December 18, 2008

Ladies and Gentlemen:

One of the vital roles of the Comptroller is to predict how and where our economy will grow, to provide state leaders with critical information for future decisions. Though our state's diverse economy is serving us well in the difficult economic times we face, we must look beyond the horizon with the keenest and sharpest eyes to ensure Texas' prosperity continues.

Today, a serious imbalance is emerging between the demand for skilled workers and the state's ability to supply them. As the nation's current leader in job creation, Texas cannot afford to fall behind. *Texas Works* provides an in-depth study of this issue with recommended steps to ensure our state's young and growing population is one of the world's strongest and most highly skilled work forces.

Texas Works highlights many statistics and findings:

- the number of jobs requiring technical training, certifications or associate degrees is outpacing the number of people available to fill them despite the fact that many pay above-average salaries.
- a growing number of employers across the state is raising the alarm about the need for more skilled workers.
- multiple paths to high school graduation and postsecondary training and education will help reduce the skilled-worker gap and could help reduce dropout rates; current state policy focuses on a single path to a four-year degree.
- Texas population projections point to a less educated work force if the state continues on its current path, negating the economic advantage of a younger average working population.
- funding to public two-year institutions has not kept pace with the high demand for vocational, technical and associate degree training, even though these investments have high returns.

I know you share a strong commitment to our state's success and will be highly interested in exploring the issues and recommendations in *Texas Works*. On a state level, this is about our strength as an economic powerhouse. On a personal level for all of us, this is about making the future success of every Texan our top priority.

Sincerely,

Susan Combs

Table of Contents

Executive Summary and Introduction

Decades of unprecedented technological advances have remade the U.S. and world economies. Mainstay industries such as heavy manufacturing have declined while entirely new fields have created millions of jobs, permanently altering the economic landscape. And more change is on the way.

In this environment, ensuring that Texas students have the range of technical skills they need to pursue a successful career is a critical goal, both for the individual and the state as a whole. Many Texas businesses simply cannot prosper without a growing labor pool of skilled technical employees.

At present, however, most of the state's attention is devoted to encouraging and preparing students to earn four-year degrees. But there are other paths to success, and we neglect these at our peril.

Regardless of how much we promote university education, a large number of Texas students simply will not choose to attend a four-year school. But our economy is large and diverse enough to provide them with rewarding careers and strong incomes — as long as they acquire the postsecondary training they need to succeed.

Many high-paying and rapidly growing professions are open to persons with technical training. In 2007, more than 80 percent of all Texas jobs did not require a bachelor's degree (**Exhibit 1**). More importantly, neither did nearly 44 percent of

"If Texas is known to have work force talent, more companies will locate and expand in the state."

—Monte King, Workforce Development, Shell Oil Company, Houston

Exhibit 1

Education Requirements for Texas Jobs, 2007

Texas Jobs not Requiring Bachelor's Degree

	Number of Jobs	Percent
Short-term on-the-job training	3,657,193	35.65%
Moderate-term on-the-job training	2,291,220	22.33
Long-term on-the-job training	689,753	6.72
Work experience in a related field	678,346	6.61
Postsecondary vocational award	497,698	4.85
Associate degree	407,568	3.97
Subtotal – No Bachelor's Degree Required	**8,221,778**	**80.15%**

Texas Jobs Requiring Bachelor's degree or Above

	Number of Jobs	Percent
Bachelor's degree	1,277,197	12.45%
Master's degree	118,477	1.15
Degree plus work experience	418,211	4.08
First professional degree	101,032	0.98
Doctoral degree	121,823	1.19
Subtotal – Bachelor's or Above Required	**2,036,740**	**19.85%**
Total	**10,258,518**	

Note: Numbers may not total due to rounding.
Source: Economic Modeling Specialists, Inc.

Exhibit 2

Education Requirements for Texas Jobs Paying Better-Than-Average Incomes, 2007*

Texas Jobs Paying Above-Average Income Not Requiring Bachelor's Degree

	Number of Jobs	Median Annual Earnings	Percent
Work experience in a related field	447,390	$50,718	13.09%
Moderate-term on-the-job training	243,638	49,930	7.13
Long-term on-the-job training	334,735	45,092	9.80
Short-term on-the-job training	43,607	44,057	1.28
Postsecondary vocational award	78,886	46,616	2.31
Associate degree	343,057	53,229	10.04
Subtotal – No Bachelor's Degree Required	**1,491,313**		**43.65%**

Texas Jobs Paying Above-Average Income Requiring Bachelor's Degree or Above

	Number of Jobs	Median Annual Earnings	Percent
Bachelor's degree	1,187,112	$64,085	34.74%
Master's degree	102,068	61,709	2.99
Degree plus work experience	413,485	87,954	12.10
First professional degree	101,032	120,655	2.96
Doctoral degree	121,823	80,766	3.57
Subtotal – Bachelor's Degree Required	**1,925,520**		**56.35%**
Total	**3,416,833**		

*Texas' per capita income was $37,187 in 2007.
Note: Numbers may not total due to rounding.
Source: Economic Modeling Specialists, Inc.

The U.S. Department of Education projects that about 80 percent of the fastest-growing jobs added in the future will not require a bachelor's degree, although they will require some postsecondary education.

jobs paying an above-average income for the state (**Exhibit 2**). That included more than 343,000 jobs requiring an associate degree and paying average annual earnings of $53,229, as well as 79,000 jobs requiring technical certificates and average incomes of $46,616 (**Exhibits 3** and **4**).

And the U.S. Department of Education estimates that about 80 percent of the fastest-growing job categories in the near future will require some postsecondary training, but not a bachelor's degree.[1]

Texas has a number of community and technical colleges that can offer our children affordable, state-of-the-art training for jobs with a future after just one or two years. As Chapter 4 of this report documents, they make important contributions to the state economy; their graduates' incomes generate about $10.1 billion in the Texas economy each year. And they can play a vital role in ensuring that Texas continues to prosper in challenging economic times.

But to maximize the effectiveness of our community and technical colleges, the state must ensure that its policies help rather than hinder them.

A "One Size Fits All" Model

Many state policies are geared largely toward pushing all students into university programs (see Chapter 2). These policies may inadvertently send the signal that the four-year degree is the only path to success.

The Texas high school class that entered the ninth grade in Fall 2007, for instance, will be required to meet the new "four-by-four" standards, which require four years each of language arts, social studies, math and science. But some applied science and math courses relevant to technical courses will not count toward the four-by-four requirements.[2] The new requirements may force many students to abandon career and technical education (CTE) courses.

Similarly, proposed new grade-point average (GPA) calculation standards for high schools

Exhibit 3

Associate Degree Jobs Paying More than $37,187 (Average Texas Income, 2007)

Description	2007 Jobs	2007 Median Annual Earnings
Radiation therapists	868	$88,962
Aerospace engineering and operations technicians	807	76,606
Nuclear technicians	44	75,525
Nuclear medicine technologists	1,345	71,178
Computer specialists, all other	7,681	71,053
Dental hygienists	9,592	65,728
Fashion designers	523	63,419
Diagnostic medical sonographers	2,624	63,211
Registered nurses	160,491	58,198
Industrial engineering technicians	9,298	57,221
Fish and game wardens	505	55,973
Electrical and electronic engineering technicians	15,813	53,789
Mechanical engineering technicians	5,330	52,749
Physical therapist assistants	3,971	49,941
Electro-mechanical technicians	1,040	49,150
Occupational therapist assistants	1,789	48,714
Respiratory therapists	7,607	48,485
Radiologic technologists and technicians	13,745	48,381
Geological and petroleum technicians	4,723	47,174
Social science research assistants	479	46,342
Chemical technicians	5,951	45,843
Paralegals and legal assistants	17,242	45,677
Engineering technicians, except drafters, all other	4,805	44,928
Funeral directors	1,475	43,867
Cardiovascular technologists and technicians	2,838	43,368
Forest and conservation technicians	187	43,202
Respiratory therapy technicians	2,657	43,139
Computer support specialists	44,807	41,205
Forensic science technicians	1,261	40,934
Environmental science and protection technicians, including health	3,592	38,397
Interior designers	4,732	38,085
Medical equipment repairers	3,218	37,648
Biological technicians	2,017	37,461
Total Jobs & Weighted Average Annual Earnings	**343,057**	**$53,229**

Sources: Economic Modeling Specialists, Inc. and Texas Comptroller of Public Accounts.

"It's getting tougher to find people for technical skills-related positions. The demand is greater than the supply of the people who possess these skills."

—Carol Wilson, Senior Human Resources Director, Centerpoint Energy

Exhibit 4

Technical Certificate Jobs Paying More than $37,187 (Average Texas Income, 2007)

Description	2007 Jobs	2007 Median Annual Earnings
Commercial pilots	2,410	$61,968
Electrical and electronics repairers, powerhouse, substation, and relay	1,374	55,557
Ship engineers	1,419	53,082
Avionics technicians	2,388	50,461
Electrical and electronics drafters	3,384	49,462
Aircraft mechanics and service technicians	16,737	48,901
Appraisers and assessors of real estate	5,069	48,547
Drafters, all other	1,133	47,902
Mechanical drafters	7,297	46,592
Electrical and electronics repairers, commercial and industrial equipment	6,269	46,197
Healthcare practitioners and technical workers, all other	2,189	43,098
Electrical and electronics installers and repairers, transportation equipment	1,192	42,203
Court reporters	1,799	41,974
Architectural and civil drafters	9,405	41,954
Occupational health and safety technicians	1,428	40,082
Legal secretaries	14,776	40,082
Sound engineering technicians	640	37,877
Total Jobs & Weighted Average Annual Earnings	**78,886**	**$46,616**

Sources: Economic Modeling Specialists, Inc., Texas Comptroller of Public Accounts and Texas Workforce Commission.

"There is a tendency to push kids to a four-year degree and I think we have to change that view. There is nothing wrong with starting with an associate degree...we are paying many of our associate degree people more than four-year graduates."

—Edward C. Trump, Plant Manager, Entergy, Harrison County Power Project

would only include CTE courses aligned with university programs such as accounting.[3] Many technical courses will not count toward the calculation of student GPAs, giving students less incentive to enroll in them.

Furthermore, the ability of our community and technical colleges to train skilled workers has been hampered by declining state funding. As Chapter 3 illustrates, state funding for community and technical colleges has not kept pace with inflation and is falling in real terms. And while CTE courses can be quite expensive to establish, often requiring state-of-the-art technology and equipment, the state does not offer funding for startup costs. In some urban areas, employers donate materials and equipment and allow students to train in their facilities, but rural institutions often lack such partners.

Such state policies are shortsighted, both from the perspective of individual students and from that of Texas as a whole, which needs a productive, skilled work force with a variety of technical skills to compete successfully.

The Skilled Worker Shortage

Dwindling enrollment in vocational training is starting to affect many Texas businesses that face

shortages of skilled workers. Employers in and near the cities of Corpus Christi, Port Arthur, Beaumont and Texas City report that they cannot find enough welders. One large petrochemical company representative said that they have needed more welders than they can hire for the past two years.[4]

Carol Wilson, senior human resources director for Centerpoint Energy, told Comptroller staff that "it's getting tougher to find people for technical skills-related positions. The demand is greater than the supply."[5]

And the existing supply of skilled workers is aging. The *Wall Street Journal* recently noted that "unions, construction contractors and other businesses" are facing impending shortages of skilled workers since many of them are reaching retirement age, and there are too few young workers with the skills needed to replace them.[6]

The impending wave of retirements in the baby boom generation will remove many of our most experienced and skilled technical employees from the work force. This may drive up wages for a wide variety of technical occupations, and force employers to import labor from other states or other countries.[7] Both are costly solutions, and may ultimately lead employers to reduce operations or relocate elsewhere.

Texas' publicly funded higher education institutions are not meeting this demand. In 2007, for example, Texas had roughly 44,000 job openings for workers with some postsecondary technical or career training, but the state's public institutions produced just 36,442 students with the skills needed for those jobs.[8]

By contrast, in the same year, our public universities produced more bachelor's, master's and doctoral graduates than the economy could employ, awarding about 104,000 degrees while the state added just 85,000 jobs requiring a bachelor's degree or above (**Exhibit 5**).[9] Private Texas colleges and universities added another 26,000 graduates, for a total oversupply of about 45,000.[10]

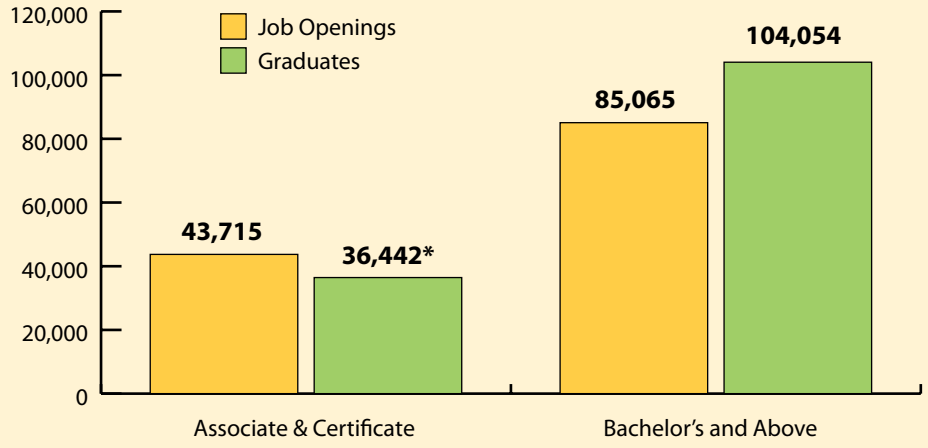
It should be noted that privately funded career schools greatly supplement our supply of skilled

"If we can't get the work force we need, we'll leave. We have to get people educated or growth will stop and people will move."

—Tom Wade, President, Logistics and Manufacturing Association, Port Laredo

Exhibit 5

Number of Graduates from Publicly Funded Institutions, by Degree Type vs. Annual Average Job Openings, 2007



*Estimate derived by taking the total number of associate degrees and certificates and subtracting "academic" associate and certificate awards.

Sources: Texas Workforce Commission and Texas Higher Education Accountability System.

technical workers, graduating more than 53,000 students with a diploma, certificate or some other credential in 2007.[11] Even so, these data provide further evidence of the way in which Texas *public* policy pushes students toward the university regardless of the actual needs of the state economy, or the economic prospects graduates face.

Challenges

Foregoing postsecondary training and education can mean a tremendous loss of income over a lifetime. A student who earns an associate degree, for example, will earn an average of $340,000 more over a working lifetime than someone with just a high school diploma — and nearly $600,000 more than a worker with no diploma.[12]

These increased earnings, moreover, can be achieved with a relatively small investment of time and money. Tuition and fees for two years at a community college in Texas, for example, cost an average of about $3,800, compared to more than $26,000 for four years at a public university.[13]

Yet far too many Texas high school students fail to pursue postsecondary education, despite its obvious benefits and advantages. As illustrated in Chapter 5, their reasons tend to fall into three broad categories:

- *inadequate knowledge* about school programs and financial aid opportunities, and how to take advantage of them.
- *institutional and bureaucratic obstacles* that make it difficult for students to obtain career and technology education.
- *financial barriers*, and the inability of financial aid systems to reach those most in need.

All of these challenges are common among the students most likely to benefit from postsecondary career and technology education.

Steps Texas Should Take

This report includes several recommendations to help overcome these challenges.

1. Make more parents and students aware of *all* postsecondary educational options, including career and technical education (CTE), and the availability of financial assistance.
2. As part of this effort, use data on educational and employment outcomes to quantify the economic benefits of CTE, and publicize these results to help make current and prospective students aware of its value and promise.
3. Ensure that state academic requirements, such as those represented by the new "four-by-four" policy and new GPA calculation standards, do not prevent or discourage students from enrolling in career and technology courses.
4. Establish a $25 million Jobs and Education for Texans (JET) fund to provide support for postsecondary CTE courses, including startup funding for new programs.
5. Link any incentive funding for postsecondary technical education to measures that help ensure the state receives a positive return on its investment.

Endnotes

[1] U.S. Department of Education, *Meeting the Challenge of a Changing World: Strengthening Education for the 21st Century* (Washington, D.C., 2006), p. 4, http://www.doleta.gov/wired/files/Meeting_The_Challenge_of_a_Changing_World.pdf. (Last visited October 8, 2008.)

[2] Letter from Susan Barnes, associate commissioner for Standards and Programs, Texas Education Agency, December 3, 2007, "19 TAC Chapter 74, Curriculum Requirements, Subchapter F, Graduation Requirements Beginning with School Year 2007-2008," pp. 1-3, 5, http://www.tea.state.tx.us/taa/stanprog120607.html (last visited December 11, 2008.) and Texas Education Agency, "Texas State Graduation Requirements," pp. 1-2, http://www.tea.state.tx.us/curriculum/SBSGradRequirements0708.pdf. (Last visited December 11, 2008.)

[3] Texas Higher Education Coordinating Board, "Commissioner's Statement and Preliminary Recommendation on Methodology for Calculating the Uniform GPA," p. 3, http://www.thecb.state.tx.us/reports/PDF/1653.PDF. (Last visited December 11, 2008.)

[4] Interview with Jim Greenwood, vice president of Governmental Affairs, Valero Energy, September 17, 2008.

[5] Interview with Carol Wilson, senior human resources Director, Centerpoint Energy, November 6, 2008.