC	21,808
PHILADELPHIA PROTECTION BUREAU INC	21,774
GREENWICH TERMINALS LLC	21,184
INSTRUMENTATION INDUSTRIES, INC	21,080
PROCESS APPLICATIONS LIMITED	21,056
NURSING ABC, INC.	21,050
LUCAS SYSTEMS INC	20,642
YORK BUILDING PRODUCTS CO INC	20,142
PRODUCTION SYSTEMS ACQUISITION CO LLC	20,000
ALLTURNA LLC	19,993
BERK INTERNATIONAL LLC	19,588
HAMILL MANUFACTURING COMPANY	19,588
GAMRY INSTRUMENTS, INC.	19,467
AMERICAN MILLWORK & CABINETRY INC	19,372
GILBERT ARCHITECTS INC	19,291
ENGINUITY LLC	19,192
PHL COLLECTIVE LLC	19,145
L R COSTANZO CO INC	18,986
BRIO DESIGN PARTNERS LLC DBA BRIO SOLUTIONS	18,651
BSEG LLC	18,318
SHEFFLER & CO INC	18,300
NATIONAL REFRIGERATION AND AIR CONDI	18,138
BLEND PRO INC	18,002
ALTAIR INTEGRATED SERVICES LLC	17,866
PRECISION MEDICAL INC	17,827
FORMS AND SURFACES, INC	17,541
DYNAMIC ENERGY SOLUTIONS LLC	17,493
MAC SAFETY INC	17,405
LOBAR SITE DEVELOPMENT CORPORATION	17,396
LIQUID FILLING SOLUTIONS, LLC	17,393
GLOBAL FIRE PROTECTION GROUP, LLC.	17,358
PERSONNEL DATA SYSTEMS INC	17,212
STEIN SEAL COMPANY	17,145
PREMIER AUTOMATION HOLDINGS, INC.	17,008
AMERICAN PROCESS LETTERING INC	16,837
CIMA NETWORK INC	16,661
GRUDI & ASSOCIATES	16,596
MARTIN'S FAMOUS PASTRY SHOPPE, INC	16,401
AT&T MOBILITY SERVICES LLC	16,358
MACHINED METALS MANUFACTURING GROUP INC	16,358
DIVERSIFIED TRAFFIC PRODUCTS INC	16,356
CORE BUSINESS SOLUTIONS INC	16,278

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
TECHNOTECTS, INC.	16,277
TRUMBULL CORPORATION	16,137
PHILADELPHIA D & M	16,083
MICHAEL F RONCA & SONS INC	16,020
GEMINI MACHINING COMPANY INC	16,020
SENTINEL PROCESS SYSTEMS INC	15,532
VANZYVERDEN INC	15,418
QUALITY BRIDGE & FAB INC	15,286
HUBERT C JASINSKI DENTAL LAB INC	15,223
CUSTOM METAL FABRICATING INC	15,215
NORTHPORT DISTRIBUTION LLC	15,190
WAZOODLE FABRICS LLC	14,975
ECOREMEDY, LLC	14,933
ATLANTIS TECHNOLOGIES LLC	14,711
SAUCON TECHNOLOGIES, INC.	14,644
OZ COLLABORATIVE LLC	14,637
GATTER & DIEHL INC	14,518
L & H SIGNS INC	14,261
KAIER ENGINEERING INCORPORATED	14,245
STRAIGHT ARROW PRODUCTS, INC.	14,234
KERMITool ACQUISITION CO., INC.	14,127
QMAC-QUALITY MACHINING INC	14,056
SOLO LAORATORIES, INC.	14,012
MSG HOLDING LLC	13,975
ACUTEC PRECISION MACHINING, INC.	13,818
ARCCA INCORPORATED	13,625
ARROW ELECTRIC, INC.	13,620
NIAGARA BOTTLING LLC	13,608
CODY COMPUTER SERVICES, INC.	13,564
CONTAINER RESEARCH CORPORATION	13,548
LANDSTUDIES, INC.	13,208
IRA G. STEFFY & SON, INC.	13,153
FINISH TECH CORP	13,131
WEB TALENT LLC	13,046
ARCHITECTURAL POLYMERS INC	12,951
ELECTRON ENERGY CORPORATION	12,872
PHYTOGENX INC	12,801
TUSICK & ASSOCIATES ARCHITECTS INC	12,457
HAROLD BECK & SONS, INC.	12,431
PRIDE MOBILITY PRODUCTS CORP.	12,213
OCTECH,LLC	12,072
BCL MANUFACTURING, INC.	11,793
J M HUNT ASSOCIATES INC	11,790
PROJECT EXECUTIONS NETWORK LLC	11,710
BRUNNER INDUSTRIAL GROUP	11,458
SKC, INC.	11,277
B & D BUILDERS LLC	11,192
AUDIA INTERNATIONAL, INC.	11,150
ALLEGHENY PETROLEUM PRODUCTS CO	11,024
SPCR ACQUISITION, INC.	10,914

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERRED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
TORCHLIGHT TECHNOLOGY GROUP LLC	10,904
THERM-OMEGA TECH INC.	10,886
PANACEA TECHNOLOGIES INC	10,699
LUNCHTIME SOFTWARE LLC	10,670
CENERO LLC	10,552
TYNDALE ENTERPRISES INC	10,485
PRECISION CUT INDUSTRIES INC	10,405
HPT PHARMA LLC	10,334
FLEXICON CORPORATION	10,256
ZEIGLER BROS., INC.	10,212
DOSSIER/ARSENAULT ASSOCIATES, INC	10,179
WEAVER CO	10,125
I B ABEL INC	10,124
ACOUSTICSHEEP LLC	10,046
PSYCHOLOGY SOFTWARE TOOLS, INC.	9,918
ADVANCED GLASS & METAL, LLC	9,896
TIMBERLANE INC	9,792
WIMER FUEL INJECTION & TURBO, LLC	9,713
CONCURRENT EDA, LLC	9,573
B & H INDUSTRIES INC	9,527
DOBIL LABORATORIES, INC	9,464
3FX INC	9,425
AKAS TEX LLC	9,273
BTB GROUP LLC	9,246
WAMPOLE MILLER, INC.	9,246
JANDM FLUIDICS INC	9,241
GREINER INDUSTRIES INC	9,234
BORTON LAWSON HOLDING CO INC	9,187
AREA TOOL & MANUFACTURING, INC.	9,150
CONEWAGO HOLDINGS INC	9,148
MAINSTREAM SWIMSUITS, INC.	9,060
BLUE MOUNTAIN QUALITY RESOURCES INC	9,024
SHO TECHNOLOGY SOLUTIONS LLC	8,921
PROFI-VISION, INC.	8,722
DATA CAP SYSTEMS, INC.	8,720
CRYSTAL STEEL FABRICATORS, INC.	8,717
SOVEREIGN COMMERCIAL SERVICES INC	8,716
D. G. YUENGLING & SON, INC.	8,547
HOMELAND MANUFACTURING SERVICES INC	8,442
APPLIED ENERGY SYSTEMS, INC	8,421
RALPH S ALBERTS CO INC	8,337
PSENERGY, LLC	8,204
KLOVER SEPA INC	8,177
IEI ARCHITECTS INC	8,043
ARMOUR TECHNOLOGIES INC.	8,018
ARMADA PARTNERS LP	7,994
NEXGEN AUTOMATION INC	7,958
FILMTRONICS INC	7,838
SILVERTIP INC	7,834
KEYSTONE COMPLIANCE LLC	7,734

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERRED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
SUPERIOR PLASTIC PRODUCTS, INC.	7,582
KRANDO METAL PRODUCTS	7,201
HUNTER MECHANICAL INC	7,108
ADVANCED MANUFACTURING TECHNOLOGIES, INC	7,085
INDIAN RIDGE PROVISIONS INC	7,049
BLATEK INDUSTRIES INC	6,974
LANCASTER SWINE HEALTH SERVICES, PC	6,858
CONTROL ANALYTICS, INC	6,800
PETER MARGITTAI ARCHITECTS LLC	6,669
ATEECO, INC.	6,632
K12SYSTEMS INC	6,582
J. B. KINTNER & SONS INC.	6,427
FYNYDD LLC	6,402
IEI GROUP LTD	6,383
SOLENIOD SOLUTIONS, INC	6,379
DIETZ & WATSON INC	6,351
SANDQUIST CORPORATION	6,216
SB GLOBAL FOODS INC	6,191
COLORFIN, LLC	5,981
RUSSELL STANDARD CORPORATION	5,908
ZIPCORP INC AND (QSSS)	5,859
VICTORY NUTRITION INTERNATIONAL INC	5,850
ELBECO INCORPORATED	5,738
X F ENTERPRISES INC	5,714
EDU LINK INCORPORATED	5,600
JOAO & BRADLEY CONSTRUCTION COMPANY INC	5,463
AMERICAN MANUFACTURING CORPORATION	5,395
GODSHALL'S QUALITY MEATS, INC.	5,222
NEU DYNAMICS CORP	5,063
STONER, INC.	5,017
B&G MANUFACTURING CO. INC.	5,011
HANOVER IRON WORKS INC	5,004
INSTECH LABORATORIES INC.	4,976
GARDNERS CANDIES INC	4,865
HAMMEL COMPANIES INC	4,843
YAZOO MILLS, INC.	4,618
WEAVER INDUSTRIES, INC.	4,576
NEWCASTLE CO INC	4,574
DENTAL MARKETING INSIGHTS LLC	4,498
FLUITRON, INC	4,433
LORNE G. SEIFERT, LLC	4,363
BASELINE CONTRACTING INC	4,274
FRONT STREET REFRIGERATED SERVICES, LLC	4,270
FLINCHBAUGH COMPANY INC	4,199
GUY CHEMICAL COMPANY, INC.	4,179
THE LACKNER GROUP, INC.	4,051
SCHOOL GATE GUARDIAN, INC	3,985
SNAKE CREEK LASERS LLC	3,974
PENN WELD, INC.	3,949
K & H TECHNOLOGIES, INC	3,939

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
SCHEERER BEARING CORPORATION	3,794
BRA-VOR TOOL & DIE COMPANY, INC.	3,600
COLUMNTEK LLC	3,467
SHAW INDUSTRIES, INC.	3,465
ENGAGED PROSPECT LLC	3,350
PRECISION PROFILES, LLC	3,140
PENN AIR HYDRAULICS CORP	3,097
GGG INFORMATION SERVICES INC	3,080
POCKET EXPERT LLC	3,060
TRI-M GROUP, LLC	3,005
VERTICAL SCREEN, INC.	2,965
ROBERT MAZZA, INC.	2,959
BACKFLIPS, INC	2,837
R A WALTON & CO INC	2,824
PLASTIKOS, INC	2,821
GO2POWER LLC	2,784
INTEGRATED FABRICATION & MACHINE, INC.	2,729
M3 MEDIA GROUP INC.	2,330
STORMLOOP TECHNOLOGIES LLC	2,274
LANCONNECT INC	2,269
NATIONAL GLASS AND METAL CO., INC.	2,254
FOOD MANAGEMENT SERVICES INC	2,231
RGS PRODUCTS INC	2,222
LANCASTER OIL COMPANY	2,211
SOLAR TECHNOLOGY INC	2,142
ALCOM PRINTING GROUP, INC.	2,118
FAB, INC.	2,074
MGS, INC (S CORPORATION)	2,033
CIMA TECHNOLOGY INC	1,990
PORTER CONSULTING ENGINEERS, PC	1,952
FRAMKAT LP	1,869
MODERN INDUSTRIES INC	1,839
NORTHEAST INDUSTRIAL MANUFACTURING, INC.	1,832
VSI OF DELAWARE INC	1,717
EFS NETWORKS INC	1,709
MCADOO & ALLEN INC.	1,577
BULK CHEMICALS INC.	1,552
WAGMAN COMPANIES, INC. & SUBSIDIARIES	1,501
DUTCHLAND, INC.	1,485
KALINOWSKI MACHINE LLC	1,431
BIRDBRAIN TECHNOLOGIES, LLC	1,416
SS INDUSTRIES LLC	1,371
ERNST CONSERVATION SEEDS	1,348
HRANEC SHEET METAL INC	1,302
BASHLIN INDUSTRIES INC	1,199
GARMAN BUILDERS, INC.	1,185
PENNSYLVANIA PAPER & SUPPLY CO	1,185
DURA-BOND INDUSTRIES INC	1,157
HENDRICK MANUFACTURING CO.	1,026
PENN COLOR, INC.	1,008

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX D - CREDITS TRANSFERRED IN 2022, BY AWARDEE

NAME	CREDIT TRANSFERRED
ACME CORRUGATED BOX CO., INC.	979
WORLD ELECTRONICS SALES AND SERVICE, INC.	960
PHARMALYTIQ LLC	909
DRUMMOND SCIENTIFIC COMPANY	745
CANTO TOOL CORPORATION	742
HILLSIDE ACQUISITION GROUP LLC & SUBS	734
C U E INC	656
RADIUS CORPORATION	590
NEW STANDARD CORPORATION	536
WILD MEADOW FARMS LLC	525
VIKING TOOL & GAGE INC	385
SUNNY DELL FOODS, INC	377
SPRING CITY ELECTRICAL MFG. CO.	371
D & E MACHINING, LTD.	313
ALWARD TOOL	133
STOLTZ MFG LLC	66

PENNSYLVANIA RESEARCH & DEVELOPMENT TAX CREDIT - 2023 REPORT

APPENDIX E - CREDITS TRANSFERRED IN 2022, BY RECIPIENT (PASS-THROUGH ENTITIES OR INDIVIDUALS)

NAME	CREDIT TRANSFERRED
GSKHAI	1,052,868
HYDRO HOLDING NORTH AMERICA	67,693
GENERAL DYNAMICS LAND SYSTEMS INC	53,213
ROBERT BOSCH NORTH AMERICA CORP	51,405
CERTARA	44,549
LEUCADIA NATIONAL CORP	22,929
COLUMBIA INSURANCE COMPANY	22,929
CRICKET HOLDCO INC	16,358
CURRY SUPPLY HOLDINGS, INC.	2,042
ALPSALPINE CO LTD	1,641
CONSILIO GROUP LLC	655
ASC, LLC	439
MICHAEL S BLOCK DMD LLC	227
MANHATTAN TECHNOLOGIES LLC	142
CONTROLS FUSION GROUP INC	117
MCKEAN CONSOLIDATED CORPORATION	94
PK HOLDINGS LLC	91
HATCHER & DIAL INC	90
BROWN MICHAELS	9
SHAREHOLDERS, MEMBERS AND PARTNERS	7,726,544