Fort Collins Cluster Report

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Executive Summary

This report uses data on employment, wages, establishment counts, location quotients, and patents to track five major industry clusters the City of Fort Collins has identified:

- Bioscience
- Clean Energy
- Technology
  - Hardware
  - Software
- Uniquely Fort Collins
- Water

Employment changes over the past 3 years have differed substantially across clusters, some highlights include:

- The Technology Cluster grew by 441 workers[1] (9.4 percent)
  - Expansion in the Hardware Cluster totaled 973 employees (26.4 percent)
  - The Software Cluster added 348 jobs (18.9 percent)
- The Clean Energy Cluster grew by 225 employees (8.9 percent)
- An additional 100 jobs (7.4 percent) were added in the Water Cluster
- The Bioscience Cluster added 60 employees (3.1 percent)
- The Uniquely Fort Collins Cluster contracted by 28 jobs (3.0 percent)

While most clusters grew between the fourth quarters of 2007 and 2010, the recovery from the national recession has led to varied growth within the clusters between 2009 and 2010. *That said, every local cluster outperformed their respective national industries over the last three years.*

Average wages showed great diversity across the sectors in 2010. On the low end, earnings per worker in the Uniquely Fort Collins Cluster averaged $45,000. Jobs in the Hardware Cluster were the highest paying, at the high end, averaging $117,100. For comparison, Larimer County's 2010 average earnings per worker was $40,800.

Between January 2010 and June 2010, 101 patents were issued to firms in the clusters.

The table below is a summary of clusters' employment changes and unadjusted unemployment rates for the county, state, and nation. *It is important to note that total cluster jobs cannot be determined simply by adding the jobs from each cluster, as some individual businesses appear in more than one cluster.*

[1] Due some firms' NAICS changes, companies in Technology Cluster (comprised of the Hardware and Software Clusters) have been reclassified in 2010, inflating the employment numbers. See discussion below.

Fort Collins Clusters' Performance Summary

	2007	2008	2009	2010	2007 - 2010 Change			2009 - 2010 Change		
					Level	Percent	National Percent	Level	Percent	National Percent
Employment										
Bioscience	1,929	2,028	1,990	1,989	60	3.1%	-4.4%	-1	-0.1%	0.8%
Clean Energy	2,523	3,133	2,963	2,748	225	8.9%	-10.6%	-215	-7.3%	-1.0%
Technology	4,694	4,758	4,182	5,181	486	10.4%	-6.6%	999	23.9%	0.7%
Hardware	3,678	4,072	3,513	4,651	973	26.4%	-3.7%	1,138	32.4%	1.6%
Software	1,846	1,737	1,589	2,239	393	21.3%	-4.9%	650	40.9%	0.7%
Uniquely Fort Collins	931	992	972	903	-28	-3.0%	-6.1%	-68	-7.0%	0.2%
Water	1,354	1,358	1,420	1,455	100	7.4%	-11.1%	34	2.4%	-0.9%
Annual Unemployment Rates										
Fort Collins-Loveland MSA*	3.4%	4.2%	7.1%	7.4%	4.0%	117.6%		0.3%	4.2%	
Colorado	3.7%	4.8%	8.3%	8.9%	5.2%	140.5%		0.6%	7.2%	
United States	4.6%	5.8%	9.3%	9.6%	5.0%	108.7%		0.3%	3.2%	
Annual Employment Levels										
Larimer County	130,249	131,266	126,437	126,658	-3,591	-2.8%		221	0.2%	
Colorado	2.3 mil	2.3 mil	2.2 mil	2.2 mil	-115,580	-5.0%		-24,337	-1.1%	
United States	135mil	134mil	129mil	129mil	-7.5 mil	-5.6%		-775,944	-0.6%	

*Not Seasonally Adjusted

Sources: CDLE/QCEW and BLS

I. Introduction

Region's Employment Situation Starting to Percolate

Although the nation's economy continues to struggle, Larimer County's job market is on a slight upswing. In July 2011, county employment stood at 136,600, up 2,200 workers (or 1.6 percent) from a year earlier. As a result, the county's July unemployment rate was 6.9 percent, down 0.4 percentage points from the 12 months prior. However, the county's unemployment rate is still 2.6 percentage points higher than 3 years earlier. Currently, 12,200 county residents are unemployed but looking for work, a 4,500 resident (58.1 percent) increase from 3 years earlier.

Over the last year, Larimer County's payrolls have increased by $79.8 million, a 1.6 percent gain. The City's largest income source is sales tax collections on retail purchases; the increase in local payrolls translates to an increase in Fort Collins retail sales tax collections. Year-to-date city sales tax revenues through July are up $10.6 mil (24.9 percent) from a year earlier[2] – this is by far the largest single year increase since 2002.

In an effort to maintain and enhance its economic health, the city has identified and promoted several clusters it deems as important drivers. In this report we update recent trends in these clusters.

The remaining sections of this report address each cluster individually. We provide cluster analysis and data looking at trends in 1) number of establishments, 2) number of employees, 3) average wages paid, and 4) new patent data. Beyond describing the basic data we look at how the competitive position of these sectors relative to the nation is trending over time. The overarching goal of our work is to help the City better understand the effectiveness and overall impact of its cluster initiatives.

How this Report is Organized

This report has two major sections: a brief overview of each cluster and Appendix A, which is a detailed report of each cluster. Each section follows the section number for the discussion of cluster:

- II. Bioscience
- III. Clean Energy
- IV. Technology
  - IV.A. Hardware
  - IV.B. Software
- V. Uniquely Fort Collins
- VI. Water

We worked with The City of Fort Collins and others to determine which firms to include in each cluster. With the exception of the Technology Cluster (Hardware and Software), the firms we track are individually identified. The Technology Cluster is special because it is the aggregation of two other clusters: Hardware and Software. We have identified firms in the Technology Cluster, and its components Hardware and Software, using the 6-digit NAICS (North American Industry Classification

[2] Effective 1 January 2011, the Fort Collins sales tax rate increased to 3.85 percent, with exemptions, which leads to overstated year-to-date comparisons.

System). See Appendix B.I for further detail on the NAICS. Because of the NAICS used in the aggregation of the Technology Cluster, the employment numbers for the Hardware and Software cluster should not be summed to prevent double counting.

Each cluster discussion also follows the same outline. Here, we first discuss cluster employment over the last 3 years – from 2007q4 through 2010q4. The next topic is performance from 2009q4 to 2010q4; this includes employment and average estimated yearly wage discussions. We also compare each cluster's employment trends to that of the nation. Put simply, the national employment trends are the same NAICS industries as defined for each cluster.

The last point in each section lists the patents issued in the clusters. We use patents as a benchmark for innovation within each cluster – this a key point to using the cluster method to track economic health.

Appendix A provides a greater detail of each cluster's performance. The Fast Facts tables drilldown to 3 or 4 digit NAICS employment, which make up the clusters. This provides level and percentage employment changes for 1 and 3 year intervals. If the data is available, we report the location quotients for each industry from 2006 and 2010. Location quotients (LQs) are used to determine comparative advantages at a regional level – for more information, please see Appendix B.II.

Appendix A also includes charts on each cluster's historical employment as well as a 3 or 4 digit NAICS breakdown of current employment, compared to Larimer County, and estimated average wages paid in 2009q4 and 2010q4.

Data

The Fort Collins Cluster Reports have been redefined and overhauled in the past few years. The new definitions have been applied to previous years' data such that our current reports are uniform; however, our new reports diverge from those performed in the initial cluster analysis performed by Development Research Partners in 2006.

An outcome of the cluster restructuring is that some firms can be represented in more than one cluster. It is key to cluster based economic health methods that each cluster spans multiple industries. Because of this intentional overlap, it is important not to sum cluster employment as some companies would be counted twice.

Employment and wage information for Larimer and Weld Counties is derived from Colorado Department of Labor and Employment's (CDLE) publication of Quarterly Census of Employment and Wages (QCEW). This database captures detailed information on every firm that pays into unemployment in the State of Colorado. To remove cyclicality and utilize the latest data available, we report average employment from the fourth quarters of 2007 though 2010.

The information used for national comparison comes from the Bureau of Labor Statistics (BLS), which compiles a nationwide QCEW dataset. The location quotients reported the Fast Facts tables also come directly from the BLS – we do not actually calculate each location quotient, just report them. See Appendix B.II for more information regarding location quotients.

Caveat

Firms' NAICS codes in the QCEW data can change over time. This is problematic for the Hardware and Software clusters as the organizations in these clusters are tracked over NAICS, not individually selected. As organizations are reclassified under different NAICS, they can disappear and reappear in these clusters over time. This is most pronounced in the Hardware Cluster, where over the past 1 and 3 years, we report a job gain of 1,138 and 973, respectively. Because of NAICS reclassification between 2009q4 and 2010q4, this cluster has almost doubled in size, increasing from 220 firms to 408 companies.

We must note that this will also change the NAICS codes breakdown in Appendix A. This will not have any effect on the overall cluster employment totals, with the exception of the Technology Cluster.

Innovation and Intellectual Property

Patents provide incentives for research and development, which advances technology. Innovation and technology are key drivers for the City's targeted clusters (excluding the Uniquely Fort Collins Cluster). Without legal protection of intellectual property, provided by patents, technology advances would be slower – studies have revealed that cluster performance is correlated with the number of patents issued in a region.

Per the United States Patent and Trademark Office, 186 patents were issued in the Fort Collins area during the first half of 2010. Just over half of these, 101 patents, were issued to cluster members. Various companies in the Technology Cluster were issued a total of 89 patents. Bioscience firms received a total of 6 patents, while 6 patents were issued in the Clean Energy Cluster and 2 patents were issued in the Water Cluster.

One shortcoming of the analysis here is that patents are often assigned in places other than where they were developed. For example, an "inventor" working in Fort Collins might develop a patent issued to Hewlett Packard (called the "assignee"), but the patent itself may be registered in Houston, which is the home of the assignee.

II. Bioscience Cluster

Over the last 1.5 years the Bioscience Cluster has remained constant; between 2009q2 and 2010q4, the cluster has consisted of 50 companies.

From 2007q4-10q4, cluster employment grew by 60 jobs, or 3.1 percent, to 1,989 positions. This 3.1 percent employment growth was better than nationwide firms in similar industries, which lost 4.4 percent of their employment over this same time.

In the past year, from 2009q4 to 2010q4, employment in the Bioscience Cluster essentially remained unchanged, contracting by 1 job (-0.1 percent). The same national industries lost 0.8 percent of their relative employment base during this time. Over the last year, estimated average earnings per worker in the cluster increased by 10 percent to $75,400.

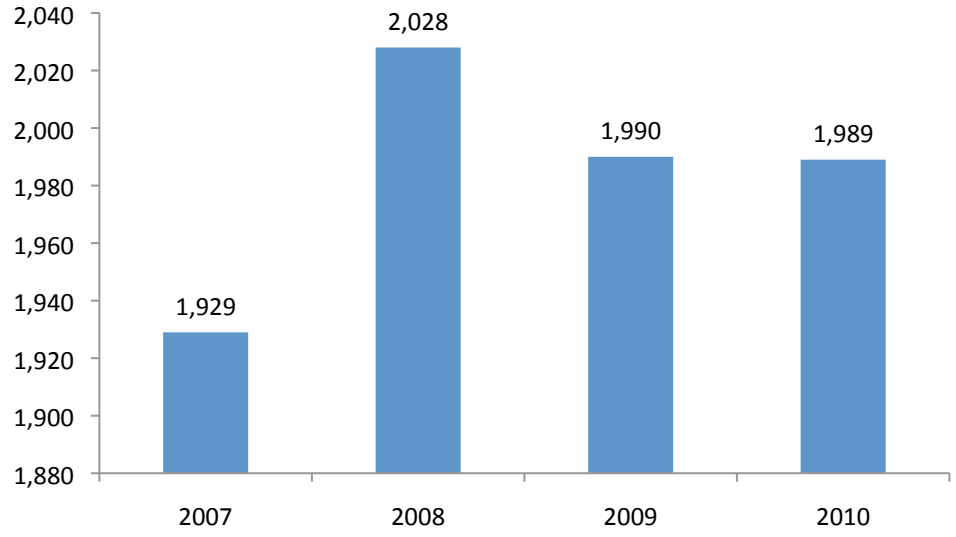
In the first half of 2010, there were a total of 6 patents issued to Bioscience firms. These firms, and number of patents registered are:

- Centers for Disease Control: 2
- Beckman Coulter/Dako: 1
- Heska: 1
- Livengood Engineering: 1
- XY: 1

Highlights

- From 2007q4 through 2010q4, the cluster grew by 60 employees (3.1 percent)
  - In contrast, national employment in the same industries contracted by 4.4 percent over these years
- The cluster only shed 1 job, or -0.1 percent, between 2009q4 and 2010q4
  - National employment expanded by 0.8 percent during this time
- Cluster estimated earnings per worker –
  - 2009: $68,300
  - 2010: $75,400
- Chart II reports average employment from 2007q4 to 2010q4
- Table II lists the 5 largest firms the Bioscience Cluster as of 2010q4

Chart II: Average Bioscience Cluster Employment from 2007q4 to 2010q4



Source: QCEW

Table II: Five Largest Employers in the Bioscience Cluster

Company	
Hach Chemial Company Inc	
Tolmar Inc	
Water Pik Inc	
Heska Corporation	
Value Plastics Inc	
Top 5 Total Employment	1,350
Percent of Cluster Employment	67.9%

Source: QCEW

III. Clean Energy

Between 2007q4 and 2010q4, the Clean Energy Cluster – which spans Larimer and Weld Counties – experienced an employment growth of 225 employees (8.9 percent). During this time, the cluster has expanded to a total of 31 companies. The opening of Vestas Blades America and Abound Solar – previously AVA Solar – helped the cluster to outperform the same national industries, which lost 10.6 percent of employment.

The Clean Energy Cluster lost 215 jobs (-7.9 percent) from 2009q4 to 2010q4. These local losses were worse than the same national industries, which lost 1.0 percent of jobs. Over this last year, average estimated wages in the cluster increased by 1.9 percent to $76,700.

The cluster was outperformed by the nation, however recent major Vestas orders and UQM's partnership with Audi and expansion into marine engines help to mitigate some these local losses.

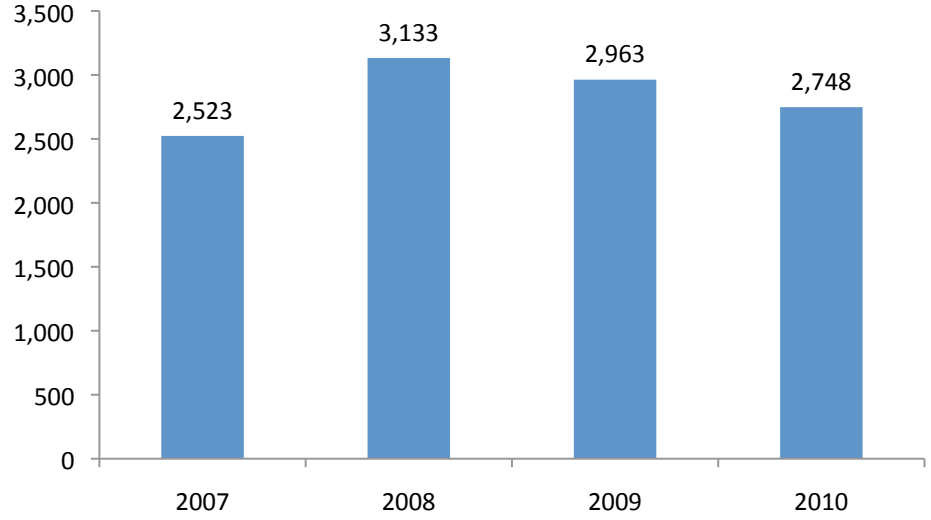
Companies in the Clean Energy Cluster were issued 6 patents between January 2011 and June 2011:

- Advanced Energy: 3
- Woodward: 2
- AMPT Solar: 1

Highlights

- Clean Energy Cluster employment grew by 225 jobs (8.9 percent) from 2007q4-10q4
  - During these 3 years, national employment in the same industries contracted by 10.6 percent
- In the past year, between 2009q4 and 2010q4, the cluster shed 215 employees (-7.3 percent)
  - The industries on a national level experienced a 1.0 percent drop in employment over this year
- Estimated average estimated wages paid –
  - 2009: $75,300
  - 2010: $76,700
- The cluster's employment, from 2007q4-10q4, is reported in Chart III
- Table III lists the largest 5 firms in the Clean Energy Cluster

Chart III: Average Clean Energy Cluster Employment from 2007q4 to 2010q4



Source: QCEW

Table III: Top Five Largest Companies in the Clean Energy Cluster

Company	
Woodward Governor Company	
Vestas Blades America Inc	
Advanced Energy Industries Inc	
General Electric International Inc	
Abound Solar Inc	
Top 5 Total Employment	2,392
Percent of Cluster Employment	87.0%

Source: QCEW

IV. Technology Cluster

As discussed earlier, the Technology Cluster is comprised of two smaller sub-clusters: Hardware and Software. As discussed above, this cluster is defined by NAICS, not individual firms and, over the past year, 188 firms were reclassified into Hardware NAICS. This is cause for an employment jump in the Hardware Cluster. See section IV.A for a further discussion.

The Software Cluster was also impacted by the NAICS changes. In the last year, the number of firms in the cluster grew from 357 to 425 – see section IV.B for more details.

Between 2007q4 and 2010q4, the Technology Cluster added 486 employees (10.4 percent) – identical industries on a nationwide level contracted by 6.6 percent during this time. Even though the Technology Cluster is an aggregation of the Hardware and Software Clusters, their respective employment numbers should not be added – to avoid double counting – the firms' NAICS changes account for most of these gains.

From 2009q4 to 2010q4, the Technology Cluster added 999 jobs (23.9 percent). The local cluster industries outperformed the national growth of 0.7 percent. In the last year, the average yearly earnings per worker increased by almost 20 percent to $115,100.

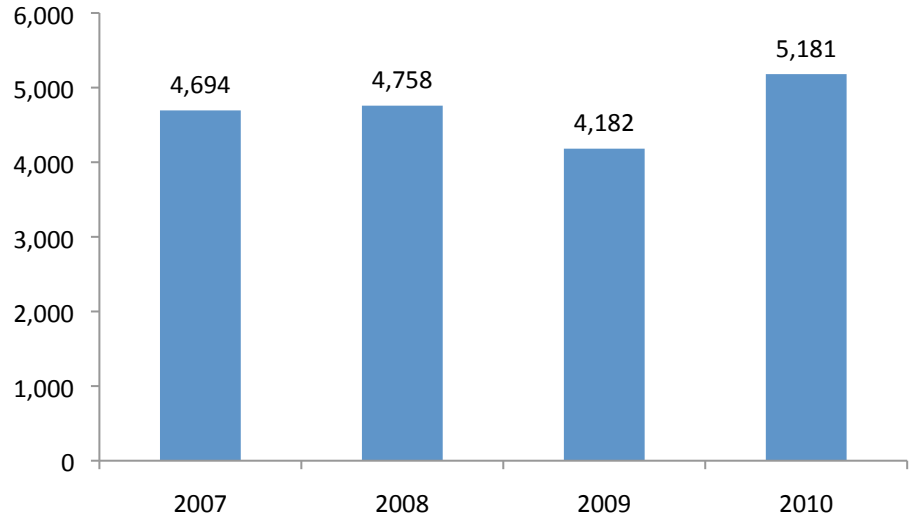
During the first half of 2011, 89 patents were registered to Technology Cluster companies:

- Hewlett Packard: 62
- LSI Industries: 10
- Avago Technologies US: 9
- Nvidia: 6
- Intel Corporation: 1
- National Semiconductor Corporation: 1

Highlights

- The cluster added jobs 486 jobs (10.4 percent) between 2007q4 and 2010q4
  - National employment in identical industries contracted by 6.6 percent over these 3 years
- From 2009q4-2010q4, the cluster grew by 999 jobs (23.9 percent)
  - Over this year, nationwide employment grew by 0.7 percent
- Technology Cluster average salary –
  - 2009: $96,300
  - 2010: $115,100
- Average employment from 2007q4 through 2010q4 is reported in Chart IV
- The 5 largest firms in the Technology Cluster are reported in Table IV

Chart IV: Average Technology Cluster Employment from 2007q4-10q4



Source: QCEW

Table IV: Five Largest Firms in the Technology Cluster

Company	
Avago Technologies US Inc	
Advanced Energy Inc	
Intel Corporation	
Hewlett Packard Co	
Agilent Technologies	
Top 5 Total Employment	2,115
Percent of Cluster Employment	39.9%

Source: QCEW

IV.A Hardware Cluster

Over the last year, the number of companies in the Hardware Cluster jumped from 220 firms to 408 companies. The vast majority of these reclassified companies have 2 or fewer employees, which tells us that the firms are either new startups or have just started paying into the State's unemployment insurance. The largest 5 of these companies total 708 employees and account for 73 percent of employment gains between 2009q4 and 2010q4. During this time, cluster employment expanded by 1,138 workers (32.4 percent) to 4,651 jobs, while the average wage paid in the cluster grew 9.8 percent to $117,100.

The Hardware Cluster represents the bulk of employment in the Technology Cluster, and grew by 973 workers (26.4 percent) from 2007q4-10q4. During these 3 years, nationwide employment in the same industries contracted by 3.7 percent.

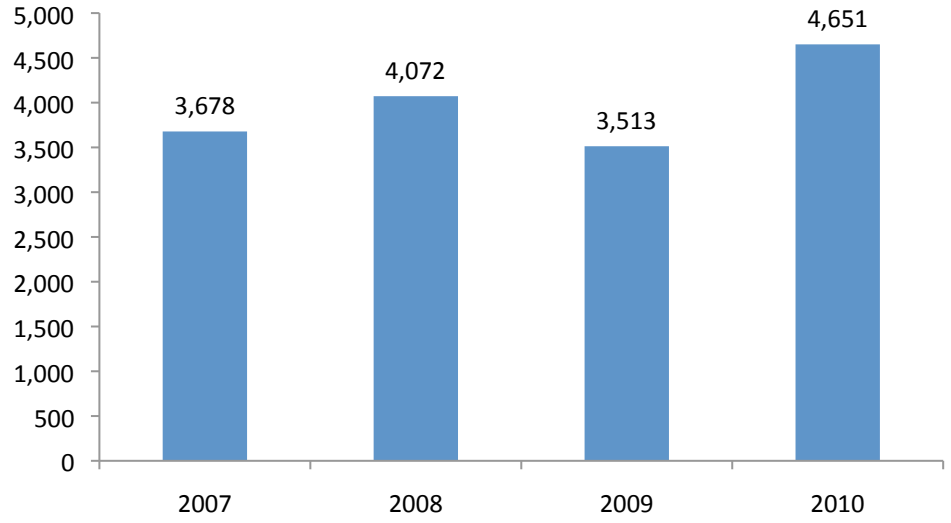
Between January 2011 and June 2011, 83 patents were issued to Hardware Cluster firms

- Hewlett Packard: 62
- LSI Industries: 10
- Avago Technologies US: 9
- National Semiconductor Corporation: 1
- Intel Corp: 1

Highlights

- Between 2007q4 and 2010q4, the Hardware Cluster expanded by 973 jobs (26.4 percent)
  - National employment in the same industries fell by 3.7 percent over this time
- From 2009q4 to 2010q4, employment in the Hardware Cluster added 1,138 jobs (32.4 percent)
  - Employment in identical industries grew by 1.6 percent nationwide
- Hardware Cluster average salary –
  - 2009: $106,600
  - 2010: $117,100
- Chart IV.A reports average employment for 2007q4-10q4
- Table IV.A shows the five largest firms in the Hardware Cluster

Chart IV.A: Average Employment from 2007q4 through 2010q4 for the Hardware Cluster



Source: QCEW

Table IV.A: Top Five Largest Employers in the Hardware Cluster

Company	
Avago Technologies US Inc	
Advanced Energy Inc	
Intel Corporation	
Hewlett Packard Co	
Agilent Technologies	
Top 5 Total Employment	2,115
Percent of Cluster Employment	45.5%

Source: QCEW

IV.B Software Cluster

Like the Hardware Cluster, the number of firms in the Software Cluster jumped over the last year due to NAICS definitional changes by 168 firms to 425 companies. The 5 largest of these new firms totals 293 jobs, almost half of the one year increase of 650 jobs, or 40.9 percent, from 2009q4-10q4. Over this same time, employment in the same national industries grew by 0.7 percent. During the last year the average wage paid in the Software Cluster grew by $13,500 – or 18 percent – to $88,800.

The Software Cluster experienced an employment gain of 393 jobs (21.3 percent) between 2007q4 and 2010q4. National employment in the same industries contracted by 4.9 percent over this same time.

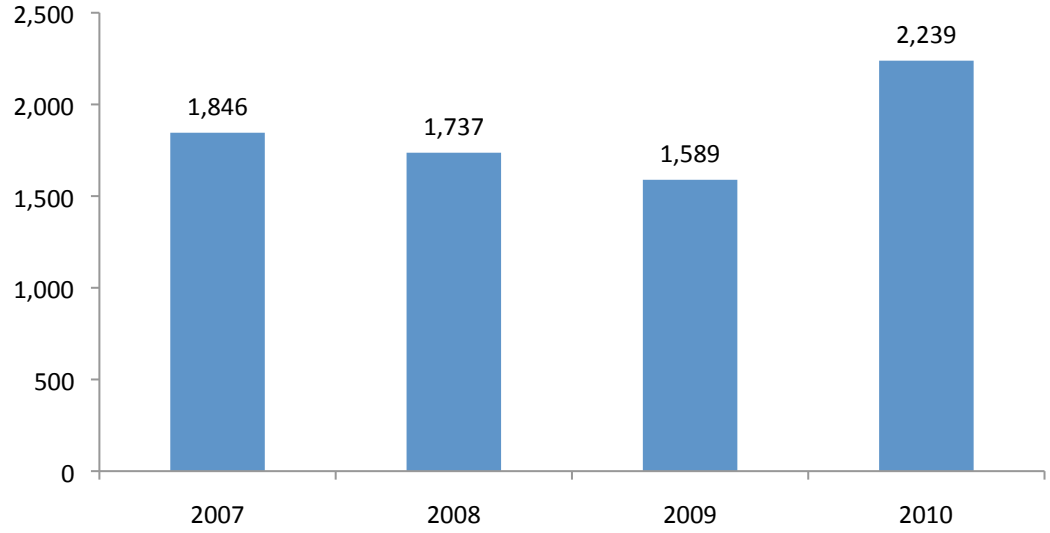
Six patents were assigned to one firm in the Software Cluster in the first half of 2011:

- Nvidia: 6

Highlights

- The Software Cluster added 393 jobs (21.3 percent) between 2007q4 and 2010q4
  - National employment fell by 4.9 percent over this time
- From 2009q4 and 2010q4, the Software Cluster grew by 650 employees (40.9 percent) to 2,194
  - Nationwide employment in identical industries expanded by 0.7 percent over this year
- Software Cluster average salary –
  - 2009: $75,300
  - 2010: $88,800
- Chart IV.B reports average employment from 2007q4 to 2010q4
- Table IV.B shows the five largest firms in the Software Cluster

Chart IV.B: Software Cluster Average Employment for 2007q4-10q4



Source: QCEW

Table IV.B: Five Largest Employers in the Software Cluster

Company	
Techni Graphic Systems Inc	
Palladius Inc	
Colorado Customeware Inc	
Telvent Miner & Miner	
Advanced Micro Devices	
Top 5 Total Employment	692
Percent of Cluster Employment	30.8%

Source: QCEW

V. Uniquely Fort Collins Cluster

The Uniquely Fort Collins Cluster (UFCC) is the most specific cluster in this report because it only tracks companies that are physically located and headquartered in the City of Fort Collins. The firms in this cluster are based on the NAICS codes used by Colorado Creative Industries' report on Colorado's Creative Economy[3].

From 2007q4 to 2010q4, the UFCC contracted by 28 jobs (-3.0 percent) to a total of 903 jobs. The local firms outperformed the nation, as national industries experienced an employment contraction of 6.1 percent. Over these 3 years, the UFCC lost 2 firms and is now comprised of 83 local businesses.

The Uniquely Fort Collins Cluster contracted by 68 workers (-7.0 percent) from 2009q4-10q4. Identical industries on a national level experienced an employment growth of 0.2 percent during this time. Despite the employment contractions over the past year, the average wage paid in the UFCC increased by just over a quarter to $45,000

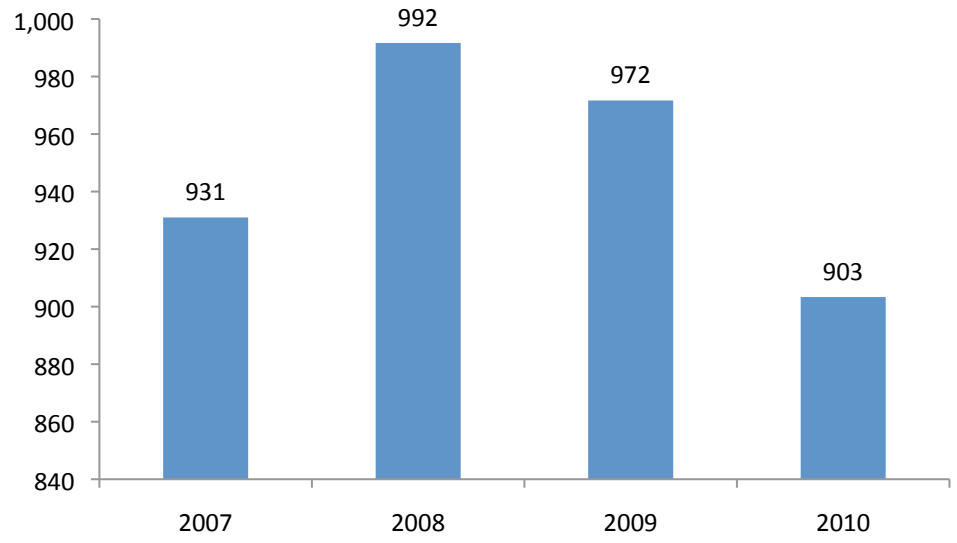
No patents were issued to Uniquely Fort Collins firms in the first half of 2011.

Highlights

- Between 2007q4 and 2010q4, the Uniquely Fort Collins Cluster contracted by 28 jobs (-3.0 percent)
    - National employment fell by 6.1 percent over this time
- From 2009q4-10q4, the UFCC shed 68 employees (-7.0 percent)
    - National employment in the same industries grew by 0.2 percent during these three years
- UFCC average estimated earnings per worker –
    - 2009: $35,400
    - 2010: $45,000
- The Uniquely Fort Collins Cluster's average employment from 2007q4-10q4 is reported in Chart V
- Table V shows the five largest firms in the UFCC

[3] Colorado Creative Economy study: http://www.coloarts.state.co.us/programs/economic/co_creativeconomy/index.htm

Chart V: 2007q4-10q4 Average Employment for the Uniquely Fort Collins Cluster



Source: QCEW

Table V: The Uniquely Fort Collins Cluster's Five Biggest Employers

Company	
New Belgium Brewing Co Inc	
Odell Brewing Company Inc	
Triple Crown Softball	
KT Productions Inc / Carousel Dinner Theater	
New Citizen Inc	
Top 5 Total Employment	464
Percent of Cluster Employment	51.4

Source: QCEW

VI. Water Cluster

The Water Cluster is the newest addition to the Fort Collins Cluster Initiative and consists of 37 firms across 10 industries. Of the current companies, 11 firms did not exist in Larimer County as of 2007q4 – Rubicon Systems America is one of these firms. The spirit of the cluster is to capture companies that work in the water industry be it construction, engineering, technology, or instrumentation with the goal of promoting entrepreneurship, innovation, collaboration, and growth of the water resource industry.[4] The new partnership with Imagine H2O helps to facilitate this goal.

Between 2007q4 and 2010q4, employment in the cluster grew by 100 jobs (7.4 percent). Over this time, the same national industries contracted by 11.1 percent. Rubicon Systems America opened a local facility in 2008 and is major driver of this growth.

The Water Cluster expanded by 34 jobs (2.4 percent) from 2009q4 through 2010q4. Here too, the Cluster outperformed the same national industries, which lost 0.9 percent of its relative employment base. Over this year, the average estimated salary increased by $200 to $67,700.

During the first half of 2011, only 1 firm was issued a patent:

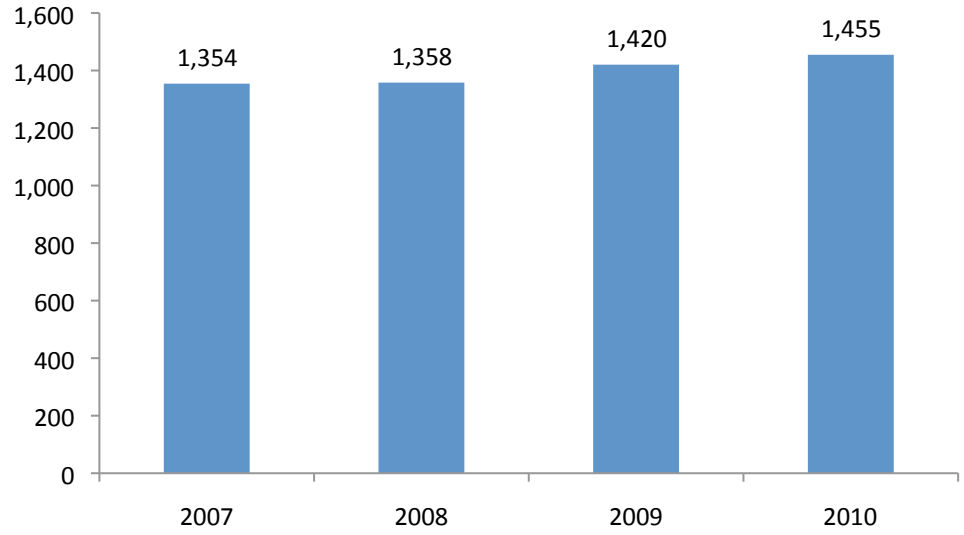
- Woodward Governor: 2

Highlights

- Between 2007q4 and 2010q4, cluster employment expanded by 100 jobs (7.4 percent)
  - National employment in the same industries contracted by 11.1 percent over this time
- Cluster employment grew by 34 jobs (2.4 percent) between 2009q4 and 2010q4
  - Over this year, nationwide employment in the same industries fell by 0.9 percent
- Water Cluster estimated average annual wages paid –
  - 2009: $67,500
  - 2010: $67,700
- Average employment from 2007q4 through 2010q4 is displayed in Chart VI
- The five largest companies in the cluster are reported in Table VI

[4] Woodard Governor and AECOM both have divisions related to water, but they are only a fraction of their company's total employment. We do not include employment for either firm because there is no consistent way to estimate what percent of total employment is related to water. If we were to include these two companies, cluster employment would increase substantially.

Chart VI: Average Employment: 2007q4-10q4



Source: CDLE QCEW

Table VI: Five largest firms in the Water Cluster

Company	
Hach Chemical Company Inc	
Telvent Miner & Miner Inc	
Advance Tank and Construction Co	
In-Situ Inc	
Riverside Technology Inc	
Top 5 Total Employment	1,182
Percent of Cluster Employment	81.3%

Source: CDLE QCEW

Appendix A: Detailed Cluster Information

A.I Introduction to Appendix A

As we mentioned in the Introduction (section I), the goal of the previous sections is to give a brief overview for each cluster. Appendix A provides a greater level of insight into each cluster's performance by disaggregating the clusters to their 3 or 4-digit NAICS.

It is important to note that we did not calculate the location quotients below; instead, they come directly from the BLS. As a result the location quotients refer to related *industr*ies, rather than the specific clusters of interest. This is a necessary compromise due to the fact that there are no nationally accepted definitions of these clusters.

For example, 2010 employment in the county's Machinery Manufacturing (NAICS 333) totaled 2,035 employees, resulting in an industry location quotient of 2.11. Yet only 10 of these workers are employed in the Bioscience firms within that broader industry. In this case the industry LQ greatly overstates the cluster's actual LQ.

Each cluster analysis below follows the format:

- Bullet points noting changes over the last 3 years, 1 year, and a brief discussion on the location quotients from 2006 and 2010
- Table A is Fast Facts and details each cluster's average employment from 2007q4 through 2010q4, 3 and 1 year employment changes, and location quotients (LQs).
- Chart A graphs the clusters' average employment from 2007q4-10q4 over 3 or 4-digit NAICS
- Chart B illustrates every cluster's 3 or 4-digit NAICS employment breakdown, compared to that of Larimer County, for 2010q4
- Chart C displays the total wages paid in each cluster, over the NAICS breakdown, from 2009q4 to 2010q4

A.II Bioscience Cluster

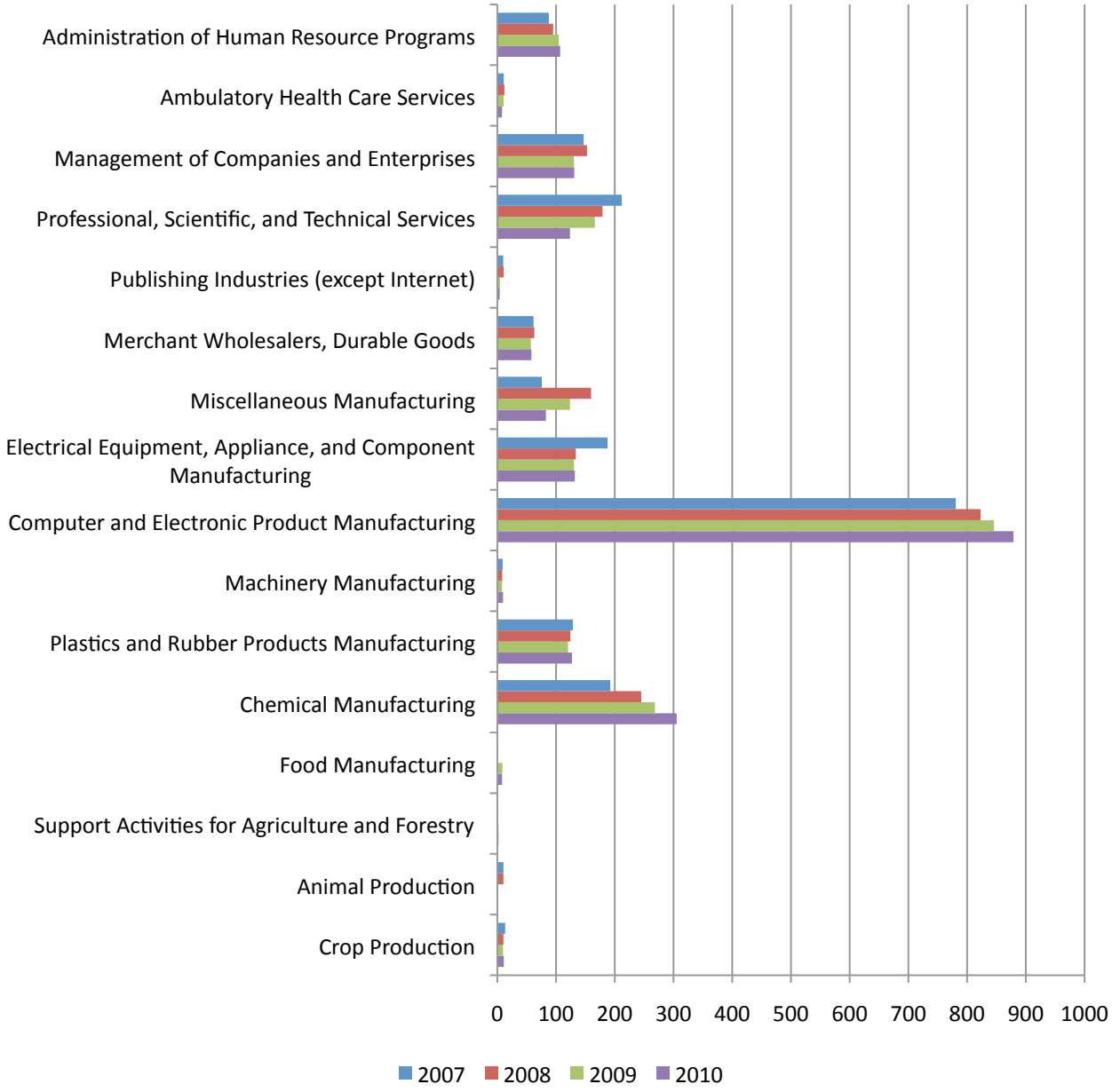
- Cluster employment expanded by 60 jobs, or 3.1 percent, from 2007q4-10q4 (Table A.II.A)
  - Chemical Manufacturing (NAICS 325) grew by 113 jobs (58.9 percent) during this time
  - Computer and Electronic Product Manufacturing (NAICS 334) is the largest industry in the cluster and expanded by 98 jobs – 7.7 percent – to 879 positions, over these 3 years
  - The largest contraction occurred in the industry Professional, Scientific and Technical Services (NAICS 541) – this industry lost 88 jobs (-41.5 percent)
- Between 2009q4 and 2010q4, the Bioscience Cluster lost 1 employee, or -0.1 percent (Table A.II.A)
  - The largest growth was in Chemical Manufacturing (NAICS 325), which expanded by 37 jobs, or 13.8 percent
  - Professional, Scientific, and Technical Services (NAICS 541) was the hardest hit industry and contracted by 42 jobs (-25.3 percent)
- The location quotients for the industries in the Bioscience, on the whole, do not indicate a large concentration of employment. The largest industry in the cluster, Computer and Electronic Product Manufacturing (NAICS 334), had the largest county share of employment in 2006 and 2010, with LQs of 3.53 and 3.74, respectively. The industry with the second greatest relative employment concentrations is Machinery Manufacturing (NAICS 333), with a 2010 location quotient of 2.07.

Table A.II.A: Larimer County's Bioscience Cluster Fast Facts

NAICS	Industry	Employment				2007 - 2010		2009 - 2010		Location Quotients	
		2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
111	Crop Production	13	10	10	11	-2	-15.4%	1	10.0%	0.68	0.60
112	Animal Production	10	10	0	0	-10	-100.0%	0		1.09	1.05
115	Support Activities for Agriculture and Forestry	1	1	2	2	1	100.0%	0	0.0%	ND	ND
311	Food Manufacturing	0	0	9	8						0.22
325	Chemical Manufacturing	192	245	268	305	113	58.9%	37	13.8%	0.27	0.57
326	Plastics and Rubber Products Manufacturing	129	124	120	127	-2	-1.6%	7	5.8%	0.49	0.85
333	Machinery Manufacturing	9	8	8	10	1	11.1%	2	25.0%	1.79	2.07
334	Computer and Electronic Product Manufacturing	781	823	846	879	98	12.5%	33	3.9%	3.53	3.74
335	Electrical Equipment, Appliance, and Component Manufacturing	188	134	130	132	-56	-29.8%	2	1.5%	1.17	0.79
339	Miscellaneous Manufacturing	76	160	124	83	7	9.2%	-41	-33.1%	1.09	0.68
423	Merchant Wholesalers, Durable Goods	62	63	57	58	-4	-6.5%	1	1.8%	0.57	0.54
511	Publishing Industries (except Internet)	10	11	4	4	-6	-60.0%	0	0.0%	0.67	1.92
541	Professional, Scientific, and Technical Services	212	179	166	124	-88	-41.5%	-42	-25.3%	1.40	1.22
551	Management of Companies and Enterprises	147	153	130	131	-16	-10.9%	1	0.8%	0.34	0.28
621	Ambulatory Health Care Services	11	12	11	8	-3	-27.3%	-3	-27.3%	1.03	1.08
923	Administration of Human Resource Programs	88	95	105	107	19	21.6%	2	1.9%	ND	ND
	TOTAL	1,929	2,028	1,990	1,989	60	3.1%	-1	-0.1%		

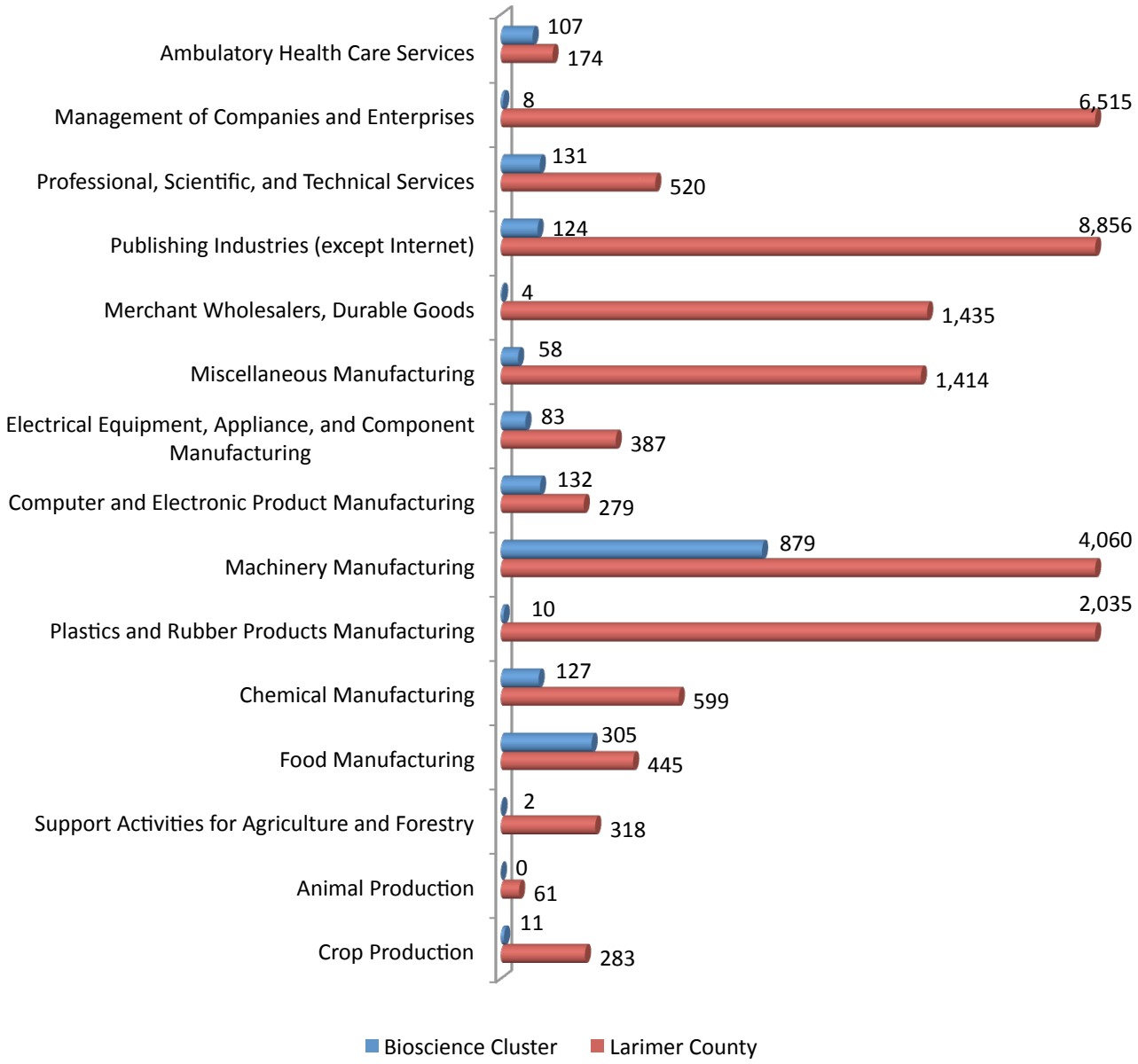
ND: Not Disclosable
Sources: CDLE QCEW and BLS

Chart A.II.A: Average Employment for the Bioscience Cluster from 2007q4-10q4 (Table A.II.A)



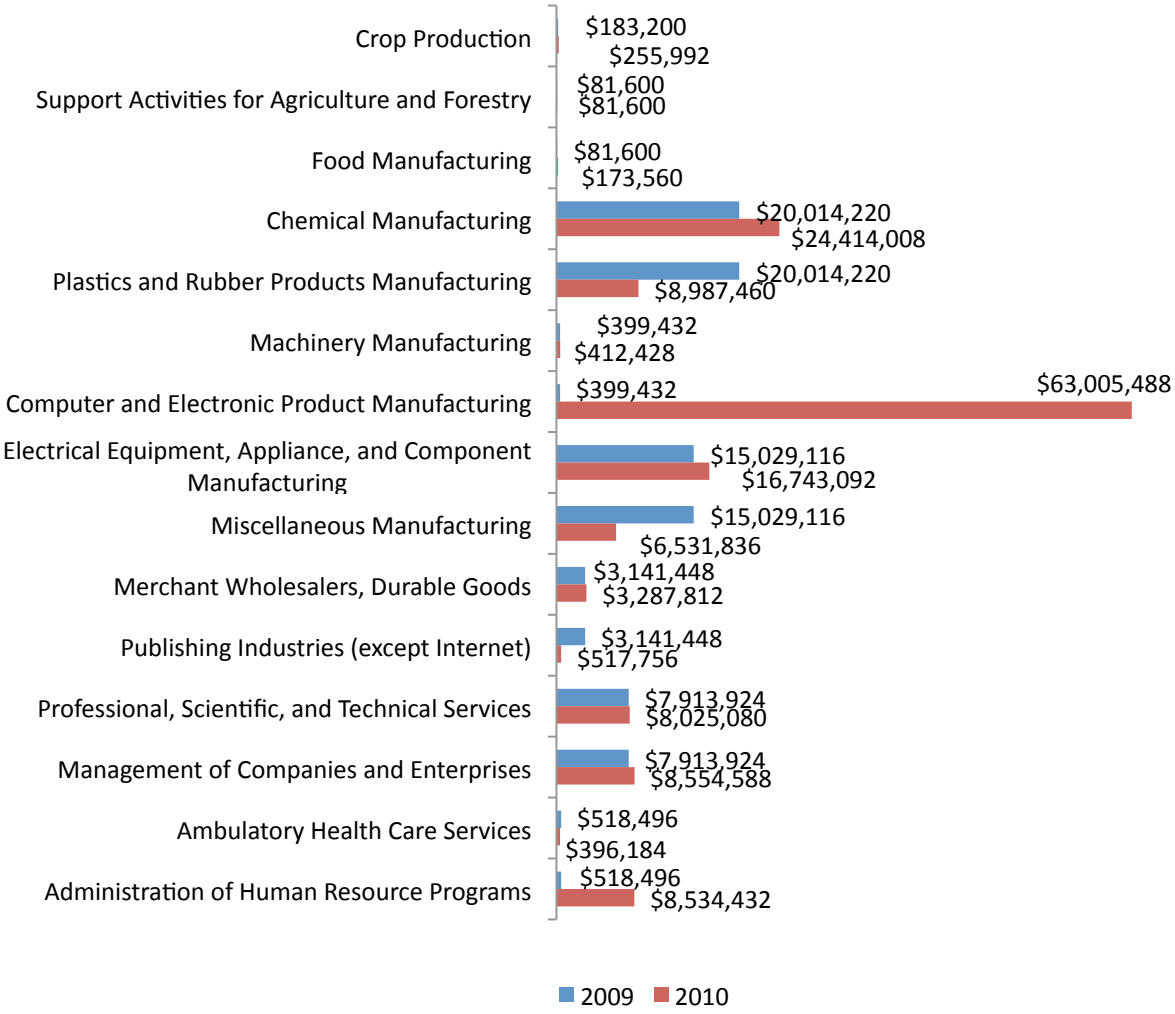
Source: CDLE QCEW

Chart A.II.B: 2010q4 Average Employment for the Bioscience Cluster and Larimer County



Source: CDLE QCEW

Chart A.II.C: Wages Paid in the Bioscience Cluster for 2009q4 & 10q4



Source: CDLE QCEW

A.III. Clean Energy Cluster

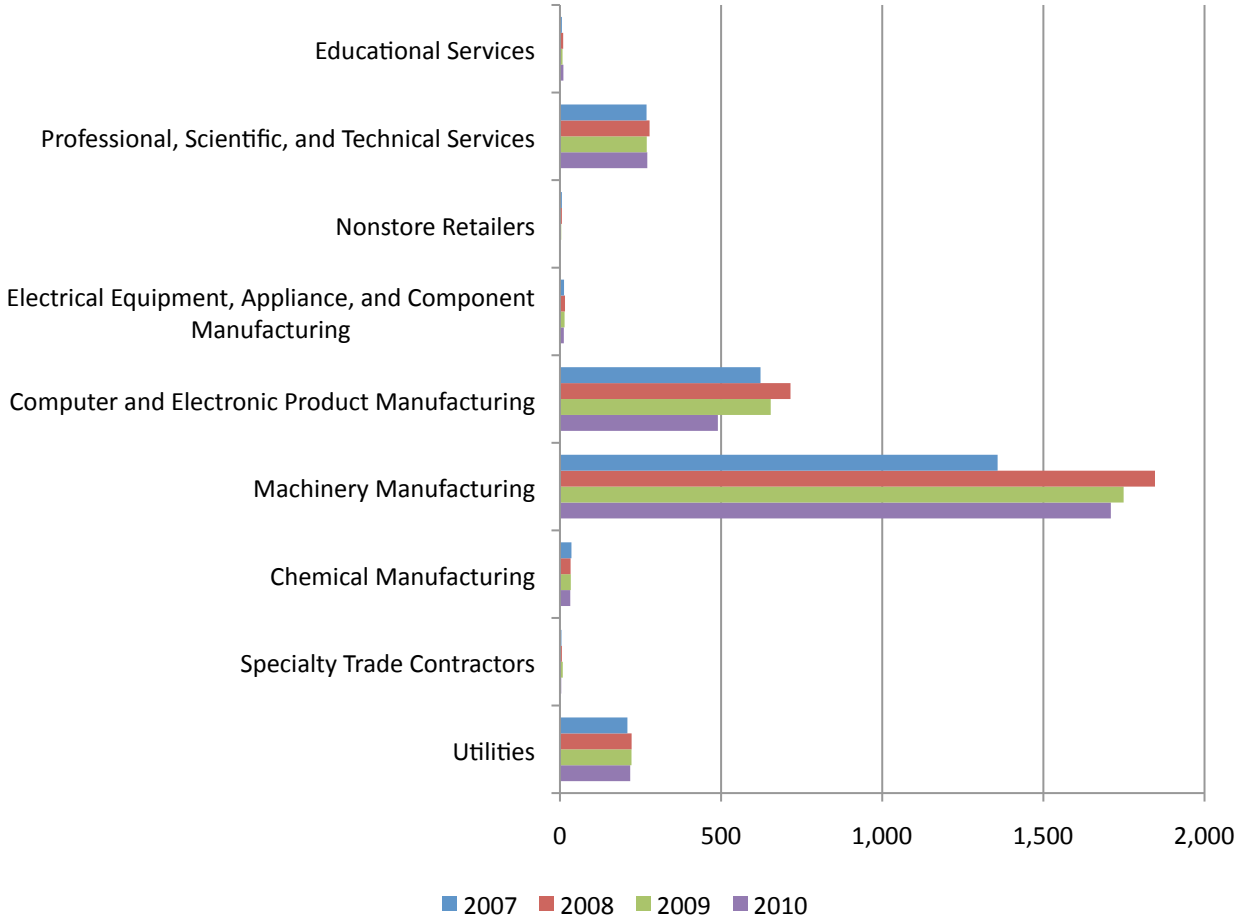
- As per Table A.III.A, cluster employment expanded by 225 jobs, or 8.9 percent, from 2007q4 through 2010q4
    - The only notable growth was in the industry of Machinery Manufacturing (NAICS 333), where added 351 jobs (25.9 percent) were added in these 3 years
    - The largest employment contraction was in the industry of Computer and Electronic Product Manufacturing (NAICS 334), which shed 132 jobs, or -21.3 percent
- Between 2009q4 and 2010q4, the Clean Energy Cluster shed 215 jobs (-7.3 percent; Table A.III.A)
    - Only two industries experienced employment growth during this time
        - Educational Services (NAICS 611) grew by one-third to 11 jobs
        - Professional, Scientific and Technical Services (NAICS 541) added 2 jobs, or 0.6 percent
    - The greatest employment contraction occurred in the industry of Machinery Manufacturing (NAICS 333), which lost 164 employees, or -25.1 percent
- Analyzing the LQs for the industries in the Clean Energy Cluster reveals that, for the 3 largest in the cluster, Larimer County has an employment base that is relatively larger than the US. The three largest industries in the cluster their respective location quotients are:
    - Computer and Electronic Product Manufacturing (NAICS 334) – LQ: 3.74
    - Machinery Manufacturing (NAICS 333) – LQ: 2.07
    - Professional, Scientific, and Technical Services (NAICS 541) – LQ: 1.22

Table A.III.A: Clean Energy Cluster Fast Facts

		Employment								Location Quotients	
						2007 - 2010		2009 - 2010			
NAICS	Industry	2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
221	Utilities	209	222	222	218	9	4.1%	-4	-1.8%	0.47	0.45
238	Specialty Trade Contractors	5	6	9	4	-1	-14.3%	-5	-53.8%	1.66	1.53
325	Chemical Manufacturing	36	33	34	32	-4	-10.3%	-2	-5.0%	0.27	0.57
333	Machinery Manufacturing	1,358	1,846	1,749	1,709	351	25.9%	-40	-2.3%	1.79	2.07
334	Computer and Electronic Product Manufacturing	622	715	654	490	-132	-21.3%	-164	-25.1%	3.53	3.74
335	Electrical Equipment, Appliance, and Component Manufacturing	13	16	14	12	-1	-5.3%	-2	-16.3%	1.17	0.79
454	Nonstore Retailers	6	6	4	1	-5	-83.3%	-3	-75.0%	0.85	0.97
541	Professional, Scientific, and Technical Services	269	278	269	271	2	0.9%	2	0.6%	1.40	1.22
611	Educational Services	6	10	8	11	5	77.8%	3	33.3%	0.49	0.47
	TOTAL	2,523	3,133	2,963	2,748	225	8.9%	-215	-7.3%		

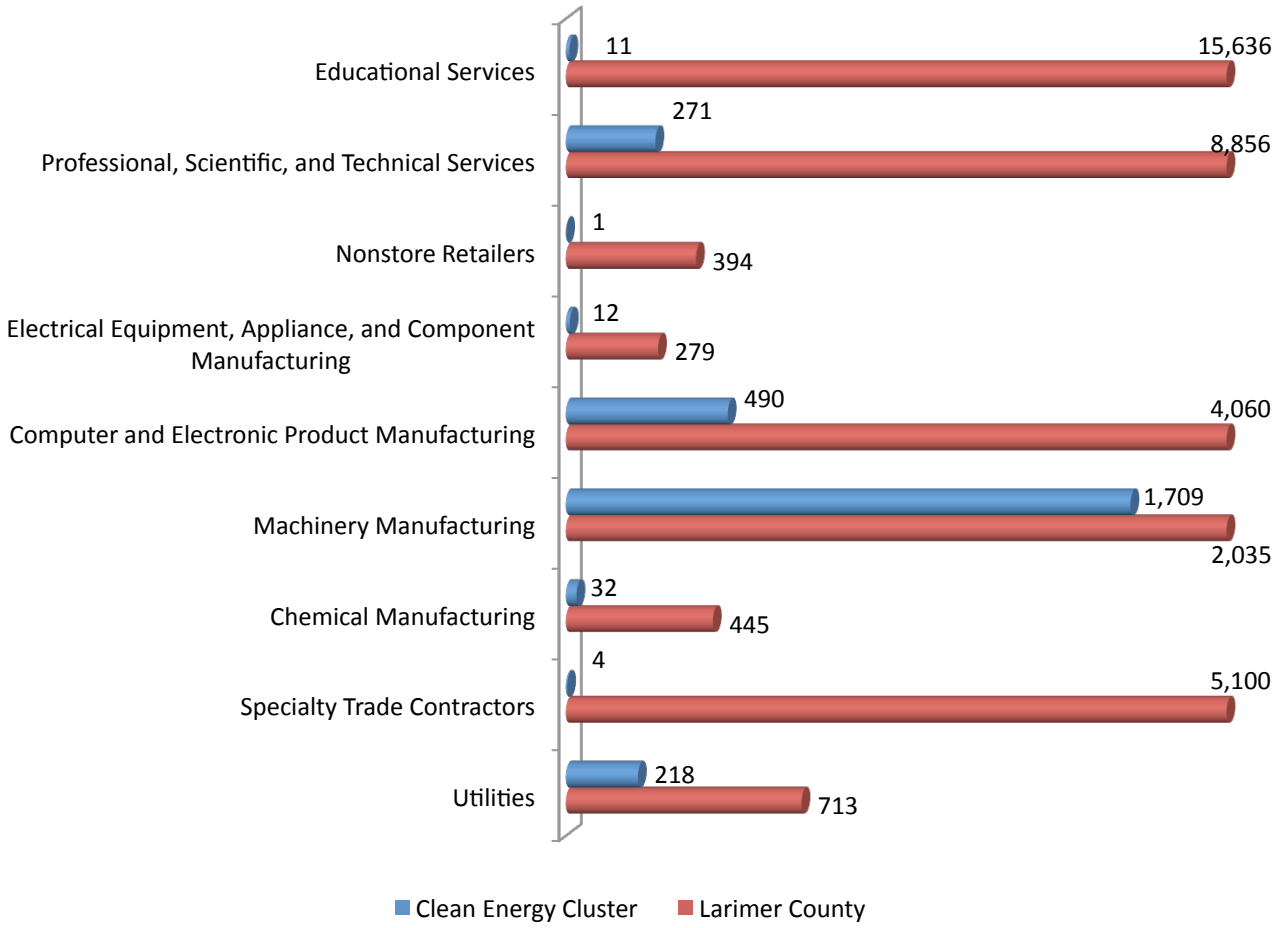
Sources: CDLE QCEW, CSU, and BLS

Chart A.III.A: Clean Energy Cluster Average Employment 2007q4-10q4



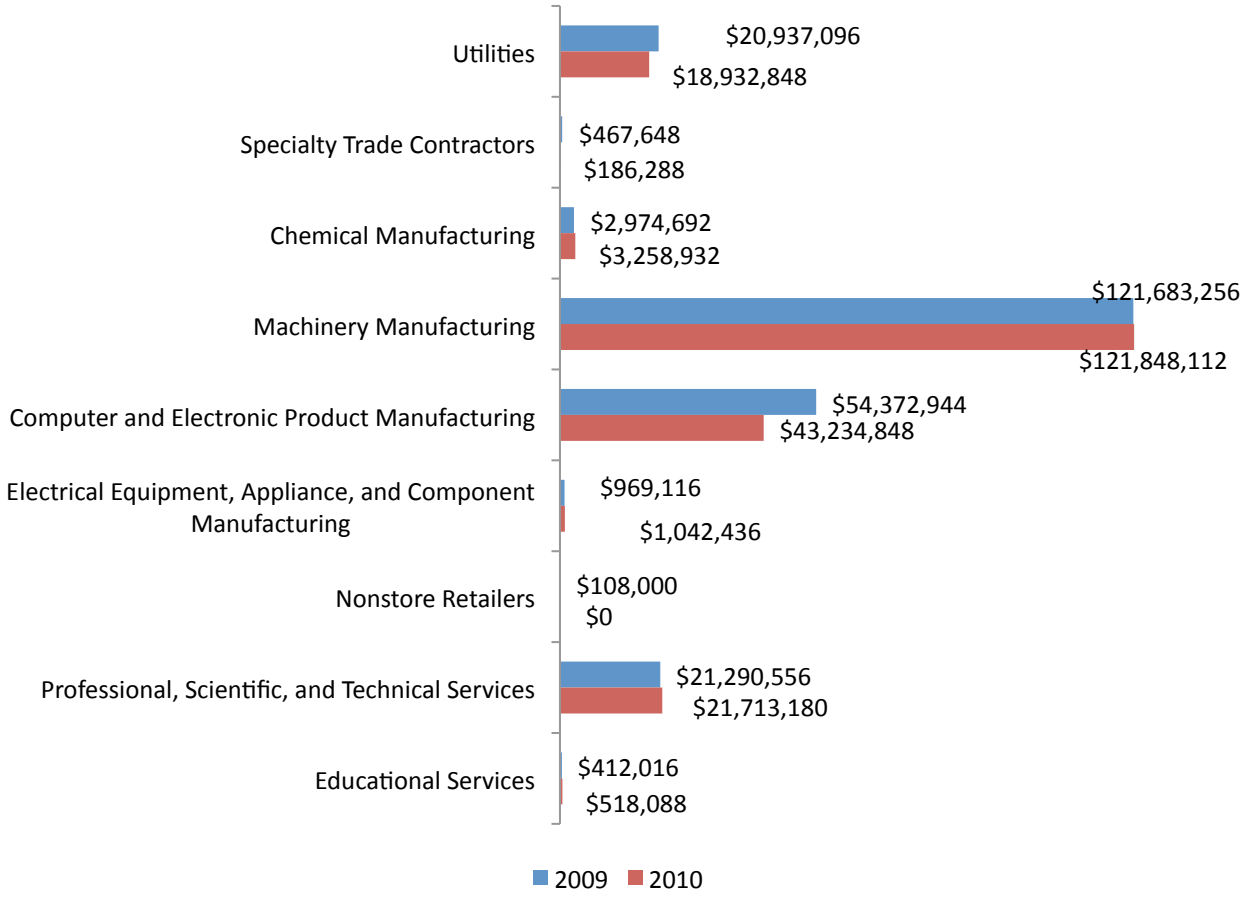
Source: CDLE QCEW

Chart A.III.B: 2010q4 Clean Energy Cluster Employment Compared to Larimer County



Source: CDLE QCEW

Chart A.III.C: 2009q4 and 2010q4 Total Wages Paid in the Clean Energy Cluster



Source: CDLE QCEW

A.IV. Technology (Hardware + Software) Cluster

We remind the reader that the Technology Cluster is defined by NAICS codes and, due to firm reclassification, the employment numbers are inflated for both the Hardware and Software Clusters.

- Table A.IV.A shows that cluster employment increased by 486 jobs, or 10.4 percent, from 2007q4 through 2010q4
  - The greatest growth was in the sector of Computer Systems Design and Related Services (NAICS 5415), which added 458 jobs (35.8 percent)
  - Other notable growth occurred in the Semiconductor and Other Electronic Component Manufacturing (NAICS 3344) sector, which gained 250 jobs (28.6 percent)
  - The hardest hit industry was Navigational, Measuring Electromedical, and Control Instruments Manufacturing (NAICS 3345), where 176 positions (20.3 percent) were lost
- From 2009q4 to 2010q4, the Technology Cluster grew by 999 jobs (23.9 percent), as shown in Table A.IV.A
  - Two industries experienced the greatest job growth:
    - Computer Systems Design and Related Services increased by 691 employees, or 66.1 percent
    - Semiconductor and Other Electronic Component Manufacturing added 354 jobs (46.0 percent)
  - Again, the largest employment contraction was in the Navigational, Measuring, Electromedical, and Control Instruments Manufacturing industry, which lost 26 jobs (-3.7 percent)
- The location quotients for the Technology Cluster indicate that, on average, Larimer County has a relatively higher concentration of employment in these industries, compared to the nation. A few notable sectors are:
  - Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345) – LQ: 4.41
  - Semiconductor and Other Electronic Component Manufacturing (NAICS 3344) – LQ: 3.00

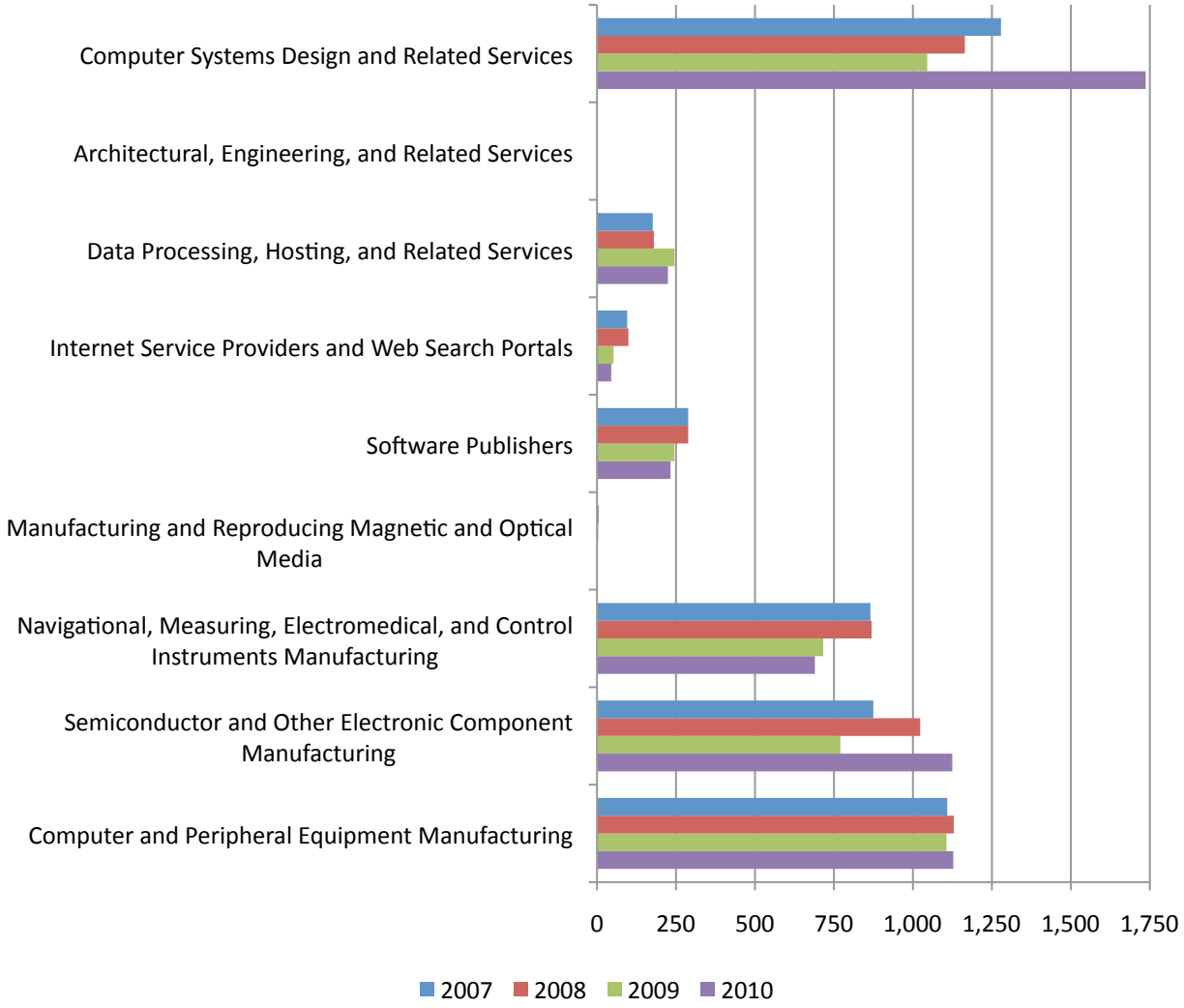
Table A.IV.A: Technology Cluster Fast Facts

NAICS	Industry	Employment				2007 - 2010		2009 - 2010		Location Quotients	
		2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
3341	Computer and Peripheral Equipment Manufacturing	1,109	1,129	1,106	1,128	19	1.7%	21	1.9%	ND	ND
3344	Semiconductor and Other Electronic Component Manufacturing	875	1,023	770	1,125	250	28.6%	354	46.0%	2.48	3.00
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	865	869	716	690	-176	-20.3%	-26	-3.7%	5.24	4.41
3346	Manufacturing and Reproducing Magnetic and Optical Media	5	3	0	0	-5	-100.0%	0		1.21	0.51
5112	Software Publishers	289	289	245	233	-56	-19.4%	-12	-4.9%	0.74	0.67
5181	Internet Service Providers and Web Search Portals	96	99	52	45	-51	-53.0%	-7	-14.0%	ND	ND
5182	Data Processing, Hosting, and Related Services	176	180	246	224	48	27.2%	-21	-8.7%	0.61	1.58
5413	Architectural, Engineering, and Related Services	1	1	1	0	-1		-1	-100.0%	1.79	1.63
5415	Computer Systems Design and Related Services	1,279	1,164	1,045	1,737	458	35.8%	691	66.1%	0.99	1.21
	TOTAL	4,694	4,758	4,182	5,181	486	10.4%	999	23.9%		

ND: Not Disclosable

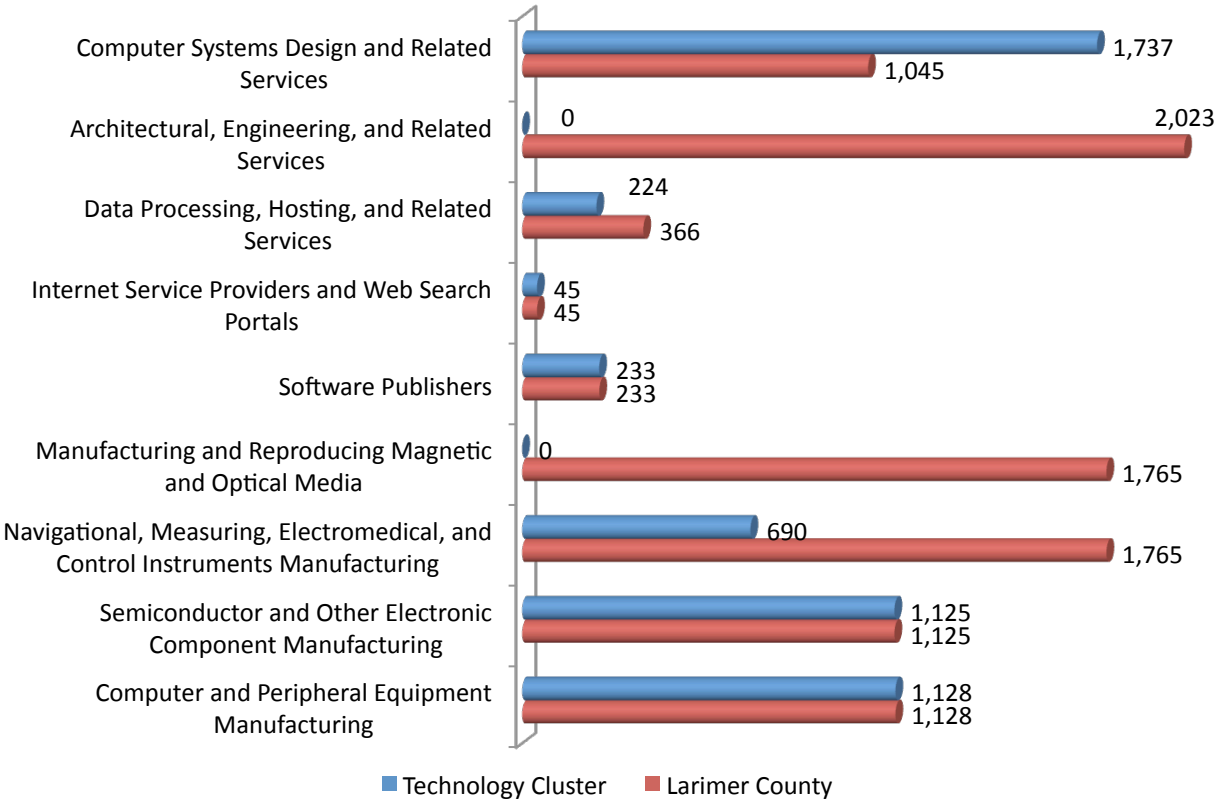
Sources: CDLE QCEW and BLS

Chart A.IV.A: Average Employment in the Technology Cluster from 2007q4 through 2010q4



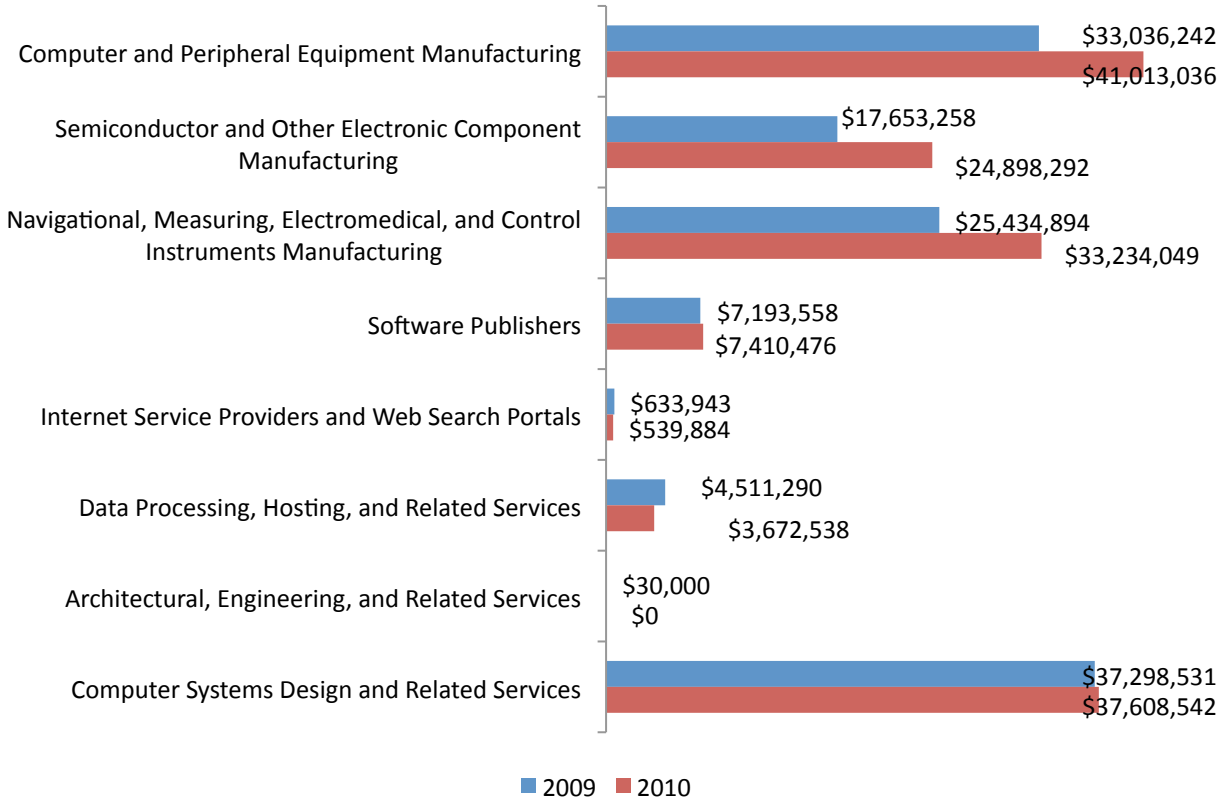
Source: CDLE QCEW

Chart A.IV.B: Technology Custer vs Larimer County Employment – 2010q4



*Businesses can be listed in multiple clusters
Source: CDLE QCEW

Chart A.IV.C: Total Wages Paid in the Technology Cluster in 2009q4 and 2010q4



Source: CDLE QCEW

A.IV.1. Hardware Cluster

- As per Table A.IV.1.A, employment in the Hardware Cluster grew by 973 jobs – 26.4 percent – from 2007q4-10q4
  - The sectors with the greatest growth were:
    - Computer Systems Design and Related Services (NAICS 5415), which added 879 jobs, or 106.0 percent
    - Semiconductor and Other Electronic Component Manufacturing (NAICS 3344), which 250 jobs (28.6 percent)
  - The only employment loss was in the Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345) sector, where 176 employees (-20.3 percent) were lost
- In the last year (from 2009q4 through 2010q4), the Hardware Cluster gained 1,138 employees (32.4 percent), per Table A.IV.1.A
  - The same substantial growth occurred in the same two sectors:
    - Computer Systems Design and Related Services grew by 788 jobs, or 85.7 percent
    - Semiconductor and Other Electronic Component Manufacturing added 354 jobs (46.0 percent)

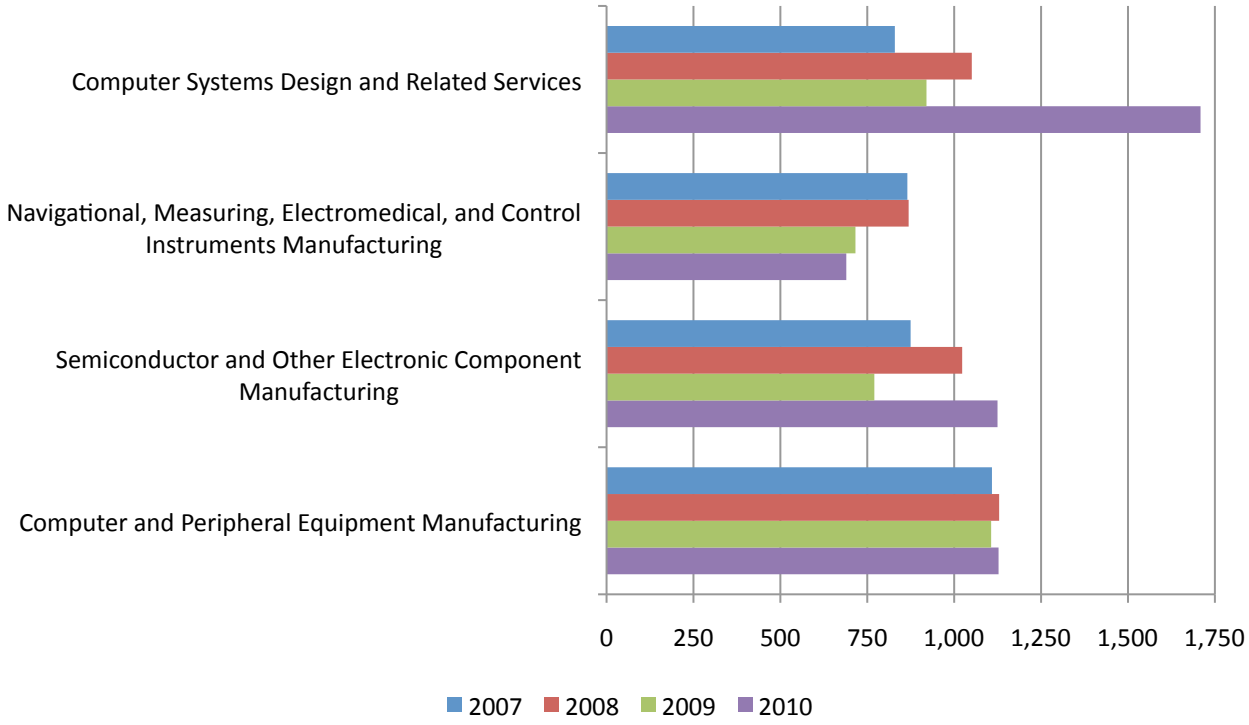
- Of the disclosable location quotients, there is evidence that Larimer County has a larger than average employment base in the Hardware Cluster
    - Navigational, Measuring, Electromedical, and Control Instruments Manufacturing – LQ: 4.41
    - Semiconductor and Other Electronic Component Manufacturing – LQ: 3.00
    - Computer Systems Design and Related Services – LQ: 1.21

Table A.IV.1.A: Hardware Cluster Fast Facts

		Employment								Location Quotients	
						2007 - 2010		2009 - 2010			
NAICS	Industry	2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
3341	Computer and Peripheral Equipment Manufacturing	1,109	1,129	1,106	1,128	19	1.7%	21	1.9%	ND	ND
3344	Semiconductor and Other Electronic Component Manufacturing	875	1,023	770	1,125	250	28.6%	354	46.0%	2.48	3.00
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	865	869	716	690	-176	-20.3%	-26	-3.7%	5.24	4.41
5415	Computer Systems Design and Related Services	829	1,051	920	1,709	879	106.0%	788	85.7%	0.99	1.21
	TOTAL	3,678	4,072	3,513	4,651	973	26.4%	1,138	32.4%		

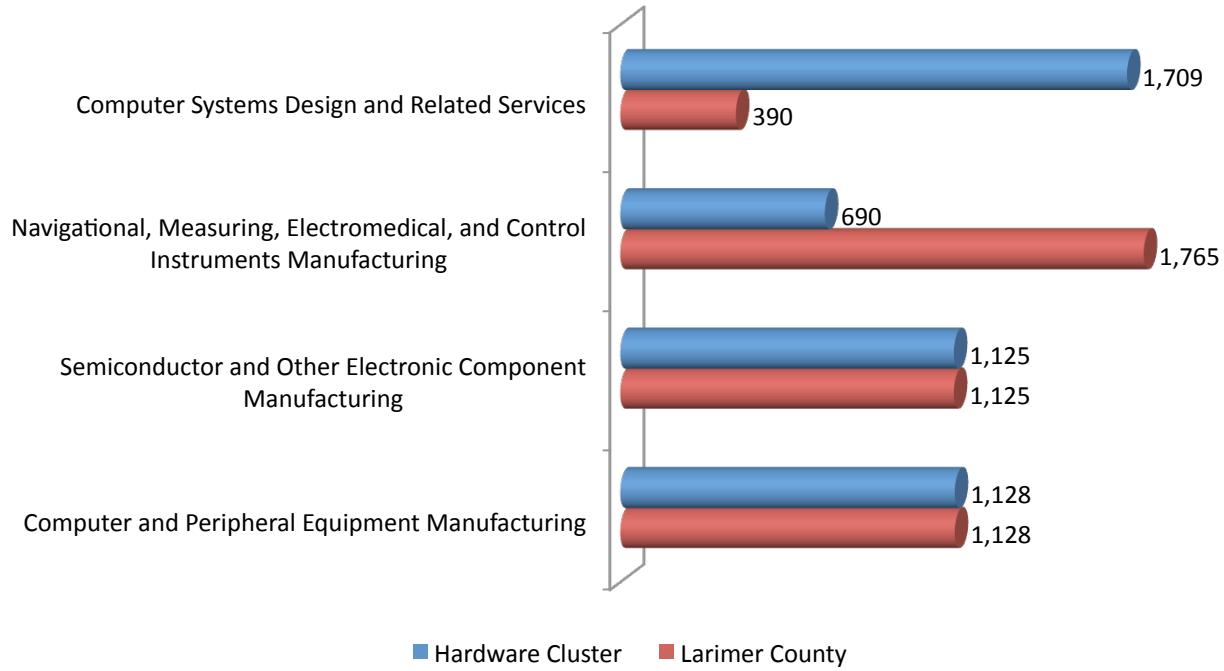
ND: Not Disclosable
Sources: CDLE QCEW and BLS

Chart A.IV.1.A: Hardware Cluster Historical Employment from 2007q4-10q4



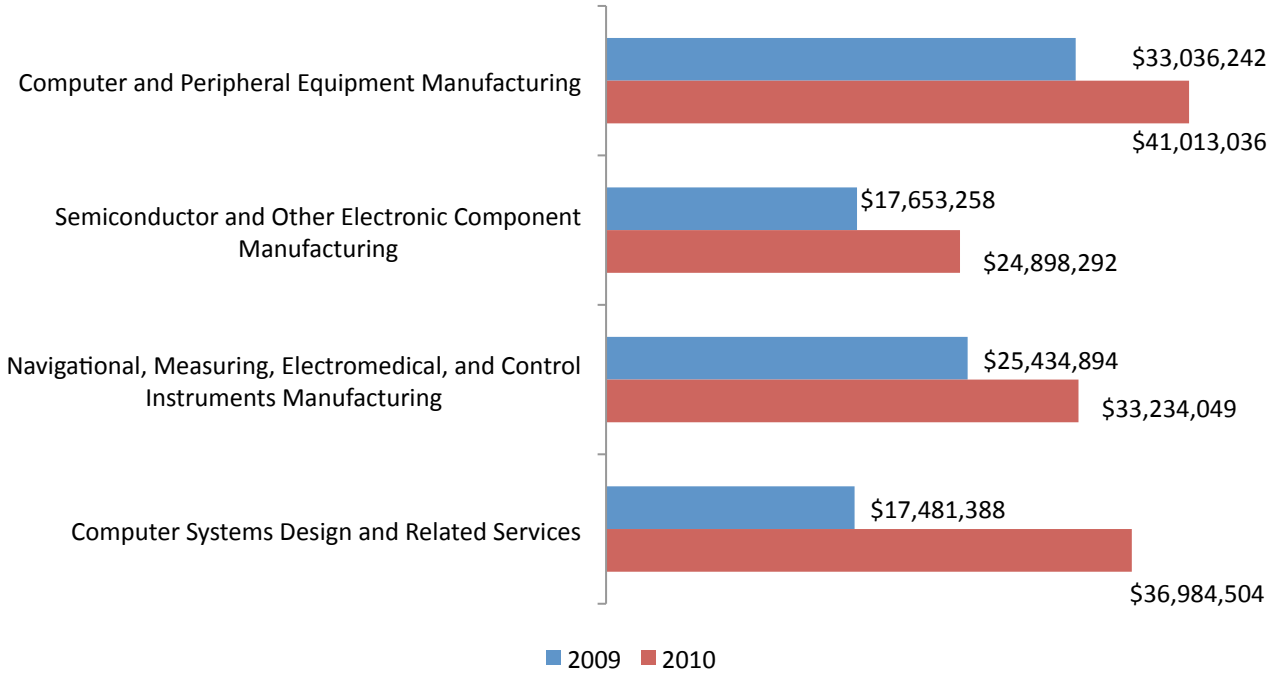
Source: CDLE QCEW

Chart A.IV.1.B: Hardware Cluster Employment Compared to Larimer County – 2010q4



Source: CDLE QCEW

Chart A.IV.1.C: Hardware Cluster Total Wages Paid for 2009q4 and 2010q4



Source: CDLE QCEW

A.IV.2. Software Cluster

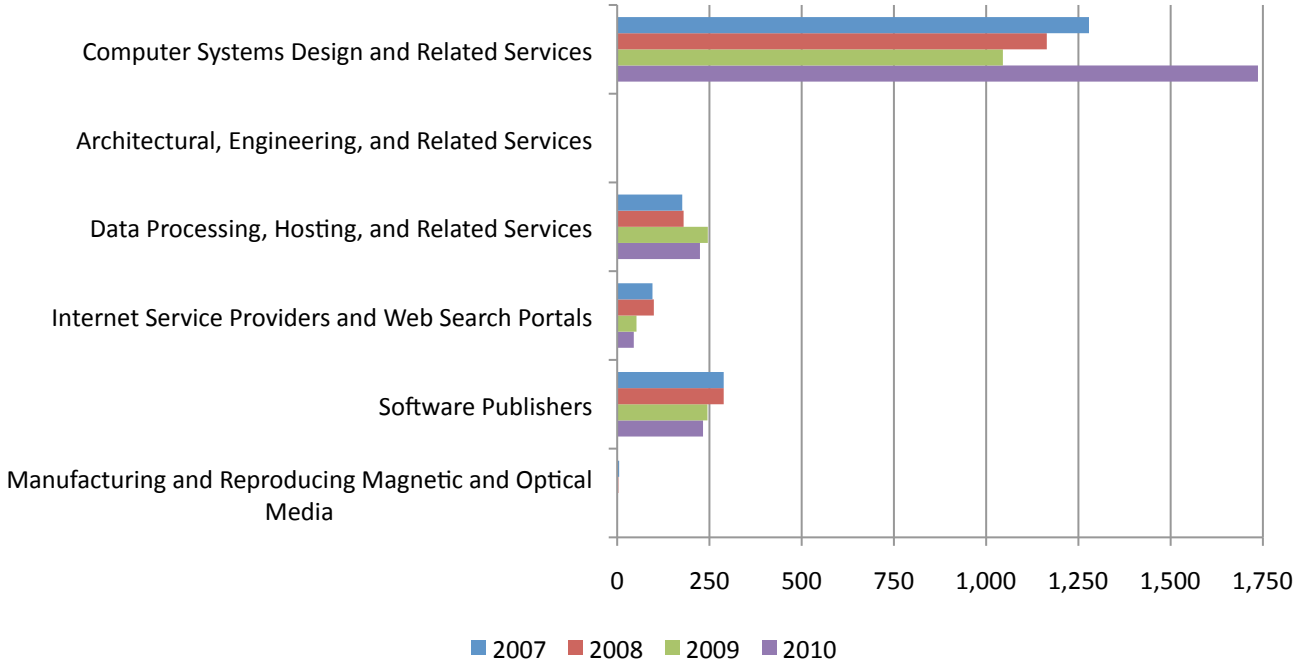
- As indicated in Table A.IV.2.A, Software Cluster employment increased by 393 jobs (21.3 percent) between 2007q4 and 2010q4
  - The greatest job gain was in the industry of Computer Systems Design and Related Services, which added 458 employees, or 35.8 percent
  - Software Publishers (NAICS 5112) experienced the greatest employment contraction of 56 jobs, or -19.4 percent
- The Software Cluster grew by 650 jobs (40.9 percent) between 2009q4 and 2010q4, as indicated in Table A.IV.2.A
  - The only job expansion was in the industry of Computer Systems Design and Related Services, where 691 jobs – 66.1 percent – were added
  - The largest job contraction was in Data Procession, Hosting, and Related Services (NAICS 5182), which shed 21 jobs, or -8.7 percent
- With the exception of the Software Publishers sector, the LQs indicate a higher than average employment concentration in the Software Cluster.

Table A.IV.2.A: Larimer County's Software Cluster Fast Facts

NAICS	Industry	Employment				2007 - 2010		2009 - 2010		Location Quotients	
		2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
3346	Manufacturing and Reproducing Magnetic and Optical Media	5	3	0	0	-5	-100.0%	0		1.21	ND
5112	Software Publishers	289	289	245	233	-56	-19.4%	-12	-4.9%	0.74	0.90
5181	Internet Service Providers and Web Search Portals	96	99	52	45	-51	-53.0%	-7	-14.0%	ND	ND
5182	Data Processing, Hosting, and Related Services	176	180	246	224	48	27.2%	-21	-8.7%	0.61	1.58
5413	Architectural, Engineering, and Related Services	1	1	1	0	-1		-1	-100.0%	1.79	1.63
5415	Computer Systems Design and Related Services	1,279	1,164	1,045	1,737	458	35.8%	691	66.1%	0.99	1.21
	TOTAL	1,846	1,737	1,589	2,239	393	21.3%	650	40.9%		

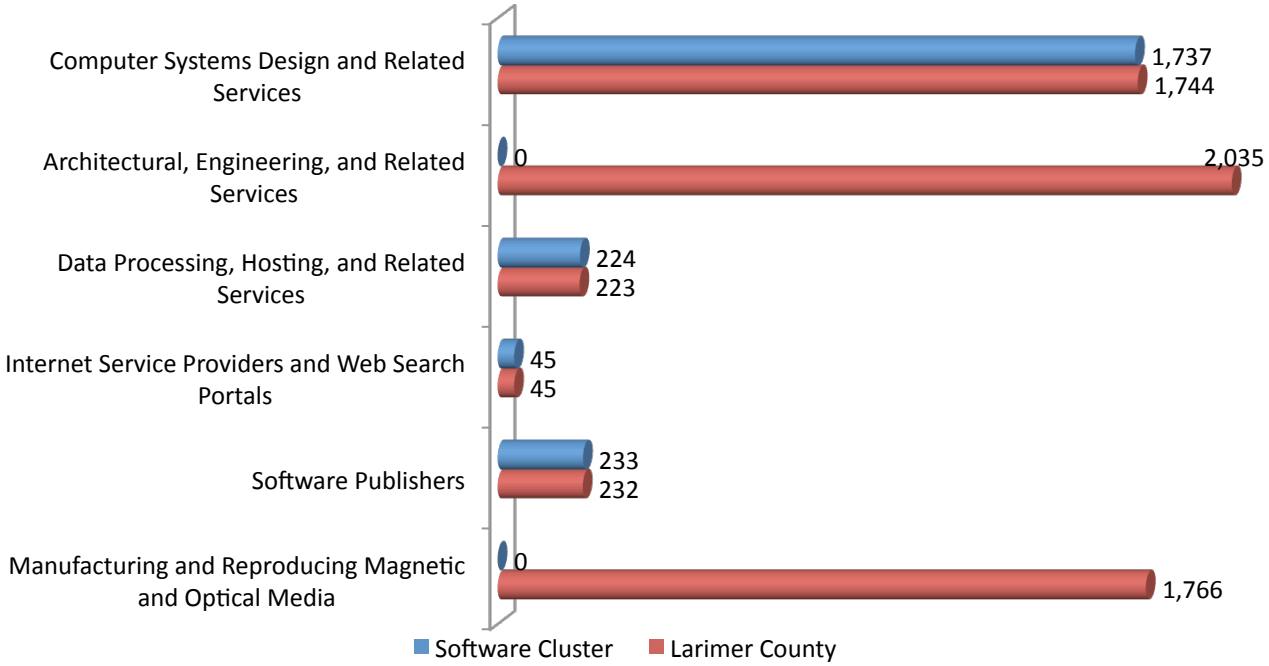
Sources: CDLE QCEW and BLS

Chart A.IV.2.A: Average Employment in the Software Cluster from 2007q4 through 2010q4



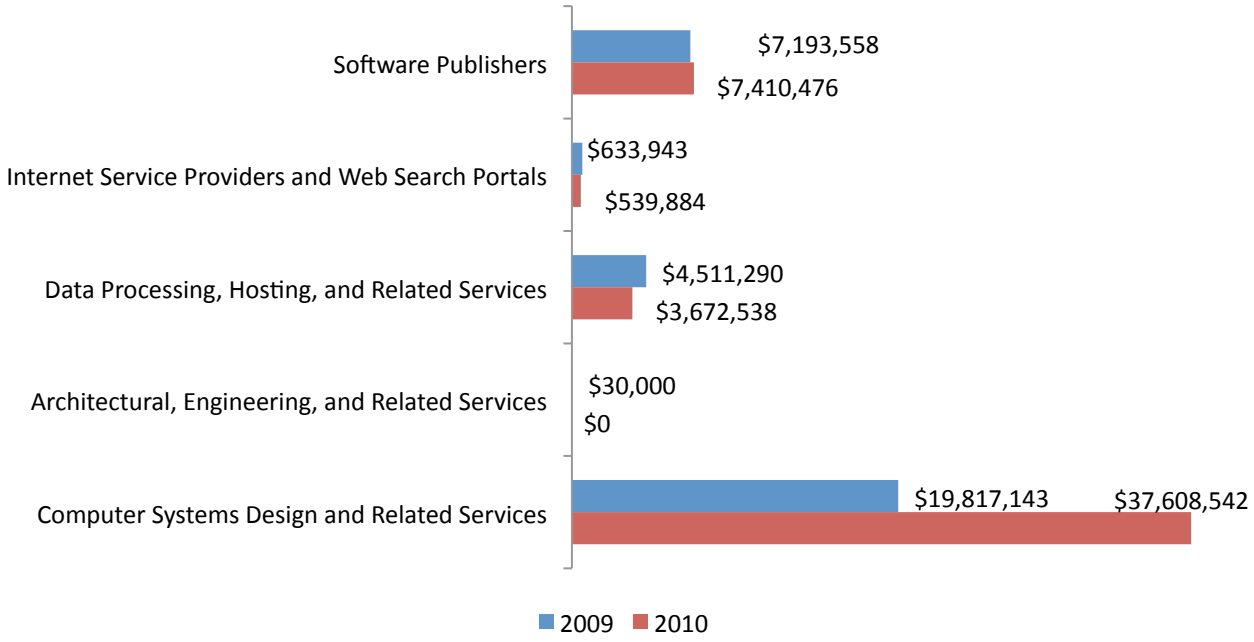
Source: CDLE QCEW

Chart A.IV.2.B: Software Custer Employment vs Larimer County Employment – 2010q4



Source: CDLE QCEW

Chart A.IV.2.C: Total Wages Paid in the Software Cluster – 2009q4 and 2010q4



Source: CDLE QCEW

A.V. Uniquely Fort Collins Cluster

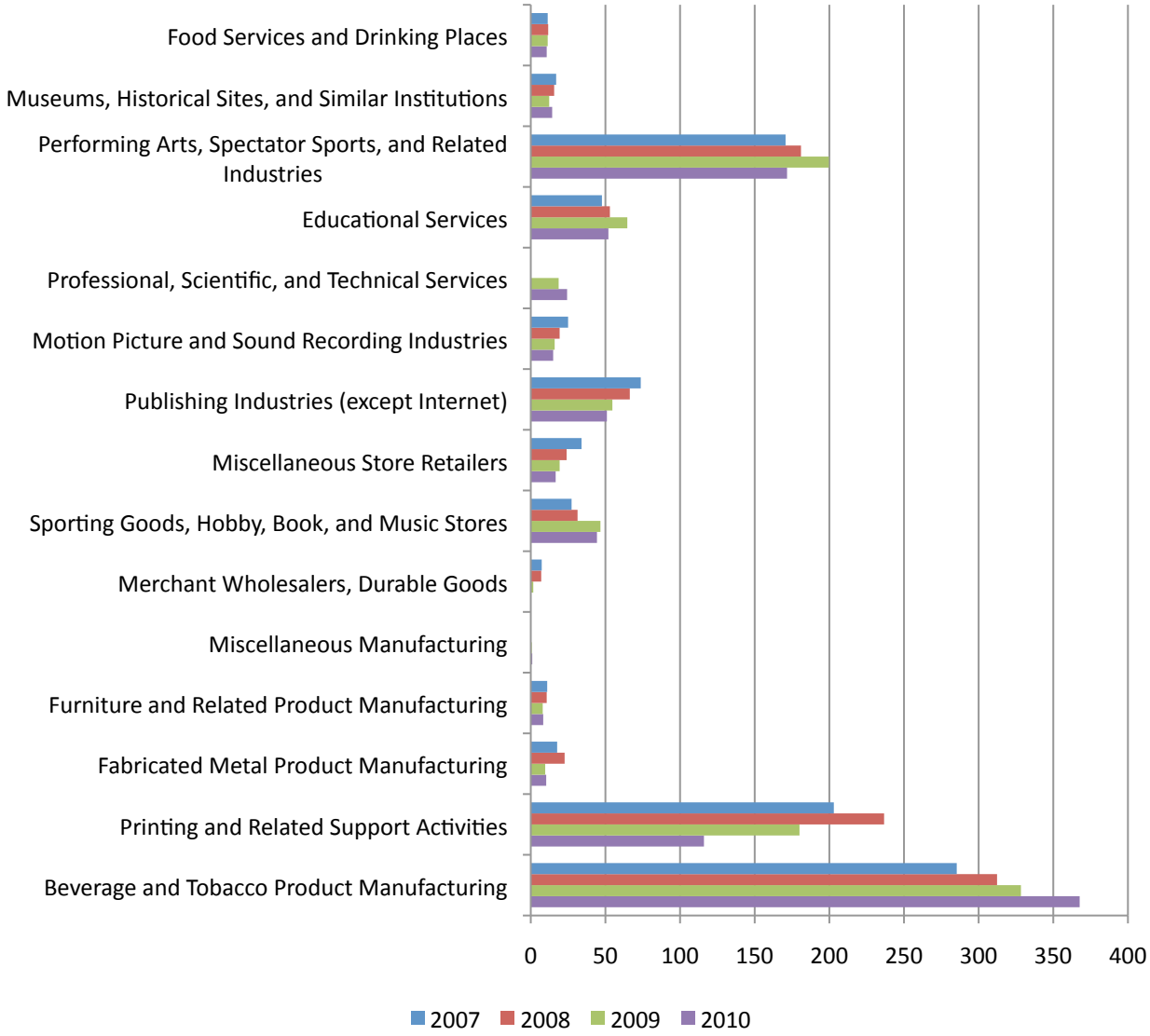
- As per Table A.V.A, the UFCC shed 28 positions, or -3.0 percent, from 2007q4 to 2010q4
  - The greatest growth occurred in the industry of Beverage and Tobacco Product Manufacturing (NAICS 312) – this industry added 82 jobs, or 28.9 percent
  - The largest employment contraction was in the sector of Printing and Related Support Activities (NAICS 323), which lost 87 positions, or -42.9 percent
  - An additional 8 other industries shed a total of 71 jobs over this time
- Between 2009q4 and 2010q4, cluster employment declined by 68 jobs – or -7.0 percent (Table A.V.A)
  - Again, the Beverage and Tobacco Product Manufacturing industry added the most jobs of 39 (12.0 percent)
  - The greatest employment contraction occurred in Printing and Related Support Activities (NAICS 323), which lost 64 jobs, or -35.6 percent
  - Again, an additional 8 lost jobs, totaling 53 positions
- There is great variation in the location quotients in the UFCC. Some notable industries are:
  - Beverage and Tobacco Product Manufacturing – LQ: 5.26
    - Breweries (NAICS 312120) – LQ: 38.50
  - Sporting Goods, Hobby, Book, and Music Stores (NAICS 451) – LQ: 2.05
  - Publishing Industries (except Internet; NAICS 511) – LQ: 1.92

Table A.V.A: Uniquely Fort Collins Cluster Fast Facts

NAICS	Industry	Employment				2007 - 2010		2009 - 2010		Location Quotients	
		2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
312	Beverage and Tobacco Product Manufacturing	285	312	328	368	82	28.9%	39	12.0%	0.68	5.26
323	Printing and Related Support Activities	203	237	180	116	-87	-42.9%	-64	-35.6%	1.09	0.81
332	Fabricated Metal Product Manufacturing	18	23	10	10	-7	-41.5%	1	6.9%	ND	0.32
337	Furniture and Related Product Manufacturing	11	11	8	8	-3	-24.2%	0	4.2%	0.27	0.91
339	Miscellaneous Manufacturing	0	0	1	1	1		0	50.0%	0.49	0.68
423	Merchant Wholesalers, Durable Goods	7	7	2	0	-7	-100.0%	-2	-100.0%	1.79	ND
451	Sporting Goods, Hobby, Book, and Music Stores	27	31	47	44	17	62.2%	-2	-5.0%	3.53	2.05
453	Miscellaneous Store Retailers	34	24	19	17	-17	-51.0%	-3	-13.8%	1.17	1.67
511	Publishing Industries (except Internet)	74	66	55	51	-23	-30.8%	-4	-6.7%	1.09	1.92
512	Motion Picture and Sound Recording Industries	25	19	16	15	-10	-40.0%	-1	-6.3%	0.57	0.59
541	Professional, Scientific, and Technical Services	0	0	19	24	24		6	30.4%	0.67	1.22
611	Educational Services	48	53	65	52	4	9.1%	-13	-19.6%	1.40	0.47
711	Performing Arts, Spectator Sports, and Related Industries	171	181	200	172	1	0.6%	-28	-14.0%	0.34	1.33
712	Museums, Historical Sites, and Similar Institutions	17	16	12	14	-3	-15.7%	2	16.2%	1.03	0.15
722	Food Services and Drinking Places	11	12	11	11	-1	-5.9%	-1	-5.9%	ND	1.32
	TOTAL	931	992	972	903	-28	-3.0%	-68	-7.0%		

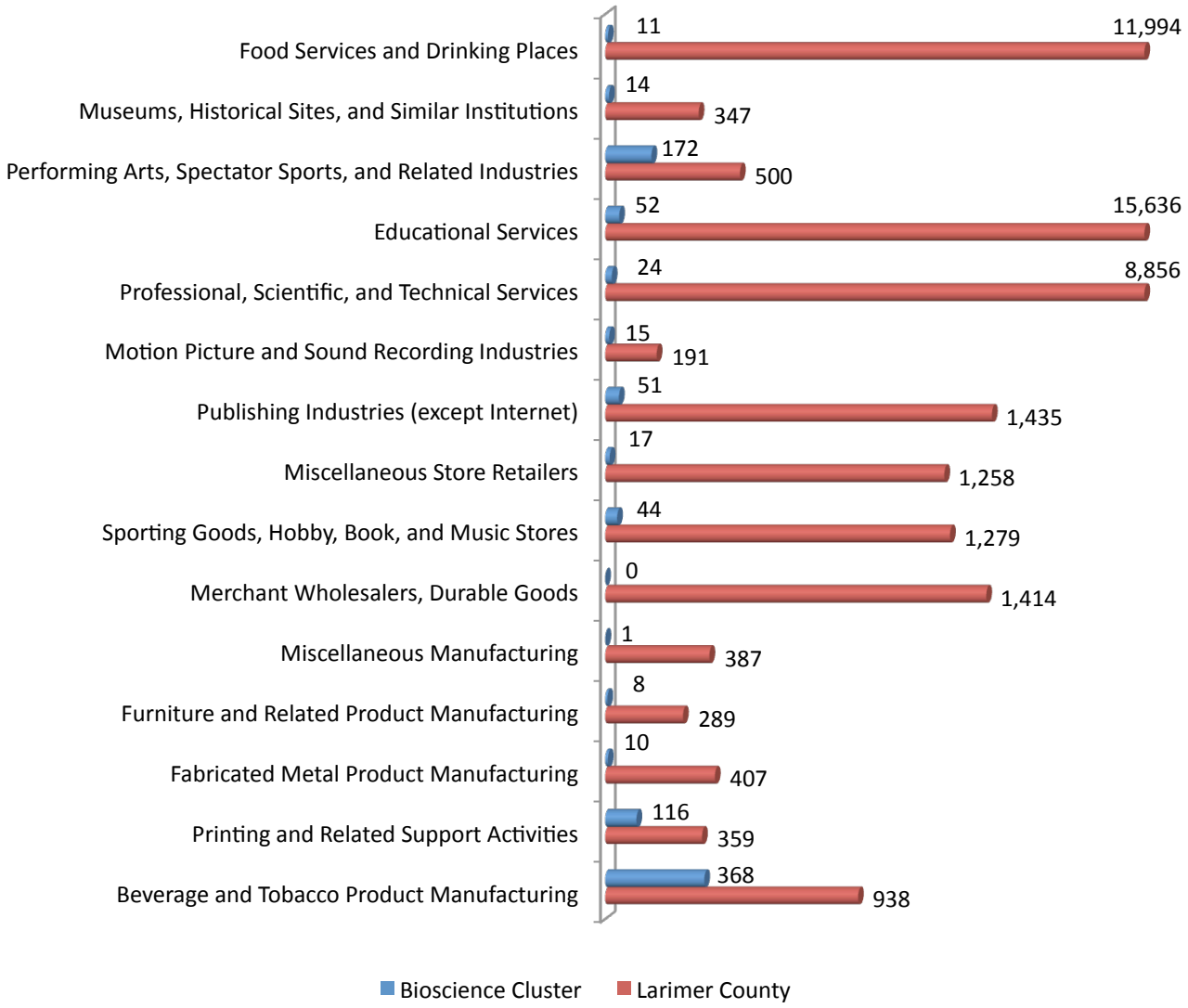
Sources: CDLE QCEW and BLS

Chart A.V.A: Average Employment in the Uniquely Fort Collins Cluster from 2007q4 through 2010q4



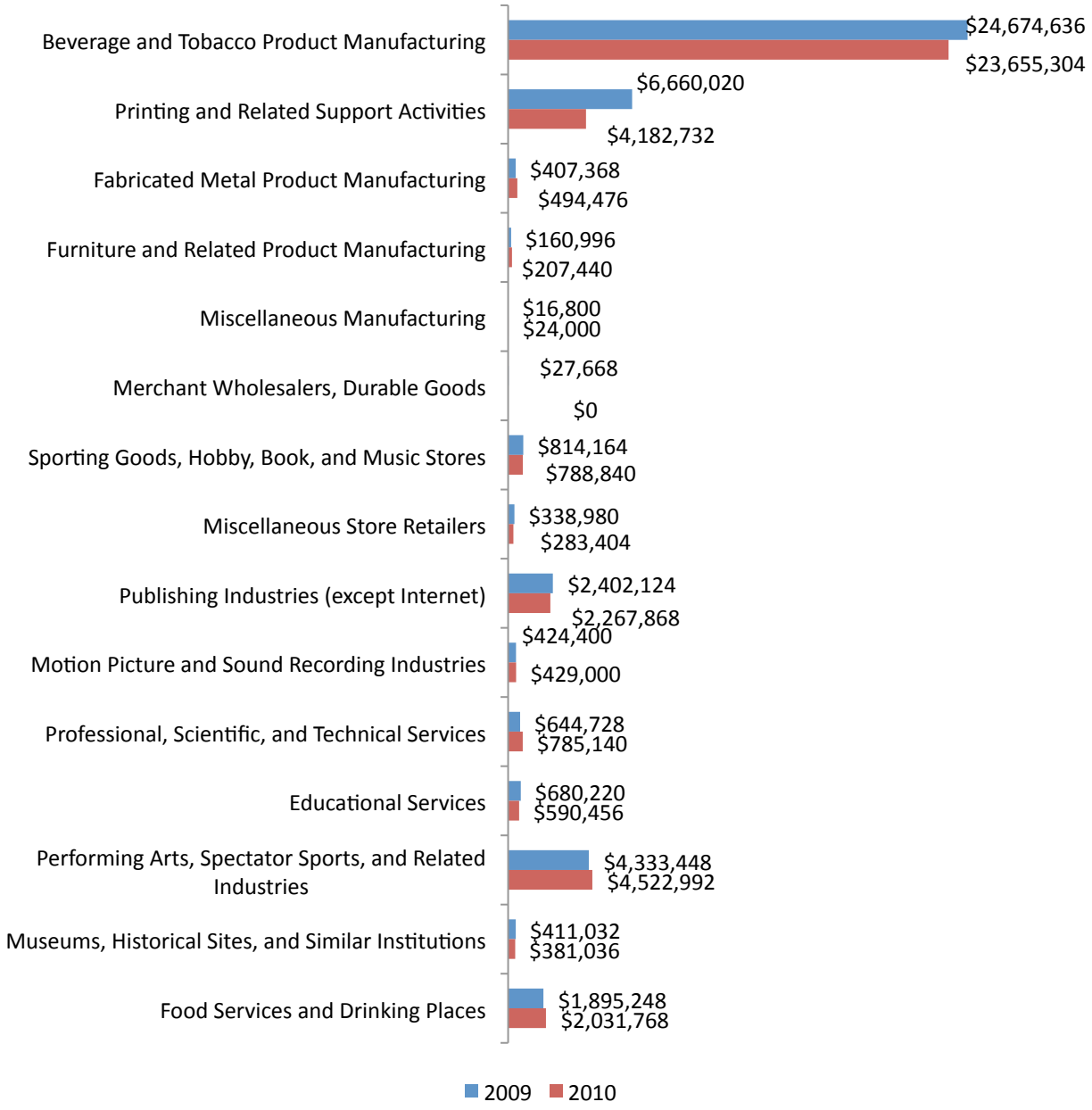
Source: CDLE QCEW

Chart A.V.B: Uniquely Fort Collins Cluster Employment Compared to Larimer County – 2010q4



Source: CDLE QCEW

Chart A.V.C: Total Wages Paid in the UFC Cluster – 2009q4 and 2010q4
Source: CDLE QCEW



A.VI. Water Cluster Details

- The Water Cluster grew by 100 jobs – or 7.4 percent – between 2007q4-10q4 (Table A.VI)
  - Computer and Electronic Product Manufacturing (NAICS 334) had the greatest growth of 179 jobs, or 25.4 percent
  - Professional, Scientific, and Technical Services (NAICS 541) added 48 positions – or 14.9 percent
  - Specialty Trade Contractors (NAICS 238) lost 72 jobs (-40.8 percent), the greatest contraction in the cluster
- From 2009q4-10q4, the Water Cluster expanded by 34 positions (2.4 percent)
  - Computer and Electronic Product Manufacturing had the greatest expansion of 117 jobs, or 15.2 percent
  - Here too, Specialty Trade Contractors had the largest loss of 18 positions (-15.0 percent)
- For the larger industries in the Water Cluster, the location quotients show a greater employment concentration, compared to the US. The smaller industries in the cluster show, on average, a much smaller employment base. Notable industries and their location quotients are:
  - Computer and Electronic Product Manufacturing (NAICS 334) – LQ: 3.74
  - Specialty Trade Contractors (NAICS 238) – LQ: 1.53

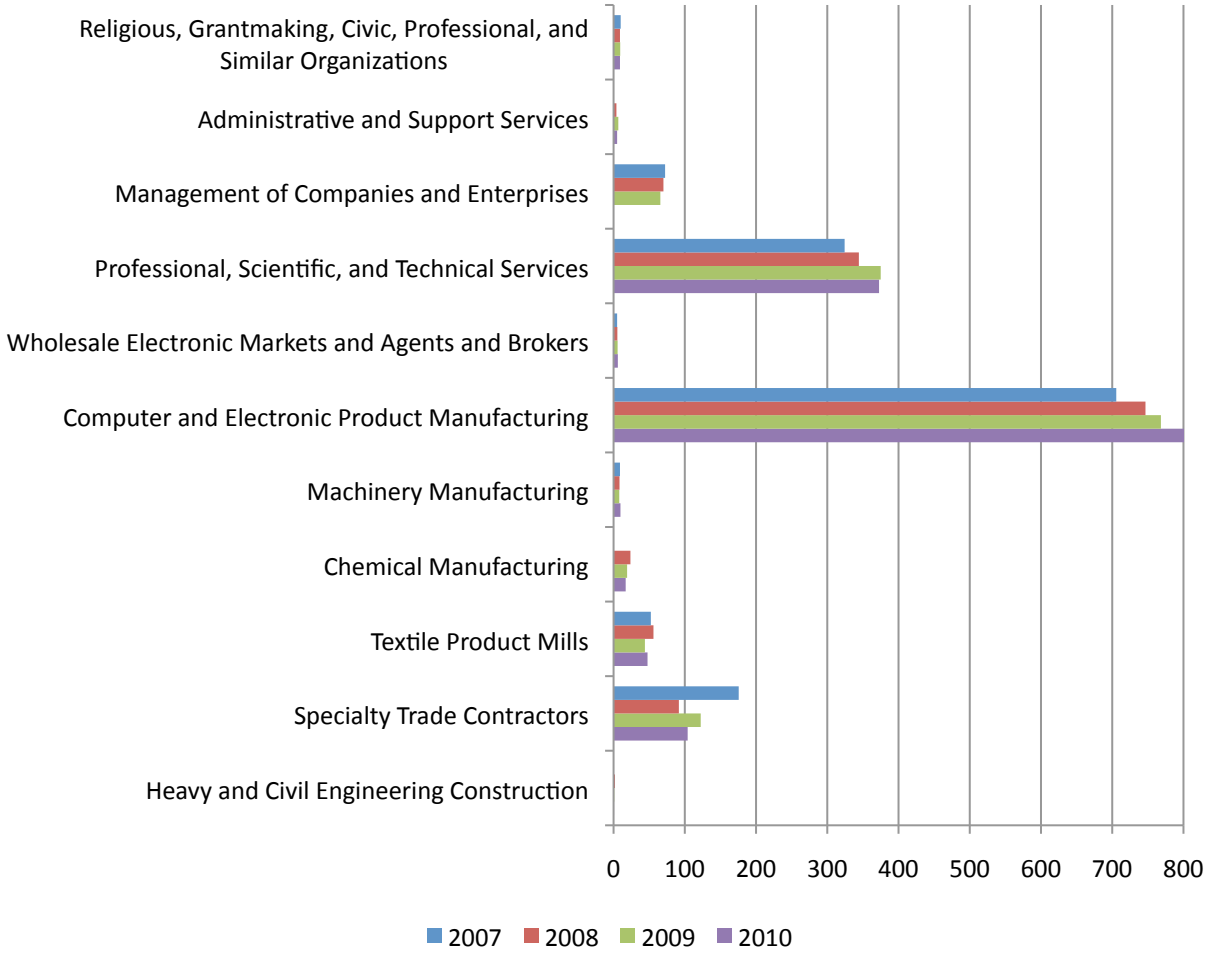
Note: the employment in the industry of Management of Companies and Enterprises (NAICS 551) was reclassified in 2010 under NAICS 334, Computer and Electronic Product Manufacturing

Table A.VI: Water Cluster Fast Facts

NAICS	Industry	Employment								Location Quotients	
						2007 - 2010		2009 - 2010			
		2007	2008	2009	2010	Level Change	Percent Change	Level Change	Percent Change	2006	2010
237	Heavy and Civil Engineering Construction	0	2	1	1	1		0	-33.3%	1.20	1.17
238	Specialty Trade Contractors	176	92	122	104	-72	-40.8%	-18	-15.0%	1.66	1.53
314	Textile Product Mills	52	56	44	48	-5	-8.9%	4	8.3%	0.44	0.62
325	Chemical Manufacturing	0	24	19	17	17		-2	-10.5%	0.27	0.57
333	Machinery Manufacturing	9	8	8	10	1	7.4%	2	20.8%	1.79	2.07
334	Computer and Electronic Product Manufacturing	706	747	768	885	179	25.4%	117	15.2%	3.53	3.74
425	Wholesale Electronic Markets and Agents and Brokers	5	5	6	6	1	20.0%	0	5.9%	0.44	0.51
541	Professional, Scientific, and Technical Services	324	344	375	373	48	14.9%	-2	-0.6%	1.40	1.22
551	Management of Companies and Enterprises	72	70	66	0	-72	-100.0%	-66	-100.0%	0.34	0.28
561	Administrative and Support Services	0	1	2	3	3		1	50.0%	0.92	0.52
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	10	9	9	9	-1	-10.0%	0	-3.6%	1.00	0.39
	TOTAL	1,354	1,358	1,420	1,455	100	7.4%	34	2.4%		

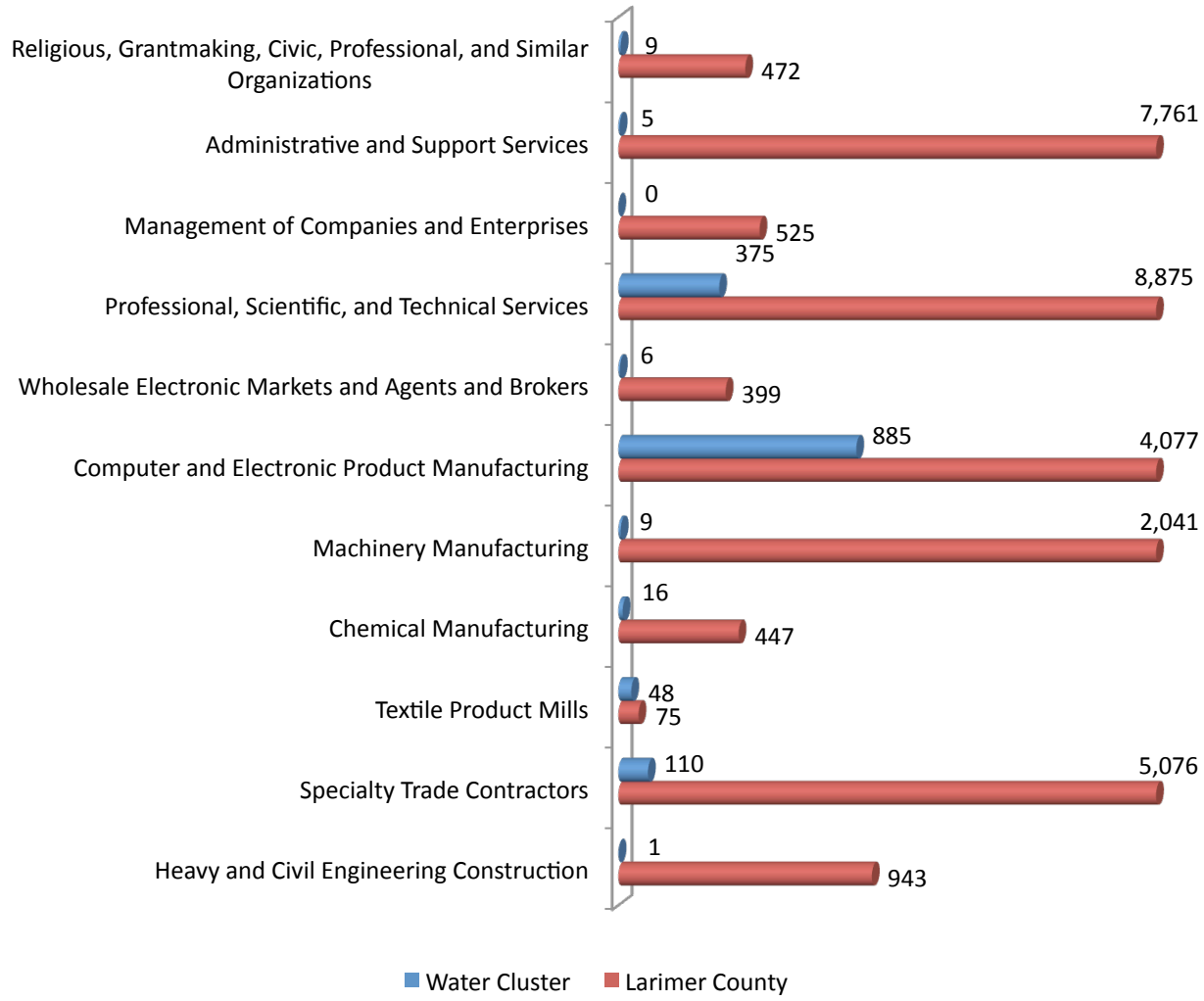
Sources: CDLE QCEW and BLS

Chart A.VI.1: Fourth Quarter Average Employment in the Water Cluster



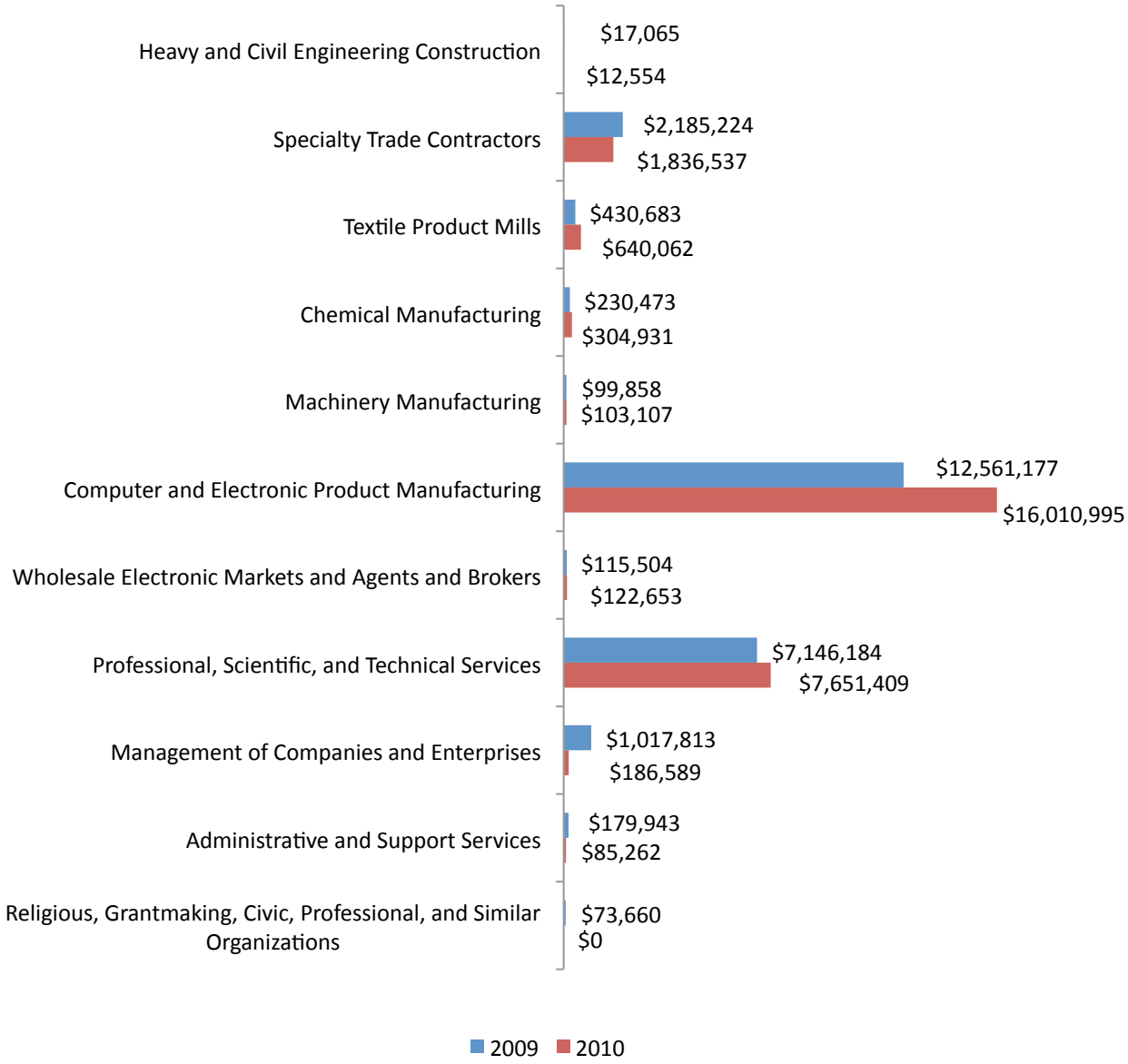
Source: CDLE QCEW

Chart A.VI.2: 2010q4 Average Employment - Water Cluster Compared to Larimer County



Source: CDLE CDLE QCEW

Chart A.VI.3: Total Fourth Quarter Wages Paid in the Water Cluster



Source: CDLE QCEW

APPENDIX B

B.I: North American Industrial Classification System (NAICS)

NAICS is a basic framework for categorizing establishments and is the basis for regional economic analysis. This system allows us to arrange the economy's multitude of business types into discrete industry classifications. These classifications are numerical and hierarchical, with digits on the left defining major sectors and digits to their right specifying subdivisions. Today, much of the readily available economic data related to employment is based on such classifications.

NAICS divides the economy into 20 major sectors and recognizes 1,170 industries. Five of the 20 sectors are largely goods producing and 15 are entirely services-producing industries. The NAICS system is hierarchical and identifies sectors and industries therein with from 2 to 6 digits: the more digits, the more specific the industry identification.

New NAICS code structure

NAICS Code	Industry
11	Agriculture, Forestry, and Fishing
21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Service (except public administration)
91-93	Public Administration

Typically, in comparative discussions of industries the NAICS codes can be used as 2, 3, 4, 5, and 6 digit codes. Discussions about manufacturing in general use the 2 digit manufacturing codes (31-33) but discussions about particular types of manufacturing use the 3-digit sub-sector codes.

Here are a couple of examples:

	Example #1		Example #2	
NAICS Level	**NAICS Code**	**Description**	**NAICS Code**	**Description**
Sector	31-33	Manufacturing	42	Wholesale trade
Subsector	334	Computer and electronic product manufacturing	423	Merchant wholesalers, durable goods
Industry group	3346	Manufacturing and reproduction of magnetic and optical media	4231	Motor vehicle and parts merchant wholesalers
Industry	33461	Manufacturing and reproduction of magnetic and optical media	42311	Motor vehicle merchant wholesalers
U.S. Industry	334611	Reproduction of software	42312	New motor vehicle parts merchant wholesalers

A Few Caveats

When using Industrial Classifications, there are a few important factors that you should keep in mind.

First, individual establishments are assigned an industry according to their primary economic activity. Thus, if a business produces goods that fall under two or more industries, the business is classified according to its major output.

Second, employment figures represent an industry and not an occupation. Thus, industry data does not provide a clear picture of the types of work in which employees are engaged. For example, many companies carry out some of their business services internally. Such services show up in the industry employment statistics for the whole business. For example, an accountant at a steel mill would be counted in the employment statistics for the steel industry (NAICS 3311) rather than the business service industry (NAICS 5412). However, if the steel mill hired an accounting firm to do their books, this employee would show up in NAICS 5412.

Finally, for confidentiality reasons, data is often not made publicly available when it will identify individual businesses. While county data is usually available at very aggregated level, confidentiality concerns often arise at more detailed levels of analysis. This is especially true in smaller economic regions, such as rural counties.

More information on the NAICS system is available on the internet, go to:
http://www.census.gov/epcd/www/naics.html

B.II: Location Quotients

In a nutshell, the location quotient helps identify those local industries that are producing more than is needed for local use and selling outside the region (exporting) and those that are not meeting local needs and are a source of consumption leakage (importing). Often times, the location quotient reinforces what you already know about your local economy, but just as often, it uncovers things you did not know, or, at least, changes your perceptions. The real strength of the tool is that it is a simple, yet effective educational resource.

Calculating a location quotient is a straightforward process, and, in practice, most often uses employment data that is widely available (This analysis is most informative when using as disaggregated employment data as you can find for your region (NAICS 3- or 4-digit). The basic formula for the location quotient is:

$$LQ = \frac{\text{\% of Local Employment in Industry i}}{\text{\% of National Employment in Industry i}}$$

$$= \frac{\text{Local Employment in Industry i / Total Local Employment}}{\text{National Employment in Industry i / Total National Employment}}$$

Simply put, the location quotient identifies how local industries stack up with national averages.

In practice, location quotients are often used to identify regionally competitive industries. An exporting industry is one where the industry not only meets the local demand for its products, but also produces enough so as to sell outside of the region. An importing industry is one where local production levels are insufficient to meet local demand.

When interpreting the data, a location quotient greater than 1.0 indicates that the economy is self-sufficient, and may even be exporting the good or service of that particular industry. (As a rule-of-thumb, a location quotient greater than 1.25 almost certainly identifies exporting industries.) On the other hand, a location quotient less than 1.0 suggests that the region tends to import the good or service. (The applicable rule-of- thumb is that a location quotient less than 0.75 indicates an importing industry.)