Connecticut Department of Labor (CTDOL)

Report to the Education, Higher Education and Employment Advancement and Labor and Public Employees Committees

Economic Outlook and Prospects for Vocational-Technical Related Occupations

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I. SUMMARY

Connecticut is in its 78th month of steady recovery since the recession of 2008-2010. Employment growth has been moderate and steady since 2010 – though Connecticut has lagged behind the U.S. on average. As of August 2016, all major economic sectors except construction have shown at least some employment growth in the last 12 months. This includes manufacturing which last peaked in 1967 and has shown no annual growth since 1980. Our short-term forecast for employment growth through 2017 calls for a conservative growth rate of 0.7 percent over the two-year period 2015-2017, however, more recent data indicates the economy may be creating jobs at a faster pace. It now appears that employment growth in 2016 alone may come in at 0.7 percent, about twice what we originally projected. Incomes have been slow to recover since the recession, but lately appear to be picking up. As of August 2016, wages have been growing at a 3.5 percent rate over the year. The slow growth in income and wages until recently is partly due to the natural demographic phenomena of larger numbers of retirees being replaced by younger age cohorts early in their earnings path. However, the problem of income growth is also impacted by the fact that some of the fastest growing segments in the economy since the recession have been in traditionally lower paying fields.

The CT Department of Labor undertakes an annual examination of occupations served by education programs provided by the vocational high school system. The agency examines growth patterns in those occupations in the state which require a high school diploma as a minimum entry requirement. CTDOL also looks at the balance in the number of graduates from education programs provided by the vocational education system and the demand for new entrants into the occupations these programs are designed to serve. Finally, CTDOL looks at a broader spectrum of occupations which require a high school diploma as a minimum requirement for entry, but for which there is no current high school level training available. These occupations may provide future opportunities for expansion of vocational high school education programs.

In general, this analysis indicates that the educational programs offered by the vocational high school system are in good alignment with the apparent demand for new entrants into the occupations they are designed to service. There are a very few cases where, based on Training and Education Planning System (TEPS) analysis, vocational programs appear to be producing candidates for jobs that may not exist.

Based on TEPS data, CTDOL recommends that further research be done regarding the demand for automotive technology, computer installation and repair technology, and electrician programs to assure those fields are not being "over supplied." **We caution that the TEPS program used to identify supply and demand imbalances should be used as a preliminary indicator only. There are other possible explanations for apparent imbalances that our current data can't address.**

II. Introduction

According to Sec 10-95h of the Connecticut General Statutes:

"The Labor Commissioner shall submit the following to the joint standing committees of the General Assembly having cognizance of matters relating to education, higher education and employment advancement and labor: (A) Information identifying general economic trends in the state; (B) occupational information regarding the public and private sectors, such as continuous data on occupational movements; and (C) information identifying emerging regional, state and national workforce needs over the next thirty years."

This report seeks to address these requirements.

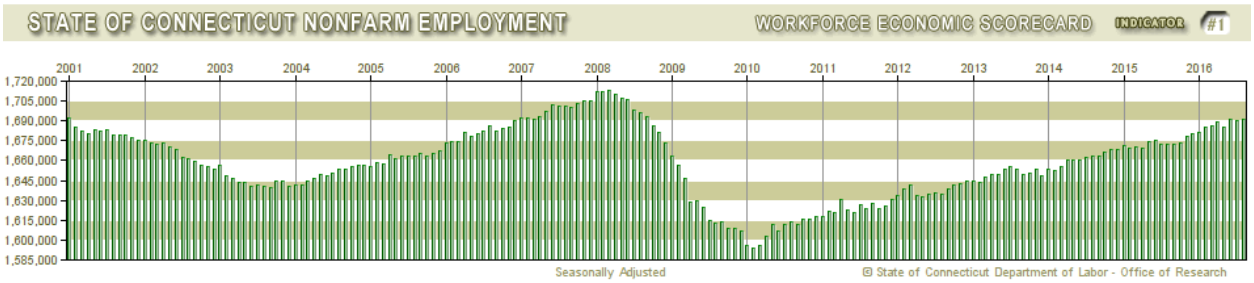
It should be noted that limitations on the data collected by the Department of Labor make full compliance with parts B) and C) above problematic. CTDOL conducts long-term occupational projections every two years with funding from the U.S. Department of Labor Education and Training Administration (USDOL / ETA). Our contracted deliverable mandates that CTDOL follow methods used by all states. We currently have occupational projections for the 2014–2024 ten-year period. The next round of projections will be completed by July 1, 2018, covering the period 2016–2026. Given long-term changes in technology, consumer tastes and economic conditions, thirty-year occupational projections would not generate meaningful results.

The foundation of CTDOL occupational projections is our Occupational Employment Statistics (OES) program, used to produce annual estimates of employment and wages earned by occupation in Connecticut. As currently designed by the USDOL Bureau of Labor Statistics, the sample design for the OES program does not permit its use as a "time-series," i.e. the comparisons of employment by occupation from one year to the next are not statistically valid. The data are best interpreted as "snapshots" in time. As a result, meeting the part B) condition to present "continuous data" on movements in occupational demand is not strictly possible.

III. Current Outlook for CT Economy and Labor Markets

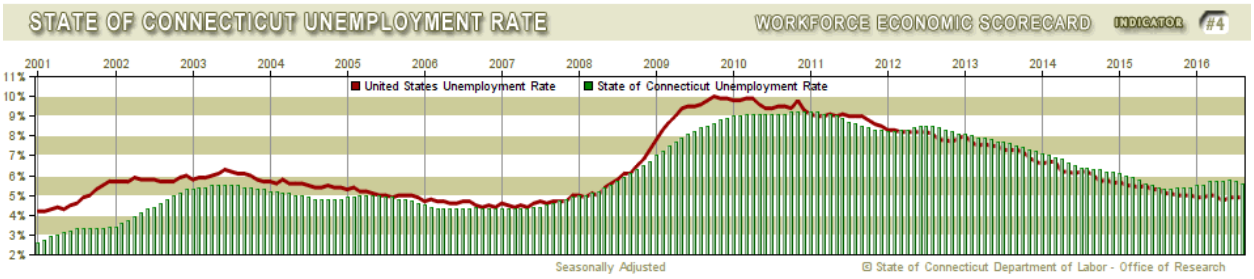
Connecticut's recovery from the recession of 2008–2010 has been relatively slow as compared to U.S. averages. However, job growth in the state remains on a moderate growth trajectory (See FIGURE 1).

FIGURE 1:



As of August 2016, Connecticut recovered about 97 thousand, or 81 percent, of the jobs lost since the bottom of the recession in the first quarter of 2010. Connecticut's unemployment rate has drifted up a bit in 2016 relative to the U.S. average. This is partly due to the state's moderate employment growth rate, but also to more people returning to the labor force because they see opportunity for employment (see FIGURE 2).

FIGURE 2:

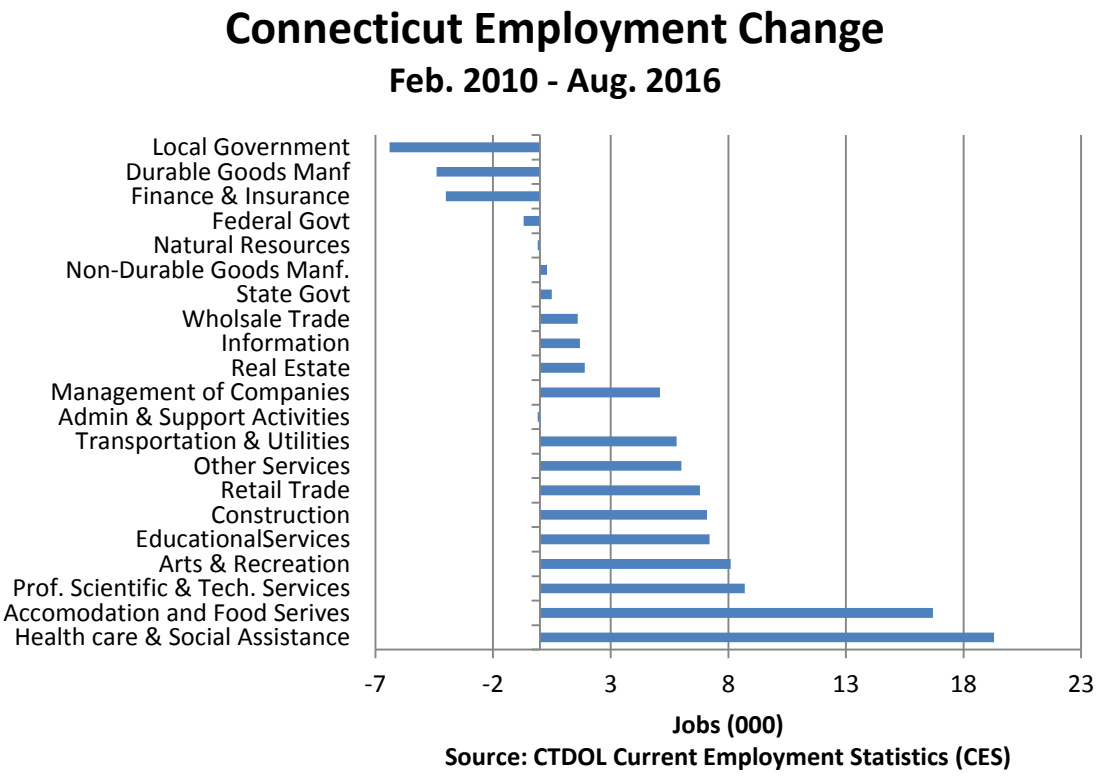


WHAT DOES THE RECOVERY LOOK LIKE? WHERE ARE WE GAINING AND LOSING?

To date, the jobs recovery in Connecticut has occurred across most industries with some important exceptions. Job growth in the public sector, particularly at the state and local level, continues to drag on growth in the state. In FIGURE 3, the small amount of growth in state government is somewhat misleading because standard reporting includes the state colleges and universities in this category. Since the withdrawal of federal stimulus funds, state and local governments have little choice but to slow hiring, and jobs continue to shrink. Manufacturing employment continues to decline, but in this case bad news may be good. The rate of decline in manufacturing employment is the lowest it has been

in several decades. As of August 2016, the Manufacturing sector is showing actual growth. Manufacturing employment has declined in Connecticut, more as a factor of productivity and a shift toward advanced manufacturing, rather than a decline in the importance of this industry in the state. Even in a low employment growth environment, there is great opportunity and challenge in Connecticut manufacturing labor markets. The average age of the skilled manufacturing workforce is much higher than the workforce as a whole. Even in an environment where little net growth in total manufacturing employment is predicted, we do forecast reasonably strong annual demand to replace retiring workers.

FIGURE 3:



A continuing concern is the slow recovery of financial sector jobs, both in banking and in our historically important insurance industry. The banking industry has been hit hard by declines in both hedge funds and banking. The insurance industry continues to suffer from a decline in profitability (excepting healthcare) and continued restructuring where key activities such as IT services are being outsourced.

More recently, the job growth picture has improved even in those sectors which have been stubbornly slow to recover. In the twelve months ending in August 2016, only the construction sector is failing to show employment growth.

Table 1: Connecticut Industry Sector Employment Growth September 2015 – September 2016

	Year to Year			
	Sep 2016	Sep 2015	Change	Rate %
Follow link below for more charts & data				
Connecticut Nonfarm Employment	1,685,000	1,672,200	12,800	0.8%
Private Sector	1,446,400	1,433,200	13,200	0.9%
Follow link below for more charts & data				
Construction	56,800	57,500	-700	-1.2%
Manufacturing	159,600	159,200	400	0.3%
Follow link below for more charts & data				
Transportation and Public Utilities	298,400	297,000	1,400	0.5%
Information	33,200	32,500	700	2.2%
Financial Activities	131,800	129,800	2,000	1.5%
Professional and Business Services	219,400	216,400	3,000	1.4%
Educational and Health Services	328,000	325,400	2,600	0.8%
Leisure and Hospitality	154,000	150,700	3,300	2.2%
Other Services	64,600	64,100	500	0.8%
Government	238,600	239,000	-400	-0.2%
Follow link below for more charts & data				
United States Nonfarm Employment	144,747,000	142,300,000	2,447,000	1.7%

Source: CTDOL Current Employment Statistics Program

SHORT-TERM EMPLOYMENT OUTLOOK

Connecticut is expected to continue on its rebound from the recent recession over the forecast period. The average annual growth rate is expected to be 0.7 percent. This will potentially bring the employment level to 1,696,795 by the third quarter of 2017.

The goods producing industries are expected to contract at an annual average rate of 0.1 percent. The largest contributor to this is the manufacturing industry. Over the two-year period, it is expected to drop by only 1,850 jobs, the smallest decline in many years. As is shown in Table 1, current growth data indicates we may see a stronger performance than the two year forecast indicates. Construction has a brighter outlook, as it is projected to grow on average 1.3 percent annually though the sector is currently down over the year through September 2016.

The much larger service providing industries are forecasted to grow 0.4 percent on an annual average basis. Service industries are led by education and health services which are expected to grow 0.9 percent annually, keeping on trend with how it has performed over recent years. Other significant contributions to the anticipated employment growth are the Trade, Transportation, Utilities, Leisure and Hospitality, Financial Activities, Professional and Business Services sectors. Government and Information are both likely to shrink over the next two years.

Table 2: Short Term Industry Employment Forecast – Connecticut Payroll Jobs Q4 2015 – Q4 2017

Industry	2015 Employment	2017 Projected Employment	Avg. Annual Growth Rate
Total All Industries	**1,771,120**	**1,783,010**	**0.3%**
Goods Producing	213,970	213,390	-0.1%
Natural Resources and Mining	4,140	4,050	-1.1%
Construction	51,560	52,930	1.3%
Manufacturing	158,270	156,420	-0.6%
Services Providing	1,453,310	1,464,860	0.4%
Trade, Transportation, and Utilities	295,210	297,850	0.4%
Information	32,180	31,330	-1.3%
Financial Activities	128,960	129,950	0.4%
Professional and Business Services	211,470	211,930	0.1%
Education and Health Services	471,450	480,290	0.9%
Leisure and Hospitality	154,750	155,820	0.3%
Other Services (except Government)	74,570	74,890	0.2%
Government	84,710	82,800	-1.1%

IV. Demand for Occupations Relevant to the Vocational Education System (requiring High School or postsecondary education)

LONG-TERM INDUSTRY/OCCUPATIONAL-EMPLOYMENT FORECAST PROCESS:

The long-term projections are produced on a two-year cycle and look forward 10 years. The most recent 10-year projections are for the period 2014-2024 and were completed in the summer of 2016. The 2016-2026 projections are scheduled to be completed by June 30, 2018.

Every quarter, Connecticut employers report employment levels and wages to the Connecticut Department of Labor as part of the Unemployment Compensation Insurance system. This data allows the Office of Research to accurately calculate employment levels for every industry in the state over time. For most industries, we have complete and consistent data back to 1990. This data is used as a foundation to produce the long-term projections of Connecticut employment by industry, based on trends in the data and other factors. These other factors include the national projections for employment by industry, independent demographic forecasts, and independent forecasts of other factors that could affect employment in Connecticut. For example, there are independent forecasts of capital investment by the U.S. Department of Defense. They are used to develop employment projections for those Connecticut industries affected by changes in defense capital spending.

The long-term industry projections are produced with the assumption that the economy will have full employment at the end of the projection period. The "full employment" assumption is made because predicting the timing of the business cycle over a ten-year period is difficult, if not impossible, and would severely complicate the use of this data for planning purposes.

LONG-TERM OCCUPATIONAL FORECASTS

The Occupational Employment Statistics (OES) program conducted in partnership with the USDOL Bureau of Labor Statistics develops staffing patterns for each industry based on a survey of 21,000 establishments. These staffing patterns are combined with the industry data to produce the estimates of employment by occupation for the base year. Occupational employment projections are based on both the industry projections and change factors which estimate the portion of employment each occupation is expected to gain or lose within each industry. Finally, the number of projected openings is computed based on the change in the level of employment, plus an occupation-specific measure of expected turnover.

Growth in employment for an industry or occupation can occur for two reasons. First, the demand for labor can increase because the industry itself is expanding, requiring more labor. Second, there can be demand for new positions in an industry or occupation for demographic reasons, i.e. to replace retiring workers or replace workers who leave a position to take a new job – leaving a vacancy behind. This type of annual demand is called replacement demand. Because of the need for replacements, there can be significant demand for new workers even in cases where the industry itself is not growing. In addition, we would expect high replacement demand in industries and occupations that have traditionally high turnover or "churn." For example, we can expect a reasonably high annual demand for skilled replacement manufacturing occupations even though manufacturing is not projected to see an increase in overall employment levels over the next ten years. The average age of manufacturing workers in Connecticut is considerably higher than the average age of all of Connecticut's workers. In addition, many of those manufacturing workers are close to retirement.

Our occupational projections distinguish between the annual projected demands for openings due to growth from those due to replacement needs.

The tables below present the estimated annual occupational demand for new job openings over the period 2014–2024. *To be of greater use to the Vocational Education system, these tables focus on those*

occupations that require either a high school education or postsecondary certificate as minimum level entry requirements. Occupations which require either less than a high school degree level of education or college preparation are not included. Vocational high school training may not be relevant to all these occupations. Rankings are presented by all projected annual openings and separately by those occupations projected to be fastest growing. For contrast purposes, those occupations in greatest decline are also presented.

TABLE 3: Top 100 CT Occupations which Require a High School Degree or Postsecondary Award (Ranked by Annual Projected Openings due to Growth through 2024)

SOURCE: CTDOL Occupational Projections program 2014-2024

Occupational Title	Projected Employment 2024	Annual Growth Openings	Annual Total Openings	Median Annual Wage	Minimum Education	Required Work Experience	On Job Training
Customer Service Representatives	32,242	247	980	38,509	HS	None	ST
Childcare Workers	20,210	222	753	22,852	HS	None	ST
First-Line Supervisors of Office and Administrative	27,038	156	541	60,674	HS	< 5 Yrs.	None
Medical Assistants	8,486	124	275	34,865	PS	None	None
Nursing Assistants	24,059	123	639	31,357	PS	None	None
Carpenters	16,315	121	295	51,785	HS	None	APP
Machinists	8,644	111	329	46,628	HS	None	LT
Receptionists and Information Clerks	14,288	106	462	32,962	HS	None	ST
Electricians	9,107	103	226	56,623	HS	None	APP
Social and Human Service Assistants	9,089	100	259	38,216	HS	None	ST
Bus Drivers, School or Special Client	10,202	94	216	34,637	HS	None	ST
Sales Representatives, Wholesale and Manufactu	16,924	93	422	63,280	HS	None	MT
Hairdressers, Hairstylists, and Cosmetologists	11,154	88	352	25,942	PS	None	None
Sales Representatives, Services, All Other	10,575	81	289	59,651	HS	None	MT
Office Clerks, General	34,770	81	813	35,879	HS	None	ST
Licensed Practical and Licensed Vocational Nurse	9,594	75	327	56,548	PS	None	None
First-Line Supervisors of Food Preparation and Se	8,999	71	317	33,672	HS	< 5 Yrs.	None
Maintenance and Repair Workers, General	11,274	70	347	44,206	HS	None	LT
First-Line Supervisors of Construction Trades and	7,973	67	125	73,058	HS	5+ Yrs.	None
Plumbers, Pipefitters, and Steamfitters	6,377	66	142	58,565	HS	None	APP
Secretaries and Administrative Assistants, Excep	34,336	63	418	42,019	HS	None	ST
Computer-Controlled Machine Tool Operators, Met	3,261	60	141	44,852	HS	None	MT
Billing and Posting Clerks	6,137	57	173	43,779	HS	None	MT
Medical Secretaries	4,837	57	102	39,921	HS	None	MT
Light Truck or Delivery Services Drivers	12,117	55	252	33,547	HS	None	ST
Team Assemblers	10,013	52	256	30,224	HS	None	MT
Industrial Machinery Mechanics	2,895	51	113	53,753	HS	None	LT
Self-Enrichment Education Teachers	3,992	49	115	41,665	HS	< 5 Yrs.	None
Insurance Sales Agents	8,253	49	253	57,649	HS	None	MT
Office and Administrative Support Workers, All Otl	6,295	49	205	20,477	HS	None	ST
Heavy and Tractor-Trailer Truck Drivers	14,596	49	289	46,536	PS	None	ST
Massage Therapists	2,775	46	63	45,970	PS	None	None
Residential Advisors	2,339	40	99	28,389	HS	None	ST
Dental Assistants	4,204	38	132	42,288	PS	None	None
Security Guards	11,795	37	198	27,523	HS	None	ST
Emergency Medical Technicians and Paramedics	3,608	36	89	44,800	PS	None	None
Fitness Trainers and Aerobics Instructors	4,905	36	120	44,124	HS	None	ST
Recreation Workers	5,520	36	131	26,615	HS	None	ST
Production, Planning, and Expediting Clerks	4,827	34	156	49,407	HS	None	MT
Assemblers and Fabricators, All Other	3,666	33	105	33,113	HS	None	MT
Property, Real Estate, and Community Associatio	4,180	32	99	62,987	HS	< 5 Yrs.	None
Inspectors, Testers, Sorters, Samplers, and Weigl	8,213	32	230	43,984	HS	None	MT
First-Line Supervisors of Retail Sales Workers	21,855	31	513	44,215	HS	< 5 Yrs.	None
Heating, Air Conditioning, and Refrigeration Mecha	3,853	30	84	55,280	PS	None	LT
Nonfarm Animal Caretakers	2,932	29	83	23,066	HS	None	ST
Operating Engineers and Other Construction Equi	3,322	27	78	63,850	HS	None	MT
First-Line Supervisors of Mechanics, Installers, an	4,674	27	115	69,651	HS	< 5 Yrs.	None
Insurance Claims and Policy Processing Clerks	4,883	26	142	47,535	HS	None	MT
Bus and Truck Mechanics and Diesel Engine Spe	2,661	26	67	53,348	HS	None	LT
Real Estate Sales Agents	4,851	24	56	44,801	HS	None	MT
First-Line Supervisors of Production and Operating	8,650	24	157	64,440	HS	< 5 Yrs.	None

TABLE 3: CONTINUED

Occupational Title	Projected Employment 2024	Annual Growth Openings	Annual Total Openings	Median Annual Wage	Minimum Education	Required Work Experience	On Job Training
Automotive Service Technicians and Mechanics	10,133	23	288	42,244	PS	None	ST
Food Service Managers	5,654	20	130	54,811	HS	< 5 Yrs.	None
Chefs and Head Cooks	2,330	20	52	44,603	HS	5+ Yrs.	None
Pharmacy Technicians	3,741	19	54	31,774	HS	None	MT
First-Line Supervisors of Landscaping, Lawn Servic	3,201	19	69	54,250	HS	< 5 Yrs.	None
Installation, Maintenance, and Repair Workers, All	3,224	19	65	40,090	HS	None	MT
Opticians, Dispensing	1,146	18	44	39,738	HS	None	LT
Psychiatric Aides	1,376	18	45	36,058	HS	None	ST
Physical Therapist Aides	830	18	37	29,552	HS	None	ST
Manicurists and Pedicurists	2,464	18	36	20,150	PS	None	None
First-Line Supervisors of Non-Retail Sales Workers	5,532	18	80	78,119	HS	< 5 Yrs.	None
Shipping, Receiving, and Traffic Clerks	7,323	18	173	34,599	HS	None	ST
Maintenance Workers, Machinery	1,354	18	37	48,464	HS	None	MT
Computer Numerically Controlled Machine Tool Pr	1,031	18	44	55,845	HS	None	LT
Information and Record Clerks, All Other	1,729	17	57	40,770	HS	None	ST
Medical Records and Health Information Technicia	1,685	15	49	43,806	PS	None	None
Phlebotomists	1,792	15	49	37,730	PS	None	None
Brickmasons and Blockmasons	1,090	14	22	67,082	HS	None	APP
Telecommunications Equipment Installers and Rep	2,615	14	36	58,607	PS	None	MT
Welders, Cutters, Solderers, and Brazers	2,448	14	80	42,606	HS	None	MT
Driver/Sales Workers	3,195	14	66	26,619	HS	None	ST
Claims Adjusters, Examiners, and Investigators	5,609	13	149	67,162	HS	None	LT
First-Line Supervisors of Housekeeping and Janito	3,034	13	59	52,180	HS	< 5 Yrs.	None
Hotel, Motel, and Resort Desk Clerks	1,971	13	108	22,667	HS	None	ST
Automotive Body and Related Repairers	2,025	13	57	44,125	HS	None	LT
Multiple Machine Tool Setters, Operators, and Ter	3,354	13	69	37,492	HS	None	MT
Ophthalmic Medical Technicians	823	12	19	41,574	PS	None	None
Health Technologists and Technicians, All Other	1,026	12	21	48,178	HS	None	None
Personal Care and Service Workers, All Other	1,237	12	37	26,992	HS	None	ST
Production Workers, All Other	2,015	12	51	30,878	HS	None	MT
Hazardous Materials Removal Workers	916	11	29	42,495	HS	None	MT
Audio and Video Equipment Technicians	1,233	10	32	49,162	PS	None	ST
Healthcare Practitioners and Technical Workers, A	869	10	25	51,800	PS	None	None
Demonstrators and Product Promoters	1,569	10	54	29,264	HS	None	ST
Dispatchers, Except Police, Fire, and Ambulance	1,917	10	56	39,911	HS	None	MT
Sheet Metal Workers	1,351	10	37	52,151	HS	None	APP
Outdoor Power Equipment and Other Small Engin	914	10	26	44,964	HS	None	MT
Dental Laboratory Technicians	731	10	25	39,840	HS	None	MT
Painters, Transportation Equipment	714	10	22	58,764	HS	None	MT
Community Health Workers	790	9	23	39,433	HS	None	ST
Real Estate Brokers	1,773	9	21	65,605	HS	< 5 Yrs.	None
Helpers--Electricians	579	9	15	28,937	HS	None	ST
First-Line Supervisors of Transportation and Materi	2,031	9	71	63,355	HS	< 5 Yrs.	None
Police and Sheriff's Patrol Officers	6,291	8	213	68,853	HS	None	MT
Security and Fire Alarm Systems Installers	716	8	24	55,189	HS	None	MT
Cabinetmakers and Bench Carpenters	972	8	15	44,627	HS	None	MT
Ophthalmic Laboratory Technicians	578	8	20	37,563	HS	None	MT
Transportation, Storage, and Distribution Managers	1,220	7	32	102,069	HS	5+ Yrs.	None
Library Technicians	1,743	7	87	40,113	PS	None	None
Veterinary Assistants and Laboratory Animal Care	1,047	7	27	27,880	HS	None	ST
Skincare Specialists	780	7	13	35,038	PS	None	None

Table 3 Abbreviation Key:

HS = High school diploma, PS = Post-secondary award

ST = Short-term on-the-job training (OJT), MT = medium-term OJT, LT = Long-term OJT, APP = Apprenticeship

Table 4: Bottom 50 CT Occupations which Require a High School Degree or Postsecondary Award (Ranked by Total Projected Annual Openings Through 2024)

Occupational Title	Projected Employment 2024	Annual Growth Openings	Annual Total Openings	Median Annual Wage	Minimum Education	Required Work Experience	On Job Training
Control and Valve Installers and Repairers, Except	527	0	21	70,238	HS	None	MT
Home Appliance Repairers	464	0	13	39,392	HS	None	MT
Coin, Vending, and Amusement Machine Servicers	280	0	5	39,382	HS	None	ST
Locksmiths and Safe Repairers	156	0	9	48,625	HS	None	LT
Coil Winders, Tapers, and Finishers	219	0	3	34,654	HS	None	MT
Electrical and Electronic Equipment Assemblers	3,034	0	39	34,440	HS	None	MT
Electromechanical Equipment Assemblers	1,099	0	14	37,900	HS	None	MT
Food Cooking Machine Operators and Tenders	213	0	4	28,458	HS	None	MT
Extruding and Drawing Machine Setters, Operators	1,018	0	30	39,054	HS	None	MT
Forging Machine Setters, Operators, and Tenders,	241	0	6	39,840	HS	None	MT
Rolling Machine Setters, Operators, and Tenders,	289	0	8	40,473	HS	None	MT
Cutting, Punching, and Press Machine Setters, O	1,835	0	28	34,379	HS	None	MT
Drilling and Boring Machine Tool Setters, Operator	245	0	5	32,133	HS	None	MT
Grinding, Lapping, Polishing, and Buffing Machine	1,218	0	60	39,442	HS	None	MT
Lathe and Turning Machine Tool Setters, Operator	1,107	0	33	36,737	HS	None	MT
Milling and Planing Machine Setters, Operators, a	231	0	5	43,606	HS	None	MT
Model Makers, Metal and Plastic	100	0	2	50,476	HS	None	MT
Foundry Mold and Coremakers	66	0	1	35,042	HS	None	MT
Molding, Coremaking, and Casting Machine Sette	874	0	16	28,397	HS	None	MT
Tool and Die Makers	1,996	0	10	58,223	HS	None	LT
Welding, Soldering, and Brazing Machine Setters,	338	0	11	36,757	HS	None	MT
Heat Treating Equipment Setters, Operators, and	238	0	5	37,635	HS	None	MT
Layout Workers, Metal and Plastic	83	0	2	47,740	HS	None	MT
Plating and Coating Machine Setters, Operators, a	529	0	15	31,408	HS	None	MT
Tool Grinders, Filers, and Sharpeners	144	0	4		HS	None	MT
Metal Workers and Plastic Workers, All Other	229	0	5	38,166	HS	None	MT
Prepress Technicians and Workers	320	0	6	48,812	PS	None	None
Printing Press Operators	2,005	0	32	36,778	HS	None	MT
Print Binding and Finishing Workers	521	0	8	35,604	HS	None	ST
Textile Cutting Machine Setters, Operators, and T	55	0	1	28,264	HS	None	MT
Upholsterers	217	0	6	37,084	HS	None	MT
Textile, Apparel, and Furnishings Workers, All Oth	57	0	1	26,254	HS	None	ST
Sawing Machine Setters, Operators, and Tenders,	181	0	5	34,144	HS	None	ST
Woodworking Machine Setters, Operators, and Te	271	0	5	36,818	HS	None	ST
Power Distributors and Dispatchers	106	0	4		HS	None	LT
Power Plant Operators	200	0	7	71,401	HS	None	LT
Chemical Plant and System Operators	287	0	11	63,644	HS	None	LT
Petroleum Pump System Operators, Refinery Ope	52	0	2	58,550	HS	None	LT
Crushing, Grinding, and Polishing Machine Setters	504	0	11	36,584	HS	None	MT
Cutting and Slicing Machine Setters, Operators, a	1,025	0	20	36,584	HS	None	ST
Extruding, Forming, Pressing, and Compacting Ma	376	0	15	33,685	HS	None	MT
Furnace, Kiln, Oven, Drier, and Kettle Operators a	87	0	2	34,144	HS	None	MT
Photographic Process Workers and Processing M	192	0	6	30,724	HS	None	ST
Adhesive Bonding Machine Operators and Tenders	97	0	3	38,298	HS	None	MT
Etchers and Engravers	150	0	4	31,949	HS	None	MT
Molders, Shapers, and Casters, Except Metal and	173	0	6	39,932	HS	None	LT
Paper Goods Machine Setters, Operators, and Te	795	0	13	44,402	HS	None	MT
Aircraft Cargo Handling Supervisors	56	0	2	48,695	HS	< 5 Yrs.	None
Ambulance Drivers and Attendants, Except Emerg	111	0	2	29,339	HS	None	MT
Transportation Inspectors	136	0	4	70,781	HS	None	MT
Transportation Attendants, Except Flight Attendan	50	0	1	21,740	HS	None	ST

SOURCE: CTDOL Occupational Projections program 2014- 2024

Table 3 Abbreviation Key:

HS = High school diploma, PS = Post-secondary award

ST = Short-term on-the-job training (OJT), MT = medium-term OJT, LT = Long-term OJT, APP = Apprenticeship

V. Workforce Alignment between Vocational Education System (requiring High School or postsecondary education) and Projected Occupational Demand

The CTDOL TEPS program tool attempts to compare the "pipeline" of education program completers in Connecticut to the estimated demand for new entrants into those occupations for which completers are being trained. TEPS uses program completer information from the Integrated Postsecondary Education Data System (IPEDS) and local education institutions and compares these values to CTDOL's long-term estimates of annual demand for new entrants into an occupation. The results can be informative, but the limitations of the data and labor markets must be understood in order to properly use the information. These limitations include:

- The ONET (Occupational Information Network) crosswalk which relates education programs (classified by CIP – Classification of Instructional Program codes) to occupations (classified by SOC – Standard Occupational Codes) is "one to many" relationship in both directions. This means an educational program may train an individual for a number of occupations and an occupation may draw qualified entrants from a number of education programs. There is no reliable data available to apportion completers to each of its available occupations. **TEPS assumes that all completers of an education program could enter any of the occupations for which they qualify.**

- TEPS (or any state-based measure of labor supply and demand) assumes that labor markets begin and end at the state border. In fact, this is highly dependent on the occupation involved. Entrants to some new positions could come across state or international borders. Similarly, many trained in Connecticut could seek positions elsewhere.

- **The TEPS procedure recognizes, but can't measure those who complete an education program and may not be directly entering the workforce.** A particular education program may be a useful stepping stone toward further education and career choices.

As a result of these limitations, TEPS results that show a significant under or over supply of trained individuals for entry into an occupation should be taken as a preliminary indicator only. More analysis from those who are close to these professions is necessary to determine if too many or too few individuals are being trained for a particular occupation.

For the case of vocational/technical education, TEPS filters out those completers of Bachelor's and advanced degrees as well as those occupations which require higher levels of training. For high school education programs for which there are also Certificate and Associate degree programs, the completers are included, but accounted for separately. This is done because these high school programs may be the first step in a career pathway that requires higher levels of training.

Table 5: Educational Programs provided by Connecticut High Schools and the Average Annual Openings for the Occupations they "Supply."

Educational Program (CIP Title BOLD) SOC Occupation (in Blue)	2015 High School Completers	2015 Post Secondary Certificate	2015 Associate Deg. Awards	2015 Bachelor Awards	Total Completers	Projected Annual Openings	Projected Surplus or Deficit	% Surplus or Deficit
Architectural and Building Sciences/Technology.	**36**	**0**	**0**	**0**	**36**	**134**	**98**	**73**
Architectural and Civil Drafters	36	0	0	0	36	9		
Autobody/Collision and Repair Technology/Technici	**108**	**54**	**0**	**0**	**162**	**90**	**-72**	**-80**
Automotive Body and Related Repairers	108	54	0	0	162	57		
Automotive Glass Installers and Repairers	108	54	0	0	162	6		
Insurance Appraisers, Auto Damage	108	54	0	0	162	5		
Painters, Transportation Equipment	108	54	0	0	162	22		
Automobile/Automotive Mechanics Technology/Tec	**246**	**588**	**19**	**0**	**853**	**294**	**-559**	**-190**
Automotive Service Technicians and Mechanics	246	588	19	0	853	288	-565	
Electrical and Electronics Installers and Repairers, T	246	588	19	0	853	3	-850	
Electronic Equipment Installers and Repairers, Mot	246	588	19	0	853	3	-850	
Baking and Pastry Arts/Baker/Pastry Chef.	**15**	**108**	**0**	**0**	**123**	**95**	**-28**	**-29**
Bakers	15	108	0	0	123			
Chefs and Head Cooks	15	108	0	0	123			
Carpentry/Carpenter.	**197**	**1**	**0**	**0**	**198**	**420**	**222**	**53**
Carpenters	197	1	0	0	198			
Supervisors of Construction and Extraction Workers	197	1	0	0	198			
Child Care Provider/Assistant.	**13**	**21**	**5**	**0**	**39**	**753**	**714**	**95**
Childcare Workers	13	21	5	0	39			
Computer Installation and Repair Technology/Techn	**61**	**126**	**0**	**0**	**187**	**32**	**-155**	**-484**
Computer, Automated Teller, and Office Machine R	61	126	0	0	187			
Electrical and Electronics Repairers, Commercial an	61	126	0	0	187			
Computer Numerically Controlled (CNC) Machinist T	**11**	**250**	**0**	**0**	**261**	**185**	**-76**	**-41**
Computer Numerically Controlled Machine Tool Pr	11	250	0	0	261			
Computer-Controlled Machine Tool Operators, Met	11	250	0	0	261			
Cosmetology, Barber/Styling, and Nail Instructor.	**213**	**0**	**0**	**0**	**213**	**352**	**139**	**39**
Barbers	213	0	0	0	213			
Hairdressers, Hairstylists, and Cosmetologists	213	0	0	0	213			
Design and Visual Communications, General.	**12**	**0**	**0**	**41**	**59**	**152**	**93**	**61**
Art, Drama, and Music Teachers, Postsecondary	12	0	0	41	59			
Commercial and Industrial Designers	12	0	0	41	59			
Designers, All Other	12	0	0	41	59			
Graphic Designers	12	0	0	41	59			
Set and Exhibit Designers	12	0	0	41	59			
Diesel Mechanics Technology/Technician.	**10**	**0**	**0**	**0**	**10**	**67**	**57**	**85**
Bus and Truck Mechanics and Diesel Engine Special	10	0	0	0	10			
Electrician.	**216**	**437**	**0**	**0**	**653**	**375**	**-278**	**-74**
Electricians	216	437	0	0	653			
Security and Fire Alarm Systems Installers	216	437	0	0	653			
Signal and Track Switch Repairers	216	437	0	0	653			
Supervisors of Construction and Extraction Workers	216	437	0	0	653			
Electromechanical Engineering.	**16**	**0**	**0**	**0**	**16**	**512**	**496**	**97**
Architectural and Engineering Managers	16	0	0	0	16			
Engineering Teachers, Postsecondary	16	0	0	0	16			
Engineers, All Other	16	0	0	0	16			
Mechanical Engineers	16	0	0	0	16			
Fashion Merchandising.	**38**	**0**	**6**	**16**	**60**	**462**	**402**	**87**
Sales Representatives, Wholesale and Manufacturi	38	0	6	16	60			
Wholesale and Retail Buyers, Except Farm Products	38	0	6	16	60			
Graphic Communications, General.	**75**	**0**	**0**	**0**	**75**	**6**	**-69**	**-1150**
Prepress Technician and Workers	75	0	0	0	75			
Health Information/Medical Records Technology/Te	**95**	**12**	**22**	**0**	**129**	**49**	**-80**	**-163**
Medical Records and Health Information Technician	95	12	22	0	129			

Table 5: Continued

Educational Program (CIP Title BOLD) SOC Occupation (in Blue)	2015 High School Completers	2015 Post Secondary Certificate	2015 Associate Deg. Awards	2015 Bachelor Awards	Total Completers	Projected Annual Openings	Projected Surplus or Deficit	% Surplus or Deficit
Heating, Ventilation, Air Conditioning and Refrigerat	**129**	**108**	**0**	**0**	**237**	**105**	**-132**	**-126**
Engineering Technicians, Except Drafters, All Other	129	108	0	0	237			
Heating, Air Conditioning, and Refrigeration Mecha	129	108	0	0	237			
Information Technology.	**85**	**46**	**1**	**25**	**177**	**1044**	**867**	**83**
Computer and Information Research Scientists	85	46	1	25	177			
Computer and Information Systems Managers	85	46	1	25	177			
Computer Network Architects	85	46	1	25	177			
Computer Systems Analysts	85	46	1	25	177			
Information Security Analysts	85	46	1	25	177			
Software Developers, Applications	85	46	1	25	177			
Software Developers, Systems Software	85	46	1	25	177			
Manufacturing Engineering Technology/Technician.	**165**	**42**	**5**	**5**	**217**	**28**	**-189**	**-675**
Industrial Engineering Technicians	165	42	5	5	217			
Marketing/Marketing Management, General.	**22**	**10**	**36**	**352**	**438**	**658**	**220**	**33**
Advertising and Promotions Managers	22	10	36	352	438			
Business Teachers, Postsecondary	22	10	36	352	438			
Market Research Analysts and Marketing Specialist	22	10	36	352	438			
Marketing Managers	22	10	36	352	438			
Sales Managers	22	10	36	352	438			
Mason/Masonry.	**45**	**0**	**0**	**0**	**45**	**152**	**107**	**70**
Brickmasons and Blockmasons	45	0	0	0	45			
Stonemasons	45	0	0	0	45			
Supervisors of Construction and Extraction Workers	45	0	0	0	45			
Tile and Marble Setters	45	0	0	0	45			
Mechanical Engineering/Mechanical Technology/Te	**118**	**0**	**1**	**40**	**159**	**40**	**-119**	**-298**
Mechanical Engineering Technicians	118	0	1	40	159			
Mechatronics, Robotics, and Automation Engineerin	**32**	**0**	**0**	**0**	**32**	**194**	**162**	**84**
Architectural and Engineering Managers	32	0	0	0	32			
Engineering Teachers, Postsecondary	32	0	0	0	32			
Engineers, All Other	32	0	0	0	32			
Plumbing Technology/Plumber.	**171**	**24**	**0**	**0**	**195**	**267**	**72**	**27**
Plumbers, Pipefitters, and Steamfitters	171	24	0	0	195			
Septic Tank Servicers and Sewer Pipe Cleaners	171	24	0	0	195			
Supervisors of Construction and Extraction Workers	171	24	0	0	195			
Recording Arts Technology/Technician.	**12**	**0**	**0**	**0**	**12**	**41**	**29**	**71**
Audio and Video Equipment Technicians	12	0	0	0	12			
Sound Engineering Technicians	12	0	0	0	12			
Tourism and Travel Services Management.	**15**	**0**	**0**	**0**	**15**	**362**	**347**	**96**
Managers, All Other	15	0	0	0	15			
Travel Guides	15	0	0	0	15			
Welding Technology/Welder.	**20**	**179**	**0**	**0**	**199**	**91**	**-108**	**-119**
Welders, Cutters, Solderers, and Brazers	20	179	0	0	199			
Welding, Soldering, and Brazing Machine Setters, C	20	179	0	0	199			

Source: CTDOL TEPS Program

Interpret **Table 5** above as follows. In **bold black** are the instructional programs offered by high schools in Connecticut in CIP (Classification of Instructional Programs) format. For each program, the number of 2014 program completers is listed along with the number of completers of Certificate programs, Associate degree programs and Bachelor's degrees in the same CIP category. **In blue**, below each CIP program are the occupations for which candidates should be qualified. A positive value in the "Projected Surplus or Deficit" column indicates there are more annual openings anticipated than trained program completers. A negative value indicates there are more candidates then estimated openings.

Table 6 shows existing educational programs and their estimated occupational demand where there is apparent demand in excess of supply for occupations that require only a high school diploma as a minimum level entry requirement. In addition, there appears to be no current high school level training programs available.

Table 6: **Vocational Education Program Potential**

Educational Program (CIP Title BOLD) SOC Occupation (in Blue)	2015 High School Completers	2015 Post Secondary Certificate	2015 Associate Deg.	2015 Bachelor Awards	Total Completers	Projected Annual Openings	Projected Surplus or Deficit	% Surplus or Deficit
Administrative Assistant and Secretarial Science,	**0**	**35**	**47**	**0**	**82**	**512**	**430**	**84**
Executive Secretaries and Executive Administra	0	35	47	0	82	94		
Secretaries and Administrative Assistants, Exce	0	35	47	0	82	418		
Aeronautics/Aviation/Aerospace Science and Te	**0**	**63**	**1**	**0**	**64**	**32**	**-32**	**-100**
Transportation, Storage, and Distribution Mana	0	63	1	0	64	32		
Aircraft Powerplant Technology/Technician.	**0**	**11**	**0**	**0**	**11**	**35**	**24**	**69**
Aircraft Structure, Surfaces, Rigging, and Systen	0	11	0	0	11	35		
Airframe Mechanics and Aircraft Maintenance Te	**0**	**0**	**1**	**0**	**1**	**35**	**34**	**97**
Aircraft Structure, Surfaces, Rigging, and Systen	0	0	1	0	1	35		
Banking and Financial Support Services.	**0**	**2**	**2**	**0**	**4**	**313**	**309**	**99**
Bill and Account Collectors	0	2	2	0	4	74		
Credit Authorizers, Checkers, and Clerks	0	2	2	0	4	2		
Loan Interviewers and Clerks	0	2	2	0	4	27		
New Accounts Clerks	0	2	2	0	4	4		
Tellers	0	2	2	0	4	206		
Community Health and Preventive Medicine.	**0**	**0**	**0**	**0**	**0**	**23**	**23**	**100**
Community Health Workers	0	0	0	0	0	23		
Community Organization and Advocacy.	**0**	**3**	**0**	**11**	**14**	**10**	**-4**	**-40**
Eligibility Interviewers, Government Programs	0	3	0	11	14	10		
Cooking and Related Culinary Arts, General.	**0**	**4**	**0**	**0**	**4**	**369**	**365**	**99**
Chefs and Head Cooks	0	4	0	0	4	52		
First-Line Supervisors of Food Preparation and	0	4	0	0	4	317		
Corrections.	**0**	**9**	**0**	**0**	**9**	**160**	**151**	**94**
Correctional Officers and Jailers	0	9	0	0	9	84		
First-Line Supervisors of Correctional Officers	0	9	0	0	9	11		
First-Line Supervisors of Police and Detectives	0	9	0	0	9	65		
Culinary Arts/Chef Training.	**0**	**238**	**12**	**0**	**250**	**369**	**119**	**32**
Chefs and Head Cooks	0	238	12	0	250	52		
First-Line Supervisors of Food Preparation and	0	238	12	0	250	317		
Developmental Services Worker.	**0**	**3**	**15**	**0**	**18**	**259**	**241**	**93**
Social and Human Service Assistants	0	3	15	0	18	259		
Electrical/Electronics Equipment Installation and	**0**	**61**	**0**	**0**	**61**	**65**	**4**	**6**
Installation, Maintenance, and Repair Workers,	0	61	0	0	61	65		
Gene/Genetic Therapy.	**0**	**0**	**0**	**12**	**12**	**21**	**9**	**43**
Health Technologists and Technicians, All Othe	0	0	0	12	12	21		
Human Services, General.	**0**	**1**	**39**	**102**	**202**	**259**	**57**	**22**
Social and Human Service Assistants	0	1	39	102	202	259		
Insurance.	**0**	**0**	**0**	**14**	**14**	**402**	**388**	**97**
Claims Adjusters, Examiners, and Investigators	0	0	0	14	14	149		
Insurance Sales Agents	0	0	0	14	14	253		

Table 6: (Continued)

Educational Program (CIP Title BOLD) SOC Occupation (in Blue)	2015 High School Completers	2015 Post Secondary Certificate	2015 Associate Deg.	2015 Bachelor Awards	Total Completers	Projected Annual Openings	Projected Surplus or Deficit	% Surplus or Deficit
Law Enforcement Investigation and Interviewing	**0**	**0**	**0**	**0**	**0**	**233**	**233**	**100**
Detectives and Criminal Investigators	0	0	0	0	0	20		
Police and Sheriff's Patrol Officers	0	0	0	0	0	213		
Machine Tool Technology/Machinist.	**0**	**3**	**0**	**0**	**3**	**585**	**582**	**99**
Cutting, Punching, and Press Machine Setters, (	0	3	0	0	3	28		
Drilling and Boring Machine Tool Setters, Opera	0	3	0	0	3	5		
Extruding and Drawing Machine Setters, Operat	0	3	0	0	3	30		
Forging Machine Setters, Operators, and Tende	0	3	0	0	3	6		
Grinding, Lapping, Polishing, and Buffing Machi	0	3	0	0	3	60		
Heat Treating Equipment Setters, Operators, ar	0	3	0	0	3	5		
Lathe and Turning Machine Tool Setters, Opera	0	3	0	0	3	33		
Layout Workers, Metal and Plastic	0	3	0	0	3	2		
Machinists	0	3	0	0	3	329		
Metal Workers and Plastic Workers, All Other	0	3	0	0	3	5		
Milling and Planing Machine Setters, Operators	0	3	0	0	3	5		
Multiple Machine Tool Setters, Operators, and	0	3	0	0	3	69		
Rolling Machine Setters, Operators, and Tender	0	3	0	0	3	8		
Medical Administrative/Executive Assistant and	**0**	**60**	**0**	**0**	**60**	**102**	**42**	**41**
Medical Secretaries	0	60	0	0	60	102		
Medical Insurance Specialist/Medical Biller.	**0**	**90**	**0**	**0**	**90**	**102**	**12**	**12**
Medical Secretaries	0	90	0	0	90	102		
Medical Office Assistant/Specialist.	**0**	**0**	**0**	**0**	**1**	**102**	**101**	**99**
Medical Secretaries	0	0	0	0	1	102		
Public Health Education and Promotion.	**0**	**0**	**0**	**0**	**4**	**23**	**19**	**83**
Community Health Workers	0	0	0	0	4	23		
Quality Control Technology/Technician.	**0**	**10**	**0**	**0**	**12**	**230**	**218**	**95**
Inspectors, Testers, Sorters, Samplers, and Wei	0	10	0	0	12	230		
Restaurant, Culinary, and Catering Management,	**0**	**0**	**16**	**0**	**16**	**499**	**483**	**97**
Chefs and Head Cooks	0	0	16	0	16	52		
First-Line Supervisors of Food Preparation and	0	0	16	0	16	317		
Food Service Managers	0	0	16	0	16	130		
Restaurant/Food Services Management.	**0**	**0**	**9**	**0**	**9**	**137**	**128**	**93**
Food Service Managers	0	0	9	0	9	130		
Lodging Managers	0	0	9	0	9	7		
Taxation.	**0**	**0**	**0**	**0**	**9**	**28**	**19**	**68**
Tax Preparers	0	0	0	0	9	28		
Water Quality and Wastewater Treatment Mana	**0**	**10**	**0**	**0**	**10**	**33**	**23**	**70**
Water and Wastewater Treatment Plant and Sy	0	10	0	0	10	33		
Welding Engineering Technology/Technician.	**0**	**58**	**0**	**0**	**58**	**80**	**22**	**28**
Welders, Cutters, Solderers, and Brazers	0	58	0	0	58	80		

Source: CTDOL TEPS program